



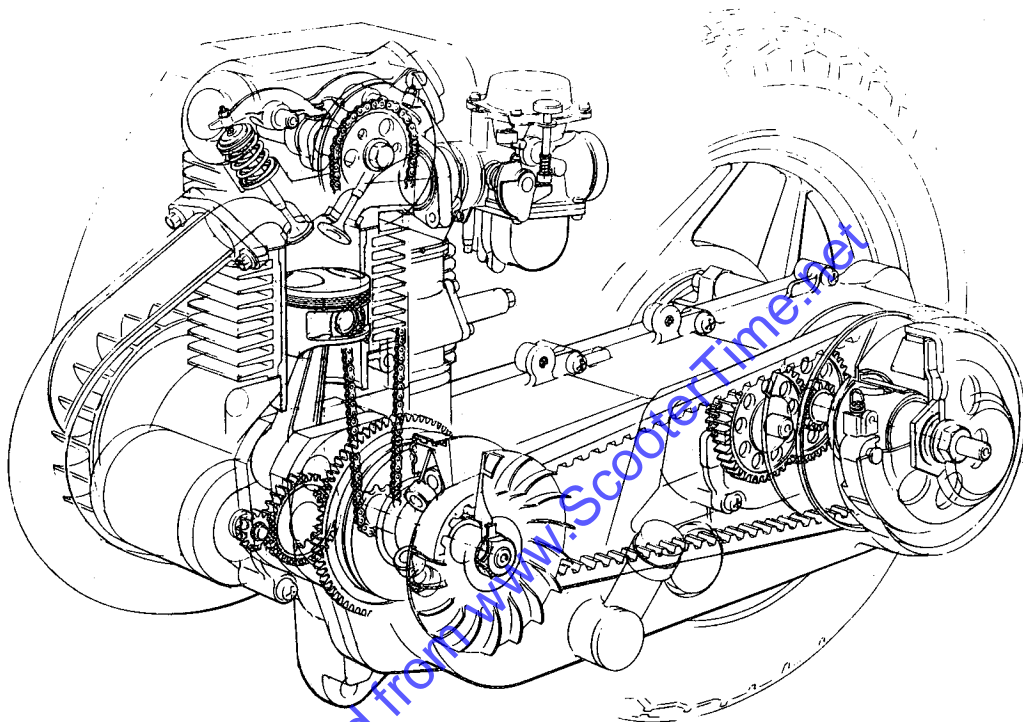
# YAMAHA

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**Model :**

**1WA281972000**





**XC125S**

**SERVICE MANUAL**

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1st Edition, August 1985

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## NOTICE

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

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

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

## HOW TO USE THIS MANUAL

### PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.

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

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

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

### MANUAL FORMAT













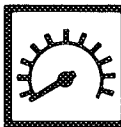
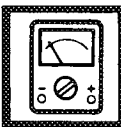







All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspection operations.

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

- Bearings  
Pitting/Damage → Replace.

### EXPLODED DIAGRAM

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

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

## ILLUSTRATED SYMBOLS (Refer to the illustration)

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

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






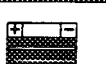

Symbols ⑨ to ⑭ are used to identify the specifications appearing in the text.

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

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

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

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<b>ENGINE OVERHAUL</b>	 <b>ENG 3</b>
<b>CARBURETION</b>	 <b>CARB 4</b>
<b>CHASSIS</b>	 <b>CHAS 5</b>
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## CHAPTER 1. GENERAL INFORMATION

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**GENERAL INFORMATION**

**SCOOTER IDENTIFICATION**

**VEHICLE IDENTIFICATION NUMBER**

The vehicle identification number ① is stamped into the frame.

**Starting Serial Number:**  
**JYA1WA00 \* GA000101**

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

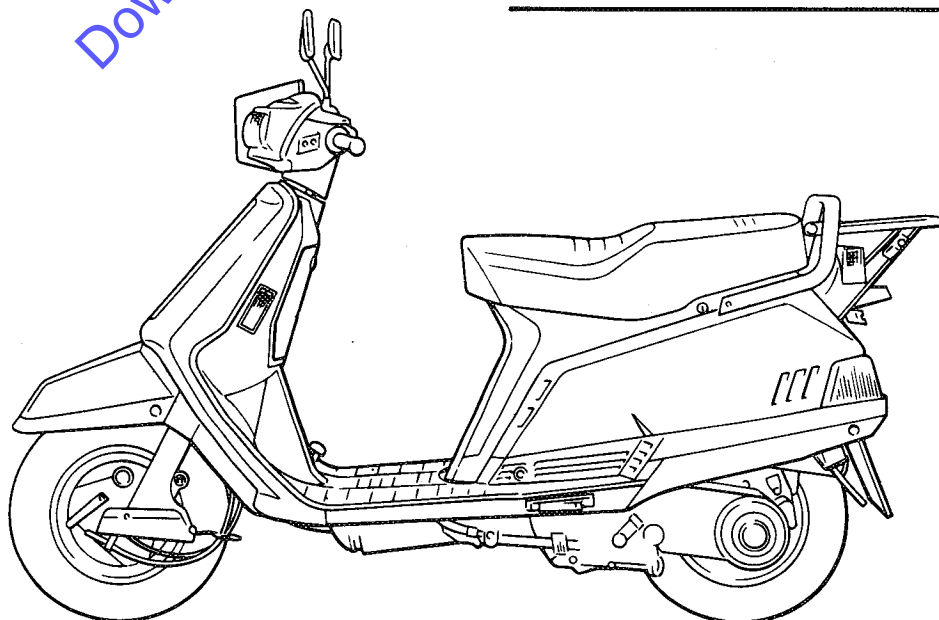
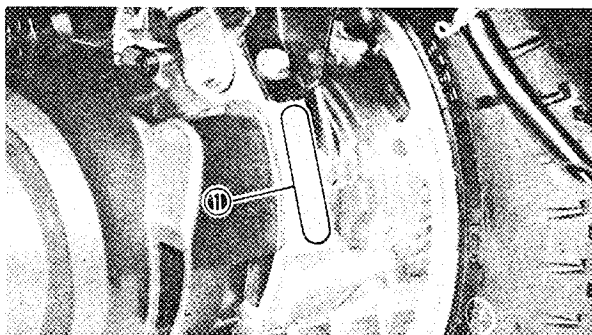
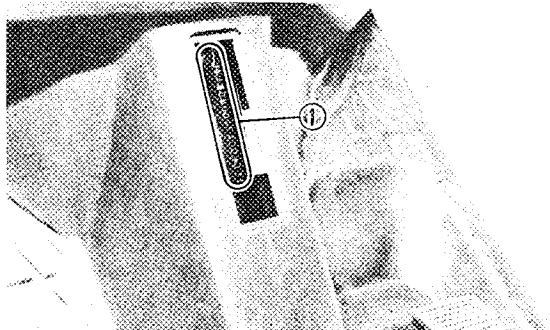
**ENGINE SERIAL NUMBER**

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

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

**Starting Serial Number:**  
**1WA-000101**

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



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**1**



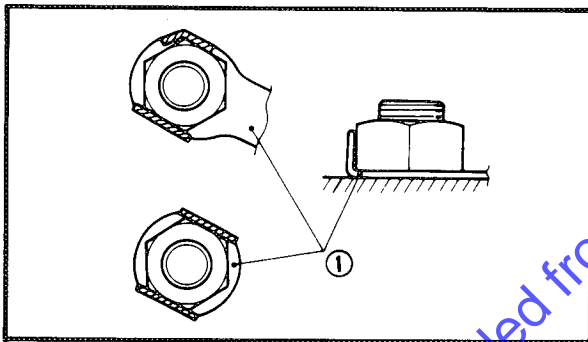
**IMPORTANT INFORMATION**

**ALL REPLACEMENT PARTS**

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

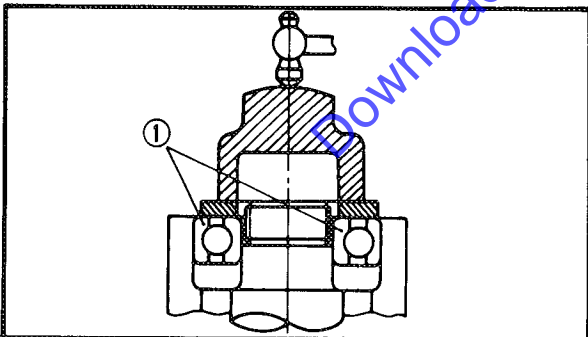
**GASKETS, OIL SEALS, AND O-RINGS**

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



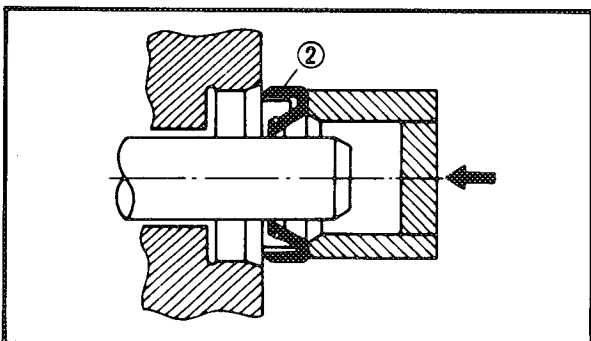
**LOCK WASHERS/PLATES AND COTTER PINS**

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



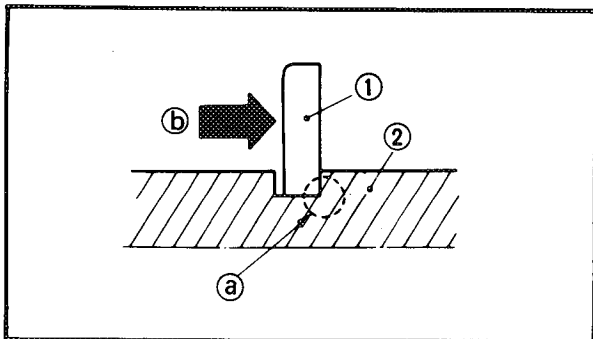
**BEARINGS AND OIL SEALS**

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



**CAUTION:**

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



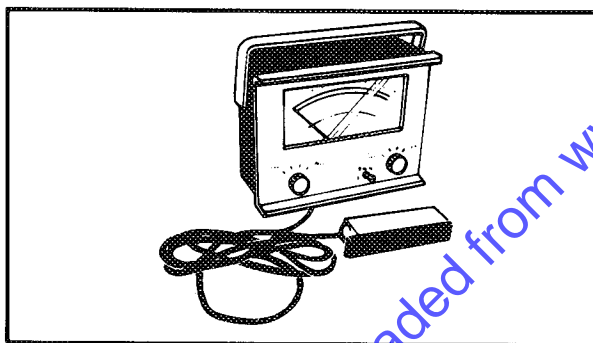
**CIRCLIPS**

1. All circlips should be inspected carefully before reassembly. Always replace piston pin clips after one use. Replace distorted circlips. When installing a circlip ①, make sure that the sharp-edged corner ③ is positioned opposite to the thrust ④ it receives. See the sectional view.

② Shaft

**SPECIAL TOOLS**

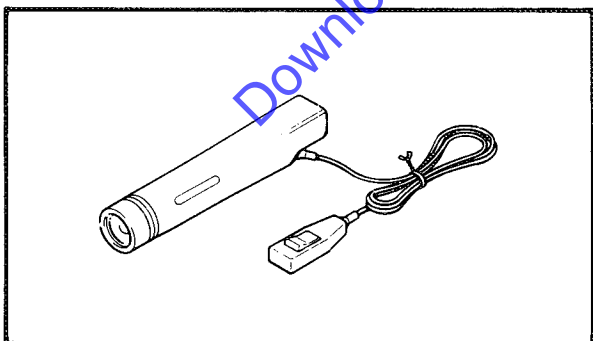
The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques.



**FOR TUNE-UP**

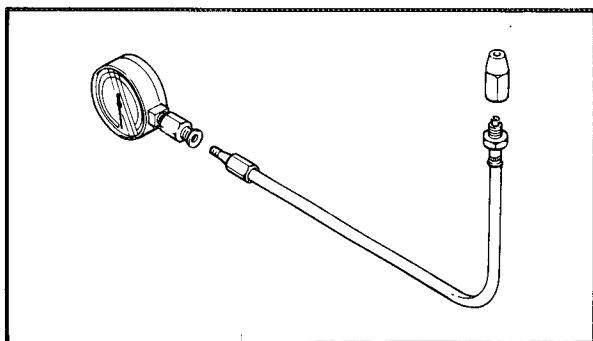
1. Inductive Tachometer  
P/N YU-8036

This tool is needed for detecting engine rpm.



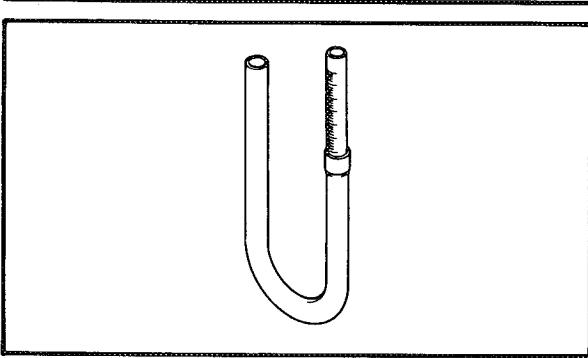
2. Timing Light  
P/N YU-08037

This tool is necessary for checking timing.



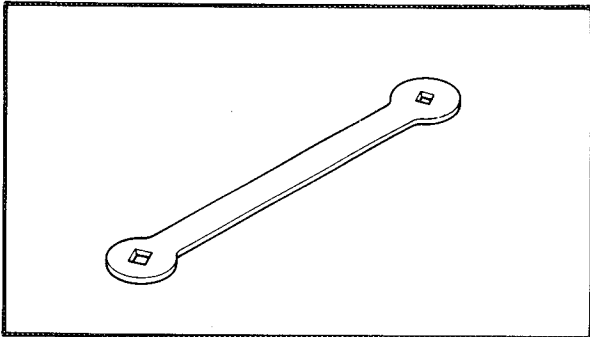
3. Compression Gauge  
P/N YU-33223

This gauge is used to measure engine compression.



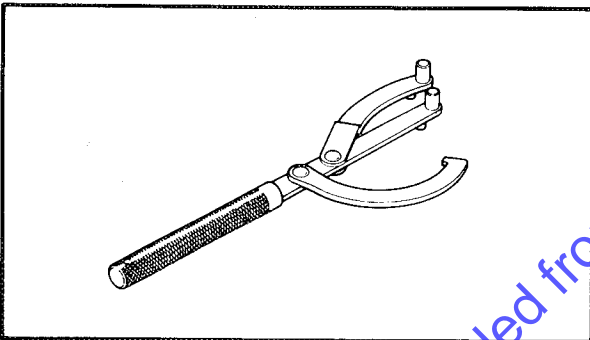
4. Fuel Level Gauge  
P/N YM-01312-A

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



5. Valve Adjusting Tool  
P/N YM-08035

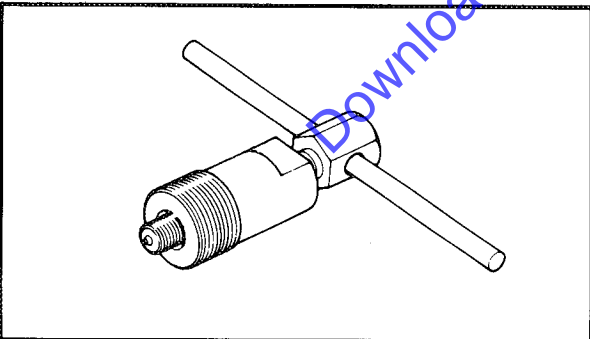
This tool is necessary for adjusting the valve clearance.



#### FOR ENGINE SERVICE

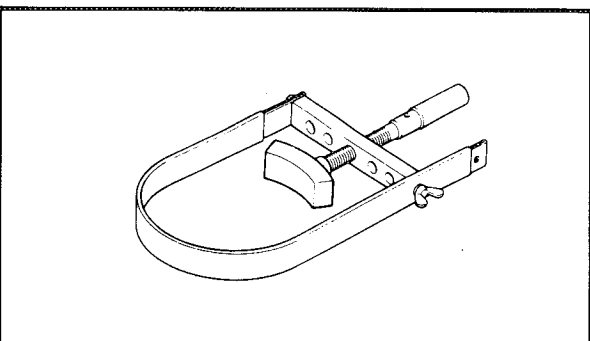
1. Rotor Holder  
P/N YU-01235

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



2. Flywheel Magneto Puller  
P/N YM-01189

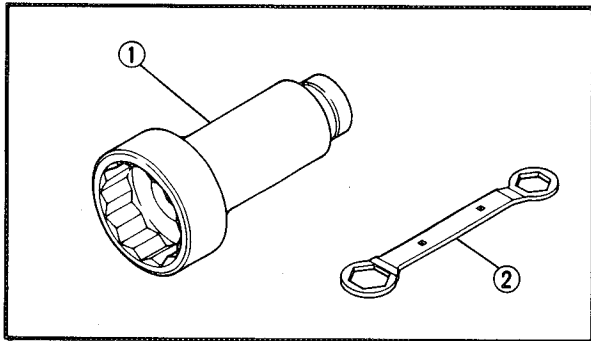
This tool is used to remove the flywheel.



3. Primary Sheave Holder  
P/N YU-01701

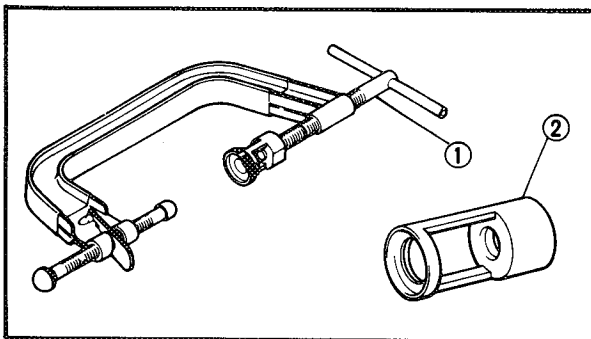
This tool is used when holding the clutch hub.

**1**



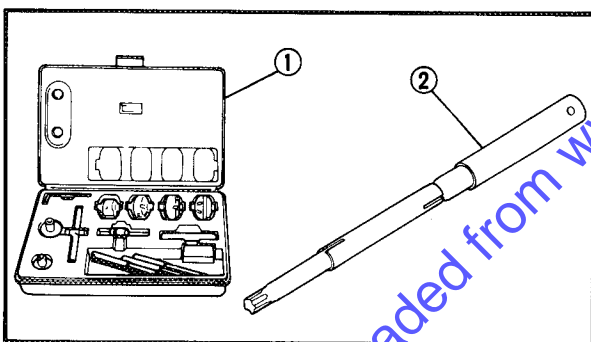
4. Middle Drive Shaft Nut Wrench – ①  
P/N YM-04045-A  
Locknut Wrench – ②  
P/N YM-4045-A

These tools are used to remove and install the secondary sheave nut.



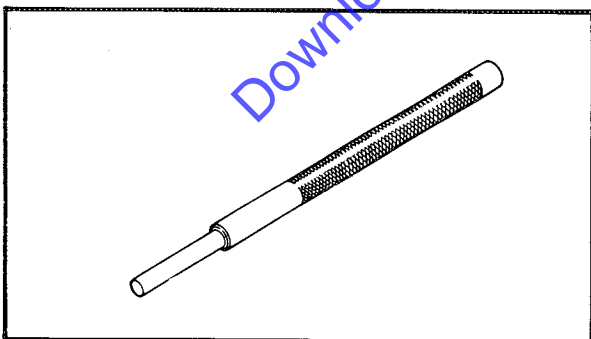
5. Valve Spring Compressor  
P/N YM-04019 – ①  
Adapter  
P/N YM-4108 – ②

These tools are used to remove and install the valve assemblies.



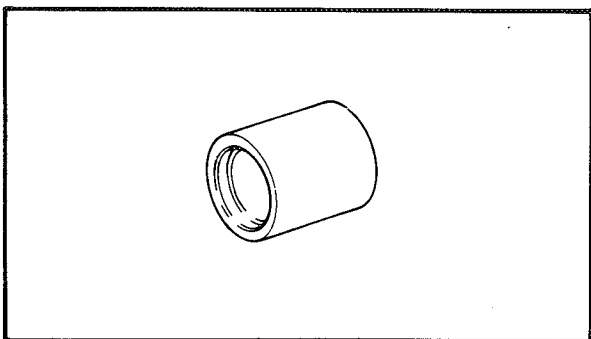
6. Valve Seat Cutter  
P/N YM-91043 – ①  
5 mm Pilot  
P/N YM-91043-50 – ②

These tools are used to resurface the valve seat.



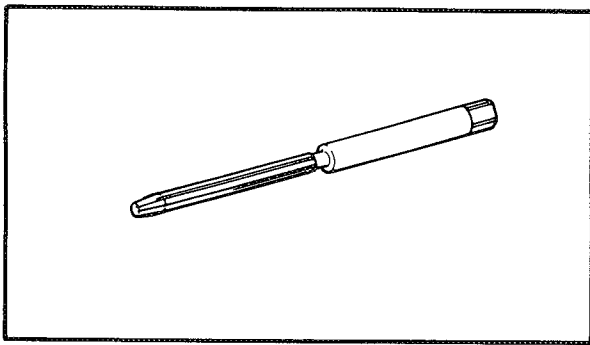
7. Valve Guide Remover  
P/N YM-4097

This tool is needed to install the valve guides properly.



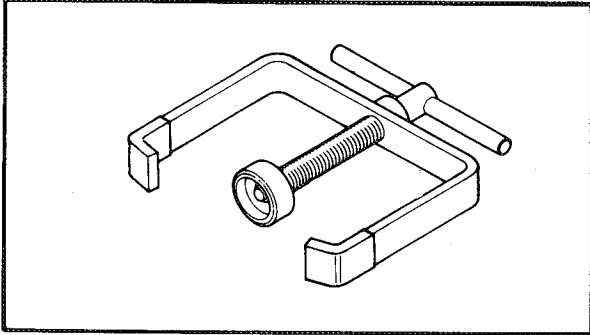
8. Valve Guide Installer  
P/N YM-4098

This tool is needed to install the valve guides properly.



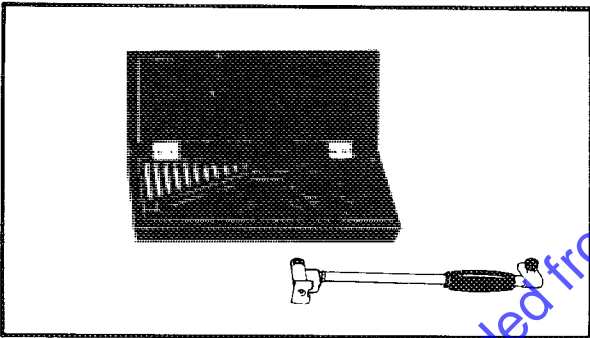
9. Valve Guide Reamer  
P/N YM-4099

This tool is used to re bore the new valve guide.



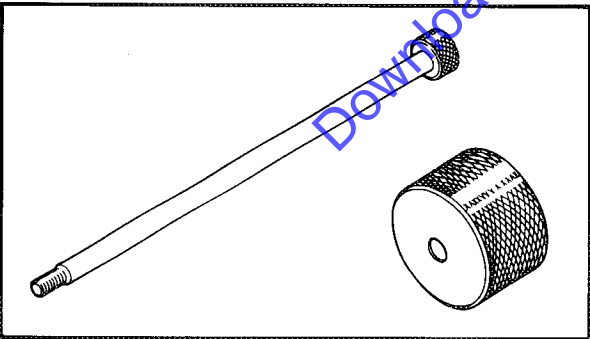
10. Clutch Spring Holder  
P/N YS-28891

This tool is used to disassembly and assembly the secondary sheave.



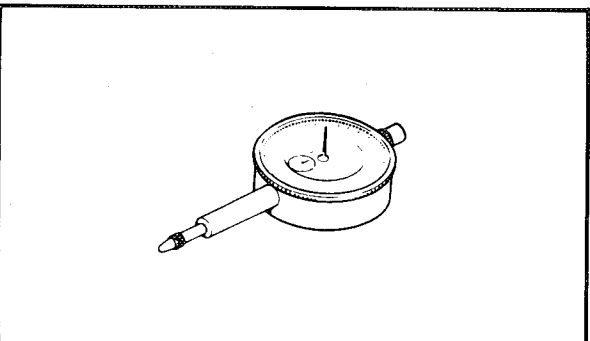
11. Cylinder Gauge  
P/N 90890-03016

This tool is used to measures cylinder bore.

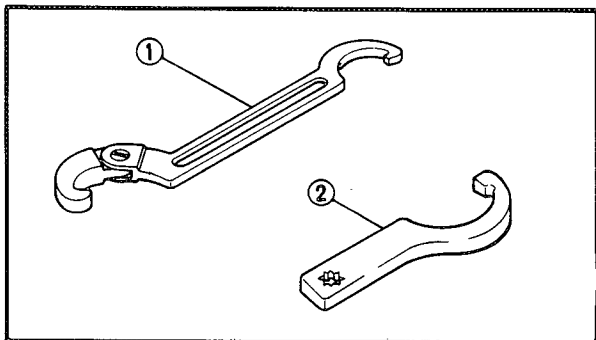


12. Slide Hammer Set (M6)  
P/N YU-01083

These tools are used to remove and install the rocker arm shafts.



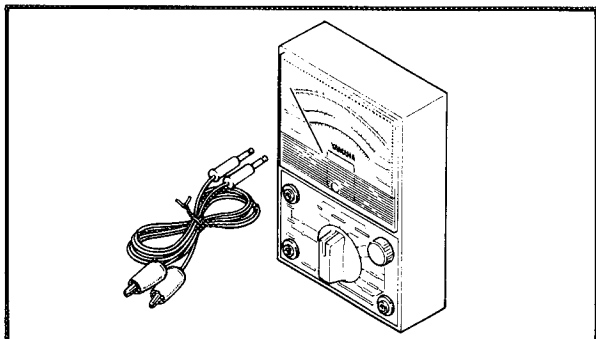
13. Dial Gauge  
P/N YU-03097



**FOR CHASSIS SERVICE**

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

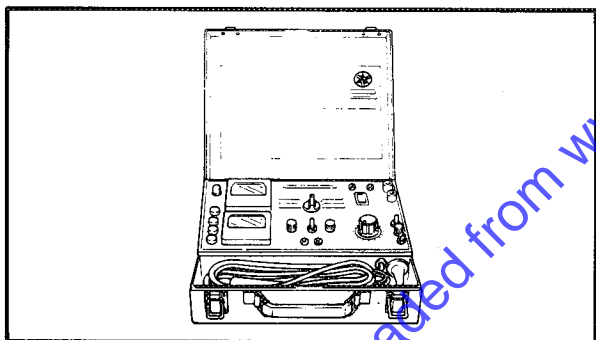
These tools are used to loosen and tighten the steering ring nut.



**FOR ELECTRICAL COMPONENTS**

1. Pocket Tester  
P/N YU-03112

This instrument is invaluable for electrical system inspection and adjustment.



2. Electro Tester  
P/N YU-33260

This instrument is necessary for ignition system inspection.

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## CHAPTER 2. PERIODIC INSPECTION AND ADJUSTMENTS

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# INTRODUCTION/ PERIODIC MAINTENANCE/LUBRICATION INTERVALS

## PERIODIC INSPECTIONS AND ADJUSTMENTS

### INTRODUCTION

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

### PERIODIC MAINTENANCE/LUBRICATION INTERVALS

Unit: km (miles)

ITEM	REMARKS	EVERY		
		BREAK-IN 1,000 (600)	6,000 (4,000) or 6 months	12,000 (8,000) or 12 months
Valve(s)*	Check valve clearance. Adjust if necessary.	○	○	○
Spark plug(s)	Check condition. Clean or replace if necessary.	○	○	○
Air filter	Clean. Replace if necessary.		○	○
Crankcase filter	Clean. Replace if necessary.			○
Carburetor*	Check idle speed/starter operation. Adjust if necessary.	○	○	○
Fuel line*	Check fuel hose and vacuum pipe for cracks or damage. Replace if necessary.		○	○
Engine oil	Replace (Warm engine before draining).	○	○	○
Final gear oil	Check oil level/oil leakage. Replace every 24,000 (16,000) or 24 months.	REPLACE	○	○
Brake	Check operation. Adjust if necessary.		○	○
Clutch	Check operation. Adjust if necessary.		○	○
Front brake tensionbar pivots and bottom link pivots	Apply until new grease shows.***		○	○
Front axle	Apply grease lightly.***		○	○
Wheels*	Check balance/damage/runout. Repair if necessary.		○	○
Wheel bearings*	Check bearings assembly for looseness/damage. Replace if damaged.		○	○
Steering bearing*	Check bearings assembly for looseness. Correct if necessary. Moderately repack every 24,000 (16,000) or 24 months.**	○		○
Front forks*	Check operation/oil leakage. Repair if necessary.		○	○
Rear shock absorber*	Check operation/oil leakage. Repair if necessary.		○	○
V-belt	Check damage and wear. Replace if necessary. Replace every 18,000 km (12,000 mi).		○	○
Fittings/Fasteners*	Check all chassis fittings and fasteners. Correct if necessary.	○	○	○
Center and sidestand*	Check operation. Repair if necessary.	○	○	○
Sidestand switch*	Check operation. Clean or replace if necessary.	○	○	○
Battery*	Check specific gravity. Check breather pipe for proper operation. Correct if necessary.		○	○

\*: It is recommended that these items be serviced by a Yamaha dealer.

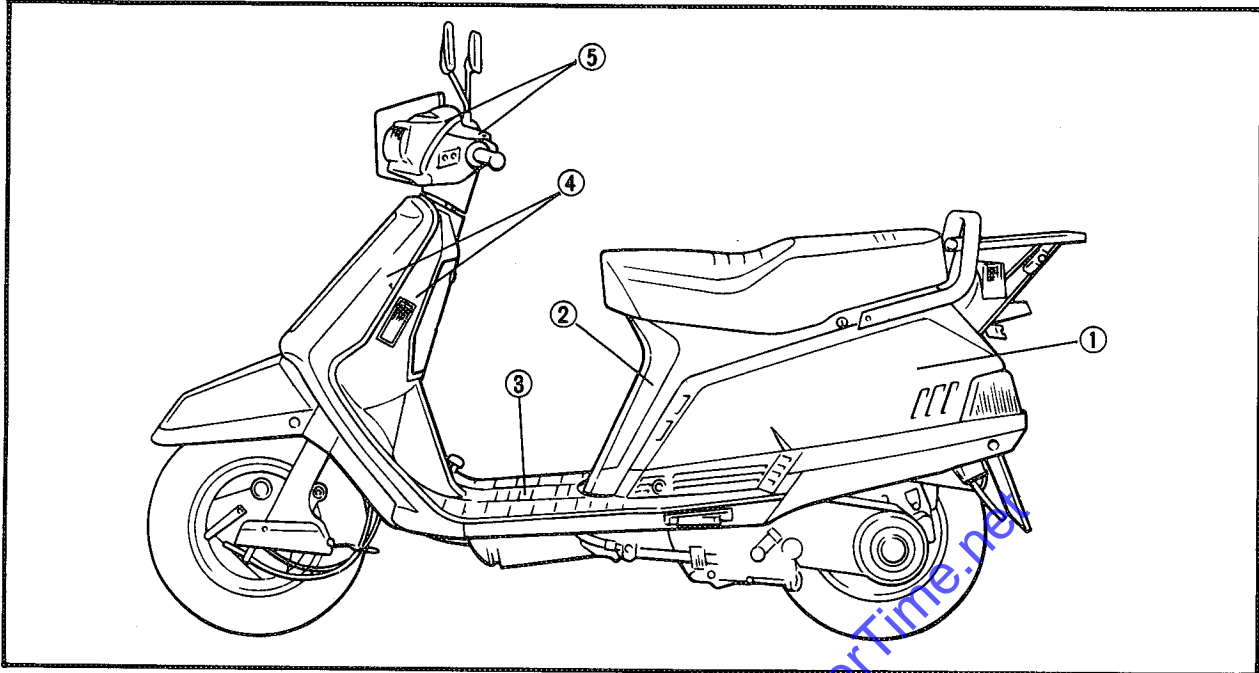
\*\* : Medium weight wheel bearing grease.

\*\*\* : Lithium soap base grease.





REMOVING THE COVERS AND PANELS

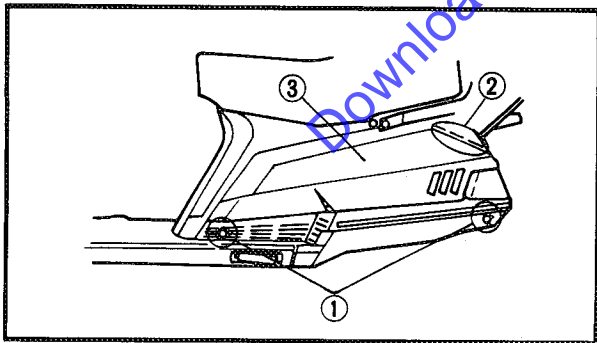


2

- ① Side covers (Right/Left)
- ② Front cover
- ③ Footrest board
- ④ Front and rear leg shield
- ⑤ Front and rear handlebar cover

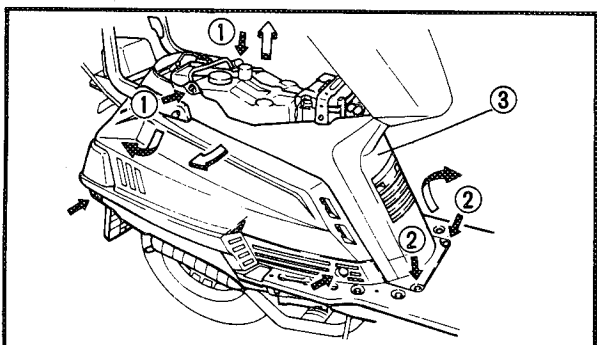
**CAUTION:**

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



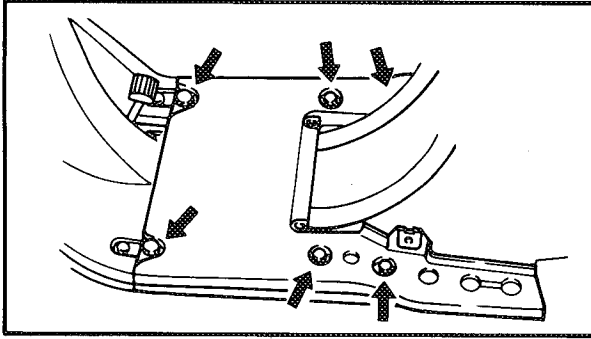
**SIDE COVER (Right/Left)**

1. Remove:
  - Screws (Side cover) ①
2. Unhook:
  - Hooks ②
3. Remove:
  - Side cover ③



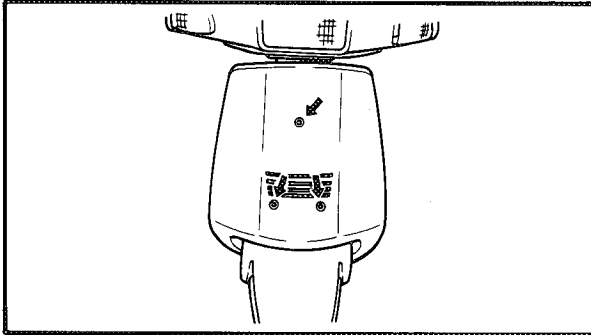
**FRONT COVER**

1. Open the seat.
2. Remove:
  - Screws (Front cover) ①
  - Bolts (Front cover) ②
3. Close the seat.
4. Remove:
  - Front cover ③



**FOOTREST BOARD**

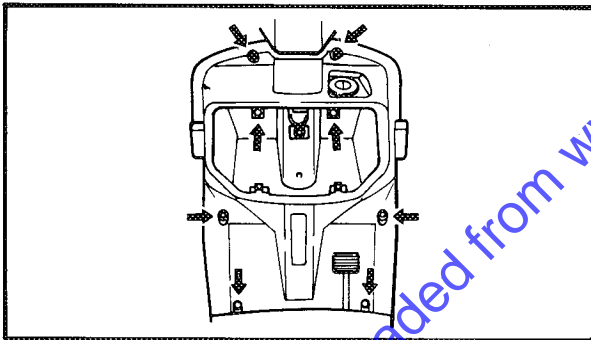
1. Remove:
  - Side covers (Right/Left)
  - Front cover
  - Footrest mat
  - Bolts (Footrest board)
  - Footrest board



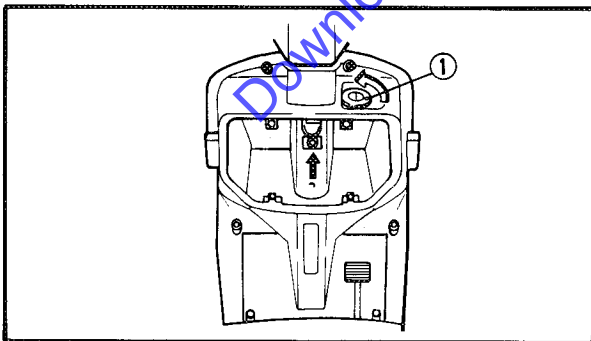
**FRONT AND REAR LEG SHIELD**

**Front Leg Shield**

1. Remove:
  - Nuts (Leg shield)

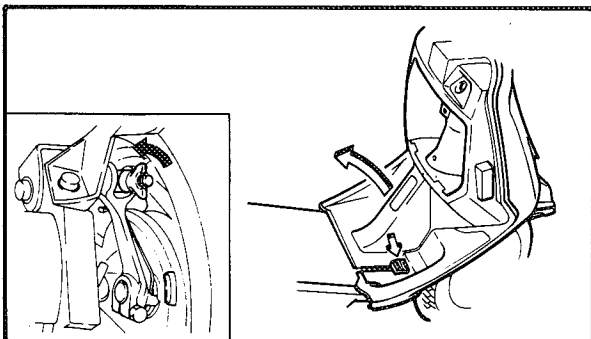


2. Remove:
  - Screws (Leg shield)
  - Bolts (Footrest board)
  - Front leg shield

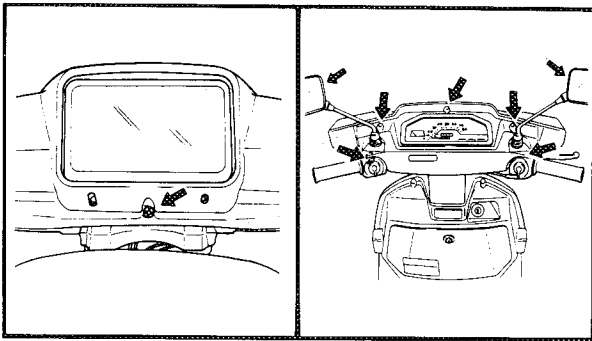


**Rear Leg Shield**

1. Remove:
  - Footrest board
  - Front leg shield
  - Screws (Rear leg shield)
  - Nut (Rear leg shield)
  - Main switch cap ①  
Turn counterclockwise and pull off.



2. Loosen:
  - Rear brake adjuster
3. Apply the rear brake fully, move the leg shield then remove the leg shield.
4. Remove:
  - Rear leg shield



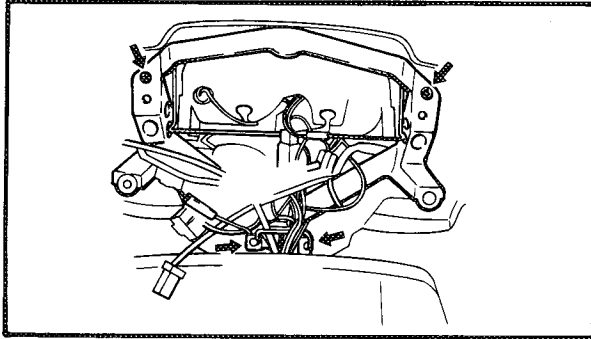
## FRONT AND REAR HANDLEBAR COVERS

### Front Handlebar Cover

1. Remove:
  - Rear view mirrors
  - Screws (Handlebar cover)
2. Remove:
  - Front handlebar cover

### Rear Handlebar Cover

1. Remove:
  - Front handlebar cover
2. Disconnect:
  - Speedometer cable
3. Remove:
  - Screws (Handlebar cover)
  - Rear handlebar cover

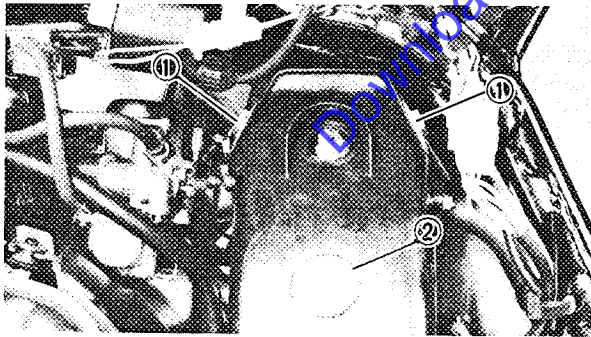


## ENGINE

### VALVE CLEARANCE ADJUSTMENT

#### NOTE:

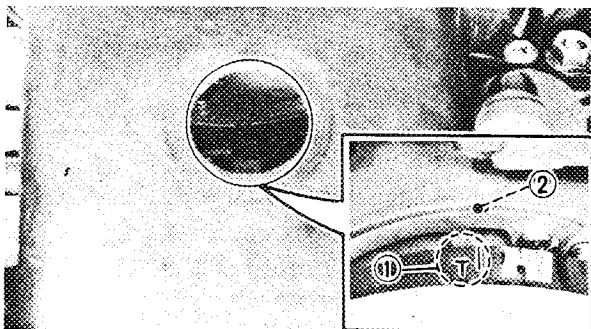
Valve clearance must be measured when the engine is cool to the touch.



1. Remove:
  - Side cover (Right)
  - Front cover
  - Valve covers ① (Intake/Exhaust)
  - Spark plug
  - Timing check window plug ②

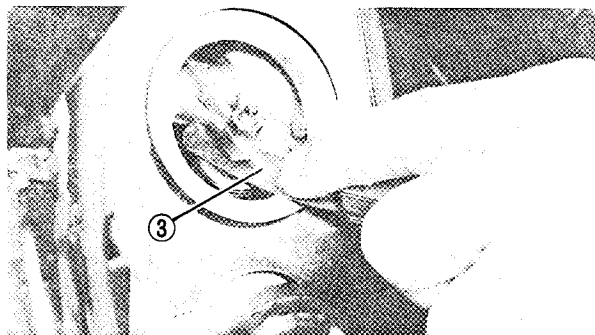
2. Measure:
  - Valve clearance

By the following measurement steps.



#### Valve clearance measurement steps:

- Align the "T" mark ① on the flywheel with the stationary pointer ② on the crankcase. When the "T" mark is aligned with the stationary pointer, the piston is at Top Dead Center (TDC).

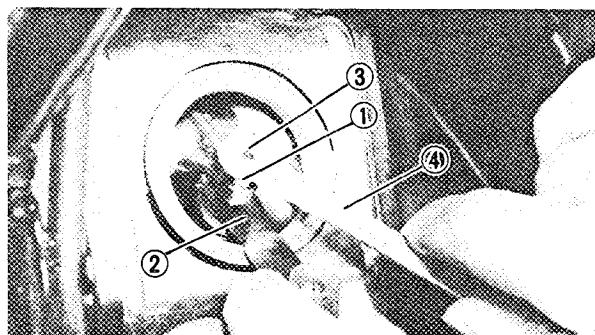


- Measure the valve clearance using a Feeler Gauge ③ .  
Out of specification → Adjust clearance.



**Intake Valve (Cold):**  
0.08 ~ 0.12 mm (0.003 ~ 0.005 in)  
**Exhaust Valve (Cold):**  
0.10 ~ 0.14 mm (0.004 ~ 0.006 in)

**2**



3. Adjust:
- Valve clearance  
By the following adjustment steps.

**Valve clearance adjustment steps:**

- Loosen the locknut ① .
- Insert a Feeler Gauge ② between the adjuster end and the valve end.
- Turn the adjuster ③ clockwise or counter-clockwise with the Valve Adjusting Tool ④ (YM-08035) until proper clearance is attained.



**Intake Valve (Cold):**  
0.08 ~ 0.12 mm (0.003 ~ 0.005 in)  
**Exhaust Valve (Cold):**  
0.10 ~ 0.14 mm (0.004 ~ 0.006 in)

- Hold the adjuster to prevent it from moving and thoroughly tighten the locknut.



**Valve Clearance Adjusting Locknut:**  
7 Nm (0.7 m·kg, 5.1 ft·lb)

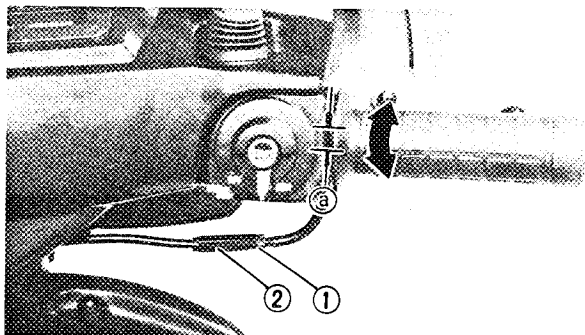
- Measure the valve clearance.
- If the clearance is incorrect, repeat above steps until the proper clearance is obtained.

4. Install:
- Reverse the applicable removal steps. (See page 2-4)




**Spark Plug:**  
12.5 Nm (1.25 m·kg, 9.0 ft·lb)  
**Valve Cover (Intake/Exhaust):**  
7 Nm (0.7 m·kg, 5.1 ft·lb)

## THROTTLE CABLE ADJUSTMENT/ IDLE SPEED ADJUSTMENT



### THROTTLE CABLE ADJUSTMENT

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

 **Throttle Cable Free Play (a) :**  
1.5 ~ 3.5 mm (0.06 ~ 0.14 in)

2. Adjust:
  - Throttle cable free play  
By the following adjustment steps.

#### Throttle cable free play adjustment steps:

- Loosen the locknut (1).
- Turn the adjuster (2) clockwise or counterclockwise until proper free play is attained.
- Tighten the locknut.
- Measure the throttle cable free play.
- If the free play is incorrect, repeat above steps until the proper free play is obtained.

#### NOTE:

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

2

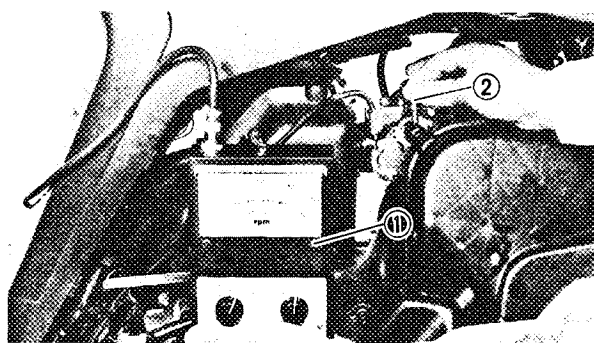
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### IDLE SPEED ADJUSTMENT

1. Remove:
  - Side covers (Right/Left)
2. Start the engine and warm it up before setting idle-speed.

#### NOTE:

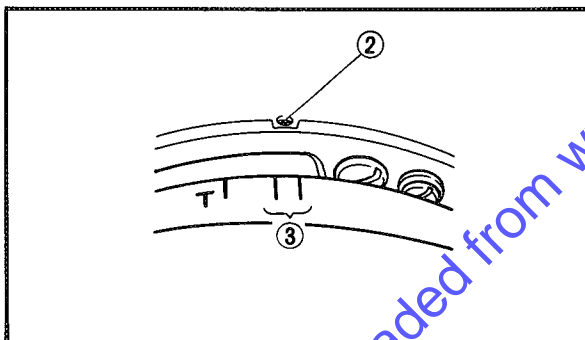
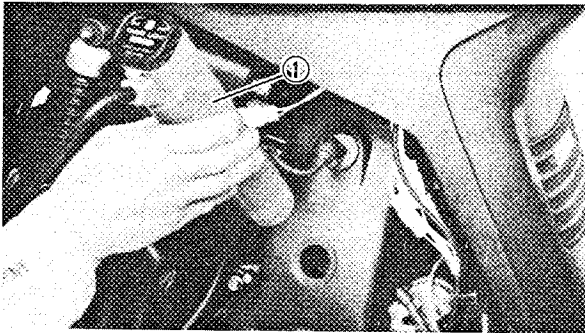
A warm engine is defined as one which had been operated for about 3 minutes at 3,000 r/min with no load.



3. Attach:
  - Inductive Tachometer (YU-8036) (1)
4. Adjust:
  - Idle speed  
Turn the throttle stop screw (2) clockwise to increase engine speed and counterclockwise to decrease engine speed.



Engine Idle Speed:  
1,350 ~ 1,450 r/min



## IGNITION TIMING CHECK

### WARNING:

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

- Check:
  - Ignition timing
 By the following steps.

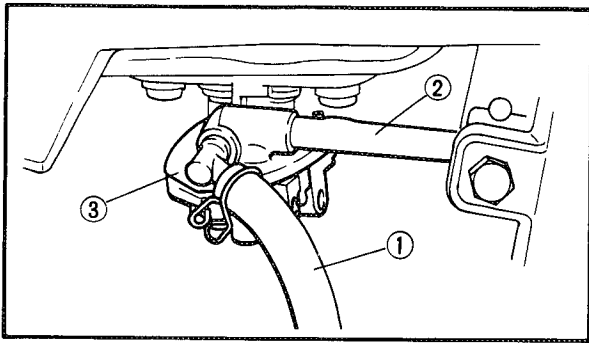
### Ignition timing check steps:

- Remove the timing check window.
- Connect the timing light (YU-08037) ① to spark plug lead.
- Warm up the engine and allow it to idle at the specified engine speed.  
Use the tachometer



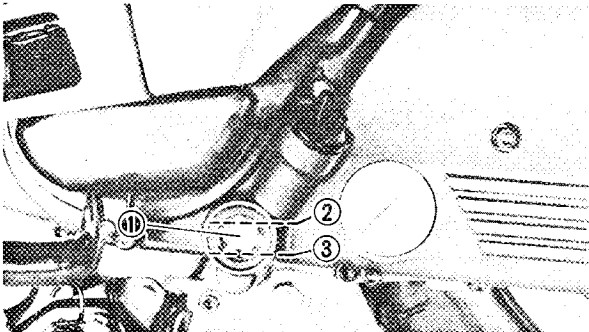
Engine Speed:  
1,400 r/min

- Visually check the stationary pointer ② on the crankcase to verify it is within the required firing range ③ indicated on the flywheel.  
Incorrect firing range → Check flywheel and/or pickup assembly (tightness damage). Refer to "CHAPTER 6. ELECTRICAL" for further information.



### FUEL LINE INSPECTION

1. Inspect:
  - Fuel hose ①
  - Vacuum hose ②
  - Fuel cock ③Crack/Damage → Replace.



### ENGINE OIL LEVEL INSPECTION

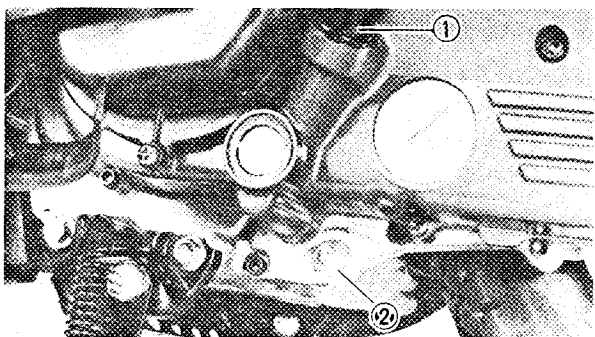
1. Inspect:
  - Oil levelOil level low → Add sufficient oil.  
By the following inspection steps.

#### Engine oil level measurement steps:

- Place the scooter on its centerstand.
- Warm up the engine for a few minutes.
- Stop the engine.
- Observe the oil level through the level window ① located at the lower part of left side crankcase cover.
- If the level is lower, add the oil up to the proper level.

#### NOTE:

- Position scooter straight up when checking oil level; a slight tilt to the side can produce false readings.
- Wait a few minutes until level settles before checking.
- Oil level should be between maximum ② and minimum ③ marks.



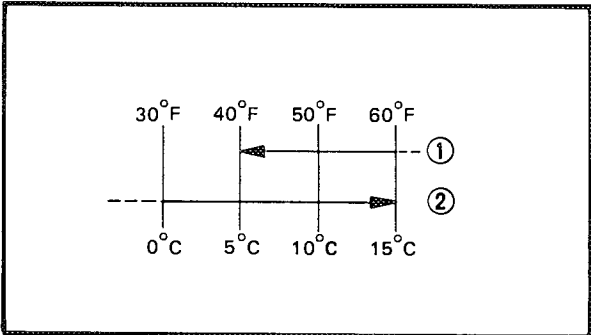
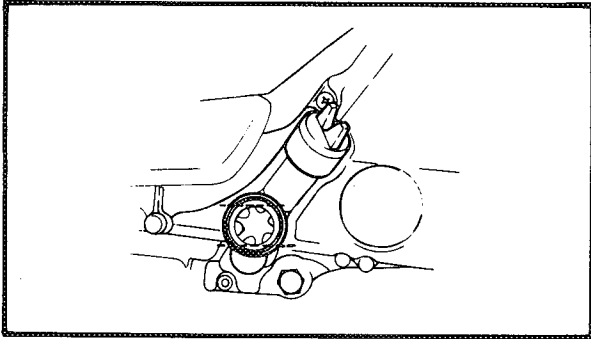
### ENGINE OIL REPLACEMENT

1. Place the scooter on a level place.
2. Warm up engine for several minutes, and stop it.
3. Place an oil pan under the engine.
4. Remove:
  - Oil filler cap ①
  - Drain plug ②Drain the engine oil.

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## FINAL GEAR OIL (SUB TRANSMISSION OIL) REPLACEMENT



- Tighten:
  - Drain plug



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

- Fill:
  - Crankcase



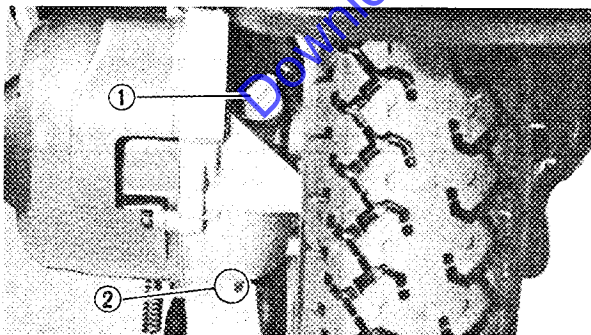
**Recommended Oil:**  
 At 5°C (40°F) or Higher:  
 Yamalube 4-cycle Oil or  
 SAE 20W40 Type SE Motor Oil ①  
 At 15°C (60°F) or Lower:  
 SAE 10W30 Type SE Motor Oil ②  
**Periodic Oil Change:**  
 1.0 L (0.9 Imp qt, 1.1 US qt)

**NOTE:**  
 Recommended engine oil classification; API Service "SE", "SF" type or equivalent (e.g. "SF-SE", "SF-SE-CC", "SF-SE-SD" etc.).

**CAUTION:**

Do not allow foreign material to enter the crankcase.

- Observe:
  - Oil level
- Install:
  - Oil filler cap



## FINAL GEAR OIL (SUB TRANSMISSION OIL) REPLACEMENT

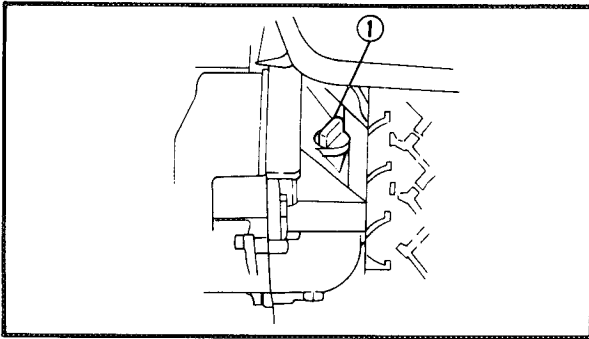
- Place the scooter on a level place.
- Warm up engine for several minutes, and stop it.
- Place an oil pan under the final gear case.
- Remove:
  - Oil filler cap ①
  - Drain plug ②
 Drain the engine oil.
- Tighten:
  - Drain plug



**Drain Plug:**  
16 Nm (1.6 m·kg, 11 ft·lb)



# AIR FILTER AND CRANKCASE FILTER CLEANING



6. Fill:
- Final gear case



**Final Gear Oil:**  
**SAE 10W30 Type SE Motor Oil**  
**Total Amount:**  
**0.15 L (0.13 Imp qt, 0.16 US qt)**

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

**Wipe off any oil split on tire or wheel.**

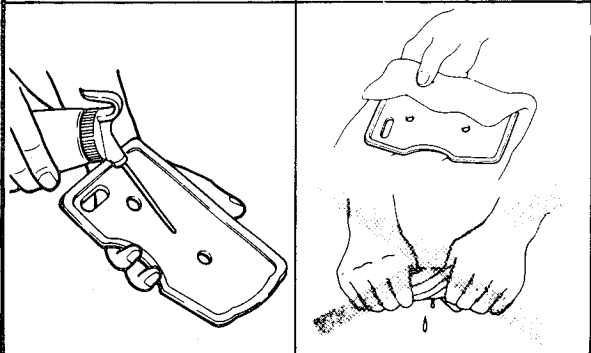
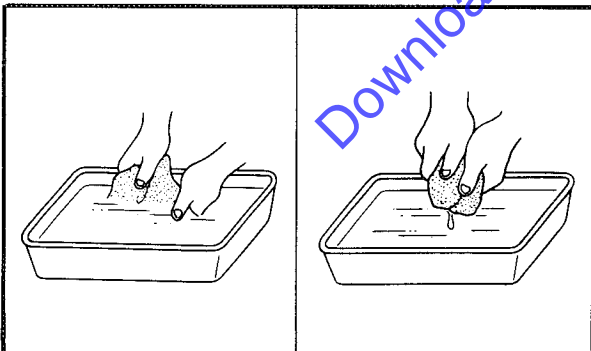
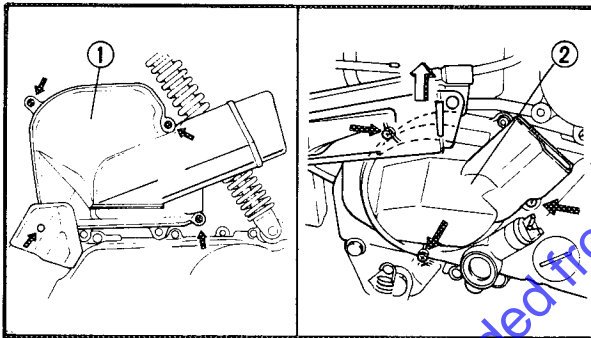
7. Install:
- Oil filler cap ①

## AIR FILTER AND CRANKCASE FILTER CLEANING

1. Remove:
- Side cover (Left)
  - Bolts (Footrest board)
  - Air filter case cover ①
  - Crankcase filter cover ②
  - Air filter element
  - Crankcase filter element

2. Clean:

- Air filter element
- Crankcase filter element



**Filter elements cleaning steps:**

- Wash the filter gently, but thoroughly, in solvent.
- Squeeze the solvent out of the filter, and allow the filter to dry.
- Pour a small quantity of Air cooled 2 stroke engine oil on the filter and work it thoroughly into the foam.
- Wrap it with a clean cloth, and squeeze it lightly.

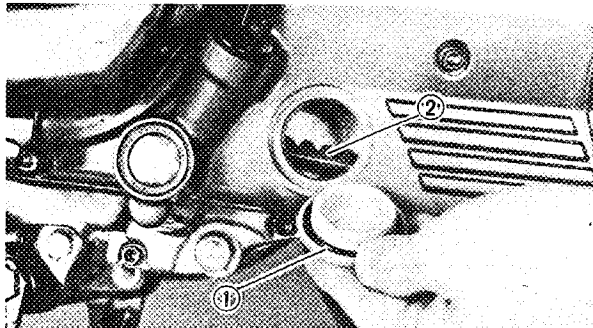
**NOTE:** \_\_\_\_\_

- Don't squeeze the filter in the manner as shown.
- Replace the filter, if damaged.

