YAMAHA

BW350T

Service Manual

LIT-11616-05-69

2JN-28197-10

BW350T
SERVICE MANUAL

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Printed in U.S.A.
P/N LIT-11616-05-69

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 machines have a basic understanding of the mechanical concepts and procedures inherent in machine 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 are 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 PUBLICATION
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 machine.

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

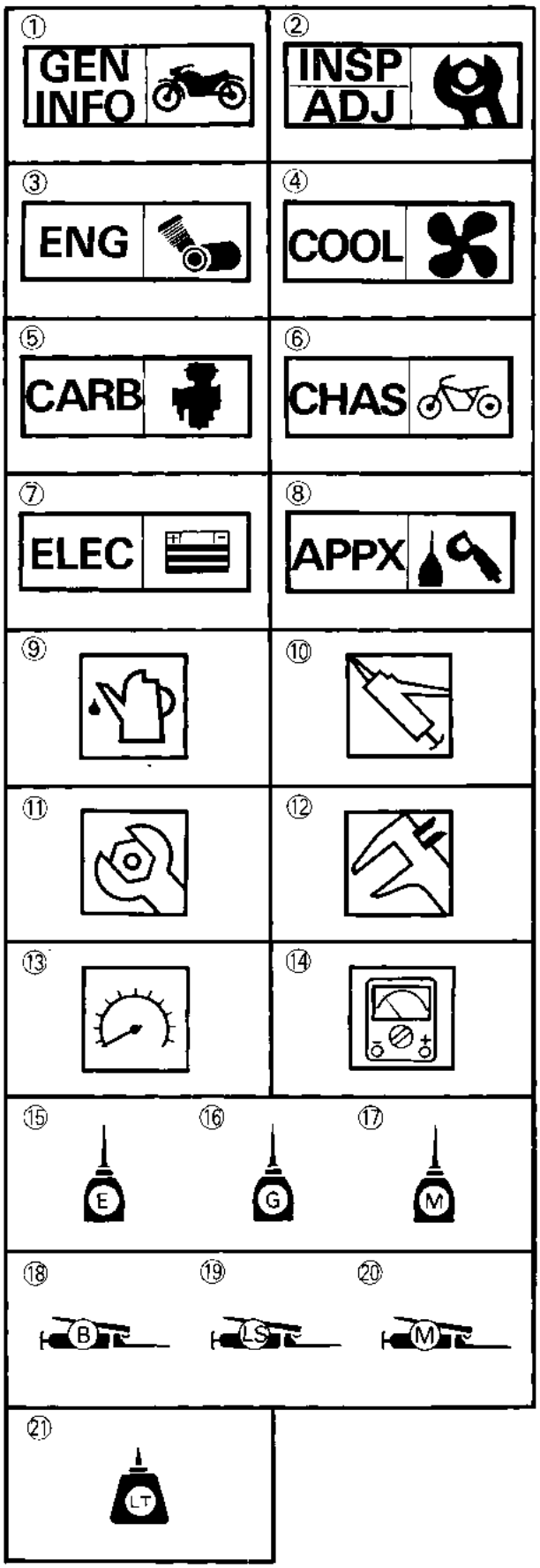
MANUAL FORMAT

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

- Bearings;
  Pitting/Damage→Replace.

EXPLODED DIAGRAM

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



ILLUSTRATED SYMBOLS (Refer to the illustration)

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

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

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

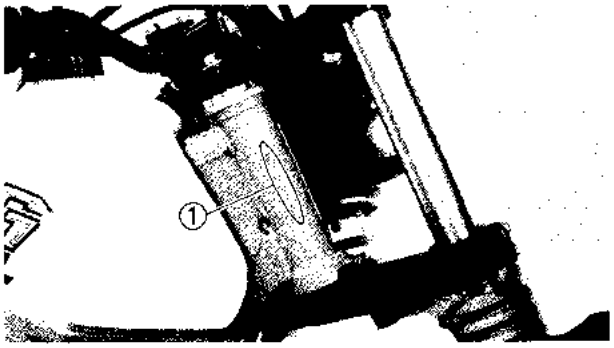
⑨ Filling fluid
⑩ Lubricant
⑪ Tightening
⑫ Wear limit, clearance
⑬ Engine speed
⑭ Ω, V, A

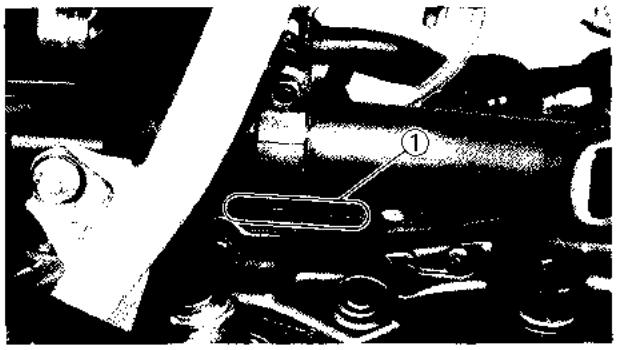
Illustrated symbols ⑮ to ㉑ in the exploded diagram indicate grade of lubricant and location of lubrication point.

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

INDEX

CHAPTER 1.
GENERAL INFORMATION





GENERAL INFORMATION

MACHINE IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

The vehicle identification number (1) is on the left side of the steering head pipe.

Starting Serial Number:
BW350T JYA2JN00*HC000101

ENGINE SERIAL NUMBER

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

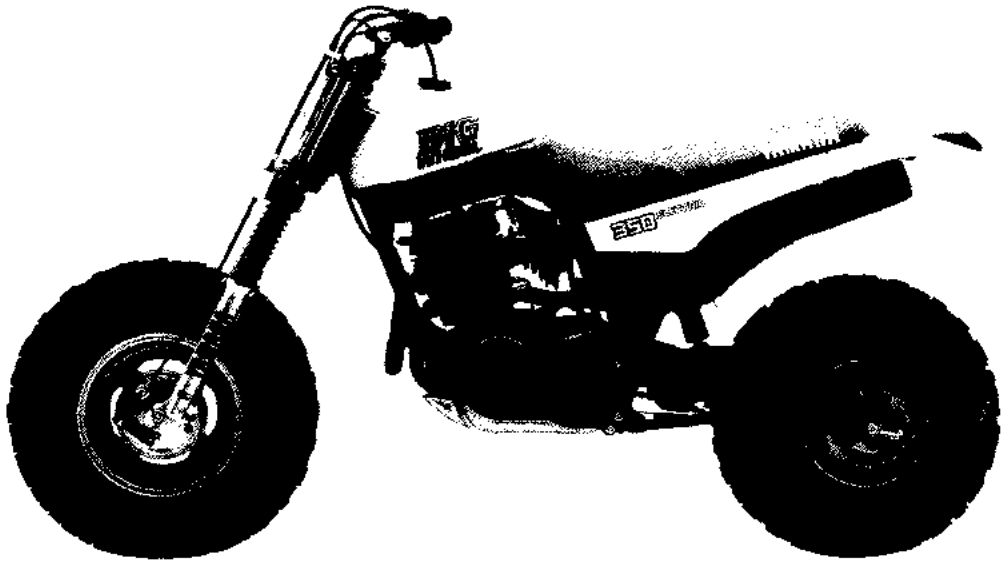
Starting Serial Number:
BW350T 2JN-000101

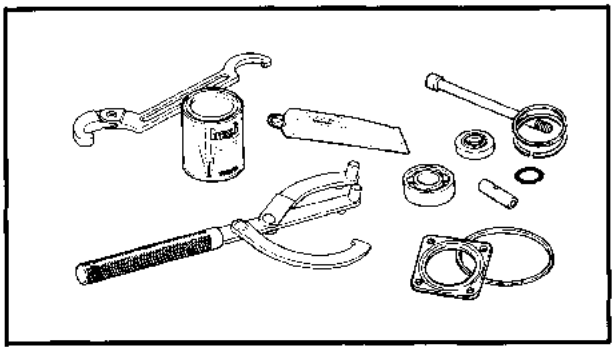
NOTE:

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

NOTE:

Designs and specifications are subject to change without notice.

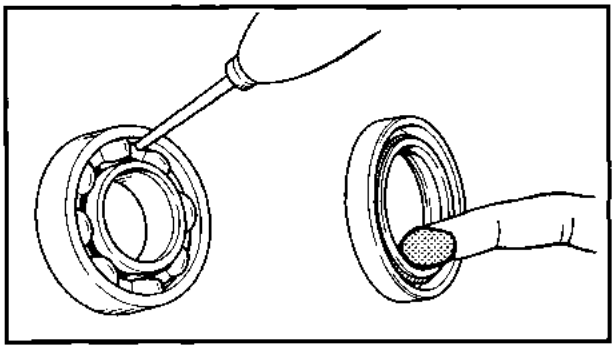




IMPORTANT INFORMATION

ALL REPLACEMENT PARTS

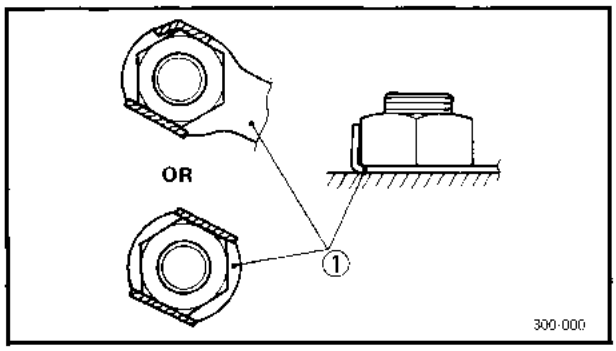
1. Use only genuine Yamaha parts for all replacements. Use oil and/or grease recommended by Yamaha for assembly and adjustment. Other brands may be similar in function and appearance, but inferior in quality.



GASKETS, OIL SEALS, AND O-RINGS

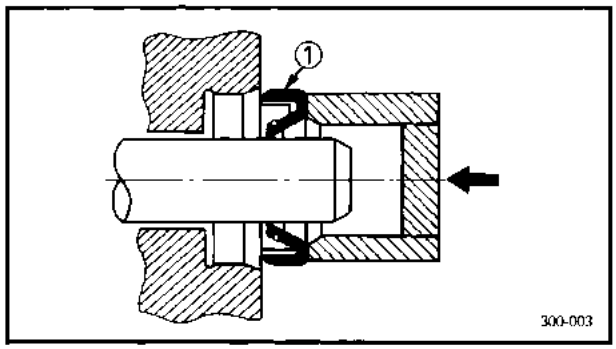
1. All gaskets, seals, and O-rings should be replaced when an engine is overhauled. All gasket surfaces, oil seal lips and O-rings must be cleaned.

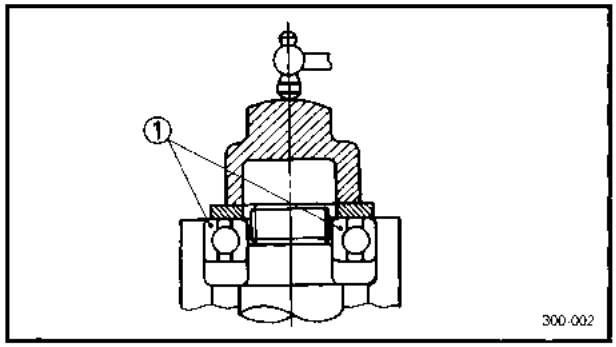
2. Properly oil all mating parts and bearings during reassembly. Apply grease to the oil seal lips.

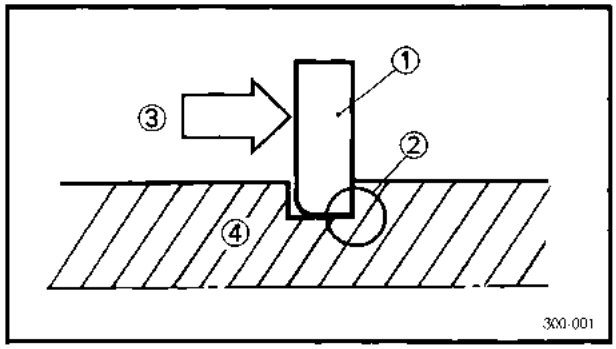


LOCK WASHERS/PLATES AND COTTER PINS

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) and oil seal(s) 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.

① Oil seal

CAUTION:

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

① Bearing

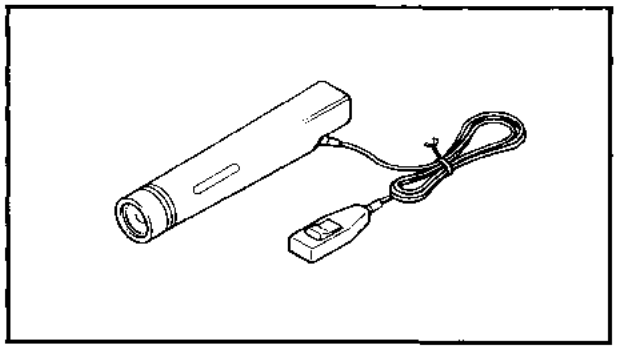
CIRCLIPS

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

④ Shaft

SPECIAL TOOLS

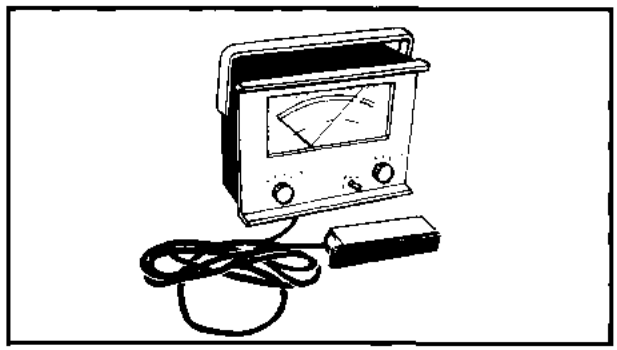
The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques.



FOR TUNE-UP

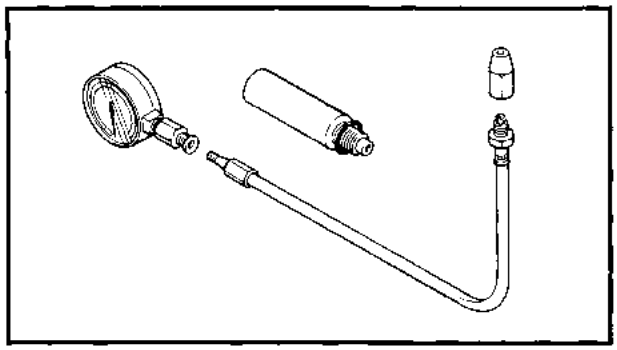
1. Inductive Timing Light
   P/N. YU-33277

This tool is necessary for adjusting the ignition timing.



2. Inductive Tachometer
   P/N. YU-08036

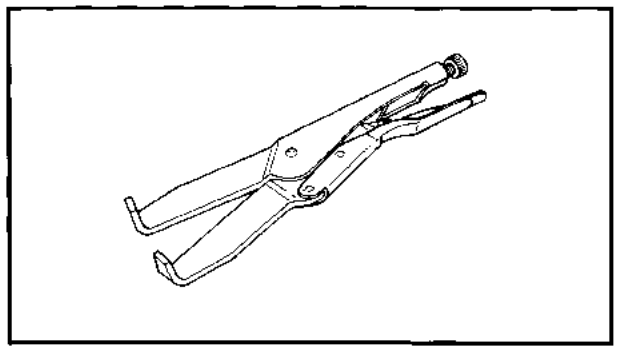
This tool is needed for detecting engine r.p.m.



3. Compression Gauge
   P/N. YU-33223

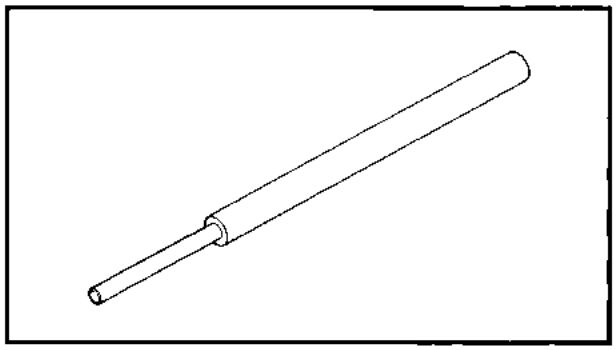
This gauge is used to measure the engine compression.

FOR ENGINE SERVICE



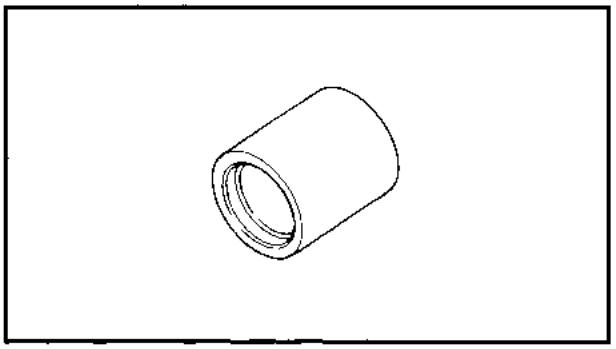
1. Universal Clutch Holder
   P/N. YM-91042

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



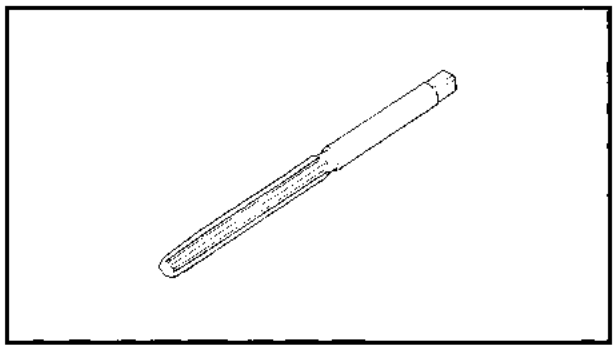
2. Valve Guide Remover (7.0 mm)
   P/N. YM-01255-A

This tool is used to remove the valve guide.



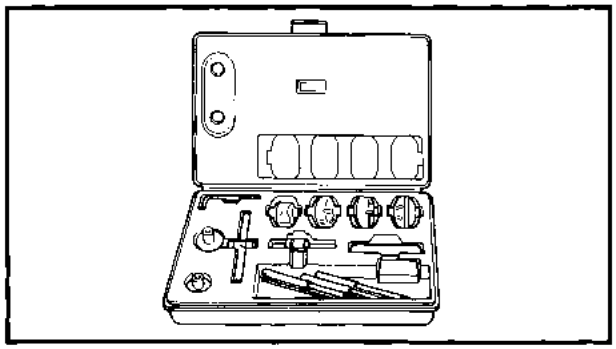
3. Valve Guide Installer (7.0 mm)
   P/N. YM-04017

This tool is needed to install the valve guide properly together with the valve guide remover.



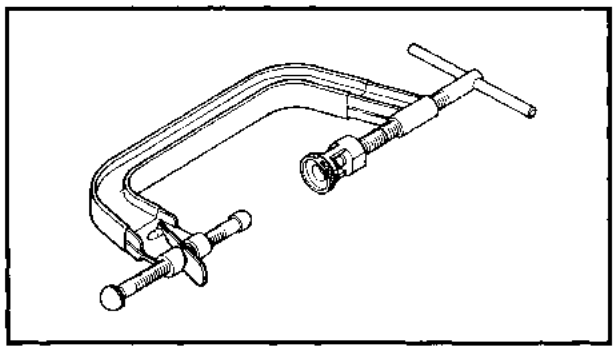
4. Valve Guide Reamer (7.0 mm)
   P/N. YM-01227

This tool is used to rebore the new valve guide.



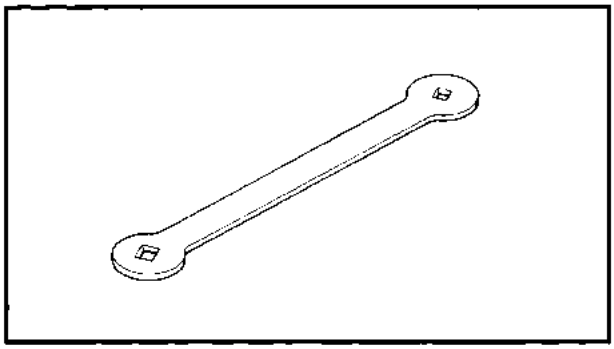
5. Valve Seat Cutter
   P/N. YM-91043

This tool is needed to reface the valve seat.



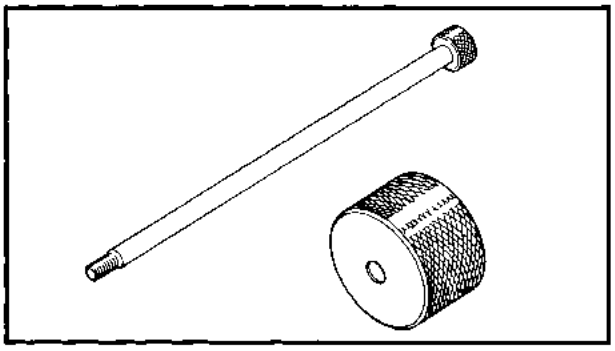
6. Valve Spring Compressor
   P/N. YM-04019

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



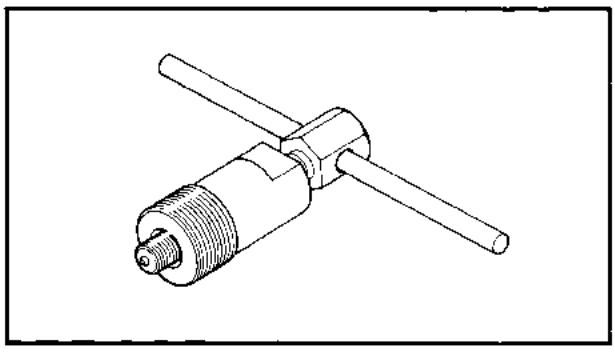
7. Valve Adjusting Tool
   P/N. YM-08035

This tool is used for adjusting the valve clearance.



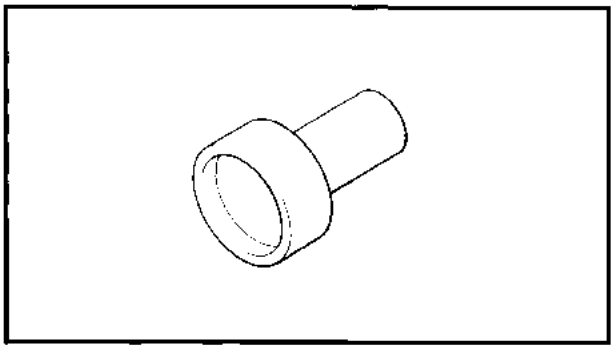
8. Slide Hammer Set
   P/N. YU-01083

These tools are used for removing the rocker arm shaft.



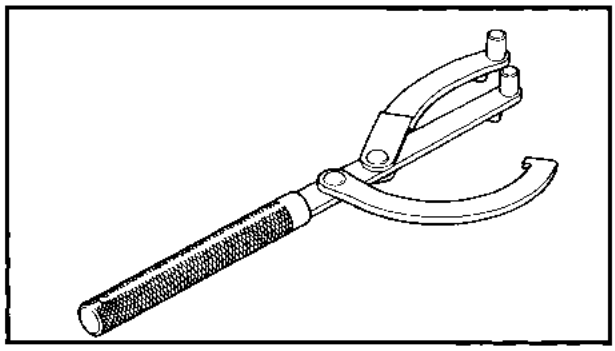
9. Magneto Puller
   P/N. YM-01189

This tool is used for removing the C.D.I. magneto.



10. Adapter
    P/N. YM-1382

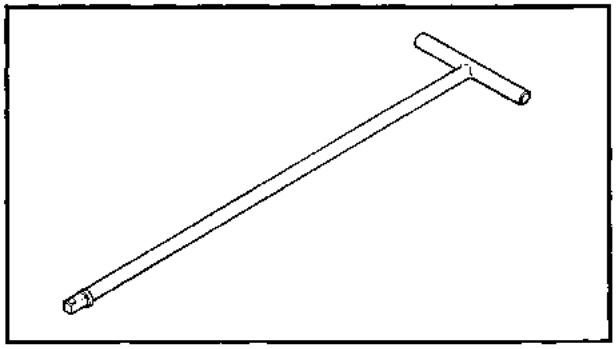
This tool is used to remove the C.D.I. magneto from the crankshaft together with the magneto puller.



11. Rotor Holder
    P/N. YU-01235

This tool is used to hold the C.D.I. magneto.

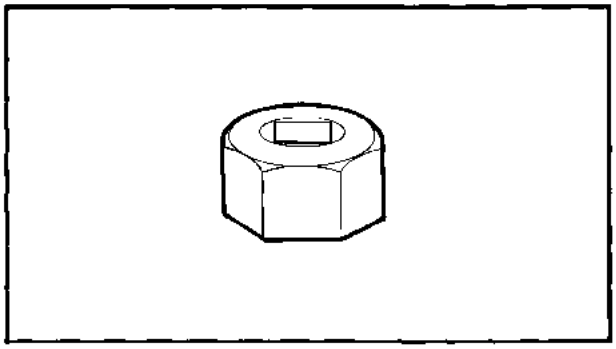
SPECIAL TOOLS



FOR CHASSIS SERVICE

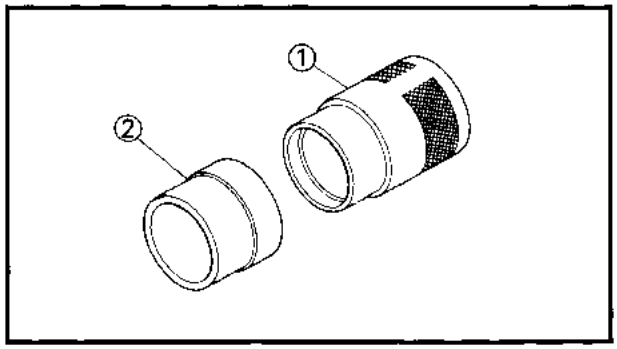
1. T-Handle
   P/N. YM-01326

This tool is used to loosen and tighten the front fork cylinder holding bolt.



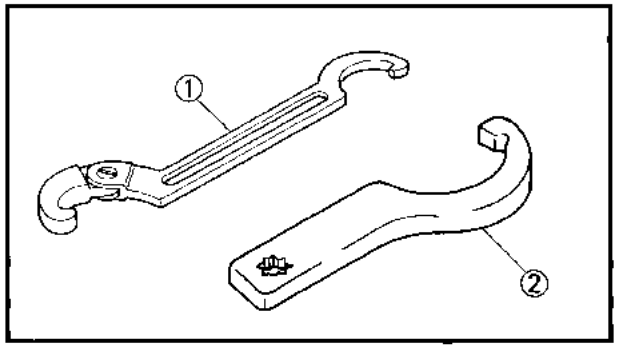
2. Fork Damper Rod Holder (19 mm)
   P/N. YM-33256

This tool is used to loosen and tighten the front fork cylinder holding bolt.



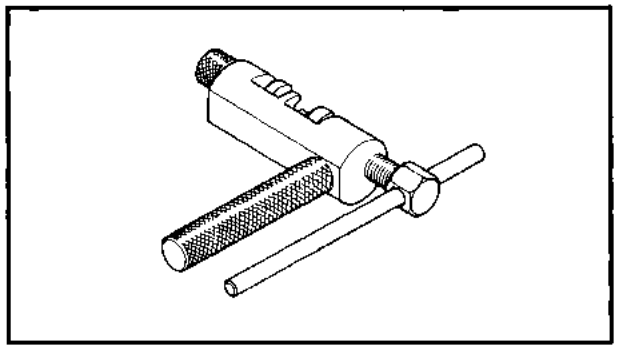
3. Front Fork Oil Seal Driver (Weight)
   P/N. YM-33963 ..... ①
   Attachment
   P/N. YM-1368 ..... ②

These tools are used for installing the fork seal.

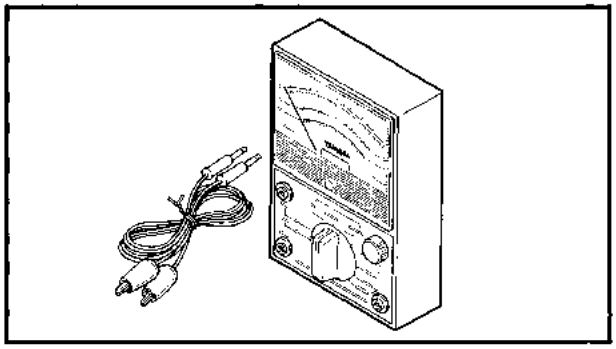


4. Ring Nut Wrench
   P/N. YU-01268 ..... ①
   P/N. YU-33975 ..... ②

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



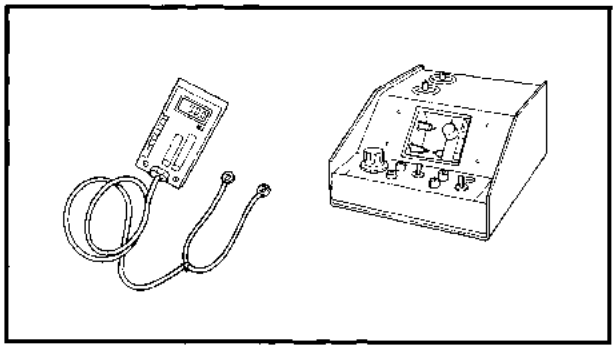
5. Drive Chain Cutter
   P/N. YM-33858



FOR ELECTRICAL COMPONENTS

1. Pocket Tester
   P/N. YU-03112

This instrument is invaluable for checking the electrical system.



2. Electro Tester
   P/N. YU-33260

This instrument is necessary for checking the ignition system components.

CHAPTER 2
PERIODIC INSPECTIONS AND ADJUSTMENT

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

ITEM	REMARKS	BREAK-IN 1 month	EVERY 6 months	EVERY 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.		○	○
Carburetor	Check idle speed/starter operation. Adjust if necessary.	○	○	○
Fuel line	Check fuel hose for cracks or damage. Replace if necessary.		○	○
Engine oil	Replace (Warm engine before draining).	○	○	○
Engine oil filter	Clean. Replace if necessary.	○	○	○
Engine oil strainer	Clean. Replace if necessary.	○	○	○
Brake	Check operation. Adjust if necessary.	○	○	○
Clutch	Check operation. Adjust if necessary.	○	○	○
Decompression system	Check operation.		○	○
Rear arm pivot	Check rear arm assembly for looseness. Correct if necessary. Moderatelely repack.***	○	○	○
Wheels	Check balance/damage/runout Replace if necessary.		○	○
Wheel bearings	Check bearings assembly for looseness/ damage. Replace if damaged.		○	○
Steering bearing	Check bearings assembly for looseness. Correct if necessary. Moderately repack every 12 months.**	○		○
Front forks	Check operation/oil leakage. Repair if necessary.		○	○
Drive chain	Check chain slack/alignment. Adjust if necessary. Clean and lube.	EVERY 1 month		
Fittings/Fasteners	Check all chassis fittings and fasteners. Correct if necessary.	○	○	○
Sidestand	Check operation. Repair if necessary.	○	○	○
Battery	Top-up/check specific gravity and breather pipe.	○	○	○

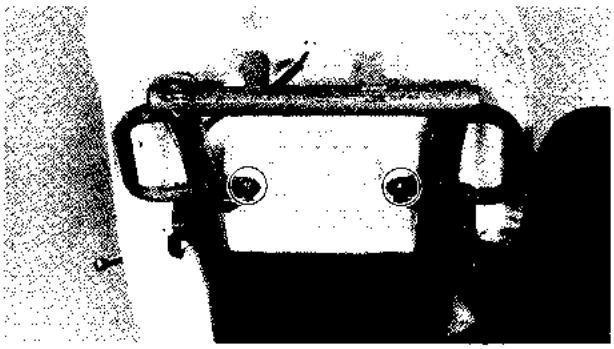
**: Medium weight wheel bearing grease.
***: Lithium soap base grease

ENGINE

VALVE CLEARANCE ADJUSTMENT

NOTE:

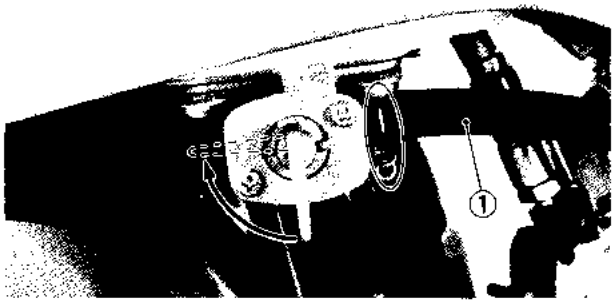
- Valve clearance should be measured or adjusted when the engine is cool to the touch.
- Measure or adjust valve clearance when piston at Top Dead Center (T.D.C.) on compression stroke.