3. Install:
- Above components list (step 1)

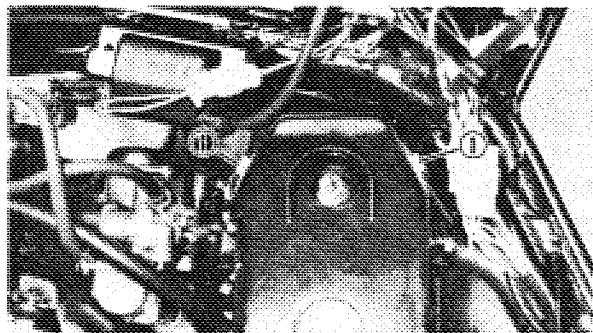
**NOTE:** \_\_\_\_\_

After installing the filter, make sure it is positioned correctly in place.



**V-BELT INSPECTION**

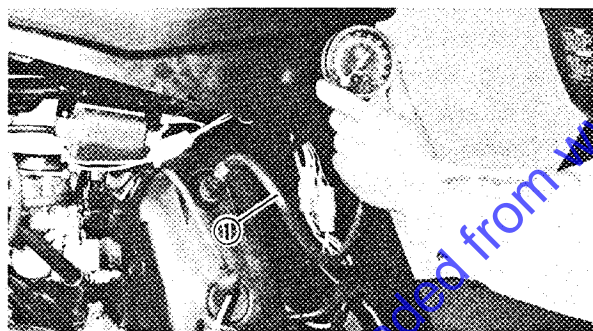
1. Remove:
  - V-belt check window plug ①  
(from the left side crankcase cover)
2. Inspect:
  - V-belt ②  
Damage/Crack/Wear/Chipping → Replace.  
Oil/Grease → Check sheaves.  
(Refer to page 3-27)



**COMPRESSION PRESSURE MEASUREMENT**

**NOTE:**

Insufficient compression pressure will result in performance loss.



1. Remove:
  - Side cover (Right)
  - Valve covers (Intake/Exhaust) ①
2. Measure:
  - Valve clearance  
Out of specification → Adjust.
3. Warm up the engine for a few minutes, and stop it.
4. Remove:
  - Spark plug
5. Measure:
  - Compression pressure  
By the following measurement steps.

**Compression pressure measurement steps:**

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

**Compression Pressure (at sea level):**

**Standard:**

**882 kPa (9 kg/cm<sup>2</sup>, 128 psi)**

**Minimum:**

**785 kPa (8 kg/cm<sup>2</sup>, 114 psi)**

**Maximum:**

**1,079 kPa (11 kg/cm<sup>2</sup>, 156 psi)**

**2**

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**WARNING:**

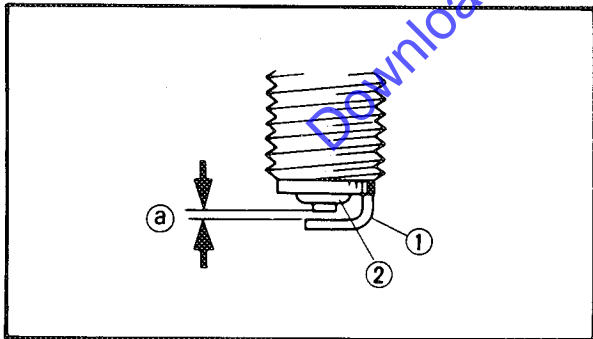
When cranking the engine, ground the spark plug lead to prevent sparking.

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

**Compression Pressure  
(with oil introduced into cylinder)**

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

**2**



**SPARK PLUG INSPECTION**

1. Inspect:
  - Electrode ①  
Wear/Damage → Replace.
  - Insulator color ②  
Normal condition is a medium to light tan color.  
Distinctly different color → Check the engine condition.
- ② Spark plug gap
2. Clean:
  - Spark plug  
Clean the spark plug with a spark plug cleaner or wire brush.
3. Inspect:
  - Spark plug type  
Incorrect → Replace.



**Standard Spark Plug:  
U20FSR-U (N.D.)**

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



**Spark Plug Gap:  
0.6 ~ 0.7 mm (0.024 ~ 0.028 in)**

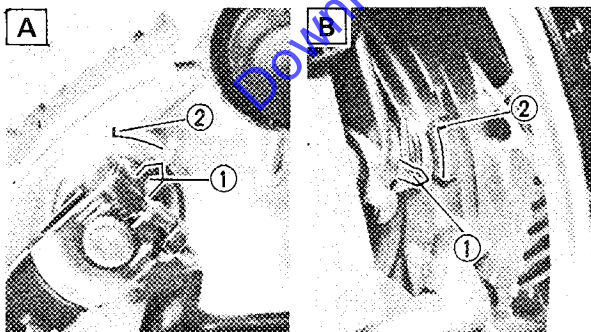
5. Tighten:
  - Spark plug

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



**Spark Plug:  
12.5 Nm (1.25 m·kg, 9.0 ft·lb)**

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



**CHASSIS  
BRAKE LINING INSPECTION**

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

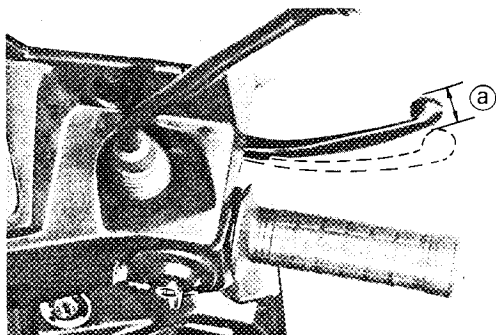
**A** FRONT  
**B** REAR

**FRONT BRAKE ADJUSTMENT**

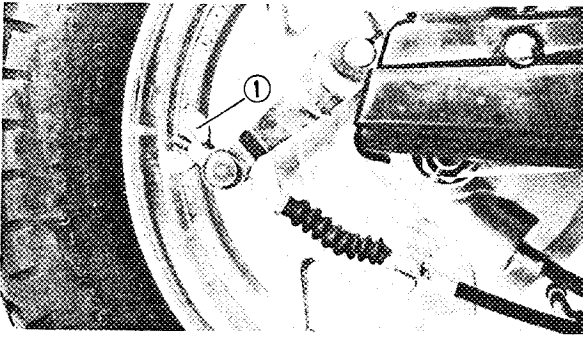
1. Check:
  - Free play ①  
Out of specification → Adjust.



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

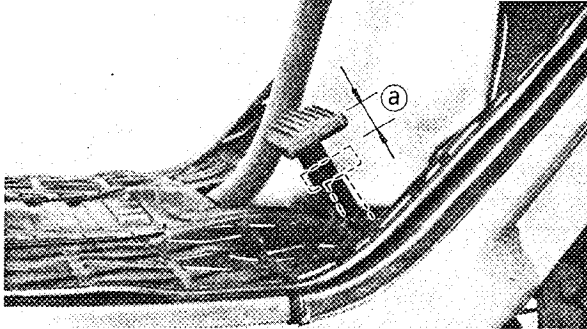


## REAR BRAKE ADJUSTMENT/ TIRES AND CAST WHEELS CHECK



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

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



### REAR BRAKE ADJUSTMENT

1. Check:
  - Free play ①  
Out of specification → Adjust.

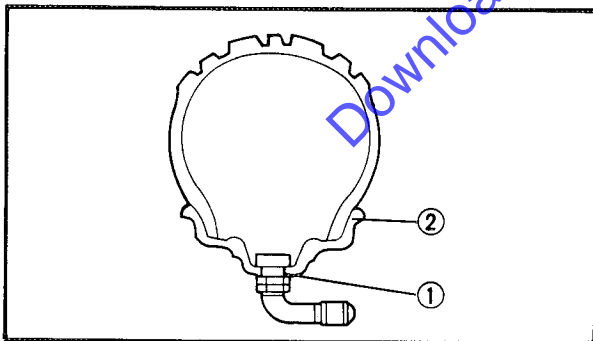
	<b>Rear Brake Pedal Free Play ① :</b> 5 ~ 15 mm (0.2 ~ 0.6 in)
--	---

2



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

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



### TIRES AND CAST WHEELS CHECK

This scooter is equipped with cast wheels designed for tubeless tires only.

Tubeless tires are installed as standard equipments.

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

Maximum load*	168 kg (370 lb)	
Cold tire pressure	Front	Rear
Up to 75 kg (165 lb) load*	147 kPa (1.5 kg/cm <sup>2</sup> , 21 psi)	196 kPa (2.0 kg/cm <sup>2</sup> , 28 psi)
75 kg (165 lb)-155 kg (341 lb) load* (Maximum load)	147 kPa (1.5 kg/cm <sup>2</sup> , 21 psi)	294 kPa (3.0 kg/cm <sup>2</sup> , 43 psi)

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

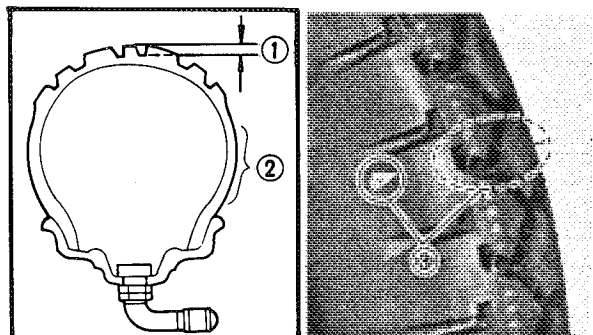
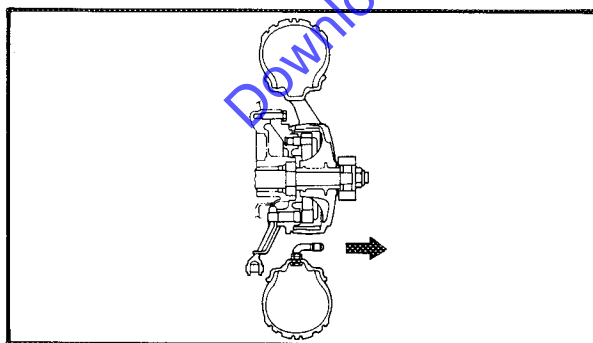
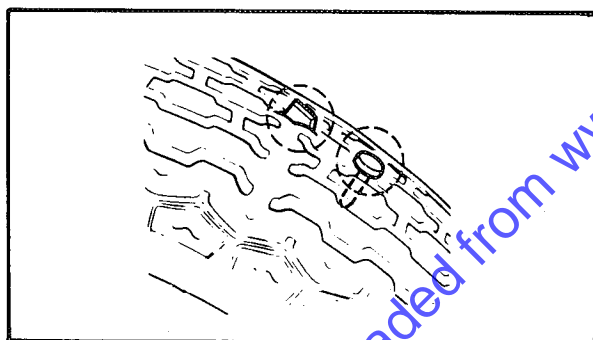
- ① Air valve  
② Cast wheel (Tubeless wheel)



2

**WARNING:**

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



2. Inspect:

- Tire surface  
Wear/Damage/Cracks/Road hazards → Replace.
- Aluminum wheels  
Damage/Bends → Replace.

**WARNING:**

- Never attempt even small repairs to the wheel.
- Install the rear wheel air valve on the right of the scooter (on the muffler side).
- Ride conservatively after installing a tire to allow it to seat itself properly on the rim.

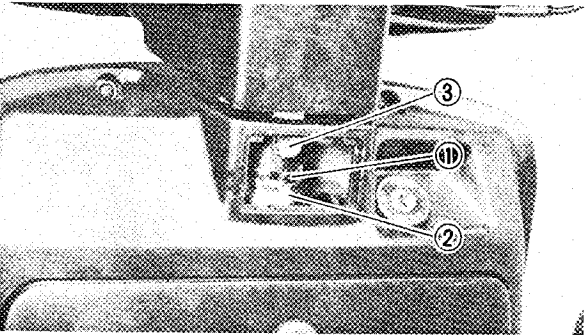
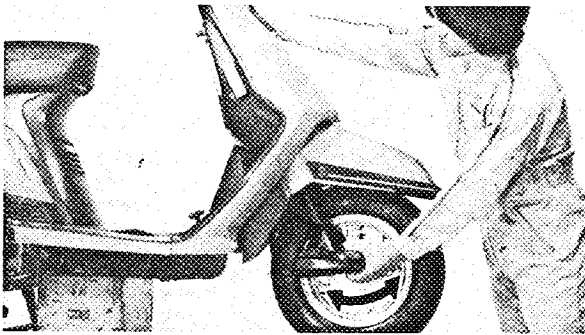
3. Measure:

- Tire tread depth  
Out of specification → Replace.



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

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



**STEERING HEAD INSPECTION**

1. Place the scooter on its centerstand, then elevate the front wheel.
2. Check:
  - Steering assembly bearings  
Grasp the bottom of the forks and gently rock the fork assembly back and forth.  
Looseness → Adjust.

**STEERING HEAD ADJUSTMENT**

1. Remove:
  - Steering nut cover
2. Loosen:
  - Ring nut (Upper) ①
  - Ring nut (Lower) ②  
Use the Ring Nut Wrench (YU-33975).
3. Tighten:
  - Ring Nuts (Lower and upper)  
By the following tightening steps.

**2**

**Ring nuts tightening steps:**

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

**NOTE:** \_\_\_\_\_  
Set the Torque Wrench to the Ring Nut Wrench so that they form a right angle.

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

**Do not over-tightening.**



**Ring Nut (Lower):**

**30 Nm (3.0 m·kg, 22 ft·lb)**

- Loosen the ring nut ② 1/4 turn.
- Hold the ring nut (lower), and tighten the ring nut (upper) ① using the Ring Nut Wrench.

**NOTE:** \_\_\_\_\_  
Set the Torque Wrench to the Ring Nut Wrench so that they form a right angle.

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

**Do not over-tightening.**



**Ring Nut (Upper):**

**30 Nm (3.0 m·kg, 22 ft·lb)**

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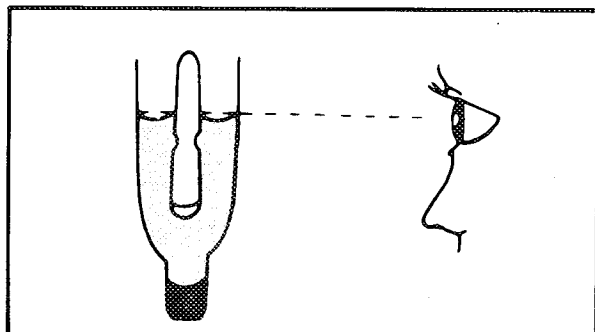
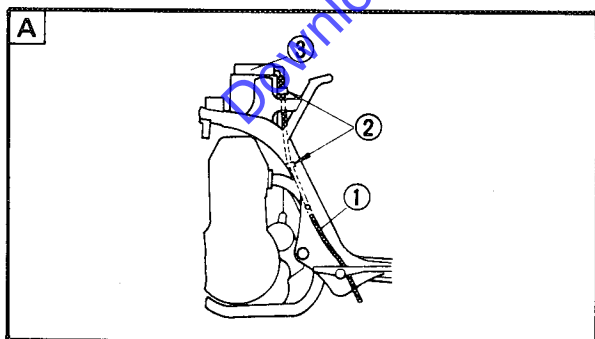
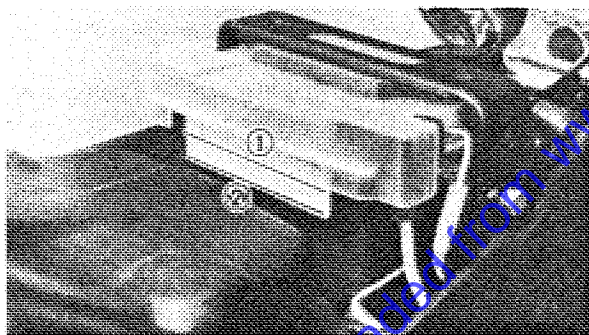


- Check the steering stem by turning it lock to lock. If there is any binding, inspect the steering bearing. Refer to "CHAPTER 6. STEERING HEAD" for more details.
- Tighten the bolt (handlebar mounting) ③ .



**Bolt (Handlebar Mounting):**  
**34 Nm (3.4 m·kg, 24 ft·lb)**

4. Install:
  - Steering nut cover



**ELECTRICAL**  
**BATTERY INSPECTION**

1. Check:
  - Fluid level  
Incorrect → Refill.  
Fluid level should be between upper ① and lower ② level marks.

**CAUTION:**

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

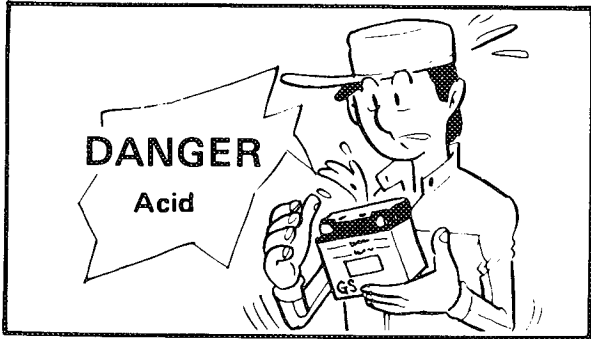
2. Connect:
  - Breather hose ①  
Be sure the hose is properly attached and routed.
3. Inspect:
  - Breather hose  
Obstruction → Remove.  
Damage → Replace.

- A** HOW TO LAYOUT BATTERY BREATHER HOSE
- ② Battery
  - ③ Clamp

**CAUTION:**

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





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

**WARNING**

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

Always follow these preventive measures:

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

Antidote (EXTERNAL):

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

Antidote (INTERNAL):

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

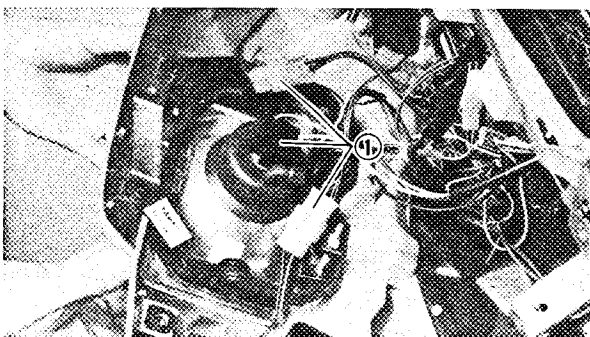
Batteries also generate explosive hydrogen gas, therefore you should always follow these preventive measures:

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

**KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.**

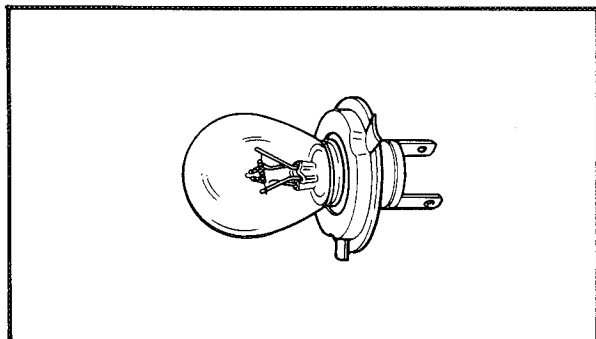
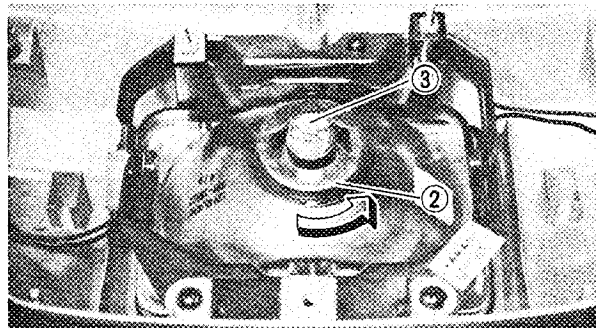
**2**

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## HEADLIGHT BULB REPLACEMENT

1. Remove:
  - Handlebar cover (Front)
2. Disconnect:
  - Headlight lead connectors ①
  - Bulb holder ②  
Turn it counterclockwise.
  - Defective bulb ③



**WARNING:**

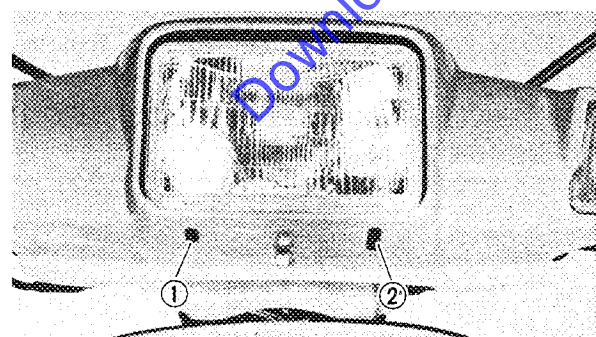
Do not touch headlight bulb when it is on as the bulb generates enormous heat; keep flammable objects away.

3. Install:
  - Bulb (New)
  - Bulb holder

**CAUTION:**

Avoid touching glass part of bulb. Also keep it free from oil otherwise, transparency of glass, bulb life and illuminous flux will be adversely affected. If oil gets on bulb, clean it with a cloth moistened thoroughly with alcohol or lacquer thinner.

4. Connect:
  - Headlight lead connectors
5. Install:
  - Handlebar cover (Front)



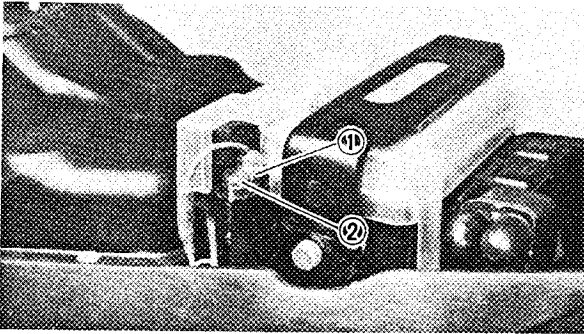
**HEADLIGHT BEAM ADJUSTMENT**

1. Adjust:
  - Headlight beam (Horizontally)

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

2. Adjust:
  - Headlight beam (Vertically)

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



**FUSE INSPECTION**

1. Open the seat.
2. Inspect:
  - Fuse ①  
Defective → Replace.  
Blow fuse (New) → Inspect circuit.

- ① Main fuse
- ② Spare fuse

**Blown fuse procedure steps:**

- Turn off ignition and the circuit.
- Install a new fuse of proper amperage.
- Turn on switches to verify operation of electrical device.
- If fuse blows immediately again, check circuit in question.

**WARNING:**

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

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## CHAPTER 3. ENGINE OVERHAUL

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## ENGINE OVERHAUL

### ENGINE REMOVAL

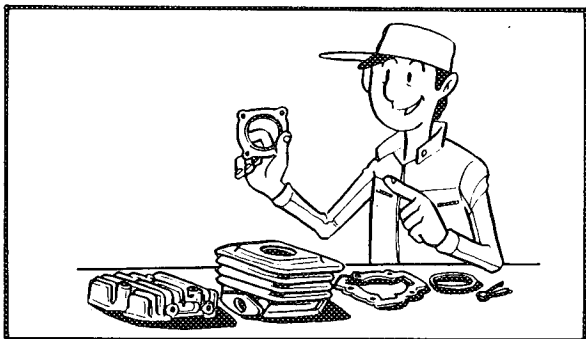
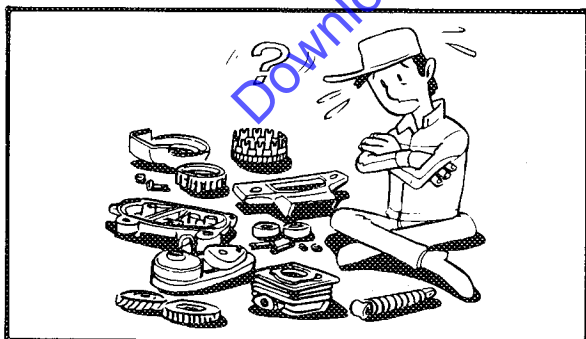
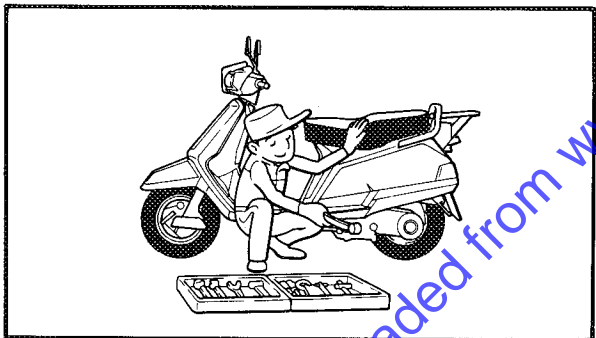
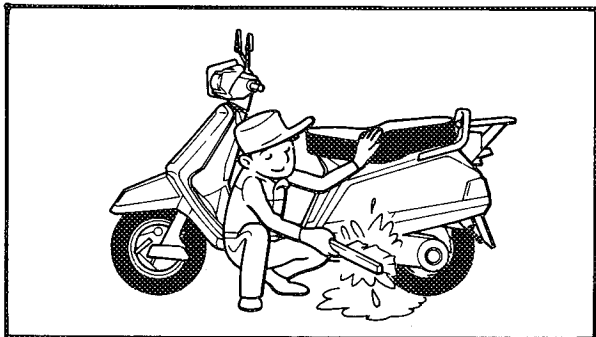
#### NOTE:

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

- Primary and secondary sheave
- Carburetor
- CDI Magneto
- Starter motor

#### PREPARATION FOR REMOVAL

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



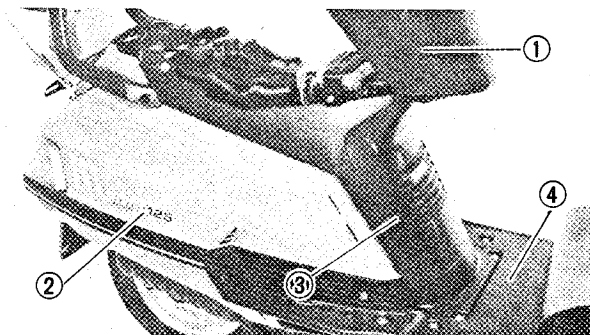
2. Use proper tools and cleaning equipment. Refer to "CHAPTER 1. SPECIAL TOOL".

#### NOTE:

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

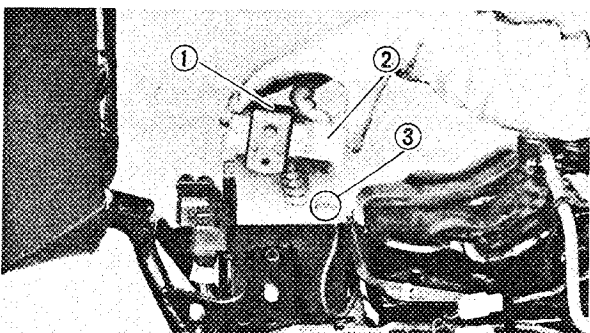
3. During the engine disassembly, clean all parts and place them in trays in the order of disassembly. This will speed up assembly time and help assure that all parts are correctly reinstalled in the engine.





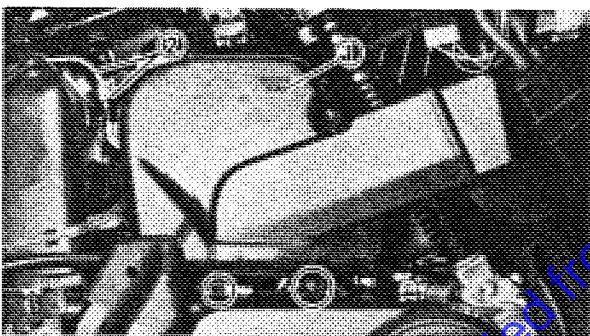
**COVERS AND FOOTREST BOARD**

1. Place the scooter on the centerstand.
2. Drain:
  - Engine oil
  - Final gear oil
3. Open the seat ①.
4. Remove:
  - Side covers ② (Right/Left)
  - Front cover ③
  - Footrest board ④



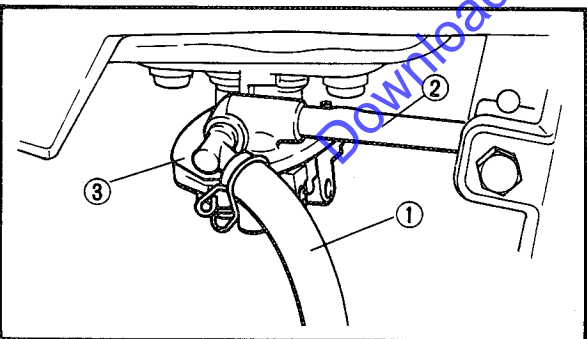
**BATTERY LEAD**

1. Remove:
  - Bridge plate ①
  - Cover ②
2. Disconnect:
  - Battery negative lead ③



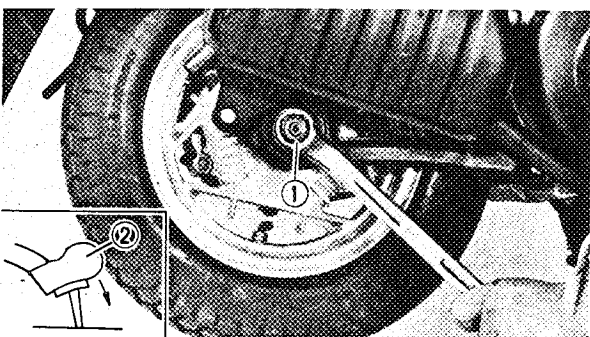
**AIR FILTER ELEMENT CASE AND THROTTLE CABLE**

1. Remove:
  - Air filter element case ①
  - Throttle cable ②



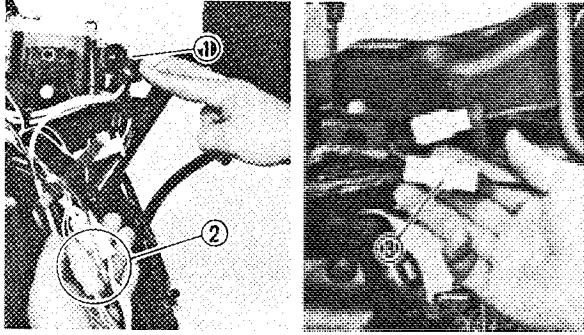
**CARBURETOR HOSES**

1. Remove
  - Fuel hose ①
  - Vacuum hose ②
  - Fuel cock ③

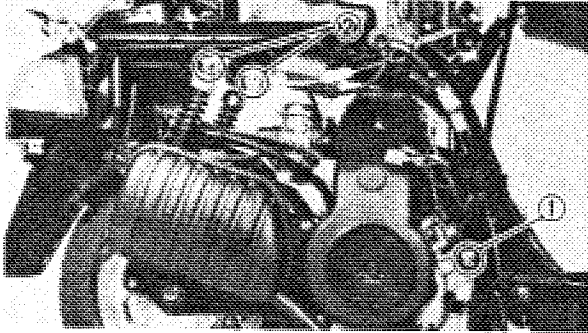


**REAR WHEEL**

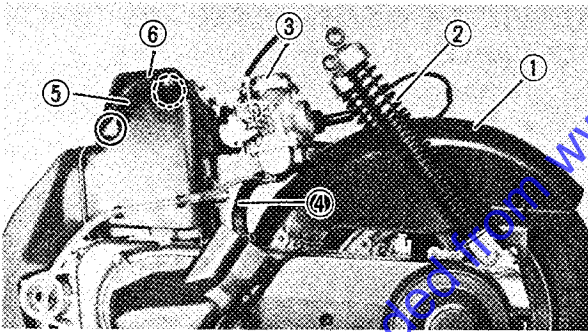
1. Remove:
  - Cotter pin
2. Loosen:
  - Axle nut ①  
(by applying the rear brake ②)
3. Remove:
  - Brake cable support
  - Brake cable

**CONNECTORS**

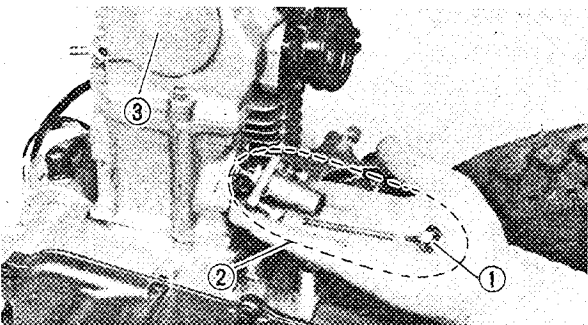
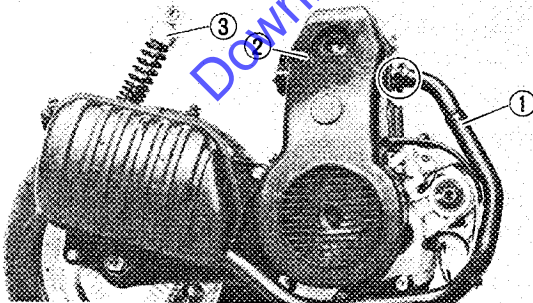
1. Disconnect:
  - Starter motor lead (Red) ① (from starter relay)
  - AC magneto leads ②
  - Starter choke unit lead ③
  - Spark plug cap

**ENGINE**

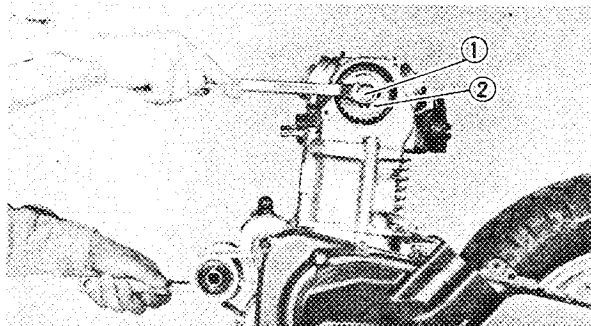
1. Remove:
  - Mounting bolt ①
  - Rear shock absorber pivot bolts (Upper) ②
  - Frame (from the engine assembly)
2. Place the frame on a suitable stand.

**COMPONENTS**

1. Remove:
  - Rear fender ①
  - Shock absorber (Left) ②
  - Carburetor ③
  - Ventilation hose ④
  - Air shroud 1 ⑤
  - Air shroud 2 ⑥
2. Remove:
  - Muffler ①
  - Air shroud 3 ②
  - Shock absorber (Right) ③
3. Loosen:
  - Spark plug

**ENGINE DISASSEMBLY****CAM CHAIN TENSIONER AND CYLINDER HEAD**

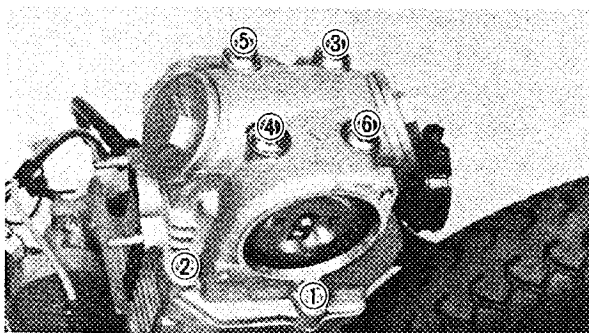
1. Loosen:
  - Bolt (Cam chain tensioner) ①
2. Remove:
  - Cam chain tensioner assembly ②
  - Cam sprocket cover ③



3. Remove:
  - Bolt (Cam sprocket) ①

**NOTE:** \_\_\_\_\_  
 Hold the flywheel securing nut to remove the sprocket bolt.

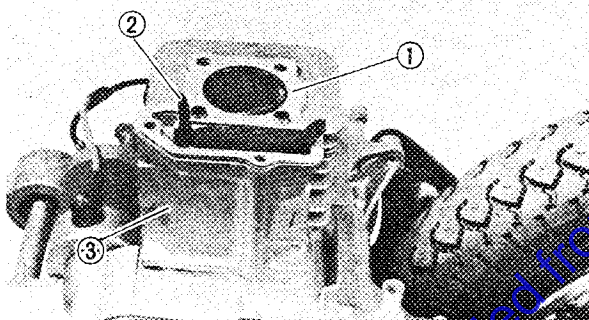
- Cam chain sprocket ②



4. Remove:
  - Bolts (Cylinder head)

**NOTE:** \_\_\_\_\_  
 Follow numerical number shown in photo. Start by loosening each nut 1/2 turn until all are loose.

- Cylinder head



**CYLINDER AND PISTON**

1. Remove:
  - Cylinder head gasket ①
  - Cam chain guide (Front) ②
  - Cylinder ③



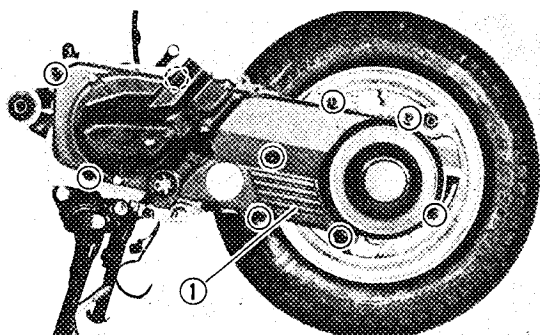
2. Remove:
  - Piston pin clips ①

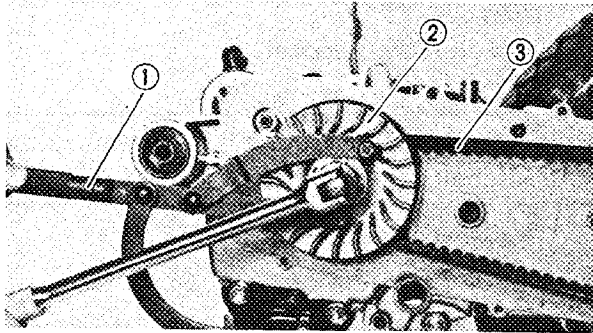
**NOTE:** \_\_\_\_\_  
 Before removing the piston pin clip, cover the crankcase with a clean rag so you will not accidentally drop the clip into the crankcase.

- Piston pin ②
- Piston ③

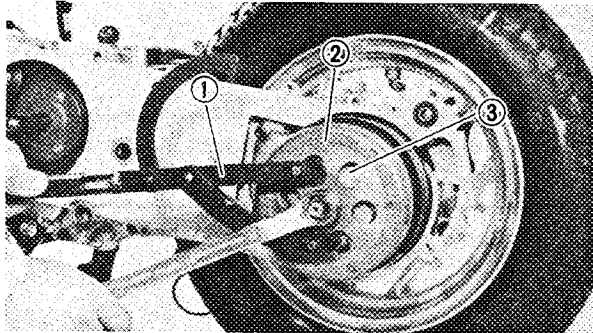
**PRIMARY AND SECONDARY SHEAVE**

1. Remove:
  - Screws (Crankcase cover)
  - Crankcase cover 1 ①



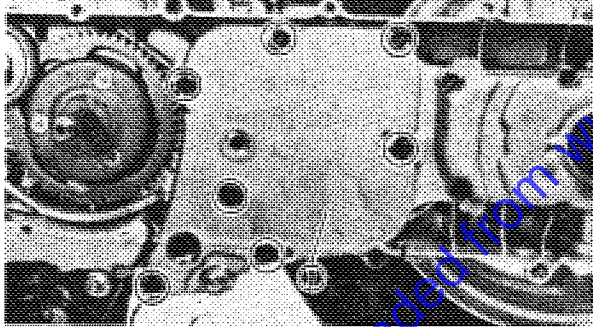


2. Remove:
  - Nut (Primary sheave)  
Use the Rotor Holder (YU-01235) ① .
  - Washer
  - Primary fixed sheave ②
  - V-belt ③
  - Collar
  - Primary sheave assembly



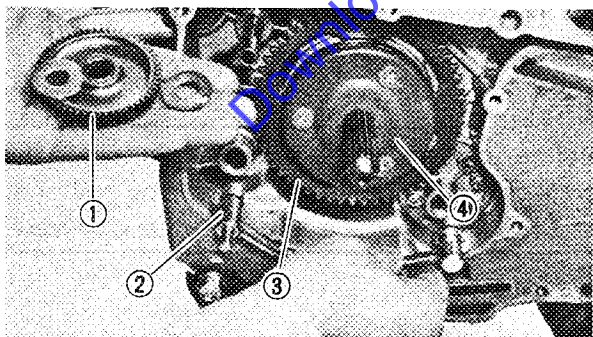
3. Remove:
  - Nut (Secondary sheave)  
Use the Rotor Holder (YU-01235) ① .
  - Clutch housing ②
  - Secondary sheave assembly ③

3

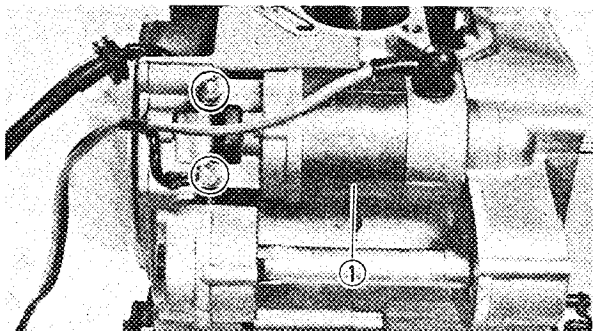


#### STARTER SYSTEM

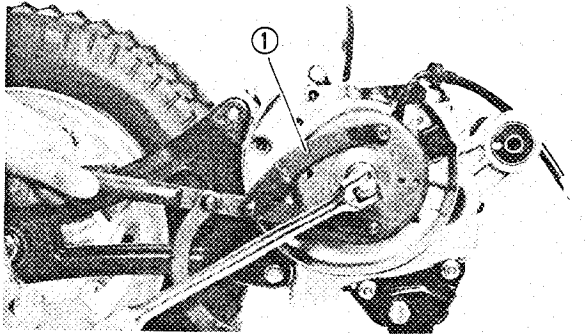
1. Remove:
  - Crankcase cover ①



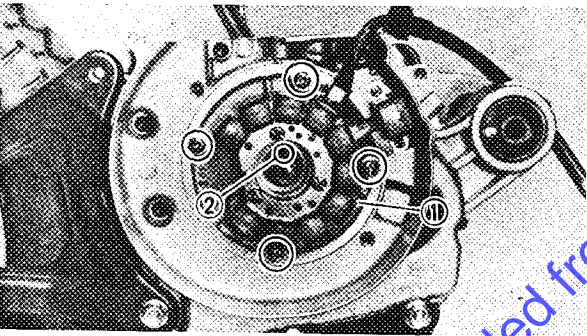
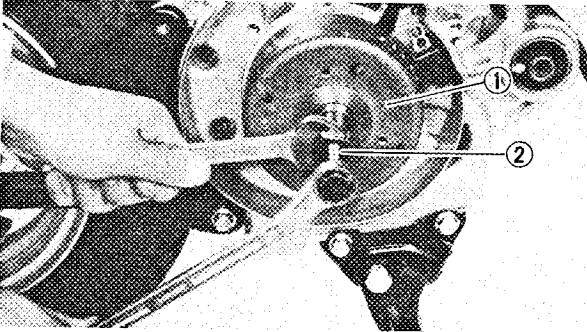
2. Remove:
  - Starter idle gear ①
  - Oil gallery pipe ②  
(pull out)
  - Starter driven gear ③  
(together with starter clutch ④)



3. Remove:
  - Starter motor assembly ①

**CDI MAGNETO**

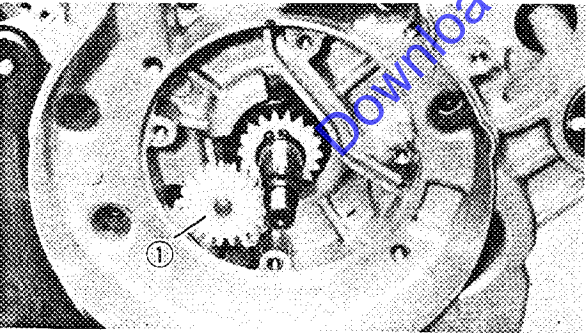
1. Remove:
  - Cooling fan
  - Nut (Magneto)  
Use the Rotor Holder (YU-01235) ① .
  - Spring washer
  - Washer
  
2. Remove:
  - Magneto rotor ①  
Use the Flywheel Magneto Puller (YM-01189) ② .



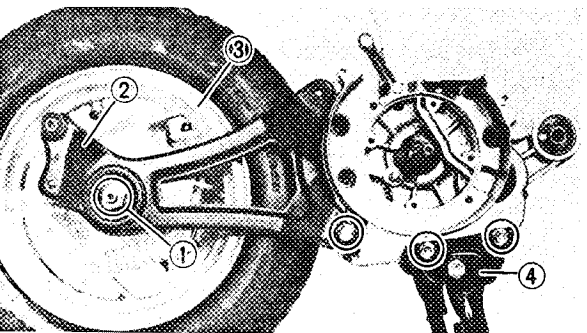
3. Remove:
  - Generator assembly ①
  - Woodruff key ②

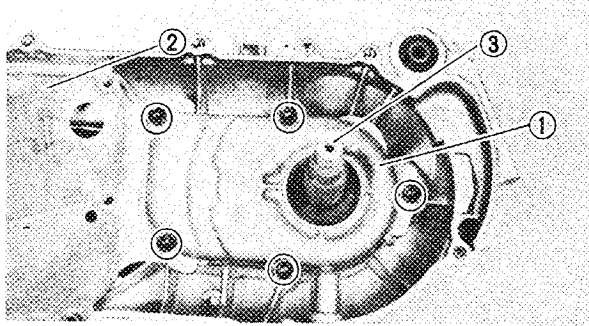
**3****OIL PUMP**

1. Remove:
  - Oil pump idler gear ①

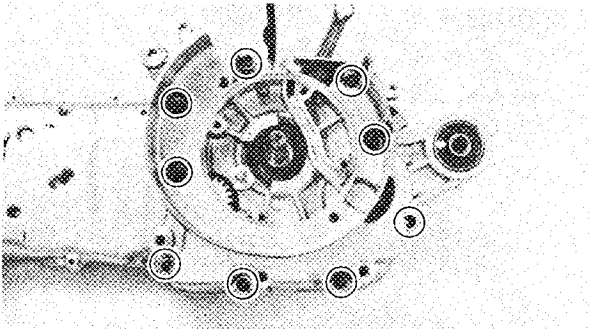
**TRANSMISSION**

1. Remove:
  - Nut (Rear wheel axle) ①
  - Rear arm ②
  - Rear wheel ③
  - Main stand assembly ④



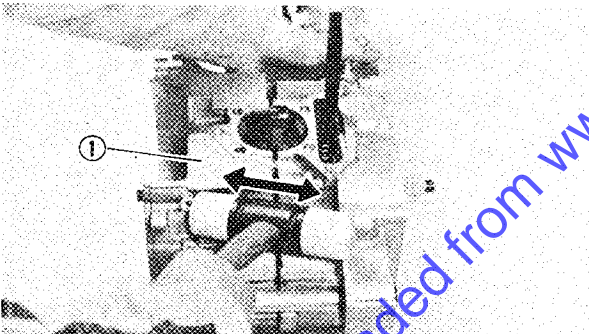


2. Remove:
  - Transmission cover ①
  - Gasket ②
  - Main axle
  - Drive axle ③

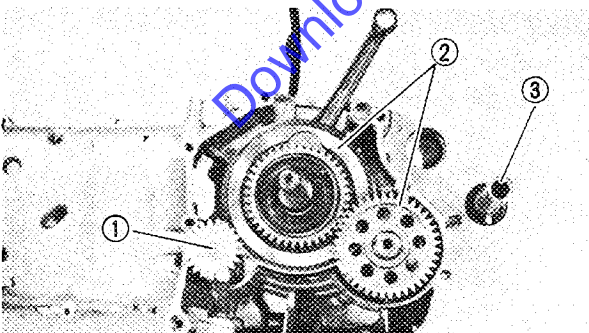


### CRANKCASE AND CRANKSHAFT

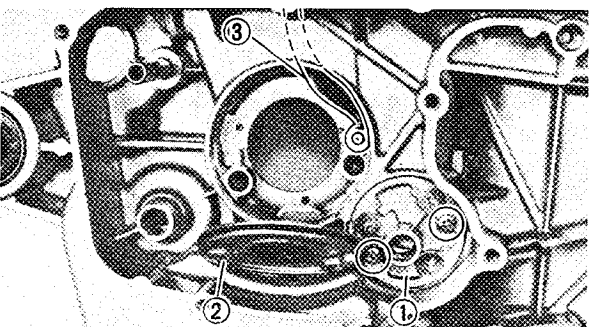
1. Remove:
  - Bolts (Crankcase)



2. Remove:
  - Crankcase (Right) ①  
Use a soft hammer.



3. Remove:
  - Oil pump driven gear shaft assembly ①
  - Crank shaft/Balancer ②
  - Engine mount spacer ③
  - Cam chain



4. Remove:
  - Oil pump assembly ①
  - Cam chain case cover ②
  - Cam chain guide (Rear) ③



INSPECTION AND REPAIR

CYLINDER HEAD

1. Remove:
  - Valve covers (Intake/Exhaust) ①
  - Rocker arm shafts (Intake/Exhaust) ②
  - Use the Slide Hammer Set (YU-01083) ③ .
  - Rocker arms (Intake/Exhaust) ④

2. Remove:
  - Stopper plate ①
  - Camshaft ② and camshaft bearing ③
  - Use the Slide Hammer Set (YU-01083).

3. Attach:
  - Adapter (YM-4108) ①
  - Valve Spring Compressor (YM-04019) ②

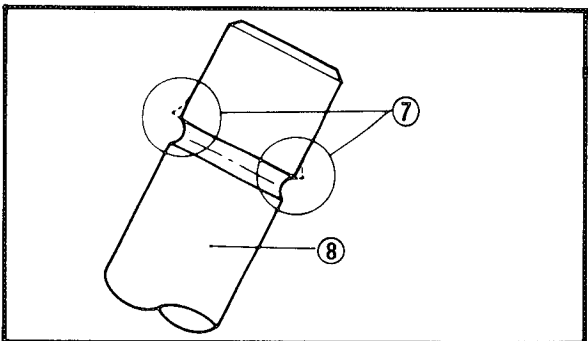
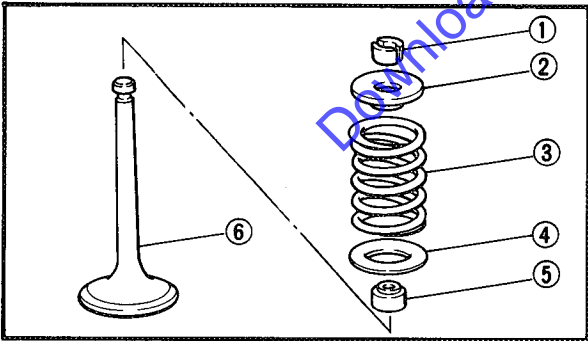
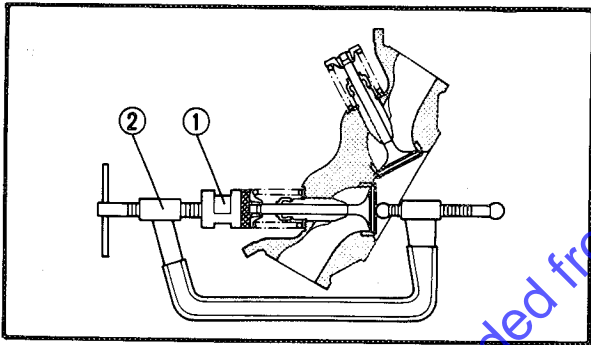
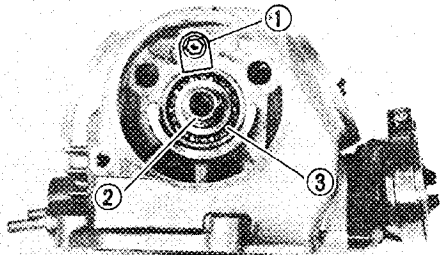
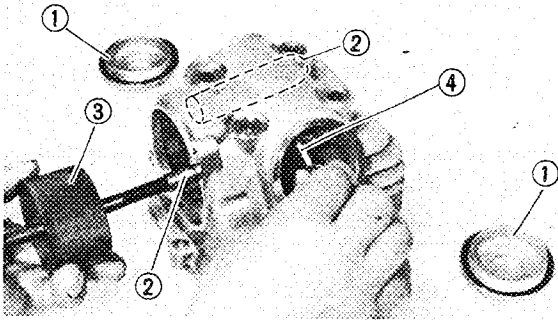
4. Remove:
  - Valve retainers ①
  - Use Magneto or Tweezers.
  - Valve spring seat (Upper) ②
  - Valve spring ③
  - Valve spring seat (Lower) ④
  - Oil seal ⑤
  - Valve ⑥

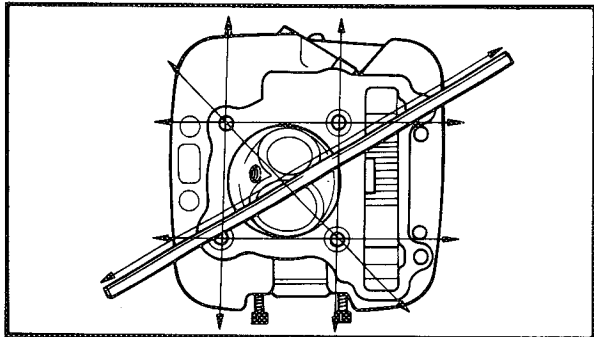
**NOTE:** \_\_\_\_\_  
 Deburr ⑦ any deformed valve stem ⑧ end. Use an oil stone to smooth the stem end.

5. Eliminate:
  - Carbon deposit
  - Use rounded scraper.

**NOTE:** \_\_\_\_\_  
 Do not a sharp instrument and avoid damaging or scratching:

- Spark plug threads
- Valve seat
- Cylinder head

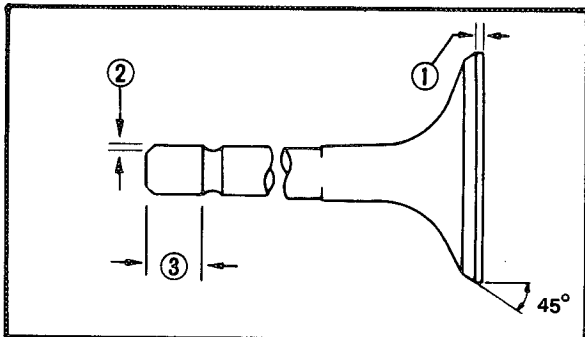




6. Measure:
  - Cylinder head warpage
 Out of specification → Resurface/Replace.



**Cylinder Head Warp Limit:**  
Less than 0.05 mm (0.002 in)



**VALVE, VALVE GUIDE, AND VALVE SEAT**

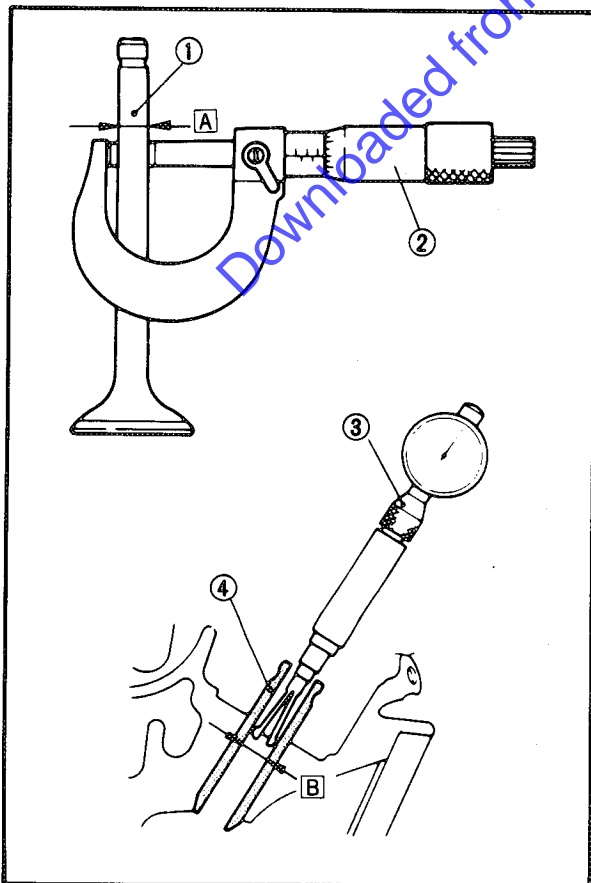
**Intake and Exhaust Valve**

1. Check:
  - Valve face
  - Stem end
 Wear/Pitting/Out of specification → Replace.



**Margin Thickness (Service limit) ① :**  
 Intake 0.3 mm (0.012 in)  
 Exhaust 0.7 mm (0.027 in)  
**Beveled ② : 0.25 mm (0.010 in)**  
**Minimum Length (Service limit) ③ :**  
 4.5 mm (0.177 in)

3



2. Measure:
  - Valve stem clearance (Cold)
 Use Micrometer ② and Bore Gauge ③.  
 Out of specification → Replace either valve and/or guide.

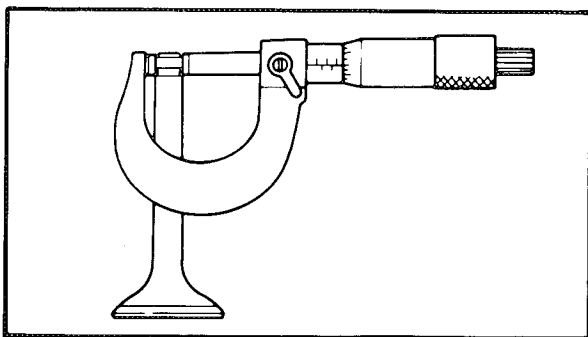
**Valve Stem Clearance = B - A**



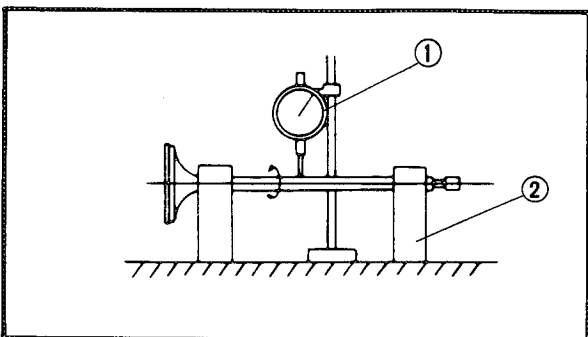
	Valve Stem. Clearance	Maximum
Intake	0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in)	0.08 mm (0.0031 in)
Exhaust	0.025 ~ 0.052 mm (0.0010 ~ 0.0020 in)	0.10 mm (0.0039 in)

- ① Valve
- ④ Valve guide
- A VALVE STEM OUTSIDE DIAMETER
- B VALVE GUIDE INSIDE DIAMETER





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



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

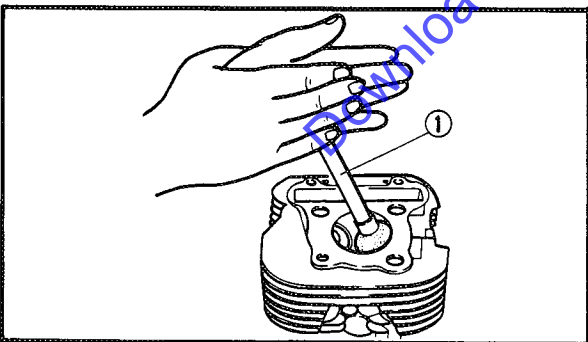
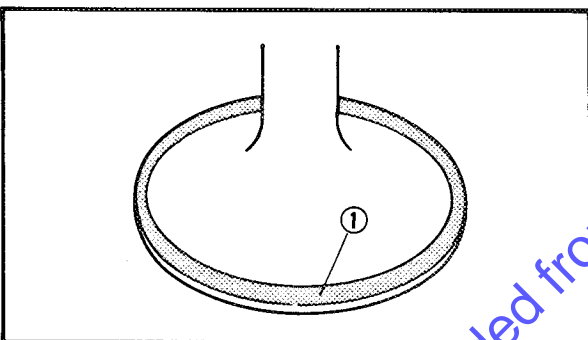


**Maximum Runout:**  
0.02 mm (0.0008 in)

- ① Dial gauge  
② V-block

#### Valve Seat

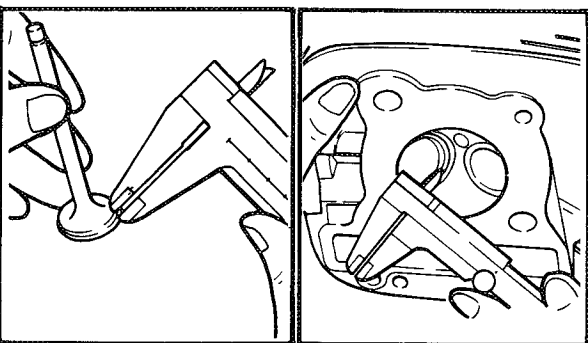
1. Remove:
  - Carbon  
(from valve seat and valve face)
2. Apply:
  - Mechanics bluing dye (Dykem) ①  
(to valve face)

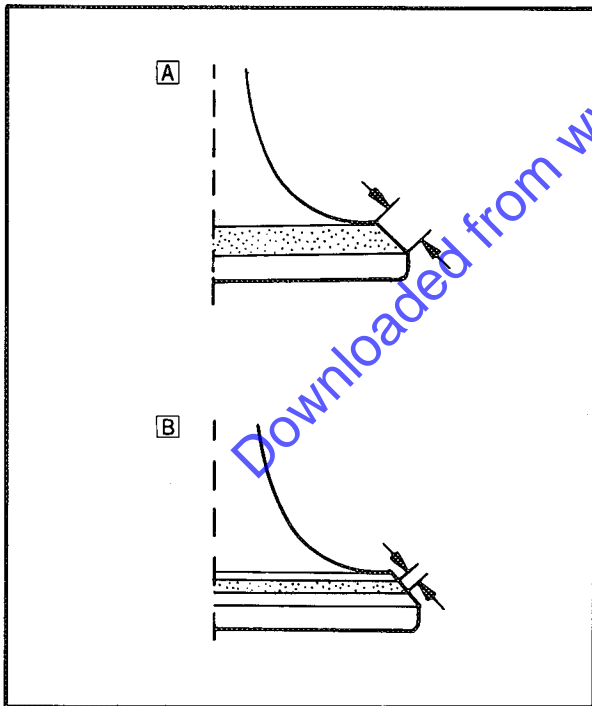
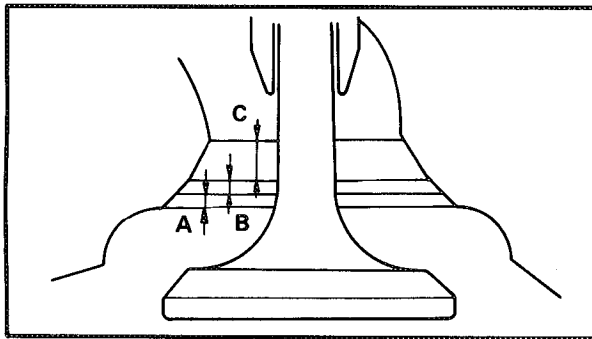
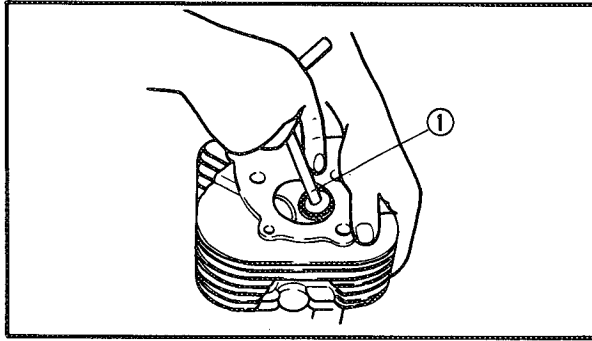


3. Insert:
  - Valves  
(to cylinder head)  
Lap the valve to the seat by rotating the lapping stick ① in both directions.
4. Remove:
  - Valves
5. Measure:
  - Valve face/Valve seat contact surface.  
Wherever valve seat and valve face made contact, bluing will have been removed.  
Out of specification/Pitting/Variation of valve seat width → Cut valve seat further.



**Seat Width:**  
Standard: 0.9 ~ 1.1 mm  
(0.035 ~ 0.043 in)  
Wear Limit: 1.6 mm (0.063 in)





6. Resurface:

- Valve seats

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

**CAUTION:**

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

Cut sections as follows	
Section	Cutter
A	30°
B	45°
C	60°

**Valve seat recutting steps:**

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

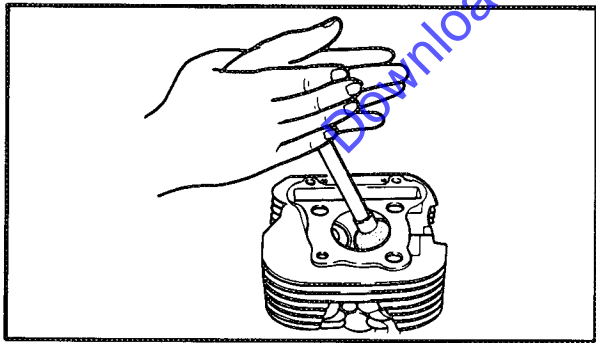
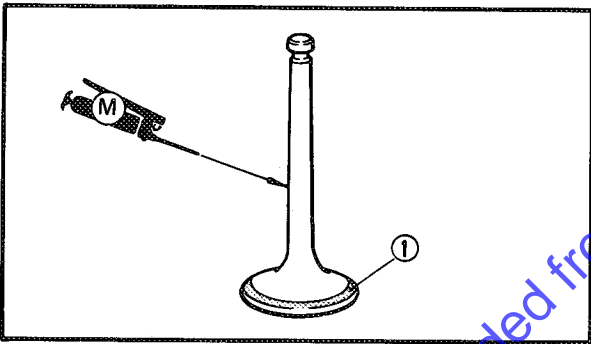
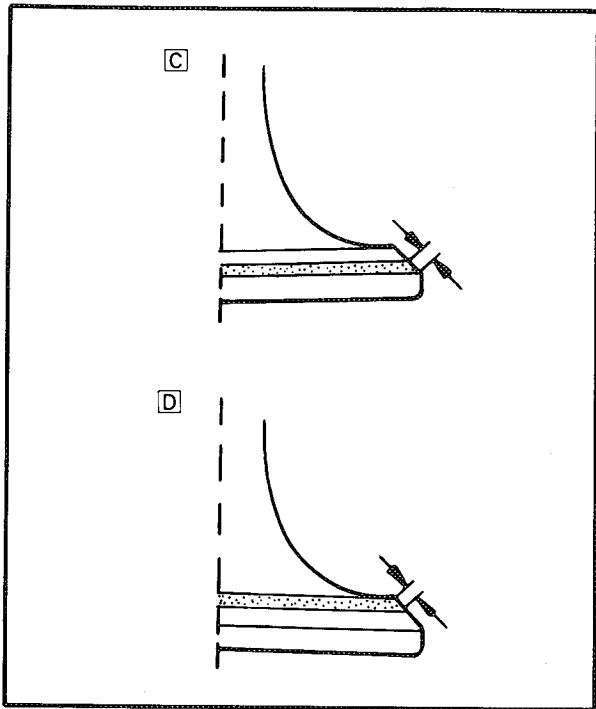
Valve Seat Cutter Set		Desired result
Use either	30° cutter	To center the seat or to reduce its width
	45° cutter	
	60° cutter	

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

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

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

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



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

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

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

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

**Valve/Valve Seat Assembly Lapping**

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

**CAUTION:**

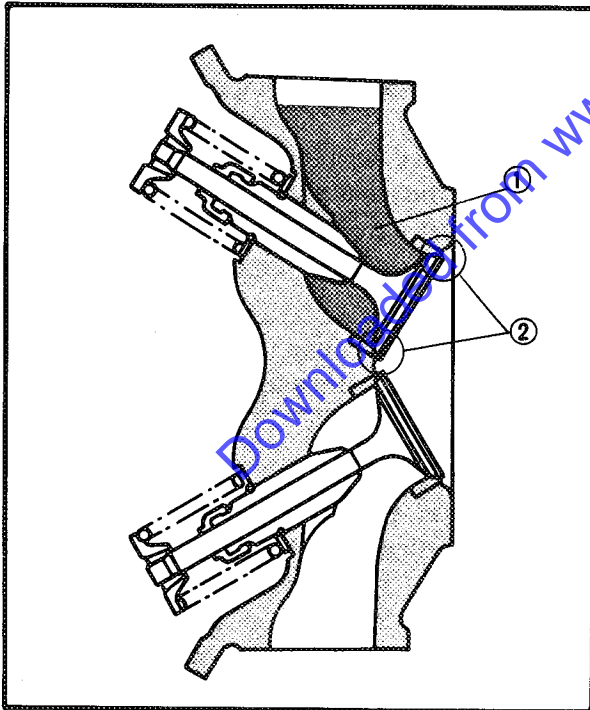
Be sure no compound enters into the gap between the valve stem and guide.

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

**NOTE:**

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

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



5. Repeat steps 2 and 3.

**NOTE:**

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

6. Inspect:

- Valve face

Not yet uniformly smooth → Repeat procedure from step 1.

7. Apply:

- Mechanics bluing dye (Dykem)  
(to valve face and seat)

8. Lap:

- Valve

9. Inspect:

- Valve face

Valve must make full seat contact indicated by gray surface all around. The valve face where bluing was removed.

Faulty contact → Replace.

(See procedure below)

10. Clean:

- Intake/Exhaust port and valve assembly  
(spray solvent with compressed air)

**NOTE:**

After the lapping has been completed and the valve assemblies have been reinstalled the valve seal should be tested.

Pour solvent ① into intake and exhaust ports. There should be no leakage past the seat ②.

11. Check:

- Valve seal

Leakage past valve seat → Relap.

(See procedure below)

**Relapping steps:**

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

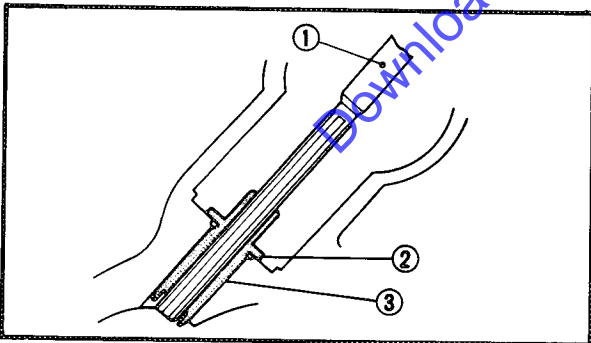
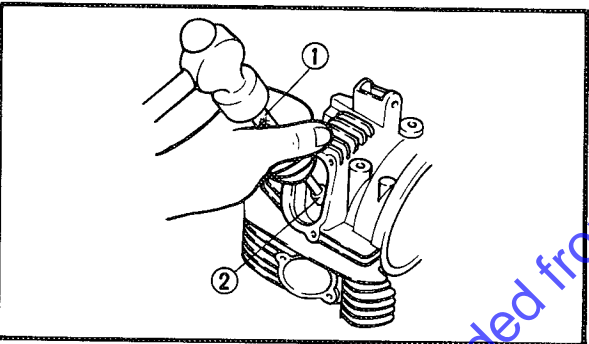
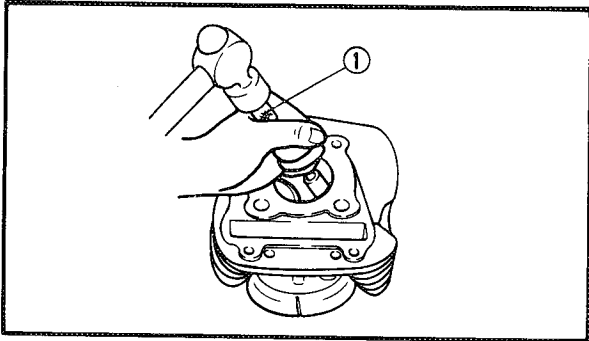


### Valve Guide

#### NOTE:

Always replace valve guide if valve is replaced.  
Always replace oil seal if valve is removed.

1. Inspect:
  - Valve guides
  - Wear/Oil leakage into cylinder → Replace.



### Valve Guide Removal

#### NOTE:

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

1. Remove:
  - Valve guide
  - Use the Valve Guide Remover (YM-04097) (1).

### Valve Guide Installation

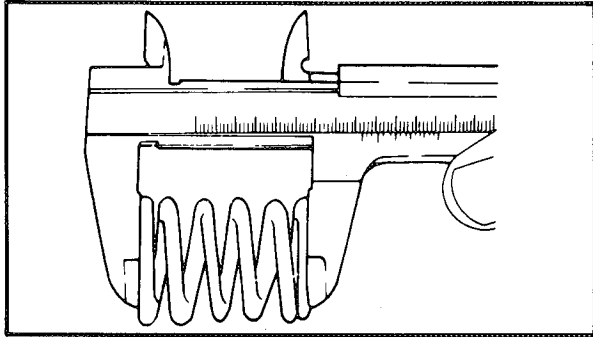
1. Install:
  - O-ring (New)
  - Valve guide (Oversize)
  - Use the Valve Guide Remover (YM-04097) (1) with Valve Guide Installer (YM-04098) (2).

#### NOTE:

After installing valve guide:

- Use 5 mm Valve Guide Reamer (90890-04099) (1) to obtain proper valve guide (3) /valve stem clearance.
- Valve guide reamer must be turned clockwise when inserting or drawing.

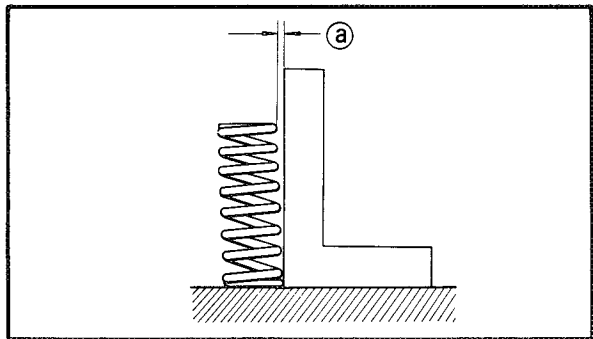
(2) O-ring



**Valve Spring**

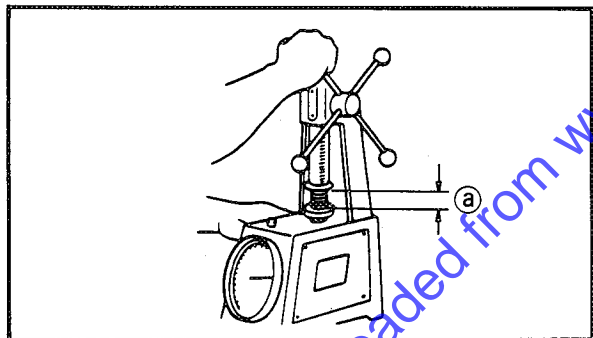
1. Measure:
  - Spring free length
  - Out of specification → Replace.

**Valve Spring Free Length (IN/EX):**  
**Standard: 28.63 mm (1.127 in)**  
**Limit: 25.40 mm (1.000 in)**



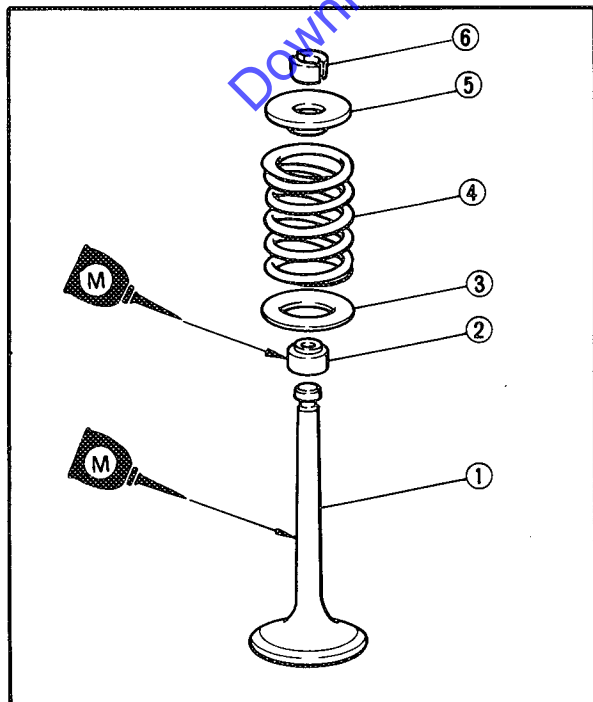
2. Measure:
  - Spring tilt (a)
  - Out of specification → Replace.

**Tilt Limit:**  
**2.5° or 1.2 mm (0.047 in)**



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

**Valve Compressed Force:**  
**9.8 kg (21.5 lb)/**  
**(a) = 24.9 mm (0.98 in)**

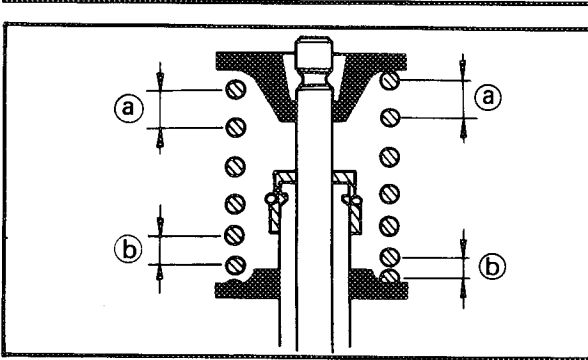


**Valve Installation**

1. Lubricate:
  - Valve stem
  - Oil seal

**High-Quality Molybdenum Disulfide Motor Oil or Molybdenum Disulfide Grease.**

2. Install:
  - Valve ①
  - Oil seal ②
  - Valve spring seat (Lower) ③
  - Valve spring ④
  - Valve spring seat (Upper) ⑤
  - Valve retainers ⑥

**NOTE:**

Install spring with wider-gapped coils facing upwards as shown.

- (a) LARGER PITCH
- (b) SMALLER PITCH

**ROCKER ARM AND ROCKER ARM SHAFTS****1. Inspect:**

- Rocker arm shaft hole ①
- Cam lobe contact surface ②
- Adjuster surface ③

Wear/Pitting/Scratches/Blue discoloration → Replace

**2. Inspect:**

- Rocker arm shaft

Groove can be felt (bearing surface)/Blue discoloration (rocker arm shaft) → Replace then inspect lubrication system.

**3. Measure:**

- Rocker arm inside diameter

Use a Bore Gage ① .

Out of specification → Replace.



**Rocker Arm Inside Diameter:**

10.00 ~ 10.015 mm

(0.3937 ~ 0.3943 in)

**4. Measure:**

- Rocker arm shaft outside diameter

Use a Micrometer ①

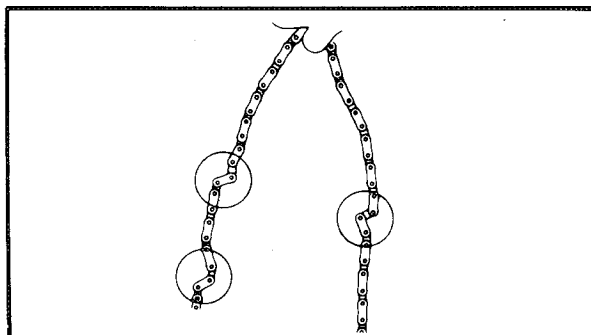
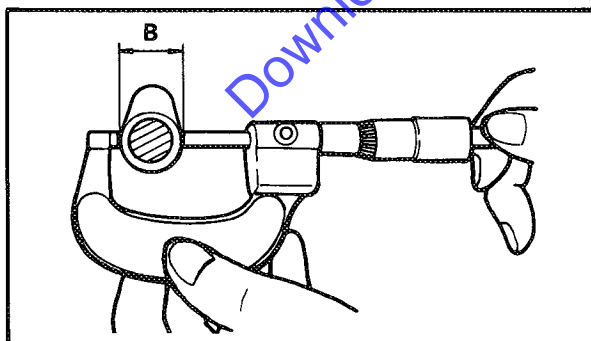
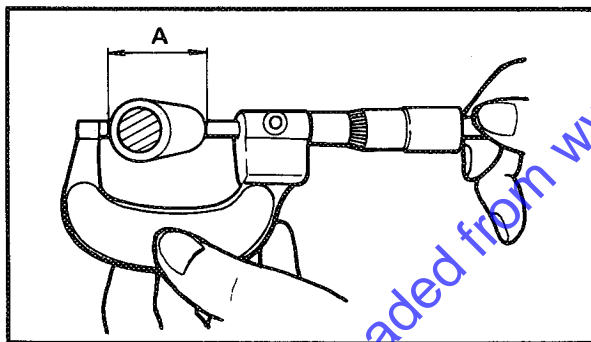
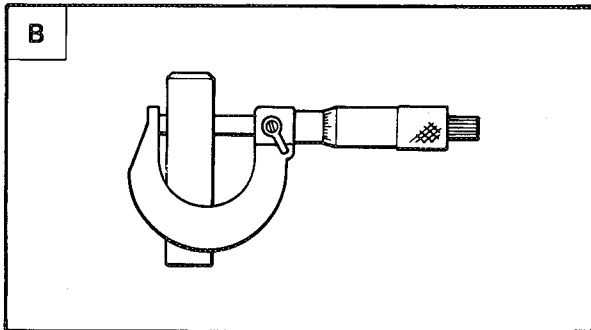
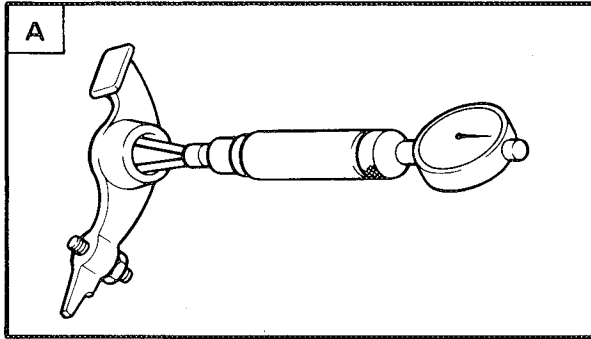
Out of specification → Replace.



**Rocker Arm Shaft Outside Diameter:**

9.81 ~ 9.91 mm

(0.386 ~ 0.390 in)



- Measure:
  - Arm-to-shaft clearance

$$\text{Arm-to-shaft Clearance} = \text{B} - \text{A}$$

Clearance is greater than 0.08 mm (0.0032 in) → Replace either or both parts.



**Arm-to-Shaft Clearance:**  
 0.09 ~ 0.34 mm  
 (0.0035 ~ 0.0134 in)  
 Limit: 0.08 mm (0.0032 in)

3

**CAMSHAFT**

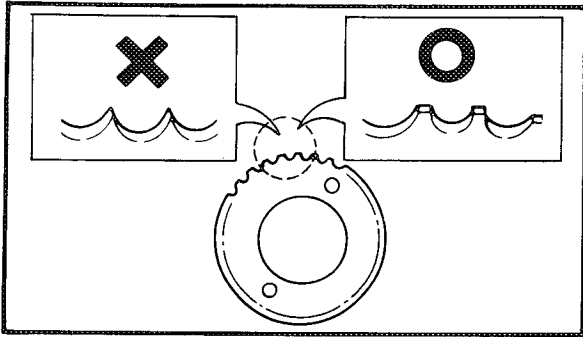
- Inspect:
  - Cam lobes  
 Pitting/Scratches/Blue discoloration → Replace.
- Measure:
  - Cam lobes  
 Use a Micrometer.  
 Out of specification → Replace.

	Cam Lobe "A"	Cam Lobe "B"
Intake	26.169 ~ 26.269 mm (1.030 ~ 1.034 in)	21.061 ~ 21.161 mm (0.829 ~ 0.833 in)
Exhaust	26.169 ~ 26.269 mm (1.030 ~ 1.034 in)	21.061 ~ 21.161 mm (0.829 ~ 0.833 in)

**CAM CHAIN**

- Inspect:
  - Cam chain  
 Chain stretch/Cracks/Damaged → Replace.



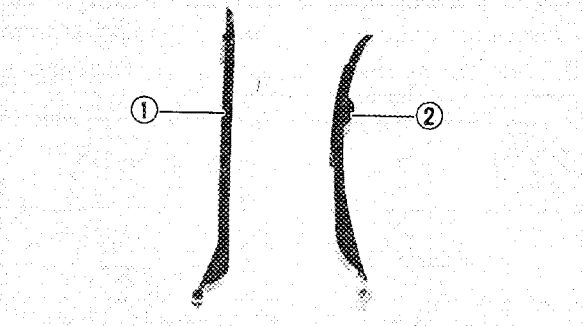


**Cam Sprocket**

1. Inspect:
    - Cam sprocket teeth
    - Cam chain drive sprocket
- Wear/Damage → Replace.

**Cam Chain Guide**

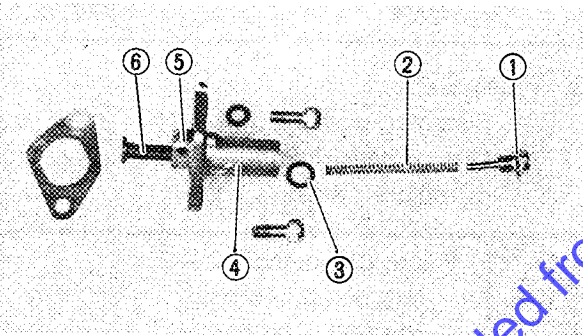
1. Inspect:
    - Front guide ①
    - Rear guide ②
- Wear → Replace.



**Cam Chain Tensioner**

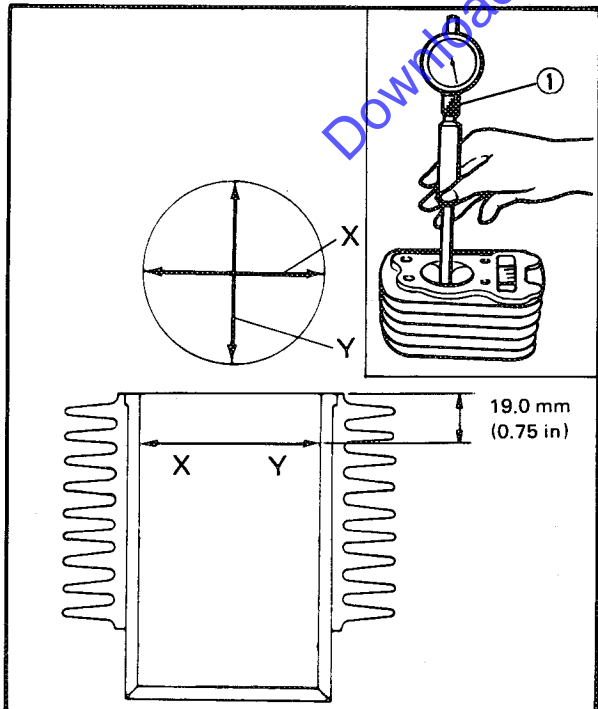
1. Check:
    - One-way cam ⑤ operation
- Unsmooth operation → Replace.
2. Inspect:
    - All parts
- Damage/Wear → Replace.


- ① End plug
- ④ Tensioner body
- ② Spring
- ⑥ Tensioner rod
- ③ O-ring

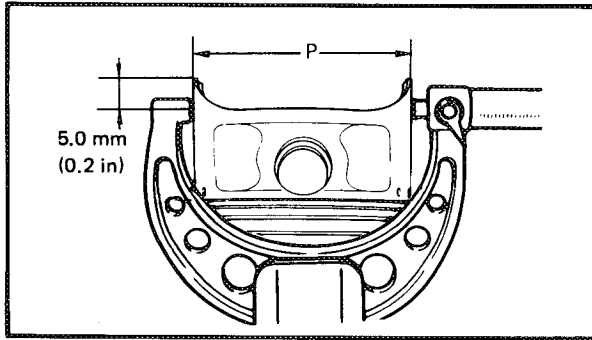


**CYLINDER**

1. Inspect:
    - Cylinder wall
- Wear/Scratches → Rebore or replace.
2. Measure:
    - Cylinder bore "C"
- Use a Cylinder Bore Gauge ① .  
 Measure the cylinder bore "C" horizontally and laterally at 19.0 mm (0.75 in) from the cylinder top.  
 Then find the coverage of the measurements.  
 Out of specification → Rebore.



	Standard	Wear limit
Cylinder Bore "C"	49.00 ~ 49.01 mm (1.929 ~ 1.930 in)	49.1 mm (1.933 in)
$C = \frac{X + Y}{2}$		



**PISTON, PISTON RING, AND PISTON PIN**

**Piston**

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

**NOTE:** \_\_\_\_\_  
Measurement should be made at a point 5.0 mm (0.2 in) above the bottom edge of the piston.

Piston Outside Diameter "P"	
Standard	48.945 ~ 48.985 mm (1.927 ~ 1.929 in)
Oversize 2	49.50 mm (1.949 in)
Oversize 4	50.00 mm (1.969 in)

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

<p><b>Piston Clearance = C – P:</b> 0.020 ~ 0.040 mm (0.0008 ~ 0.0016 in)</p>
---

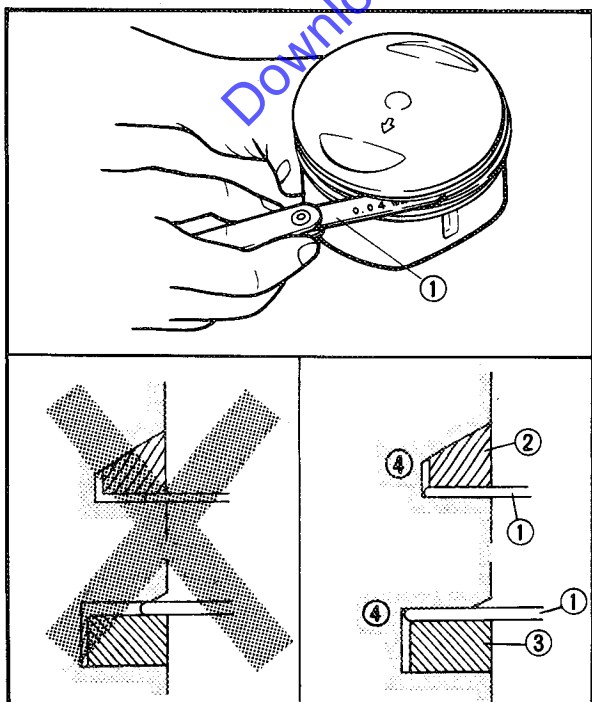
C: Cylinder bore P: Piston outside diameter

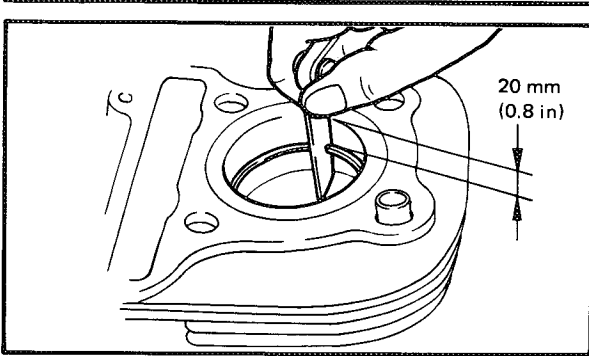
**Piston Ring**

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

Side Clearance	Top	0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)
	2nd	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)
<b>Limit: 0.12 mm (0.0047 in)</b>		

- ② Piston ring (taper)
- ③ Piston ring (barrel)
- ④ Piston






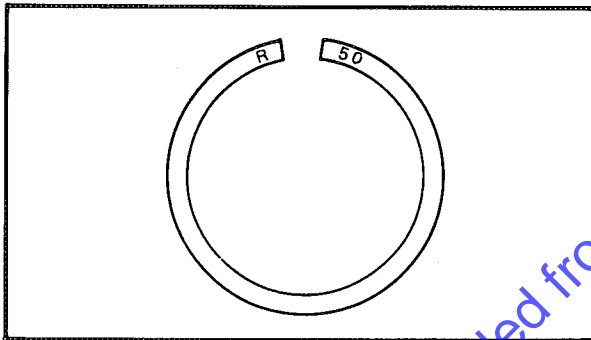
2. Position:

- Piston ring (into cylinder)  
Push the ring with the piston crown.

3. Measure:

- End gap  
Use Feeler Gauge ①.  
Out of specification → Replace rings as set.

	Standard	Limit
Top Ring	0.15 ~ 0.30 mm (0.006 ~ 0.012 in)	0.40 mm (0.16 in)
2nd Ring	0.15 ~ 0.30 mm (0.006 ~ 0.012 in)	0.40 mm (0.16 in)
Oil Control (Rails)	0.30 ~ 0.90 mm (0.012 ~ 0.035 in)	0.40 mm (0.16 in)

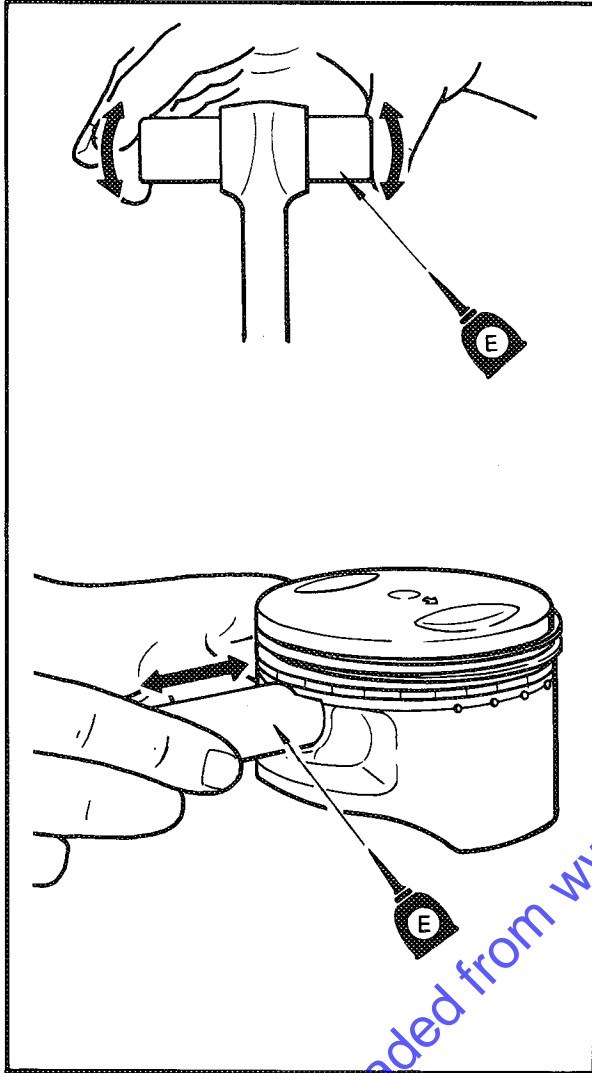


Oversize Piston Rings

- The oversize top and middle ring sizes are stamped on top of the ring.

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

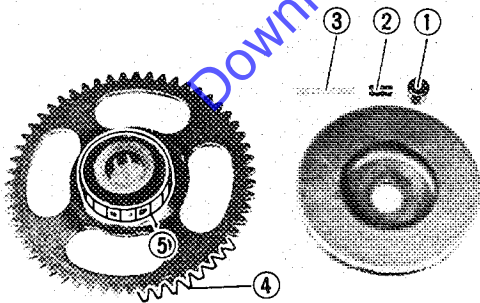
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**Piston Pin**

1. Lubricate:
  - Piston pin (Lightly)
2. Install:
  - Piston pin  
(into small end of connecting rod)
3. Check:
  - Free play  
Free play → Inspect connecting rod for wear.  
Wear → Inspect connecting rod and piston pin.
4. Position:
  - Piston pin  
(into piston)
5. Check:
  - Free play  
When pin is in place in piston.  
Free play → Replace piston pin and/or piston.

3



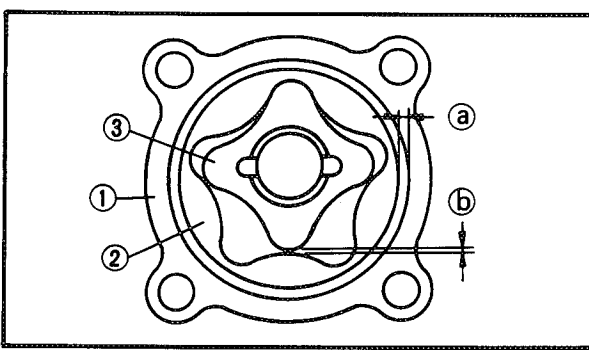
**STARTER DRIVES**

**Electric Starter Clutch**

1. Check:
  - Roller ① operation
  - Spring cap ② operation
  - Spring ③ operation  
Unsmooth operation → Replace one-way clutch.
2. Apply:
  - Molybdenum disulfide oil  
(with the hole in which the spring is installed)

**Starter Gear**

1. Inspect:
  - Idle gear teeth ④
  - Contacting surfaces with the clutch ⑤  
Pitting/Wear/Damage → Replace.



### OIL PUMP

#### 1. Measure:

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



Side Clearance "A":

0.06 ~ 0.10 mm

(0.0024 ~ 0.0039 in)

Limit: 0.15 mm (0.006 in)

#### 2. Measure:

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

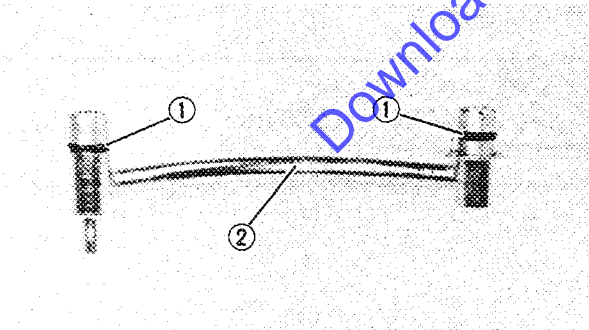


Tip Clearance "B":

0.15 mm (0.0059 in)

Limit: 0.2 mm (0.008 in)

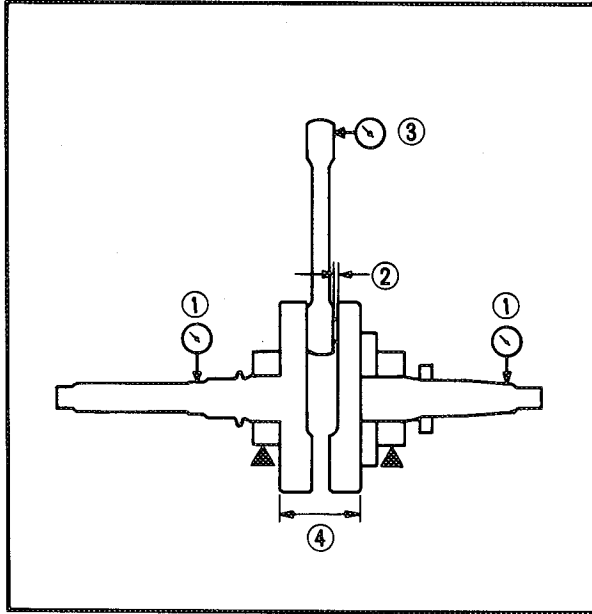
# 3



### OIL GALLERY PIPE

#### 1. Inspect:

- O-rings ①  
Wear/Cracks/Damage → Replace.
- Gallery pipe ②  
Cracks/Damage/Clog → Replace.



**CRANKSHAFT AND CONNECTING ROD**

**Crankshaft Runout**

1. Measure:

- Crankshaft runout ①  
Use V-Blocks and Dial Gauge (YU-03097).  
Out of specification → Replace.



**Runout Limit:**

Left: 0.01 mm (0.0004 in)  
Right: 0.03 mm (0.0012 in)

- Big end side clearance ②  
Out of specification → Replace connecting rod.



**STD Big End Side Clearance:**

0.05 ~ 0.45 mm  
(0.0020 ~ 0.0177 in)  
Limit: 0.5 mm (0.0197 in)

- Small end free play ③  
Out of specification → Replace connecting rod.



**Small End Free Play:**

Standard: 0.8 ~ 1.0 mm  
(0.031 ~ 0.039 in)  
Limit: 1.5 mm (0.059 in)

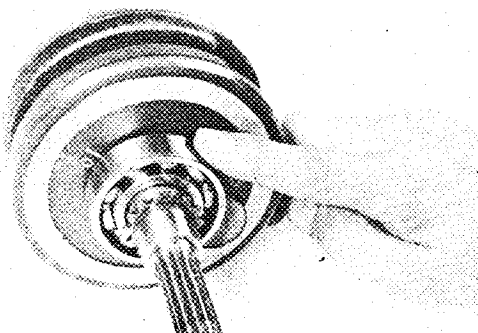
- Crank width ④  
Out of specification → Replace crankshaft.



**Crank Width:**

44.95 ~ 45.00 mm  
(1.770 ~ 1.772 in)

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**Crankshaft Bearings**

1. Inspect:

- Bearing races  
Pitting/Rust/Scoring → Replace.

**NOTE:**

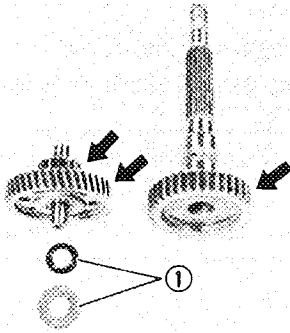
- Clean and dry bearing before checking.
- Lubricate bearings immediately after examining them to prevent rust.



## TRANSMISSION

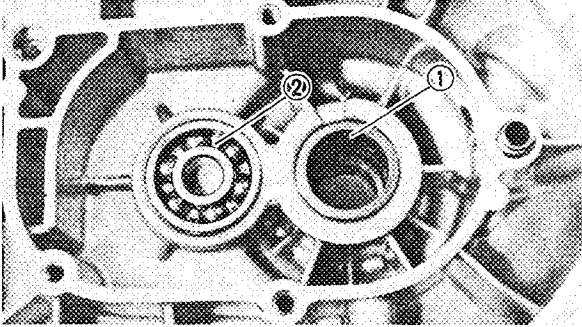
## Gears

1. Inspect:
  - Gear teeth  
Pitting/Galling/Wear → Replace.
  - Washers ①  
Damage/Wear → Replace.



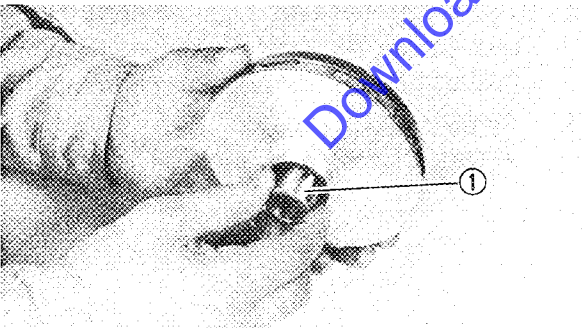
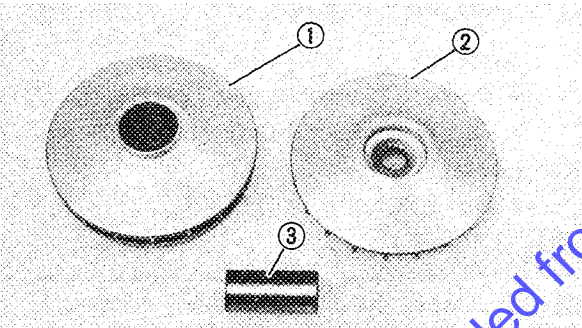
## Bearings

1. Inspect:
  - Drive axle bearing ①
  - Main axle bearing ②  
Pitting/Damage → Replace.

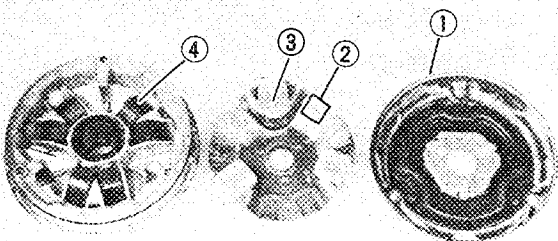


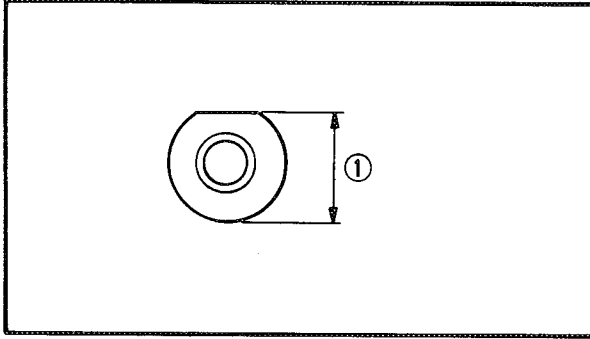
## PRIMARY SHEAVE

1. Inspect:
  - Primary sliding sheave ①
  - Primary fixed sheave ②
  - Collar ③  
Wear/Cracks/Scratches/Damage → Replace.
2. Position:
  - Collar ①  
(into primary sliding sheave)
3. Check:
  - Freely  
Free play → Replace.



4. Remove:
  - Primary sheave cap ①
  - Cam ②
  - Slider bushings ③
  - Weights ④





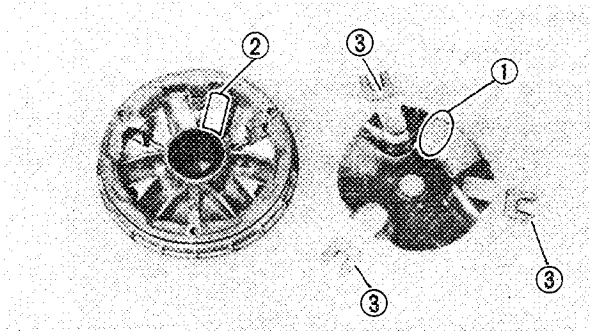
5. Measure:
  - Weight minimum outside diameter ①
  - Out of specification → Replace.



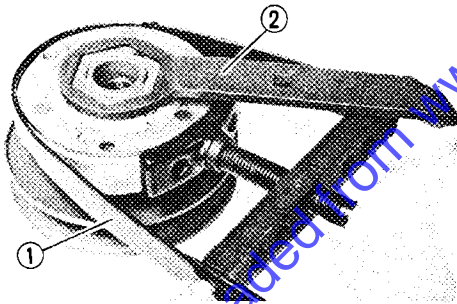
**Weight Outside Diameter:**

Standard: 18.0 mm (0.71 in)

Limit: 17.5 mm (0.69 in)



6. Inspect:
  - Cam ①
  - Ramps ②  
(in the sliding sheave)
  - Slider bushing ③  
Scratches/Wear → Replace primary sheave assembly.

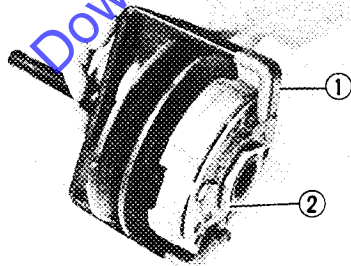


**SECONDARY SHEAVE**

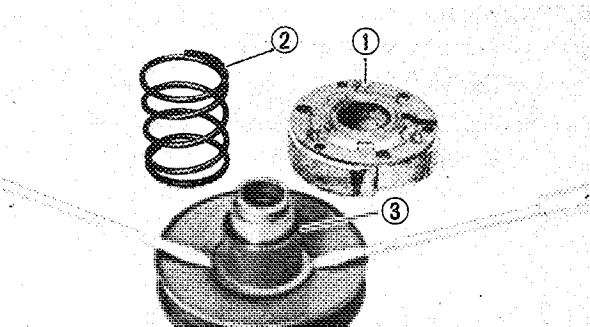
1. Attach:
  - Primary Sheave Holder (YU-01701) ①
  - Nut Wrench (YM-04045A) ②
2. Loosen:
  - Nut (Clutch)

**CAUTION:**

**Do not remove the clutch securing nut yet.**

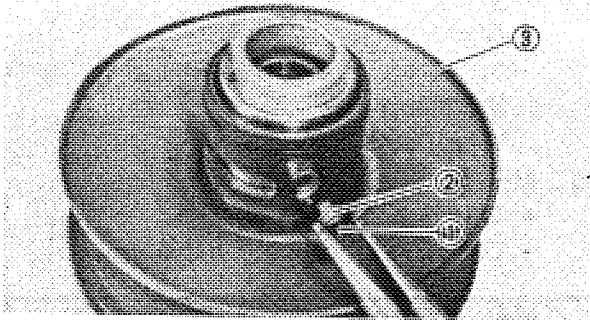


3. Using a proper bolt ①, washers, nuts ② and spacers ③, with Crankcase Separator (YU-01135) ④ compress the clutch spring.
4. Remove:
  - Nut (Clutch) ⑤

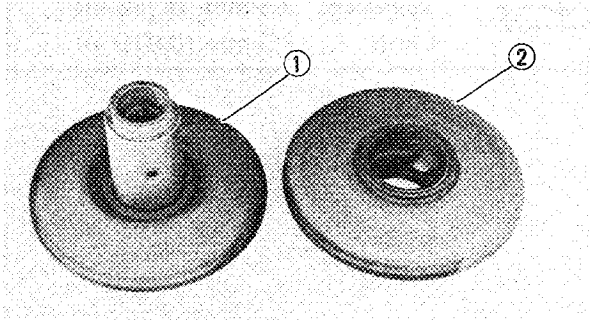


5. Remove:
  - Clutch assembly ①
  - Spring ②
  - Spring seat ③

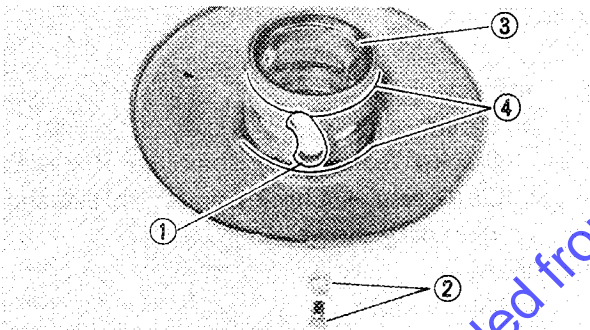




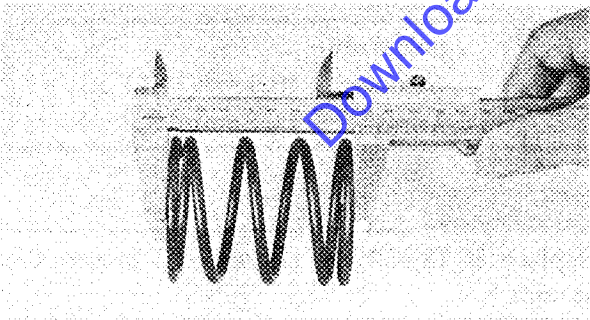
6. Remove:
- Guide pin ①
  - Guide collar ②
  - Sliding sheave ③




7. Inspect:
- Secondary fixed sheave ①
  - Secondary sliding sheave ②
- Scratches/Damage → Replace as a set.

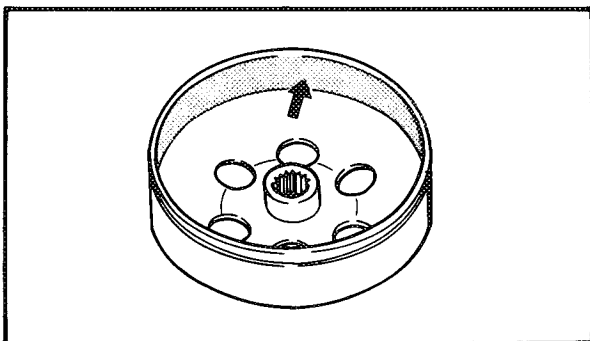


8. Inspect:
- Torque cam groove ①
  - Guide pin/Collar ②
- Wear/Damage → Replace as a set.
- Oil seal ③
  - O-rings ④
- Damage/Wear → Replace.




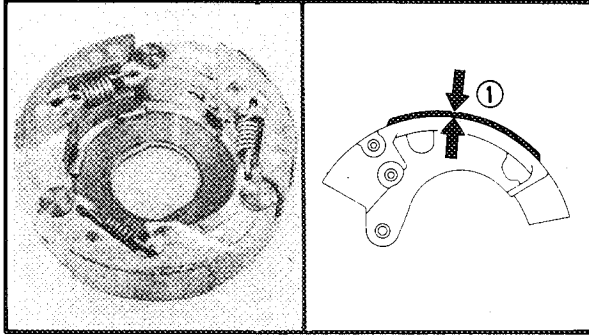
9. Measure:
- Sliding spring free length
- Out of specification → Replace.

	<b>Sliding Spring Free Length:</b>
	Standard: 76.8 mm (3.02 in)
	Limit: 71.0 mm (2.80 in)



10. Inspect:
- Clutch housing (Inner surfaces)
- Scratches/Damage → Replace.
- Oil/Grease → Check oil seals and O-rings of the secondary fixed sheave and sliding sheave.

	<b>Clutch Housing Wear Limit:</b>
	120.3 mm (4.736 in)

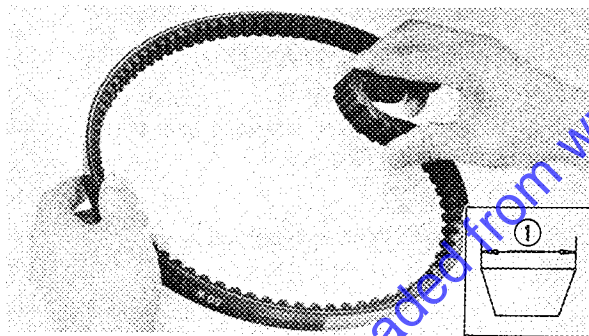


11. Inspect:
  - Clutch shoes  
Scratches → Glazing using the Coarse Sandpaper.  
Wear/Damage → Replace.
12. Measure:
  - Clutch shoe thickness ①  
Out of specification → Replace.



**Clutch Shoe Thickness:**  
 Standard: 3.5 mm (0.138 in)  
 Limit: 2.0 mm (0.079 in)

3



V-BELT

1. Inspect:
  - V-belt  
Cracks/Wear/Scaling/Chipping → Replace.  
Oil/Grease → Check primary sheave and secondary sheave.
2. Measure:
  - V-belt width ①  
Out of specification → Replace.



**V-belt Width:**  
 Standard: 19.5 mm (0.77 in)  
 Limit: 17.5 mm (0.69 in)

**WARNING:**

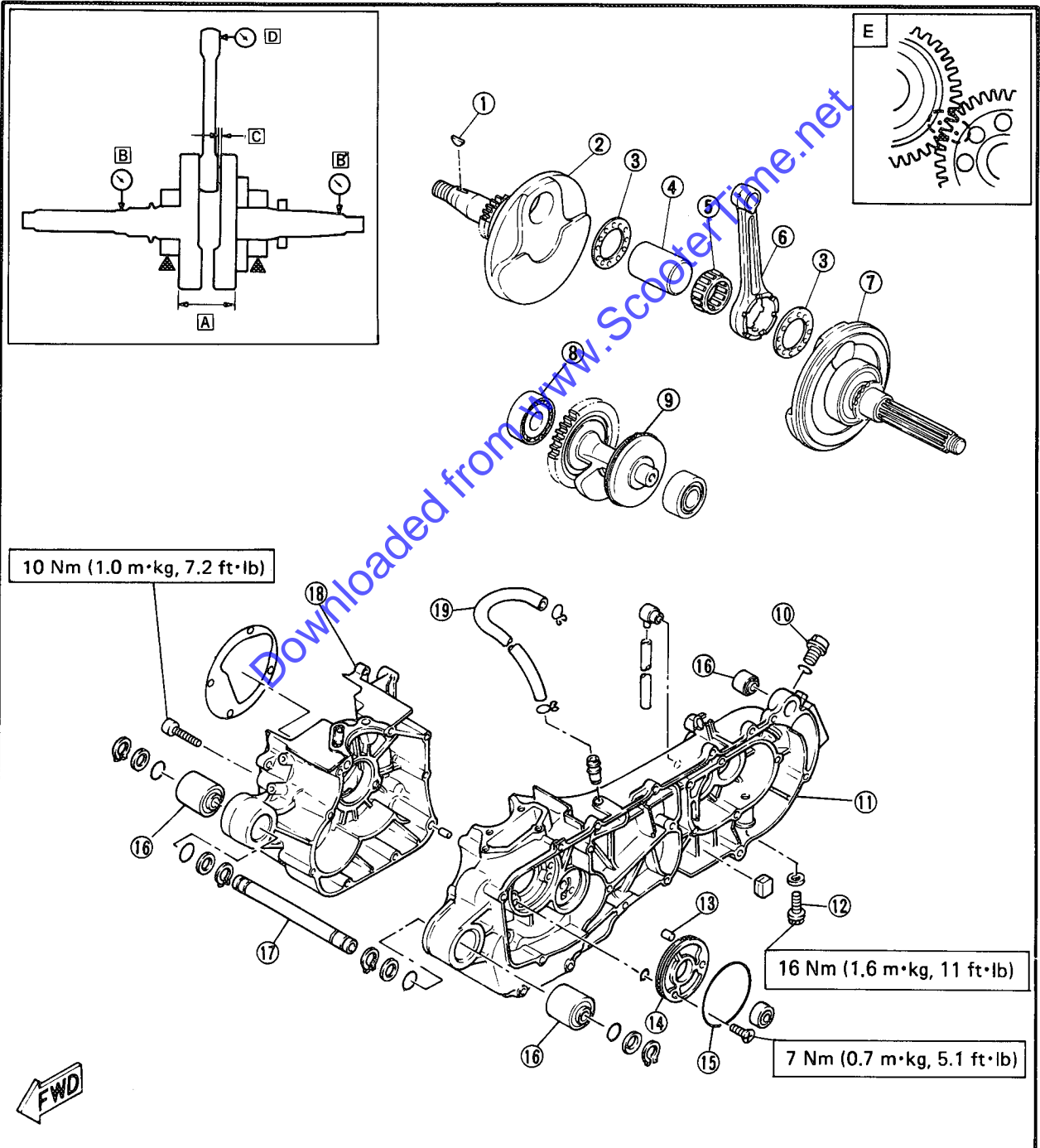
Replace at 18,000 km (11,400 mi) irrespective at limit.