1. Remove:
   - Seat

2. Remove:
   - Air scoops (Right and left)

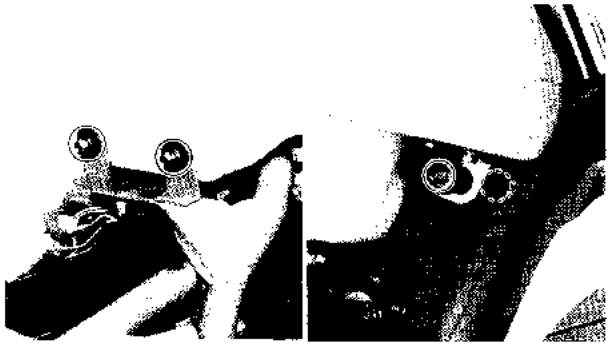
A Right
B Left



3. Disconnect:
   - Fuel hose (1)

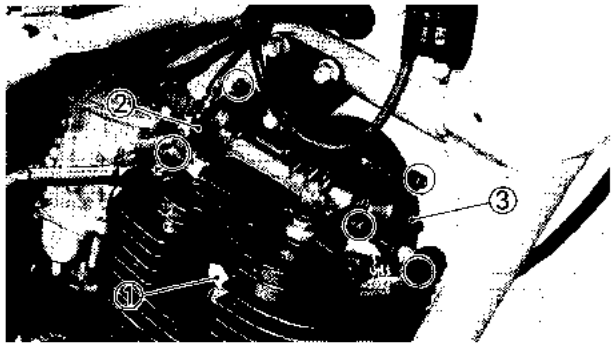
NOTE:

Before disconnecting the fuel hose, turn the fuel cock to "OFF" position.

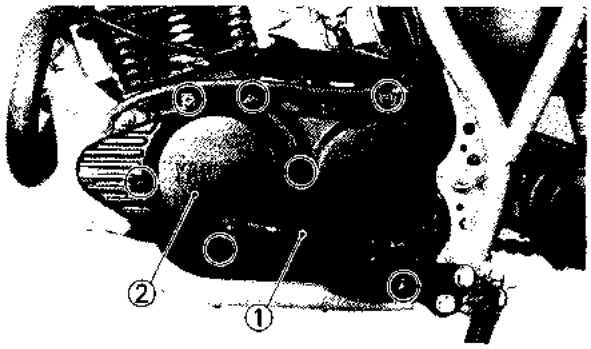


4. Remove:
   - Fuel tank

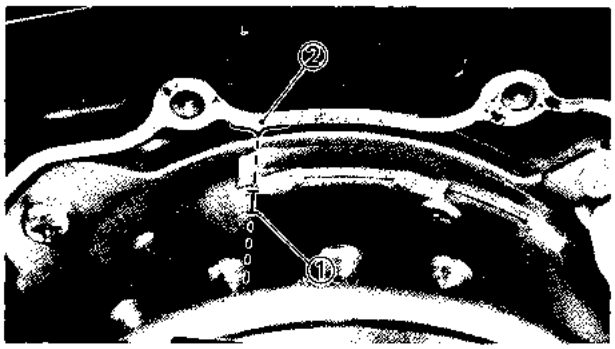
VALVE CLEARANCE ADJUSTMENT



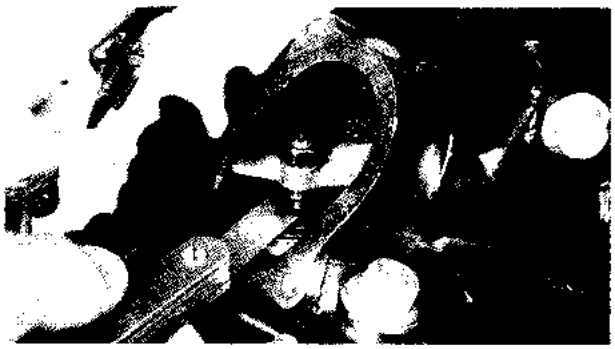
5. Remove:
   - Spark plug ①
   - Valve cover ② (Intake)
   - Valve cover ③ (Exhaust)



6. Remove:
   - Change pedal ①
   - Crankcase cover ② (Left)
   - Gasket (Crankcase cover)



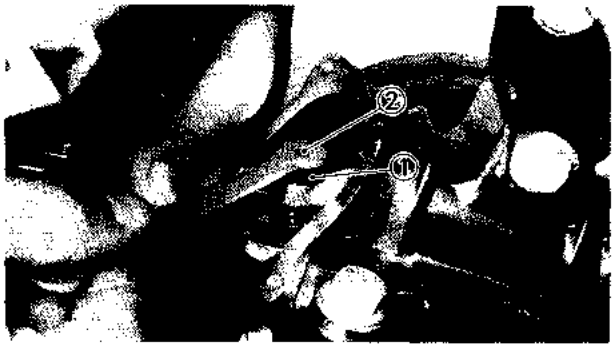
7. Turn the crankshaft counterclockwise to align the "I" mark ① on the rotor with the crankcase mark ② when the piston is at TDC on the compression stroke.



8. Measure:
   - Valve clearance

   Out of specification → Adjust.

Valve Clearance (Cold):
Intake:
0.06 ~ 0.10 mm (0.002 ~ 0.004 in)
Exhaust:
0.16 ~ 0.20 mm (0.006 ~ 0.008 in)



9. Adjust:
   - Valve clearance

Adjustment steps:
- Loosen the locknut ①.
- Turn the adjuster ② in or out using the Valve Adjusting Tool (YM-08035).

Turn in	Clearance is decreased.
Turn out	Clearance is increased.

•Tighten the locknut.

Locknut:
20 Nm (2.0 m•kg, 14 ft•lb)

10. Install:
    - •Spark plug
    - •Valve covers
    - •Gasket (Crankcase cover)
    - •Crankcase cover
    - •Change pedal
    - •Fuel tank
    - •Air scoops
    - •Seat

Spark Plug:
18 Nm (1.8 m•kg, 13 ft•lb)
Bolts (Valve Cover):
10 Nm (1.0 m•kg, 7.2 ft•lb)
Screws (Crankcase Cover):
7 Nm (0.7 m•kg, 5.1 ft•lb)
Bolt (Change Pedal):
10 Nm (1.0 m•kg, 7.2 ft•lb)
Bolts (Fuel Tank):
7 Nm (0.7 m•kg, 5.1 ft•lb)
Screws (Air Scoop):
5 Nm (0.5 m•kg, 3.6 ft•lb)
Bolts (Seat):
5 Nm (0.5 m•kg, 3.6 ft•lb)

IDLE SPEED ADJUSTMENT

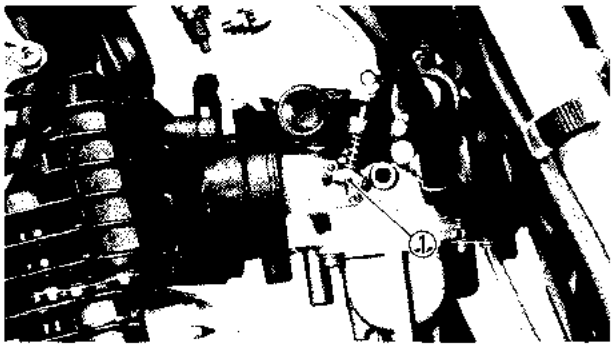
1. Start the engine and warm it up for a few minutes.

2. Attach:
   - •Inductive Tachometer (YU-08036)
     To spark plug lead.

THROTTLE CABLE FREE PLAY ADJUSTMENT

3. Measure:
   • Engine idle speed
   Out of specification → Adjust.

	Engine Idle Speed: **1,500 r/min**



4. Adjust:
   • Engine idle speed

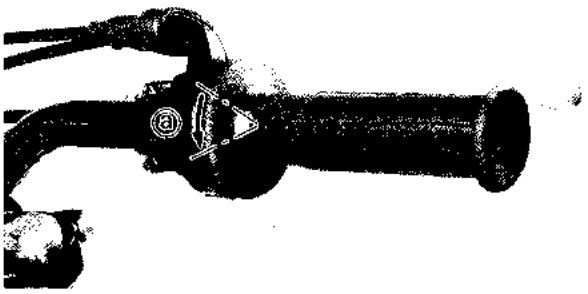
Adjustment steps:
• Turn the throttle stop screw (1) in or out until the specified engine speed is obtained.

Turn in	**Idle speed becomes higher.**
Turn out	**Idle speed becomes lower.**

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

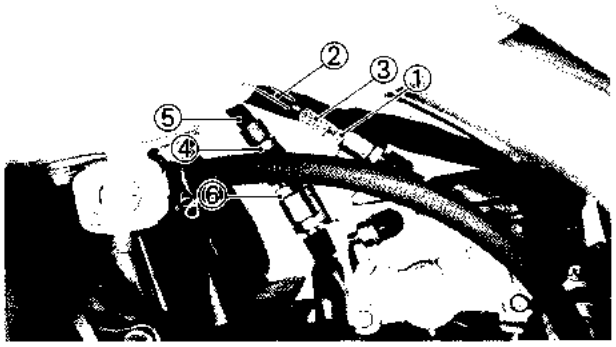
THROTTLE CABLE FREE PLAY ADJUSTMENT

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



1. Inspect:
   • Throttle cable free play (a)
   Out of specification → Adjust.

	Throttle Cable Free Play: **2 ~ 5 mm (0.08 ~ 0.20 in)**

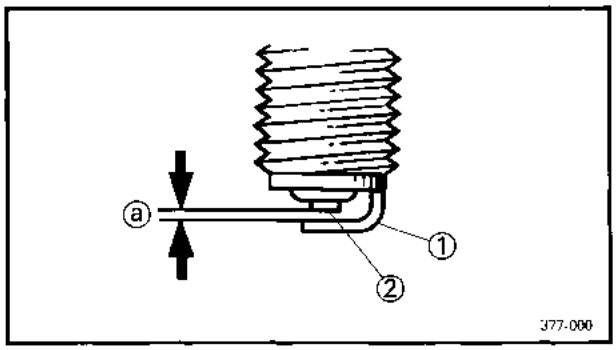


2. Adjust:
   - Throttle cable free play

   By the following adjustment steps.

Throttle cable adjustment steps:
- Loosen the locknut ① on the throttle cable 1 ②.
- Turn the adjuster ③ clockwise or counterclockwise until proper free play is attained.
- If the play is still incorrect after the adjuster is loosened 5 mm (0.2 in), make an adjustment with the adjuster ④ on the throttle cable 2 ⑤.

⑥ Locknuts
- Tighten the locknuts.



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.

ⓐ 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:
For USA:
D8EA (NGK), X24ES-U (N.D.)
Except for USA:
DR8ES-L (NGK), X24ERS-U (N.D.)

IGNITION TIMING CHECK

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

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

5. Tighten:
   • Spark plug

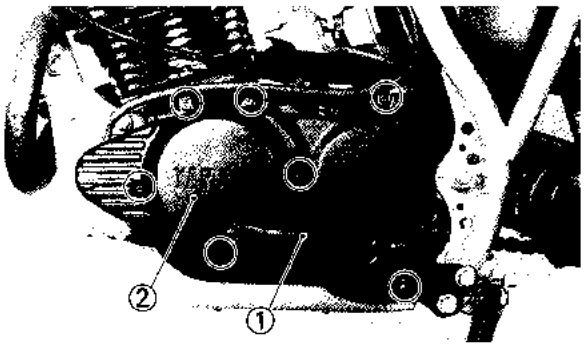
NOTE:

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

Spark Plug:
18 Nm (1.8 m•kg, 13 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 past finger tight. Have the spark plug torqued to the correct value as soon as possible with a torque wrench.



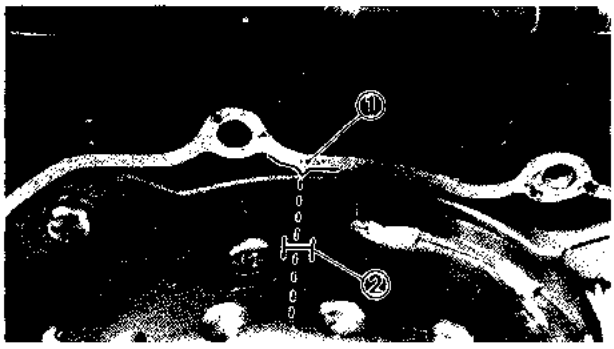
IGNITION TIMING CHECK

1. Remove:
   • Change pedal ①
   • Crankcase cover ②
   • Gasket (Crankcase cover)

2. Attach:
   • Inductive Tachometer (YU-08036)
   • Inductive Timing Light (YU-33277)
   To spark plug lead.

3. Warm up the engine and allow it to idle at the specified speed.

Engine Idle Speed:
1,500 r/min



4. Check:
   - Ignition timing
     Visually check the crankcase mark ① is within the firing range ② indicated on the rotor.

     Incorrect firing range→Check flywheel and/or pickup assembly (tightness damage).

5. Install:
   - Gasket (Crankcase cover)
   - Crankcase cover
   - Change pedal

Screws (Crankcase Cover):
7 Nm (0.7 m•kg, 5.1 ft•lb)
Bolt (Change Pedal):
10 Nm (1.0 m•kg, 7.2 ft•lb)

COMPRESSION PRESSURE MEASUREMENT

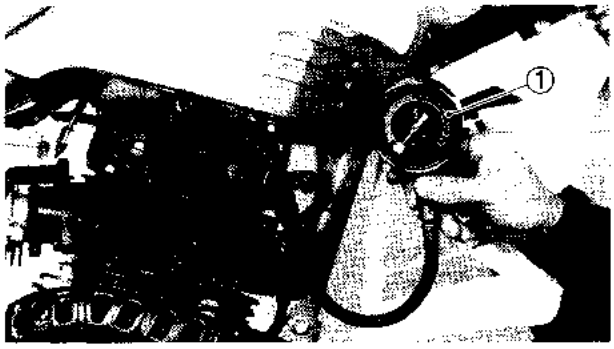
NOTE:

Insufficient compression pressure will result in performance loss.

1. Measure:
   - Valve clearance
     Out of specification→Adjust.
     Refer to "VALVE CLEARANCE ADJUSTMENT" section.

2. Warm up the engine.

COMPRESSION PRESSURE MEASUREMENT



3. Remove:
   • Spark plug

4. Measure:
   • Compression pressure

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:
850 kPa (8.5 kg/cm^2, 120 psi)
Minimum:
750 kPa (7.5 kg/cm^2, 106 psi)
Maximum:
1,000 kPa (10.0 kg/cm^2, 142 psi)

WARNING:

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

- If pressure falls below the minimum level:

1. Squirt a few drops of oil into the affected cylinder.
2. Measure the compression again.

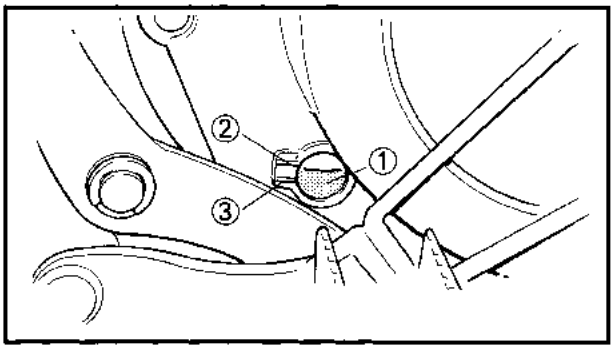
Compression Pressure (with oil introduced into cylinder)	
Reading	**Diagnosis**
Higher than without oil	**Worn or damaged pistons**
Same as without oil	**Defective ring(s), valves, cylinder head gasket or piston is possible.**
Above maximum level	**Inspect cylinder head, valve surfaces, or piston crown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

ENGINE OIL LEVEL INSPECTION

NOTE:

Position machine straight up when checking oil level, a slight tilt to the side can produce false readings.

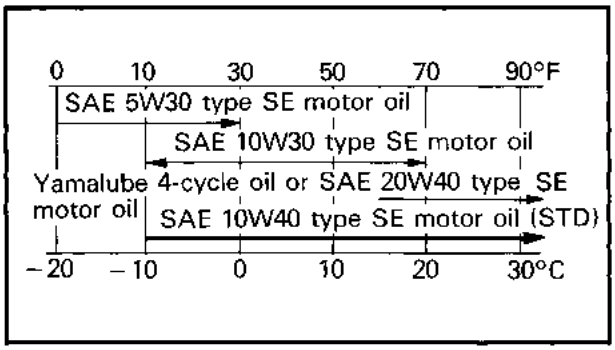
1. Warm up the engine for several minutes.



2. Stop the engine and visually check the oil level throught the level window ①.
3. Inspect:
   - Oil level
     Oil level should be between maximum ② and minimum ③ marks.
     Oil level low→Add oil to proper level.

NOTE:

Wait a few minutes until level settles before inspecting.

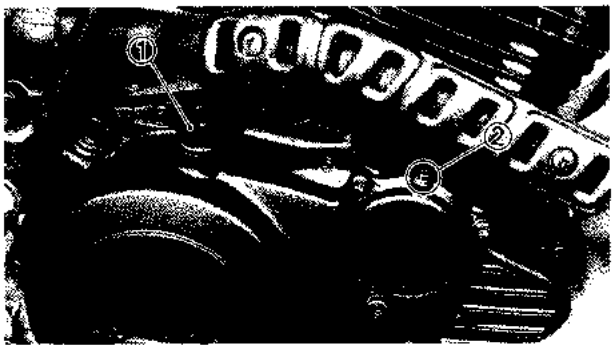


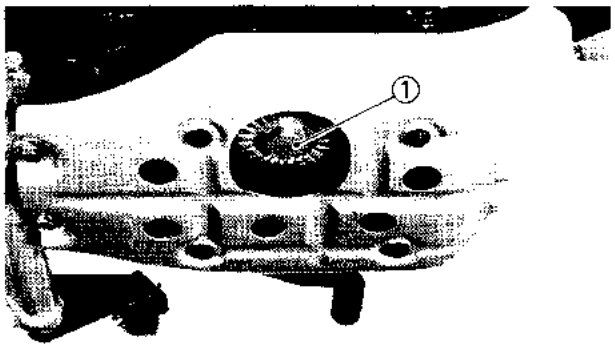
Recommended Oil:
- **At 0°C (30°F) or Lower**
  SAE 5W30 Type SE Motor Oil
- **At between −10°C (10°F) and 20°C (70°F)**
  SAE 10W30 Type SE Motor Oil
- **At 15°C (60°F) or Higher**
  Yamalube 4-cycle Oil or SAE 20W40 Type SE Motor Oil
- **At −10°C (10°F) or Higher**
  SAE 10W40 Type SE Motor Oil

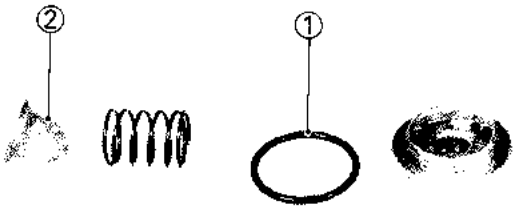
NOTE:

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

ENGINE OIL REPLACEMENT







ENGINE OIL REPLACEMENT

Without Oil Filter Change

1. Warm up the engine for several minutes, then place a receptacle under the engine.

2. Remove:
   - Oil filler cap ①
   - Bleed screw ②

3. Remove:
   - Drain plug ①
   - O-ring
   - Compression spring
   - Oil strainer

4. Drain the engine oil.

5. Inspect:
   - O-ring ①
     Cracks/Damage→Replace.
   - Oil strainer ②
     Contamination→Clean.
     Damage→Replace.

6. Install:
   - Oil strainer
   - Compression spring
   - O-ring
   - Drain plug
   - Bleed screw

Drain Plug:
32 Nm (3.2 m•kg, 23 ft•lb)
Bleed Screw:
5 Nm (0.5 m•kg, 3.6 ft•lb)

7. Fill:
   - Crankcase

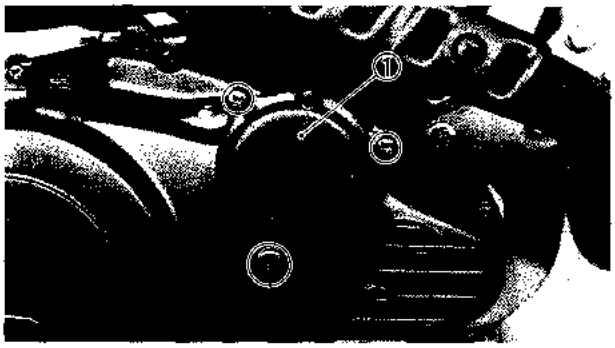
1.3 L (1.14 Imp qt, 1.37 US qt)
Recommended Oil:
Refer to Page 2-10.

CAUTION:

- **Do not add any chemical additives. Engine oil also lubricates the clutch and additives could cause clutch slippage.**
- **Be sure no foreign material enters the crankcase.**

8. Inspect:
   - Engine oil level
   Refer to the "ENGINE OIL LEVEL INSPECTION" section.

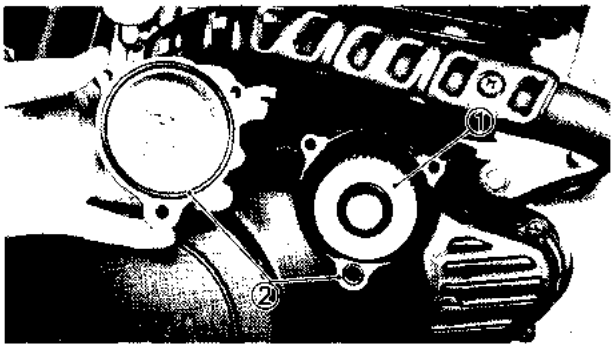
9. Install:
   - Oil filler cap



With Oil Filter Change

Follow the "without oil filter change" steps 1. ~ 5.
Then proceed as follows;

1. Remove:
   - Oil filter cover ①



2. Install:
   - Oil filter (New) ①
   Replace periodically as indicated.

3. Inspect:
   - O-rings ②
   Cracks/Damage → Replace.

4. Install:
   - Oil strainer
   - Compression spring
   - O-rings
   - Drain plug
   - Oil filter cover

ENGINE OIL REPLACEMENT

Drain Plug:
32 Nm (3.2 m•kg, 23 ft•lb)
Screws (Oil Filter Cover):
7 Nm (0.7 m•kg, 5.1 ft•lb)
Bolt (Oil Filter Cover):
10 Nm (1.0 m•kg, 7.2 ft•lb)

5. Fill
   • Crankcase

1.4 L (1.23 Imp qt, 1.47 US qt)
Recommended Oil:
Refer to Page 2-10.

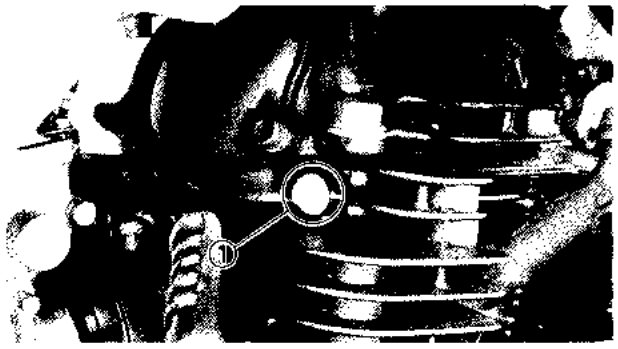
CAUTION:

- **Do not add any chemical additives. Engine oil also lubricates the clutch and additives could cause clutch slippage.**
- **Be sure no foreign material enters the crankcase.**

6. Inspect:
   • Engine oil level
   Refer to the "ENGINE OIL LEVEL INSPECTION" section.

7. Install:
   • Oil filler cap

8. Warm up engine and check for oil leaks.
   Stop engine instantly if leaking occurs.
   Leaks→Check cause.

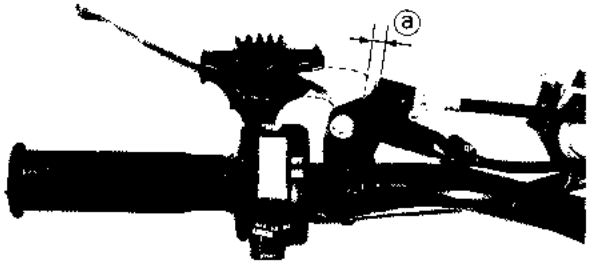


CAUTION:

After replacing the engine oil, be sure to check the oil flow in the following procedures:

- **Slightly loosen the oil gallery bolt ① in the cylinder head.**
- **Start the engine and keep it idling until oil begins to seep from the oil gallery bolt. If no oil comes out after one minute, turn the engine off so it will not seize.**
- **Restart the engine after solving the problem(s), and recheck the oil pressure.**
- **After checking, tighten the oil gallery bolt to specification.**

	Oil Gallery Bolt: 10 Nm (1.0 m•kg, 7.2 ft•lb)

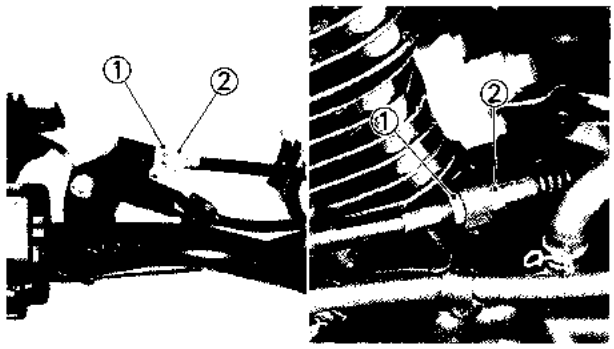


CLUTCH ADJUSTMENT

Free Play Adjustment

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

	Free Play ⓐ: 2~3 mm (0.08~0.12 in)



2. Adjust:
   - Clutch cable free play

Adjustment Steps:
- Loosen the locknuts ①.
- Turn the adjusters ② in or out until the specified free play is obtained.
- Tighten the locknuts.

NOTE:

The above procedure provides for maximum cable free play to allow for proper clutch actuating mechanism adjustment.

CLUTCH ADJUSTMENT

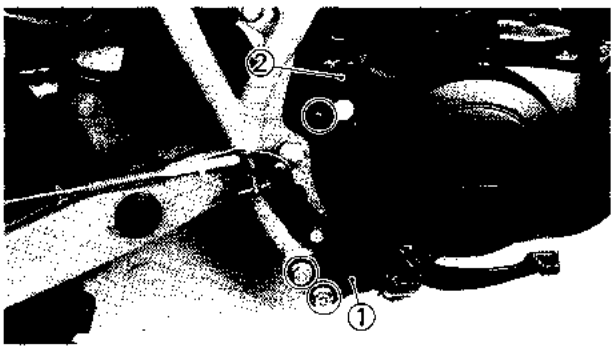
Mechanism Adjustment

1. Loosen:
   - Cable length adjuster locknuts (Fully)

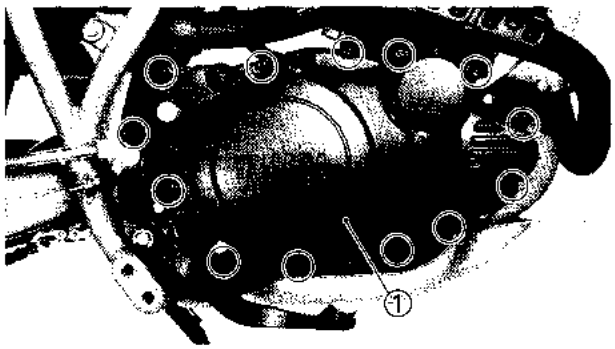
2. Tighten:
   - Cable length adjusters (Until tight)

3. Drain:
   - Engine oil

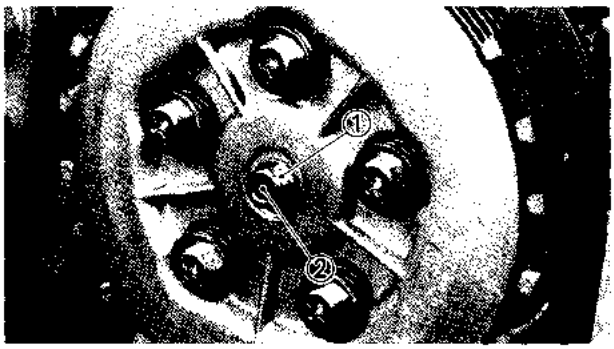
   Refer to the "ENGINE OIL REPLACEMENT" section.



4. Remove:
   - Footrest ① (Right)
   - Kick crank ②



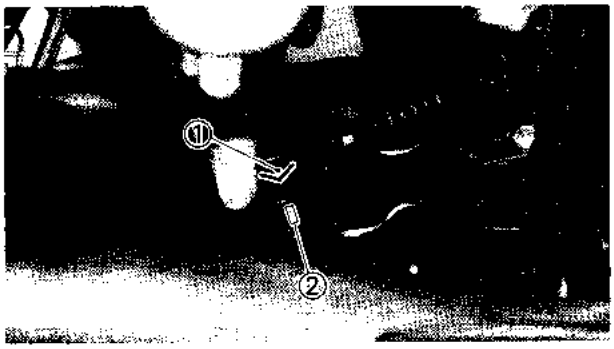
5. Remove:
   - Crankcase cover ① (Right)



6. Loosen:
   - Locknut ①

7. Push the push lever toward the front of the engine with your finger until it stops.

② Adjuster



8. Adjust:
   - Free play

   With the push lever in this position, turn the adjuster either in or out until the push lever mark ① and crankcase match mark ② are aligned.

9. Tighten:
   - Locknut

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

10. Install:
    - Crankcase cover (Right)
    - Kick crank
    - Footrest (Right)

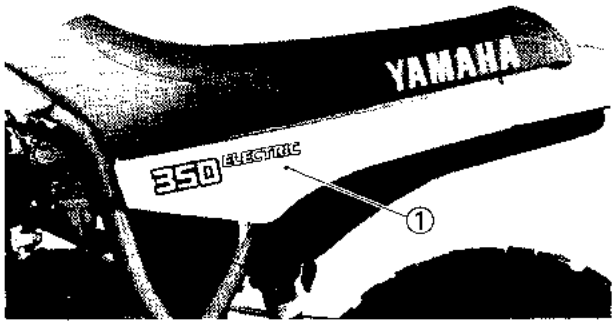
	Screws (Crankcase Cover): **7 Nm (0.7 m•kg, 5.1 ft•lb)** **Bolt (Kick Crank):** **20 Nm (2.0 m•kg, 14 ft•lb)** **Bolts (Footrest):** **45 Nm (4.5 m•kg, 32 ft•lb)**

11. Fill:
    - Crankcase

    Refer to "ENGINE OIL REPLACEMENT" section.