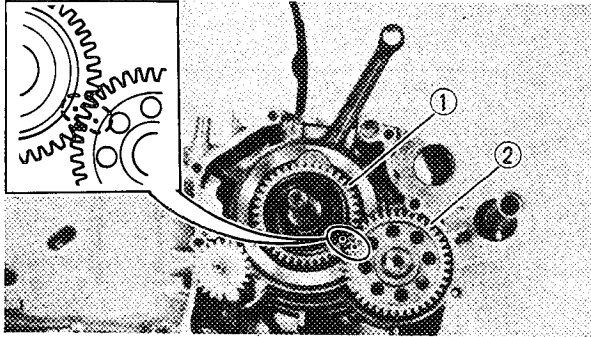


**ENGINE ASSEMBLY AND ADJUSTMENT**  
**CRANKSHAFT AND CRANKCASE**

- ① Woodruff key
- ② Crank (Right)
- ③ Thrust washer
- ④ Crank pin
- ⑤ Big end bearing
- ⑥ Connecting rod
- ⑦ Crank (Left)
- ⑧ Balancer bearing
- ⑨ Balancer
- ⑩ Filler cap
- ⑪ Crankcase (Left)
- ⑫ Final gear drain plug
- ⑬ Dowel pin
- ⑭ Cam chain case cover
- ⑮ O-ring
- ⑯ Engine mount damper
- ⑰ Engine mount spacer
- ⑱ Crankcase (Right)
- ⑲ Ventilation hose

A	CRANK WIDE: 44.95 ~ 45.00 mm (1.770 ~ 1.772 in)
B	RUNOUT LIMIT: B: 0.01 mm (0.0004 in) B': 0.03 mm (0.0012 in)
C	SIDE CLEARANCE: 0.05 ~ 0.45 mm (0.0020 ~ 0.0177 in)
D	SMALL END FREE PLAY: 0.8 ~ 1.0 mm (0.031 ~ 0.039 in)
E	BALANCER GEAR ALIGN MARKS






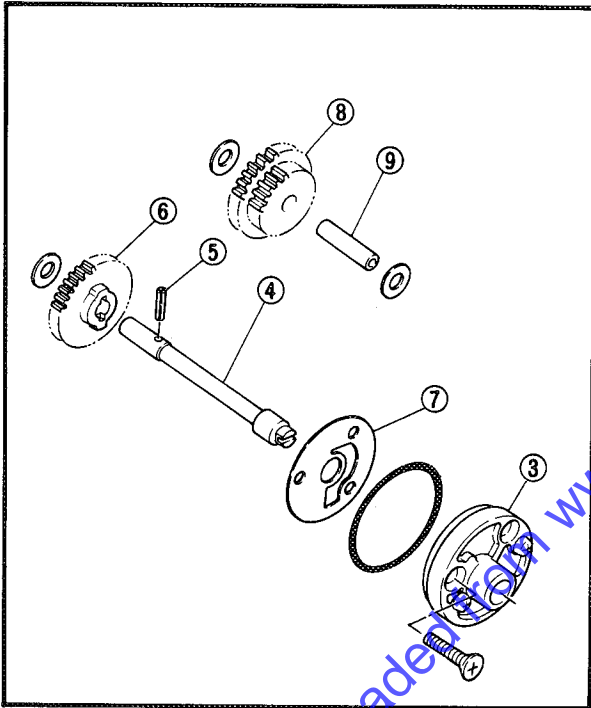
1. Install:
  - Crankshaft with gear ① / Balancer ②

**NOTE:** \_\_\_\_\_  
Align the mark on the balancer gear ② with the mark on the crankshaft gear ① .

2. Install:
  - Oil pump assembly ③

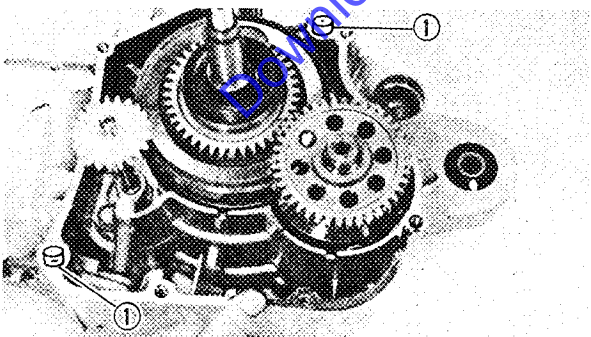
 **Bolt (Oil Pump Body):**  
7 Nm (0.7 m·kg, 5.1 ft·lb)

- Oil pump drive shaft ④
- Spring pin ⑤
- Driven gear ⑥
- Spacer




- ⑦ Oil pump body plate
- ⑧ Oil pump idler gear
- ⑨ Idle gear shaft

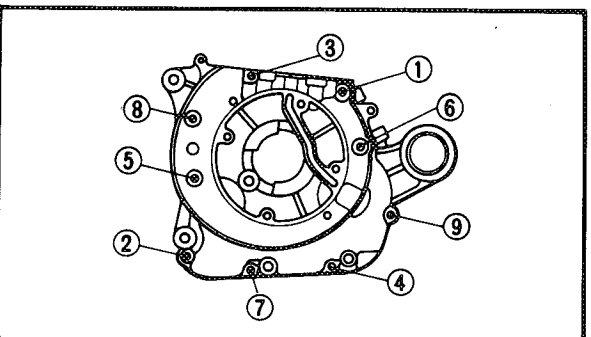
3. Apply:
  - Quick Gasket® (ACC-11001-05-01)  
(to the mating surfaces)
4. Install:
  - Dowel pins ①
5. Install:
  - Crankcase (Right)  
Tap the crankcase on lightly using a Soft Hammer.



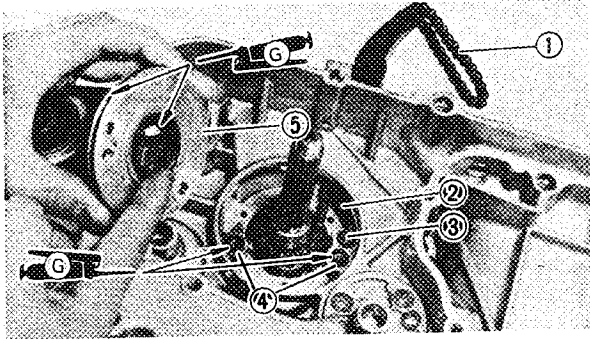
6. Tighten:
  - Bolts (Crankcase)

 **Bolts (Crankcase):**  
10 Nm (1.0 m·kg, 7.2 ft·lb)

**NOTE:** \_\_\_\_\_  
Tighten the bolt using crisscross pattern.



3

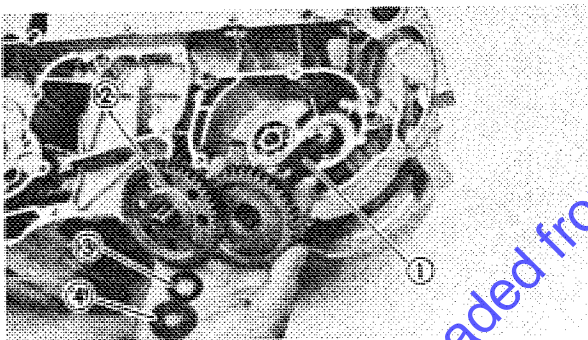


7. Install:
  - Cam chain ①
  - Cam chain guide (Rear) ②
  - Dowel pin ③
  - O-rings ④
  - Cam chain case cover ⑤

Apply grease to the O-ring and oil seal.
8. Tighten:
  - Cam chain case cover



**Bolt (Cam Chain Case):**  
7 Nm (0.7 m·kg, 5.1 ft·lb)



### TRANSMISSION

1. Install:
  - Drive axle ①

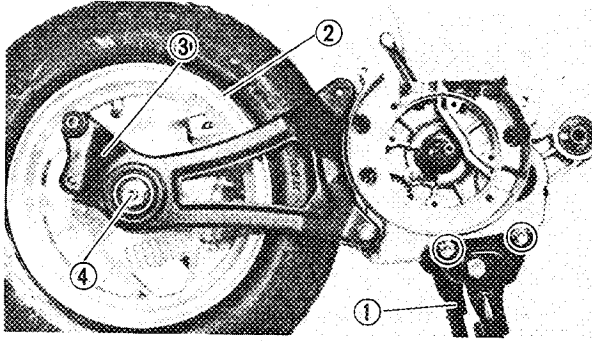
**NOTE:** \_\_\_\_\_

Be careful so that the oil seal lip is not turned over by edge of the drive axle when installing the drive axle.

- Main axle ②
  - Conical spring washer ③
  - Plate washer ④
2. Install:
    - Gasket (New)
    - Transmission cover
  3. Tighten:
    - Bolts (Transmission cover)  
(in two steps)



**Bolts (Transmission Cover):**  
10 Nm (1.0 m·kg, 7.2 ft·lb)

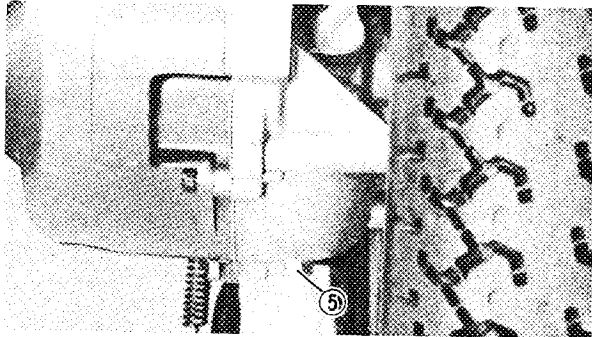


4. Install:
  - Main stand assembly ①



**Bolt (Main Stand):**  
27 Nm (2.7 m·kg, 19 ft·lb)

- Rear wheel ②
- Washer
- Rear arm ③

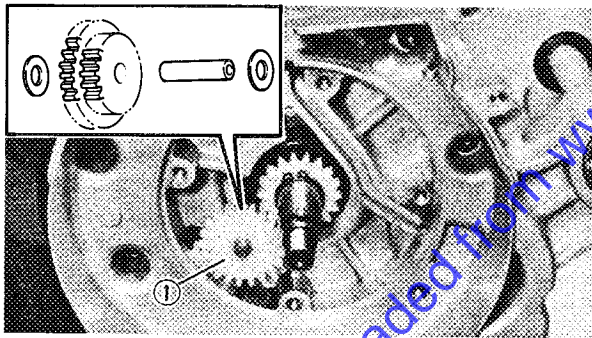


5. Tighten:
  - Rear wheel axle nut ④  
(Tighten temporarily)
  - Final gear drain plug ⑤



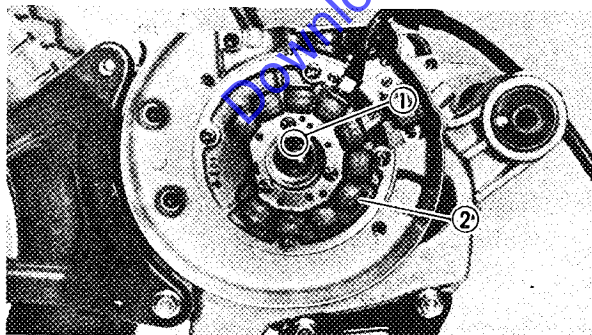
**Final Gear Drain Plug:**  
16 Nm (1.6 m·kg, 11 ft·lb)

3



**OIL PUMP GEARS**

1. Install:
  - Oil pump idle gear ①

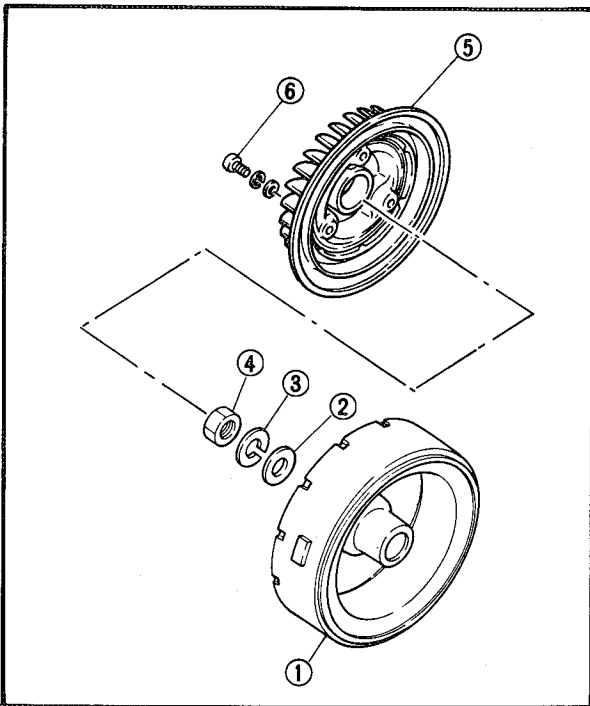


**CDI MAGNETO**


1. Install:
  - Woodruff key ①
  - Gasket (New)
2. Tighten:
  - Generator assembly ②



**Bolt (Generator):**  
7 Nm (0.7 m·kg, 5.1 ft·lb)

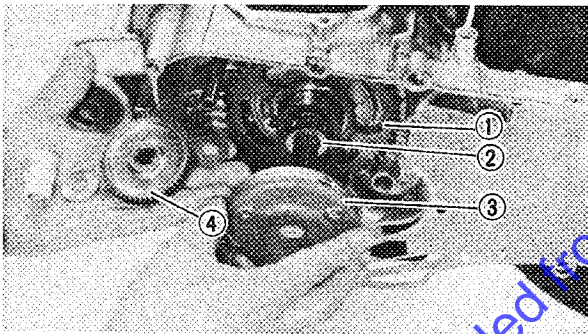


3. Install:
  - Magneto rotor ①
  - Washer ②
  - Spring washer ③
4. Tighten:
  - Nut (Magneto) ④

 **Nut (Magneto):**  
70 Nm (7.0 m·kg, 50 ft·lb)


5. Install:
  - Cooling fan ⑤  
(onto magneto rotor)
6. Tighten:
  - Screws (Cooling fan) ⑥

 **Screws (Cooling Fan):**  
7 Nm (0.7 m·kg, 5.1 ft·lb)

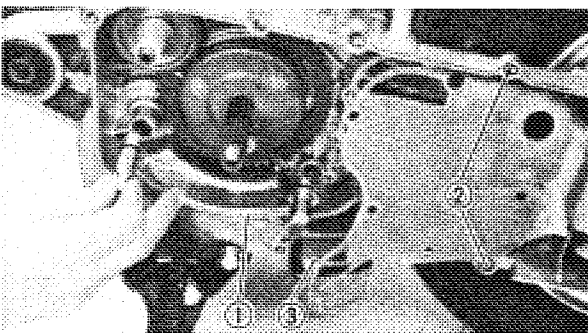


**STARTER SYSTEM**


1. Install:
  - Starter motor assembly

 **Bolts (Starter Motor):**  
7 Nm (0.7 m·kg, 5.1 ft·lb)

- Starter driven gear ①
- Plate washer ②
- Starter clutch assembly ③
- Starter idle gear ④



2. Install:
  - Oil gallery pipe ①  
Apply grease to the O-rings (New).
  - Dowel pins ②
  - Oil filter screen ③
  - Crankcase cover

 **Screw (Crankcase Cover):**  
10 Nm (1.0 m·kg, 7.2 ft·lb)

Downloaded from www.ScooterTuner.net

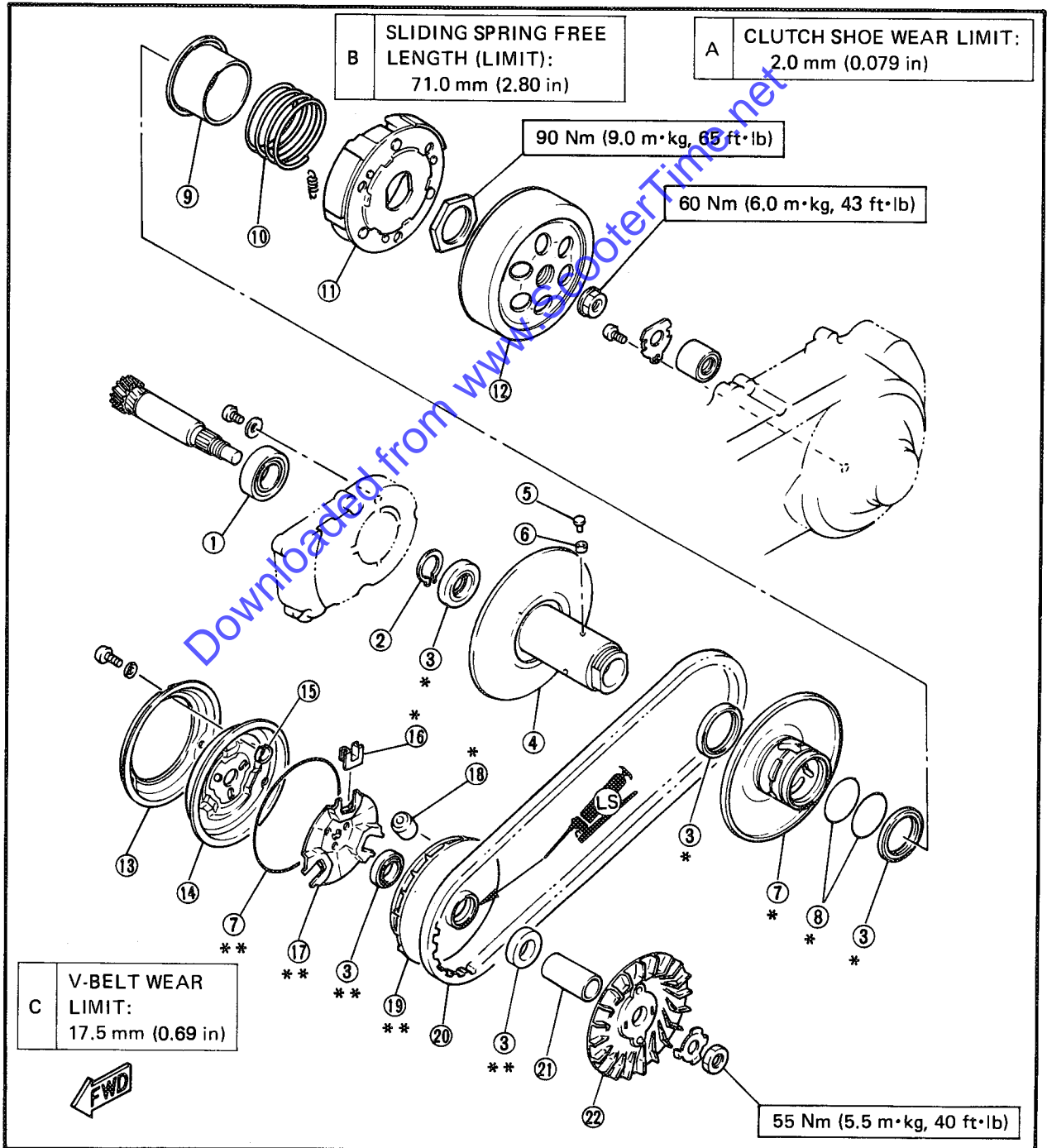


PRIMARY SHEAVE/SECONDARY SHEAVE/V-BELT

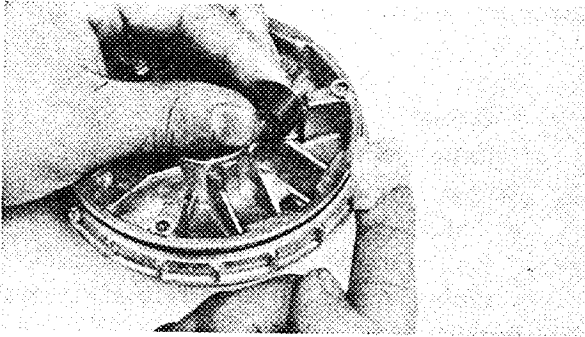
- ① Bearing
- ② Circlip
- ③ Oil seal
- ④ Secondary fixed sheave
- ⑤ Guide pin
- ⑥ Guide collar
- ⑦ Secondary sliding sheave
- ⑧ Oil seal
- ⑨ Spring seat
- ⑩ Spring
- ⑪ Clutch assembly
- ⑫ Clutch housing
- ⑬ Hold plate
- ⑭ Cap
- ⑮ Claw washer
- ⑯ Slider bushing
- ⑰ Cam
- ⑱ Weight
- ⑲ Primary sliding sheave
- ⑳ V-belt
- ㉑ Collar
- ㉒ Primary fixed sheave

\* : Apply BEL-LAY Assembly Lube®  
 \*\* : Apply Shell BT Grease No. 3 or equivalent

3







**Primary Sheave**

1. Apply:
  - Shell BT Grease No. 3 or equivalent
    - Thinly: Slider bushing
    - Heavily: Weights-sliding sheave ramps (approximately 2cc of grease per ramp and weight)

2. Assemble:
  - Primary sheave

**NOTE:** \_\_\_\_\_  
Install the claw washers ① so the slits are outside.

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

Remove any excess grease.

3. Apply:
  - Shell BT Grease No. 3 or equivalent (thinly to inside diameter of the primary sheave bore)

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

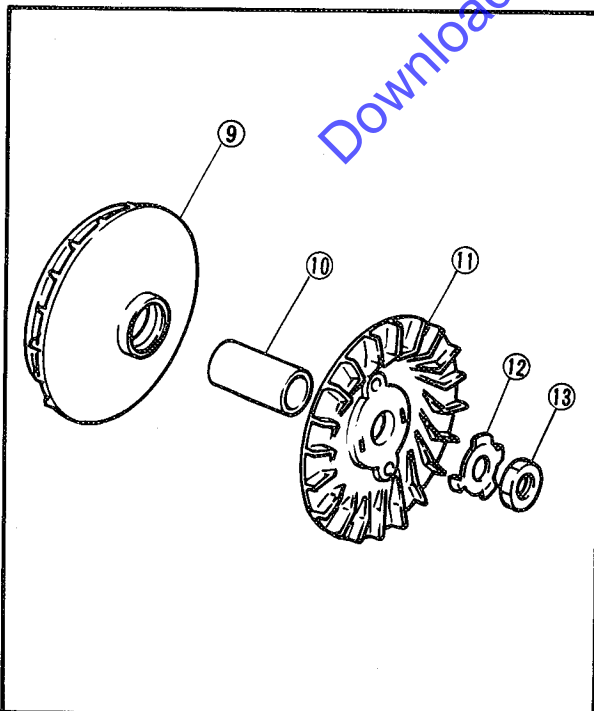
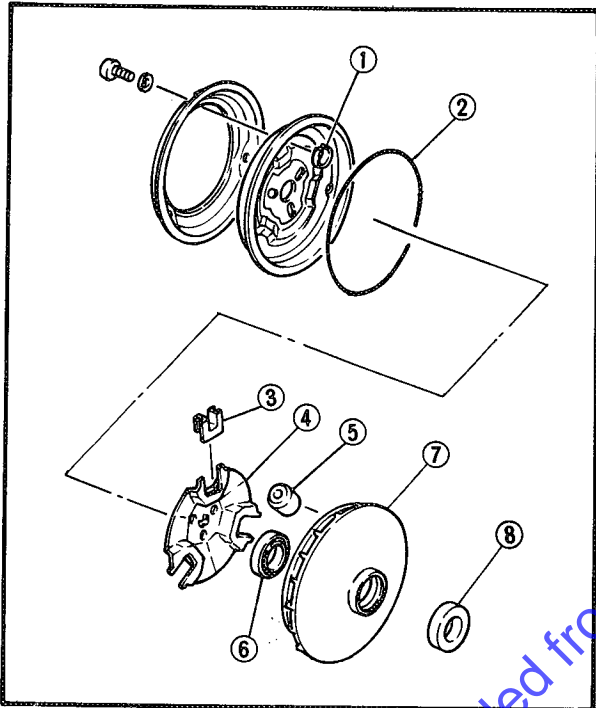
- Never apply grease to the collar.
- Be careful so that the oil seal lips are not turned over when installing the collar.

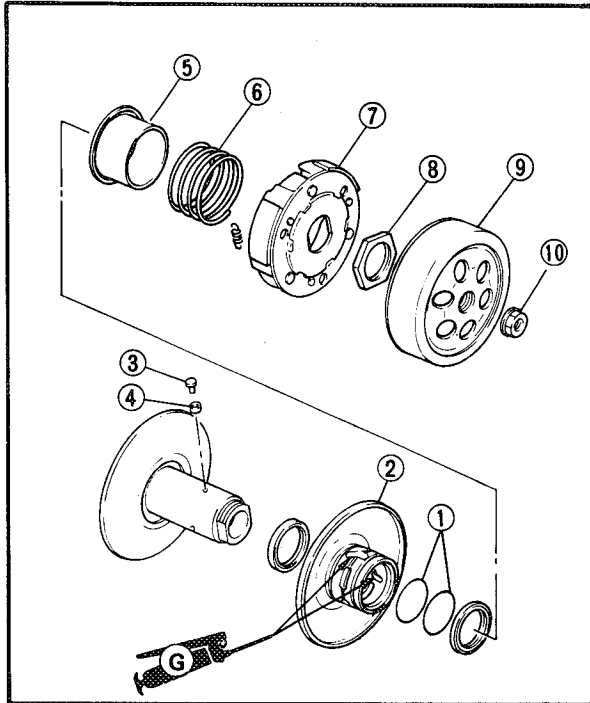
- |                  |                          |
|------------------|--------------------------|
| ① Claw washer    | ⑤ Weight                 |
| ② O-ring         | ⑥ Oil seal               |
| ③ Slider bushing | ⑦ Primary sliding sheave |
| ④ Cam            | ⑧ Oil seal               |

4. Install:
  - Primary sliding sheave ⑨
  - Collar ⑩
  - Primary fixed sheave ⑪
  - Rock washer (New) ⑫
  - Nut (Primary sheave) ⑬
5. Tighten:
  - Nut (Primary sheave)
 Use the Rotor Holder (YU-01235).

**Nut (Primary Sheave):**  
55 Nm (5.5 m·kg, 40 ft·lb)

**NOTE:** \_\_\_\_\_  
• Bend the lock washer tab against the nut falt.  
• Be sure to remove the any oil and or grease from the primary sheaves and collar with a thinner.





**Secondary Sheave**

1. Install:
  - O-rings ①  
(onto the fixed sheave)
2. Apply:
  - BEL-RAY Assembly Lube®  
(to the inside diameter of the secondary sliding sheave ② and fixed sheave)
3. Install:
  - Sliding sheave ②

**NOTE:**

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

4. Apply:
  - BEL-RAY Assembly Lube®  
(to the torque cam grooves on the sliding sheave ②)
5. Install:
  - Spring seat ⑤
  - Spring ⑥
  - Clutch assembly ⑦
6. Attach:
  - Primary Sheave Holder (YU-1701) ⑪
  - Nut Wrench (YM-04045-A) ⑫
7. Tighten:
  - Nut (Clutch) ⑧

	<p><b>Nut (Clutch):</b> 90 Nm (9.0 m·kg, 65 ft·lb)</p>
--	--

8. Install:
  - Secondary sheave assembly ⑬
  - Clutch housing ⑨
  - Nut (Secondary sheave) ⑩

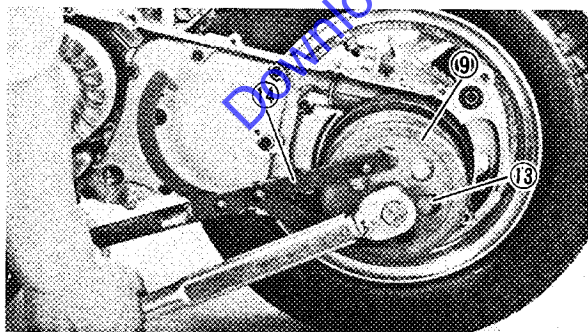
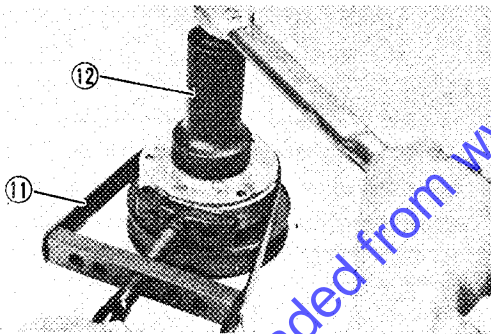
**NOTE:**

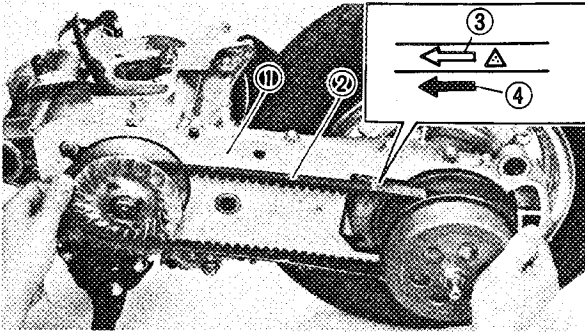
Before installation, remove the any oil and or grease from the clutch, clutch housing and sheaves with a thinner.

9. Tighten:
  - Nut (Secondary sheave)  
Use the Rotor Holder (YU-01235) ⑭

	<p><b>Nut (Secondary Sheave):</b> 60 Nm (6.0 m·kg, 43 ft·lb)</p>
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3





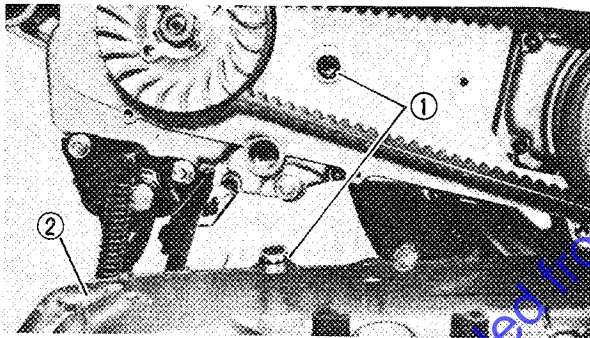
**V-Belt**

1. Install:
  - Gasket ①
  - V-belt ②

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

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

- The V-belt must be installed with the arrow marks ③ facing the direction of travel ④.
- Be sure to remove the any oil and/or grease.



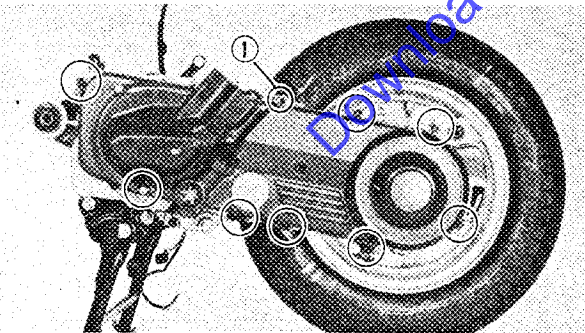
**CRANKCASE COVER**


1. Install:
  - Dowel pins
  - O-rings ①
  - Crankcase cover ②

2. Tighten:
  - Screws (Crankcase cover)

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

Do not install the screw ① as it is tighten with rear fender.

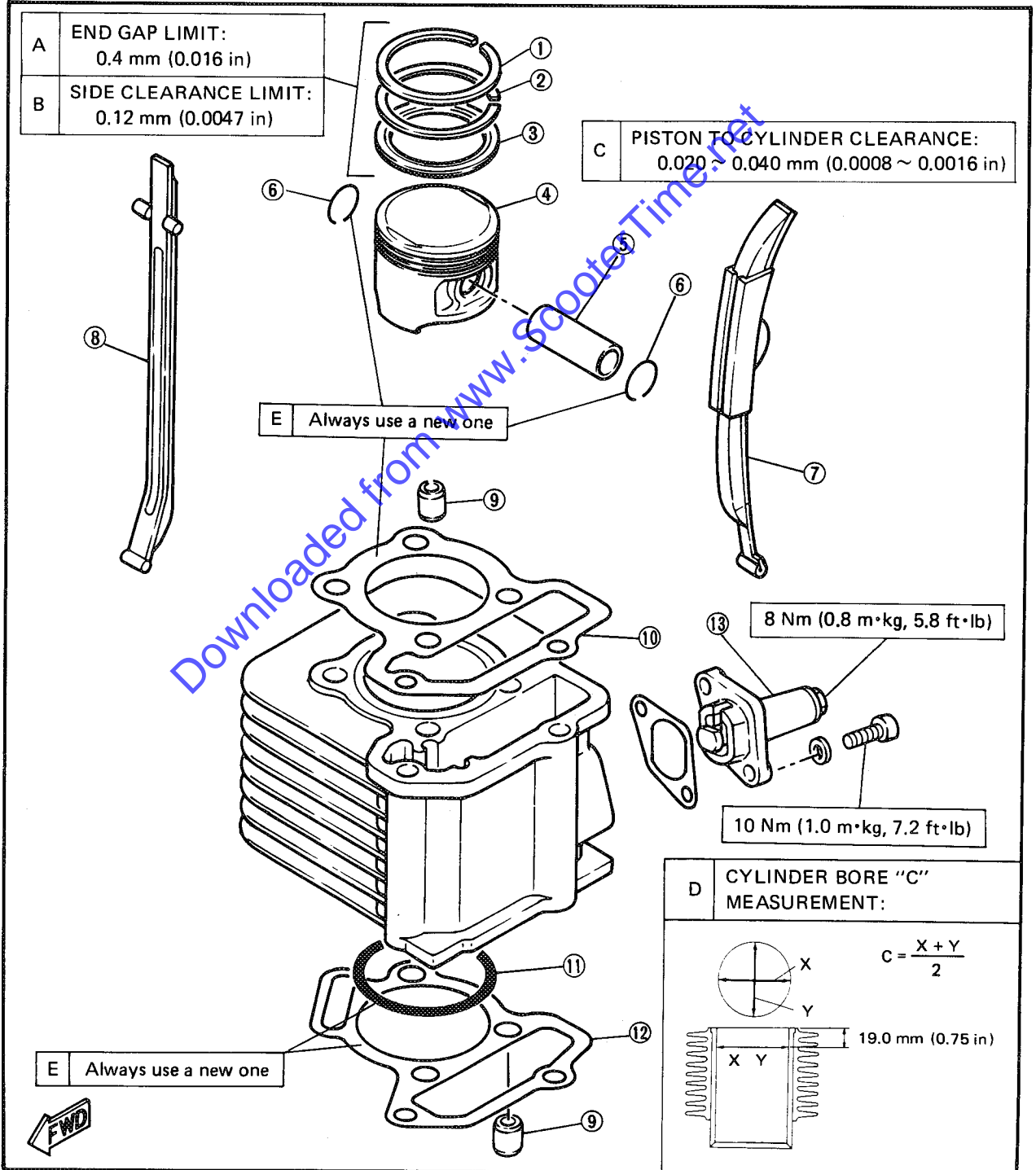


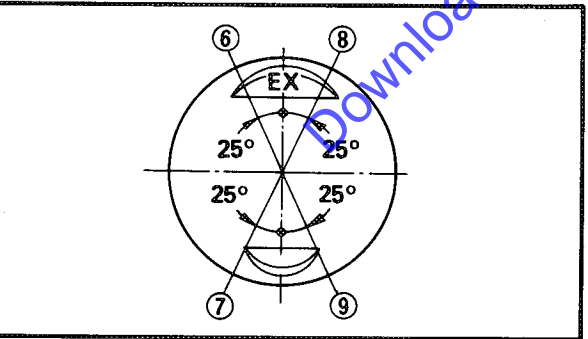
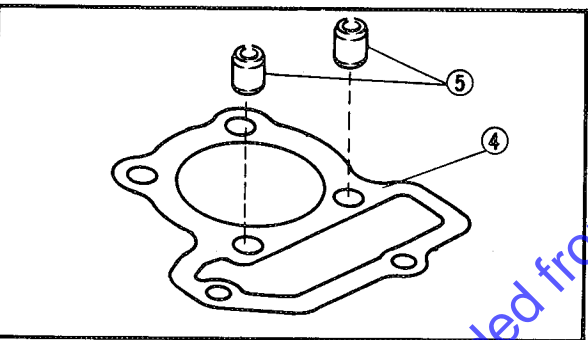
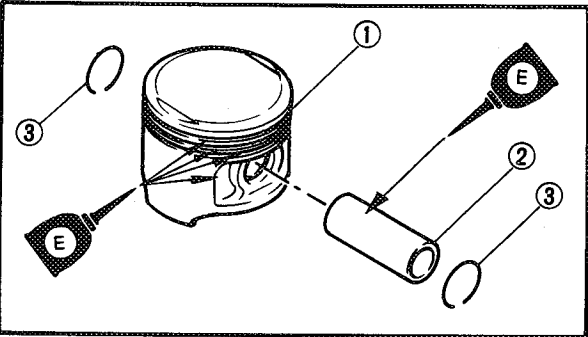
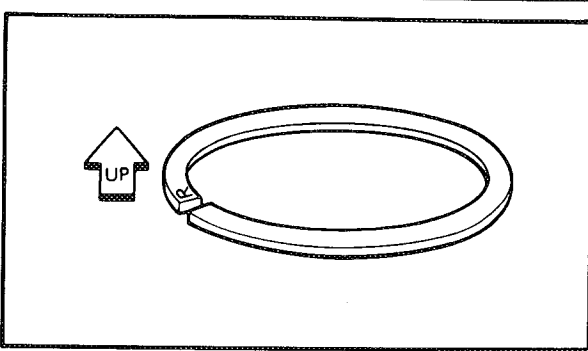
	<p><b>Screw (Crankcase Cover):</b> 10 Nm (1.0 m·kg, 7.2 ft·lb)</p>
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CYLINDER AND PISTON

- ① Top ring
- ② 2nd ring
- ③ Oil ring
- ④ Piston
- ⑤ Piston pin
- ⑥ Piston pin clip
- ⑦ Cam chain guide (Front)
- ⑧ Cam chain guide (Rear)
- ⑨ Dowel pin
- ⑩ Head gasket
- ⑪ O-ring
- ⑫ Cylinder gasket
- ⑬ Cam chain tensioner





### Piston

1. Install:
  - Piston rings

### NOTE:

Be sure to install rings so that manufacturer's marks or numbers are located on the top side of the rings. Oil the piston and rings liberally.

2. Install:

- Piston ①
- Piston pin ②
- Lubricate engine oil.
- Piston pin clips ③

### NOTE:

- Be sure the piston is positioned correctly.
- Always install new piston pin clips.
- Cover crankcase with clean rag before installing piston pin clips to prevent clips from falling into crankcase cavity.

- Gasket ④ (New)
- Dowel pins ⑤

3. Lubricate:

- Piston
- Piston rings
- Use the engine oil.

4. Align:

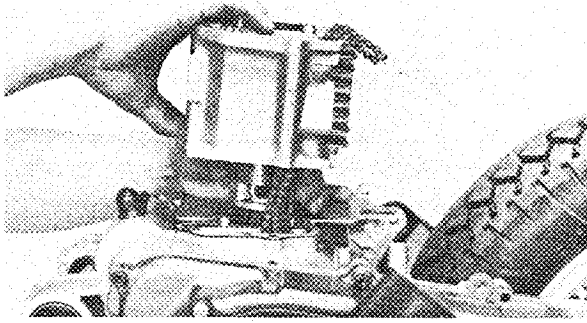
- Top ring ⑥
- Oil ring (Lower rail) ⑦
- Oil ring (Upper rail) ⑧
- 2nd ring ⑨
- Align the above components as shown.

### NOTE:

Manufacturer's marks or numbers stamped on rings should face upwards.

### CAUTION:

Be sure ends of oil ring expander do not overlap.



5. Attach a length of wire to cam chain.
6. Install:
  - CylinderRoute the cam chain and the cam chain guide through the cam chain journal.
7. Install:
  - Cam chain guide (Front)

**CAUTION:**

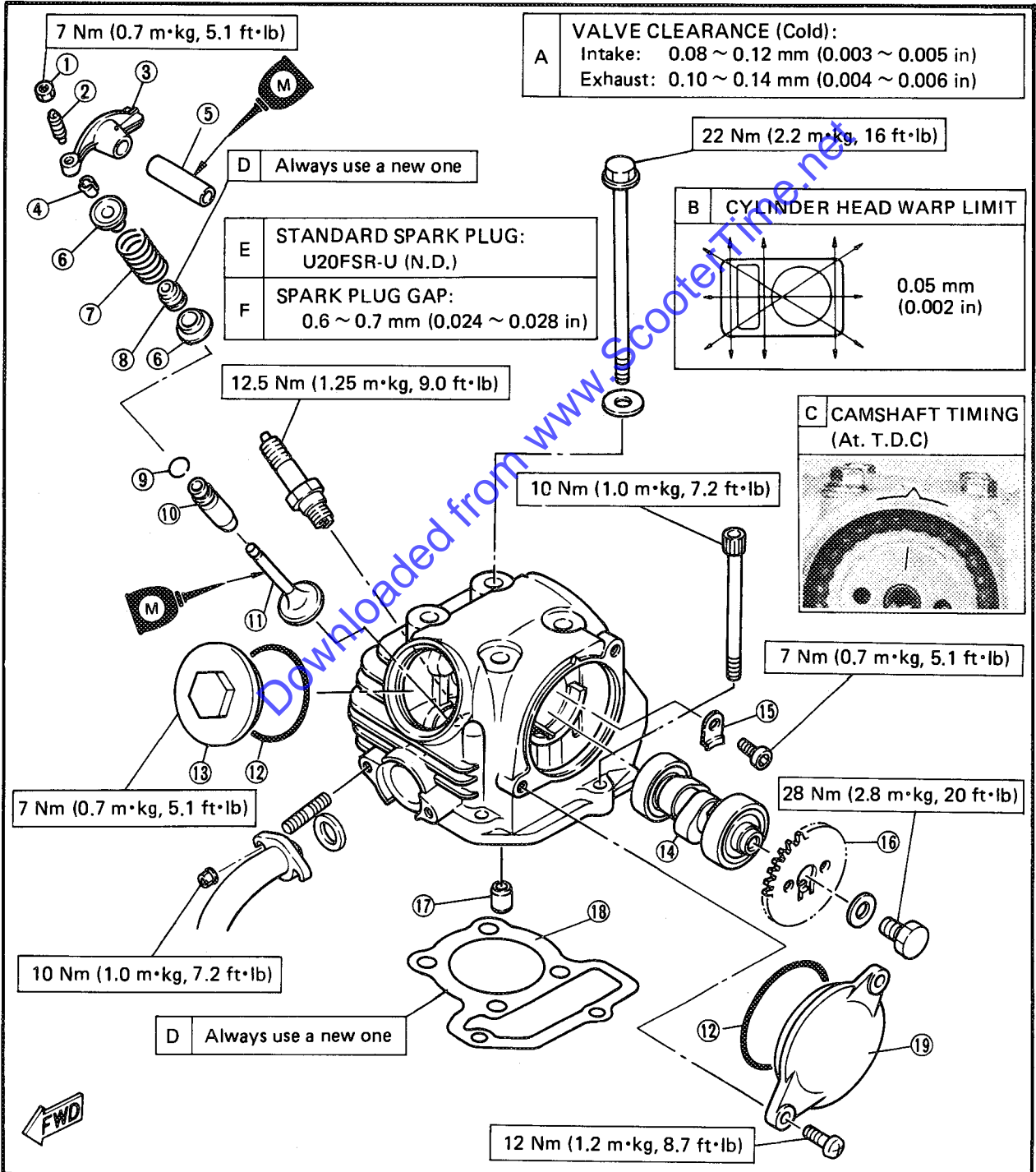
The lower end and the upper end of the guide must rest in slot in the crankcase and the cylinder.

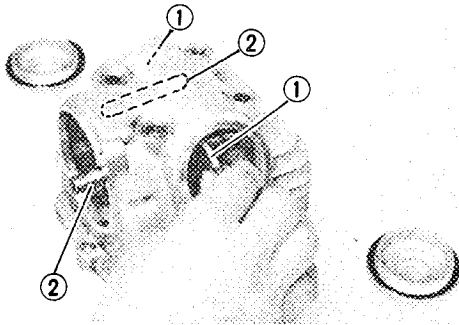
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## CYLINDER HEAD

- ① Locknut
- ② Adjuster
- ③ Rocker arm
- ④ Valve retainer
- ⑤ Rocker arm shaft
- ⑥ Spring seat
- ⑦ Spring
- ⑧ Oil seal
- ⑨ Circlip
- ⑩ Valve guide
- ⑪ Valve
- ⑫ O-ring
- ⑬ Valve cover
- ⑭ Camshaft
- ⑮ Stopper plate
- ⑯ Cam sprocket
- ⑰ Dowel pin
- ⑱ Cylinder head gasket
- ⑲ Cam sprocket cover

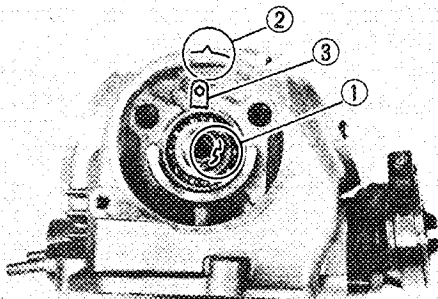




1. Install:
  - Rocker arms ①
  - Rocker arm shafts ②

**NOTE:**

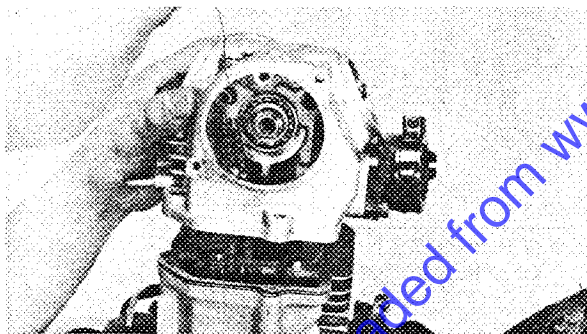
Rocker arm shaft end with inside thread, must face out of cylinder head otherwise rocker arm shaft cannot be removed.



2. Install:
  - Camshaft  
Loosen the valve adjusters on both valves before installing. Align the slot ① on the camshaft end with the timing mark ② on the cylinder head.
  - Stopper plate ③

**Bolt (Stopper Plate):**

7 Nm (0.7 m·kg, 5.1 ft·lb)



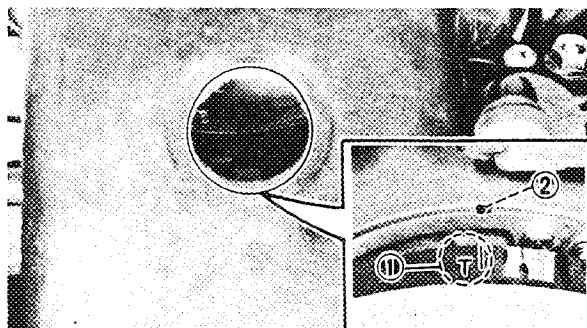
3. Install:
  - Cylinder head gasket (New)
  - Dowel pins
4. Install:
  - Cylinder head  
Route the cam chain through the cam chain journal in the cylinder head.
  - Washers
  - Bolts (Cylinder head)

5. Tighten:
  - Bolts (Cylinder head)  
Tighten the bolts in numerical order.

**Bolt (Cylinder Head):**

M8: 22 Nm (2.2 m·kg, 16 ft·lb)

M6: 10 Nm (1.0 m·kg, 7.2 ft·lb)

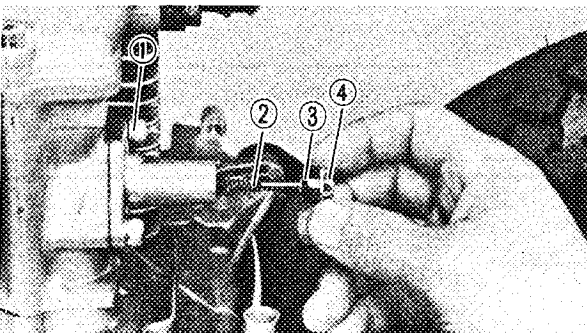
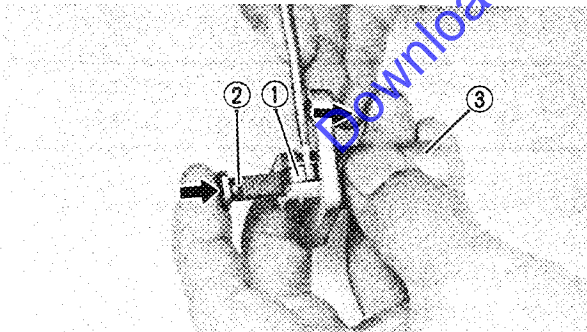
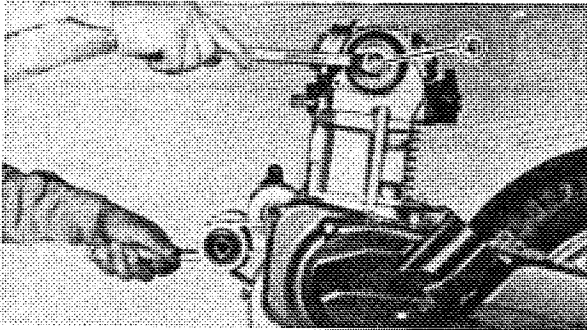
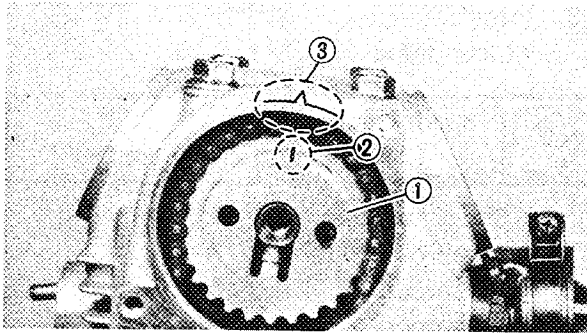


6. Align:
  - Flywheel "T" mark ①  
(with stationary pointer ②)

**NOTE:**


Be sure to keep cam chain taut while turning crankshaft.





7. Install:
  - Cam sprocket ①
  - Align the timing mark ② on the sprocket with the mark ③ on the cylinder head.

8. Tighten:
  - Bolts (Cam sprocket) ④


 **Bolt (Cam Sprocket):**  
28 Nm (2.8 m·kg, 20 ft·lb)

9. Adjust:
  - Valve clearance
  - Refer to "CHAPTER 2. VALVE CLEARANCE ADJUSTMENT" on page 2-5.

10. Install:
  - Cam sprocket cover


**NOTE:** \_\_\_\_\_  
Left lower screw is fasten together with the air shroud 1.

- Valve covers (Intake/Exhaust)


 **Screw (Cam Sprocket Cover):**  
12 Nm (1.2 m·kg, 8.7 ft·lb)  
**Valve Cover:**  
7 Nm (0.7 m·kg, 5.1 ft·lb)

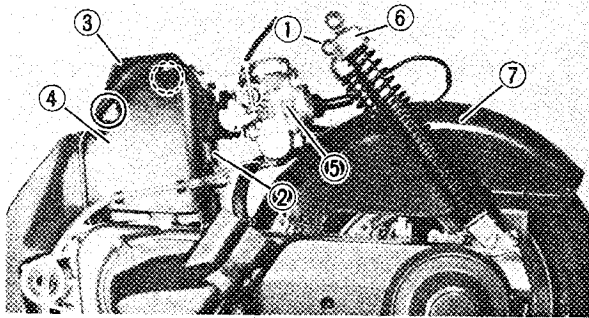
11. Release the cam chain tensioner oneway cam ① and insert the tension rod ② into the tensioner body. ③

12. Install:
  - Gasket
  - Tensioner body
  - Copper washer ①

 **Bolt (Tensioner Body):**  
10 Nm (1.0 m·kg, 7.2 ft·lb)

- Tension spring ②
- O-ring ③
- End plug ④

 **End Plug:**  
8 Nm (0.8 m·kg, 5.8 ft·lb)



13. Install:
  - Spark plug



**Spark Plug:**  
12.5 Nm (1.25 m·kg, 9.0 ft·lb)

- Shock absorber (Right) ①
- Air shroud 3 ②
- Air shroud 2 ③
- Air shroud 1 ④



**Screws (Air Shroud):**  
7 Nm (0.7 m·kg, 5.1 ft·lb)

- Carburetor ⑤
- Shock absorber (Left) ⑥
- Rear fender ⑦

ENGINE MOUNTING

1. Place:
  - Frame  
(on the engine assembly)
2. Tighten:
  - Engine mounting bolt



**Engine Mounting Bolt:**  
74 Nm (7.4 m·kg, 53 ft·lb)

- Rear shock absorber pivot bolts



**Rear Shock Absorber Pivot Bolt:**  
16 Nm (1.6 m·kg, 11 ft·lb)

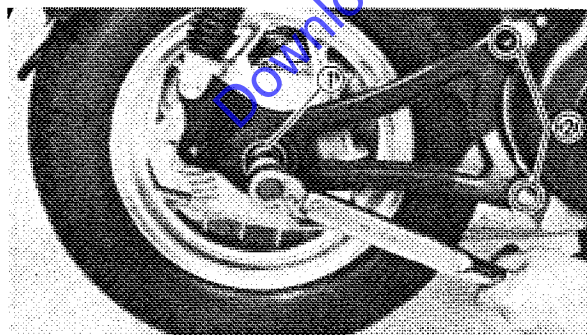
3. Install:
  - Rear brake cable
4. Tighten:
  - Rear wheel axle nut ①
  - Bolt (Rear arm) ②

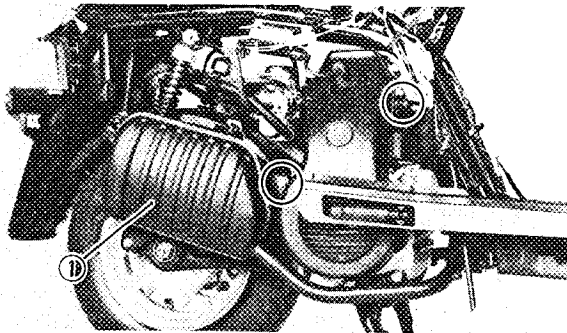
**CAUTION:**

This tightening sequence is important. So follow this steps.



**Axle Nut:**  
105 Nm (10.5 m·kg, 75 ft·lb)  
**Bolt (Rear Arm):**  
23 Nm (2.3 m·kg, 17 ft·lb)





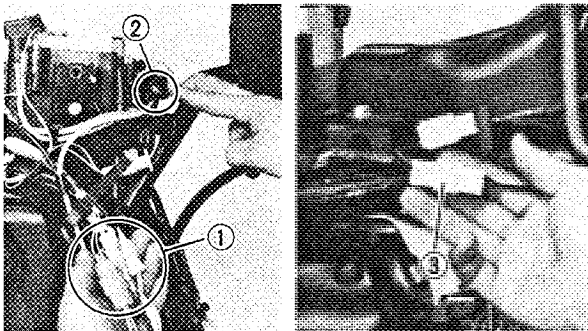
5. Install:
- Muffler assembly ①

**Exhaust:**

10 Nm (1.0 m·kg, 7.2 ft·lb)

**Body:**

16 Nm (1.6 m·kg, 11 ft·lb)



6. Connect:
- AC magneto lead ①
  - Starter motor lead (Red) ②
  - Starter choke unit lead ③
  - Fuel hose
  - Vacuum hose
  - Fuel cock
7. Connect:
- Throttle cable
- Adjust free play.