12. Adjust:
    - Clutch cable free play

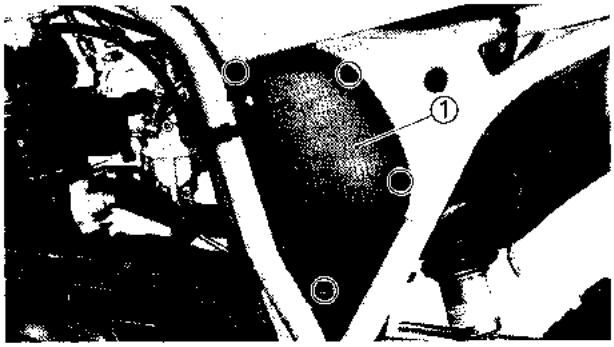
    Refer to the "Free Play Adjustment" section.



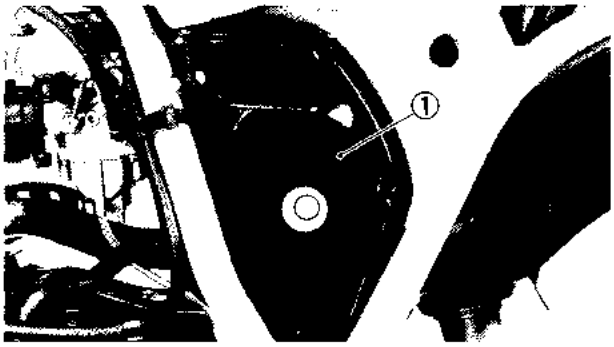
AIR FILTER CLEANING

1. Remove:
   - Side cover (Left) ①

AIR FILTER CLEANING



2. Remove:
   • Air filter case cover ①



3. Remove:
   • Air filter element ①

CAUTION:

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

4. Remove:
   • Element guide ①

5. Clean:
   • Air filter element

Cleaning steps:

• Wash the element gently, but thoroughly in solvent.

WARNING:

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

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

CAUTION:

Do not twist the element when squeezing the element.

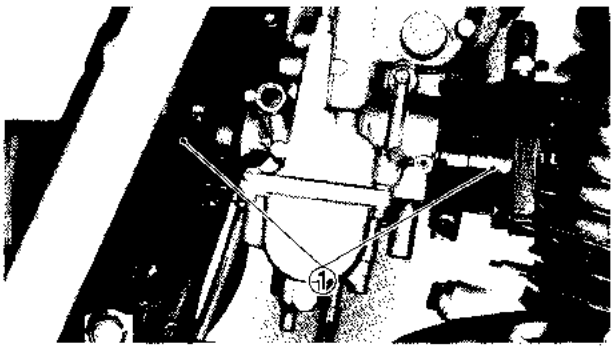
6. Inspect:
   • Element
   Damage → Replace.

7. Apply:
   • Foam-air-filter oil or Yamalube 2-cycle oil
   Onto the element.
8. Squeeze out the excess oil.

NOTE:

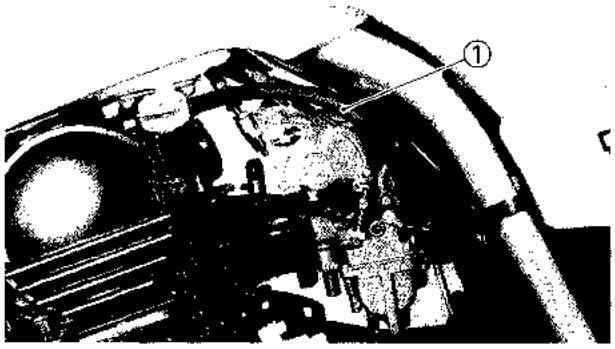
The element should be wet but not dripping.

9. Install:
   • Air filter element
   • Element guide
   • Air filter case cover
   • Side cover



CARBURETOR JOINT INSPECTION

1. Inspect:
   • Carburetor joint ①
   Cracks/Damage → Replace.



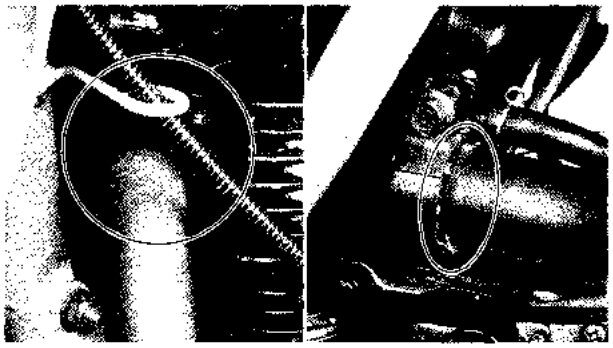
FUEL LINE INSPECTION

1. Inspect:
   • Fuel hose ①
   Cracks/Damage → Replace.

CRANKCASE VENTILATION HOSE INSPECTION

1. Inspect:
   • Crankcase ventilation hose ①
   Cracks/Damage → Replace.

EXHAUST SYSTEM INSPECTION/FRONT BRAKE ADJUSTMENT/REAR BRAKE ADJUSTMENT

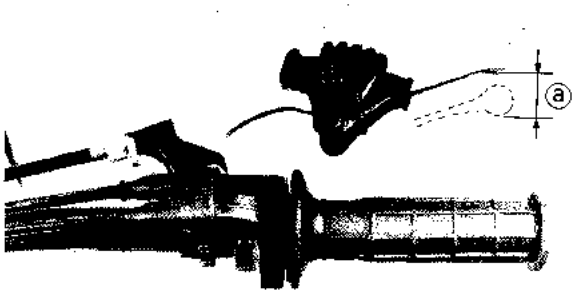


EXHAUST SYSTEM INSPECTION

1. Inspect:
   - Exhaust pipe
   - Muffler
     Cracks/Damage → Replace.
   - Gaskets
     Exhaust gas leaks → Replace.

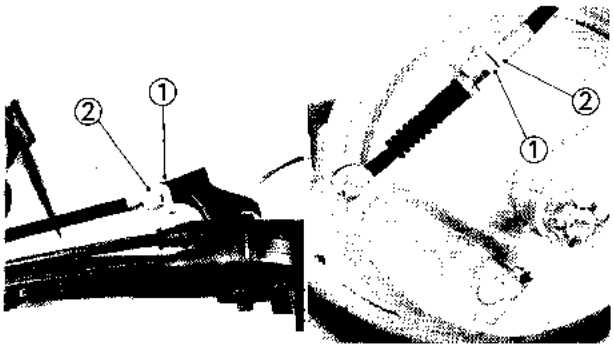
CHASSIS

FRONT BRAKE ADJUSTMENT



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

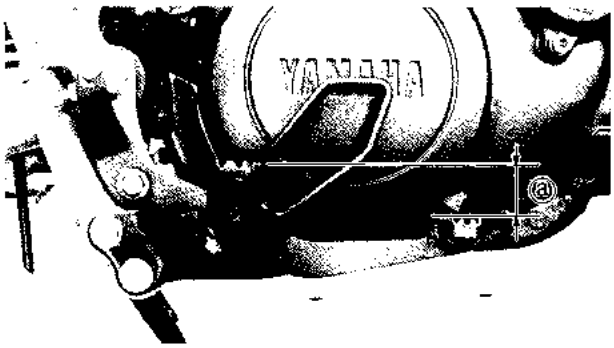
Free Play:
10 ~ 20 mm (0.39 ~ 0.79 in)



2. Adjust:
   - Front brake lever free play

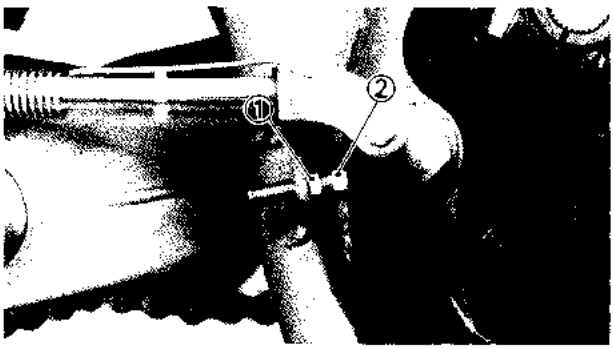
Adjustment steps:
- Loosen the locknuts ①.
- Turn the adjusters ② in or out until the specified free play is obtained.
- Tighten the locknut.

REAR BRAKE ADJUSTMENT



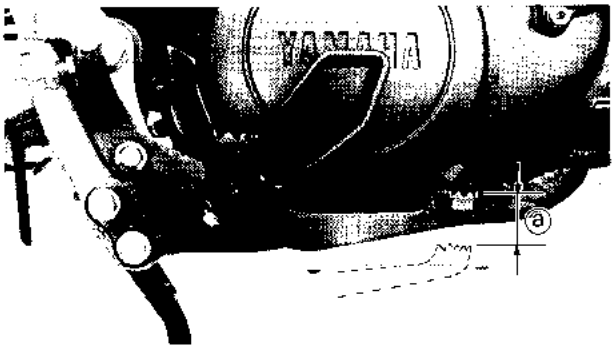
1. Check:
   - Brake pedal height ⓐ
     Out of specification → Adjust.

Pedal Height:
15 mm (0.59 in)



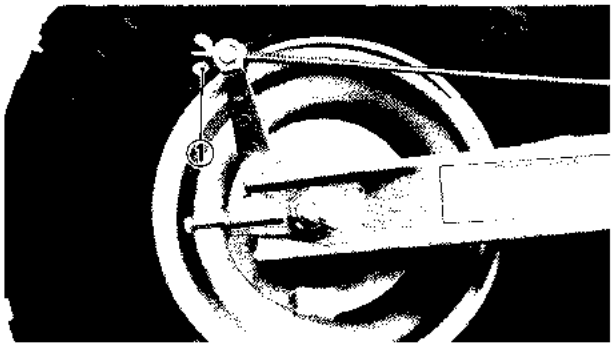
2. Adjust:
   - Brake pedal height

Adjustment steps:
- Loosen the locknut ①.
- Turn the adjuster ② in or out until the specified height is obtained.
- Tighten the locknut.



3. Check:
   • Brake pedal free play ⓐ
   Out of specification → Adjust.

Free Play:
20 ~ 30 mm (0.79 ~ 1.18 in)



4. Adjust:
   • Brake pedal free play

Adjustment steps:
• Turn the adjuster ① in or out until the specified free play is obtained.

2

DRIVE CHAIN SLACK ADJUSTMENT

NOTE:

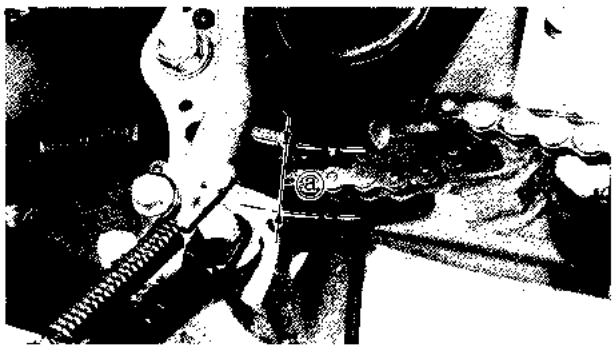
Before checking and/or adjusting, rotate the rear wheel through several revolutions and check slack at several points to find the tightest point. Check and/or adjust the chain slack with the rear wheel in this "tightest" position.

Primary Drive Chain

1. Place the machine on a level place, and hold it in an upright position.

NOTE:

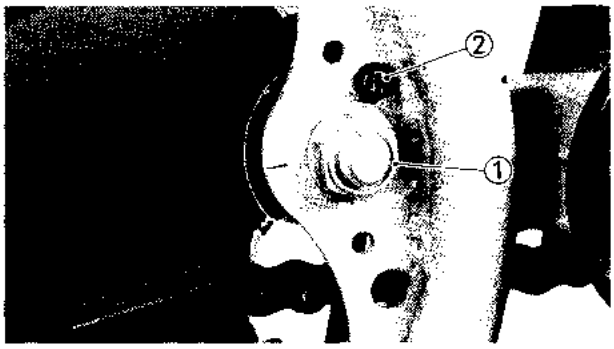
The both wheels on the ground without rider on it.

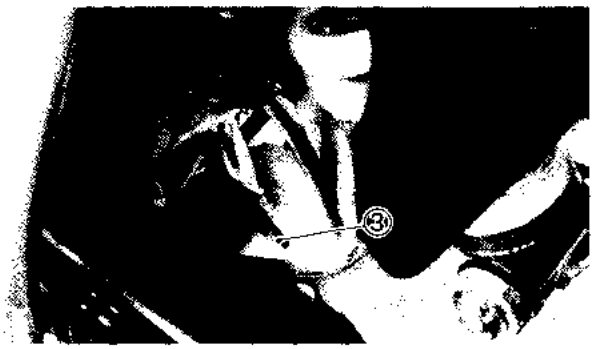


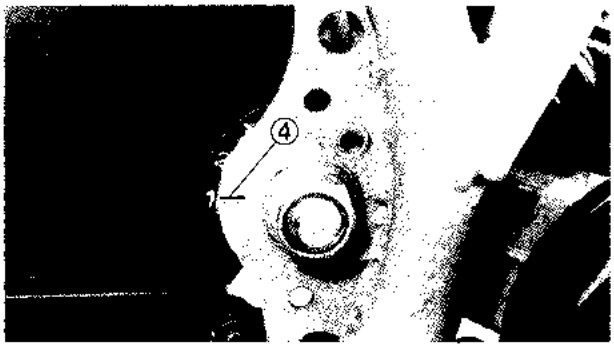
2. Check:
   • Drive chain slack ⓐ
   Out of specification → Adjust.

Drive Chain Slack:
15 ~ 40 mm (0.59 ~ 1.57 in)

DRIVE CHAIN SLACK ADJUSTMENT







3. Adjust:
   - Drive chain slack

Adjustment steps:

CAUTION:

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

- Loosen the nut ① (pivot shaft).
- Remove the stopper screw ②.
- Pull up the adjusting lever ③ until a desired marking on lever aligns with the pointer ④ on the frame.

CAUTION:

If the chain slack cannot be adjusted to specification at "6", replace the primary drive chain and drive/driven sprockets as a set.

- Install the stopper screw.
- Tighten the nut (pivot shaft).

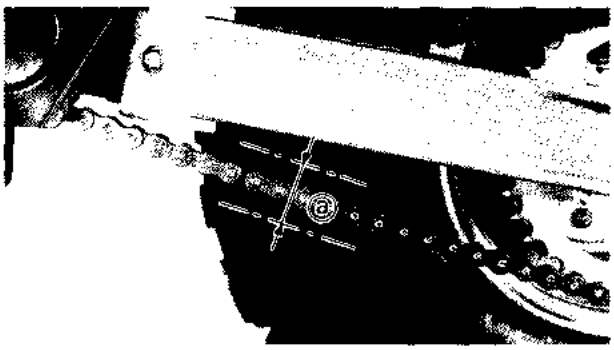
Nut (Pivot Shaft):
90 Nm (9.0 m•kg, 65 ft•lb)

Secondary Drive Chain

1. Place the machine on a level place, and hold it in an upright position.

NOTE:

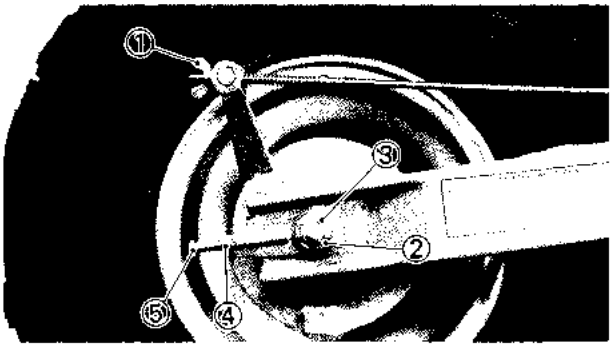
The both wheels on the ground without rider on it.

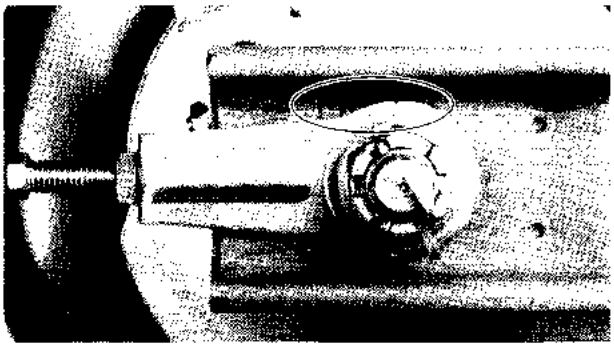


2. Check:
   - Drive chain slack ⓐ
     Out of specification → Adjust.

Drive Chain Slack:
25 – 40 mm (0.98 – 1.57 in)

3. Adjust:
   • Drive chain slack





Adjustment steps:

CAUTION:

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

- Loosen the adjuster ① (Rear brake).
- Remove the cotter pin ②.
- Loosen the axle nut ③ and locknuts ④.
- Turn the adjuster ⑤ in or out until the specified slack is obtained.

NOTE:

There are marks on each side of rear arm and on each chain puller; use them to check for proper alignment.

- Tighten the locknut and axle nut.

Axle Nut:
90 Nm (9.0 m•kg, 65 ft•lb)

- Install a cotter pin.

WARNING:

Always use a new cotter pin.

- Adjust the rear brake, refer to the "REAR BRAKE ADJUSTMENT" section.

WARNING:

After adjusting the secondary chain slack, the rear brake must be adjusted.

2

DRIVE CHAIN LUBRICATION

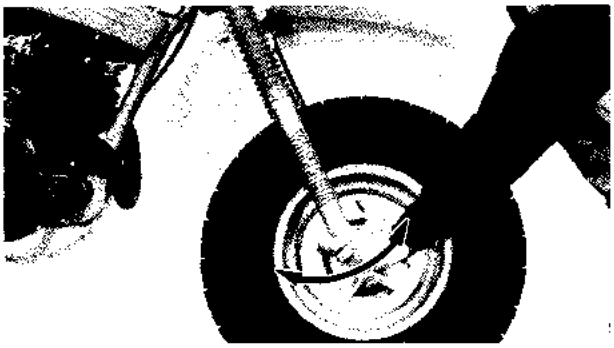
The chain consists of many parts which work against each other. If the chain is not maintained properly, it will wear out rapidly, therefore, form the habit of periodically servicing the chain. This service is especially necessary when riding in dusty conditions.

Primary Drive Chain

This machine has a primary drive chain with small rubber O-rings between the chain plates. Steam cleaning, high-pressure washes, and certain solvent can damage these O-rings. Use only kerosene to clean the drive chain. Wipe it dry, and thoroughly lubricate it with SAE 30 ~ 50W motor oil. Do not use any other lubricants on the drive chain. They may contain solvents that could damage the O-rings.

Secondary Drive Chain

1. Use any brands of spray type chain lubricant. First, remove all dirt and mud from the chain with a brush or cloth, then spray a lubricant between both rows of side plates and on all center rollers.
2. To clean the chain, remove the chain from the machine, dip it in solvent, and clean out as much dirt as possible. Take the chain out of the solvent and dry it. Immediately lubricate the chain to prevent rust.



STEERING HEAD ADJUSTMENT

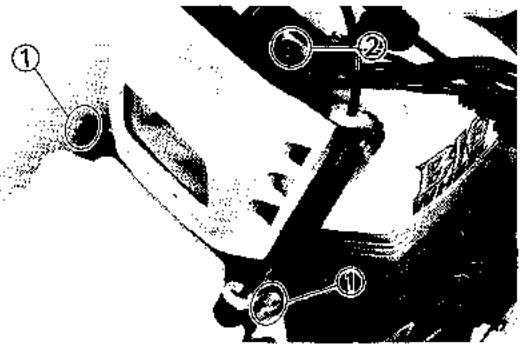
WARNING:

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

1. Elevate the front wheel by placing a suitable stand under the engine.

2. Check:
   - Steering assembly bearings
     Grasp the bottom of the forks and gently rock the fork assembly back and forth.
     Looseness→Adjust steering head.

3. Adjust:
   - Steering head



Adjustment steps:
- Loosen the pinch bolts ① and steering fitting bolt ②.
- Tighten the ring nut using the Ring Nut Wrench (YU-33975).

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

Ring Nut (Initial Tightening):
37 Nm (3.7 m•kg, 27 ft•lb)

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

WARNING:

Avoid over-tightening.

Ring Nut (Final Tightening):
6 Nm (0.6 m•kg, 4.3 ft•lb)

- Tighten the pinch bolts and steering fitting bolt.

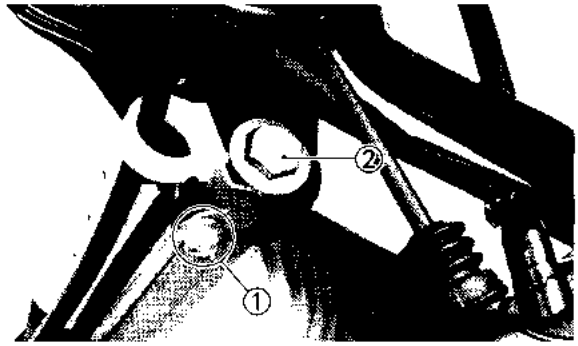
Pinch Bolts:
23 Nm (2.3 m•kg, 17 ft•lb)
Steering Fitting Bolt:
90 Nm (9.0 m•kg, 65 ft•lb)

FRONT FORK OIL REPLACEMENT

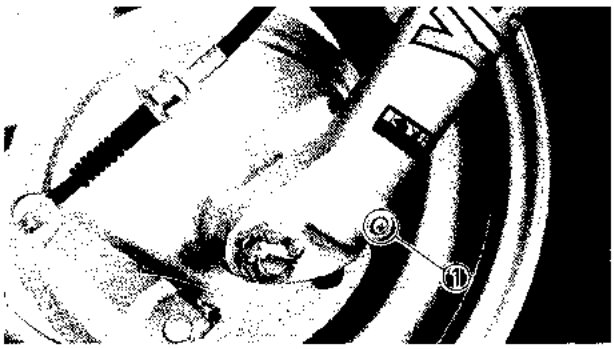
FRONT FORK OIL REPLACEMENT

WARNING:

- **Fork oil leakage can cause loss of stability and safe handling. Have any problem corrected before operating the machine.**
- **Securely support the machine so there is no danger of it falling over.**



1. Elevate the front wheel by placing a suitable stand under the engine.
2. Loosen:
   - Pinch bolt ① (Handle crown)
3. Remove:
   - Cap bolt ②



4. Place an open container under the drain hole.
5. Remove:
   - Drain screw ①
6. After most of the oil has been drained, slowly pump the forks up and down to remove any remaining oil.
7. Inspect:
   - Gasket (Drain screw)
   - O-ring (Cap bolt)

   Damage → Replace.
8. Install:
   - Gasket (Drain screw)
   - Drain screw

9. Fill:
   • Fork oil

Front Fork Oil Capacity
(Each Fork):
241 cm³ (8.5 Imp oz, 8.1 US oz)
Recommended Oil:
Yamaha Fork Oil 15wt or equivalent

10. After filling, slowly pump the forks up and down to distribute the oil.

11. Install:
    • Cap bolt

Cap Bolt:
23 Nm (2.3 m•kg, 17 ft•lb)

12. Tighten:
    • Pinch bolt

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

TIRE AND WHEEL INSPECTION

WARNING:

This model is equipped with low pressure tires. Pay attention to the following points:
Recommended tire pressure:
40 kPa (0.4 kg/cm², 5.8 psi)
Vehicle load limit: 88 kg (194 lb)
Tire size: Front AT25 × 8 – 12
Rear AT23 × 11 – 9

1. **Excessive tire pressure (over 250 kPa (2.5 kg/cm², 36 psi)) may cause tire to burst. Inflate tires very slowly. Fast inflation could cause tire to burst.**
2. **Too low a pressure (below 30 kPa (0.3 kg/cm², 4.4 psi)) will cause the rim to dislodge from the tire.**
3. **Set tire pressures cold.**

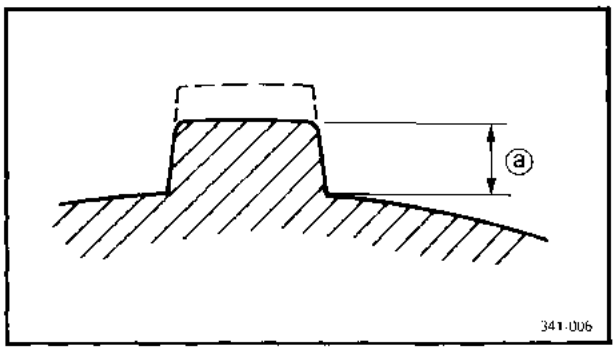
TIRE AND WHEEL INSPECTION

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

Recommended Tire Pressure:
40 kPa (0.4 kg/cm^2, 5.8 psi)

WARNING:

Never use a tire pressure below minimum specification. The tire could separate from the wheel under severe operating conditions.



2. Inspect:
   • Tire surface
   Wear/Cracks/Damage → Replace.

Tire Wear Limit ⓐ:
3.0 mm (0.12 in)

CAUTION:

Excessive tire wear will result from riding on paved surfaces.

3. Inspect:
   • Wheels
   Damage/Bends → Replace.

NOTE:

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

WARNING:

Never attempt even small repairs to the wheel.

4. Tighten:
   • Valve stem locknut

	1.5 Nm (0.15 m•kg, 1.1 ft•lb)

WARNING:

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

CABLE INSPECTION AND LUBRICATION

WARNING:

Damaged cable sheath may cause corrosion and interfere with the cable movement. An unsafe condition may result so replace such cable as soon as possible.

1. Inspect:
   • Cable sheath
   Damage → Replace.

2. Check:
   • Cable operation
   Unsmooth operation → Lubricate.

	Recommended Lubricant: **Yamaha Chain and Cable Lube or SAE 10W30 Motor Oil**

NOTE:

Hold cable end high and apply several drops of lubricant to cable.

LEVER AND PEDAL LUBRICATION

Lubricate pivoting parts of each lever and pedal.

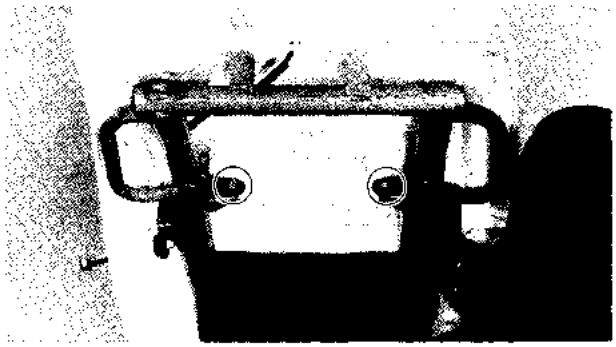
	Recommended Lubricant: **Yamaha Chain and Cable Lube or SAE 10W30 Motor Oil**

SIDESTAND LUBRICATION/BATTERY INSPECTION

SIDESTAND LUBRICATION

Lubricate the sidestand at pivot points.

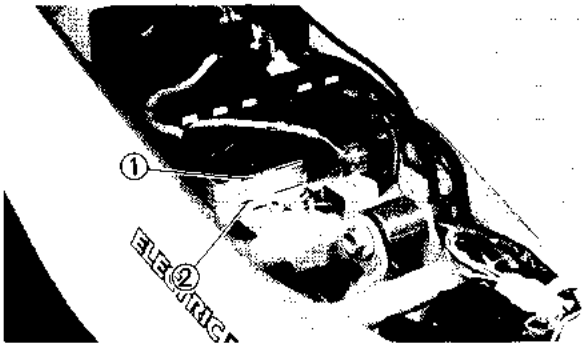
Recommended Lubricant:
Yamaha Chain and Cable Lube
or SAE 10W30 Motor Oil



ELECTRICAL

BATTERY INSPECTION

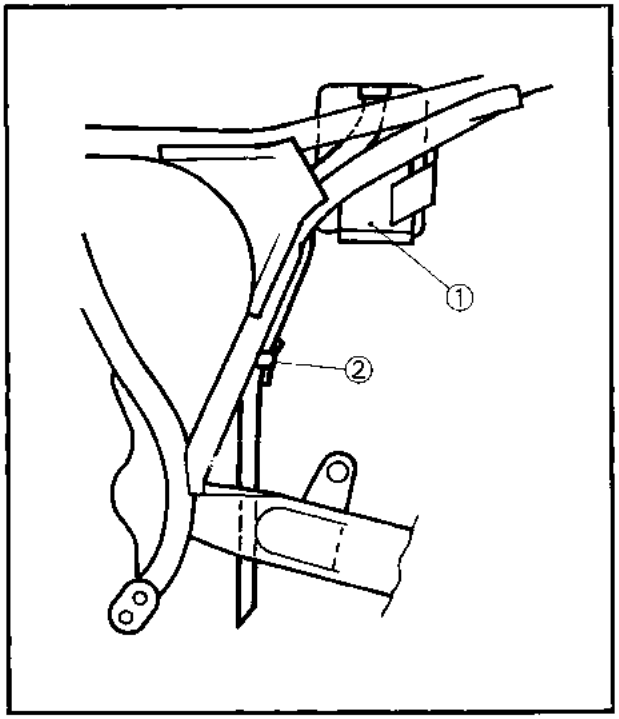
1. Remove:
   - Seat



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

CAUTION:

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



3. Inspect:
   - Battery terminal
     Dirty terminal→Clean with wire brush.
     Poor connection→Correct.

NOTE:

After cleaning the terminals, apply grease lightly to the terminals.

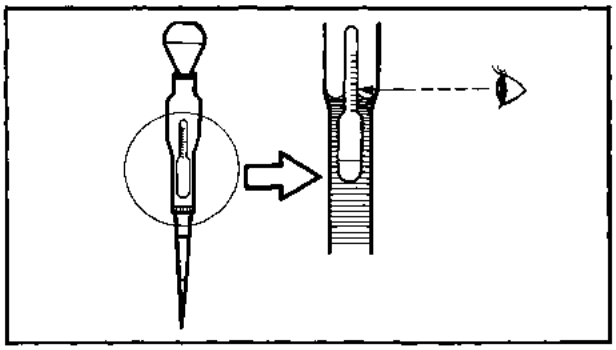
4. Connect:
   - Breather pipe ①
     Be sure the hose is properly attached and routed.

② Holder (at air cleaner case)

5. Inspect:
   • Breather pipe
   Obstruction → Remove.
   Damage → Replace.

CAUTION:

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



6. Check:
   • Specific gravity
   Less than 1.280 → Recharge battery.

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

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

CAUTION:

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

FUSE INSPECTION

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.**

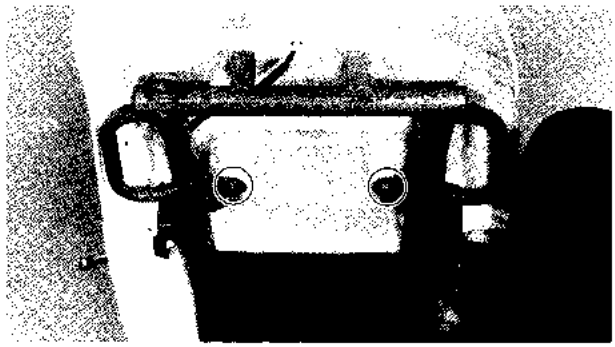
Antidote (INTERNAL):

- **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.



FUSE INSPECTION

1. Remove:
   - Seat

2. Remove:
   • Fuse ①

3. Inspect:
   • Fuse

Inspection steps:
• Connect the Pocket Tester (YU-03112) to the fuse and check it for continuity.

NOTE:
Set the tester selector to "Ω×1" position.

• If the tester is indicated at ∞. The fuse is blown, replace it.

2

4. Replace:
   • Blown fuse

Blown fuse replacement steps:
• Turn off ignition and the circuit.
• Install a new fuse of proper amperage.

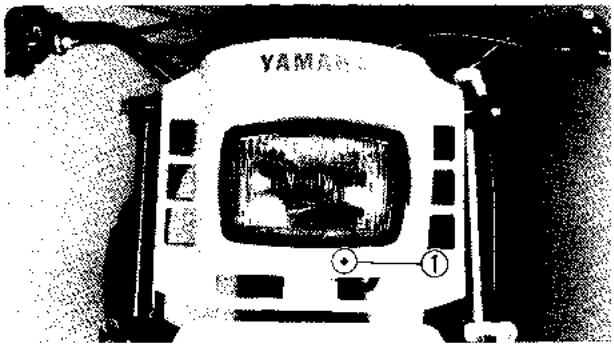
Recommended Fuse Amperage:
10A

• 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.

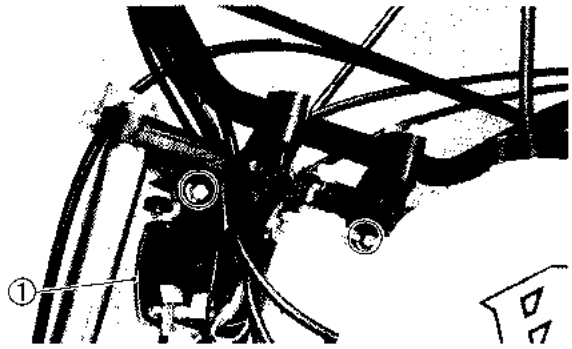
HEADLIGHT BEAM ADJUSTMENT/ HEADLIGHT BULB REPLACEMENT



HEADLIGHT BEAM ADJUSTMENT

1. Adjust:
   - Headlight beam (Vertical)

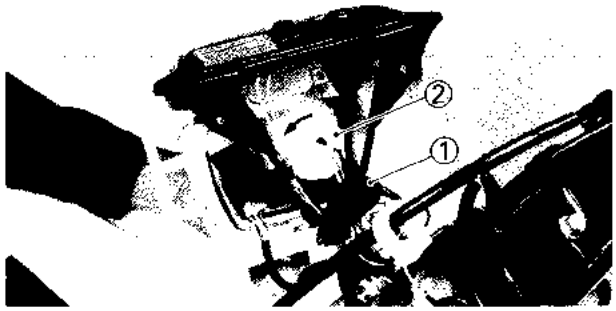
To raise the beam	**Turn the adjuster ① clockwise.**
To lower the beam	**Turn the adjuster ① counterclockwise.**



HEADLIGHT BULB REPLACEMENT

1. Remove:
   - Headlight unit ①

2. Disconnect:
   - Headlight leads



3. Remove:
   - Bulb cover ①

4. Turn the bulb holder ② counterclockwise and remove the defective bulb.

WARNING:

Keep flammable products or your hands away from the bulb while it is on, it will be hot. Do not touch the bulb until it cools down.

5. Install:
   - Bulb (New)

   Secure the new bulb with the 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.

CHAPTER 3.
ENGINE OVERHAUL

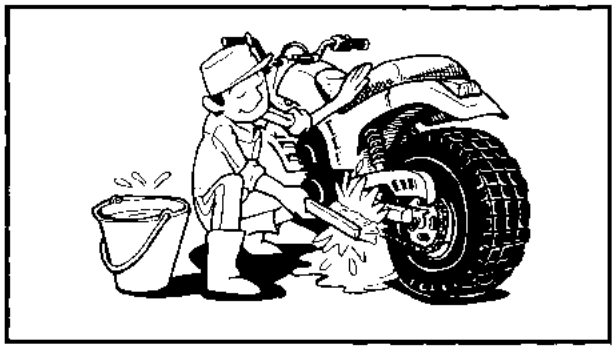
ENGINE OVERHAUL

ENGINE REMOVAL

NOTE:

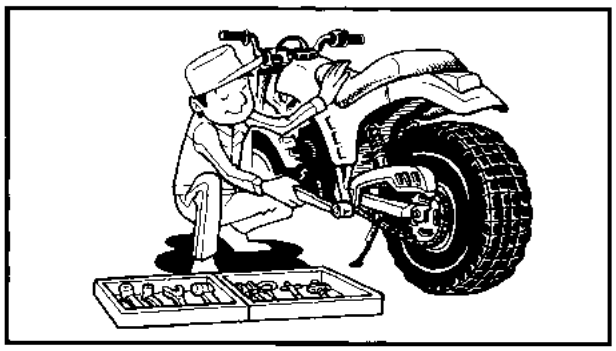
It is not necessary to remove the engine in order to remove the following components:

- Clutch/Primary drive gear
- Piston
- Kick starter
- Shift shaft
- Flywheel magneto
- Cylinder
- Cylinder head
- Camshaft
- Intake/Exhaust valves

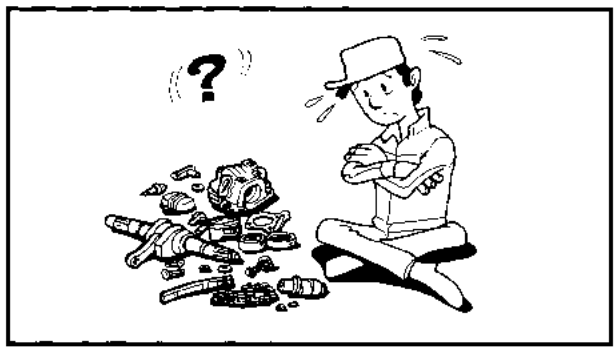


PREPARATION FOR REMOVAL

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

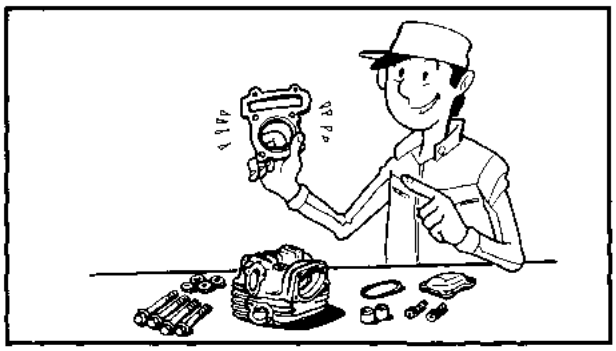


2. Use proper tools and cleaning equipment. Refer to the "SPECIAL TOOLS." section in the "CHAPTER 1".



NOTE:

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

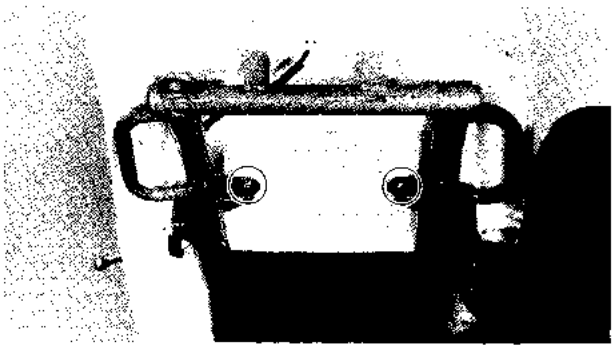


3. During engine disassembly, clean all parts and place them in trays in the order of disassembly. This will speed up assembly time and help assure that all parts are correctly reinstalled in the engine.

4. Drain:
   - Engine oil.

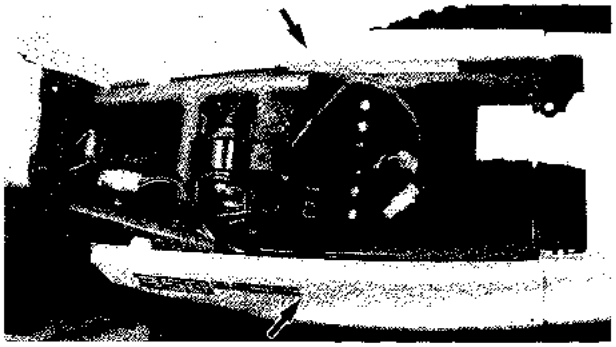
   Refer to the "ENGINE OIL REPLACEMENT" section in the "CHAPTER 2".

3

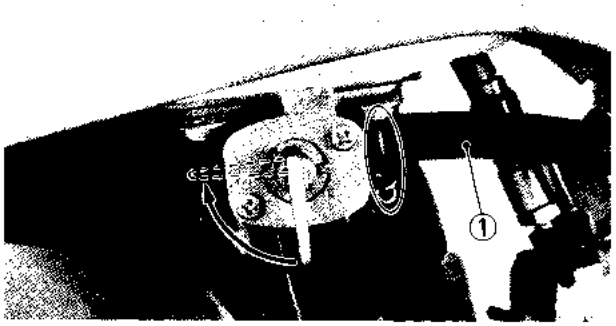


REMOVAL

1. Remove:
   - Seat



2. Remove:
   - Side covers



3. Disconnect:
   - Fuel hose ①

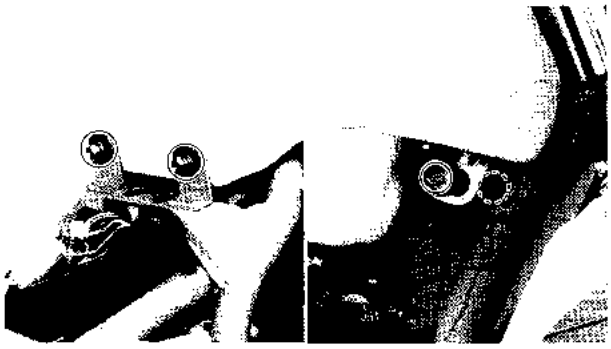
NOTE:

Before disconnecting the fuel hose, turn the fuel cock to "OFF" position.

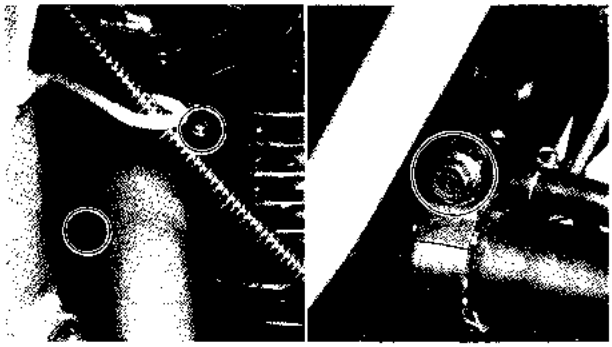
ENGINE REMOVAL

4. Remove:
   • Air scoops

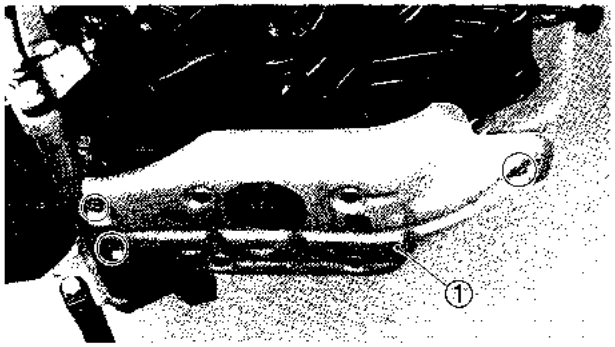
A Right side
B Left side



5. Remove:
   • Fuel tank

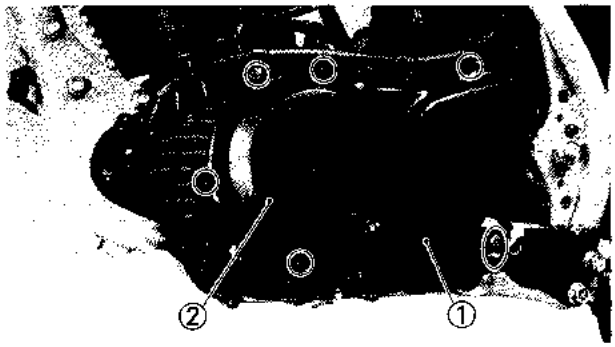


6. Remove:
   • Exhaust pipe

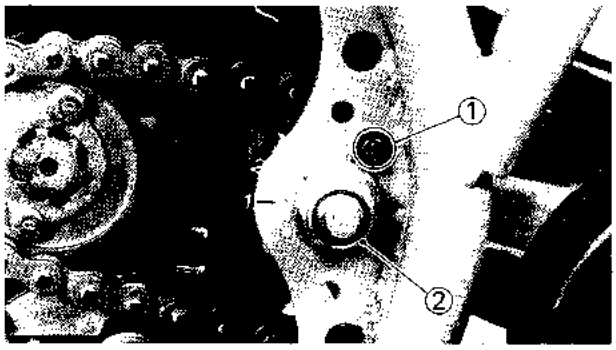


7. Remove:
   • Engine guard (1)

8. Remove:
   • Carburetor
   Refer to the "CARBURETOR – REMOVAL" section in the "CHAPTER 4".

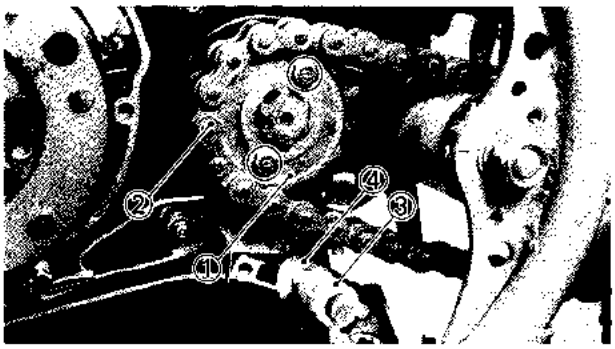


9. Remove:
   - Change pedal ①
   - Crankcase cover ②
   - Gasket (Crankcase cover)

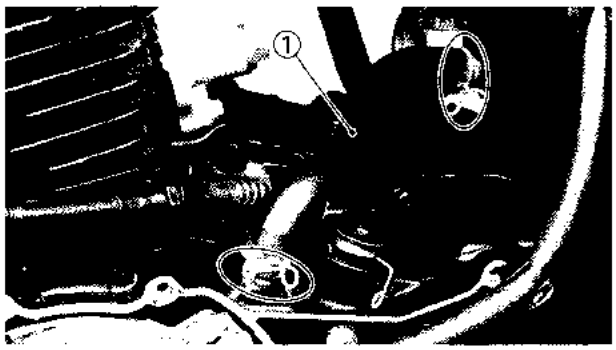


10. Remove:
    - Stopper screw ①

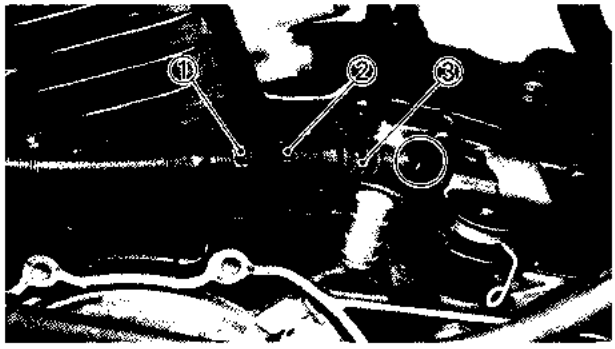
11. Loosen:
    - Nut ② (Pivot shaft)



12. Remove:
    - Drive sprocket ①
    - Primary drive chain ②
    - Collar ③ (Shift shaft)
    - Plain washer ④ (Shift shaft)

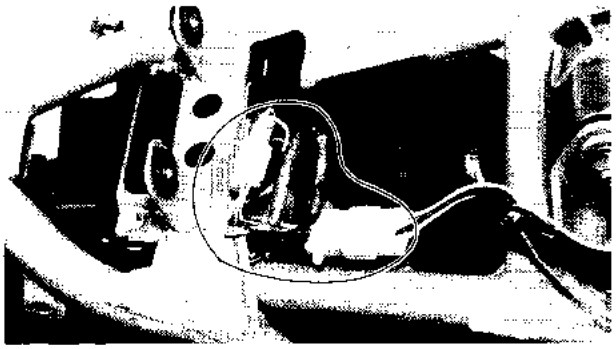


13. Remove:
    - Crankcase ventilation hose ①

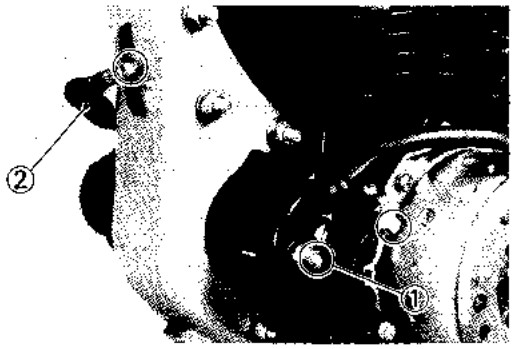


14. Loosen:
    - Locknut ① (Clutch cable)
    - Adjuster ② (Clutch cable)

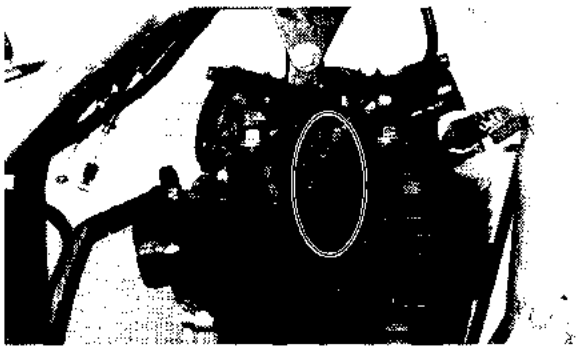
15. Remove:
    - Clutch cable ③



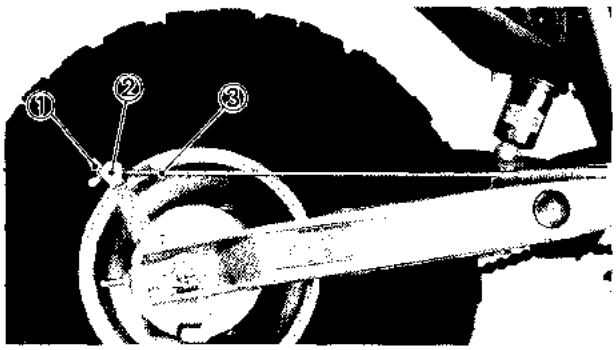
16. Disconnect:
    - C.D.I. magneto leads
    - Neutral switch leads



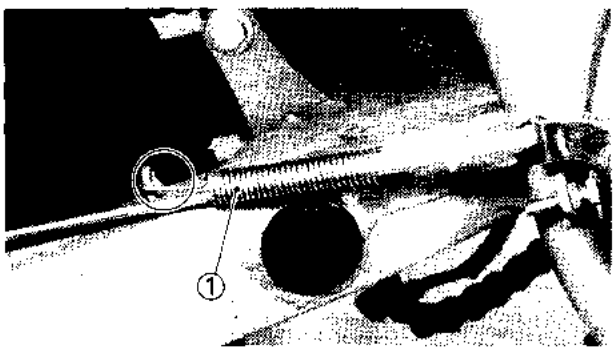
17. Remove:
    - Nut ① (Starter motor lead)
    - Ground lead ②



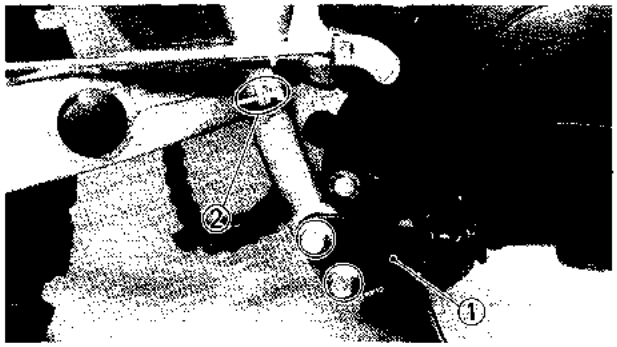
18. Remove:
    - Spark plug cap



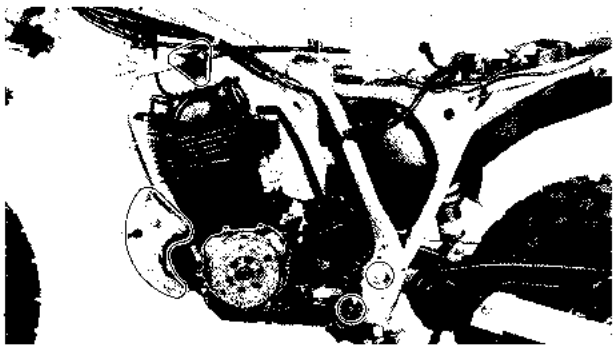
19. Remove:
    - Adjuster ① (Rear brake)
    - Pin ②
    - Spring ③



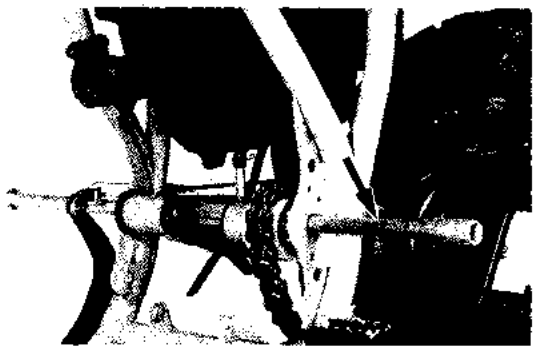
20. Unhook:
    - Spring ①



21. Remove:
    - Footrest ① (Right)
    - Adjuster ② (Brake pedal)



22. Remove:
    - Engine assembly

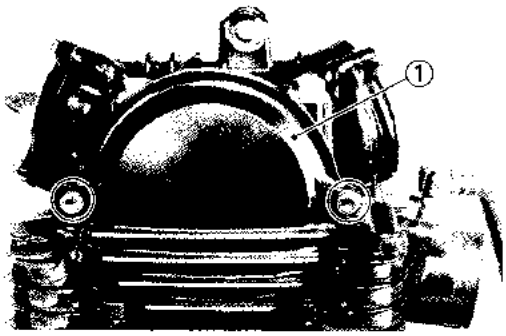


NOTE:

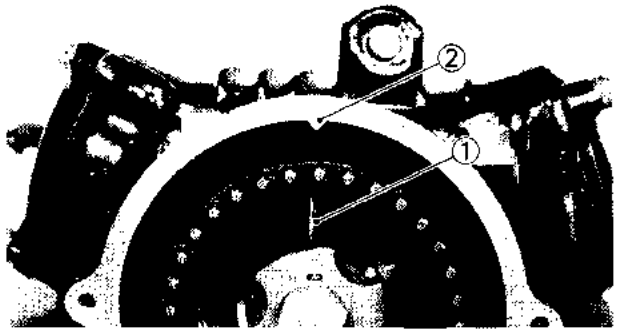
The engine and swingarm are installed using the same pivot shaft. Therefore, take care so that the pivot shaft is pulled, not entirely out, but for enough to set the engine free.

DISASSEMBLY

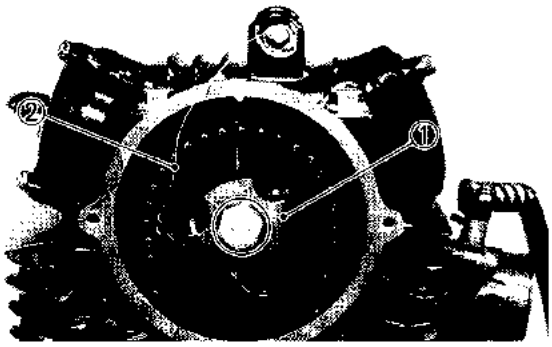
CYLINDER HEAD



1. Remove:
    - Cam sprocket cover ①

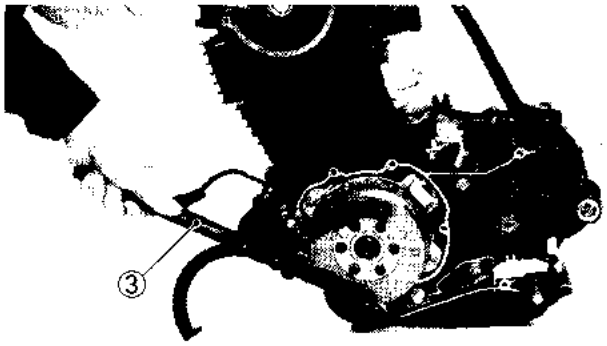


2. Align:
    - "I" mark ① (Cam sprocket) With the case mark ②.

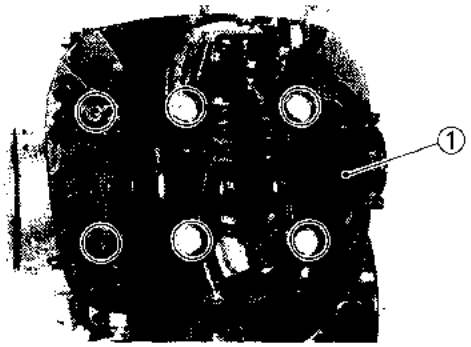


3. Remove:
   • Cam sprocket ①

NOTE:
Fasten safety wire ② to the cam chain to prevent it from falling into the crankcase.

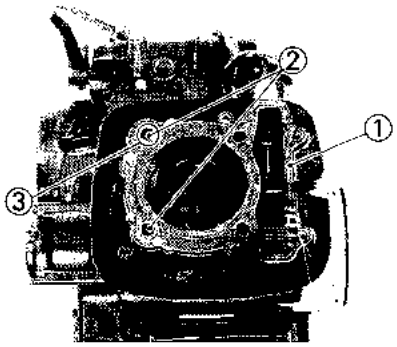


NOTE:
If difficult to loosen the cam sprocket securing bolts; hold the C.D.I. magneto with the Rotor Holder ③ (YU-01235).



4. Remove:
   • Cylinder head ①

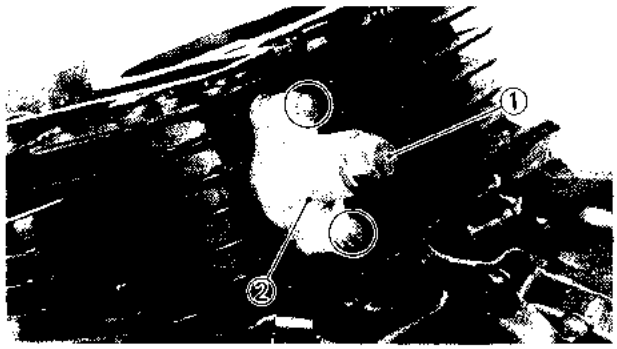
NOTE:
- Before removing the cylinder head, loosen the spark plug.
- The cylinder head holding bolts should be loosened 1/2 turn each time, and remove.