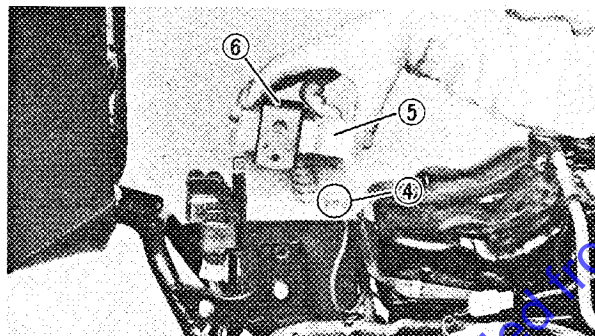
8. Install:
- Air cleaner box

9. Connect:
- Battery negative lead ④

10. Install:
- Cover ⑤
  - Bridge plate ⑥

**Bolt (Bridge Plate):**

8 Nm (0.8 m·kg, 58 ft·lb)



11. Fill:
- Engine oil
  - Final gear oil

**Engine Oil:**

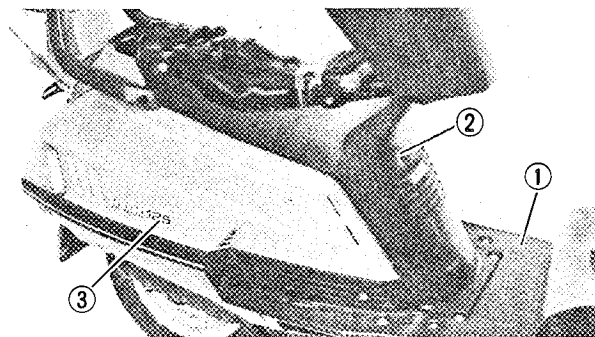
SAE 10W30 type SE motor oil

1.1 L (1.0 Imp qt, 1.2 US qt)

**Final Gear Oil:**

SAE 10W30 type SE motor oil

0.15 L (0.13 Imp qt, 0.16 US qt)



12. Install:
- Footrest board ①
  - Front cover ②
  - Side covers (Left/Right) ③

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# CHAPTER 4. CARBURETION

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AUTO CHOKE SYSTEM ..... 4-3  
REMOVAL ..... 4-6  
DISASSEMBLY ..... 4-6  
INSPECTION ..... 4-7  
FLOAT HEIGHT ADJUSTMENT..... 4-8  
ASSEMBLY AND INSTALLATION..... 4-8  
FUEL LEVEL ADJUSTMENT ..... 4-9

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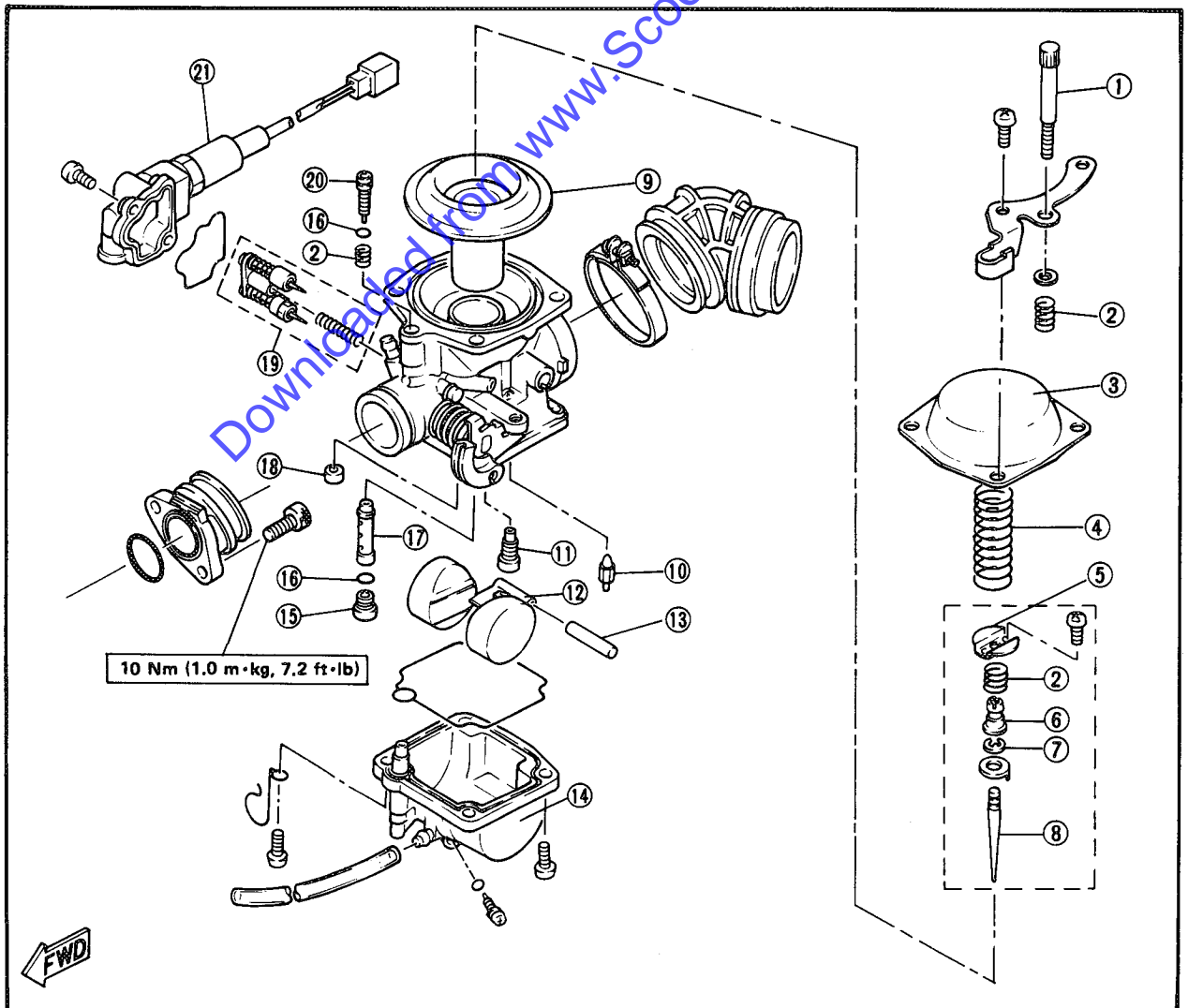
CARBURETION

CARBURETOR

- ① Throttle stop screw
- ② Spring
- ③ Vacuum chamber cover
- ④ Vacuum piston spring
- ⑤ Jet needle holder
- ⑥ Spring seat
- ⑦ Circrip
- ⑧ Jet needle
- ⑨ Vacuum piston
- ⑩ Needle valve
- ⑪ Pilot jet
- ⑫ Float
- ⑬ Float pin
- ⑭ Float chamber
- ⑮ Main jet
- ⑯ O-ring
- ⑰ Needle jet
- ⑱ Blind plug
- ⑲ Starter plunger assembly
- ⑳ Pilot screw
- ㉑ Starter choke unit

SPECIFICATIONS		
Main jet (M.J.)	#108	
Main air jet (M.A.J.)	#200	
Jet needle (J.N.)	4C10	
Needle jet (N.J.)	85	
Pilot jet (P.J.)	#34	
Pilot air jet (P.A.J.)	#140	
Fuel level (F.L.)	4.5 ~ 5.5 mm (0.18 ~ 0.22 in)	
Float height (F.H.)	26.5 ~ 27.5 mm (1.04 ~ 1.08 in)	
Pilot screw (P.S.)	1-3/4	
Valve seat (V.S.)	φ2.0	
Engine idle speed	1,350 ~ 1,450 r/min	

4

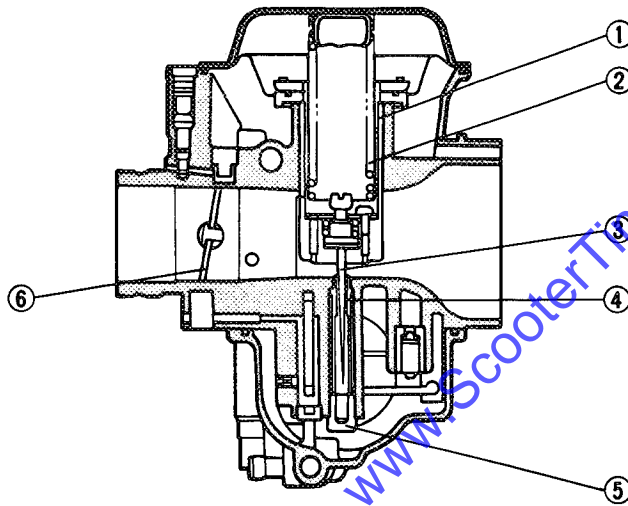




**SECTION VIEW**

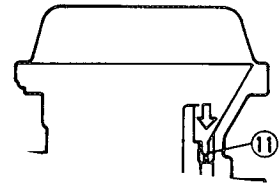
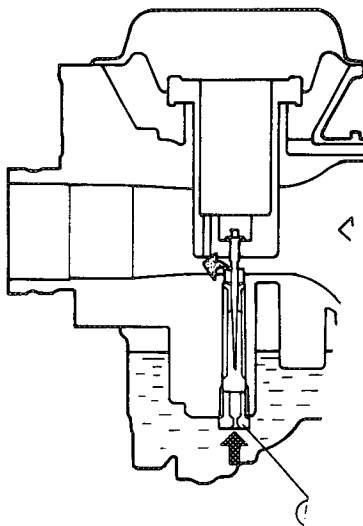
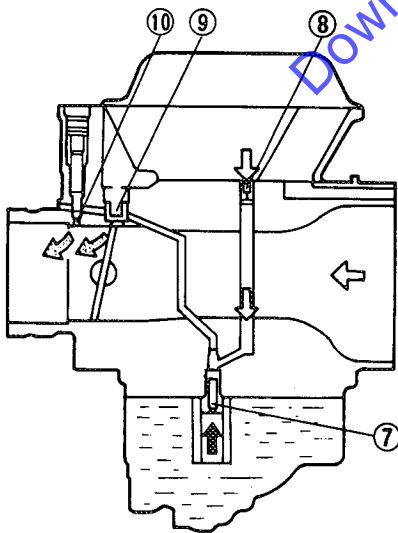
- ① Vacuum piston
- ② Vacuum piston spring
- ③ Jet needle
- ④ Needle jet
- ⑤ Main jet
- ⑥ Throttle valve
- ⑦ Pilot jet
- ⑧ Pilot air jet
- ⑨ Bypass holes
- ⑩ Pilot outlet
- ⑪ Main air jet

A	←	Air
B	←	Fuel
C	←	Mixture



**D SLOW METERING SYSTEM**

**E MAIN METERING SYSTEM**

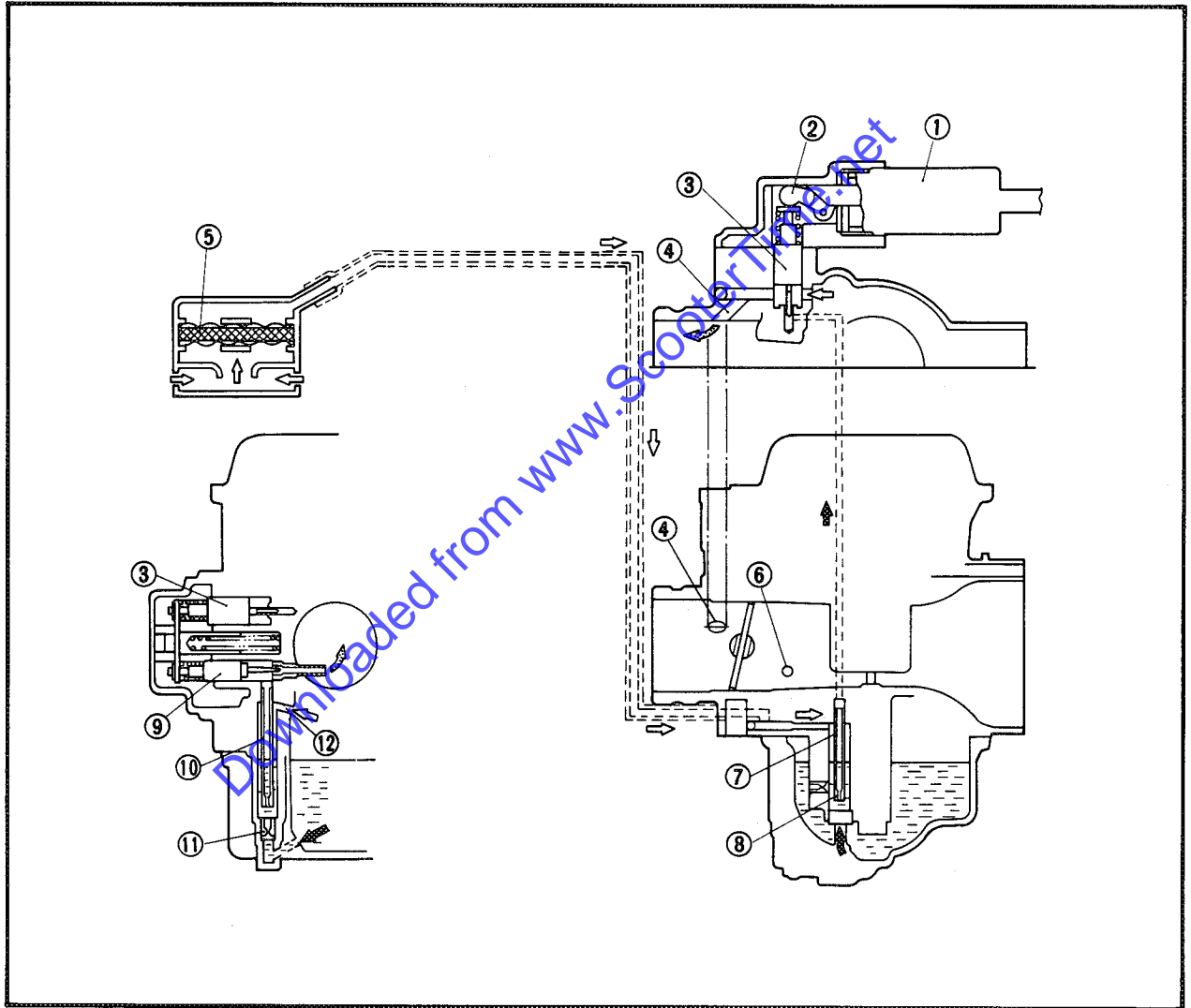




**AUTO CHOKE SYSTEM**

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

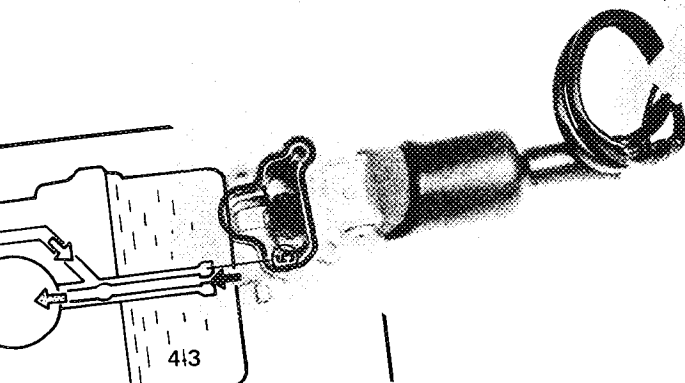
A	←	Air
B	←	Fuel
C	←	Mixture



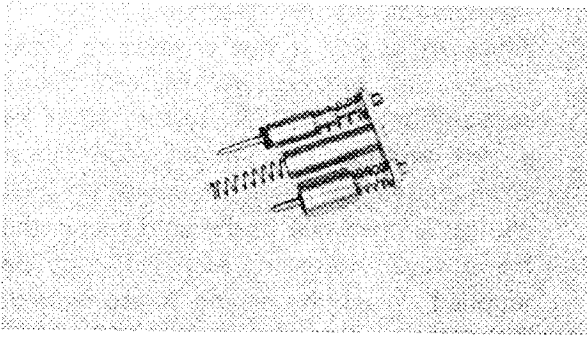
**Construction**

**1. Choke unit**

The choke unit which is composed of wax and thermostat, controls the plunger assembly after the engine is started. Heat generated in the thermostat due to an electric current flow causes the wax to expand and push the cam which controls the plunger assembly.

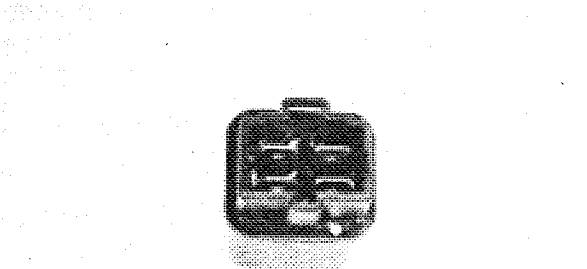






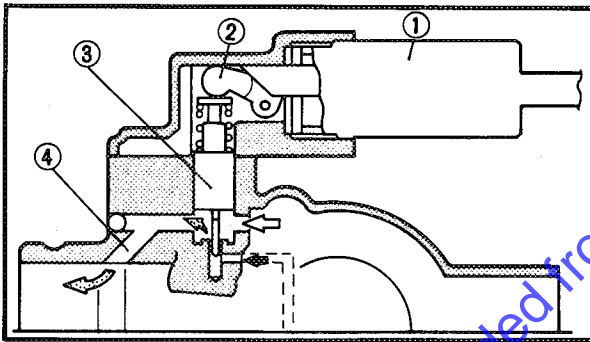
2. Plunger assembly

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



3. Choke relay

The choke relay provides electric current from the generator to the thermostat. When the engine rpm reaches 600 rpm, the choke relay is activated.

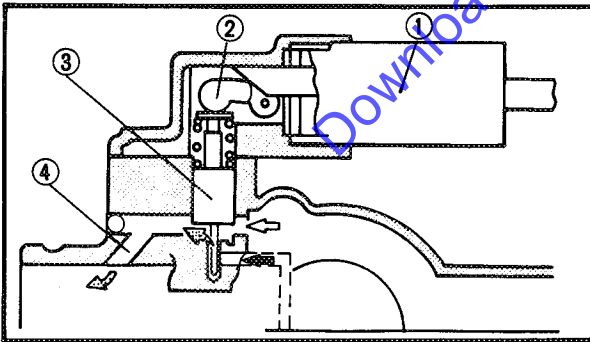


Operation

1. With a cold engine

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

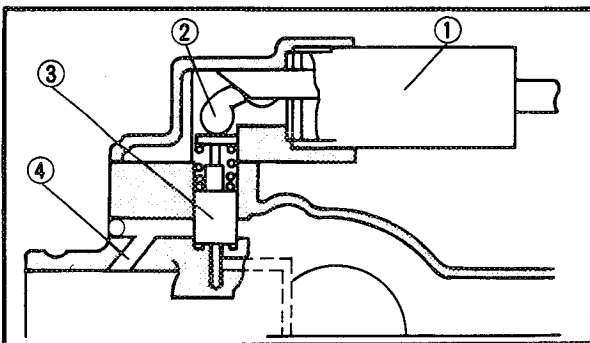
- ① Choke unit
- ② Cam
- ③ Starter plunger
- ④ Starter outlet



2. With a slightly warm engine

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

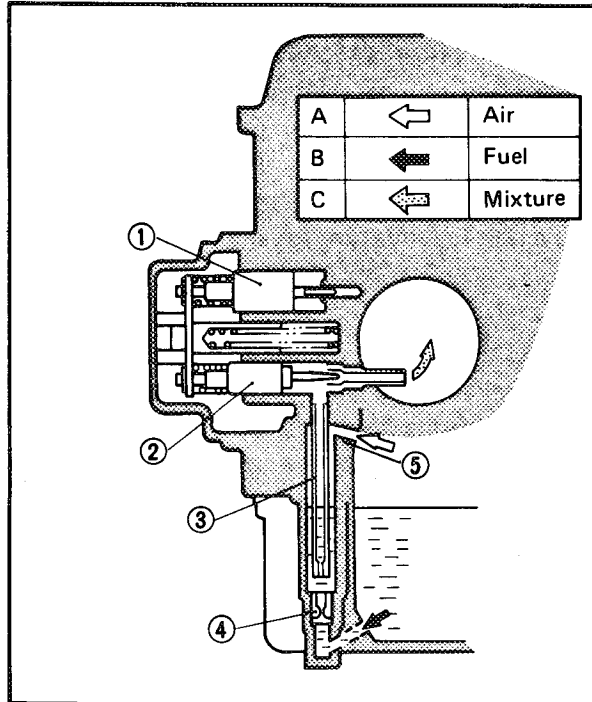
- ① Choke unit
- ② Cam
- ③ Starter plunger
- ④ Starter outlet



3. With a warm engine

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

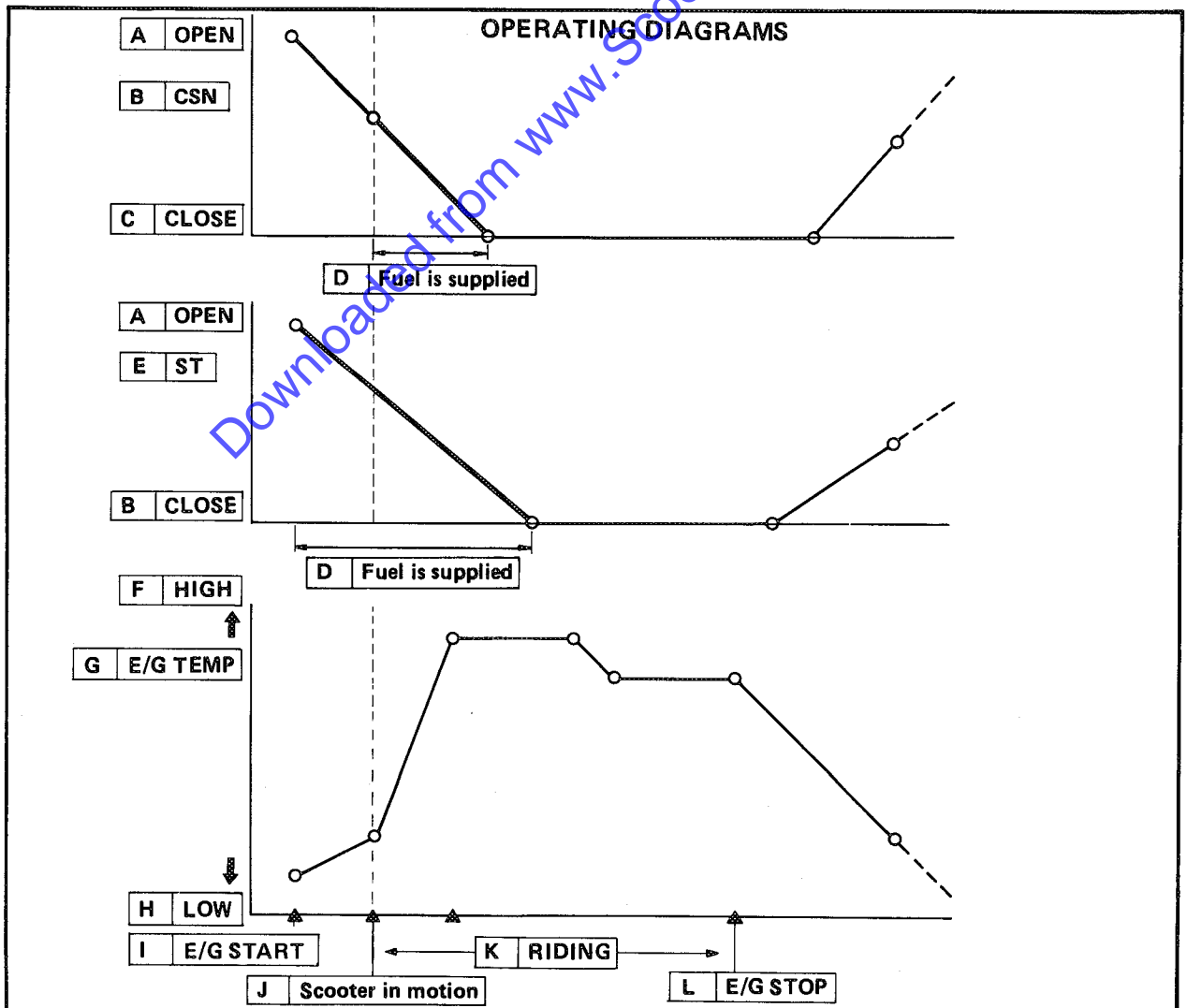
- ① Choke unit
- ② Cam
- ③ Starter plunger
- ④ Starter outlet

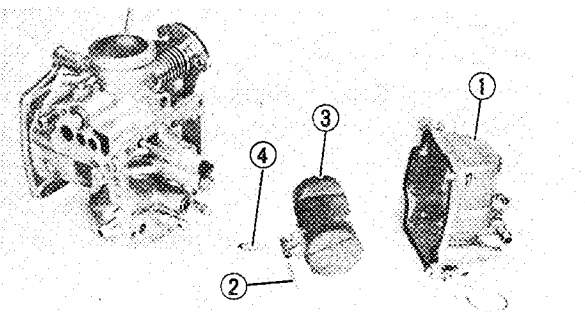
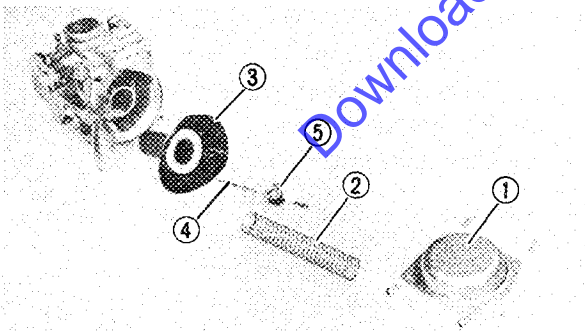
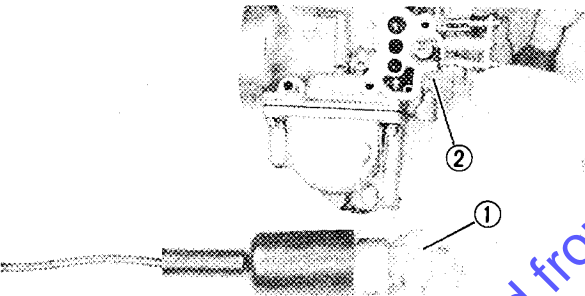
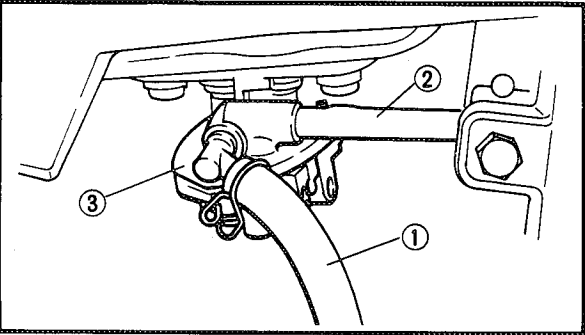
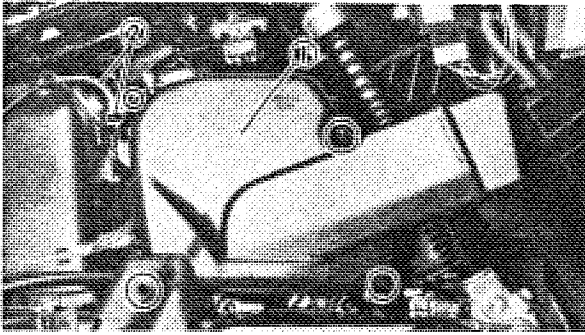


4. Accelerating with a cold engine  
 When an engine is not warmed-up sufficiently, the mixture will be lean during acceleration. The CSN system provides a rich mixture for smooth acceleration when the engine is cold, because the CSN plunger is open due to the cold wax in the thermostat. However, fuel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

- ① Starter plunger
- ② CSN plunger
- ③ CS nozzle
- ④ CS Jet
- ⑤ CS Air jet

4





**REMOVAL**

1. Remove:
  - Side covers
  - Air cleaner box ①
2. Disconnect:
  - Throttle cable ②
3. Disconnect:
  - Fuel hose ①
  - Starter choke unit lead
  - Vacuum hose ②
  - Fuel cock ③
4. Loosen:
  - Carburetor joint screw
5. Remove:
  - Carburetor

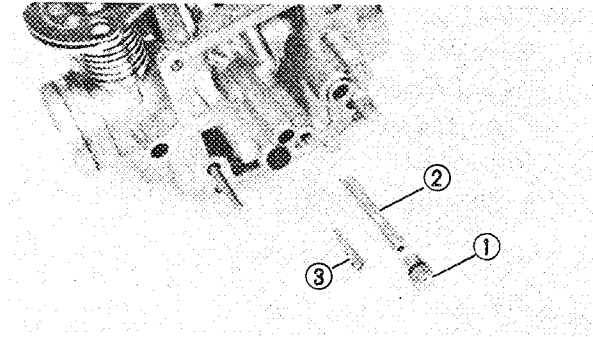
**DISASSEMBLY**

1. Remove:
  - Over flow hose
  - Air vent hose
  - Starter choke unit assembly ①
  - Starter plunger assembly ②
2. Remove:
  - Vacuum chamber cover ①
  - Spring ②
  - Vacuum piston ③
  - Jet needle ④

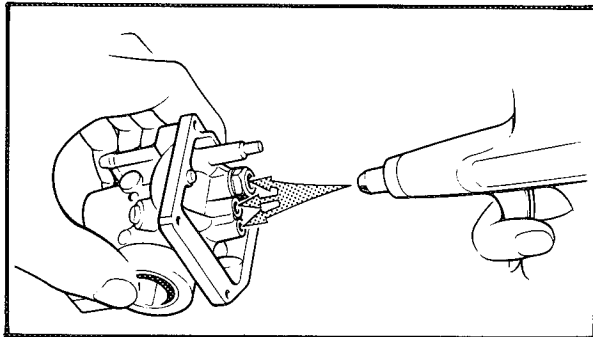
**NOTE:**

When removing the jet needle be sure not to loose the small spring ⑤ that may fall out. This spring holds the jet needle.

3. Remove:
  - Float chamber ①
  - Float pin ②
  - Float ③
  - Float valve ④

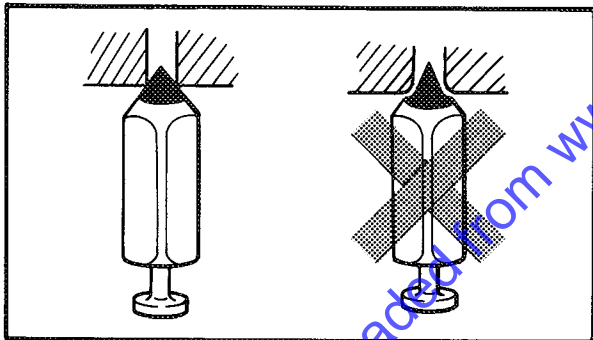


4. Remove:
  - Main jet ①
  - Needle jet ②
  - Pilot jet ③



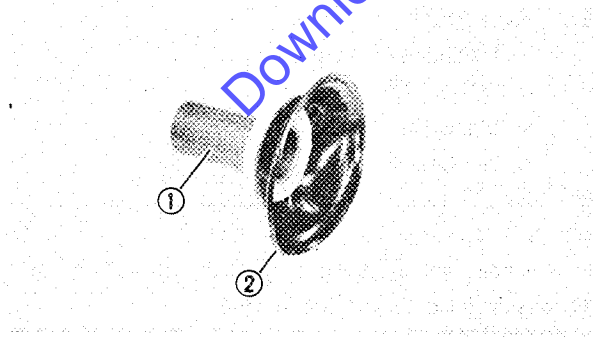
**INSPECITON**

1. Inspect:
  - Carburetor body
  - Fuel and air passages  
Contamination → Wash in petroleum-based solvent.
2. Blow out all passages and jets with compressed air.

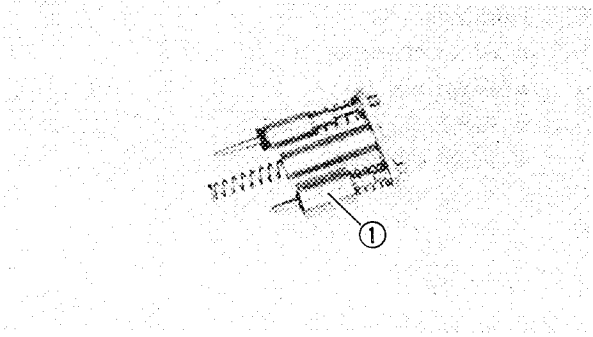


3. Inspect:
  - Float  
Damage/Torn → Replace.
  - Needle valve and valve seat  
Wear → Replace as a set.

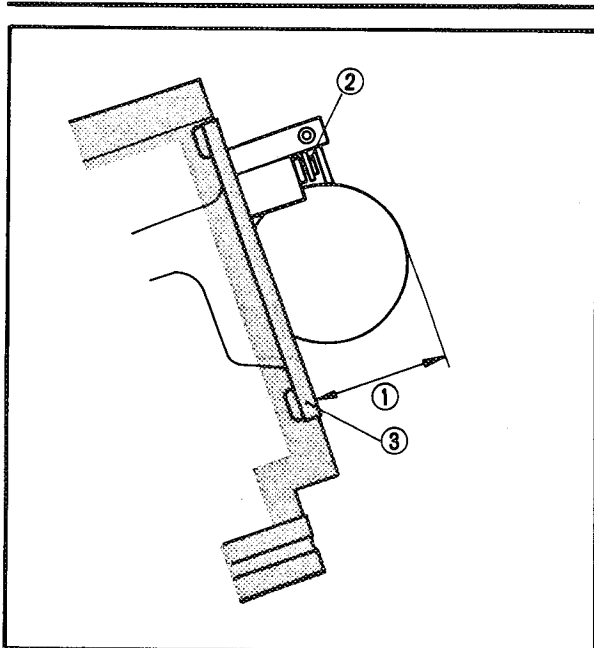
4



4. Inspect:
  - Vacuum piston ①  
Scratches → Replace as a set.
  - Rubber diaphragm ②  
Damage/Torn → Replace as a set.



5. Inspect:
  - Starter plunger ①  
Damage/Wear → Replace.
6. Install the starter plunger into the carburetor body and check for smooth movement with finger.  
Not smooth → Replace plunger assembly.



**FLOAT HEIGHT ADJUSTMENT**

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

**Float height measurement steps:**

- Hold the carburetor in an upside down position.
- Incline the carburetor at 60 ~ 70° (so that the end of the float valve ② does not hand down as a result of float weight).
- Measure the distance from the mating surface ③ of the float chamber (gasket removed) to the top of the float.

**NOTE:**

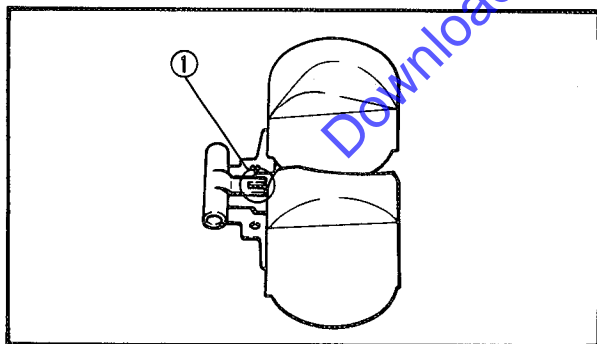
The float should be just resting on, but not depressing, the spring loaded inlet needle.



**Float Height:**

26.5 ~ 27.5 mm (1.04 ~ 1.08 in)

- If the fuel height is incorrect, adjust the fuel height.



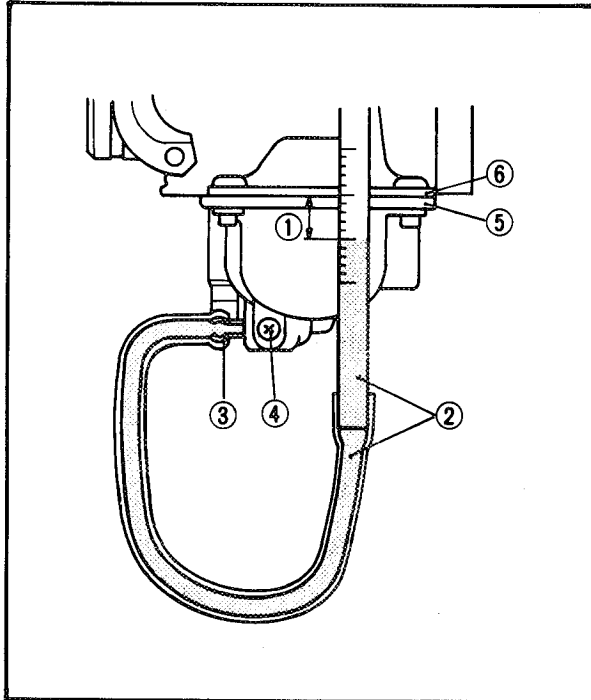
2. Adjust:
  - Float height
  - By the following steps.

**Float height adjustment step:**

- Remove the float.
- Adjust float height by bending the float tang ① slightly.
- Recheck the fuel height.

**ASSEMBLY AND INSTALLATION**

1. Reverse disassembly and removal steps.



## FUEL LEVEL ADJUSTMENT

### NOTE:

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

#### 1. Measure:

- Fuel level ①
- Out of specification → Adjust.

#### Measurement steps:

- Place the scooter on a level surface.
- Use a garage jack under the engine to ensure that the carburetor is positioned vertically.
- Connect the Fuel Level Gauge ② (YM-01312) to the drain nozzle ③.
- Loosen the drain screw ④ and start the engine.
- Measure the fuel level.



#### Fuel Level:

Below the carburetor body  
4.5 ~ 5.5 mm (0.18 ~ 0.22 in)

- If the fuel level is incorrect, adjust the fuel level.

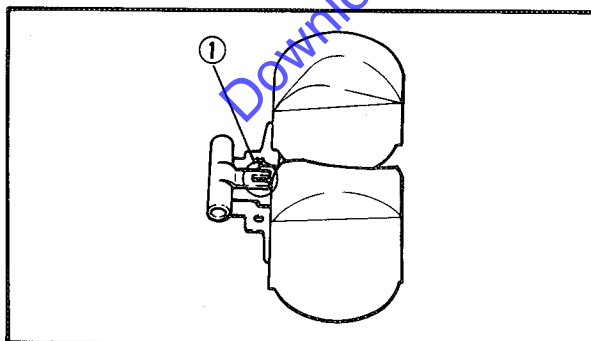
- ⑤ Float chamber
- ⑥ Carburetor body

#### 2. Adjust:

- Fuel level
- By the following steps.

#### Adjustment steps:

- Remove the carburetor.
- Adjust float level by bending the float tang ① slightly.
- Recheck the fuel level.



**CHAPTER 5.  
CHASSIS**

**FRONT WHEEL** ..... 5-1  
    **REMOVAL** ..... 5-2  
    **INSPECTION** ..... 5-2  
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**REAR WHEEL** ..... 5-5  
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    **INSTALLATION** ..... 5-7

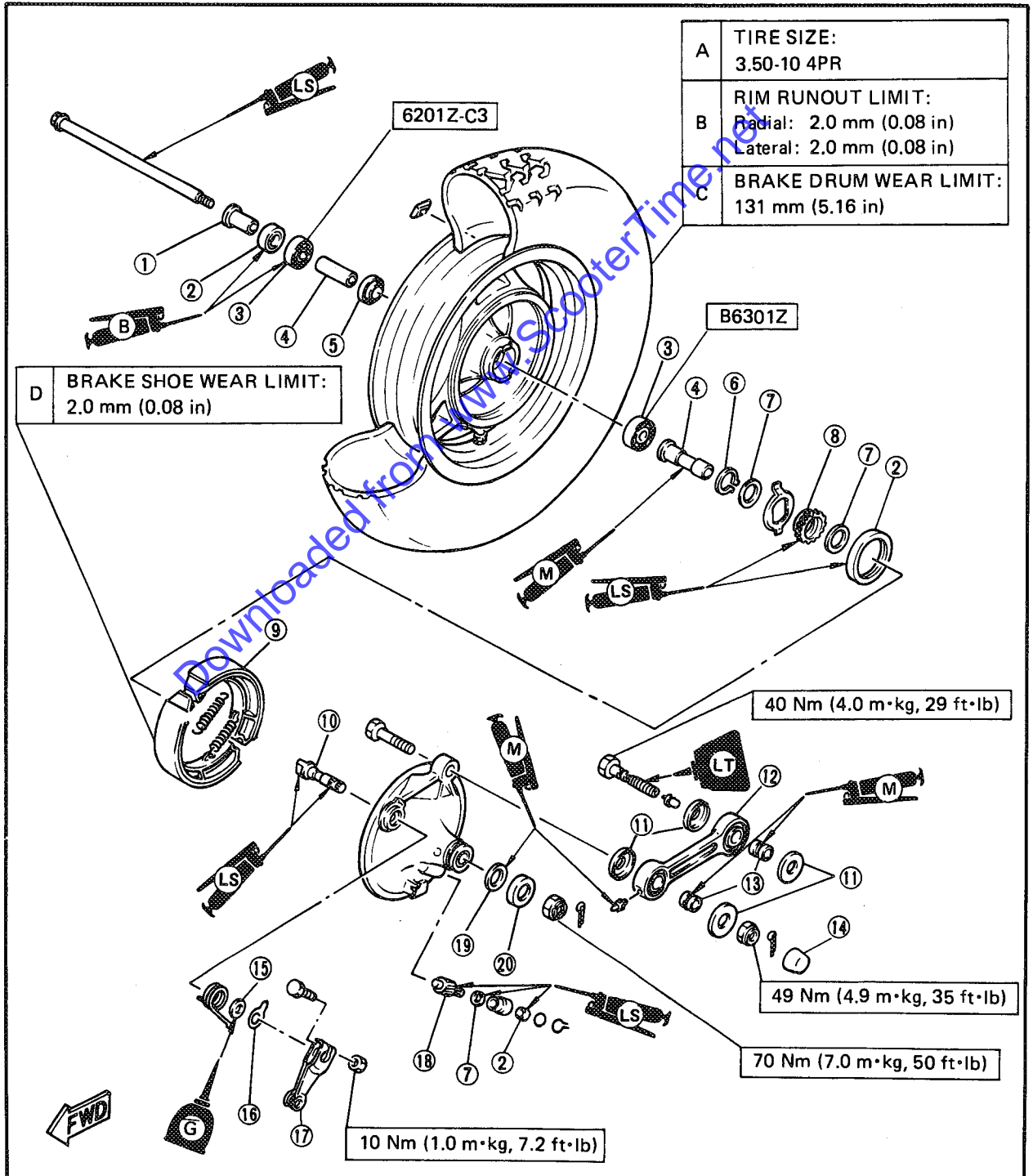
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    **REMOVAL** ..... 5-9  
    **INSPECTION** ..... 5-9  
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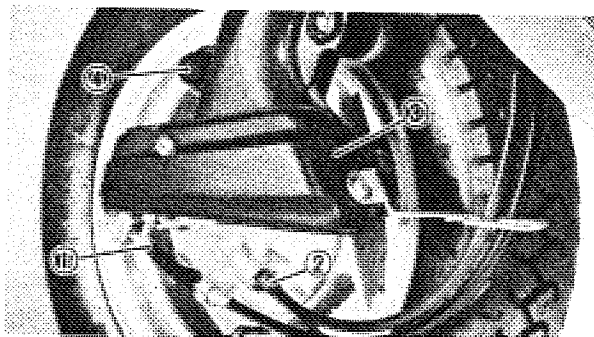
**CHASSIS**

**FRONT WHEEL**

- ① Collar
- ② Oil seal
- ③ Bearing
- ④ Spacer
- ⑤ Spacer frange
- ⑥ Circlip
- ⑦ Washer
- ⑧ Speedometer drive gear
- ⑨ Brake shoe
- ⑩ Brake camshaft
- ⑪ Seal cover
- ⑫ Tension bar
- ⑬ Collar
- ⑭ Rubber cap
- ⑮ Felt
- ⑯ Wear indicator
- ⑰ Brake cam lever
- ⑱ Meter gear
- ⑲ O-ring
- ⑳ Washer

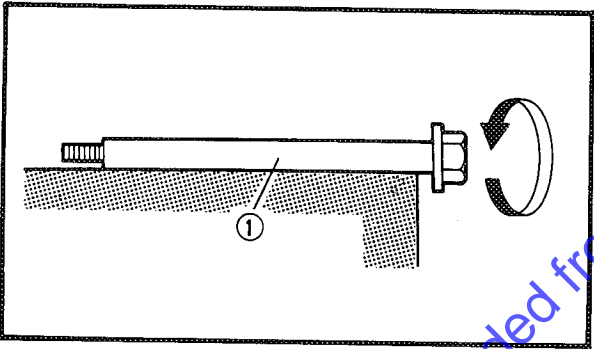
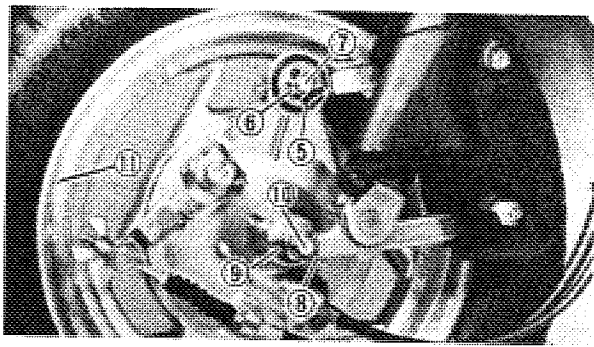






**REMOVAL**

1. Place the scooter on its centerstand.
2. Disconnect:
  - Brake cable ①
  - Speedometer cable ②
3. Remove:
  - Front suspension covers ③
  - Rubber cap ④
  - Cotter pin ⑤
  - Nut (Tension bar) ⑥
  - Bolt ⑦
  - Cotter pin (Front axle) ⑧
  - Axle nut ⑨
  - Front axle ⑩
  - Front wheel ⑪

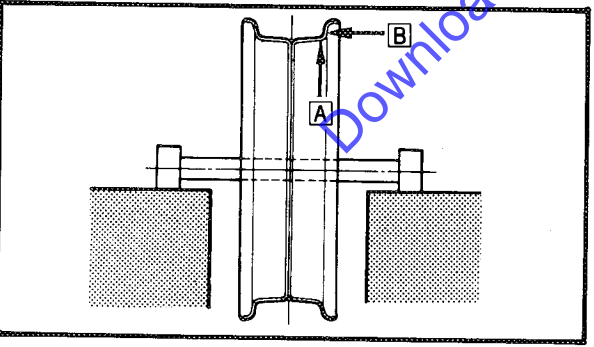


**INSPECTION**


1. Inspect:
  - Front axle ①  
Roll the axle on a Flat Surface.  
Bends → Replace.

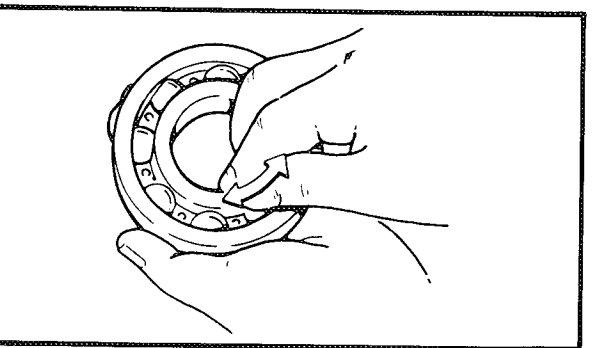
**WARNING:**

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

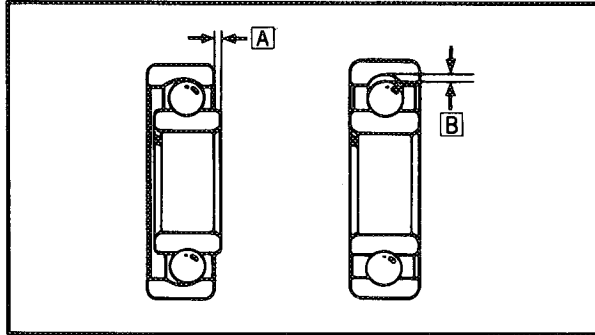


2. Inspect:
  - Wheel  
Cracks/Bends/Warpage → Replace.
3. Measure:
  - Wheel runout  
Out of specification → Replace.

	<b>Rim Runout Limits:</b>
	Radial <b>A</b> : 2.0 mm (0.08 in)
	Lateral <b>B</b> : 2.0 mm (0.08 in)



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



**Wheel bearing replacement steps:**

- Clean the outside of the wheel hub.
- Drive out the bearing.

**A** Lateral free play

**B** Radial free play

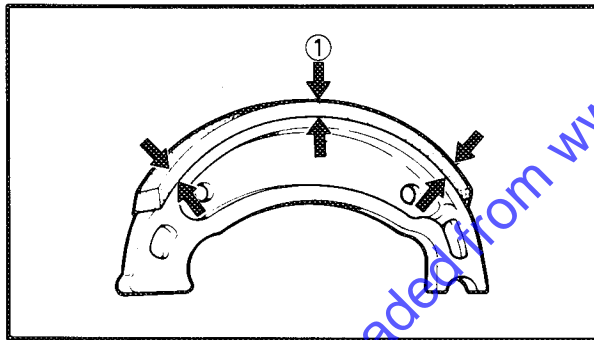
**WARNING:**

Eye protection is recommended when using striking tools.

- Install the new bearing by reversing the previous steps.

**CAUTION:**

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



5



5. Inspect:

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

6. Measure:

- Brake shoe (Thickness) ①
  - Out of specification → Replace.



**Brake Shoe Thickness:**

Standard: 4.0 mm (0.16 in)

Limit: 2.0 mm (0.08 in)

7. Inspect:

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

8. Measure:

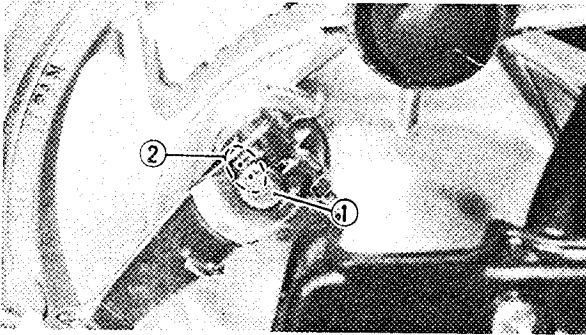
- Brake drum inside diameter
  - Out of specification → Replace.



**Brake Drum Inside Diameter:**

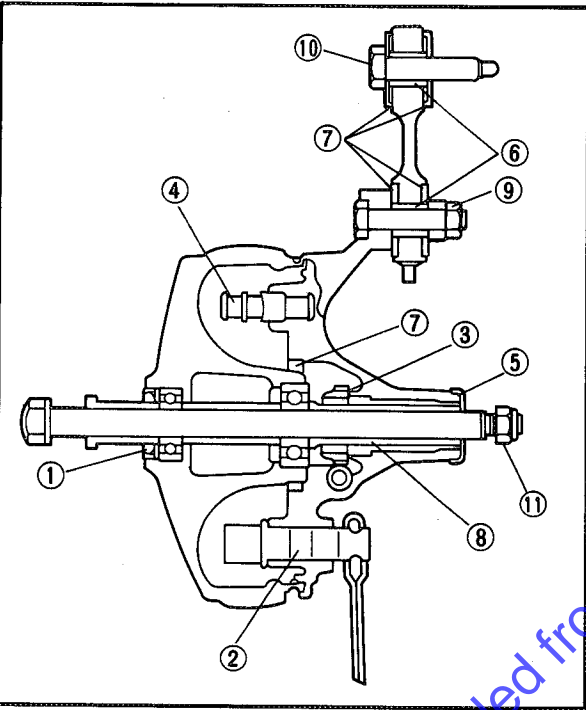
Standard: 130 mm (5.12 in)

Limit: 131 mm (5.16 in)



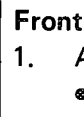



9. Inspect:
- Camshaft ①
  - Wear → Replace camshaft.
  - Condition OK → Grease camshaft.

**NOTE:** \_\_\_\_\_  
 Place alignment marks ② on the cam lever and camshaft when assembly.  
 \_\_\_\_\_



**INSTALLATION**

1. Install
- Front wheel
  - Reverse removal procedure.

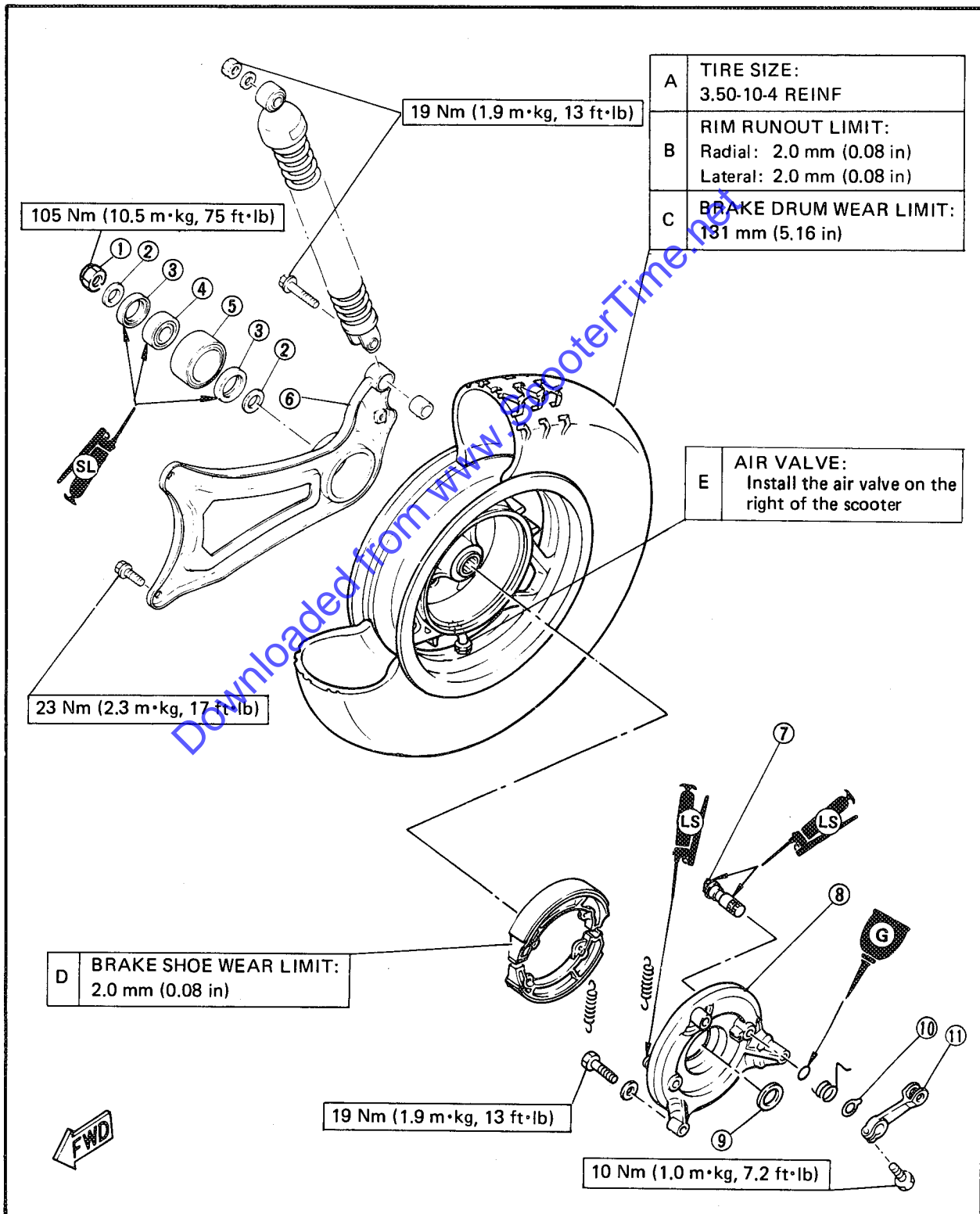
	<p><b>Front wheel installation points:</b></p> <p>1. Apply grease to the following parts:</p> <ul style="list-style-type: none"> <li>• Oil seals ① (lips)</li> <li>• Camshaft ② (shaft and cam)</li> <li>• Speedometer drive gear ③</li> <li>• Pivot shaft ④</li> </ul>
	<p><b>Lightweight Lithium-soap Base Grease</b></p> <ul style="list-style-type: none"> <li>• O-ring ⑤</li> <li>• Collars ⑥ (insides and outside)</li> <li>• Seal covers ⑦ (inside)</li> <li>• Collar ⑧ (inside and outside)</li> </ul>
	<p><b>Molybdenum Disulfide Grease</b></p> <p>2. Tighten:</p> <ul style="list-style-type: none"> <li>• Nut (Tension bar) ⑨</li> <li>• Bolt (Tension bar) ⑩</li> <li>• Axle nut ⑪</li> </ul>
	<p><b>Nut (Tension Bar) ⑨ :</b>                  49 Nm (4.9 m·kg, 35 ft·lb)</p> <p><b>Bolt (Tension Bar) ⑩ :</b>                  40 Nm (4.0 m·kg, 29 ft·lb)</p> <p><b>Axle Nut ⑪ :</b>                  70 Nm (7.0 m·kg, 50 ft·lb)</p>

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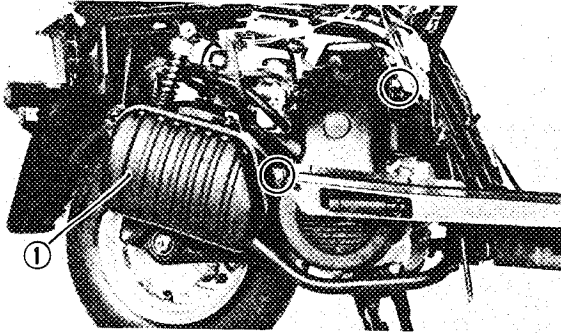


REAR WHEEL

- ① Axle nut
- ② Washer
- ③ Oil seal
- ④ Bearing
- ⑤ Bushing
- ⑥ Rear arm
- ⑦ Camshaft
- ⑧ Brake shoe plate
- ⑨ Washer
- ⑩ Wear indicator
- ⑪ Camshaft lever

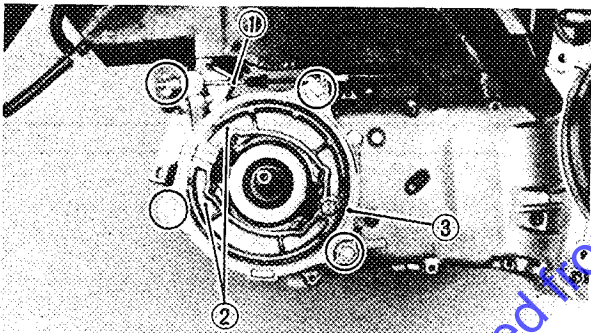
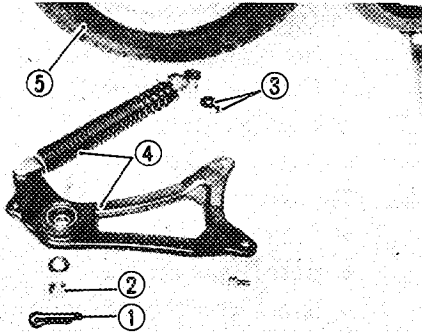


5



**REMOVAL**

1. Remove:
  - Side cover (Right)
  - Front cover
  - Muffler ①
  
2. Remove:
  - Cotter pin ①
  - Axle nut ②  
(by applying the rear brake)
  - Shock absorber pivot nut (With washer) ③
  - Shock absorber/Rear arm ④
  - Rear wheel ⑤



**BRAKE DISASSEMBLY**

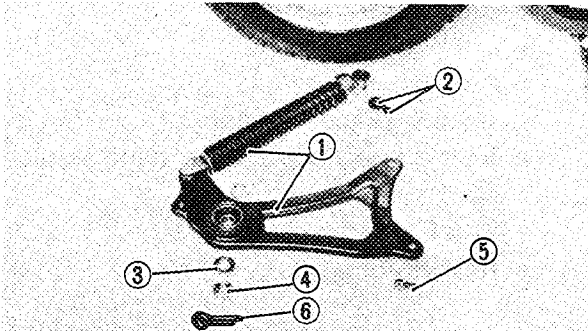
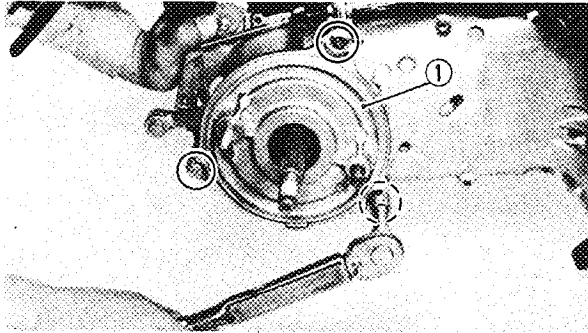
1. Disconnect:
  - Rear brake cable ①
2. Remove:
  - Brake shoes ②
  - Brake shoe plate ③

**INSPECTION**

1. Inspect:
  - Front axle
  - Wheel
  - Wheel bearings
  - Brake shoes
  - Brake drum (Inner surface)
  - Camshaft

Refer to "FRONT WHEEL-INSPECTION" section.
2. Measure:
  - Wheel runout
  - Brake shoe (Thickness)
  - Brake drum inside diameter

Refer to "FRONT WHEEL-INSPECTION" section.



## INSTALLATION

1. Install:
  - Brake shoe plate ①



**Bolt (Brake Shoe Plate):**  
19 Nm (1.9 m·kg, 13 ft·lb)

- Brake shoes
- Rear wheel

2. Install:
  - Rear arm/Shock absorber ①
  - Shock absorber pivot nut ②
  - Washer ③
  - Axle nut ④
3. Tighten:
  - Axle nut ④
  - Bolt (Rear arm) ⑤
  - Shock absorber pivot nut ②

### CAUTION:

This tightening sequence is important. So follow this steps.



**Axle Nut:**  
105 Nm (10.5 m·kg, 75 ft·lb)

**Rear Arm:**  
23 Nm (2.3 m·kg, 17 ft·lb)

**Shock Absorber:**  
16 Nm (1.6 m·kg, 11 ft·lb)

4. Install:
  - Cotter pin (New) ⑥
5. Install:
  - Muffler



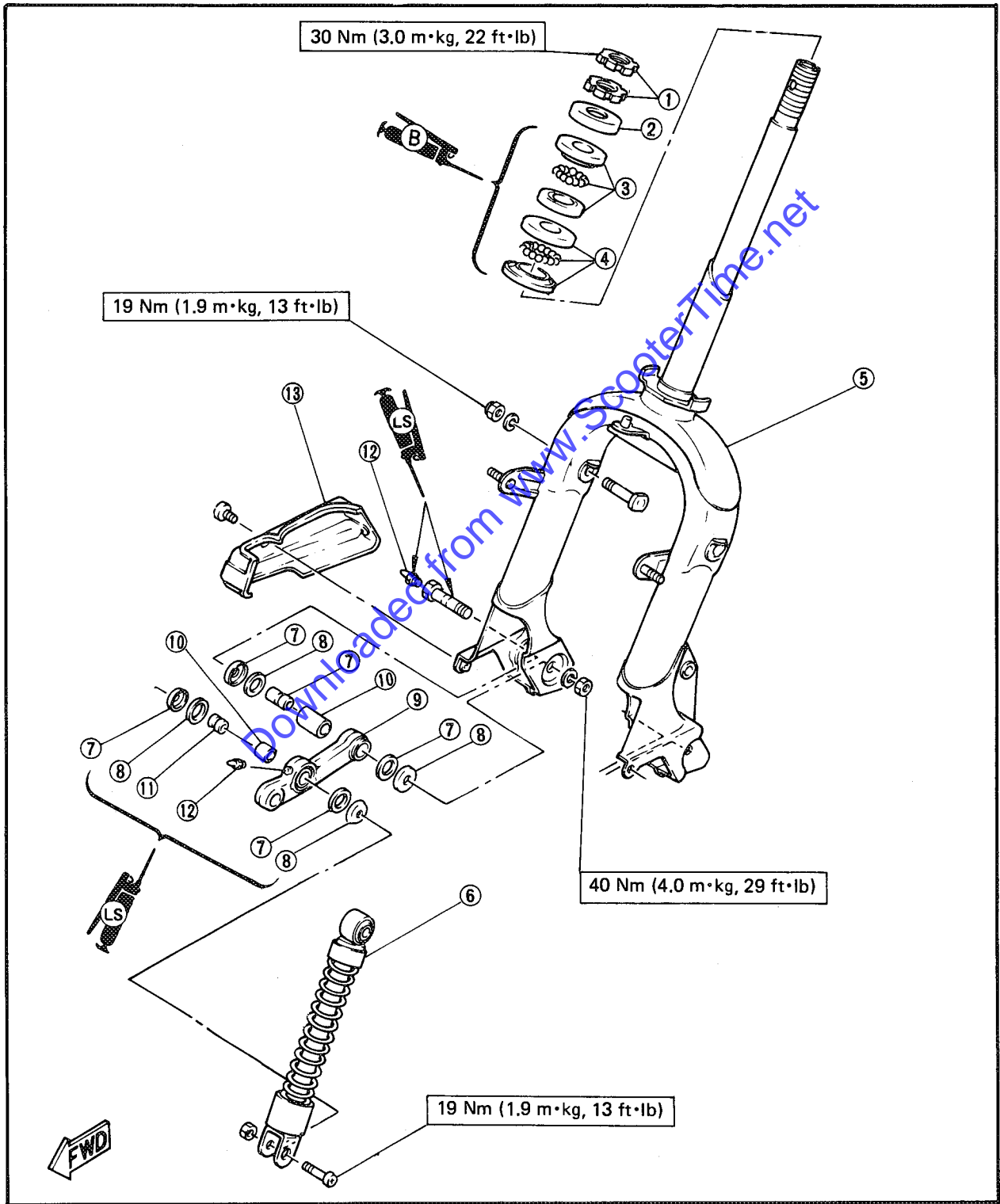
**Exhaust:**  
10 Nm (1.0 m·kg, 7.2 ft·lb)

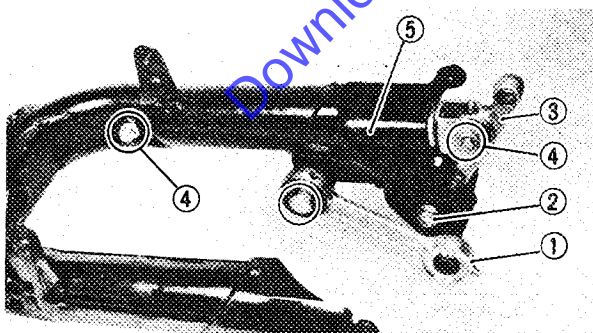
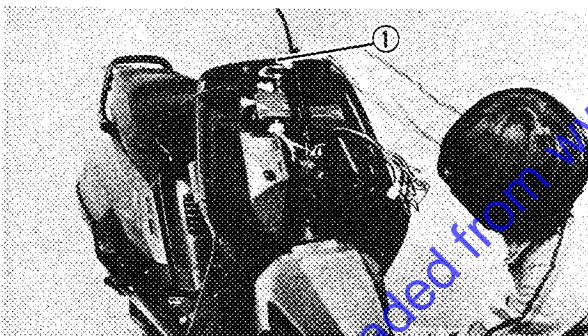
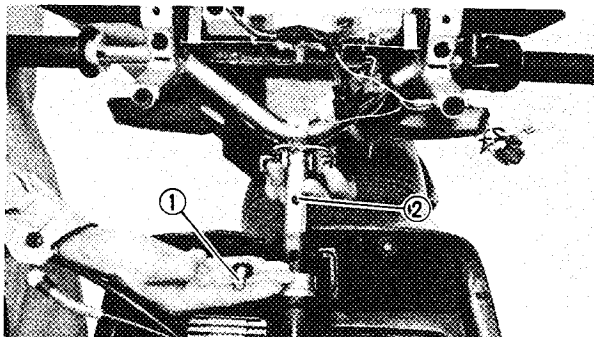
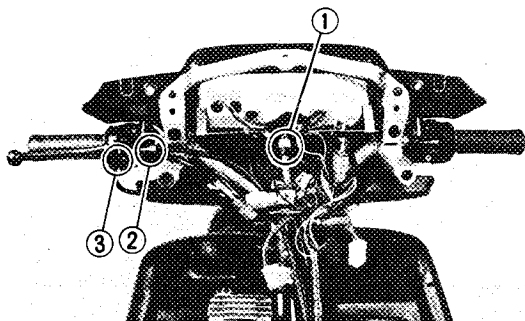
**Body:**  
16 Nm (1.6 m·kg, 11 ft·lb)

- Front cover
- Side cover (Right)

FRONT FORKS AND STEERING HEAD

- ① Ring nut
- ② Bearing cover
- ③ Upper bearing
- ④ Lower bearing
- ⑤ Fork cover
- ⑥ Shock absorber
- ⑦ Thrust cover
- ⑧ Oil seal
- ⑨ Arm
- ⑩ Bushing
- ⑪ Collar
- ⑫ Grease nipple
- ⑬ Arm cover





## REMOVAL

1. Remove:
  - Front wheel
  - Leg shield (Front)
  - Handlebar cover (Front)
2. Disconnect:
  - Electrical leads
  - Speedometer cable ①
  - Front brake cable ②
  - Throttle cable ③
3. Remove:
  - Bolt (Handlebar mounting) ①
  - Handlebar assembly ②
4. Remove:
  - Ring nuts (Upper and lower) ①
 Use the Ring Nut Wrench (YU-33975).

## NOTE:

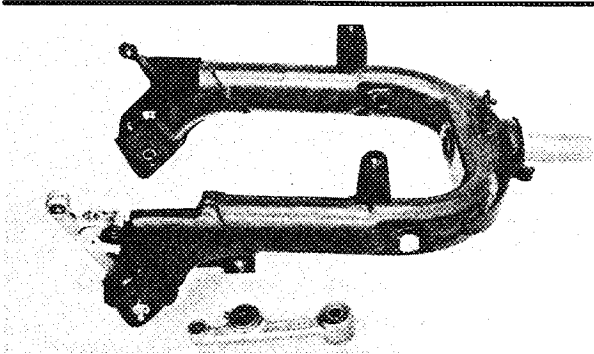
Support the forks not to drop the ball bearings.

- Front fork cover
  - Front fender (Front)
  - Front fender (Rear)
5. Remove:
    - Tension bar ①
    - Bolts (Arm) ②
    - Arms ③
    - Bolts (Shock absorber) ④
    - Shock absorbers ⑤

## INSPECTION

1. Inspect:
  - Shock absorber assembly
  - Leakage/Damage → Replace.

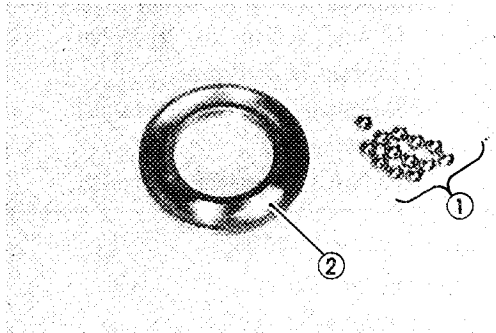




2. Inspect:
  - Fork cover
  - Arms
  - Cracks/Bends → Replace.

**WARNING:**

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



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

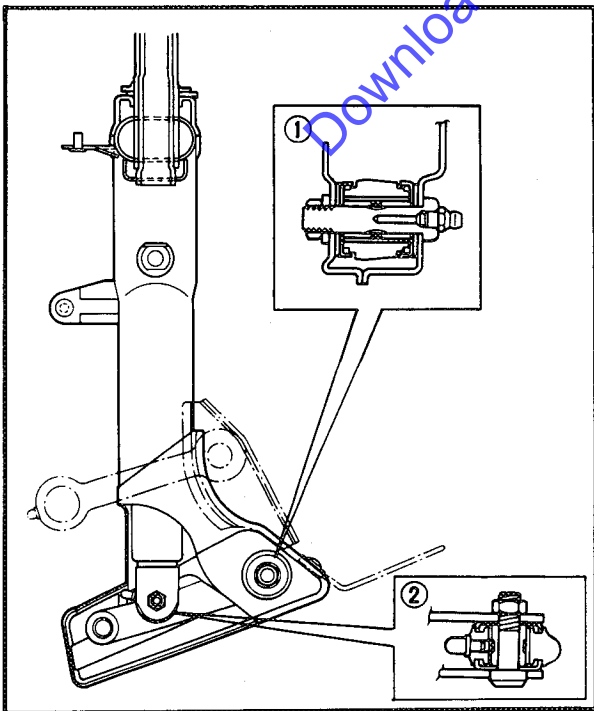
**NOTE:**

Always replace bearing and race as a set.

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

**CAUTION:**

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



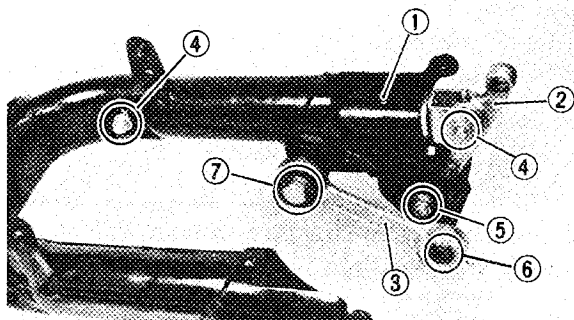
**ASSEMBLY**

1. Apply:
  - Arm pivot ①
  - Shock absorber lower mount ②




**Lightweight Lithium-soap  
Base Grease**

- Tension bar and front wheel  
Refer to "FRONT WHEEL-WHEEL  
INSTALLATION" section.



2. Install:
  - Shock absorbers ①
  - (into the fork cover)
  - Arms ②
  - Tension bar ③



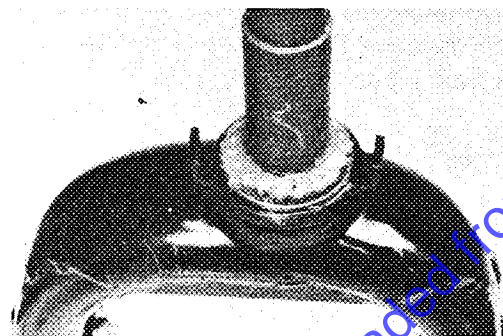
**Shock Absorber ④ :**  
19 Nm (1.9 m·kg, 13 ft·lb)

**Arm Pivot ⑤ :**  
40 Nm (4.0 m·kg, 29 ft·lb)


**Tensionbar-Brake Plate ⑥ :**  
49 Nm (4.9 m·kg, 35 ft·lb)

**Tensionbar-Fork Cover ⑦ :**  
40 Nm (4.0 m·kg, 29 ft·lb)

**Axle Nut:**  
70 Nm (7.0 m·kg, 50 ft·lb)



3. Install:
  - Front fender (Rear)
  - Front fender (Front)
4. Grease the races and put the balls in it.



**Wheel Bearing Grease:**

**NOTE:** \_\_\_\_\_  
Make sure the balls are of the same size and the quantity is correct.

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

5. Install:
  - Bearing Race (Upper)
  - Bearing cover
  - Front fork cover
  - Ring nuts (Lower and upper)

**NOTE:** \_\_\_\_\_  
The tapered side of ring nut must face downward.

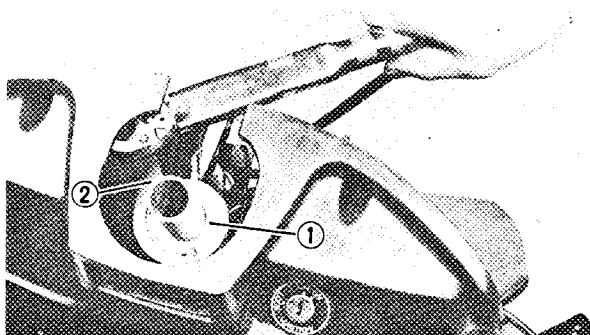
6. Tighten:
  - Ring nuts (Lower and upper)

By the following tightening steps.

**Ring nuts tightening steps:**

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

**NOTE:** \_\_\_\_\_  
Set the Torque Wrench to the Ring Nut Wrench so that they form a right angle.



**WARNING:**

Do not over-tightening.



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

- Loosen the ring nut (lower) 1/4 turn.
- Hold the ring nut (lower), and tighten the ring nut (upper) using the Ring Nut Wrench.

**NOTE:**

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

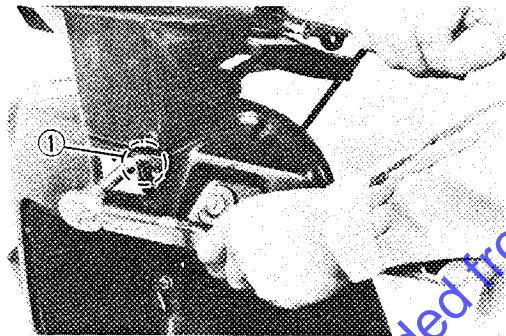
**WARNING:**

Do not over-tightening.



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

- Check the smooth operation of the steering shaft, and readjust it as required.



7. Install:
  - Handlebar assembly
8. Tighten:
  - Bolt (Handlebar mounting) ①



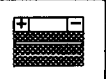
**Bolt (Handlebar Mounting):**  
34 Nm (3.4 m·kg, 24 ft·lb)

**NOTE:**

Take care for handlebar-front wheel alignment.

9. Continue Assemble; Reverse the disassembly procedures and note the following points.
  - Check for smooth throttle operation and quick spring return. Make certain that the housing does not rotate on the handlebar.
  - Before installing the leg shield, check for electrical component operations.
  - Adjust the front brake for free play and operation. Refer to "CHAPTER 2. FRONT BRAKE ADJUSTMENT" section.

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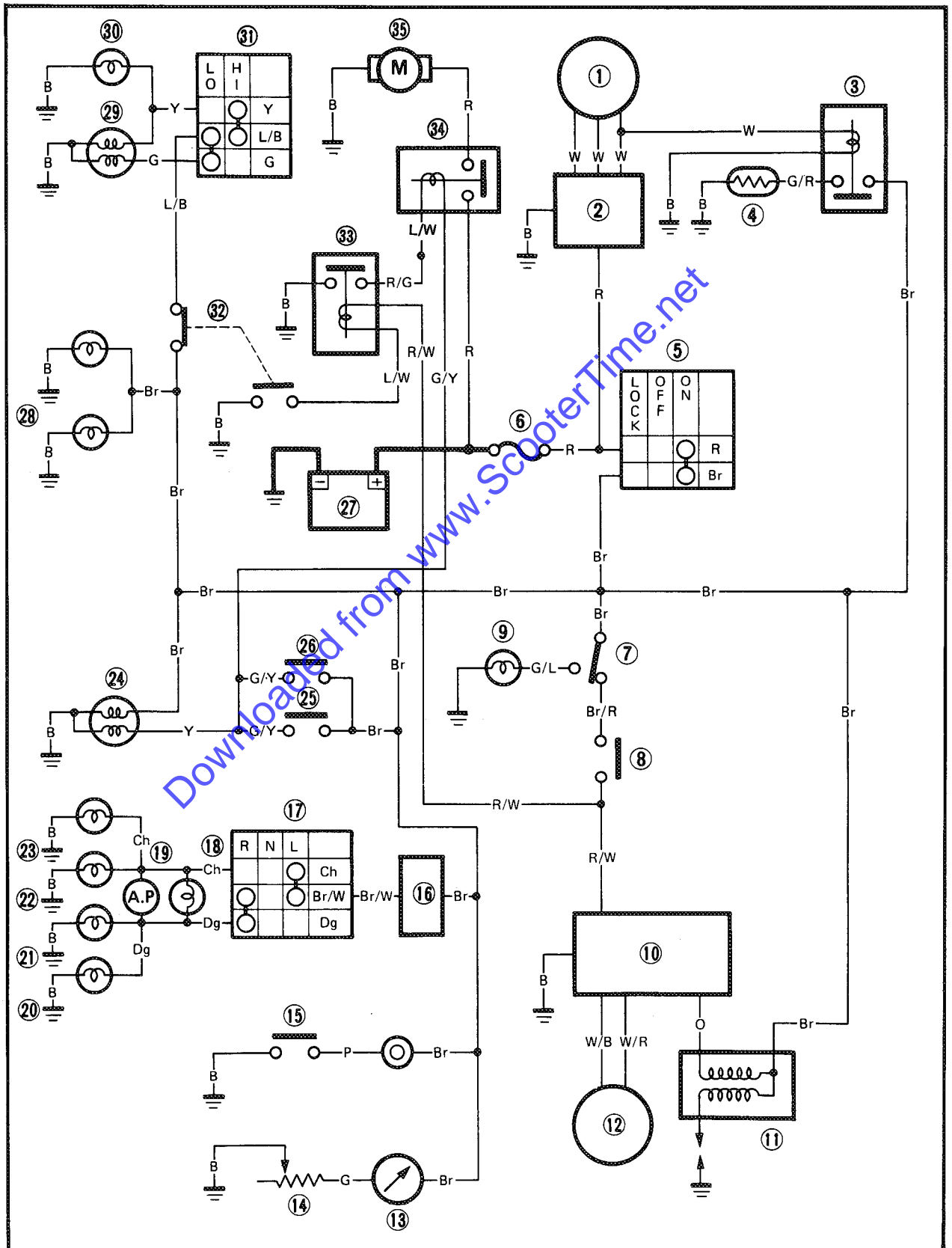
## CHAPTER 6. ELECTRICAL

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ELECTRICAL

CIRCUIT DIAGRAM



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6



- |                           |                                  |
|---------------------------|----------------------------------|
| ① AC generator            | ⑱ Audio pilot                    |
| ② Rectifier/Regulator     | ⑳ Rear flasher light (Right)     |
| ③ Choke relay             | ㉑ Front flasher light (Right)    |
| ④ Choke unit              | ㉒ Rear flasher light (Left)      |
| ⑤ Main switch             | ㉓ Front flasher light (Left)     |
| ⑥ Fuse                    | ㉔ Tail/Brake light               |
| ⑦ Sidestand switch        | ㉕ Rear brake switch              |
| ⑧ "ENGINE STOP" switch    | ㉖ Front brake switch             |
| ⑨ "STAND" indicator light | ㉗ Battery                        |
| ⑩ Ignitor unit            | ㉘ Meter lights                   |
| ⑪ Ignition coil           | ㉙ Headlight                      |
| ⑫ Pickup coil             | ㉚ "HIGH BEAM" indicator light    |
| ⑬ Fuel meter              | ㉛ "LIGHTS" (Dimmer) switch       |
| ⑭ Fuel sender             | ㉜ "START" switch                 |
| ⑮ "HORN" switch           | ㉝ Starting circuit cut-off relay |
| ⑯ Flasher relay           | ㉞ Starter relay                  |
| ⑰ "TURN" switch           | ㉟ Starter motor                  |
| ⑱ "TURN" indicator light  |                                  |

### COLOR CODE

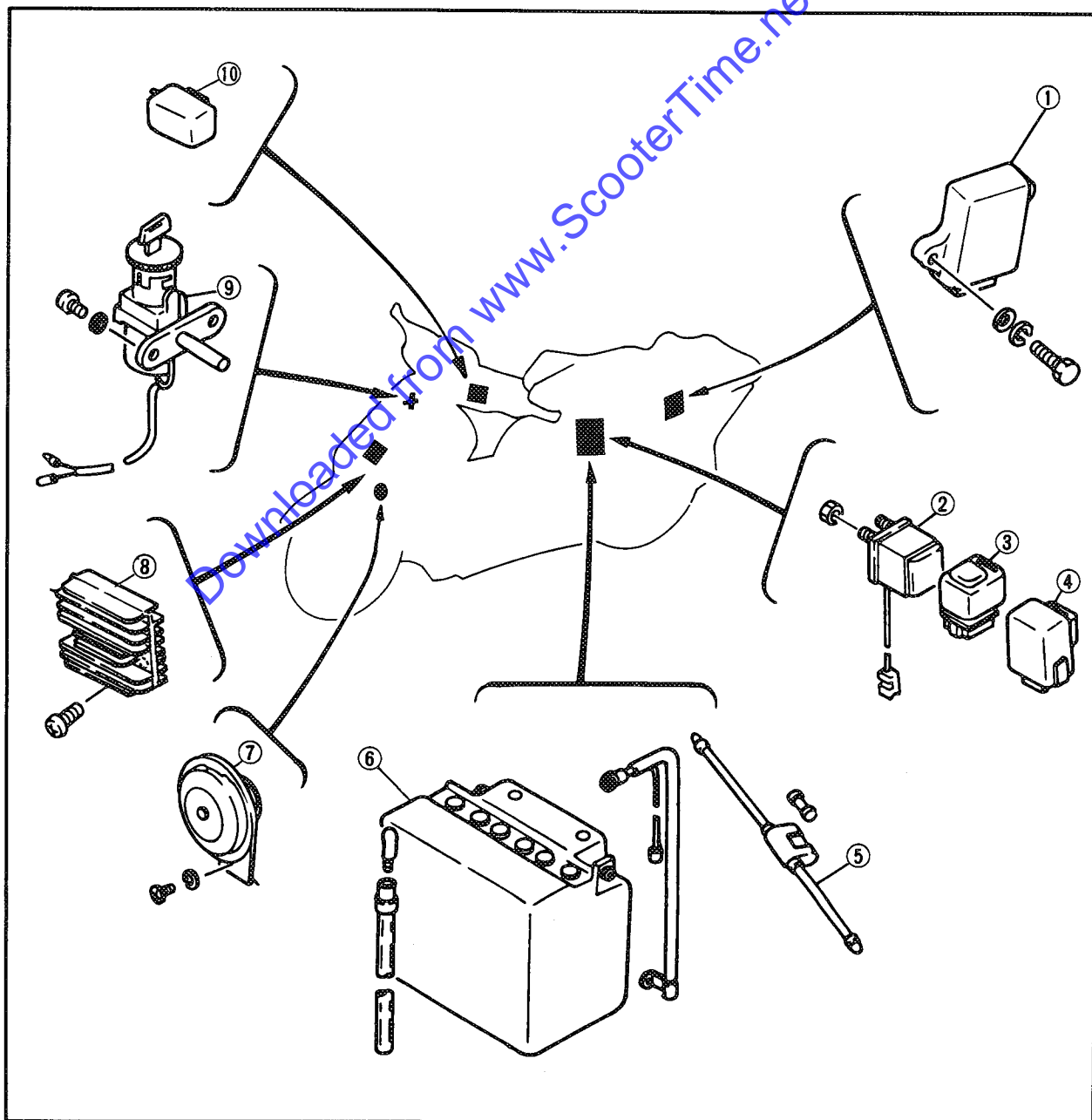
B . . . . . Black	Br. . . . . Brown	L/W . . . . . Blue/White
L . . . . . Blue	Ch . . . . . Chocolate	L/B. . . . . Blue/Black
O . . . . . Orange	Dg . . . . . Dark green	G/W . . . . . Green/White
G . . . . . Green	W/B . . . . . White/Black	G/R . . . . . Green/Red
R . . . . . Red	W/R . . . . . White/Red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



**ELECTRICAL COMPONENTS 1**

- ① Ignitor unit
- ② Starter relay
- ③ Flasher relay
- ④ Starting circuit cut-off relay
- ⑤ Fuse
- ⑥ Battery
- ⑦ Horn
- ⑧ Rectifire/Regulator
- ⑨ Main switch
- ⑩ Audio pilot

A	Starter Relay Coil Resistance: 2.7 ~ 3.3Ω at 20°C (68°F) (Blue/White – Green/Yellow)
B	Starting Circuit Cut-off Relay Coil Resistance: 68 ~ 83Ω at 20°C (68°F) (Blue/White – Red/White)
C	Battery: Capacity: 12V 7AH Specific gravity: 1.280
D	Rectifire Regulated Voltage: 14 ~ 15V



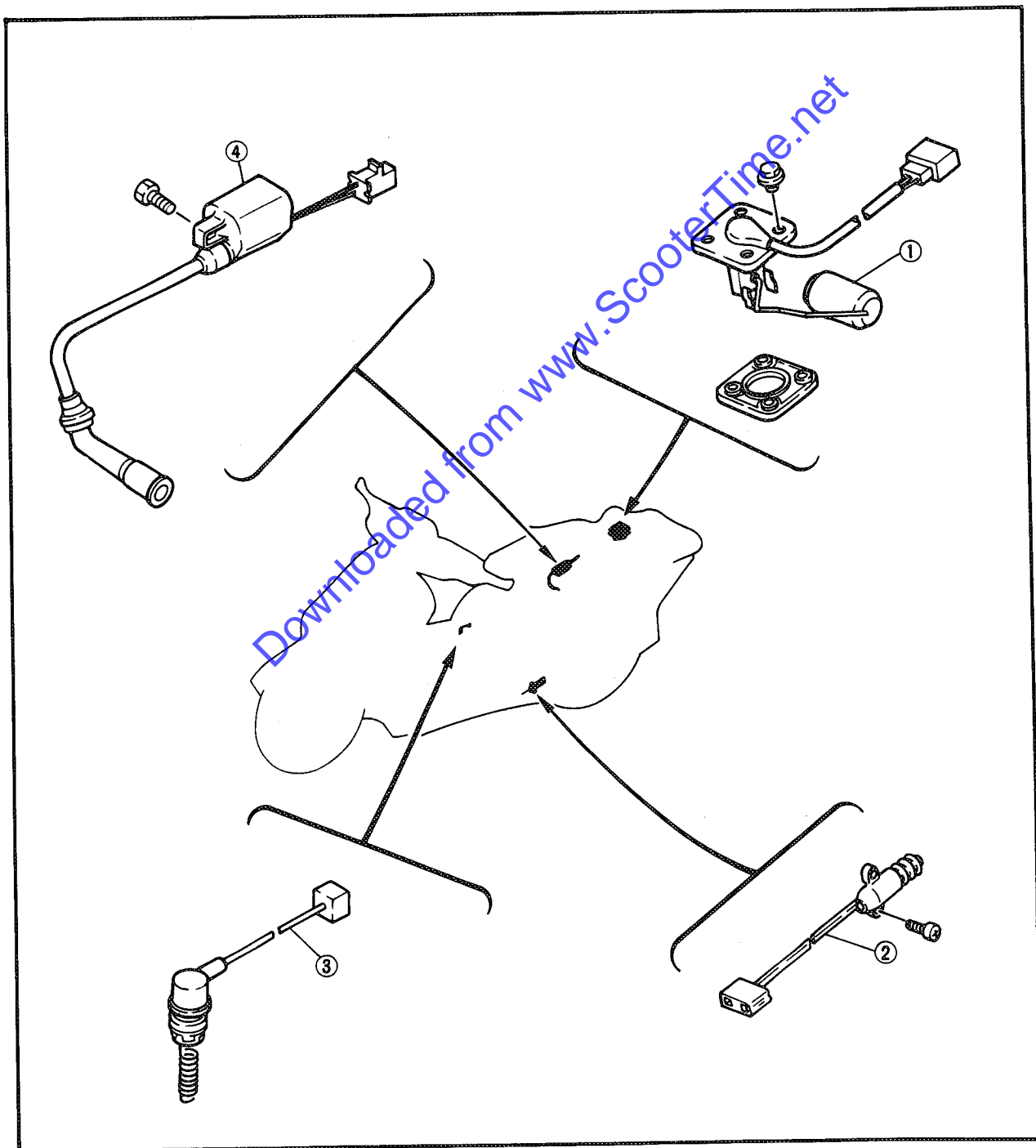
**6**



ELECTRICAL COMPONENTS 2

- ① Fuel sender
- ② Side stand switch
- ③ Rear brake switch
- ④ Ignition coil

A	Fuel Sender Resistance:
	Full position: 4 ~ 10Ω at 20°C (68°F) Empty position: 90 ~ 100Ω at 20°C (68°F)
B	Ignition Coil:
	Primary winding resistance: 2.43 ~ 2.97Ω at 20°C (68°F)
	Secondary winding resistance: 10.6 ~ 15.8kΩ at 20°C (68°F)

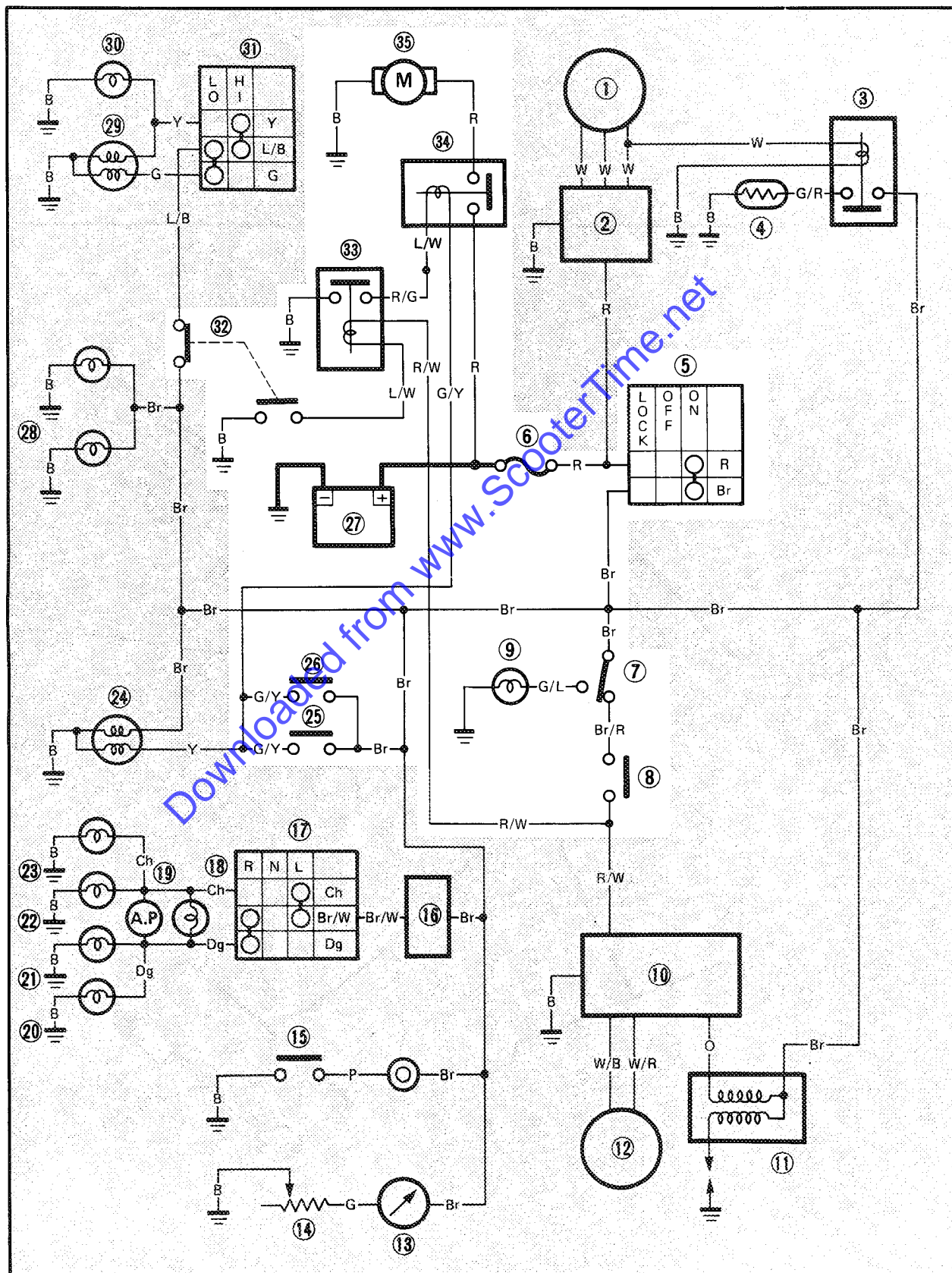




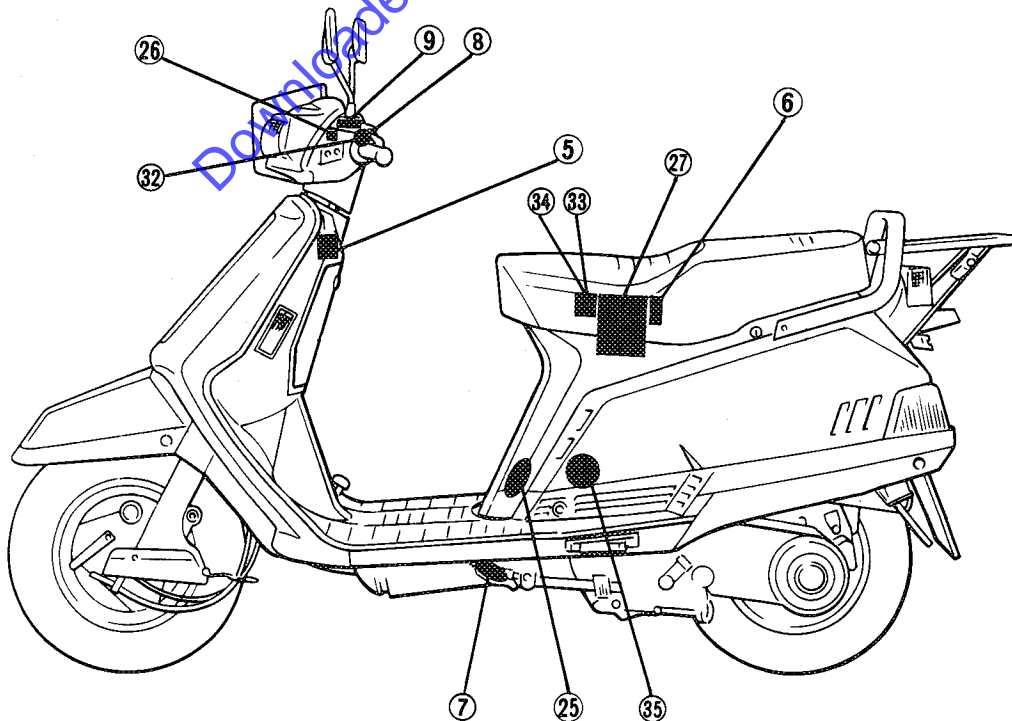
ELECTRIC STARTING SYSTEM

CIRCUIT DIAGRAM

Below circuit diagram shows starter circuit.



- ⑤ Main switch
- ⑥ Fuse
- ⑦ Sidestand switch
- ⑧ "ENGINE STOP" switch
- ⑨ "STAND" indicator light
- ⑳ Rear brake switch
- ㉑ Front brake switch
- ㉒ Battery
- ㉓ "START" switch
- ㉔ Starting circuit cut-off relay
- ㉕ Starter relay
- ㉖ Starter motor





TROUBLESHOOTING

Troubleshooting Chart (1)

THE STARTER MOTOR DOES NOT OPERATE.



Open the seat, and disconnect the 2-pin coupler (R/G and G/Y) from the starter relay.



Turn the main switch to "ON", and then hold the brake lever or step down the brake pedal.



Check the battery voltage (12V) on the "G/Y" lead into the 2-pin coupler.

NO

Check for an open or poor connection between the battery and starter relay.



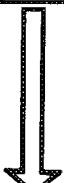
Connect the 2-pin coupler (R/G and G/Y) to the starter relay.

The starter motor does not operate.



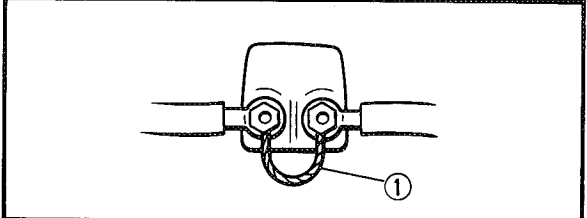
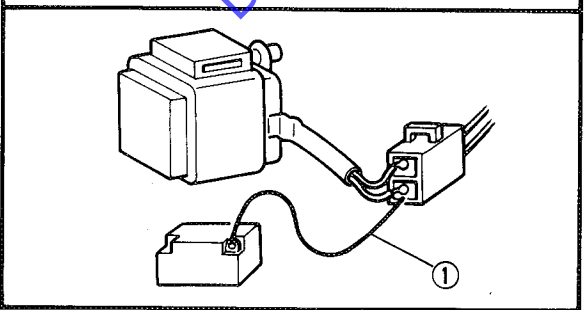
Connect the "L/W" lead into the 2-pin coupler to the battery negative (-) terminal; use a jumper lead ①.

If the starter relay does not click; replace the relay.



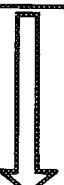
If the starter relay clicks; check the starter motor operation using the heavy duty jumper lead ①.

6



The starter motor operates.

If the starter motor does not operate, check the starter motor.



The starting circuit cut-off relay circuit is faulty. Go to CHAPTER (2).

If the starter motor operates, replace the starter relay.

Troubleshooting Chart (2)

THE STARTER MOTOR DOES NOT OPERATE.



Check the starter relay and starter motor; refer to CHART (1).



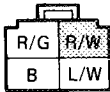
Disconnect the 4-pin coupler (R/G, R/W, B and L/W) from the starting circuit cut-off relay.



Turn the main switch to "ON" and "ENGINE STOP" switch to "RUN", and then the sidestand is up.



Check the battery voltage (12V) on the "R/W" lead into the 4-pin coupler.



Connect the 4-pin coupler (R/G, R/W, B and L/W) to the starting circuit cut-off relay.



Connect "L/W" lead into the 4-pin coupler to "ground" on the frame; use a jumper lead.



If the starting circuit cut-off relay clicks; check the "START" switch. Replace switch if necessary.

Check for an open or poor connection between the battery and starting circuit cut-off relay.

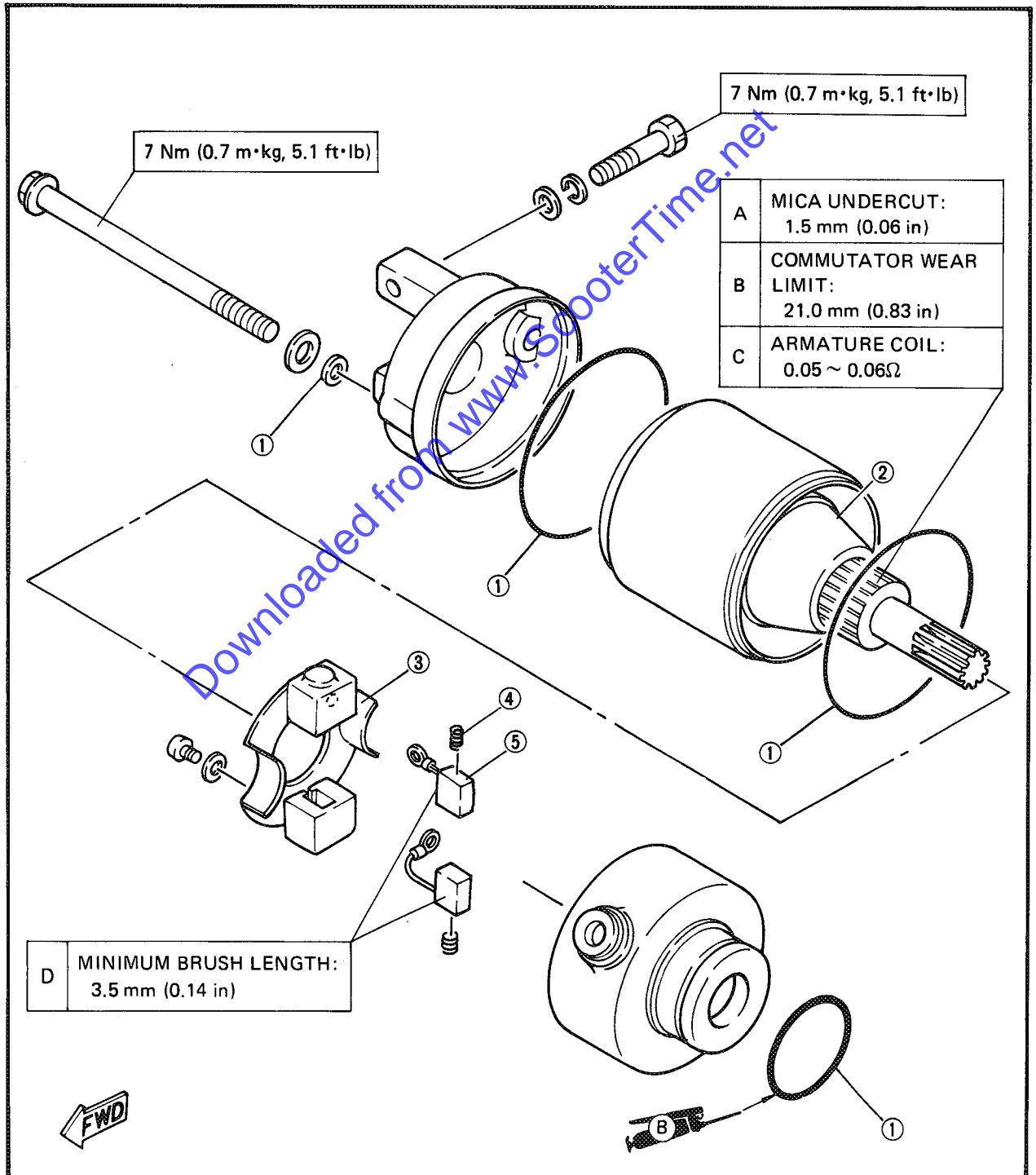
If the starting circuit cut-off relay does not click; replace the relay.

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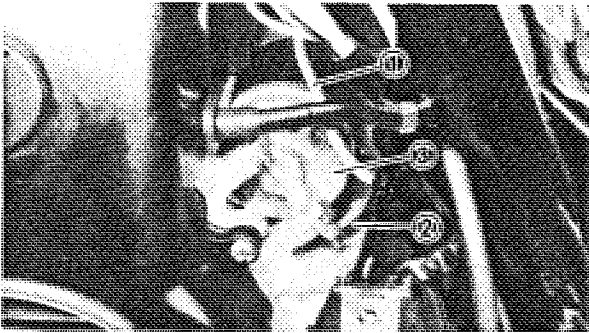


**STARTER MOTOR TEST**

- ① O-ring
- ② Armature
- ③ Brush holder
- ④ Spring
- ⑤ Brush



**6**

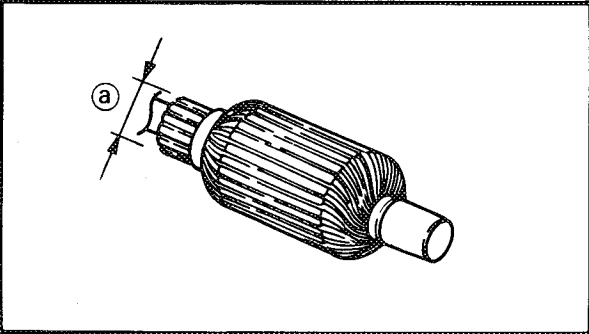



**Removal**

1. Remove:
  - Side cover (Right)
- Refer to "CHAPTER 3. ENGINE DISASSEMBLY".
2. Disconnect:
  - Starter motor negative lead ①
  - Starter motor positive lead ②
3. Remove:
  - Starter motor ③

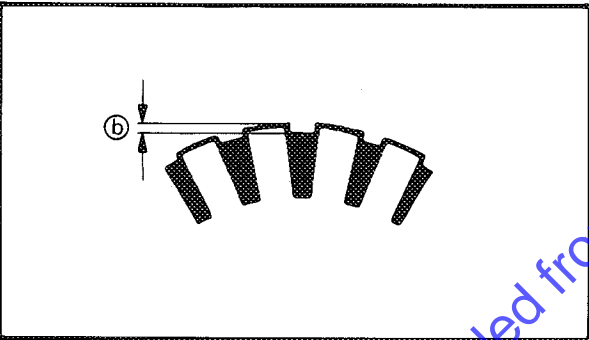
**Inspection and Repair**


1. Inspect:
  - Commutator  
Dirty → Clean it with #600 grit sandpaper.
2. Measure:
  - Commutator diameter ①  
Out of specification → Replace starter motor.



 **Commutator Wear Limit:**  
21.0 mm (0.83 in)

3. Measure:
  - Mica undercut ②  
Out of specification → Scrape the mica to proper value use a hacksaw blade can be ground to fit.



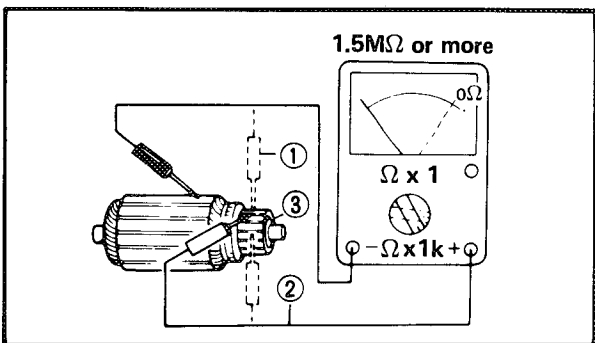
 **Mica Undercut ② :**  
1.5 mm (0.06 in)

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

4. Inspect:
  - Armature coil (insulation/continuity)  
Defect(s) → Replace starter motor.  
By the following inspecting steps.

**Armature coil inspecting steps:**

- Connect the Pocket Tester (YU-03112) for continuity check ① and insulation check ②.
- Measure the armature coil ③ resistances.



**Armature Coil Resistance:**

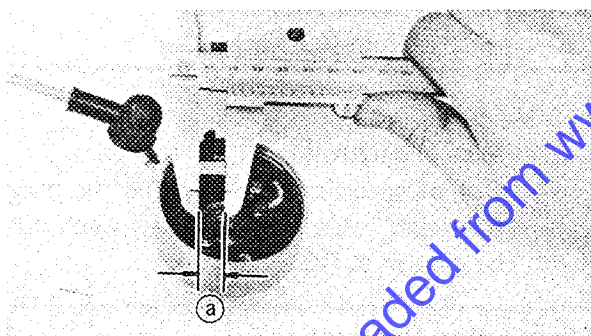
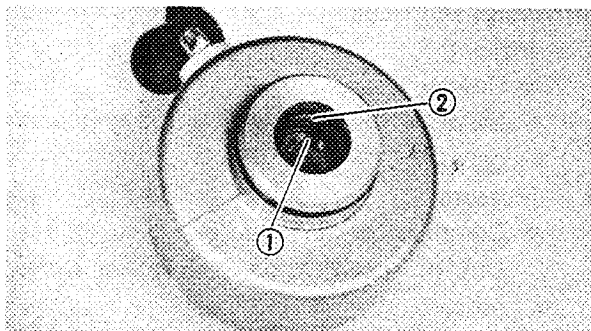
**Continuity Check ① :**

**0.05 ~ 0.06Ω at 20°C (68° F)**

**Insulation Check ② :**

**More than 1.5MΩ at 20°C (68° F)**

- If the resistance is incorrect, replace the starter motor.



## 5. Inspect:

- Bearings ①  
Wear/Damage → Replace.
- Oil seal ②  
Wear/Damage → Replace.

## 6. Measure:

- Brush length (Each) ③  
Out of specification → Replace.

**Minimum Brush Length:**

**3.5 mm (0.14 in)**

## 7. Inspect:

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

**Installation**

1. Apply grease to the starter motor O-ring and install the starter motor assembly.
2. Tighten:
  - Bolts

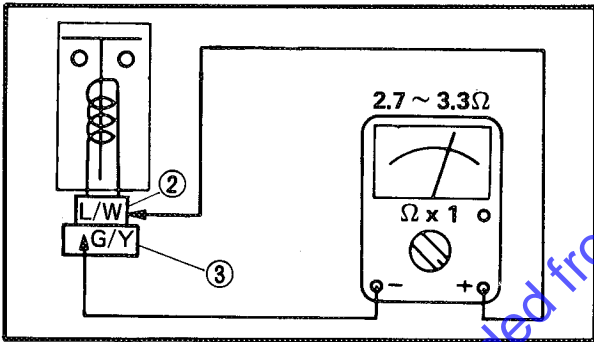
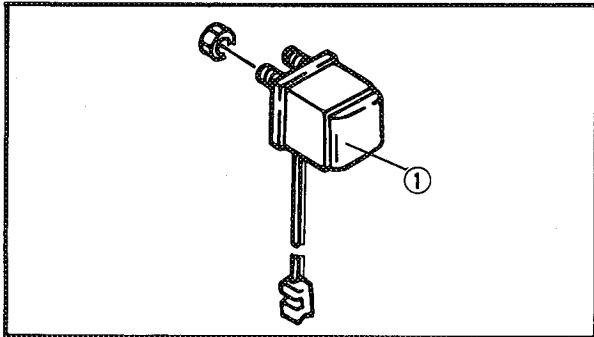
**Starter Motor:**

**7 Nm (0.7 m•kg, 5.1 ft•lb)**



**BATTERY**

Refer to "CHAPTER 2. BATTERY INSPECTION" section.



**STARTER RELAY TEST**

1. Open the seat.
2. Inspect:
  - Starter relay ①
 Poor condition → Replace.  
 By the following inspecting steps.

**Starter relay inspecting steps:**

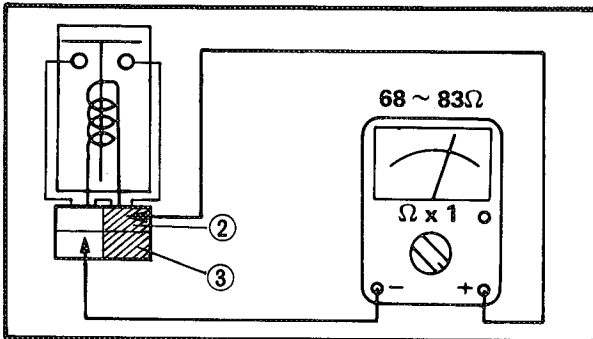
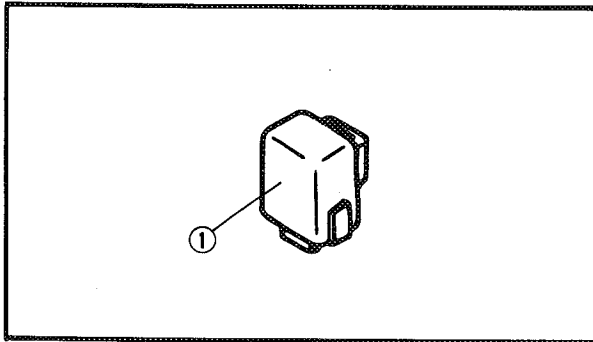
- Disconnect the starter cable from the starter relay.
- Turn ignition switch to "ON", and then hold the brake lever or step-down the brake pedal.
- Push the "START" switch and check to see if the starter relay clicks.  
 Starter relay clicking → Starter relay OK.  
 Starter relay not clicking → Measure coil resistance.
- Connect the Pocket Tester (YU-03112) leads to the starter relay.
  - ② Blue/White
  - ③ Green/Yellow
- Measure the coil resistance.



**Starter Relay Resistance:**

**2.7 ~ 3.3Ω at 20°C (68°F)**

- If the resistance is not within specification, replace the starter relay.

**STARTING CIRCUIT CUT-OFF RELAY TEST**

1. Open the seat:
2. Inspect:
  - Starting circuit cut-off relay ①
  - Poor condition → Replace.
  - By the following inspecting steps.

**Starting circuit cut-off relay inspecting steps:**

- Disconnect the starter cable from the starter relay.
- Turn ignition switch to "ON", engine stop switch to "RUN" and sidestand is up.
- Push the "START" switch and check to see if the starting circuit cut-off relay clicks.
  - Starting circuit cut-off relay clicking → Starting circuit cut-off relay OK.
  - Starting circuit cut-off relay not clicking → Measure coil resistance.
- Connect the Pocket Tester (YU-03112) leads to the starter relay.

- ② Red/White
- ③ Blue/White

- Measure the coil resistance.

**Starter Relay Resistance:**

**68 ~ 83Ω at 20°C (68°F)**

- If the resistance is not within specification, replace the starter relay.

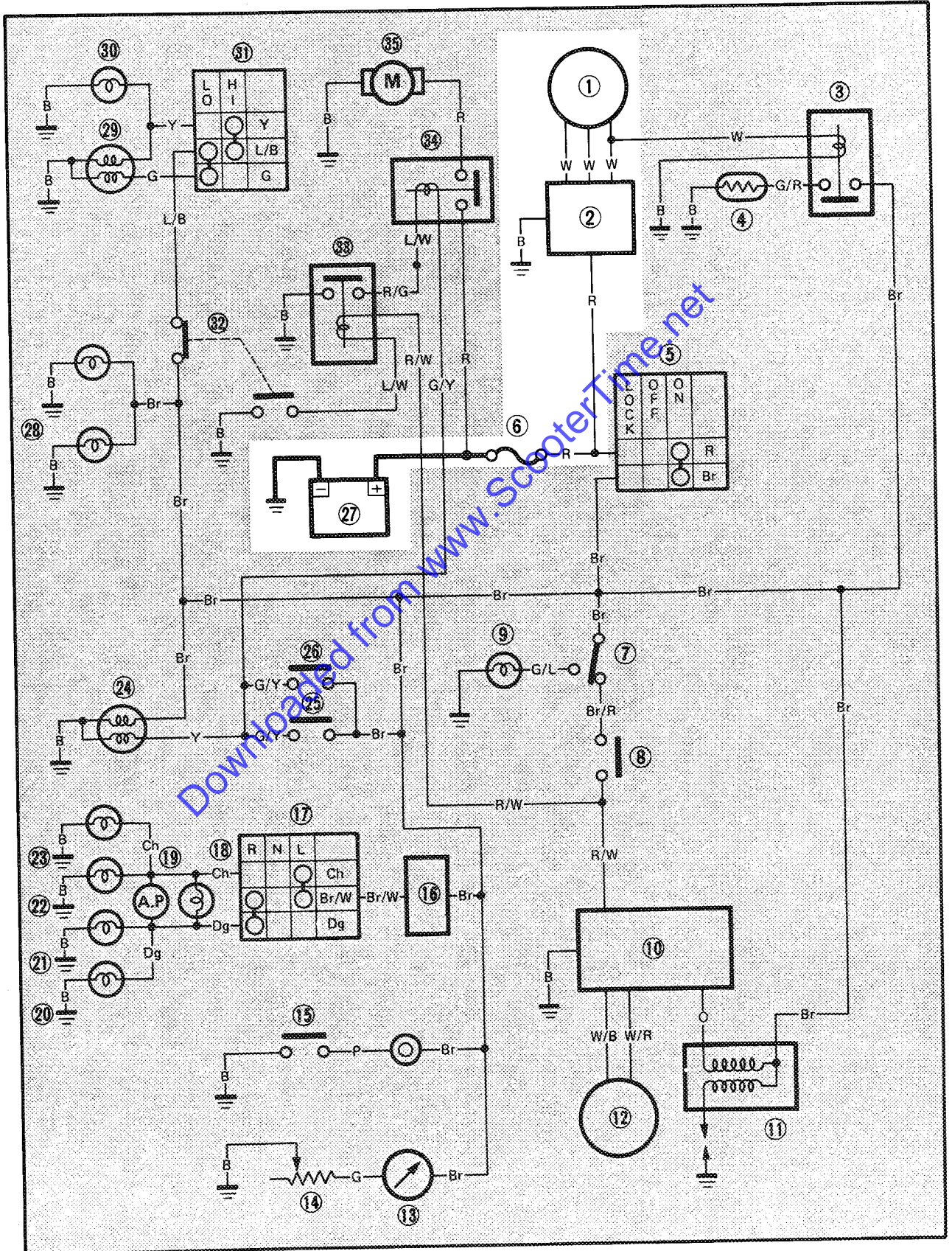


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**CHARGING SYSTEM**

**CIRCUIT DIAGRAM**

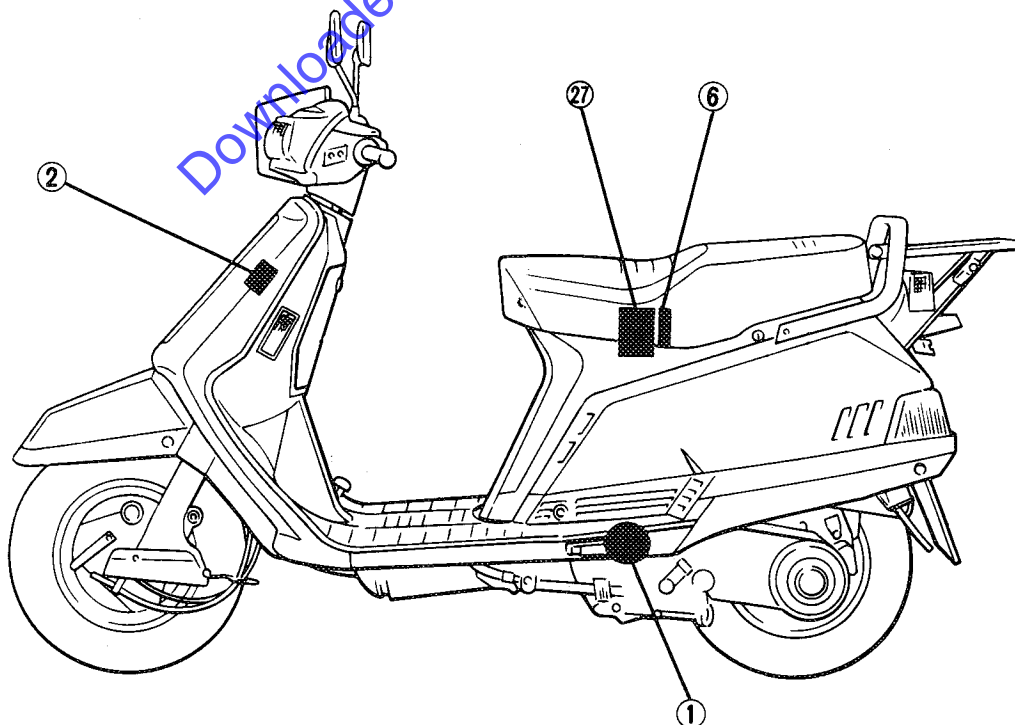
Below circuit diagram shows charging circuit.



**6**

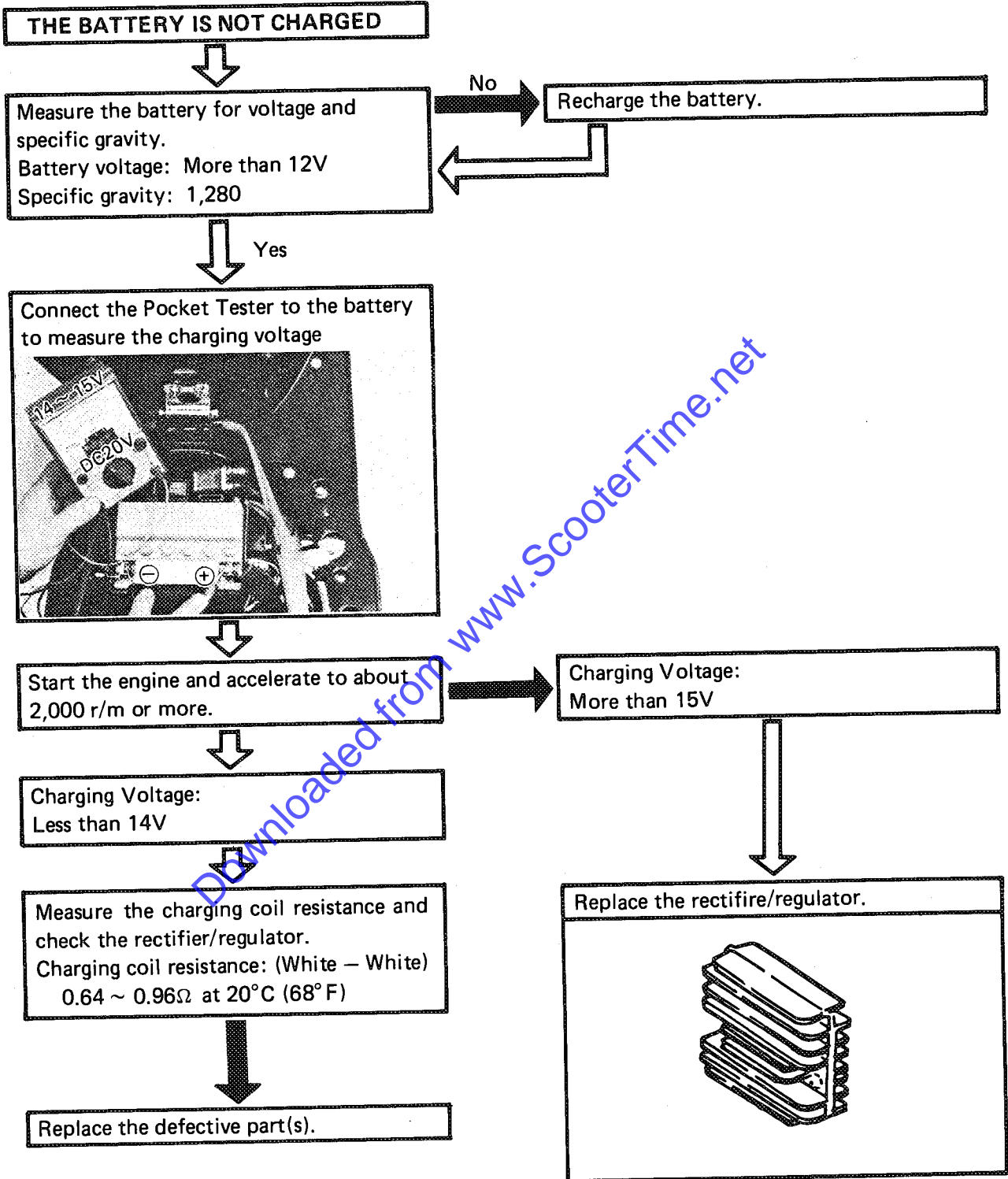


- ① AC generator
- ② Rectifier/Regulator
- ⑥ Fuse
- ②⑦ Battery



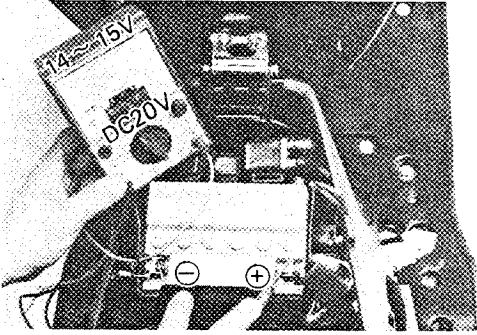
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**TROUBLESHOOTING**



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**6**



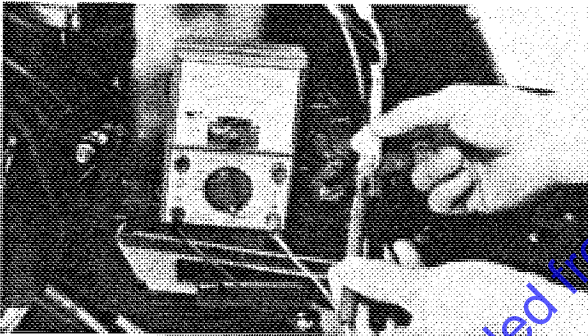
## CHARGING VOLTAGE TEST

1. Connect:
  - Pocket Tester (YU-03112)  
(to the battery terminals in parallel)
2. Start the engine and accelerate to about 2,000 r/min or more.
3. Measure:
  - Charging voltage  
Out of specification → Check battery, stator coil, and rectifier/regulator.

	<b>Charging Voltage:</b> 14 ~ 15V
--	--------------------------------------

**CAUTION:**

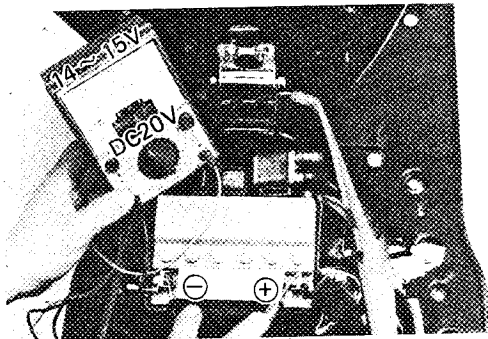
Never disconnect the leads from the battery while the generator is operating, otherwise the voltage across the generator terminals will increase and damage the semiconductors.