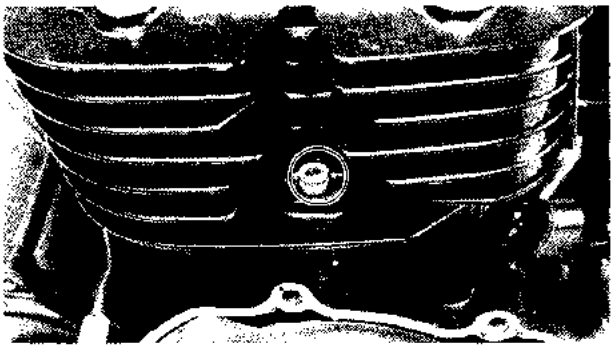
5. Remove:
   • Gasket ① (Cylinder head)
   • Dowel pins ②
   • O-ring ③

CYLINDER

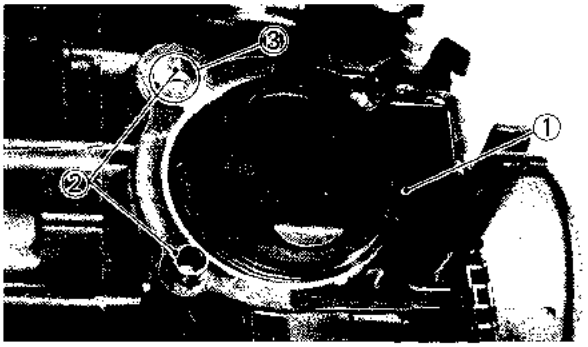
1. Loosen:
   • Blind bolt ①



2. Remove:
   • Chain tensioner ②
   • Gasket (Chain tensioner)



2. Remove:
   • Cylinder



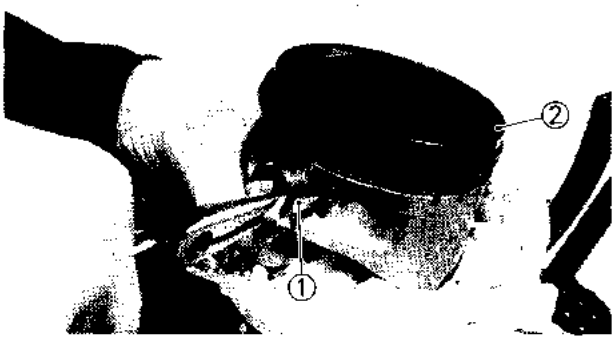
3. Remove:
   • Gasket ① (Cylinder)
   • Dowel pins ②
   • O-ring ③

PISTON

1. Remove:
   • Piston pin clip ①

NOTE:

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



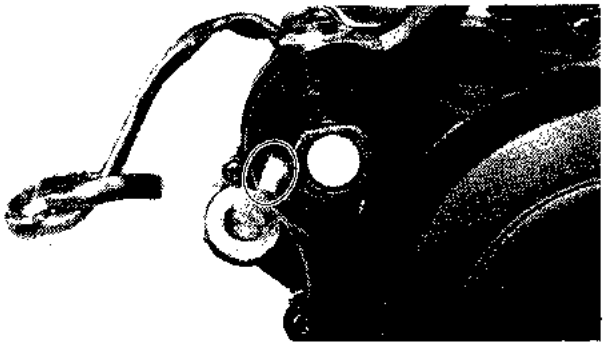
2. Remove:
   • Piston pin ①
   • Piston ②

NOTE:

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

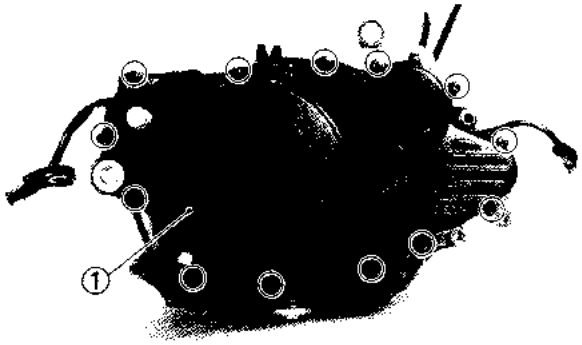
CAUTION:

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

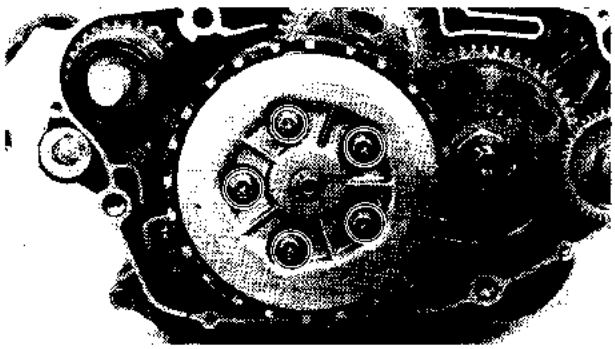


CLUTCH

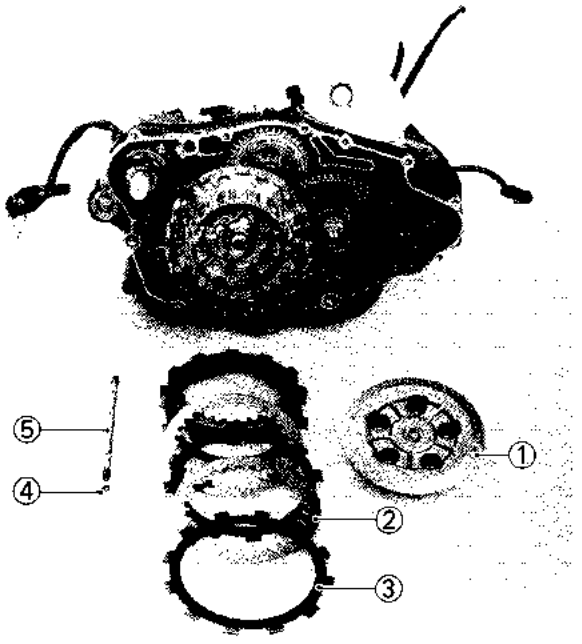
1. Remove:
   - Kick crank



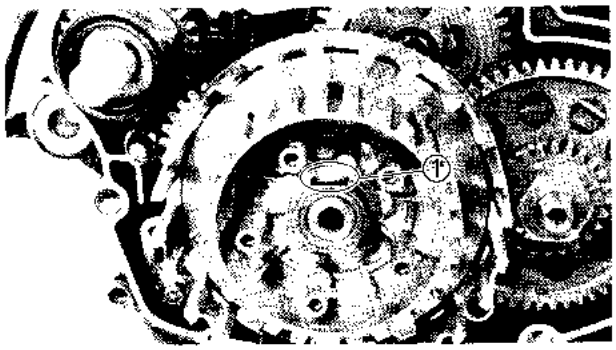
2. Remove:
   - Crankcase cover ① (Right)
   - Gasket (Crankcase cover)
   - Dowel pins



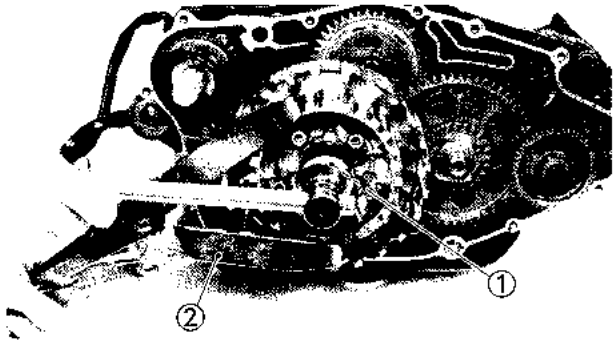
3. Remove:
   - Bolts (Pressure plate)
   - Springs (Pressure plate)



4. Remove:
   - Pressure plate ①
   - Clutch plates ②
   - Friction plates ③
   - Ball ④
   - Push rod #2 ⑤



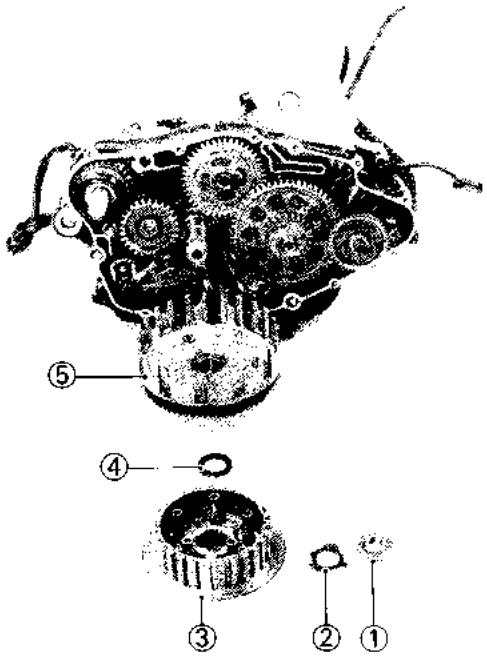
5. Straighten:
   - Lock washer tab ①



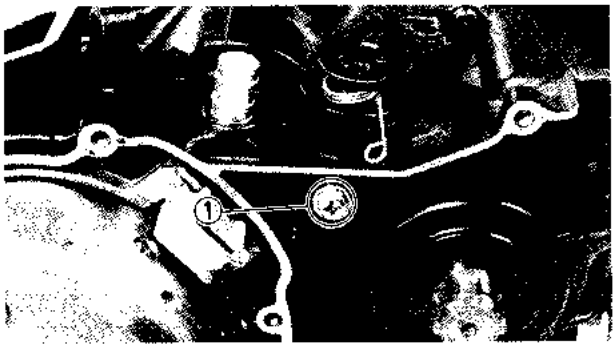
6. Remove:
   - Nut ① (Clutch boss)

NOTE:

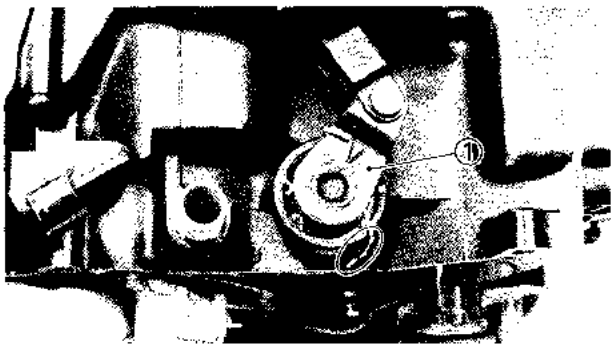
Use the Universal Clutch Holder (YM-91042) ② to hold the clutch boss.



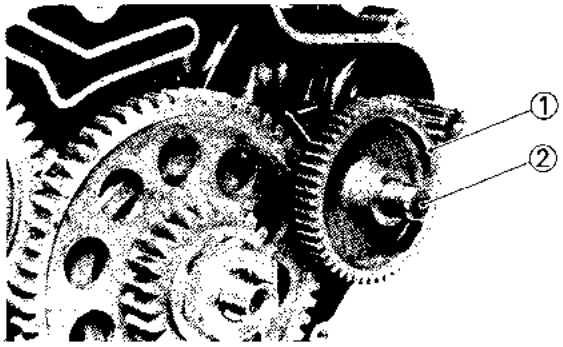
7. Remove:
   - Nut ① (Clutch boss)
   - Lock washer ②
   - Clutch boss ③
   - Thrust washer ④
   - Clutch housing ⑤



8. Remove:
   - Stopper screw ①

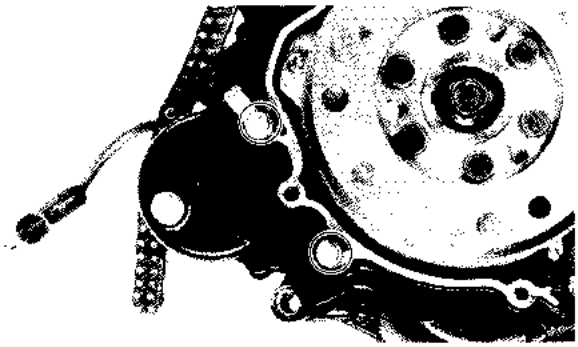


9. Remove:
   • Push lever ①

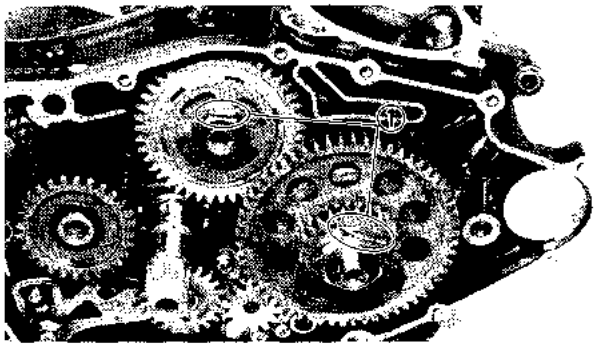


STARTER MOTOR

1. Remove:
   • Idle gear ① (Starter motor)
   • Shaft ②

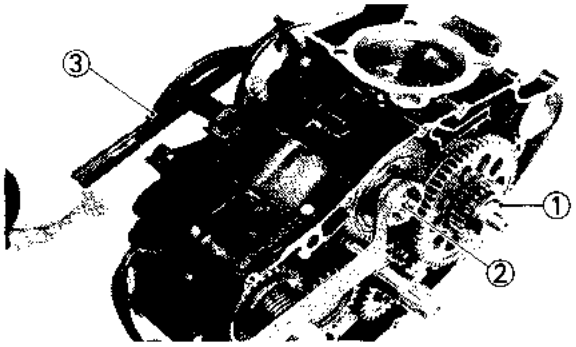


2. Remove:
   • Starter motor



PRIMARY DRIVE GEAR AND BALANCER GEAR

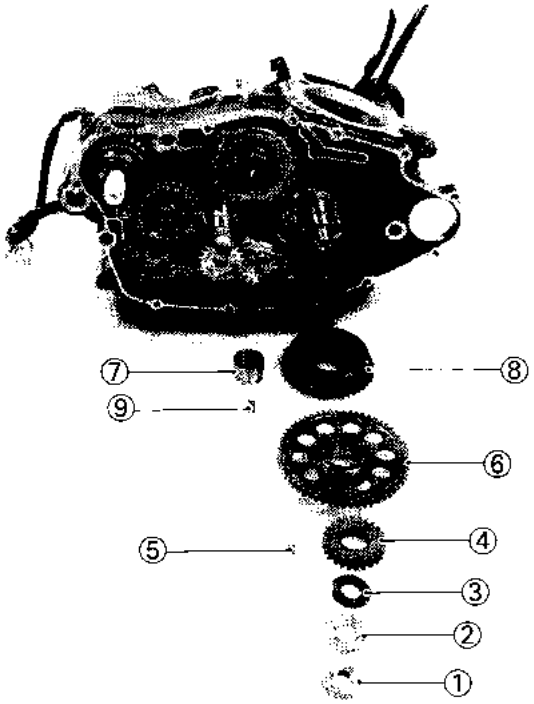
1. Straighten:
   • Lock washer tabs ①



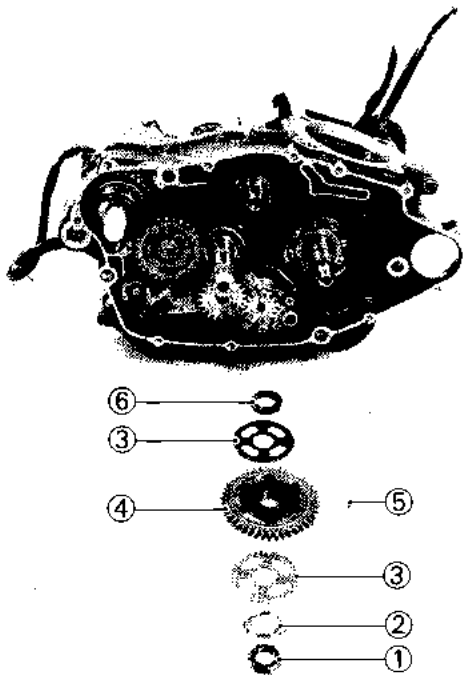
2. Loosen:
   • Nut ① (Primary drive gear)
   • Nut ② (Balancer gear)

NOTE:

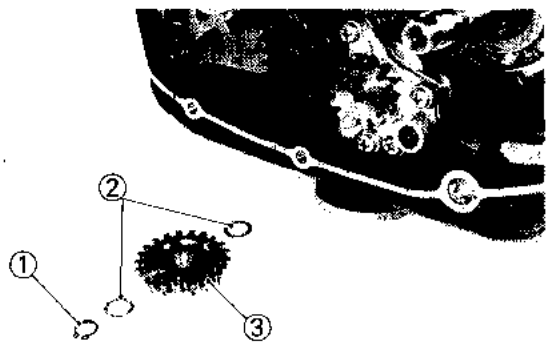
Use the Rotor Holder (YU-01235) ③ to loosen the nuts.



3. Remove:
   - Nut ①
   - Lock washer ②
   - Washer ③
   - Primary drive gear ④
   - Key ⑤
   - Starter gear ⑥
   - Collar ⑦
   - Balancer drive gear ⑧
   - Key ⑨

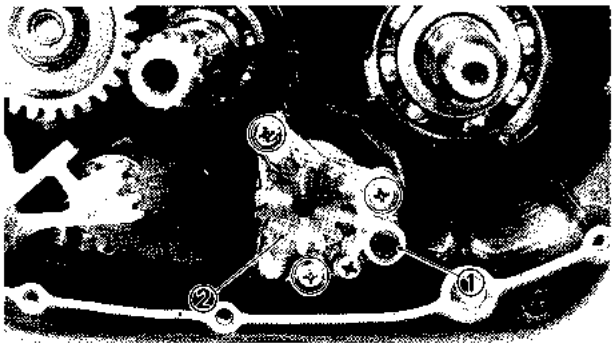


4. Remove:
   - Nut ①
   - Lock washer ②
   - Washers ③
   - Balancer gear ④
   - Key ⑤
   - Collar ⑥

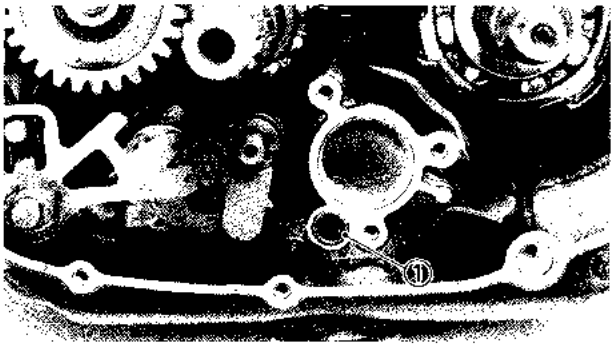


OIL PUMP

1. Remove:
   - Circlip ①
   - Plain washers ②
   - Oil pump drive gear ③

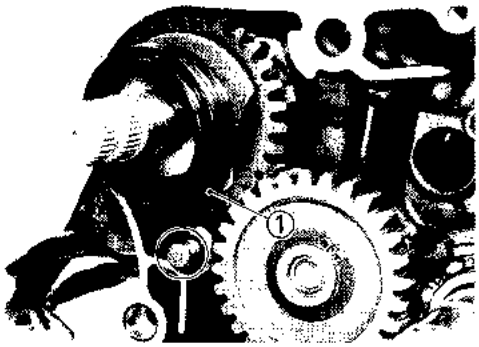


2. Remove:
   - O-ring ①
   - Oil pump ②

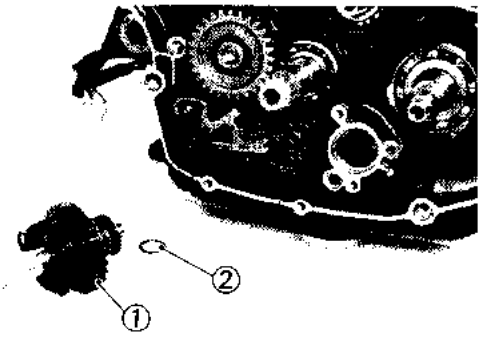


3. Remove:
   - O-ring ①

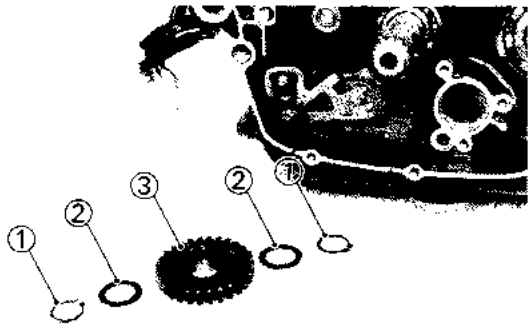
KICK AXLE



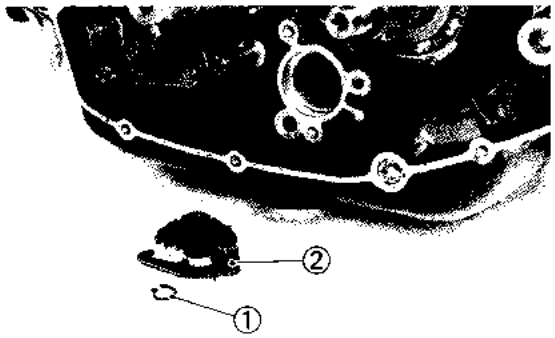
1. Unhook:
   - Spring ①



2. Remove:
   - Kick axle assembly ①
   - Plain washer ②

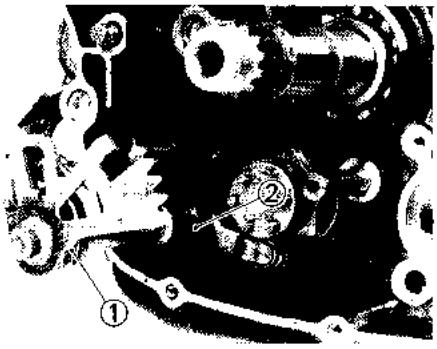


3. Remove:
   - Circlips ①
   - Plain washers ②
   - Kick idle gear ③

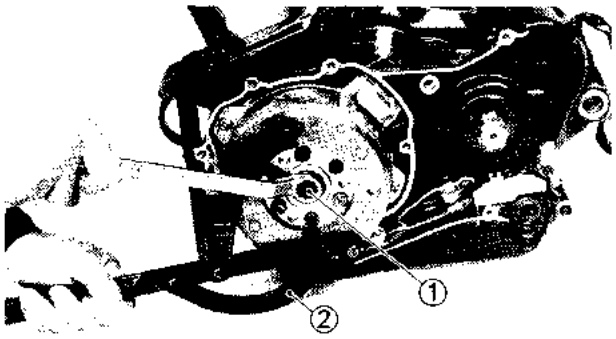


SHIFT SHAFT

1. Remove:
   - Circlip ①
   - Shift lever ②



2. Remove:
   - Shift shaft ①
   - Stopper lever ②

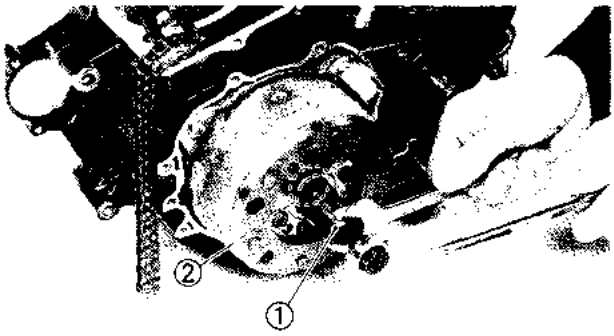


C.D.I. MAGNETO

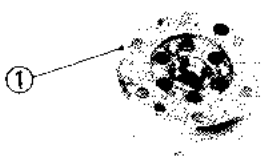
1. Remove:
   - Bolt ① (C.D.I. magneto)

NOTE:

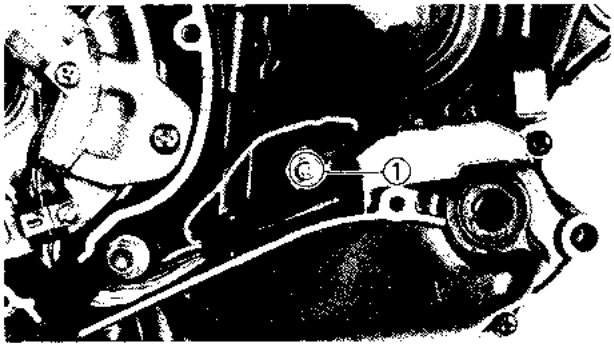
Use the Rotor Holder (YU-01235) ② to hold the C.D.I. magneto.



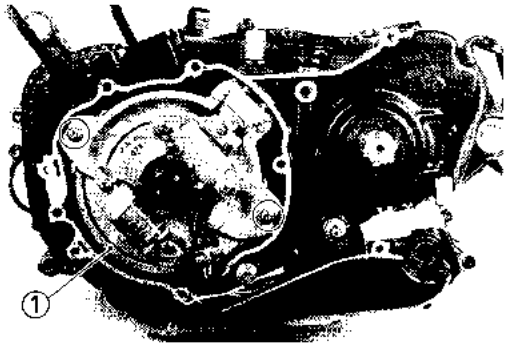
2. Attach:
   - Magneto Puller (YM-01189) ①
   - Adapter (YM-1382) ②



3. Remove:
   - C.D.I. magneto ①
   - Key ②

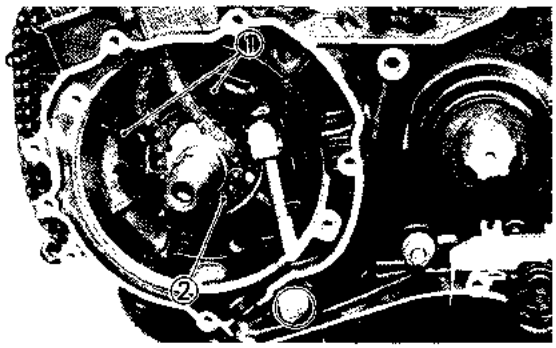


4. Loosen:
   - Screw ① (Neutral switch)



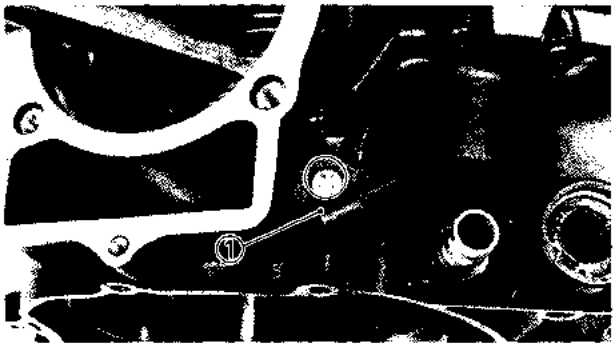
5. Remove:
   - C.D.I. base assembly ①

CAM CHAIN AND CHAIN GUIDE

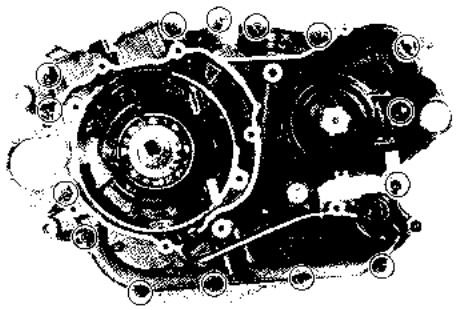


1. Remove:
   - Chain guides ①
   - Cam chain ②

CRANKCASE



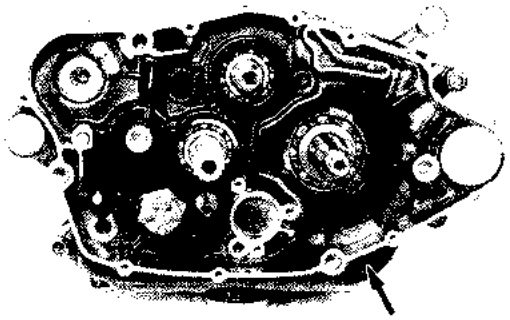
1. Remove:
   - Clutch cable holder ①



2. Remove:
   - Screws (Crankcase)

NOTE:

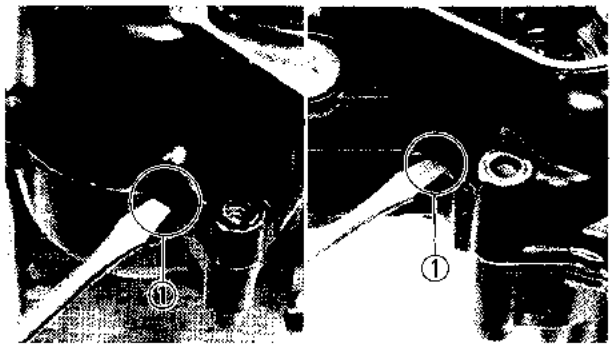
Loosen each screw 1/4 turn, and remove them after all are loosened.



3. Remove:
   - Crankcase (Right)

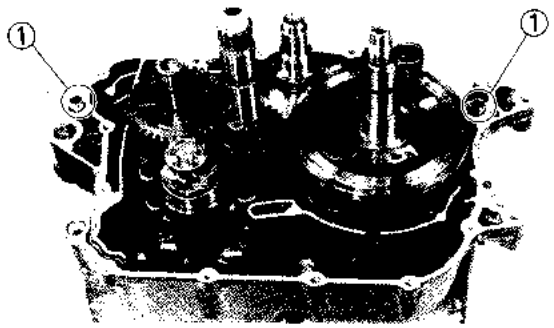
NOTE:

As pressure is applied, alternately tap on the crankshaft and main axle.

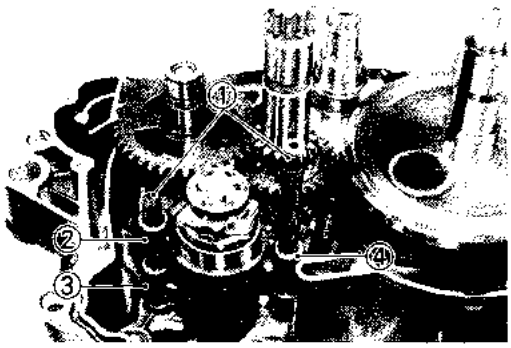


NOTE:

If the crankcase will not come off, use the lever guides ① for removal.

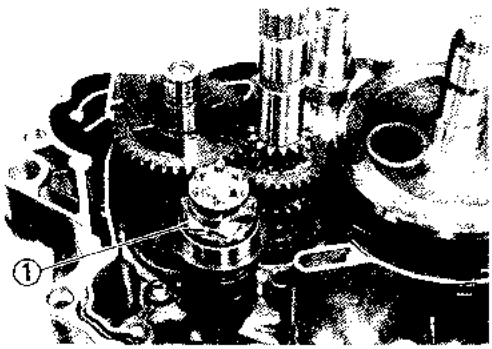


4. Remove:
   - Dowel pins ①

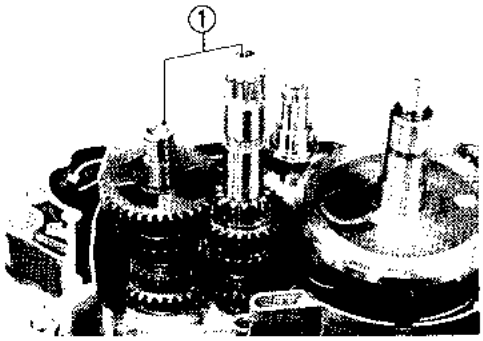


SHIFTER AND TRANSMISSION

1. Remove:
   - Guide bars ①
   - Shift fork #3 ②
   - Shift fork #1 ③
   - Shift fork #2 ④



2. Remove:
   - Shift cam ①

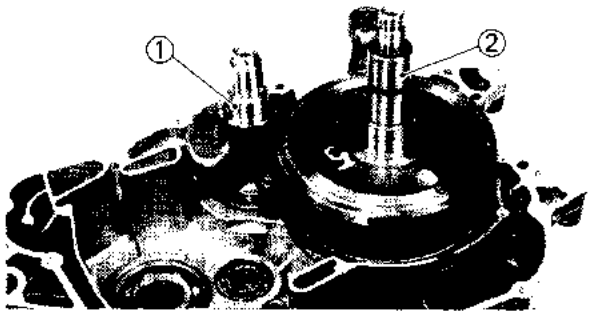


3. Remove:
   • Transmission assembly ①

NOTE:

When removing the drive axle from the crankcase, pay attention to the crankcase oil seal lip. A recommended practice is to fit the "O-ring" ① in the drive axle groove and apply grease over the fitted area before removing drive axle.

BALANCER AND CRANKSHAFT



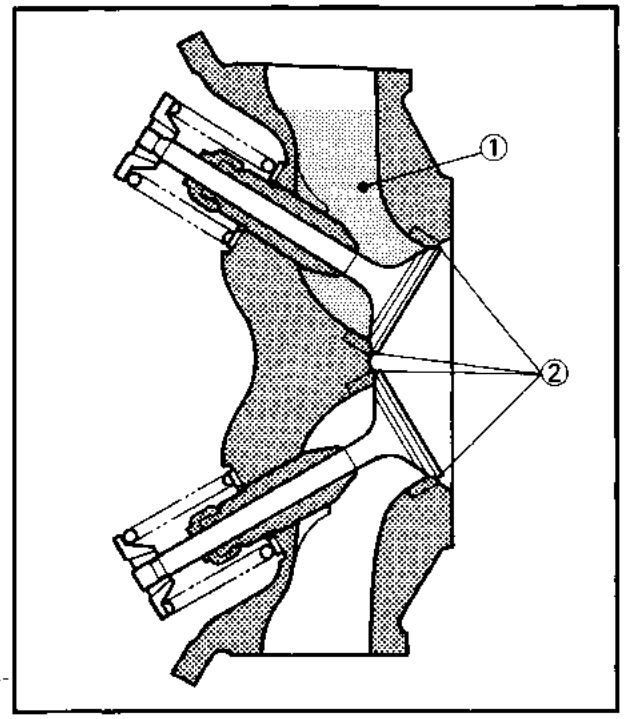
1. Remove:
   • Balancer ①
   • Crankshaft ②
   • Crankcase (Left)

VALVE, ROCKER ARM AND CAMSHAFT

NOTE:

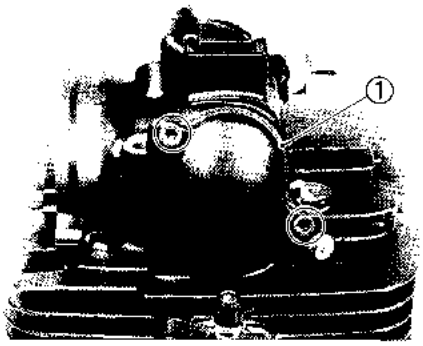
Before removing the internal parts (valve, valve spring, spring seat, etc.) of the cylinder head, the valve sealing should be checked.

1. Check:
   • Valve sealing
   Leakage at valve seat → Inspect the valve face, valve seat and valve seat width.
   Refer to the "INSPECTION AND REPAIR – VALVE SEAT" section.



Valve seal checking steps:
- Supply a clean solvent ① into the intake and exhaust ports.
- Check the valve sealing. There should be no leakage at the valve seats ②.