## CHARGING COIL RESISTANCE TEST

1. Remove:
  - Front cover
2. Disconnect:
  - Stator leads connector
3. Connect:
  - Pocket Tester (YU-03112)
4. Measure:
  - Charging coil resistance  
Out of specification → Replace the charging coil assembly.

	<b>Charging Coil Resistance:</b> 0.64 ~ 0.96Ω at 20°C (68°F) (White – White)
--	--



**RECTIFIER/REGULATOR TEST**

Since I.C. regulator is sealed with a resin, it is impossible to check or replace any of inner parts. If the regulator is found to be defective, it must be replaced with a new one.

**Checking method:**

**(Regulator)**

- Connect D.C. voltmeter to the battery terminals.
- Start engine.  
Accelerate engine to approximately 2,000 r/min or more and check regulated voltage.



**Regulated Voltage:**

14 ~ 15V

- If voltage is off, check battery, generator and rectifier. If generator, rectifier and battery are good, then I.C. regulator is broken and it should be replaced.

**NOTE:**

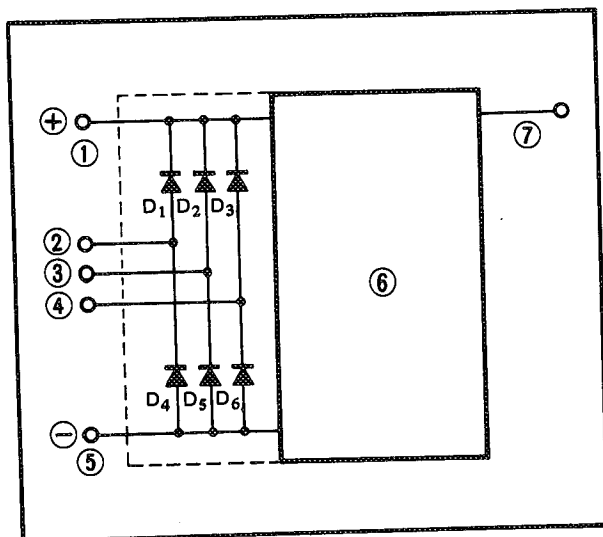
- 1) Never disconnect wires from the battery while the generator is in operation. If the battery is disconnected, the voltage across the generator terminals will increase, damaging the semiconductors.
- 2) When checking the regulator being installed on a machine, the battery should not be removed, and it should be fully charged.
- 3) Never use a high voltage insulation ohmmeter such as a megaohmmeter for such a test. If high voltage is applied to the regulator terminals, the regulator will be damaged.

**(Rectifier)**

- Check silicon rectifier as specified using ohmmeter.

- ① B (Red)
- ② U (White)
- ③ V (White)
- ④ W (White)
- ⑤ E (Black)
- ⑥ I.C. regulator
- ⑦ Br (Brown)

6





Checking element	Pocket tester connecting point		Checking result		
	(+) (red)	(-) (black)	Good	Replace (element shorted)	Replace (element opened)
D <sub>1</sub>	B	U	○	○	x
	U	B	x	○	x
D <sub>2</sub>	B	V	○	○	x
	V	B	x	○	x
D <sub>3</sub>	B	W	○	○	x
	W	B	x	○	x
D <sub>4</sub>	U	E	○	○	x
	E	U	x	○	x
D <sub>5</sub>	V	E	○	○	x
	E	V	x	○	x
D <sub>6</sub>	W	E	○	○	x
	E	W	x	○	x

○..... Continuity  
 x..... Discontinuity

**NOTE:**  
 The results "○" or "X" should be reversed according to the pocket tester polarity.

- Even if one of elements is broken, replace assembly.

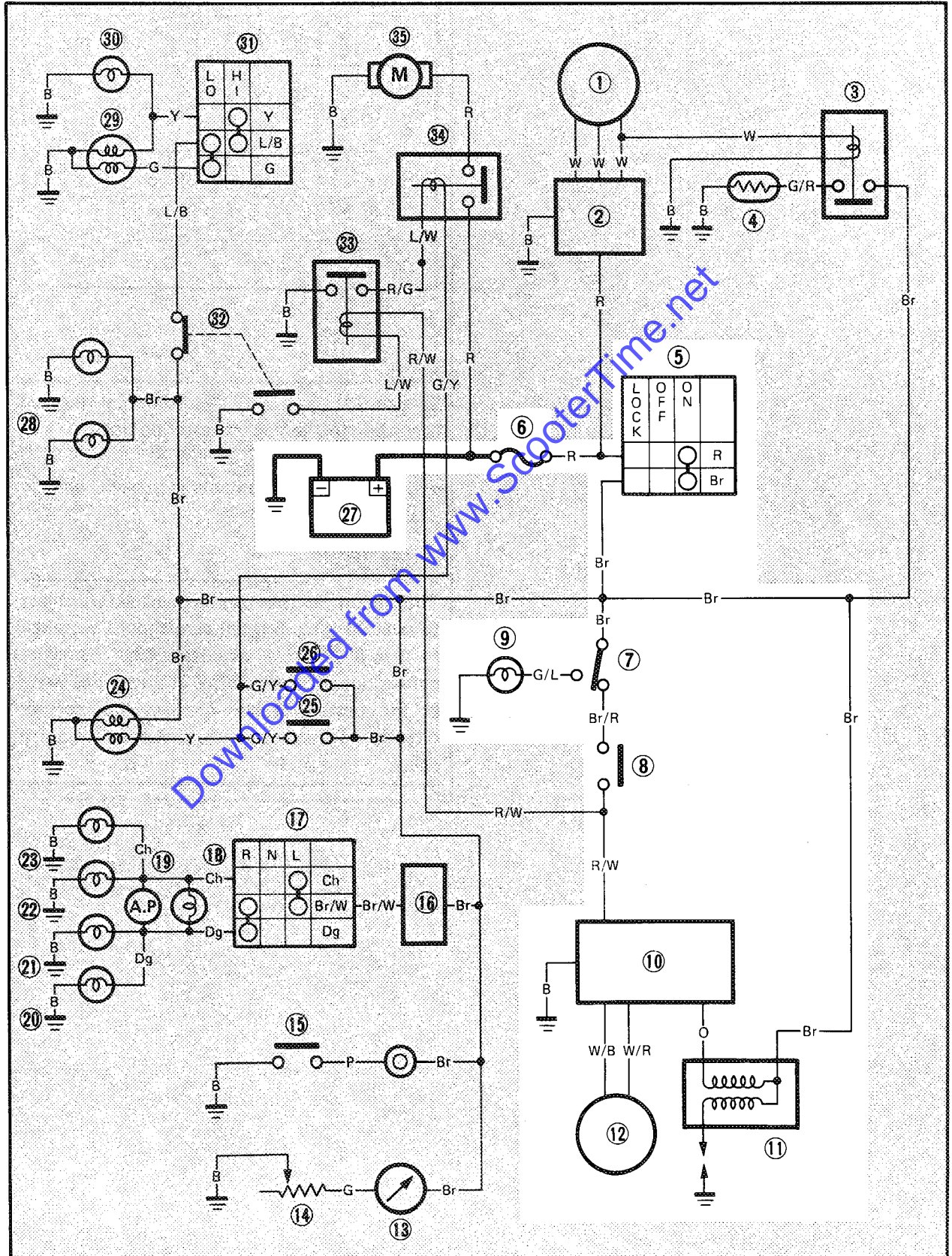
**CAUTION:**  
 The silicon rectifier can be damaged if subject to overcharging. Special care should be taken to avoid a short circuit and/or incorrect connection of the positive and negative leads at the battery. Never connect the rectifier directly to the battery to make a continuity check.

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IGNITION SYSTEM

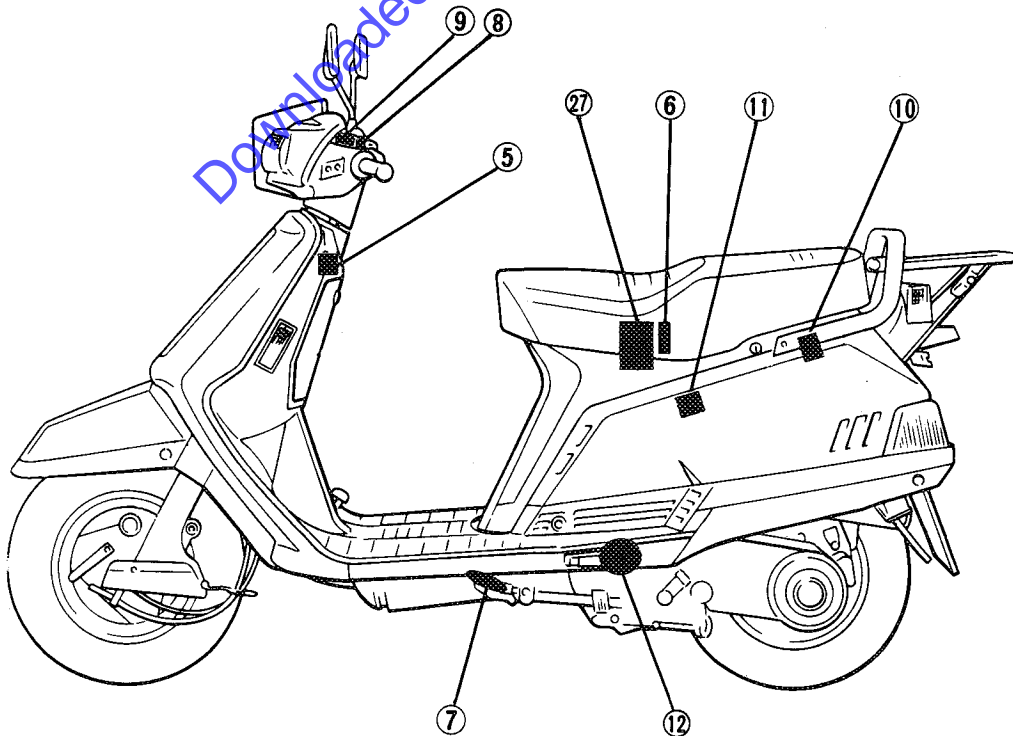
CIRCUIT DIAGRAM

Below circuit diagram shows ignition circuit





- ⑤ Main switch
- ⑥ Fuse
- ⑦ Sidestand switch
- ⑧ "ENGINE STOP" switch
- ⑨ "STAND" indicator light
- ⑩ Ignitor unit
- ⑪ Ignition coil
- ⑫ Pickup coil
- ⑳ Battery



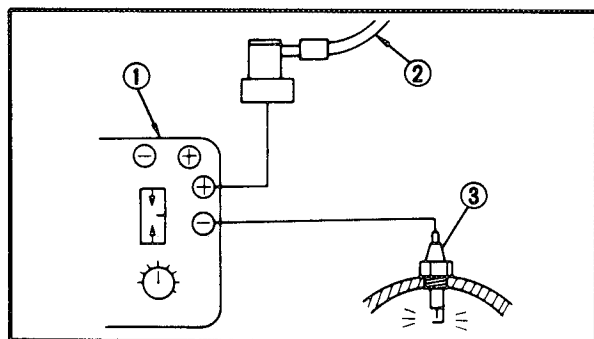
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### TROUBLESHOOTING

The entire ignition system can be checked for misfire and weak spark by using the Electro Tester.

1. Warm up the engine so that all of the electrical components are at operating temperature.



2. Connect:
  - Electro Tester (YU-03021) ①
3. Check:
  - Minimum spark gap  
Start the engine, and increase the spark gap until misfire occurs. (Test at various r/min between idle and red line.)  
Faulty ignition system operation (at the minimum spark gap or smaller) → Follow the troubleshooting chart until the source of the problem is located.

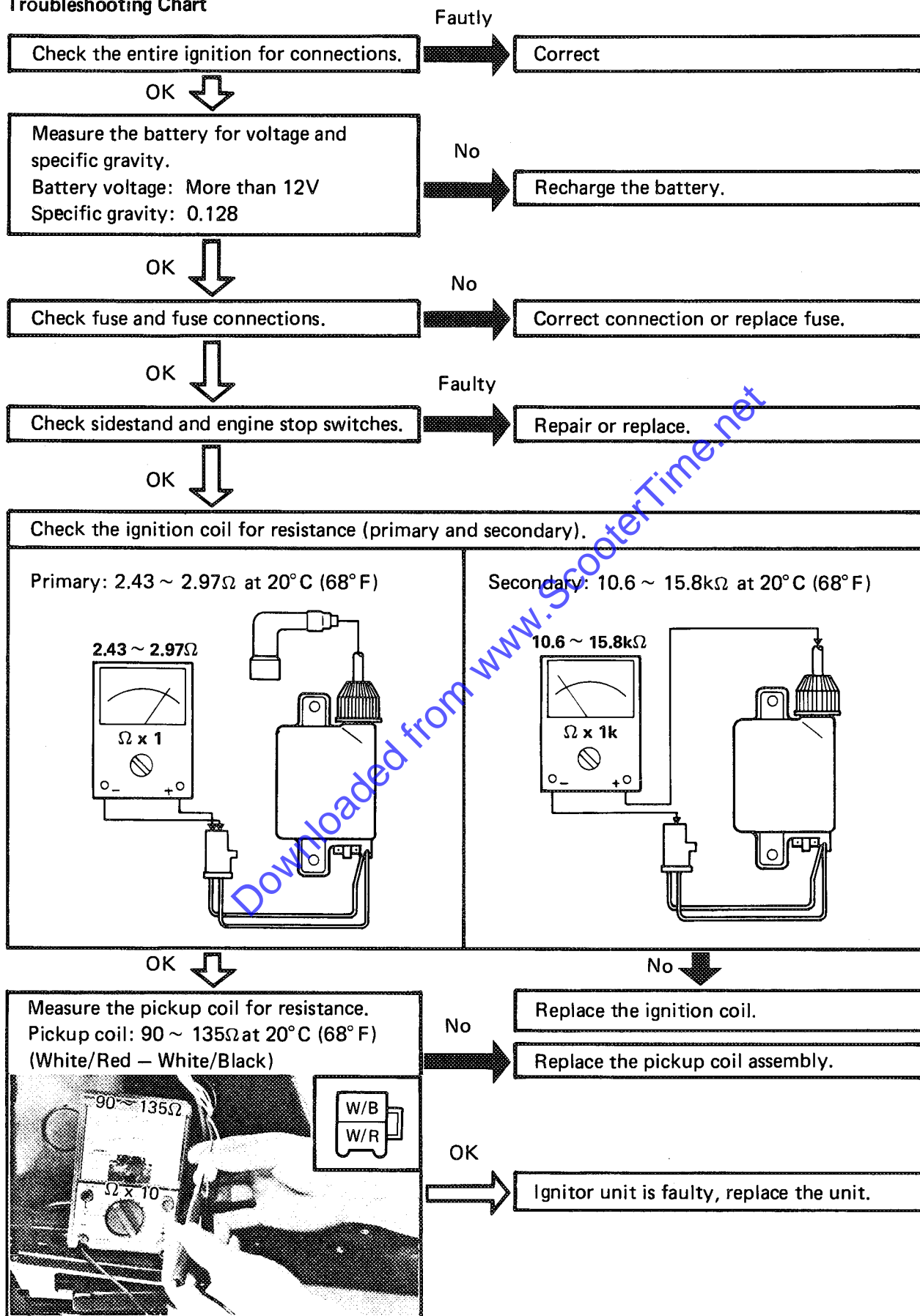
- ② Spark plug lead
- ③ Spark plug

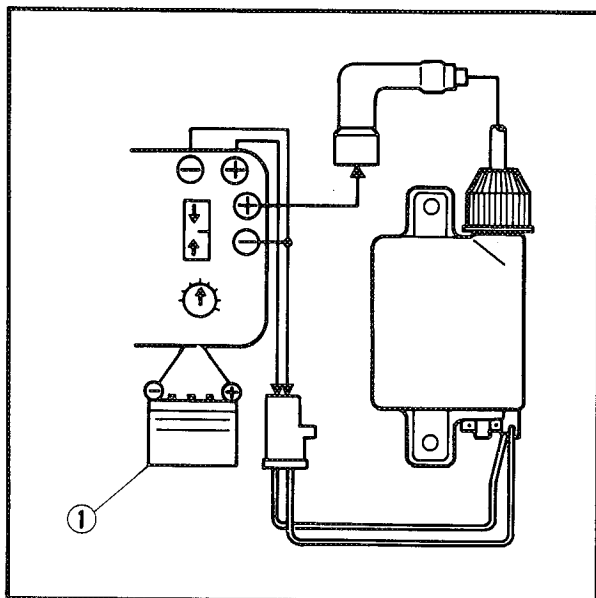
#### CAUTION:

Do not run the engine in neutral above 6,000 r/min for more than 1 or 2 seconds.

**Minimum Spark Gap: 6 mm (0.24 in)**

Troubleshooting Chart





### IGNITION SPARK GAP TEST

1. Remove:
  - Side cover (Right)
2. Disconnect:
  - Ignition coil lead
  - Spark plug lead
3. Connect:
  - Electro Tester (YU-03021)

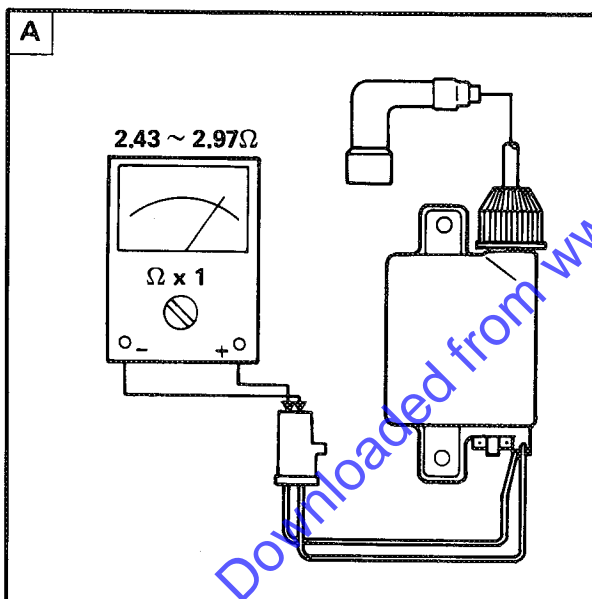
#### NOTE:

Be sure to use a fully charged battery (12V) ①.

4. Turn the spark plug gap adjuster and increase the gap to the maximum limit unless misfire occurs first.



**Minimum Spark Gap:**  
6 mm (0.24 in)

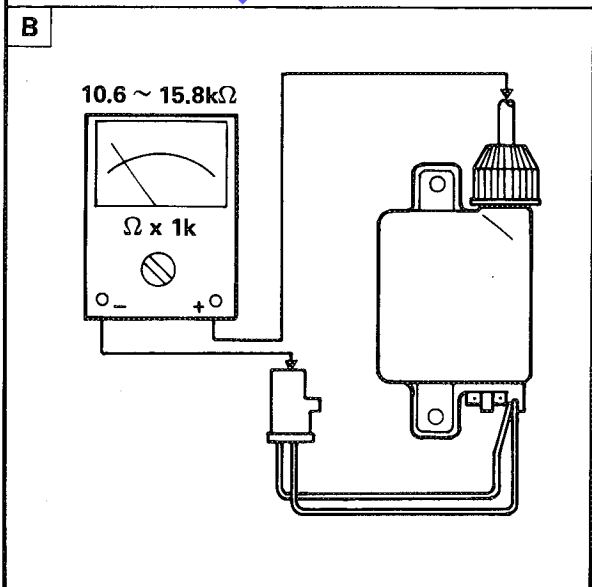


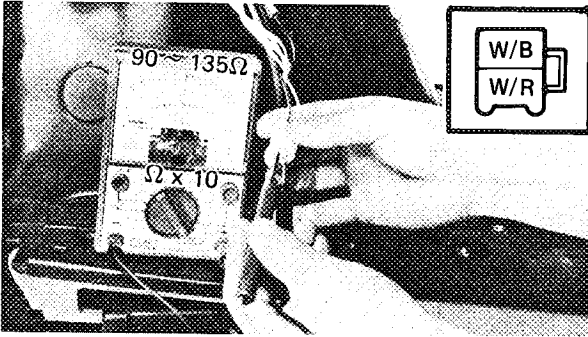
### IGNITION COIL RESISTANCE TEST

1. Connect:
  - Pocket Tester (YU-03112)
2. Measure:
  - Primary coil resistance [A]
  - Secondary coil resistance [B]
 Out of specification → Replace.



**Primary Coil Resistance:**  
2.43 ~ 2.97Ω at 20°C (68°F)  
**Secondary Coil Resistance:**  
10.6 ~ 15.8kΩ at 20°C (68°F)



**PICKUP COIL RESISTANCE TEST****Inspection**

1. Remove:
  - Side cover (Right)
2. Disconnect:
  - Pickup coil connector
3. Measure
  - Pickup coil resistanceUse a Pocket Tester. (YU-03112)  
Out of specification → Replace.

**Pickup Coil Resistance:****90 ~ 135Ω at 20° C (68° F)****(White/Red – White/Black)****SPARK PLUG INSPECTION**

Refer to "CHAPTER 2. SPARK PLUG INSPECTION" section.

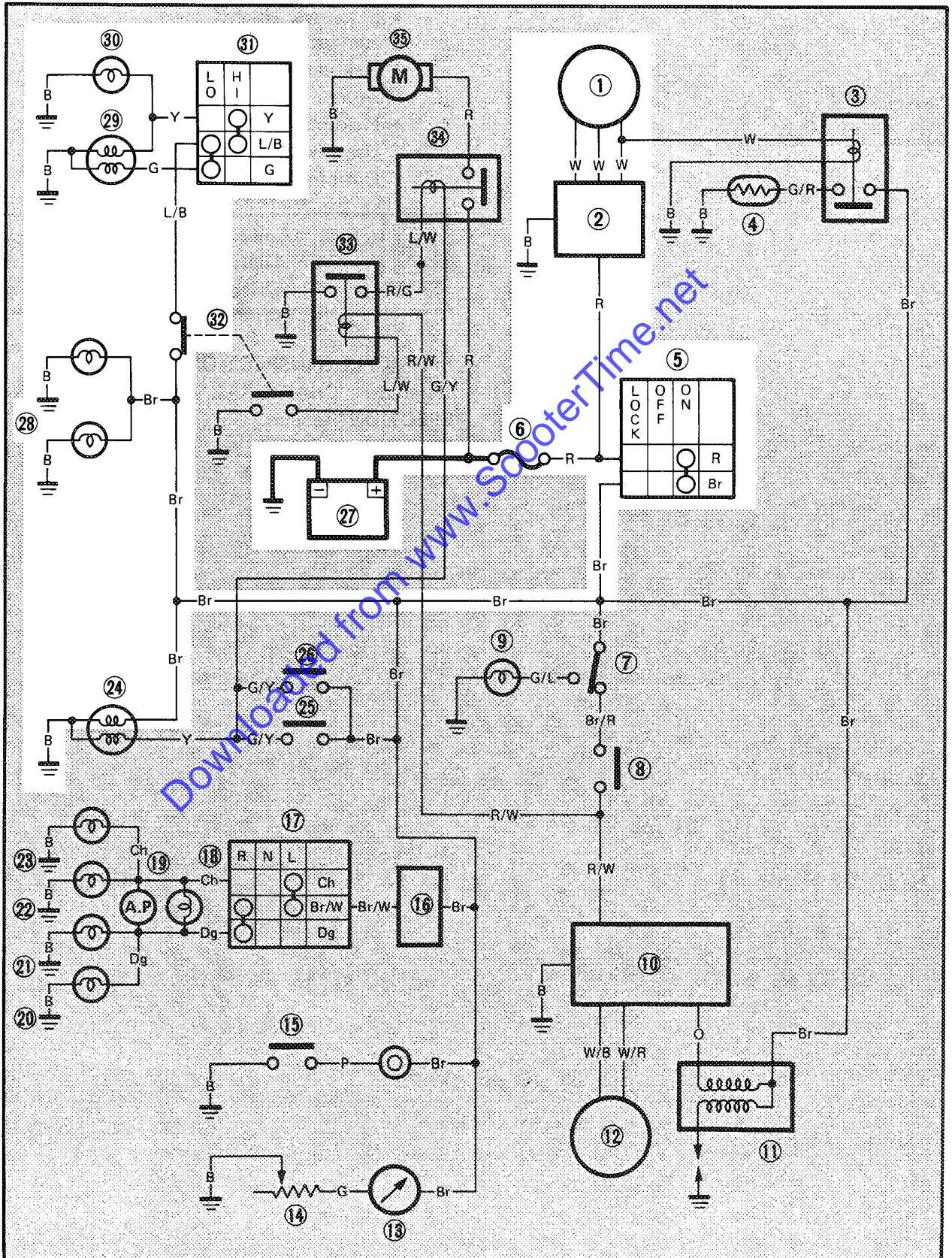
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LIGHTING SYSTEM

CIRCUIT DIAGRAM

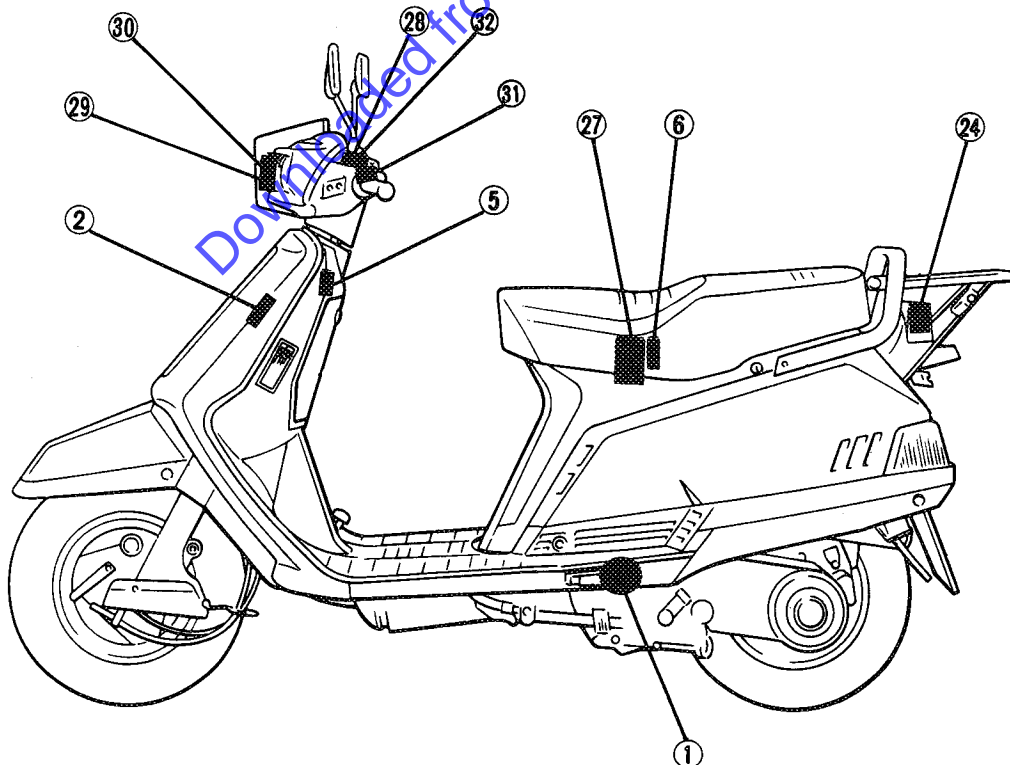
Below circuit diagram shows lighting circuit







- ① AC generator
- ② Rectifier/Regulator
- ⑤ Main switch
- ⑥ Fuse
- ⑭ Tail/Brake light
- ⑰ Battery
- ⑱ Meter lights
- ⑲ Headlight
- ⑳ "HIGH BEAM" indicator light
- ㉑ "LIGHTS" (Dimmer) switch
- ㉒ "START" switch



**LIGHTING TESTS AND CHECKS**

The battery provides power for operation of the headlight, taillight, and meter lights. If none of the above fail to operate proceed further. Low battery voltage indicates either a faulty battery, low battery fluid level, or a defective charging system.

Also check fuse condition. Replace any "open" fuses. There are individual fuses for various circuits (see complete Circuit Diagram).

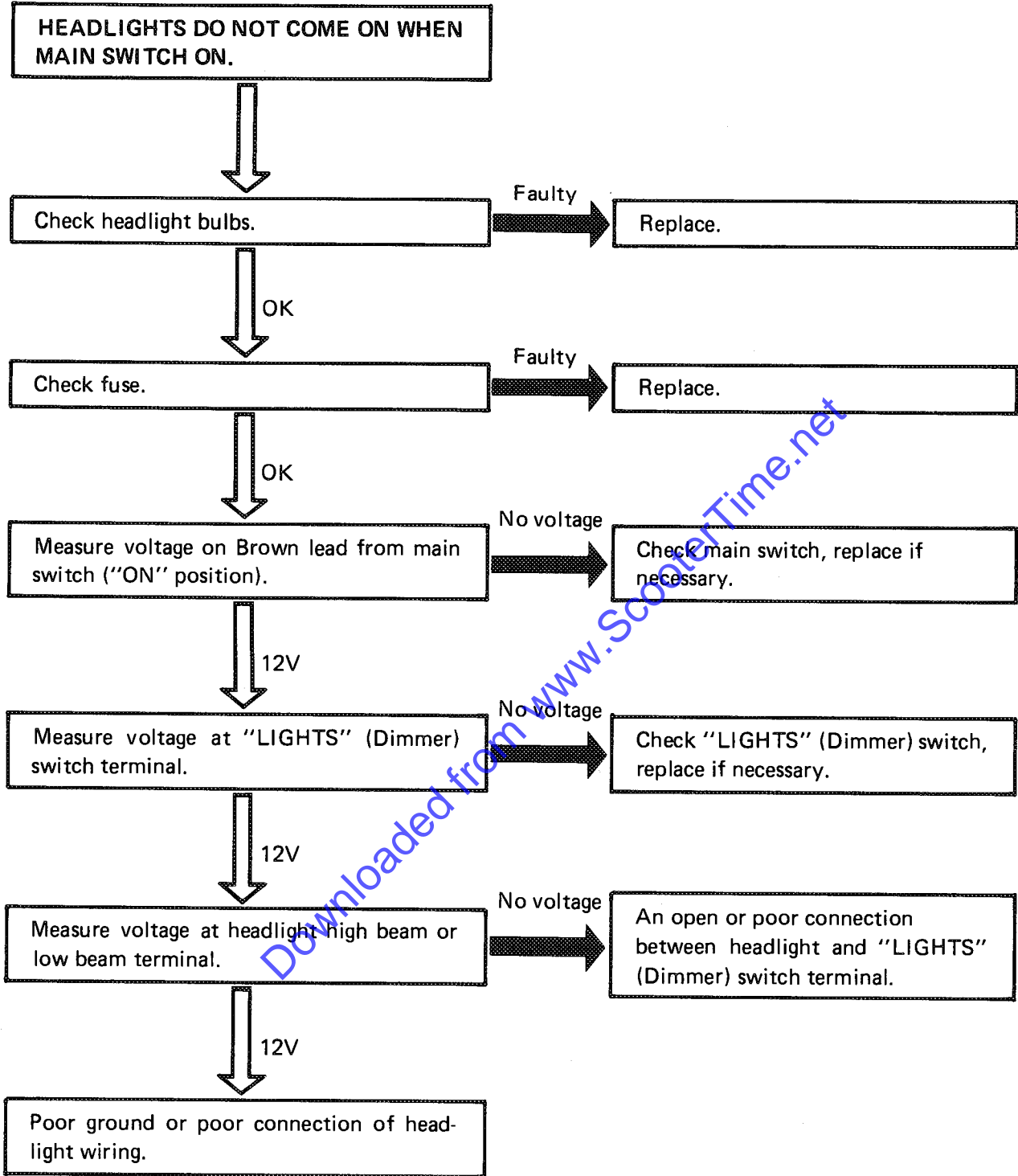
**NOTE:** \_\_\_\_\_

Check each bulb first before performing the following check.

---

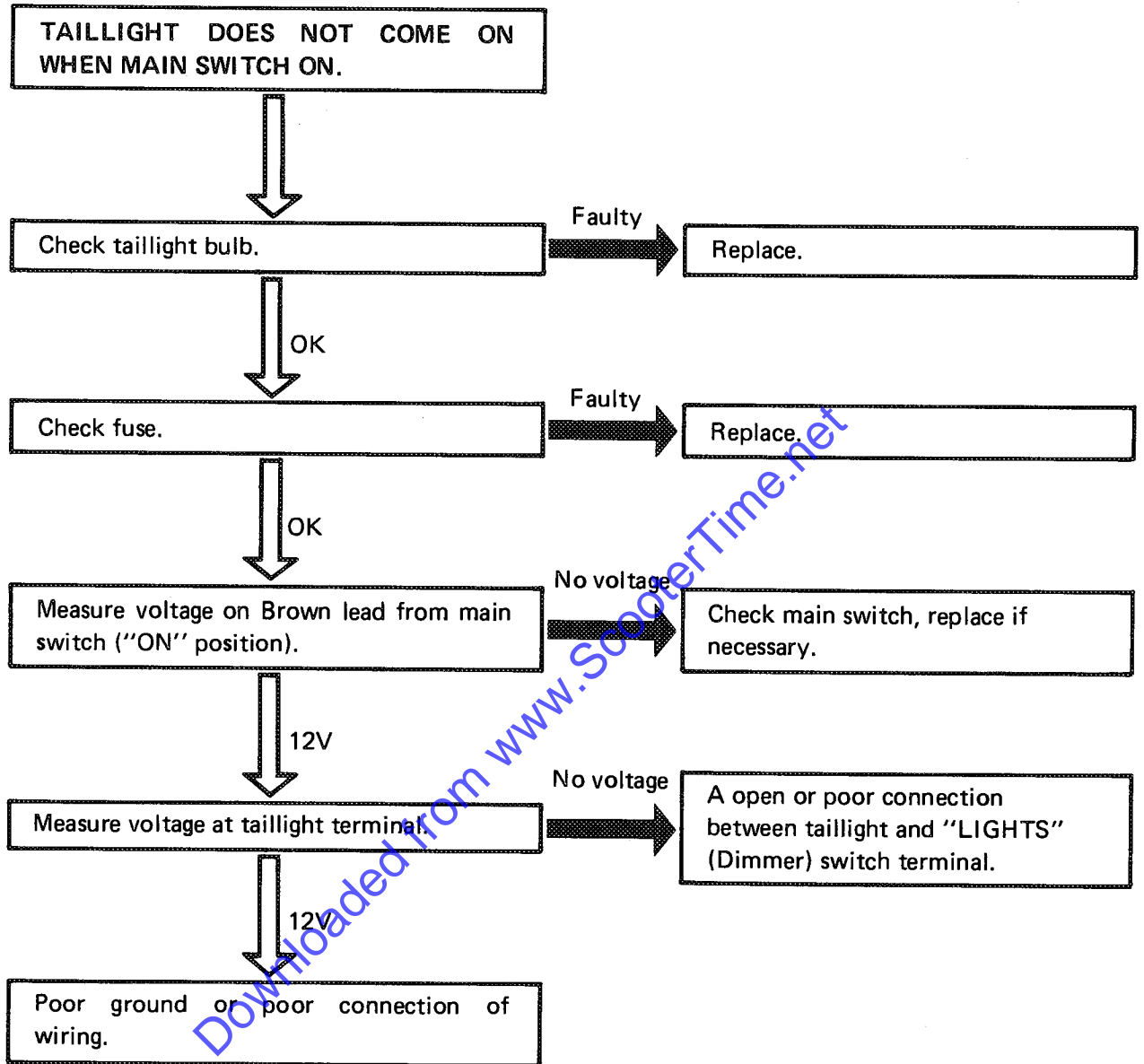
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Headlight Troubleshooting





Taillight Troubleshooting

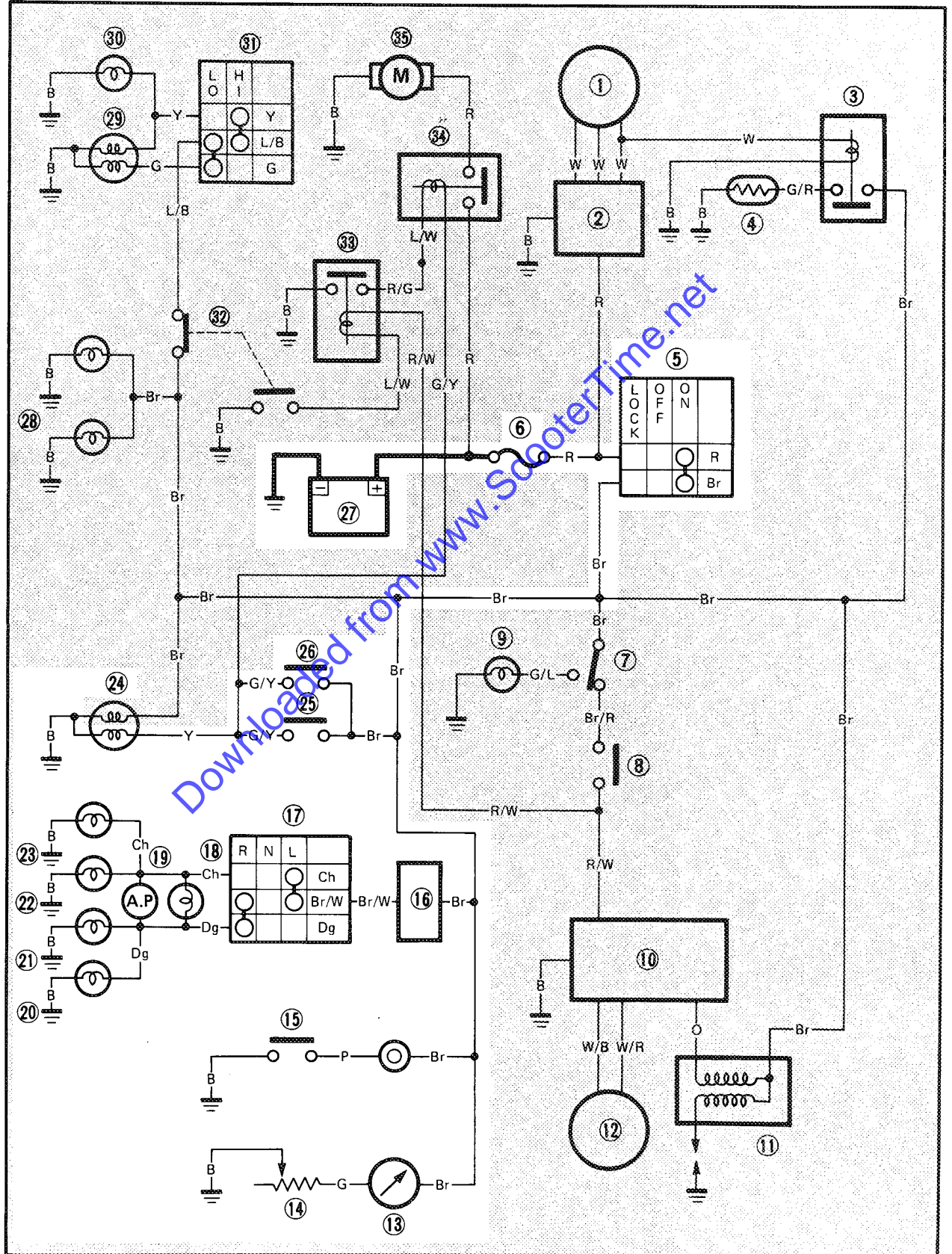


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**SIGNAL SYSTEM**

**CIRCUIT DIAGRAM**

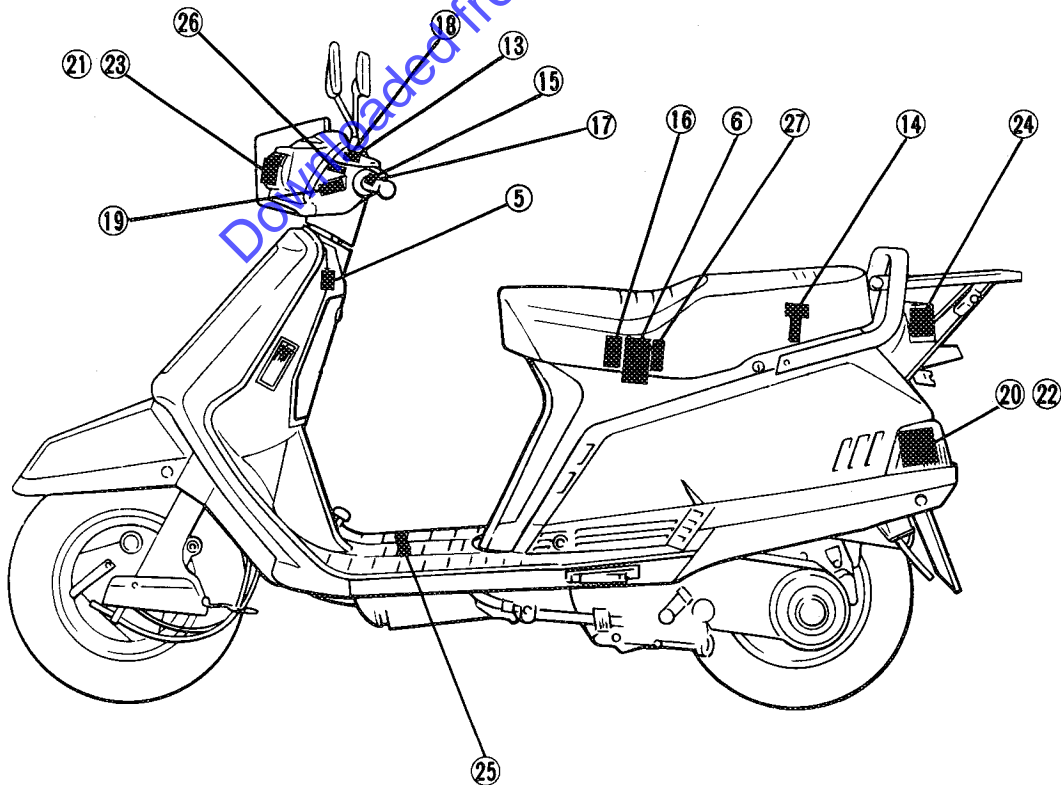
Below circuit diagram shows signal circuit.



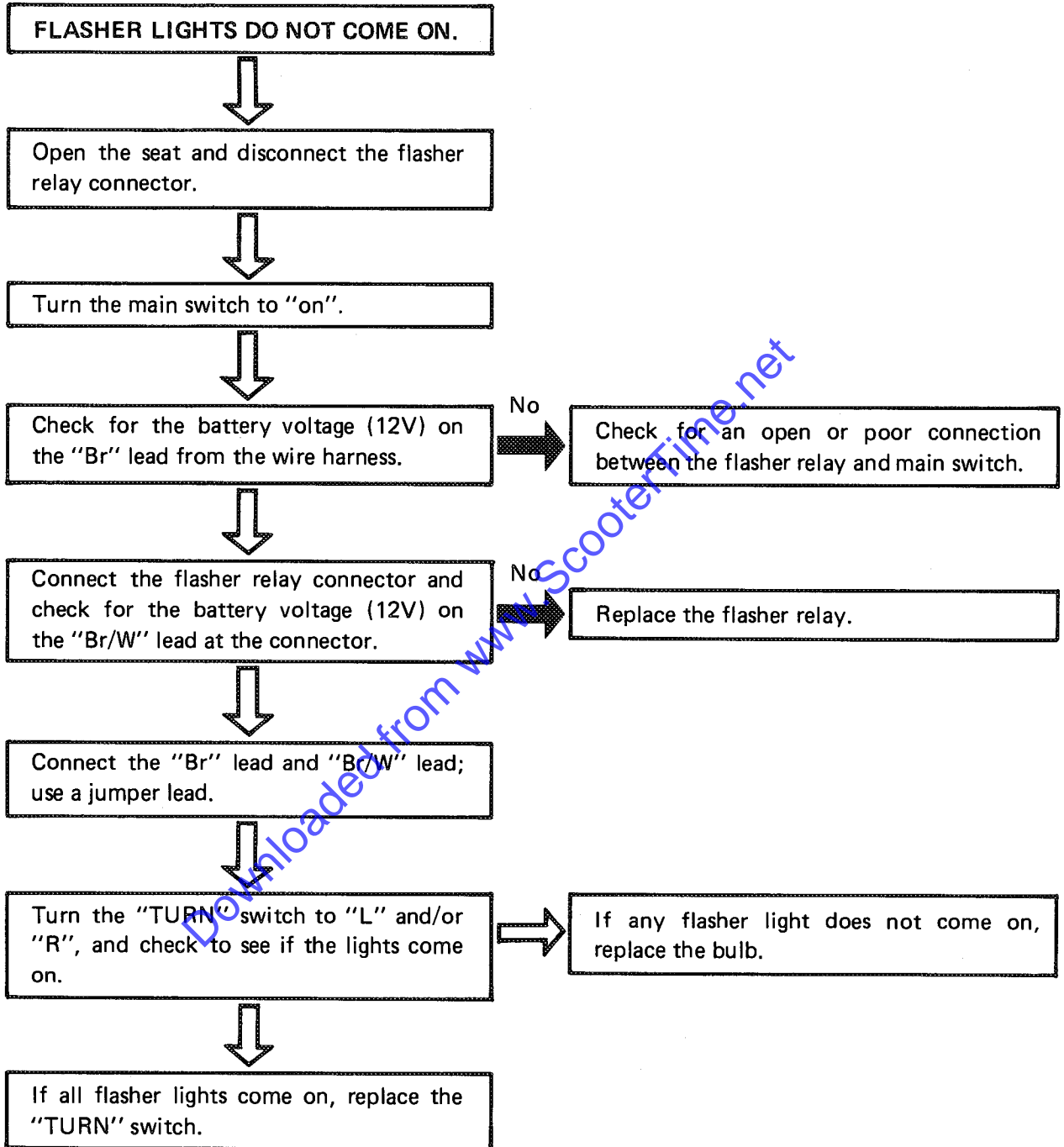
**6**



- ⑤ Main switch
- ⑥ Fuse
- ⑬ Fuel meter
- ⑭ Fuel sender
- ⑮ "HORN" switch
- ⑯ Flasher relay
- ⑰ "TURN" switch
- ⑱ "TURN" indicator light
- ⑲ Audio pilot
- ⑳ Rear flasher light (Right)
- ㉑ Front flasher light (Right)
- ㉒ Rear flasher light (Left)
- ㉓ Front flasher light (Left)
- ㉔ Tail/Brake light
- ㉕ Rear brake switch
- ㉖ Front brake switch
- ㉗ Battery



TROUBLESHOOTING



6



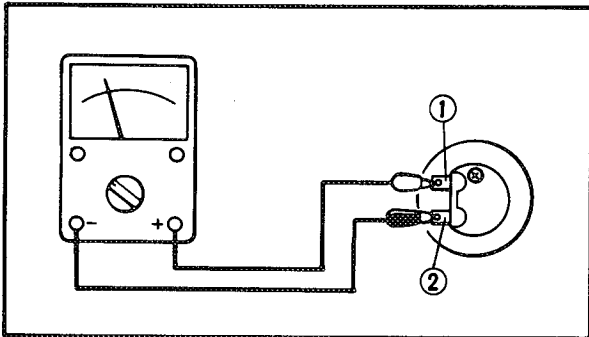


**HORN TEST**

1. Check:

Defective components → Replace.

Check for:	Horn inoperative
	12V on brown lead to horn
	Good ground (horn/pink lead) when horn button is pressed
	Faulty fuse



2. Measure:

• Horn resistance

Out of specification → Replace.

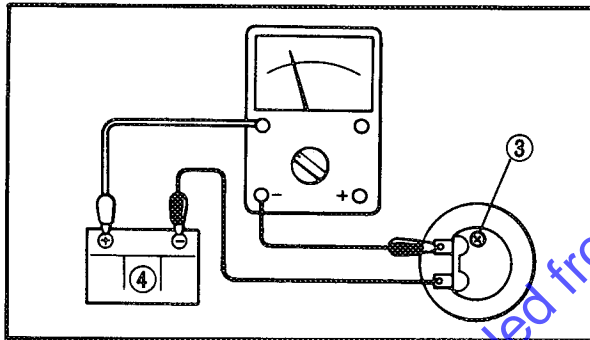
Tester's lead		Standard resistance	Tester's range
Red lead (+)	Black lead (-)		
Brown lead ①	Pink lead ②	1.05Ω ± 10%	R x 1

3. Adjust:

• Volume

Turn the adjuster ③ in and out so that the volume is maximum at the maximum amperage.

④ Battery (12V)

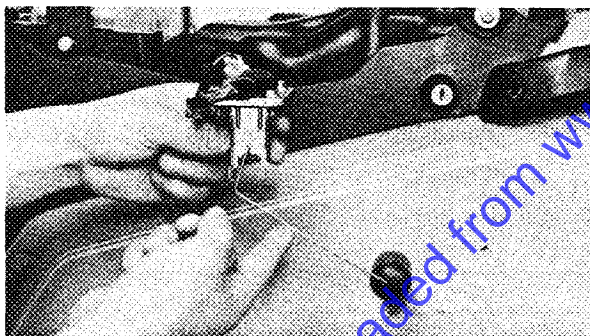
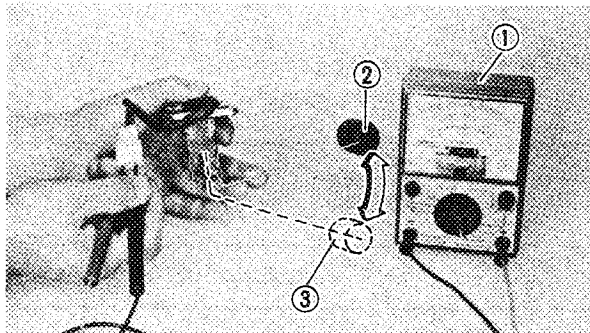
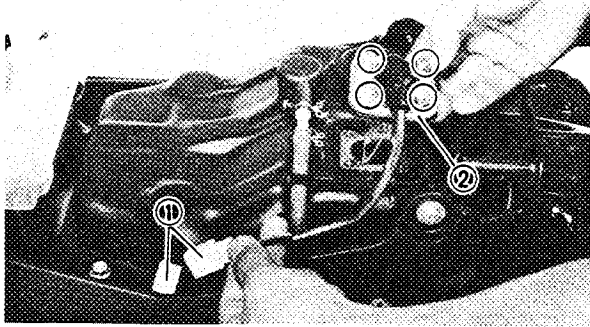


Tester's lead		Maximum Amperage	Tester's range
Red lead (+)	Black lead (-)		
Battery (+) lead	Horn lead and Battery (-) lead	1.5A	DC5A

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**BRAKE LIGHT TEST**

Check for:	Brake light inoperative
	Defective bulb
	12V on yellow lead to brake light
	12V on brown lead to each brake light switch (Front and rear brake switch)



### FUEL METER SYSTEM TEST

1. Disconnect:
    - Fuel sender connector ①
  2. Remove:
    - Fuel sender assembly ②
  3. Connect:
    - Pocket Tester (YU-03112) ①
  4. Move the sender float up ② and down ③ .
  5. Measure:
    - Sender resistance (full position)
    - Sender resistance (empty position)

Out of specification → Replace.  
In specification → Go to next test.
- 

**Fuel Sender Resistance:**

**Full Position:**  
4 ~ 10Ω at 20°C (68° F)

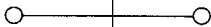
**Empty position:**  
90 ~ 100Ω at 20°C (68° F)
6. Connect:
    - Connections
  7. Check:
    - Fuel meter operation

Move the sender float up and down.  
Not operating → Replace the fuel meter.

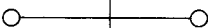
**SWITCHES TEST**

Switches may be checked for continuity with the Pocket Tester (YU-03112) on the "ohm x 1" position.


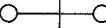
**Main Switch**

Switch Position	Lead Color	
	R	Br
LOCK		
OFF		
ON		

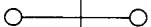

**"ENGINE STOP" Switch**

Switch Position	Lead Color	
	Br/R	R/W
OFF		
RUN		

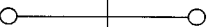
**"START" Switch**

Switch Position	Lead Color			
	L/W	B	Br	L/B
OFF				
PUSH				

**"LIGHTS" (Dimmer) Switch**

Switch Position	Lead Color		
	Y	L/B	G
LO			
HI			

**"HORN" Switch**

Switch Position	Lead Color	
	P	B
PUSH		
OFF		

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**“TURN” Switch**

Switch Position	Lead Color		
	Ch	Br/W	Dg
R		○ — ○	
N			
L	○ — ○		

**“BRAKE” Switches (Front and Rear)**

Switch Position	Lead Color	
	Br	G/Y
FREE		
DEPRESS	○ — ○	○ — ○

**Sidestand Switch**

Switch Position	Lead Color		
	Br/R	Br	G/L
FREE	○ — ○		
PUSH		○ — ○	

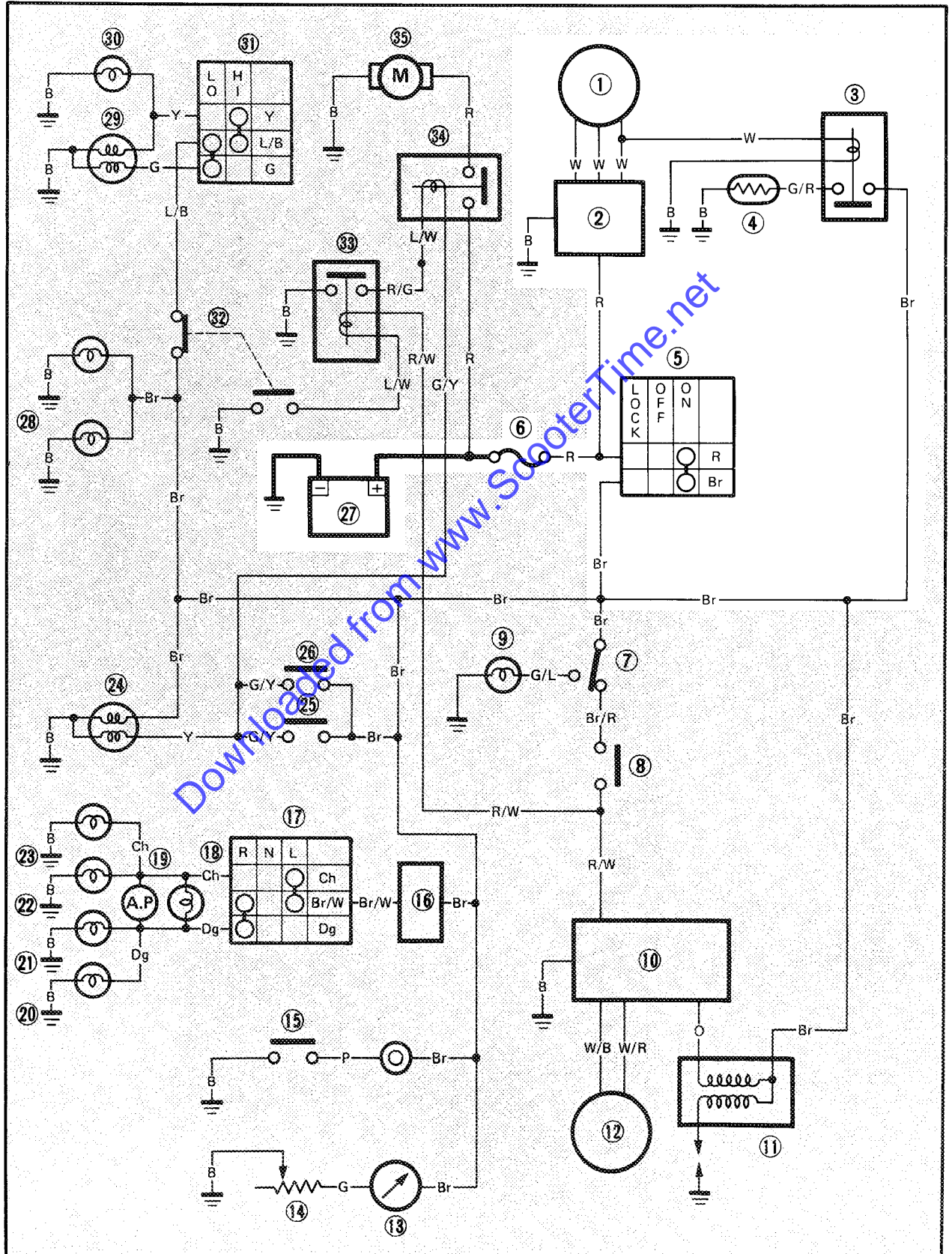
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**AUTO CHOKE SYSTEM**

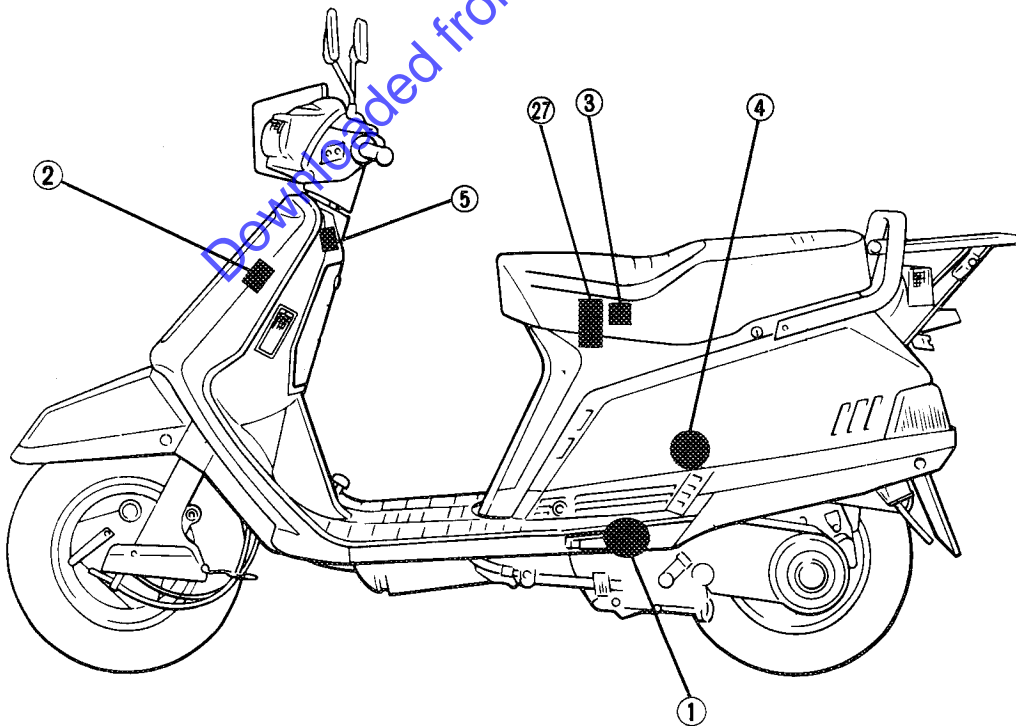
**CIRCUIT DIAGRAM**

Below circuit diagram shows auto choke circuit.