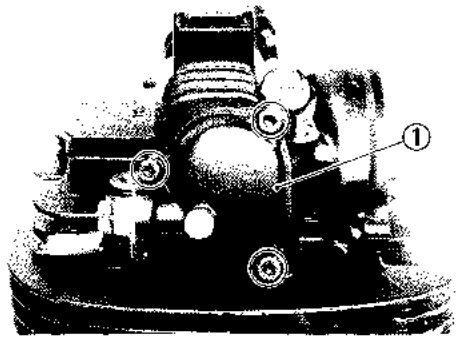
A

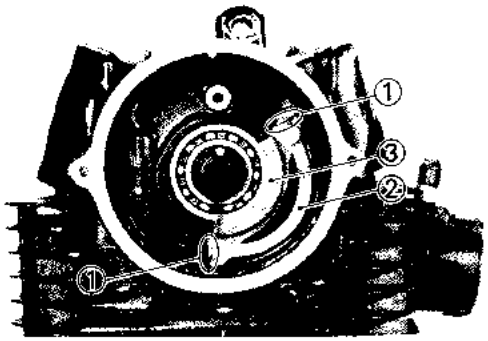


2. Remove:
   - Valve covers ①

A Valve cover (Intake)
B Valve cover (Exhaust)

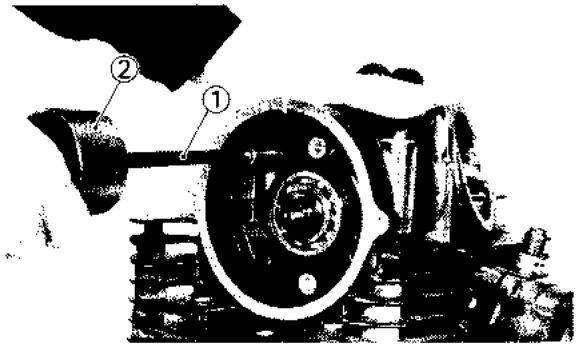
B



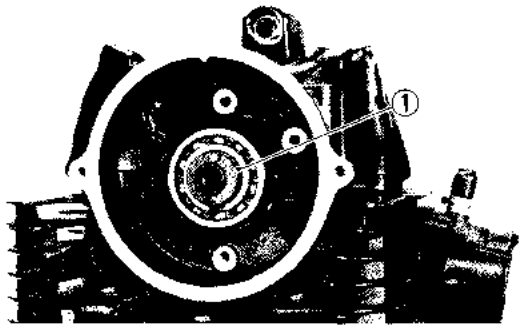


3. Straighten:
   - Lock washer tabs ①

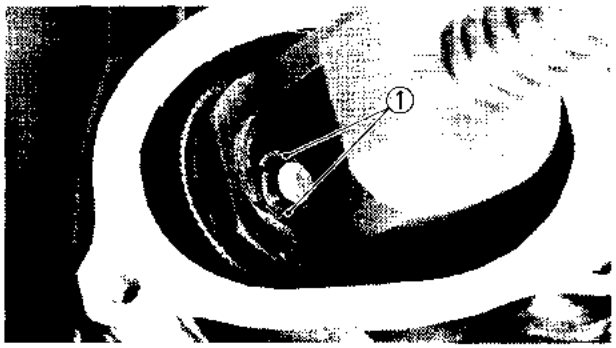
4. Remove:
   - Lock washer ②
   - Bearing holder ③



5. Remove:
   - Rocker arm shafts
     Use the Slide Hammer Bolt ① and Weight ② (YU-01083).
   - Rocker arms

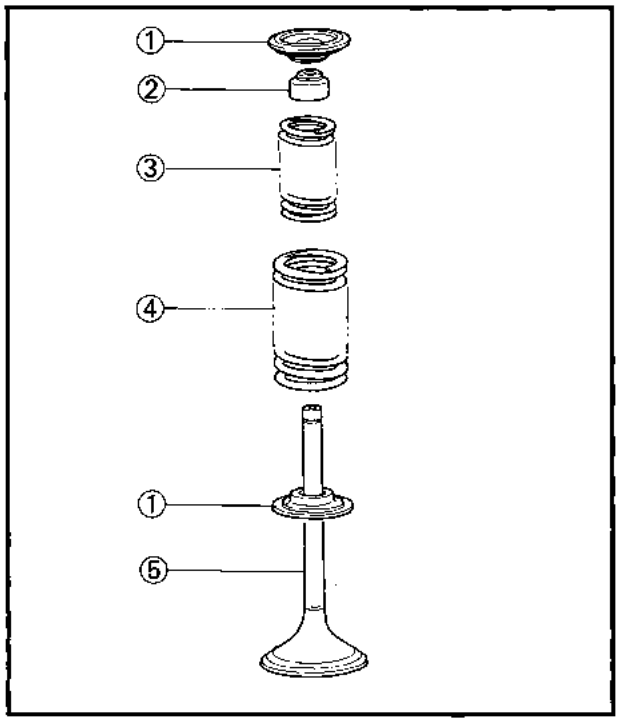


6. Remove:
   - Camshaft ①

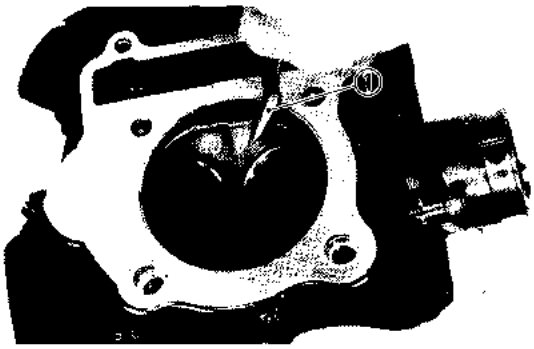


7. Attach:
   - Valve Spring Compressor (YM-04019)

8. Remove:
   - Valve retainers ①



9. Remove:
   - Valve spring seats ①
   - Oil seal ②
   - Valve spring ③ (Inner)
   - Valve spring ④ (Outer)
   - Valve ⑤



INSPECTION AND REPAIR

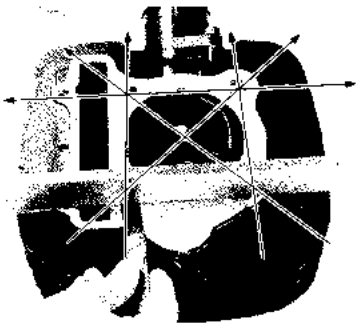
CYLINDER HEAD

1. Eliminate:
   - Carbon deposit
     (from combustion chamber)
     Use rounded scraper ①.

NOTE:

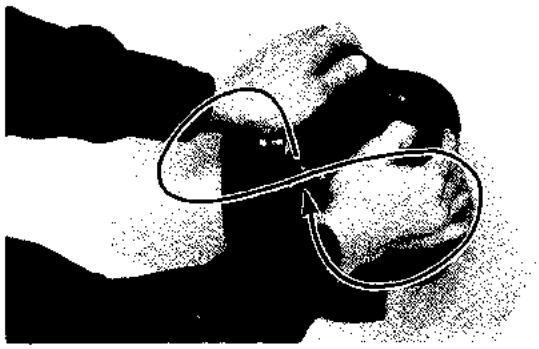
Do not use a sharp instrument and avoid damaging or scratching:
- Spark plug threads
- Valve seat

2. Inspect:
   - Cylinder head
     Scratches/Damage → Replace.



3. Measure:
   - Warpage
     Out of specification → Resurface.

Cylinder Head Warpage:
Less than 0.03 mm (0.0012 in)

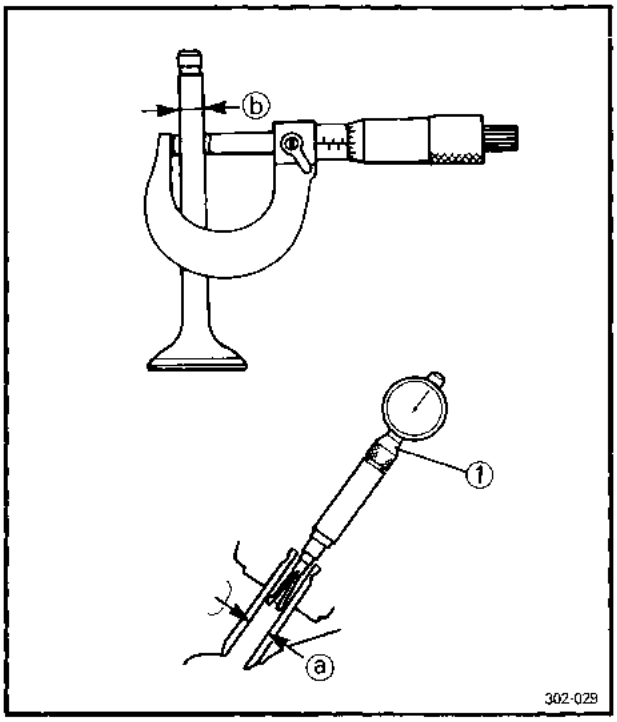


4. Resurface:
   - Cylinder head

Resurfacement steps:
- Place a 400 ~ 600 grit wet sandpaper on the surface plate, and resurface the head using a figure-eight sanding pattern.

NOTE:

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



VALVE AND VALVE GUIDE

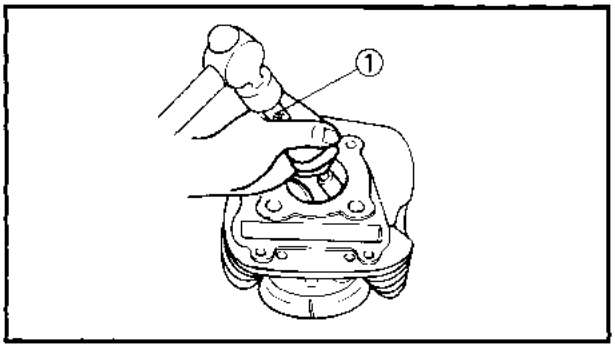
1. Measure:
   - Stem-to-guide clearance

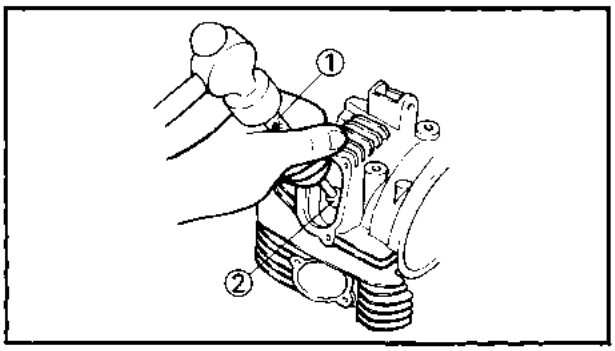
Stem-to-guide clearance =
Valve guide inside diameter ⓐ − Valve stem diameter ⓑ

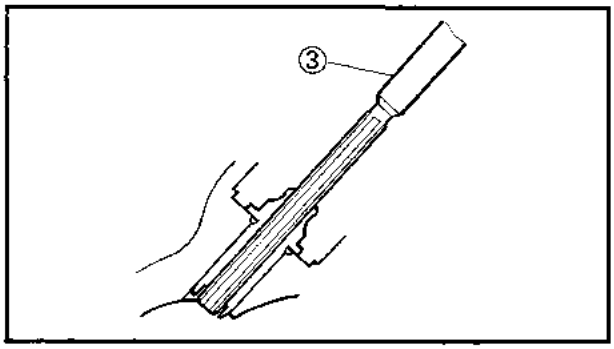
Out of specification → Replace valve guide.

Stem-to-guide Clearance:	
Intake	0.010 ~ 0.037 mm (0.0004 ~ 0.0014 in)
Exhaust	0.030 ~ 0.057 mm (0.0012 ~ 0.0022 in)

① Bore gauge







Valve guide replacement steps:

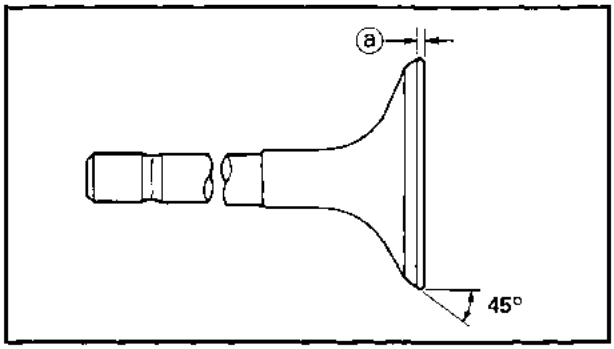
NOTE:

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

- Remove the valve guide using the Valve Guide Remover (YM-01255-A) ①.
- Install the valve guide (New) using the Valve Guide Installer (YM-04017) ② and Valve Guide Remover (YM-01255-A) ①.
- After installing the valve guide, bore the valve guide using the Valve Guide Reamer (YM-01227) ③ to obtain proper stem-to-guide clearance.

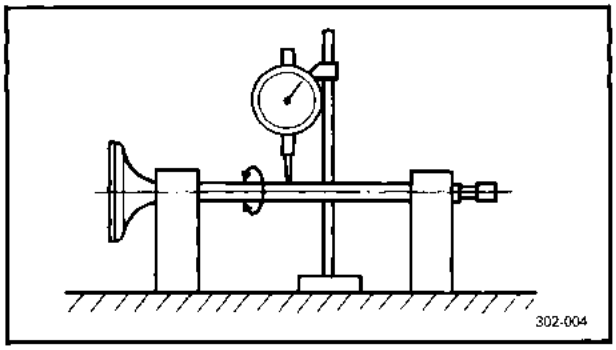
2. Clean the valve face to remove carbon deposits.

3. Inspect:
   • Valve face
   Pitting/Wear → Grind the face.



4. Measure:
   • Margin thickness ⓐ
   Out of specification → Replace.

Margin Thickness Limit:
0.7 mm (0.028 in)



5. Check:
   • Valve stem end
   Mushroom shape or diameter larger than rest or stem → Replace.
   • Runout
   Out of specification → Replace.

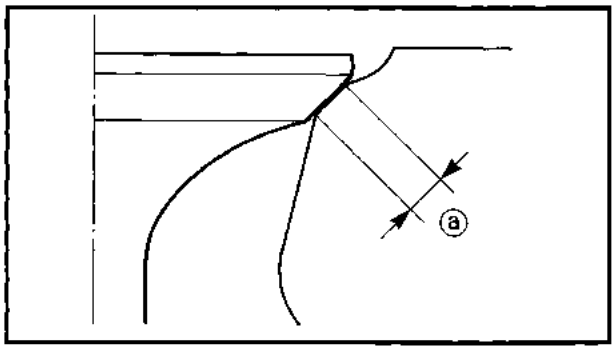
Maximum Valve Stem Runout:
0.03 mm (0.0012 in)

NOTE:
- Always replace the guide if the valve is replaced.
- Always replace the oil seal if the valve is removed.

VALVE SEAT

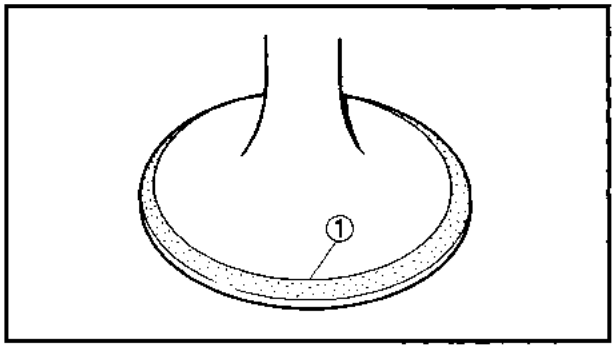
1. Clean the valve face and valve seat to remove carbon deposits.

2. Inspect:
   • Valve seat
   Pitting/Wear → Reface the valve seat.

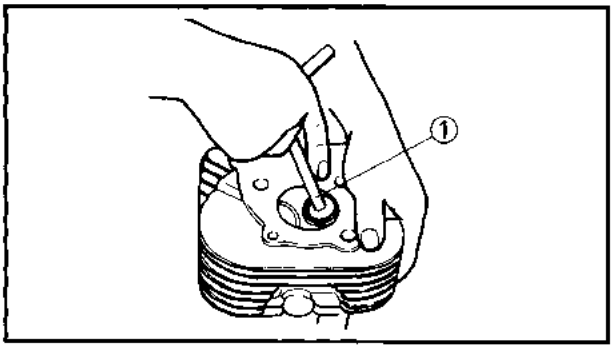


3. Measure:
   • Valve seat width ⓐ
   Out of specification → Reface valve seat.

Valve Seat Width:	
Intake	1.0 ~ 1.2 mm (0.039 ~ 0.047 in)
Exhaust	1.0 ~ 1.2 mm (0.039 ~ 0.047 in)



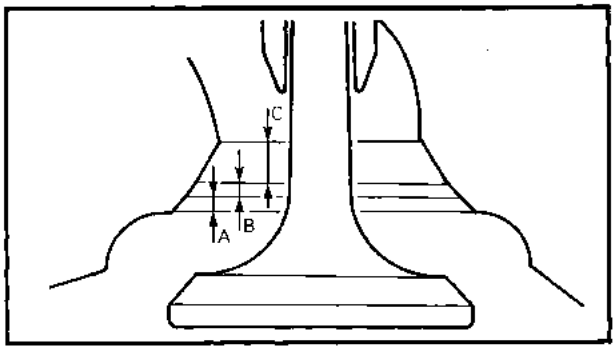
Measurement steps:
- Apply the Mechanic's bluing dye (Dykem) ① to the valve face.
- Install the valve into the cylinder head.
- Press the valve through the valve guide and onto the valve seat to make a clear pattern.
- Measure the valve seat width. Wherever the valve seat and valve face made contact, bluing will have been removed.
- If the valve seat width is too wide, too narrow, or seat has not centered, the valve seat must be refaced.



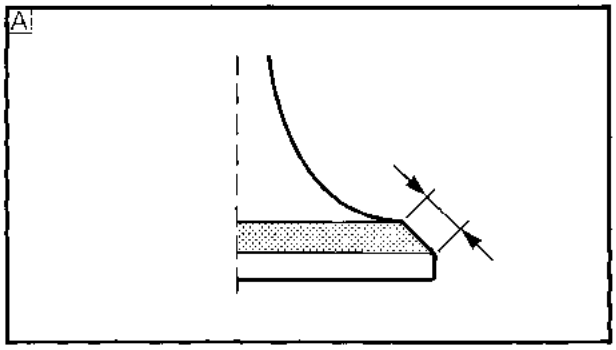
4. Reface:
   • Valve seat
   Use a 30°, 45° and 60° Valve Seat Cutter (YM-91043) ①.

CAUTION:

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



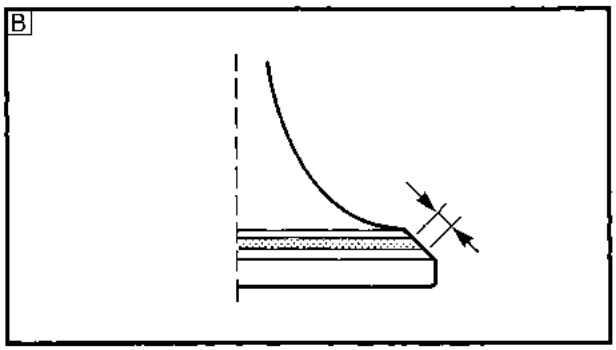
Cut sections as follows	
Section	Cutter
A	30°
B	45°
C	60°



Valve seat refacing steps:

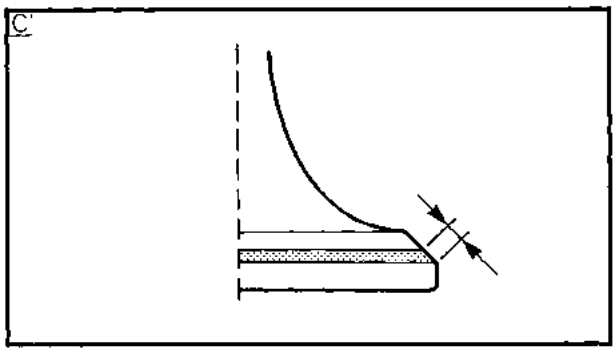
A Valve face indicates that valve seat is centered on valve face but is too wide.

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



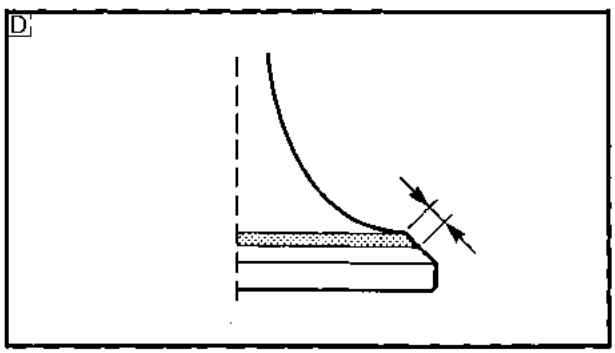
B Valve seat is in the middle of the valve face but too narrow.

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



C Valve seat is too narrow and right up near valve margin.

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	



D Valve seat is too narrow and is located down near the bottom edge of the valve face.

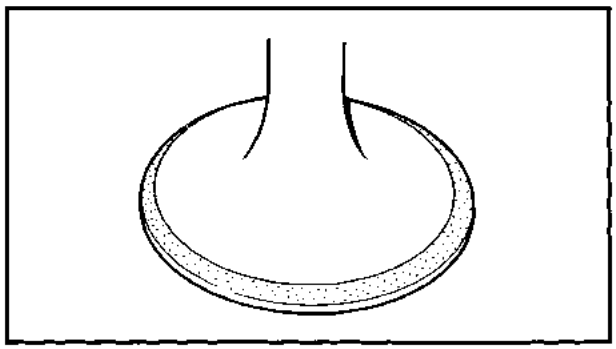
Valve Seat Cutter Set		Desired Result
Use	60° cutter, first	To center the seat and increase its width
	45° cutter	

3

5. Lap:
   - Valve face
   - Valve seat

NOTE:

When refacing the valve seat or replacing the valve and valve guide, the valve seat and valve face should be lapped.

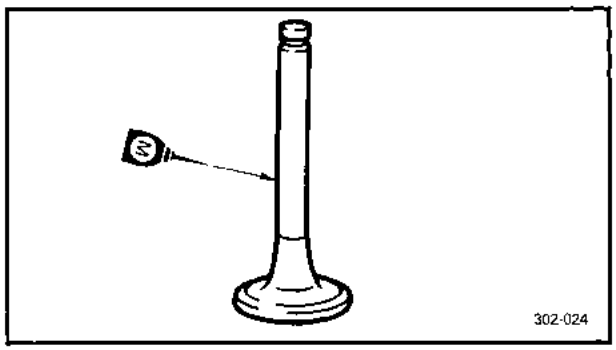


Lapping steps:

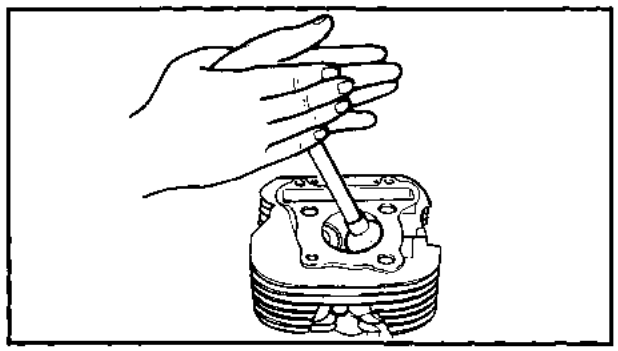
- Apply a coarse lapping compound to the valve face.

CAUTION:

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



- Apply a molybdenum disulfide oil to the valve stem.
- Install the valve into the cylinder head.



- Turn the valve until the valve face and valve seat are evenly polished, then clean off all compound.

NOTE:

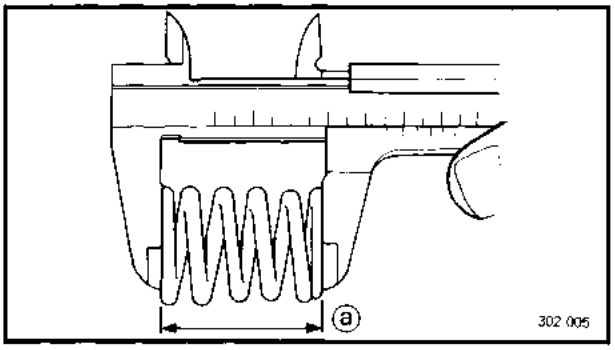
To obtain the best lapping results, lightly tap the valve seat while rotating the valve back and forth between your hands.

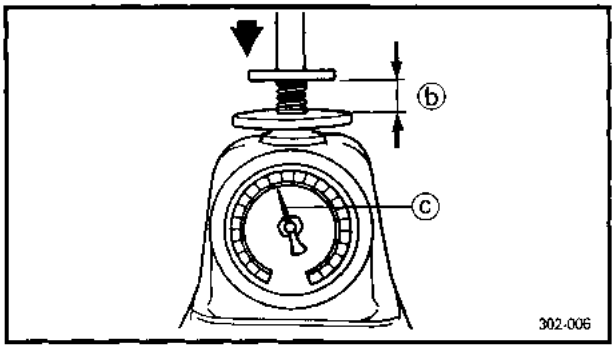
- Apply a fine lapping compound to the valve face and repeat the above steps.

NOTE:

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

- Apply the Mechanic's bluing dye (Dykem) to the valve face.
- Install the valve into the cylinder head.
- Press the valve through the valve guide and onto the valve seat to make a clear pattern.
- Measure the valve seat width again.
  If the valve seat width is out of specification, reface and lap the valve seat.





VALVE SPRING

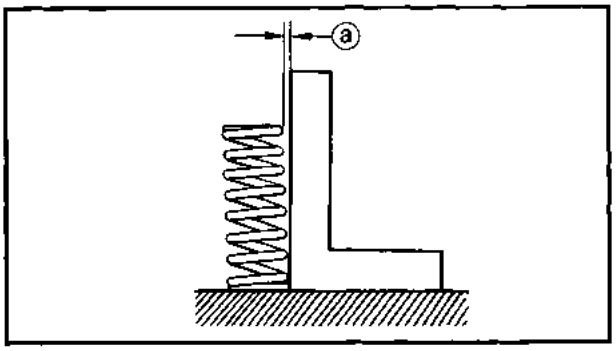
1. Measure:
   - Valve spring free length ⓐ
     Out of specification → Replace.

Valve Spring Free Length:	
Inner spring	Outer spring
39.9 mm (1.57 in)	43.6 mm (1.72 in)

2. Measure:
   - Valve spring installed force ⓒ
     Out of specification → Replace.

ⓑ Installed length

Valve Spring Installed Force:			
Inner spring		Outer spring	
ⓑ	ⓒ	ⓑ	ⓒ
33.6 mm (1.32 in)	11.5 kg (25.3 lb)	33.6 mm (1.32 in)	34.6 kg 72.3 lb)

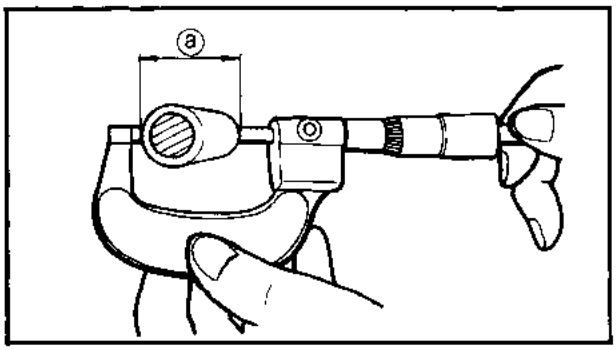


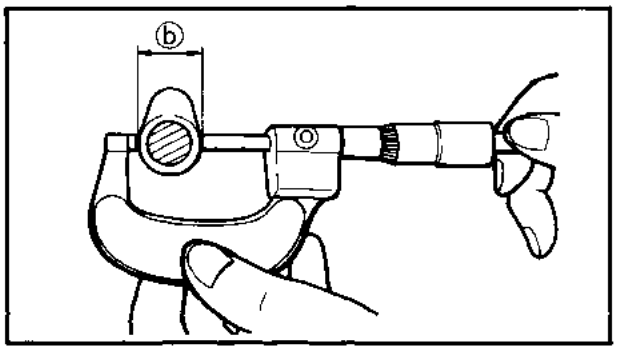
3. Measure:
   • Spring tilt ⓐ
   Out of specification → Replace.

Spring Tilt:	
Inner spring	Outer spring
Less than 1.7 mm (0.067 in)	Less than 1.9 mm (0.075 in)

CAMSHAFT

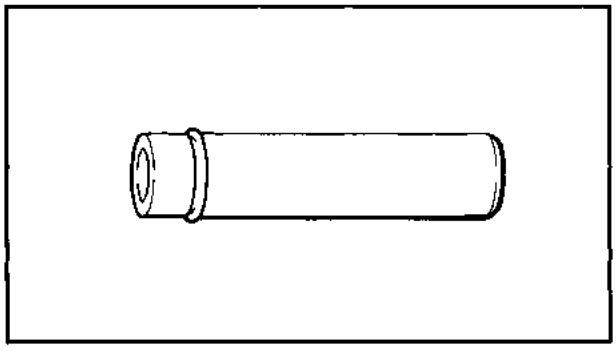
1. Inspect:
   • Cam lobes
   Pitting/Scratches/Blue discoloration → Replace.





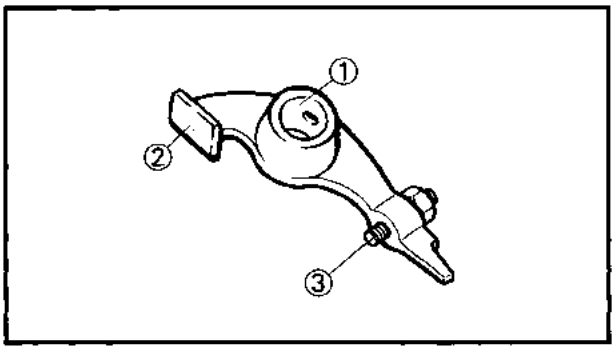
2. Measure:
   • Cam lobes
   Out of specification → Replace.

	ⓐ	ⓑ
Intake	40.28 ~ 40.38 mm (1.586 ~ 1.590 in)	32.14 ~ 32.24 mm (1.265 ~ 1.269 in)
Exhaust	40.29 ~ 40.39 mm (1.586 ~ 1.590 in)	32.14 ~ 32.24 mm (1.265 ~ 1.269 in)



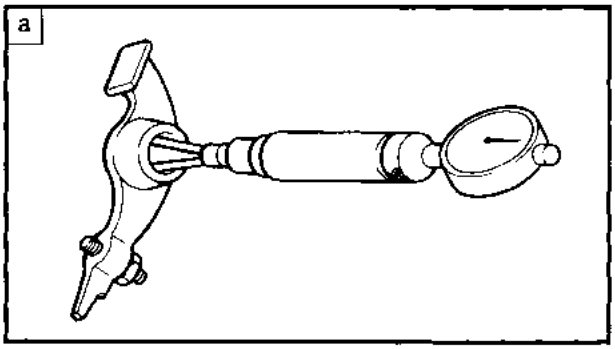
ROCKER ARM AND ROCKER ARM SHAFT

1. Inspect:
   • Rocker arm shaft
   Blue discoloration/Grooves → Replace, then inspect lubrication system.



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

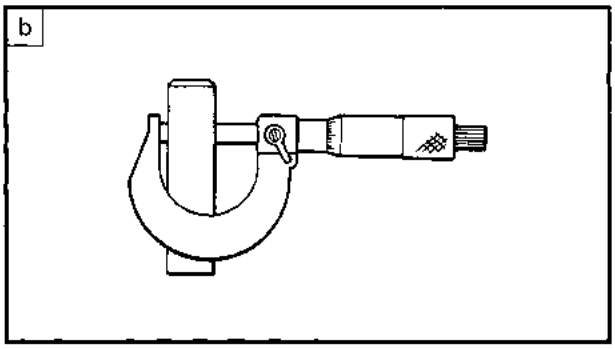
   Wear/Pitting/Scratches/Blue discoloration
   →Replace, then inspect lubrication system.



3. Measure:
   - Arm-to-shaft clearance

Arm-to-shaft clearance =
Rocker arm inside diameter ⓐ − Rocker arm shaft outside diameter ⓑ

Out of specification→Replace as a set.

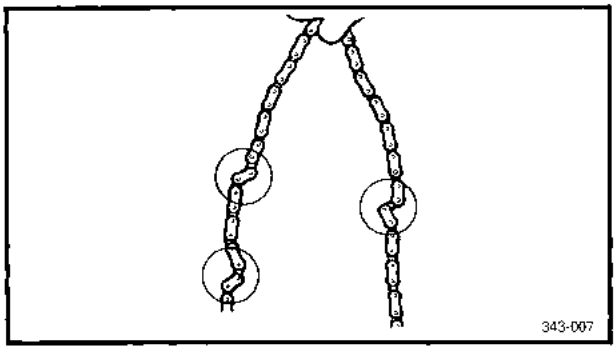


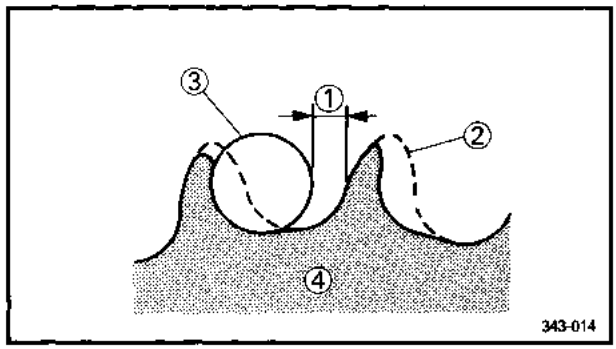
Arm-to-shaft Clearance:
0.009 – 0.037 mm
(0.0004 – 0.0015 in)
Limit: 0.1 mm (0.004 in)

CAM CHAIN AND CAM SPROCKET

1. Inspect:
   - Cam chain

   Stiff/Cracks→Replace cam chain and cam sprocket as a set.

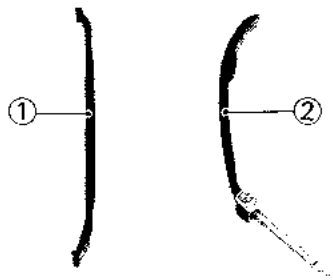




2. Inspect:
   - Cam sprocket

   Wear/Damage→Replace cam sprocket and cam chain as a set.

① 1/4 tooth
② Correct
③ Roller
④ Sprocket



CAM CHAIN GUIDE

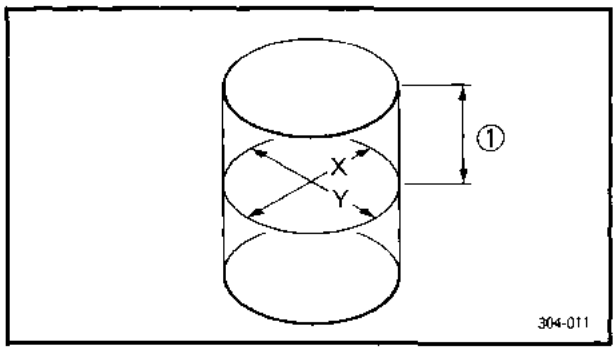
1. Inspect:
   - Exhaust side chain guide ①
   - Intake side chain guide ②

   Wear/Damage→Replace.

CYLINDER AND PISTON

1. Inspect:
   - Cylinder and piston walls

   Vertical scratches→Rebore or replace cylinder and piston.



2. Measure:
   - Piston-to-cylinder clearance

Piston-to-cylinder clearance measurement steps:

First steps

- Measure the cylinder bore "C" with a cylinder bore gauge.

① 40 mm (1.57 in) from the cylinder top

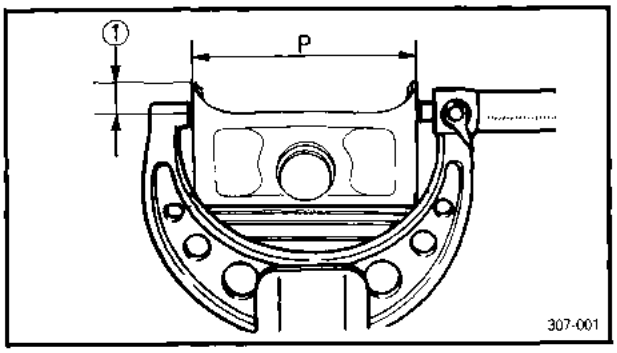
NOTE:

Measure the cylinder bore "C" in parallel to and at right angles to the crankshaft.
Then, find the average of the measurements.

	Standard	Wear Limit
Cylinder Bore "C":	82.97 ~ 83.02 mm (3.267 ~ 3.269 in)	84.0 mm (3.307 in)

$$C = \frac{X + Y}{2}$$

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



2nd steps

- Measure the piston skirt diameter "P" with a micrometer.

① 5.5 mm (0.217 in) from the piston bottom edge

Piston Size P:

Standard	**82.92 ~ 82.97 mm (3.265 ~ 3.266 in)**
Oversize 2	**83.5 mm (3.287 in)**
Oversize 4	**84.0 mm (3.307 in)**

- If out of the specification, replace the piston and piston rings as a set.

3rd steps

- Find the piston-to-cylinder clearance with following formula.

Piston-to-cylinder clearance =

Cylinder bore "C" —
Piston skirt diameter "P"

Piston-to-cylinder Clearance:
0.04 ~ 0.06 mm (0.001 ~ 0.002 in)
Limit:
0.1 mm (0.004 in)

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

Piston ring oversize:

Oversize	Mark
2	50
4	100

NOTE:
Oversize mark is stamped on the top of the ring.

3

PISTON RING

1. Measure:
   - Ring side clearance
     Use a feeler gauge.
     Out of specification → Replace piston.

NOTE:

Clean carbon from piston ring grooves and rings before measuring side clearance.

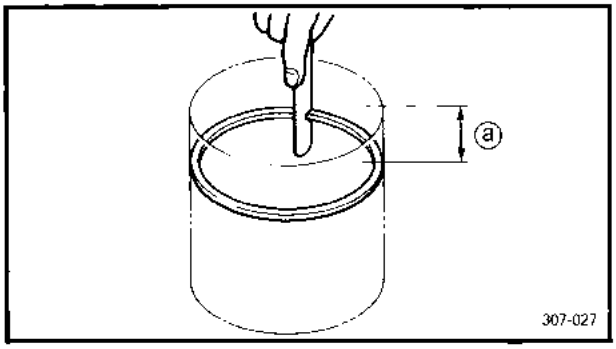
Piston Ring Side Clearance:	
Top	0.04 ~ 0.08 mm (0.001 ~ 0.003 in)
2nd	0.03 ~ 0.07 mm (0.001 ~ 0.003 in)

2. Position:
   - Piston ring
     (in cylinder)

NOTE:

Insert a ring into cylinder, and push it approximately 20 mm (0.8 in) into cylinder. Push ring with piston crown so that ring will be at a right angle to cylinder bore.

ⓐ 20 mm (0.8 in)

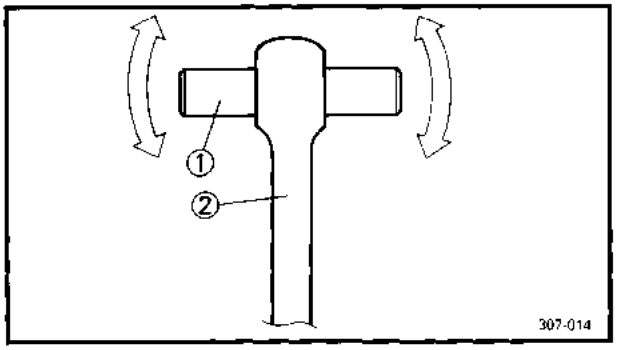


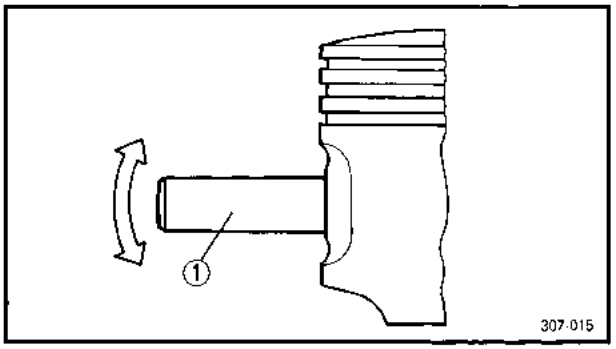
3. Measure:
   - Ring end gap
     Out of specification → Replace.

NOTE:

You cannot measure end gap on expander spacer of oil control ring. If oil control ring rails show excessive gap, replace all three rings.

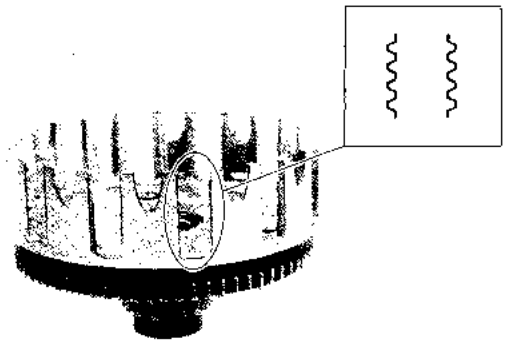
Piston Ring End Gap (Installed):	
Top ring	0.20 ~ 0.40 mm (0.008 ~ 0.016 in)
2nd ring	0.20 ~ 0.40 mm (0.008 ~ 0.016 in)
Oil ring	0.30 ~ 0.90 mm (0.012 ~ 0.035 in)





PISTON PIN

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



CLUTCH

1. Inspect:
   - Clutch housing dogs
   Cracks/Pitting (edges):
   Moderate→Deburr.
   Severe→Replace clutch housing.

NOTE:

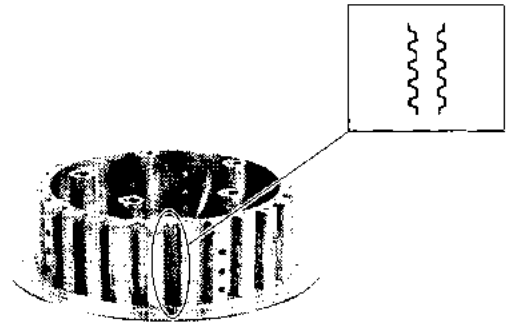
Pitting on friction plate dogs of clutch housing will cause erratic operation.

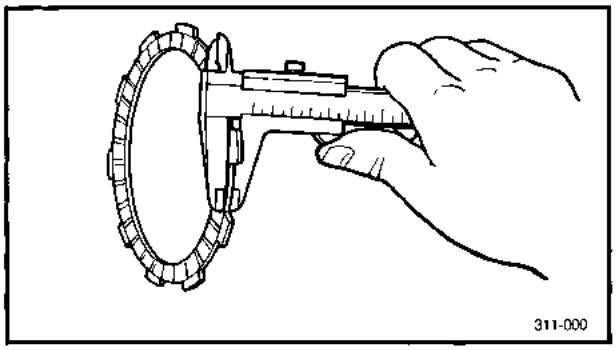
2. Inspect:
   - Clutch housing bearing
   Damage→Replace.

3. Inspect:
   - Clutch boss spline
   Pitting:
   Moderate→Deburr.
   Severe→Replace.

NOTE:

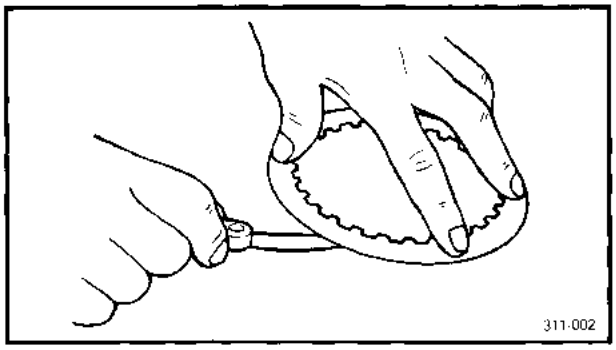
Pitting on clutch plate splines of clutch boss will cause erratic operation.





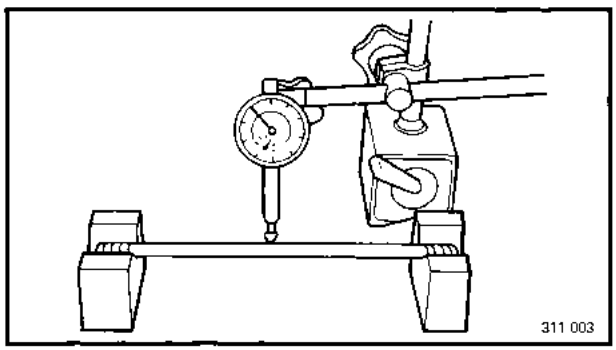
4. Measure:
   • Friction plate thickness
   Out of specification → Replace as a set.

Friction Plate Thickness:
2.64 ~ 2.76 mm (0.104 ~ 0.109 in)
Wear Limit:
2.5 mm (0.098 in)



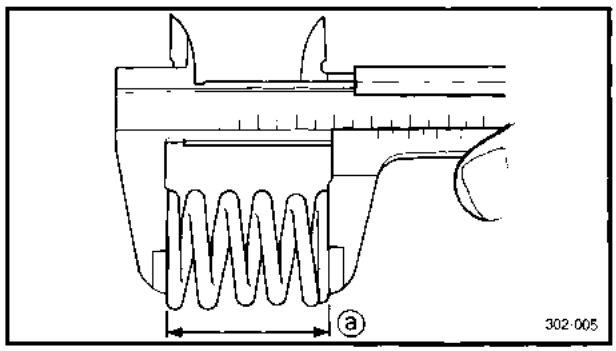
5. Measure:
   • Clutch plate warpage
   Out of specification → Replace as a set.

Clutch Plate Warpage Limit:
0.2 mm (0.008 in)



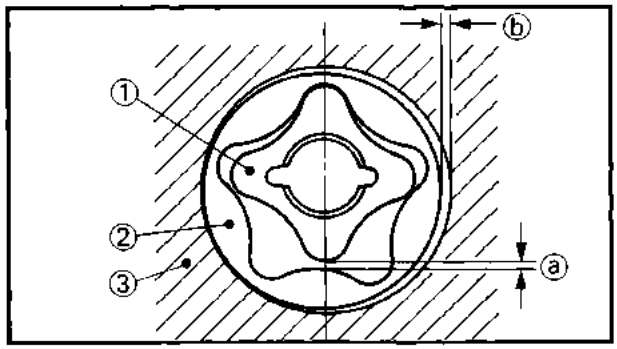
6. Measure:
   • Push rod runout
   Roll the push rod on a V-block.
   Ouf of specification → Replace.

Runout Limit:
0.2 mm (0.008 in)



7. Measure:
   • Clutch spring free length ⓐ
   Out of specification → Replace spring as a set.

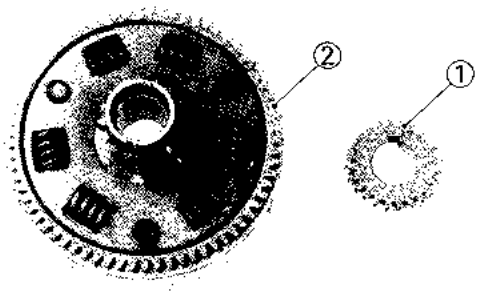
Clutch Spring Minimum Free Length ⓐ:
36.5 mm (1.440 in)



OIL PUMP

1. Measure:
   • Tip clearance ⓐ
   (between inner rotor ① and outer rotor ②)
   • Side clearance ⓑ
   (between outer rotor ② and pump housing ③)
   Ouf of specifications → Replace oil pump.

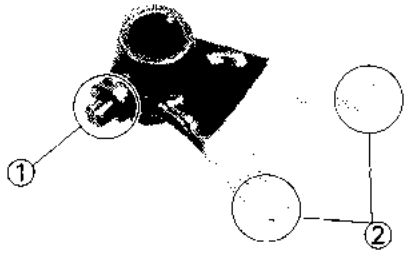
Oil Pump Clearance:	
Tip clearance	0.15 mm (0.006 in)
Side clearance	0.04 ~ 0.09 mm (0.002 ~ 0.004 in)



PRIMARY DRIVE

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

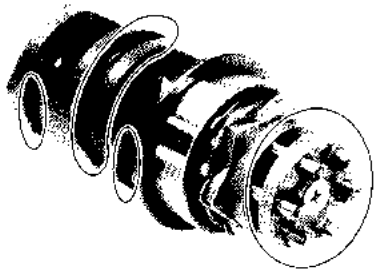
   Wear/Damage → Replace both gears.
   Excessive noises during operation → Replace both gears.



TRANSMISSION AND SHIFTER

1. Inspect:
   - Shift fork cam follower ①
   - Shift fork pawl ②

   Scoring/Bends/Wear → Replace.

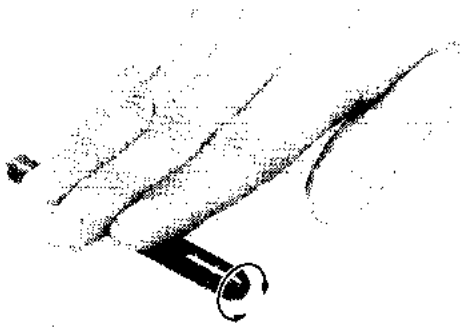


2. Inspect:
   - Shift cam groove
   - Shift cam segment

   Wear/Damage → Replace.

3. Check:
   - Shift fork movement

   Unsmooth operation → Replace shift fork and/or guide bar.



4. Inspect:
   - Guide bar
     Roll the guide bar on a flat surface.
     Bends→Replace.

WARNING:

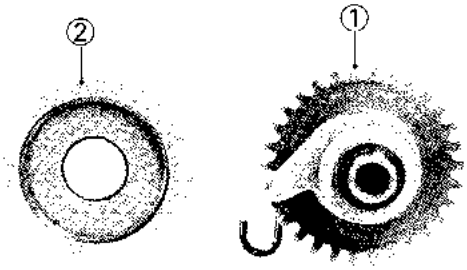
Do not attempt to straighten a bent guide bar.

5. Measure:
   - Transmission shaft runout
     Use centering device and dial gauge.
     Out of specification→Replace bent shaft.

Maximum Runout:
0.04 mm (0.001 in)

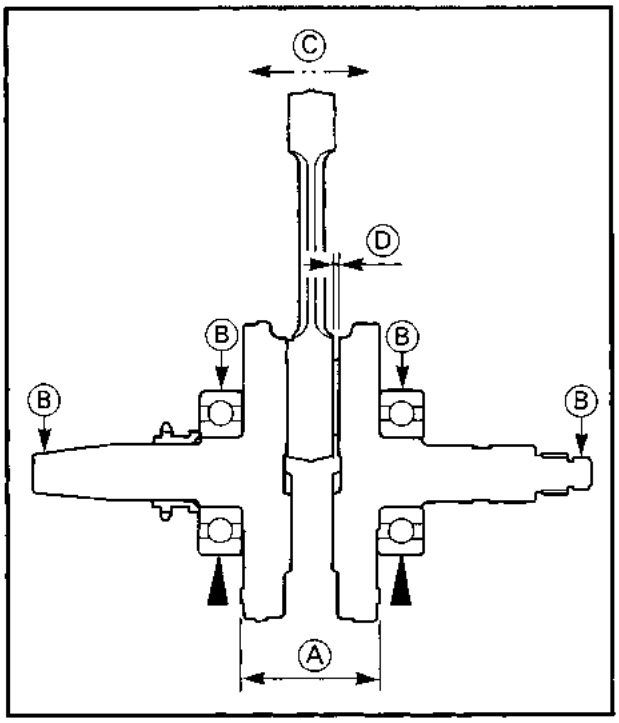
6. Inspect:
   - Gear teeth
     Blue discoloration/Pitting/Wear→Replace.
   - Mated dogs
     Rounded edges/Cracks/Missing portions →Replace.

7. Check:
   - Proper gear engagement (Each gear) (to its counter part)
   - Gear movement
     Roughness→Replace.



KICK STARTER

1. Inspect:
   - Kick gear teeth ①
   - Kick idle gear teeth ②
     Damage/wear→Replace both gears.



CRANKSHAFT

1. Measure:
   - Crank width Ⓐ

   Out of specification → Replace crankshaft.

Crank Width:
58.95 ~ 59.00 mm (2.321 ~ 2.323 in)

   - Runout Ⓑ

   Out of specification → Replace crankshaft and/or bearing.

Runout Limit:
0.03 mm (0.001 in)

   - Small end free play Ⓒ

   Out of specification → Replace big end bearing, crank pin and/or connecting rod.

Small End Free Play:
STD: 0.8 ~ 1.0 mm
(0.031 ~ 0.039 in)
Limit: 2.0 mm (0.079 in)

   - Side clearance Ⓓ

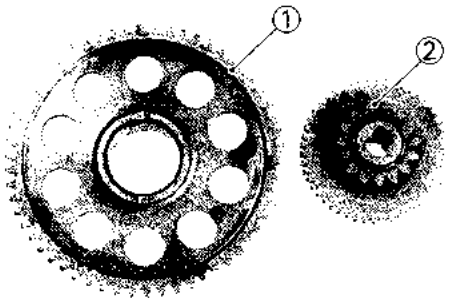
   Out of specification → Replace connecting rod.

Big End Side Clearance:
0.35 ~ 0.85 mm (0.014 ~ 0.033 in)

STARTER DRIVE

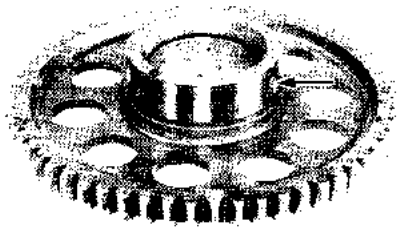
1. Inspect:
   - Starter gear teeth ①
   - Idle gear teeth ②

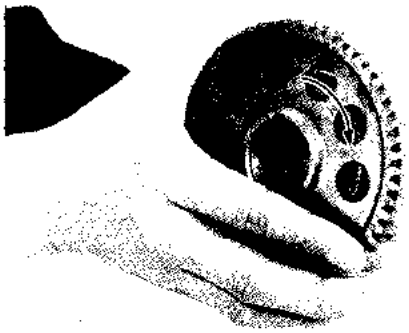
   Wear/Damage → Replace both gears.

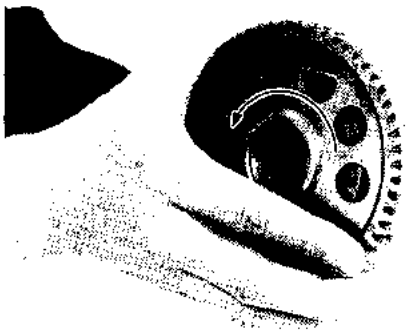


2. Inspect:
   - Contacting surfaces

   Pitting/Wear/Damage → Replace.

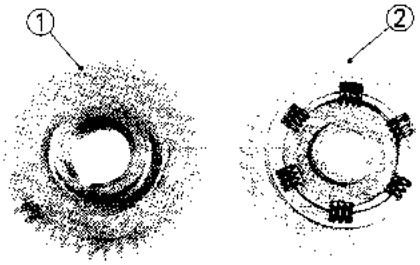






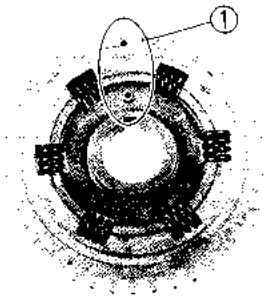
3. Check:
   - Starter clutch operation

Clutch operation checking steps:
- Install the starter wheel gear to the starter clutch, and hold the starter clutch.
- When turning the wheel gear clockwise, the starter clutch and the wheel gear should be engaged.
  If not, the starter clutch is faulty. Replace it.
- When turning the wheel gear counterclockwise, the wheel gear should turn freely.
  If not, the starter clutch is faulty. Replace it.



BALANCER DRIVE GEAR AND BALANCER GEAR

1. Inspect:
   - Balancer drive gear teeth ①
   - Balancer gear teeth ②
   Wear/Damage→Replace both gears.



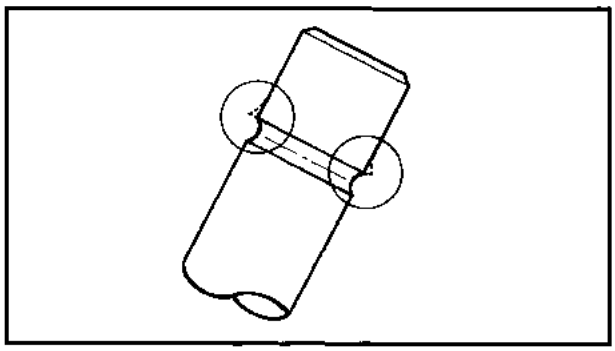
2. Check:
   - Match marks ①
   If they are not aligned→Align match marks as shown.

CRANKCASE

1. Inspect:
   - Crank halves
   - Bearing seat
   Damage→Replace.

BEARING AND OIL SEAL

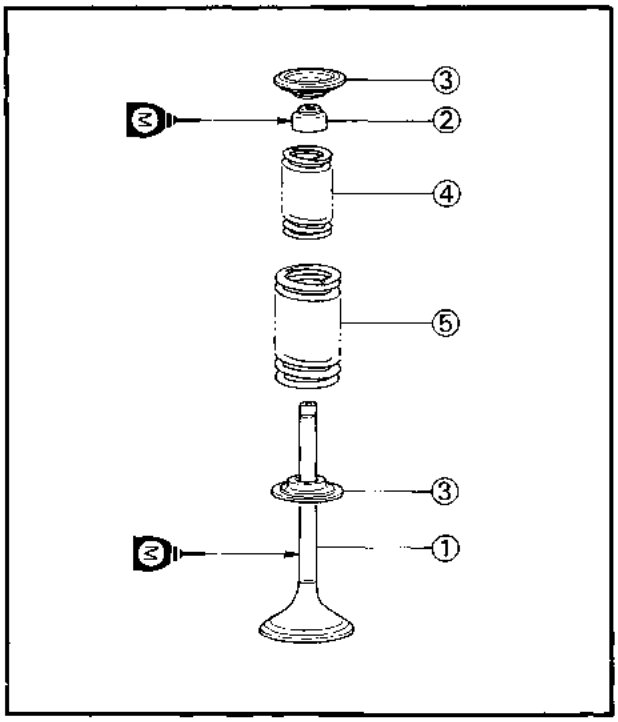
1. Inspect:
   - Bearing
     Roughness/Pitting/Damage→Replace.
   - Oil seal lip
     Damage/Wear→Replace.



ENGINE ASSEMBLY AND ADJUSTMENT

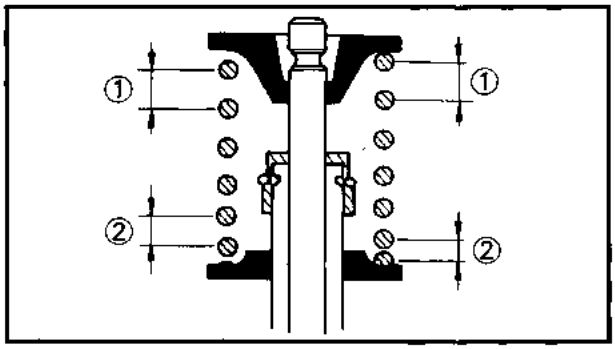
VALVE, ROCKER ARM AND CAMSHAFT

1. Deburr:
   - Valve stem end
     Use an oil stone to smooth the stem end.



2. Lubricate:
   - High-Quality molybdenum disulfide motor oil
     To the valve stem and oil seal.

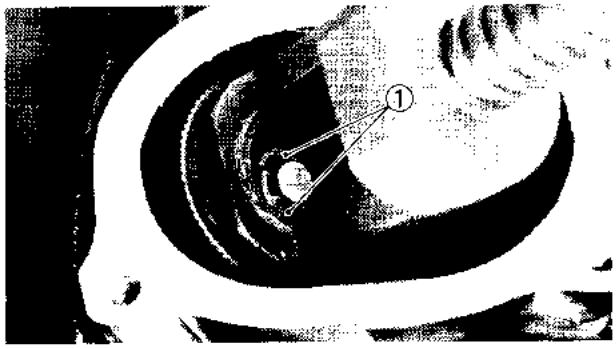
3. Install:
   - Valve ①
   - Oil seal ②
   - Valve spring seats ③
   - Valve spring ④ (Inner)
   - Valve spring ⑤ (Outer)



NOTE:

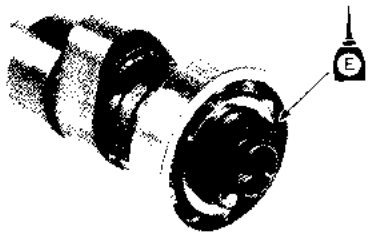
Install the inner and outer springs with wider-gapped coils ① facing upwards as shown.

① Larger pitch
② Smaller pitch

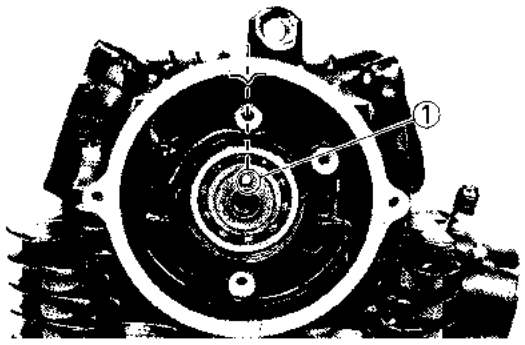


4. Attach:
   • Valve Spring Compressor (YM-04019)

5. Install:
   • Valve retainers ①



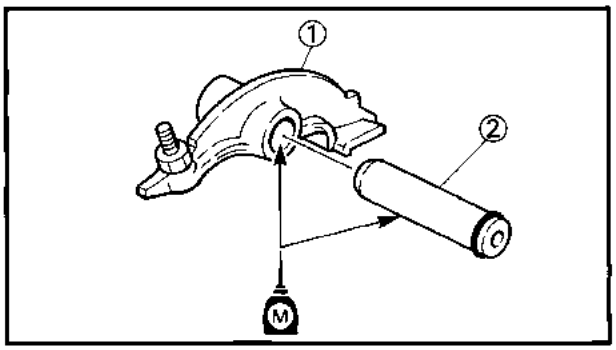
6. Lubricate:
   • Engine oil
   To the bearings of the camshaft.



7. Install:
   • Camshaft

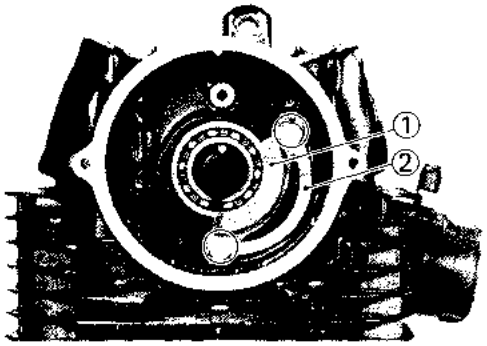
NOTE:

Install the camshaft with the pin ① at twelve o'clock position.