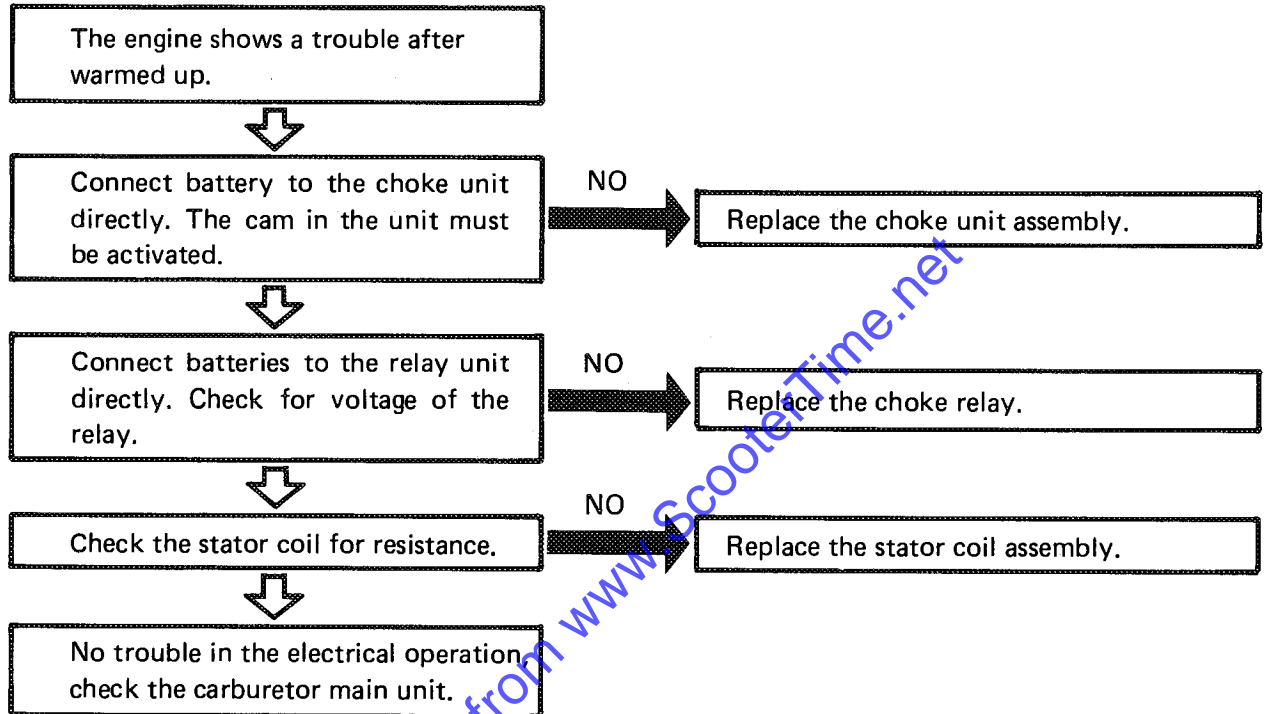


- ① AC generator
- ② Rectifier/Regulator
- ③ Choke relay
- ④ Choke unit
- ⑤ Main switch
- 27 Battery



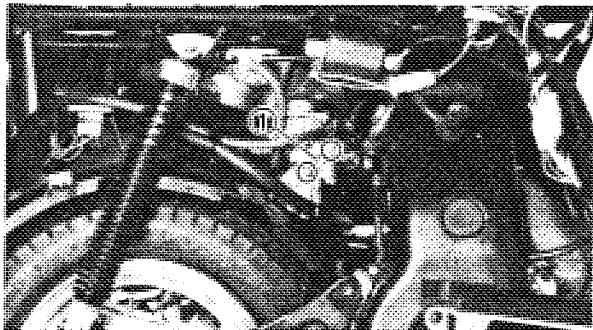
**TROUBLESHOOTING**

After starting the engine, the AUTO CHOKE system provides a leaner fuel-air mixture according to the increased engine temperature. Thus, if the cold engine is hard to start, the carburetor unit is defective and an overhaul of the unit is necessary. An electrical trouble in the AUTO CHOKE system causes the engine to be a trouble or hard to start when the engine is warmed up. Check the engine as follows:



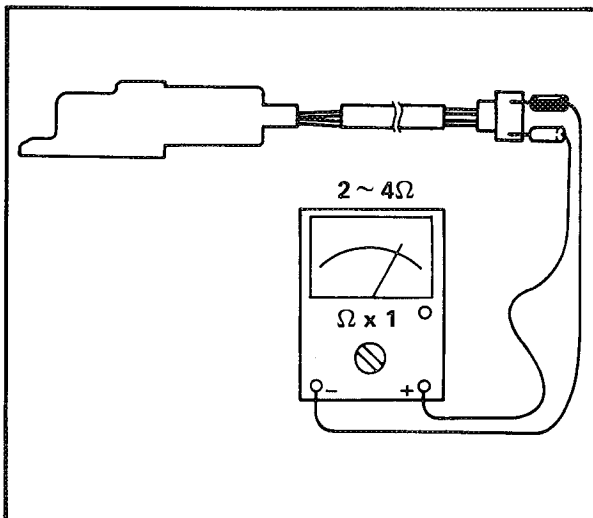
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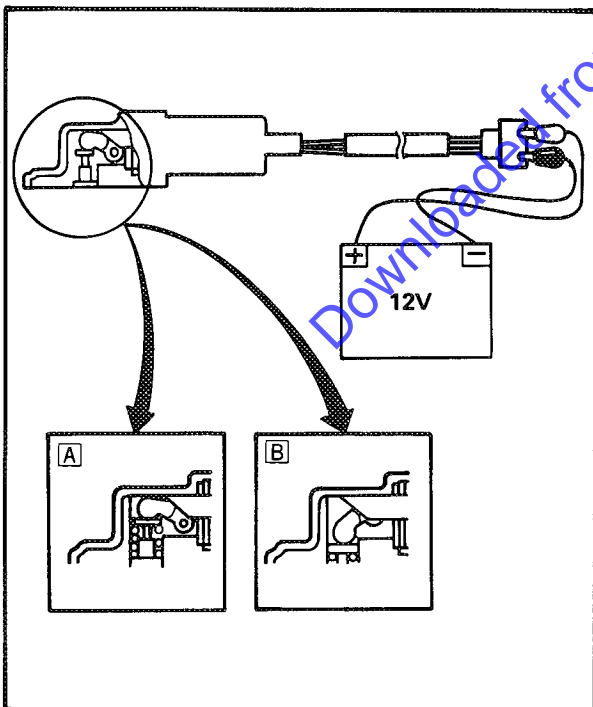


**CHOKE UNIT TEST**

1. Remove:
  - Side cover (Both)
2. Disconnect:
  - Choke unit lead
3. Remove:
  - Choke unit ①
4. Measure:
  - Choke unit resistance
  - Out of specification → Replace.



	<p><b>Choke Unit Resistance:</b>                  2 ~ 4Ω at 25°C (77° F)</p>
---	--



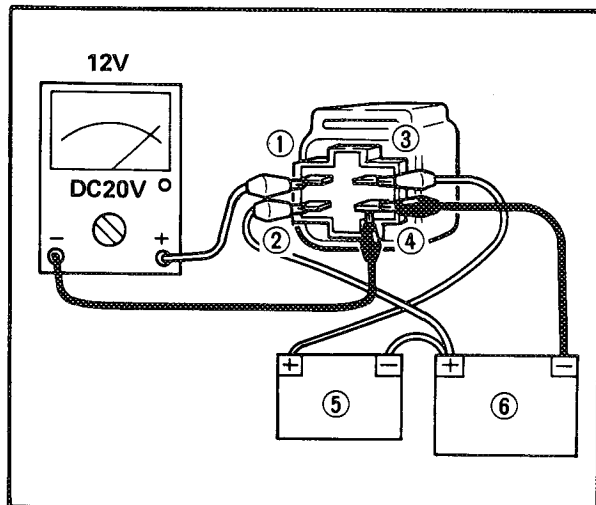
5. Connect:
  - 12V Battery
6. Check:
  - Cam movement
  - Incorrect movement → Replace.

- A** BATTERY IS NOT CONNECTED  
(WAX IS COLD)
- B** BATTERY IS CONNECTED  
(WAX IS WARM)



### CHOKE RELAY TEST

1. Remove:
  - Choke relay
2. Inspect:
  - Choke relay



#### Choke unit inspection steps:

- Connect batteries by which the applied voltage is 18V between the White ③ and the Black ④ terminals.

#### NOTE:

The relay unit needs at least 13.5V to be activated.

- Set the tester selector to "DC20V" position.
- Measurement of the voltage between the Green/Red ① and the Black ④ terminals is should be 12V.

② Brown terminal

⑤ Battery (6V)

⑥ Battery (12V)

### STATOR COIL RESISTANCE TEST

1. Measure:
  - Stator coil resistance  
Refer to "Charge Coil Resistance Measurement".

**CHAPTER 7  
APPENDICES**

**SPECIFICATIONS** ..... 7-1  
    GENERAL SPECIFICATIONS..... 7-1  
    MAINTENANCE SPECIFICATIONS ..... 7-4  
    GENERAL TORQUE SPECIFICATIONS..... 7-13  
    DEFINITION OF UNITS ..... 7-13

**LUBRICATION DIAGRAM** ..... 7-14

**CABLE ROUTING** ..... 7-15

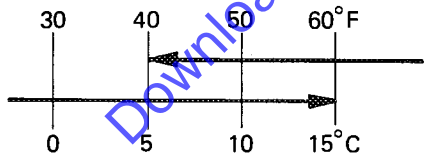
**COLOR WIRING DIAGRAM**

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**APPENDICES**

**SPECIFICATIONS**

**GENERAL SPECIFICATIONS**

Model	XC125S
Model Code	1WA
Vehicle Identification Number	JYA1WA00 * GA000101
Engine Starting Number	1WA-000101
Dimensions:	
Overall Length	1,880 mm (74.0 in)
Overall Width	650 mm (25.6 in)
Overall Height	1,095 mm (43.1 in)
Seat Height	760 mm (29.9 in)
Wheelbase	1,250 mm (49.2 in)
Minimum Ground Clearance	110 mm ( 4.3 in)
Basic Weight:	
With Oil and Full Fuel Tank	102 kg (225 lb)
Minimum Turning Radius	1,800 mm (71.0 in)
Engine:	
Engine Type	Air cooled, 4-stroke, gasoline, SOHC
Cylinder Arrangement	Single, Forward Inclined
Displacement	124 cm <sup>3</sup>
Bore x Stroke	49.0 x 66.0 mm (1.929 x 2.598 in)
Compression Ratio	10.0 : 1
Compression Pressure	90 kPa (9.0 kg/cm <sup>2</sup> , 128 psi)
Starting System	Electric starter
Lubrication System	Wet sump (Pressure lubricated)
Oil Type or Grade:	
Engine Oil:	
	
Final Gear Oil	
Yamalube 4-cycle or SAE 20W40 type SE motor oil (If temperature does not go below 5°C (40°F)) SAE 10W30 type SE motor oil (If temperature does not go above 15°C (60°F))	
SAE 10W30 type SE motor oil	
Oil Capacity:	
Engine Oil:	
Periodic Oil Change	1.0 L (0.9 Imp qt, 1.1 US qt)
Total Amount	1.1 L (1.0 Imp qt, 1.2 US qt)
Final Gear Oil:	
Total Amount	0.15 L (0.13 Imp qt, 0.16 US qt)
Air Filter:	Wet type element
Fuel:	
Type	Regular Gasoline
Tank Capacity	7.0 L (1.5 Imp gal, 1.8 US gal)
Carburetor:	
Type/Manufacturer	Y22V/TEI KEI

# SPECIFICATIONS



Model	XC125S	
Spark Plug: Type/Manufacturer Gap	U20FSR-U (N.D.) 0.6 ~ 0.7 mm (0.024 ~ 0.028 in)	
Clutch Type	Dry, Centrifugal Automatic	
Transmission: Primary Reduction System Primary Reduction Ratio Secondary Reduction System Secondary Reduction Ratio Transmission Type Operation	Helical gear 43/14 (3.071) Spur gear 36/14 (2.571) V-Belt Automatic	
Chassis: Frame Type Caster Angle Trail	Steel Tube Underbone 27° 78 mm (3.07 in)	
Tire: Type Size (F) Size (R)	Tubeless 3.50-10 4PR 3.50-10 4REINF	
Cold Tire Pressure: Maximum Load*	168 kg (370 lb)	
	Front	Rear
	147 kPa (1.5 kg/cm <sup>2</sup> , 21 psi)	196 kPa (2.0 kg/cm <sup>2</sup> , 28 psi)
	147 kPa (1.5 kg/cm <sup>2</sup> , 21 psi)	294 kPa (3.0 kg/cm <sup>2</sup> , 43 psi)
Brake: Front Brake Type Operation Rear Brake Type Operation	Drum Brake Right Hand Operation Drum Brake Right Foot Operation	
Suspension: Front Rear	Bottom Link Fork Unit Swing	
Shock Absorber: Front Rear	Coil Spring, Oil Damper Coil Spring, Gas-Oil Damper	
Wheel Travel: Front Rear	85 mm (3.3 in) 70 mm (2.8 in)	
Electrical: Ignition System Generator System Battery Type or Model Battery Capacity	Full Transistor Ignition AC Magneto GM7CZ-3D 12V 7AH	
Headlight Type	Bulb	

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

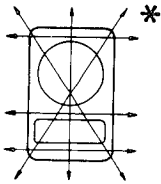
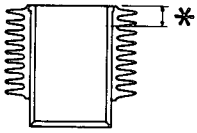
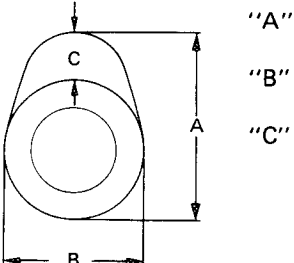
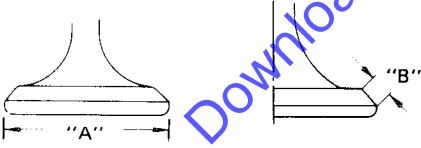
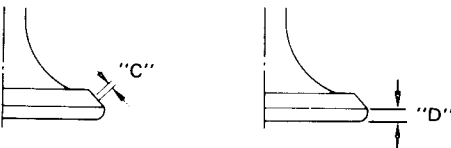


Model	XC125S
Bulb Wattage x Quantity: Headlight Tail/Brake Light Flasher Light Licence Light Meter Light	12V, 45W/40W 12V, 8W/27W 12V, 27W x 4 12V, 8W 12V, 3.4W x 2
Indicator Light Wattage x Quantity: "HIGH BEAM" "TURN" "STAND"	12V, 3.4W 12V, 3.4W 12V, 3.4W

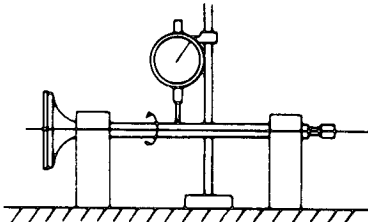
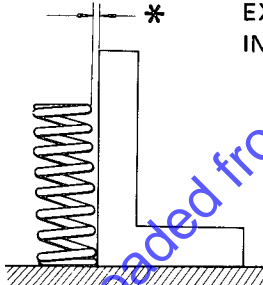


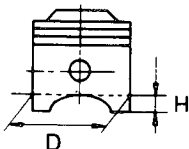
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MAINTENANCE SPECIFICATIONS

Engine

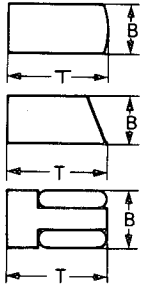
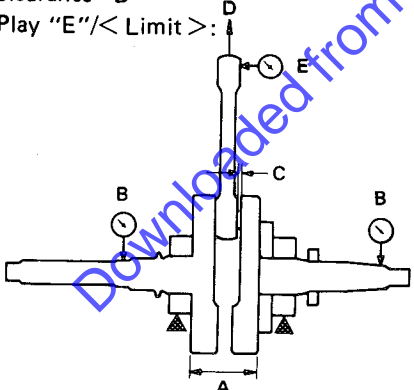
Model	XC125S
Cylinder Head: Warp Limit 	$< 0.05 \text{ mm (0.002 in)} >$ * Lines indicate straightedge measurement.
Cylinder: Bore Size/Masuring Point* $< \text{Limit} >$ 	$49.00 \sim 49.01 \text{ mm (1.929} \sim 1.930 \text{ in) /}$ $19.0 \text{ mm (0.75 in) (From the top of the cylinder)}$ $< 49.1 \text{ mm (1.933 in)} >$
Camshaft: Drive Method Cam Dimensions: Intake & Exhaust 	Chain (Left) "A" $26.169 \sim 26.269 \text{ mm (1.030} \sim 1.034 \text{ in)}$ "B" $21.061 \sim 21.161 \text{ mm (0.829} \sim 0.833 \text{ in)}$ "C" $5.264 \sim 5.274 \text{ mm (0.207} \sim 0.208 \text{ in)}$
Rocker Arm/Rocker Arm Shaft: Shaft Outside Diameter Arm-to-shaft Clearance $< \text{Limit} >$	$9.81 \sim 9.91 \text{ mm (0.386} \sim 0.390 \text{ in)}$ $0.09 \sim 0.34 \text{ mm (0.0035} \sim 0.0134 \text{ in)}$ $< 0.08 \text{ mm (0.0032 in)} >$
Valve, Valve Seat, Valve Guide: Valve Clearance (Colde): Valve Dimensions: 	$0.08 \sim 0.12 \text{ mm (0.003} \sim 0.005 \text{ in)}$ $0.10 \sim 0.14 \text{ mm (0.004} \sim 0.006 \text{ in)}$ 
"A" Head Diameter: "B" Face Width: "C" Seat Width/ $< \text{Limit} >$ : "D" Margin Thickness: Stem Outside Diameter/ $< \text{Limit} >$ :	IN. $25.9 \sim 26.1 \text{ mm (1.020} \sim 1.028 \text{ in)}$ EX. $21.9 \sim 22.1 \text{ mm (0.862} \sim 0.870 \text{ in)}$ IN. $1.4 \sim 3.0 \text{ mm (0.055} \sim 0.118 \text{ in)}$ EX. $1.7 \sim 2.8 \text{ mm (0.067} \sim 0.110 \text{ in)}$ IN. $0.9 \sim 1.1 \text{ mm (0.035} \sim 0.043 \text{ in) /}$ $< 1.6 \text{ mm (0.063 in)} >$ EX. $0.9 \sim 1.1 \text{ mm (0.035} \sim 0.043 \text{ in) /}$ $< 1.6 \text{ mm (0.063 in)} >$ IN. $0.4 \sim 0.8 \text{ mm (0.016} \sim 0.031 \text{ in)}$ EX. $0.8 \sim 1.2 \text{ mm (0.031} \sim 0.047 \text{ in)}$ IN. $4.975 \sim 4.990 \text{ mm (0.1959} \sim 0.1965 \text{ in) /}$ $< 4.950 \text{ mm (0.1949 in)} >$ EX. $4.960 \sim 4.975 \text{ mm (0.1953} \sim 0.1959 \text{ in) /}$ $< 4.953 \text{ mm (0.1950 in)} >$



Model	XC125S	
<p>Guide Inside Diameter/&lt; Limit &gt;: IN. EX.</p> <p>Stem-to-guide Clearance/&lt; Limit &gt;: IN. EX.</p> <p>Stem Runout Limit:</p> 	<p>5.000 ~ 5.012 mm (0.1969 ~ 0.1973 in)/ &lt; 5.03 mm (0.1980 in) &gt;</p> <p>5.000 ~ 5.012 mm (0.1969 ~ 0.1973 in)/ &lt; 5.03 mm (0.1980 in) &gt;</p> <p>0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in)/ &lt; 0.08 mm (0.0031 in) &gt;</p> <p>0.025 ~ 0.052 mm (0.0010 ~ 0.0020 in)/ &lt; 0.10 mm (0.0039 in) &gt;</p> <p>0.02 mm (0.0008 in)</p>	
<p>Valve Spring:</p> <p>Free Length/Limit IN. EX.</p> <p>Compressed Length (Valve Closed) IN. EX.</p> <p>Spring Rate IN. EX.</p> <p>Tilt Limit *: IN. &amp; EX.</p>  <p>Direction of Winding (Top view)</p>	<p>28.63 mm (1.127 in)/25.4 mm (1.00 in) 28.63 mm (1.127 in)/25.4 mm (1.00 in)</p> <p>24.9 mm (0.98 in) 24.9 mm (0.98 in)</p> <p>25.8 N/mm (2.62 kg/mm, 147 lb/in) 25.8 N/mm (2.62 kg/mm, 147 lb/in)</p> <p>2.5° or 1.2 mm (0.047 in)</p>	<p>IN</p>
		<p>EX</p> 
<p>Piston:</p> <p>Piston Size "D"/ Measuring Point "H"</p>  <p>Piston Clearance</p> <p>Oversize: 2nd 4th</p>	<p>48.945 ~ 48.985 mm (1.927 ~ 1.929 in)/ 5 mm (0.2 in) (From bottom line of piston skirt)</p> <p>0.020 ~ 0.040 mm (0.0008 ~ 0.0016 in)</p> <p>49.50 mm (1.949 in)</p> <p>50.00 mm (1.969 in)</p>	

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Model	XC125S
<p><b>Piston Ring:</b> Sectional Sketch</p>  <p>Top Ring</p> <p>2nd Ring</p> <p>Oil Ring</p> <p>End Gap (Installed)/&lt; Limit &gt;:</p> <p>Top Ring</p> <p>2nd Ring</p> <p>Oil Ring</p> <p>Side Clearance/&lt; Limit &gt;:</p> <p>Top Ring</p> <p>2nd Ring</p>	<p>Barrel</p> <p>B = 1.0 mm (0.039 in)</p> <p>T = 2.0 mm (0.079 in)</p> <p>Taper</p> <p>B = 1.0 mm (0.039 in)</p> <p>T = 2.0 mm (0.079 in)</p> <p>B = 2.0 mm (0.079 in)</p> <p>T = 2.2 mm (0.087 in)</p> <p>0.15 ~ 0.30 mm (0.006 ~ 0.012 in)/ &lt; 0.4 mm (0.016 in) &gt;</p> <p>0.15 ~ 0.30 mm (0.006 ~ 0.012 in)/ &lt; 0.4 mm (0.016 in) &gt;</p> <p>0.3 ~ 0.9 mm (0.012 ~ 0.035 in)/ &lt; 0.4 mm (0.016 in) &gt;</p> <p>0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)/ &lt; 0.12 mm (0.0047 in) &gt;</p> <p>0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)/ &lt; 0.12 mm (0.0047 in) &gt;</p>
<p><b>Crankshaft:</b> Crank Width "A" Runout Limit "B": Big End Side Clearance "C"/&lt; Limit &gt;: Big End Radial Clearance "D" Small End Free Play "E"/&lt; Limit &gt;:</p> 	<p>44.95 ~ 45.00 mm (1.770 ~ 1.772 in)</p> <p>Left: 0.01 mm (0.0004 in)</p> <p>Right: 0.03 mm (0.0012 in)</p> <p>0.05 ~ 0.45 mm (0.0020 ~ 0.0177 in)/ &lt; 0.5 mm (0.0197 in) &gt;</p> <p>0.004 ~ 0.019 mm (0.00016 ~ 0.00075 in)</p> <p>0.8 ~ 1.0 mm (0.031 ~ 0.039 in)/ &lt; 1.5 mm (0.059 in) &gt;</p>
<p>Balancer Drive Method:</p>	<p>Gear</p>
<p><b>Clutch:</b> Clutch Shoe Thickness &lt; Wear Limit &gt; Sliding Spring Free Length &lt; Limit &gt; V-Belt Width &lt; Wear Limit &gt; Clutch-In Revolution Clutch-Stall Revolution</p>	<p>3.5 mm (0.138 in)</p> <p>&lt; 2.0 mm (0.079 in) &gt;</p> <p>76.8 mm (3.02 in)</p> <p>&lt; 71.0 mm (2.80 in) &gt;</p> <p>19.5 mm (0.77 in)</p> <p>&lt; 17.5 mm (0.69 in) &gt;</p> <p>2,500 ~ 2,900 r/min</p> <p>3,700 ~ 4,300 r/min</p>

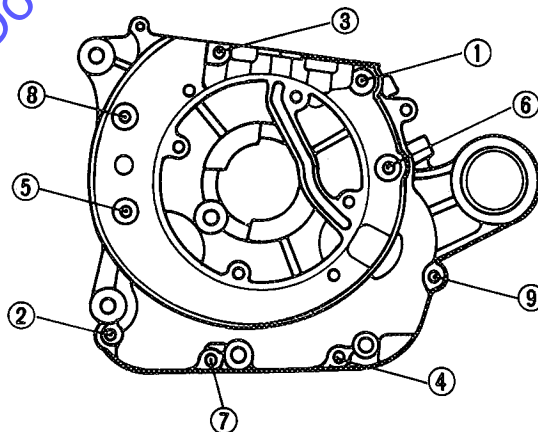


Model	XC125S
<b>Transmission:</b> Main Axle Deflection Limit Drive Axle Deflection Limit	< 0.08 mm (0.003 in) > < 0.08 mm (0.003 in) >
Air Filter Oil Grade (Oiled Filter):	Yamalube 2-cycle oil or equivalent
<b>Carburetor:</b> Type/Manufacturer/Quantity I.D. Mark Main Jet (M.J.) Main Air Jet (M.A.J.) Jet Needle (J.N.) Needle Jet (N.J.) Pilot Jet (P.J.) Pilot Air Jet (P.A.J.) Pilot Screw (P.S.) Valve Seat (V.S.) Starter Jet (G.S.) Fuel Level (F.L.) Float Height (F.H.) Engine Idling Speed Vacuum Pressure at Idling Speed Oil Temperature	Y22V/TEIKEI 50M00 #108 #200 4C10 85 #34 #140 1-3/4 φ2.0 #48 4.5 ~ 5.5 mm (0.18 ~ 0.22 in) 26.5 ~ 27.5 mm (1.04 ~ 1.08 in) 1,350 ~ 1,450 r/min Above 170 mmHg (6.69 inHg) 35 ~ 45°C (95 ~ 113°F)
<b>Lubrication System:</b> Oil Filter Type Oil Pump Type Tip Clearance/< Limit >  Side Clearance/< Limit >	Wire Mesh Trochoid Pump 0.15 mm (0.0059 in)/ < 0.2 mm (0.008 in) > 0.06 ~ 0.10 mm (0.0024 ~ 0.0039 in)/ < 0.15 mm (0.006 in) >
<b>Lubrication Chart:</b>	<p>The diagram illustrates the oil circulation path. It starts at the Oil Pan at the bottom, which contains an Oil Strainer. Oil is pumped upwards by the Oil Pump, passes through a Centrifugal Filter, then a Balancer Weight, Camshaft, Rocker Arm, and Cam Chain. From the Cam Chain, oil is distributed to the Piston and the Connecting Rod Big End. Arrows indicate the 'Feed' direction (upward) and 'Scavenge' direction (downward). The oil from the piston and connecting rod returns to the Oil Pan.</p>

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Part Name	Thread Size	Q'ty	Tightening Torque		
			Nm	m•kg	ft•lb
Cylinder Head	M 8 x 1.25	4	22	2.2	16
	M 6 x 1.0	2	10	1.0	7.2
Valve Adjuster Locknut	M 5 x 0.5	2	7	0.7	5.1
Valve Cover		2	7	0.7	5.1
Cam Shaft Bearing Stopper	M 6 x 1.0	1	7	0.7	5.1
Cam Sprocket	M 8 x 1.25	1	28	2.8	20
Cam Sprocket Cover	M 6 x 1.0	2	12	1.2	8.7
Cam Chain Tensioner	M 6 x 1.0	2	10	1.0	7.2
– Body					
– Plug	M 8 x 1.25	1	8	0.8	5.8
Spark Plug	M10 x 1.0	1	12.5	1.25	9.0
Air Shroud	M 6 x 1.0	3	7	0.7	5.1
Intake Manuhold	M 6 x 1.0	2	10	1.0	7.2
Muffler	M 6 x 1.0	2	10	1.0	7.2
– Exhaust					
– Body	M 8 x 1.25	1	16	1.6	11
Crankcase	M 6 x 1.0	9	12	1.2	8.7
Crankcase Cover-1	M 6 x 1.0	9	10	1.0	7.2
Crankcase Cover-2	M 6 x 1.0	8	12	1.2	8.7
Cam Chain Case Cover	M 6 x 1.0	2	0.7	0.7	5.1
Oil Pump	M 6 x 1.0	3	7	0.7	5.1
Drain Plug	M12 x 1.5	1	20	2.0	14
– Engine					
– Transission	M 8 x 1.25	1	16	1.6	11
Primary Sheave	M12 x 1.0	1	55	5.5	40
Secondary Sheave	M36 x 1.5	1	90	9.0	65
– Clutch					
– Clutch Housing	M14 x 1.25	1	60	6.0	43
Crankcase Cover	M 6 x 1.0	23	10	1.0	7.2
Air Duct	M 6 x 1.0	3	7	0.7	5.1
Air Filter	M 6 x 1.0	2	7	0.7	5.1
Fuel Cock	M 6 x 1.0	2	7	0.7	5.1
Stater Assembly	M 6 x 1.0	4	7	0.7	5.1
Flywheel	M12 x 1.25	1	70	7.0	50
Cooling Fan	M 6 x 1.0	3	7	0.7	5.1
Starter Motor	M 6 x 1.0	2	7	0.7	5.1

Crankcase Tightening Sequence:





Chassis

Model	XC125S
<b>Steering System:</b> Steeing Bearing Type No./Size of Steel Balls: <div style="text-align: right;">Upper Lower</div>	Ball Bearing 22 pcs/3/16 in 19 pcs/1/4 in
<b>Front Suspension:</b> Front Fork Travel Fork Spring Free Length < Limit > Spring Rate/Stroke:  Optional Spring	60 mm (2.36 in) 196.5 mm (7.74 in) < 195 mm (7.68 in) > $K_1 = 10.23 \text{ N/mm (1.043 kg/mm, 58.34 lb/in) / 0 ~ 46 mm (0 ~ 1.8 in)}$ $K_2 = 16.89 \text{ N/mm (1.722 kg/mm, 96.40 lb/in) / 46 ~ 64 mm (1.8 ~ 2.5 in)}$ No.
<b>Rear Suspension:</b> Shock Absorber Travel Spring Free Length < Limit > Fitting Length Spring Rate/Stroke  Optional Spring	75 mm (2.95 in) 245.1 mm (9.65 in) < 243.6 mm 9.59 in > 235.1 mm (9.26 in) $K_1 = 9.92 \text{ N/mm (1.011 kg/mm, 56.60 lb/in) / 0 ~ 47.5 mm (0 ~ 1.87 in)}$ $K_2 = 18.31 \text{ N/mm (1.867 kg/mm, 104.51 lb/in) / 47.5 ~ 70 mm (1.87 ~ 2.76 in)}$ $K_3 = 42.49 \text{ N/mm (4.333 kg/mm, 242.56 lb/in) / 70 ~ 85 mm (2.76 ~ 3.35 in)}$ No.
<b>Wheel:</b> Front Wheel Type Rear Wheel Type Front Rim Size/Material Rear Rim Size/Material Rim Runout Limit Vertical Lateral	Cast Wheel Cast Wheel MT2.50 x 10/Aluminum MT2.50 x 10/Aluminum  < 2.0 mm (0.08 in) > < 2.0 mm (0.08 in) >
<b>Drum Brake:</b> Type <div style="text-align: right;">Front Rear</div> Drum Inside Diameter/< Limit >: <div style="text-align: right;">Front Rear</div> Lining Thickness < Limit > Shoe Spring Free Length: <div style="text-align: right;">Front Rear</div>	Leading and Trailing Leading and Trailing  130 mm (5.12 in)/ < 131 mm (5.16 in) > 130 mm (5.12 in)/ < 131 mm (5.16 in) > 4 mm (0.16 in) < 2 mm (0.08 in) >  36.5 mm (1.44 in) 36.5 mm (1.44 in)

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# SPECIFICATIONS

**APPX**

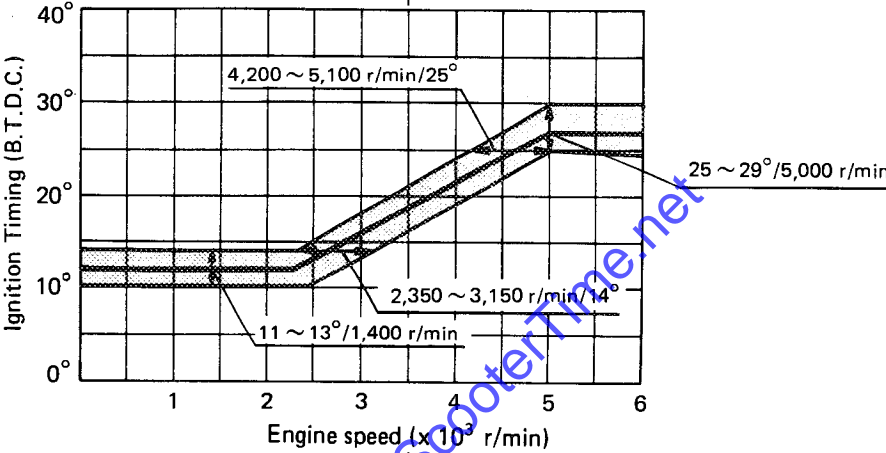
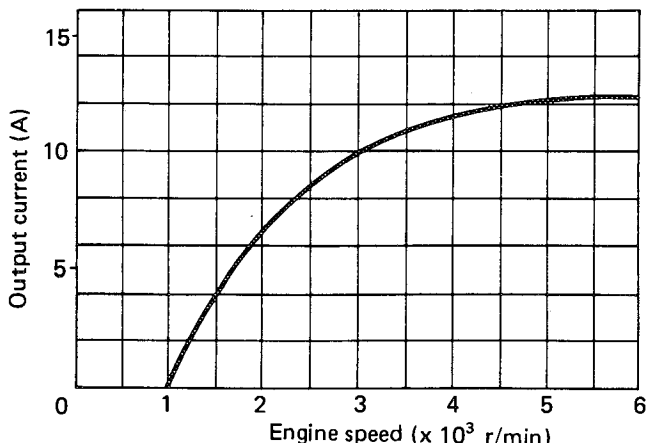


Model	XC125S
Brake Lever & Brake Pedal:	
Brake Lever Free Play/Position	10 ~ 20 mm (0.4 ~ 0.8 in)/at lever end
Brake Pedal Position	61 mm (2.40 in) (Vertical height above footrest mat.)
Brake Pedal Free Play	5 ~ 15 mm (0.2 ~ 0.6 in)

Part Name	Thread Size	Q'ty	Tightening Torque		
			Nm	m•kg	ft•lb
Engine Pivot Shaft	M12 x 1.25	1	74	7.4	53
Bridge Plate – Battery	M 6 x 1.0	2	8	0.8	58
Seat Bracket	M 8 x 1.25	2	20	2.0	15
Taillight Bracket	M 6 x 1.0	3	7	0.7	5.1
Rear Arm	M 8 x 1.25	2	23	2.3	17
Rear Shock Absorber	M 8 x 1.25	4	16	1.6	11
Steering Ring Nut	M25 x 1.0	7	30	3.0	22
Front Shock Absorber	M 8 x 1.25	4	19	1.9	13
Arm Pivot	M10 x 1.25	2	40	4.0	29
Fuel Tank	M 6 x 1.0	3	11	1.1	8
Fuel Cock	M 6 x 1.0	2	7	0.7	5.1
Fuel Sensor	M 5 x 0.8	4	2	0.2	1.4
Seat Hinge	M 6 x 1.0	7	7	0.7	5.1
Seat Lock	M 6 x 1.0	2	7	0.7	5.1
Carrier Stay	M 6 x 1.6	4	8	0.8	5.8
Carrier (Front)	M 6 x 1.0	2	8	0.8	5.8
Carrier (Rear)	M 8 x 1.25	2	16	1.6	11
Front Axle Shaft	M12 x 1.25	1	70	7.0	50
Front Brake Cam Lever	M 6 x 1.0	1	10	1.0	7.2
Tension Bar – Brake plate	M10 x 1.25	1	49	4.9	35
– Fork	M10 x 1.25	1	40	4.0	29
Rear Axle Shaft	M14 x 1.5	1	105	10.5	75
Rear Brake Plate	M 8 x 1.25	3	19	1.9	13
Rear Brake Cam Lever	M 6 x 1.0	1	10	1.0	7.2
Handlebar Mounting Bolt	M10 x 1.25	1	34	3.4	24
Footrest Board	M 8 x 1.25	2	16	1.6	11
	M 6 x 1.0	4	7	0.7	5.1
Sidestand	M10 x 1.25	1	32	3.2	23
Main Stand Bracket	M 8 x 1.25	4	27	2.7	19
Trank Lock	M22 x 1.5	1	2	0.2	1.4
Plastic Parts	M 6 x 1.0	–	7	0.7	5.1
	M 5 x 0.8	–	1	0.1	0.7

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Electrical

Model	XC125S
Voltage	12V
Ignition System: Ignition Timing (B.T.D.C.) Advanced Timing (B.T.D.C.) Advancer Type	12° at 1,400 r/min 27° at 5,000 r/min Electrical
	
TCI: Pickup Coil Resistance (Color) TCI Unit-Model/Manufacture	90 ~ 135Ω at 20°C (68°F) (White/Black – White/Red) TID11-07/HITACHI
Ignition Coil: Model/Manufacturer Primary Winding Resistance Secondary Winding Resistance	CM11-61/HITACHI 2.43 ~ 2.97 at 20°C (68°F) 10.6 ~ 15.8 kΩ at 20°C (68°F)
Charging System/Type	A.C. Magneto
AC Generator: Model/Manufacturer Normal Output	FL112-10/HITACHI 12V, 12A at 5,000 r/min
	
Charging Coil Resistance (Color)	0.64 ~ 0.96Ω at 20°C (68°F) (White – White)

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## SPECIFICATIONS

APPX



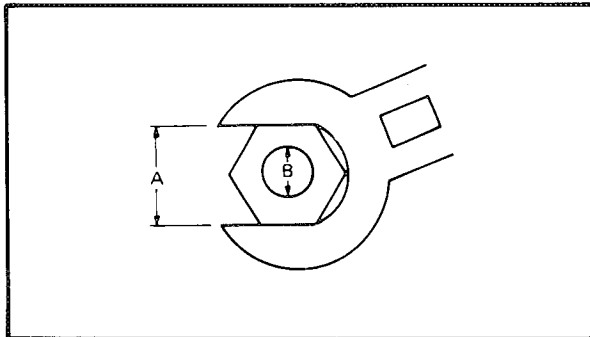
Model	XC125S
Voltage Regulator: Type Model/Manufacturer No Lead Regulated Voltage	Short Control SH553/SHINDENGEN 14 ~ 15V
Rectifier: Model/Manufacturer Capacity Withstand Voltage	SH553/SHINDENGEN 12A 400V
Battery: Capacity Specific Gravity	12V, 7AH 1.280
Electric Starter System: Type Starter Motor: Model/Manufacturer Output Armature Coil Resistance Brush: Overall Length < Limit > Spring Pressure Commutator: Diameter < Wear Limit > Mica Undercut (Width x Depth)	Constant mesh type 50M/YAMAHA 0.3 kW 0.05 ~ 0.06Ω at 20°C (68°F) 10.0 mm (0.39 in) < 3.5 mm (0.14 in) > 700 g (24.7 oz) 22.0 mm (0.87 in) < 21.0 mm (0.83 in) > 0.8 x 1.5 mm (0.03 x 0.06 in)
Starter Relay: Model/Manufacturer Amperage Rating Coil Winding Resistance (Color)	50W/TATEISHI (OMRON) 80A 2.7 ~ 3.3Ω at 20°C (60°F) (Blue/White – Green/Yellow)
Horn: Type/Quantity Model/Manufacturer Maximum Amperage	Plain type MF-12/NIKKO 1.5A
Flasher Relay: Type Model/Manufacturer Self Cancelling Device Flasher Frequency Wattage	Condenser type FZ26TSD/NIPPON DENSO No 75 ~ 95 cycle/min 27W x 2 + 3.4W + Audio Pilot
Fuel Gauge: Model/Manufacturer Sender Unit Resistance Full Empty	50W/NIPPON SEIKI 4 ~ 10Ω at 20°C (68°F) 90 ~ 100Ω at 20°C (68°F)
Starting Circuit Cut-off Relay: Model/Manufacturer Coil Winding Resistance (Color)	25G/TATEISHI (OMRON) 68 ~ 83Ω at 20°F (68°F) (Blue/White – Red/White)
Choke Relay: Model/Manufacturer	25G/TATEISHI (OMRON)
Circuit Breaker: Type Amperage for Individual Circuit/Quantity Main Reserve	Fuse 20A x 1 20A x 1

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**GENERAL TORQUE SPECIFICATIONS**

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

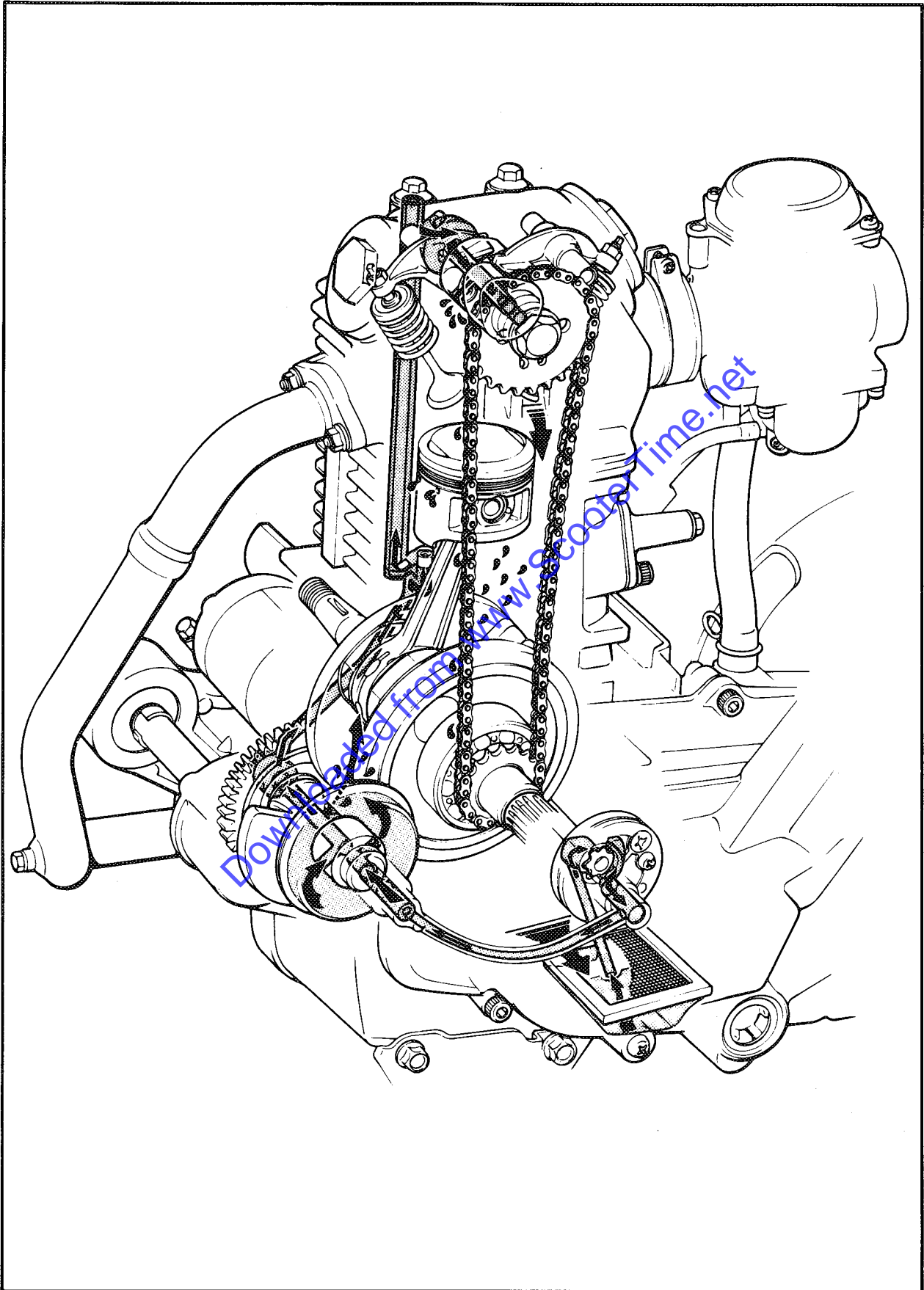
A (Nut)	B (Bolt)	General torque specifications		
		Nm	m·kg	ft·lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13.0	94

**DEFINITION OF UNITS**

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



LUBRICATION DIAGRAM

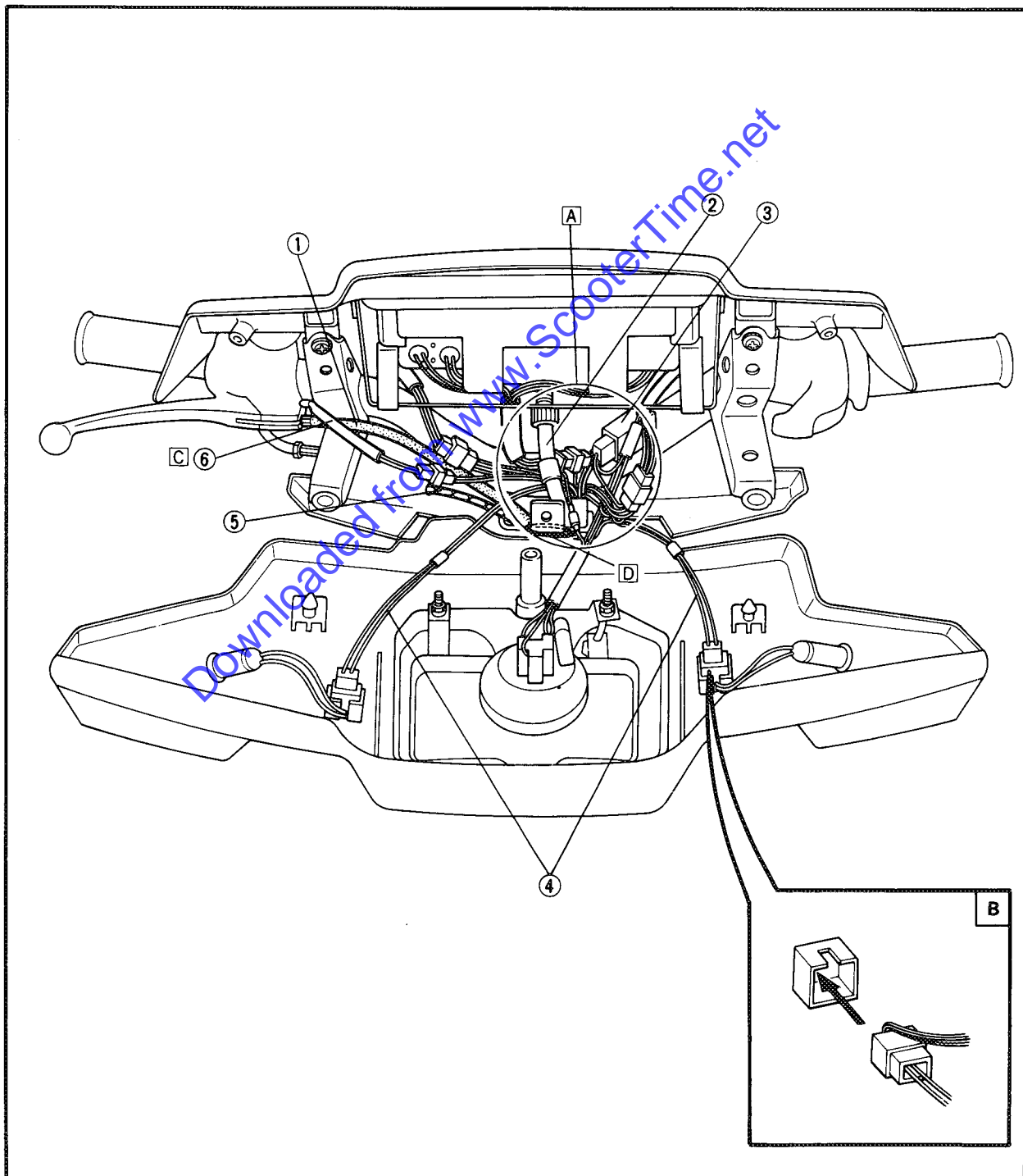




## CABLE ROUTING

- ① Front brake cable
- ② Speedometer cable
- ③ Flasher relay
- ④ Front flasher light lead
- ⑤ Throttle cable
- ⑥ Front brake switch lead

- A Except for meter leads, pass the leads and harnesses back of the speedometer cable.
- B Insert the flasher lead coupler into the holder cover socket
- C Pass the brake switch lead outside the brake cable
- D Hook the loop of the wireharness here.

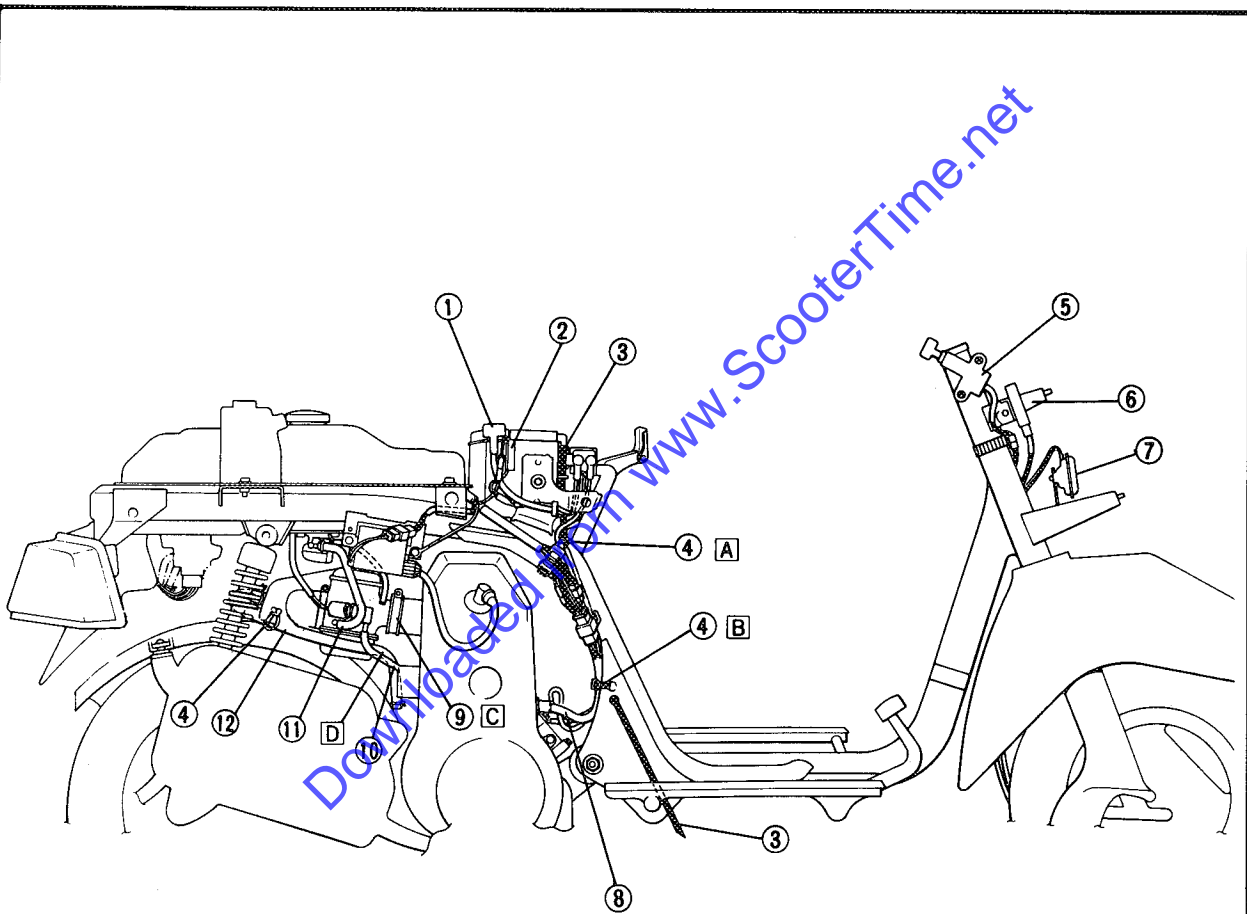




## CABLE ROUTING

- ① Battery positive (+) lead
- ② Fuse holder
- ③ Battery breather pipe
- ④ Band
- ⑤ Main switch
- ⑥ Rectifier/Regulator
- ⑦ Horn
- ⑧ Flywheel magneto lead
- ⑨ Carburetor clamp
- ⑩ Choke unit air filter hose
- ⑪ Fuel hose
- ⑫ Breather hose

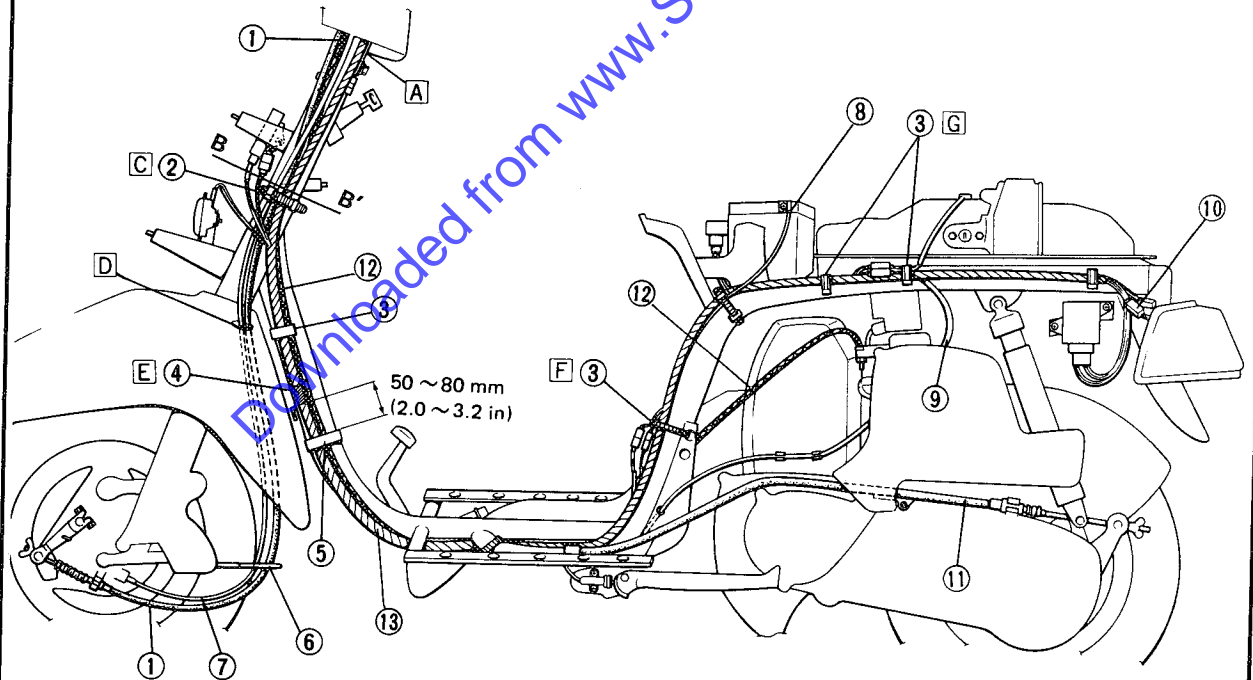
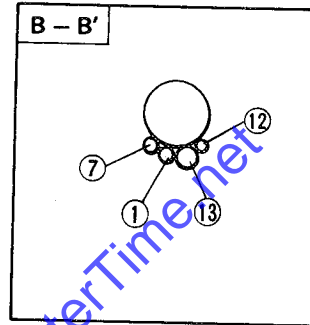
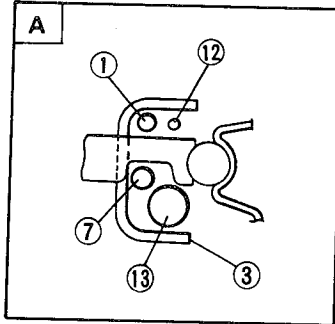
- A Clamp the starter motor lead and battery positive (–) lead and flywheel magneto lead.
- B Clamp the starter motor lead, ground lead and flywheel magneto lead.
- C The head of the screw is right side.
- D Clamp the breather hose





CABLE ROUTING

- |                     |                             |  |
|---------------------|-----------------------------|--|
| ① Front brake cable | ⑧ Battery negative (-) lead | Ⓒ Clamp the wireharness, speedometer cable, front brake cable, and throttle cable. |
| ② Band              | ⑨ Choke unit lead           | Ⓓ Pass the speedometer cable and front brake cable through the front fender hole.  |
| ③ Clamp             | ⑩ Taillight lead            | Ⓔ Clamp the wireharness and fuel sensor lead.                                      |
| ④ White tape        | ⑪ Rear brake cable          | Ⓕ Clamp the wireharness only.  |
| ⑤ Tape              | ⑫ Throttle cable            | Ⓖ Clamp the wireharness and throttle cable.  |
| ⑥ Cable holder      | ⑬ Wireharness               |  |
| ⑦ Speedometer cable |                             |  |

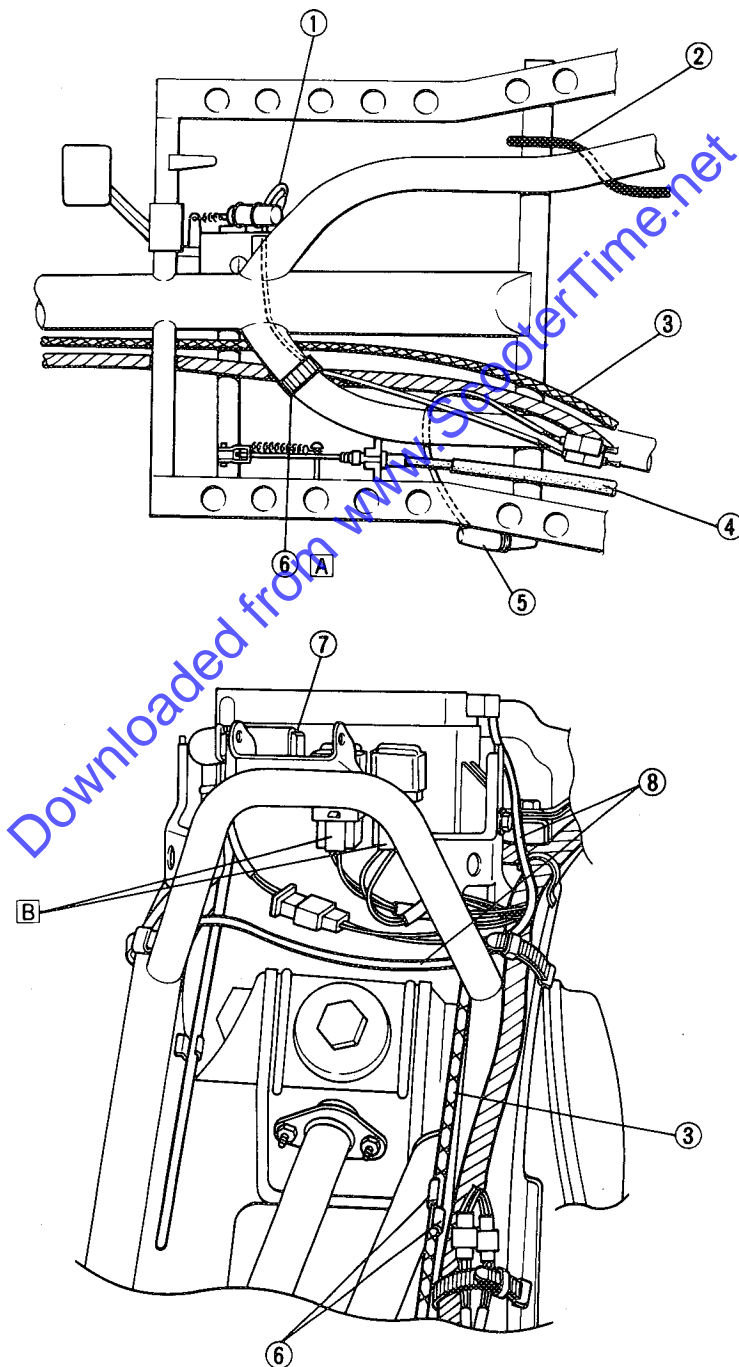




**CABLE ROUTING**

- ① Rear brake switch lead
- ② Battery breather pipe
- ③ Throttle cable
- ④ Rear brake cable
- ⑤ Sidestand switch
- ⑥ Clamp
- ⑦ Starter switch
- ⑧ Battery negative (-) lead

- A Clamp the wireharness and rear brake switch lead.
- B Blue coupler → Relay on blue mark.  
White coupler → Relay on "25G" mark.



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