8. Lubricate:
   • High-Quality molybdenum disulfide motor oil
   To the rocker arm shaft.

9. Install:
   • Rocker arm ①
   • Rocker arm shaft ②



10. Install:
    • Bearing holder ①
    • Lock washer ②

	Bolts (Bearing holder): **8 Nm (0.8 m•kg, 5.8 ft•lb)**

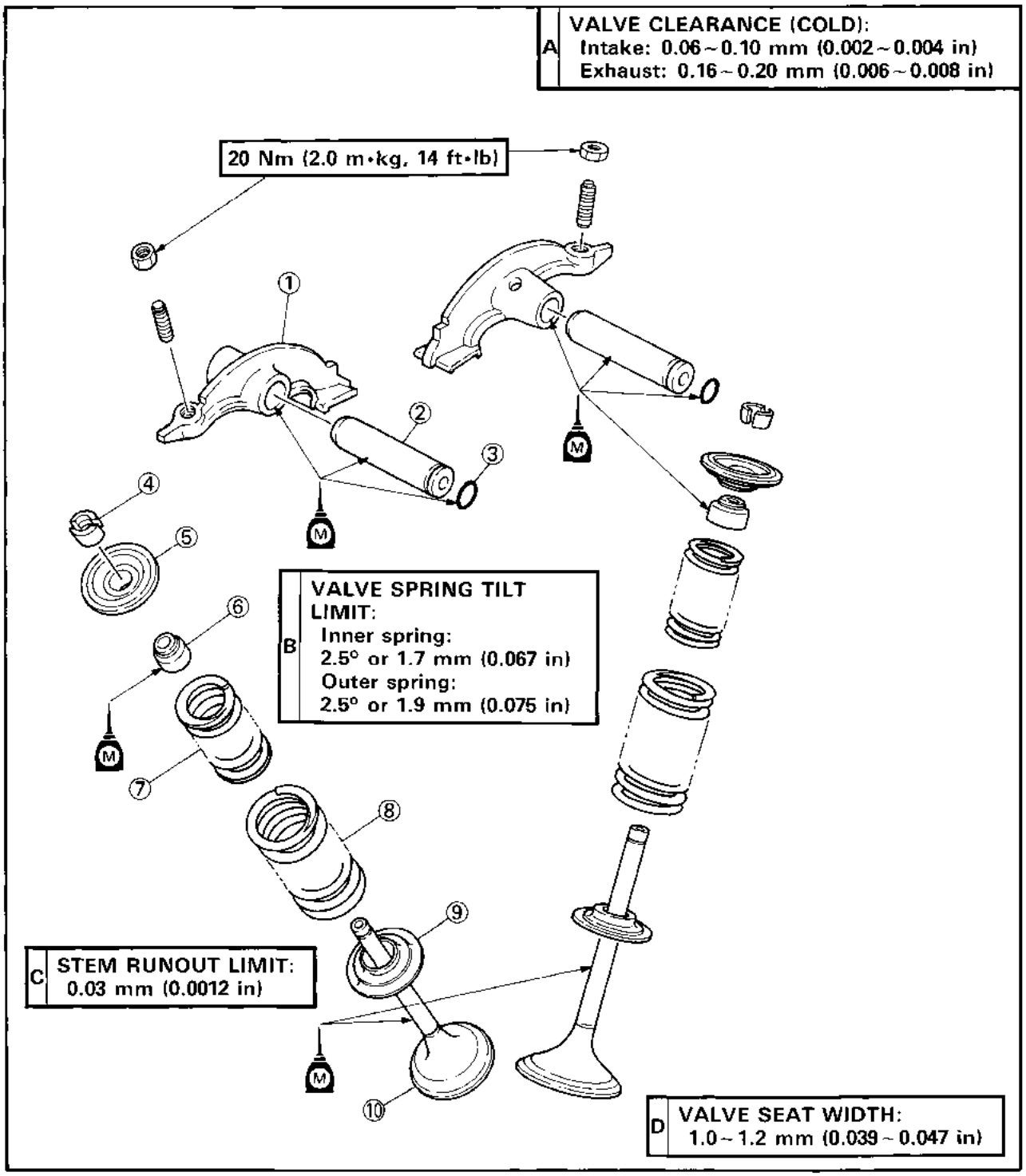
WARNING:

Use a new lock washer.

11. Bend the lock washer tabs along the bolt flats.

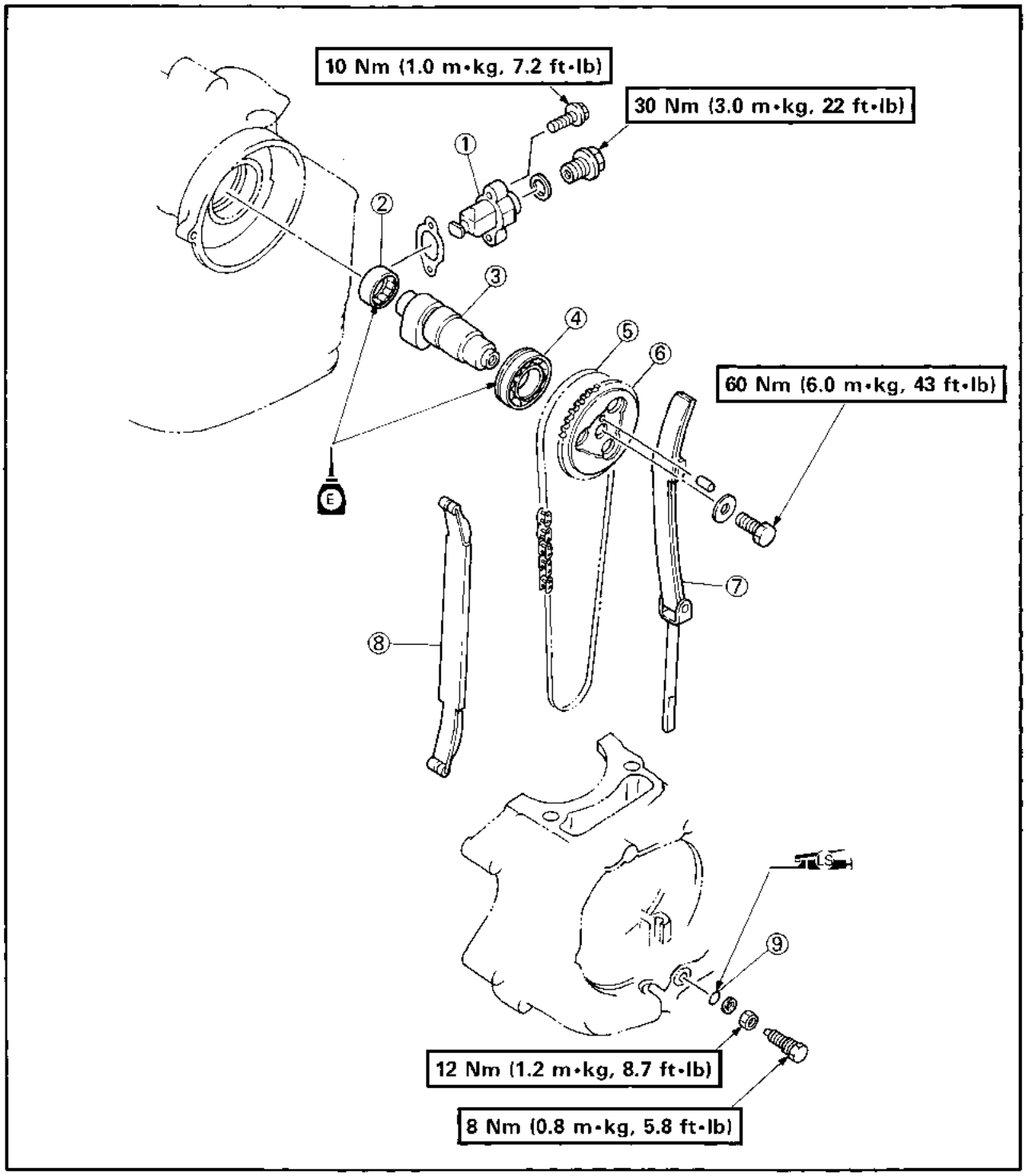
VALVE AND ROCKER ARM

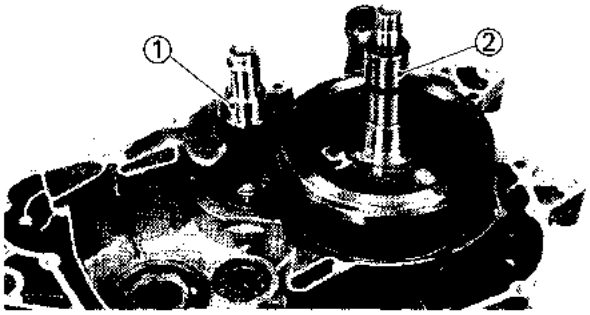
① Rocker arm
② Rocker arm shaft
③ O-ring
④ Valve retainer
⑤ Spring seat
⑥ Oil seal
⑦ Inner spring
⑧ Outer spring
⑨ Spring seat
⑩ Valve



CAMSHAFT AND CAM CHAIN

① Chain tensioner
② Bearing
③ Camshaft
④ Bearing
⑤ Cam chain
⑥ Cam sprocket
⑦ Chain guide
⑧ Chain guide
⑨ O-ring

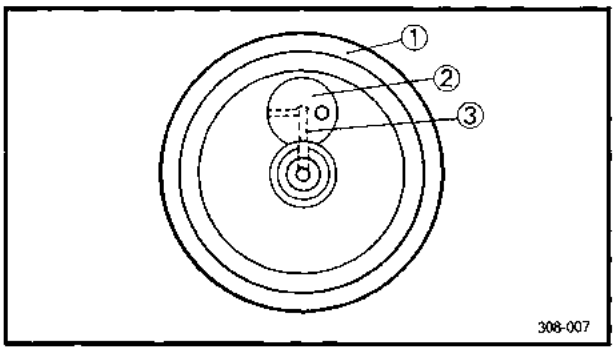




BALANCER AND CRANKSHAFT

1. Install:
   - Balancer ①
   - Crankshaft ②

   To the crankcase (Left).



2. To disassemble and reassemble the crank, follow the illustration.

NOTE:

Make sure the oil passages of the crank and crank pin are lined up during assembly.

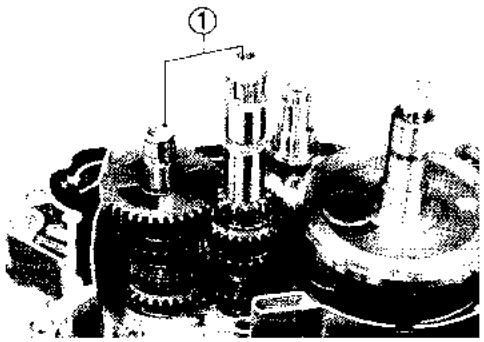
① Crank assembly
② Crank pin
③ Oil passage

SHIFTER AND TRANSMISSION

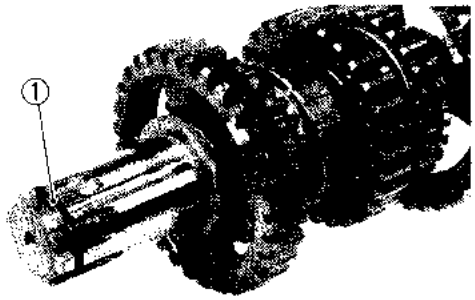
1. Lubricate:
   - Lithium soap base grease

     To the oil seal lips.
   - Engine oil

     To the bearings.

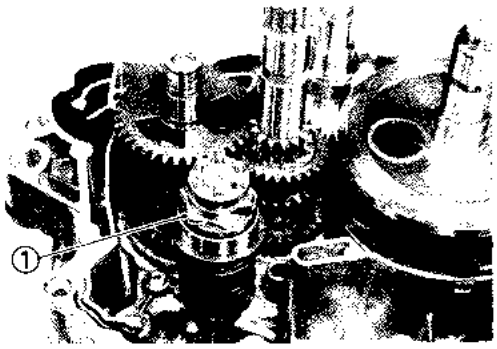


2. Install:
   - Transmission assembly ①

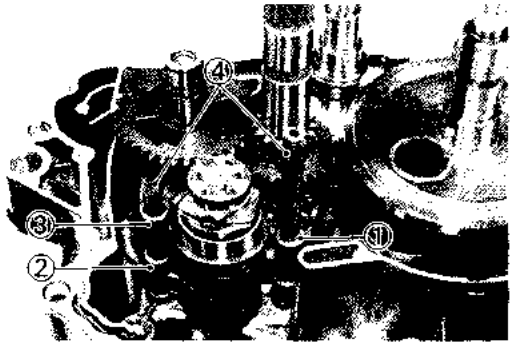


NOTE:

When installing the transmission assembly, pay attention to the crankcase oil seal lip. A recommended practice is to fit the "O-ring" ① in the drive axle groove and apply grease over the fitted area before installing the drive axle.

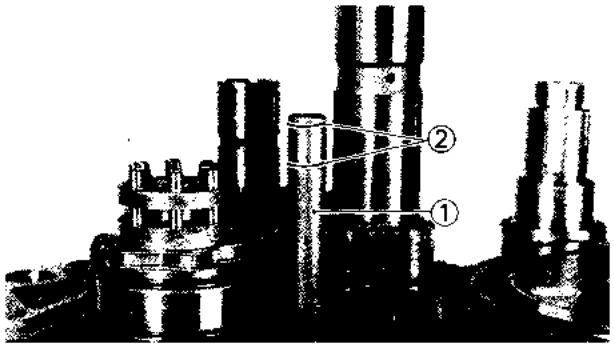


3. Install:
   • Shift cam ①

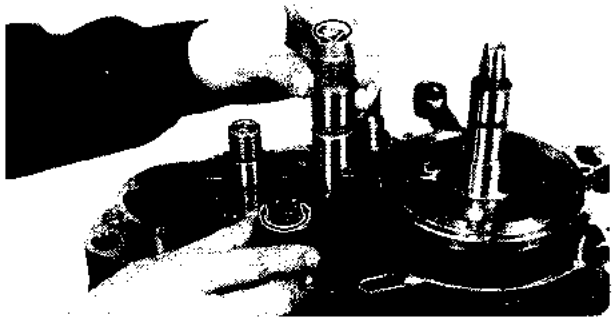


4. Install:
   • Shift fork #2 ①
   • Shift fork #1 ②
   • Shift fork #3 ③
   • Guide bars ④

NOTE:
Each shift fork is identified by a number cast on its side. All the numbers should face upward.



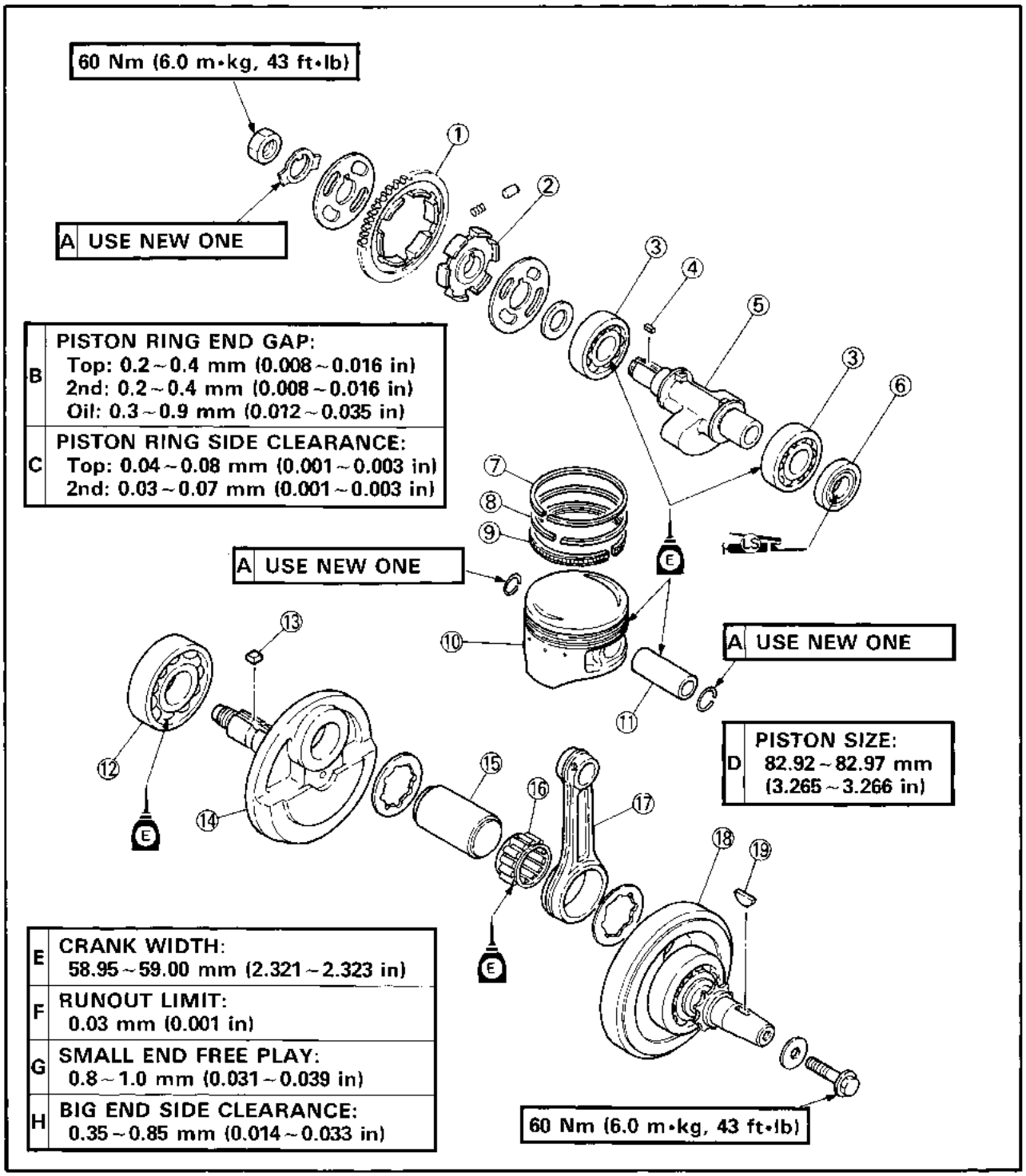
NOTE:
Install the guide bar ① with the circlip grooves ② should face upward.



5. Check:
   • Shifter and transmission operation
     Unsmooth operation→Repair.

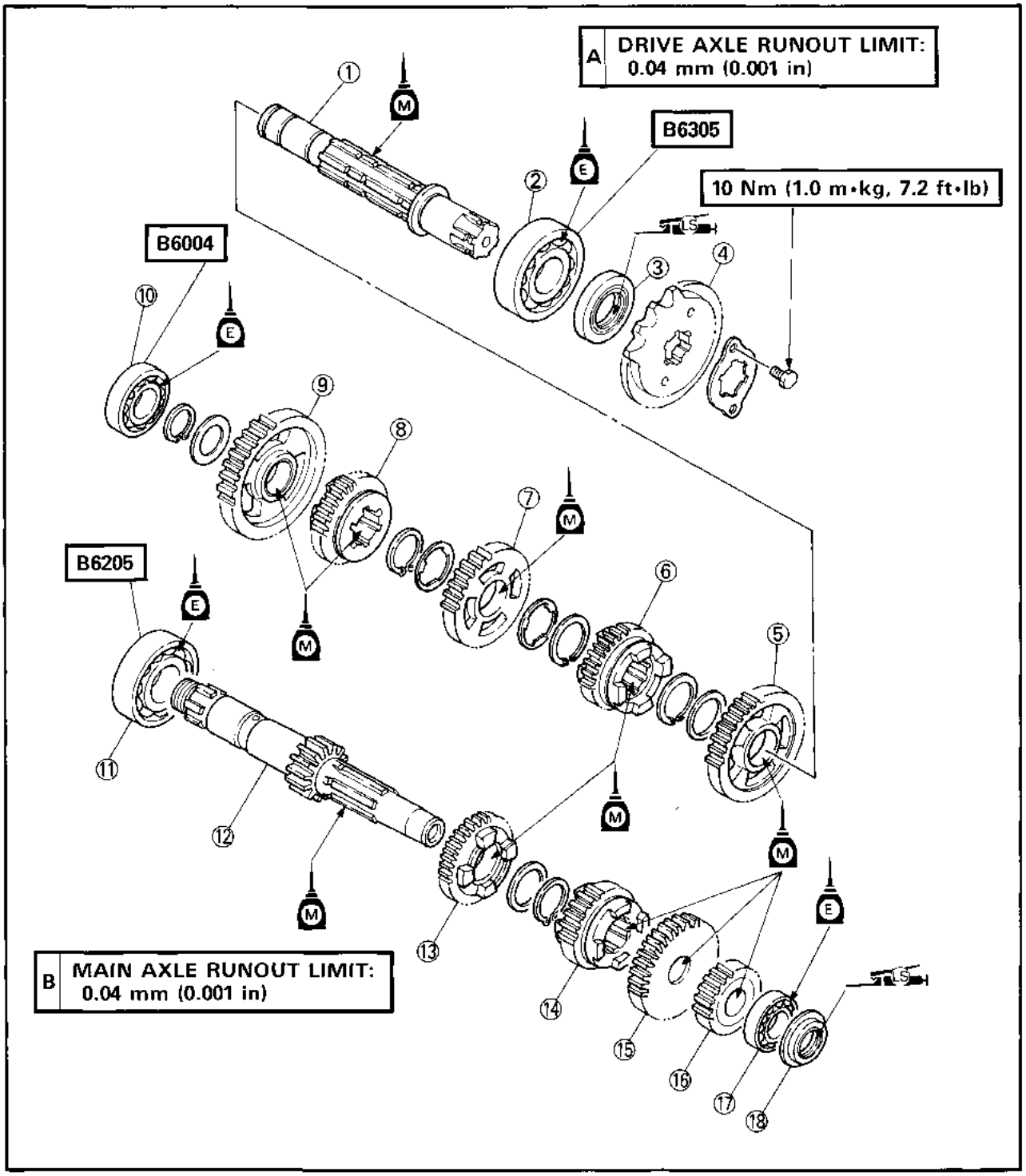
CRANKSHAFT, PISTON AND BALANCER

① Balancer gear
② Boss
③ Bearing
④ Key
⑤ Balancer
⑥ Oil seal
⑦ Top ring
⑧ 2nd ring
⑨ Oil ring
⑩ Piston
⑪ Piston pin
⑫ Bearing
⑬ Key
⑭ Crank (Right)
⑮ Crank pin
⑯ Bearing
⑰ Connecting rod
⑱ Crank (Left)
⑲ Key



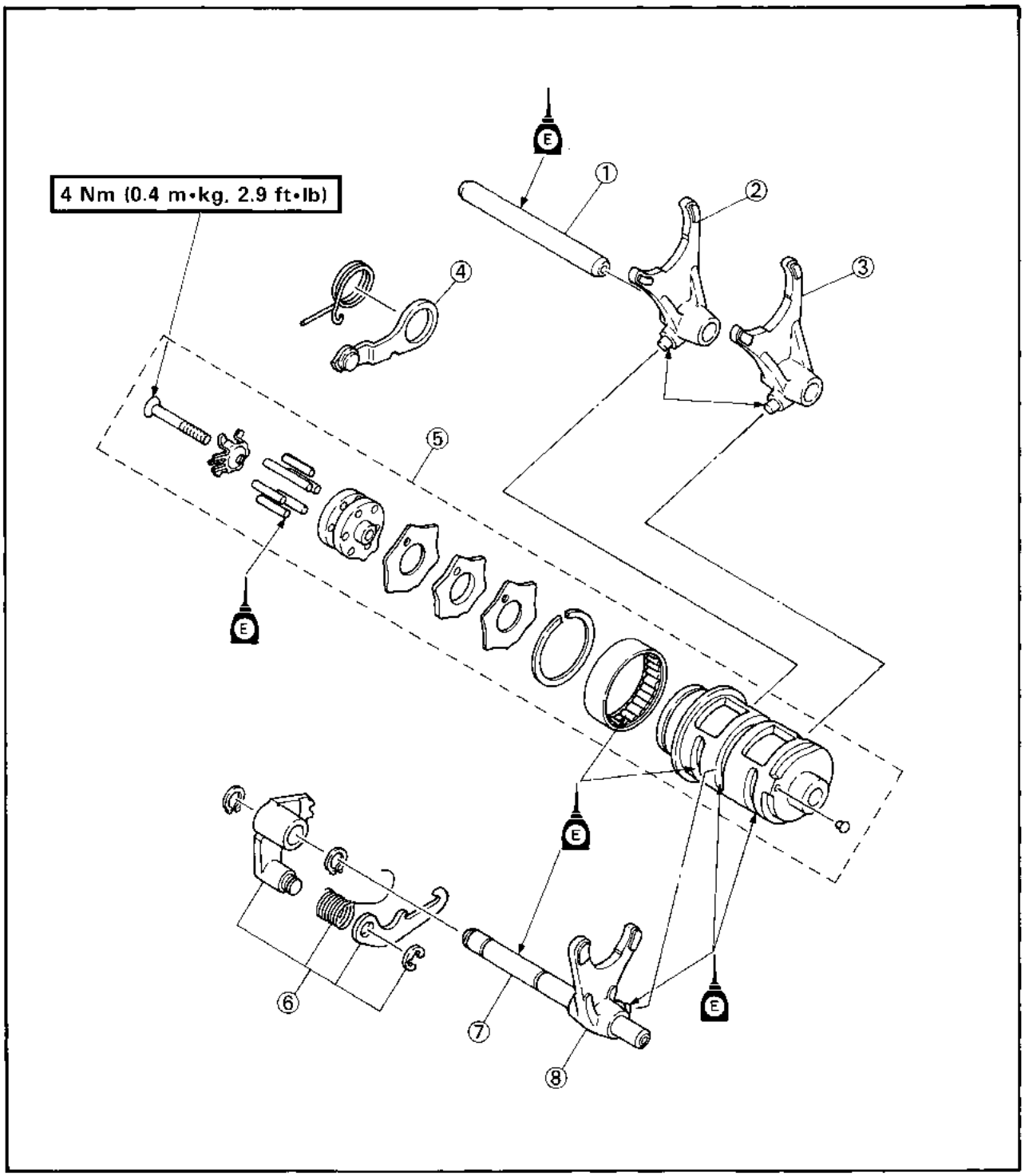
TRANSMISSION

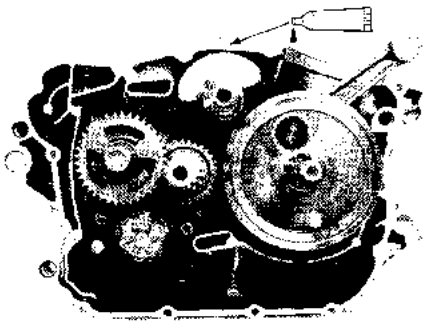
① Drive axle
② Bearing
③ Oil seal
④ Drive sprocket
⑤ 2nd wheel gear
⑥ 5th wheel gear
⑦ 3rd wheel gear
⑧ 4th wheel gear
⑨ 1st wheel gear
⑩ Bearing
⑪ Bearing
⑫ Main axle
⑬ 4th pinion gear
⑭ 3rd pinion gear
⑮ 5th pinion gear
⑯ 2nd pinion gear
⑰ Bearing
⑱ Oil seal



SHIFT CAM AND SHIFT FORK

① Guide bar
② Shift fork #3
③ Shift fork #1
④ Stopper lever
⑤ Shift cam assembly
⑥ Shift lever assembly
⑦ Guide bar
⑧ Shift fork #2

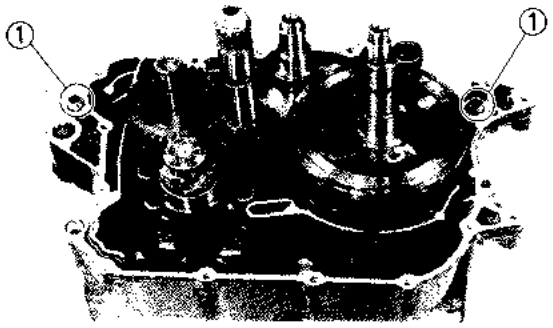




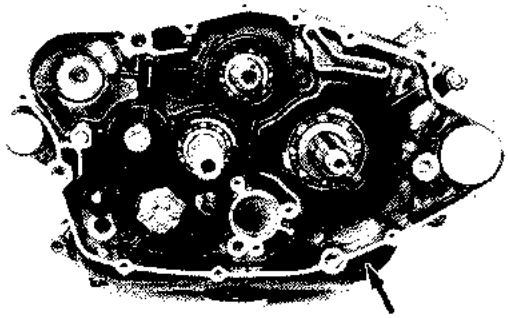
CRANKCASE

1. Clean:
   - All mating surface
     With a solvent.

2. Apply:
   - Quick Gasket® (ACC-11001-05-01)
     To crankcase mating surfaces.



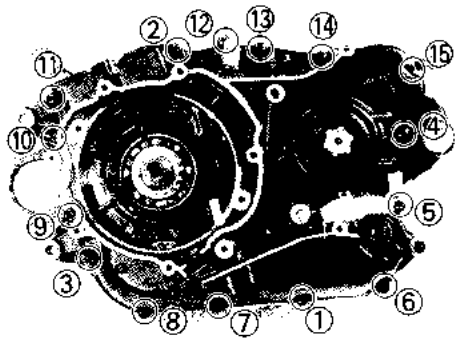
3. Install:
   - Dowel pins ①



4. Install:
   - Crankcase (Right)

CAUTION:

Before installing and torquing the crankcase holding screws, be sure to check whether the transmission is functioning properly by manually rotating the shift cam either way.

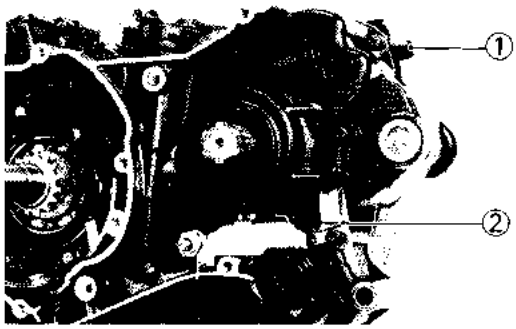


5. Tighten:
   - Screws (Crankcase)

NOTE:

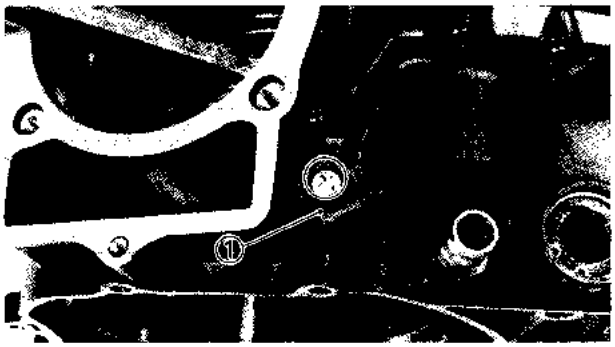
The numbers in the photo designate the crankcase tightening sequence.

	Screws (Crankcase): **7 Nm (0.7 m•kg, 5.1 ft•lb)**



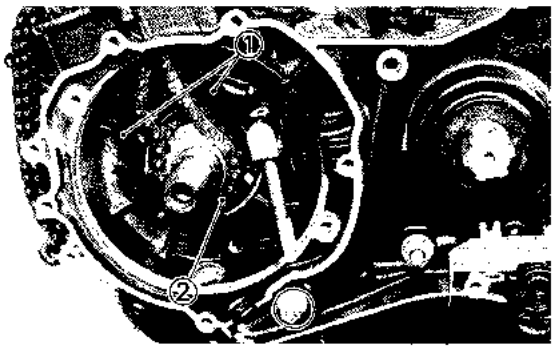
NOTE:

- Install the clamp ① on the screw No. 15.
- Install the clamp ② on the screw No. 5.



6. Install:
   • Clutch cable holder ①

	Screw (Clutch Cable Holder): 7 Nm (0.7 m•kg, 5.1 ft•lb)



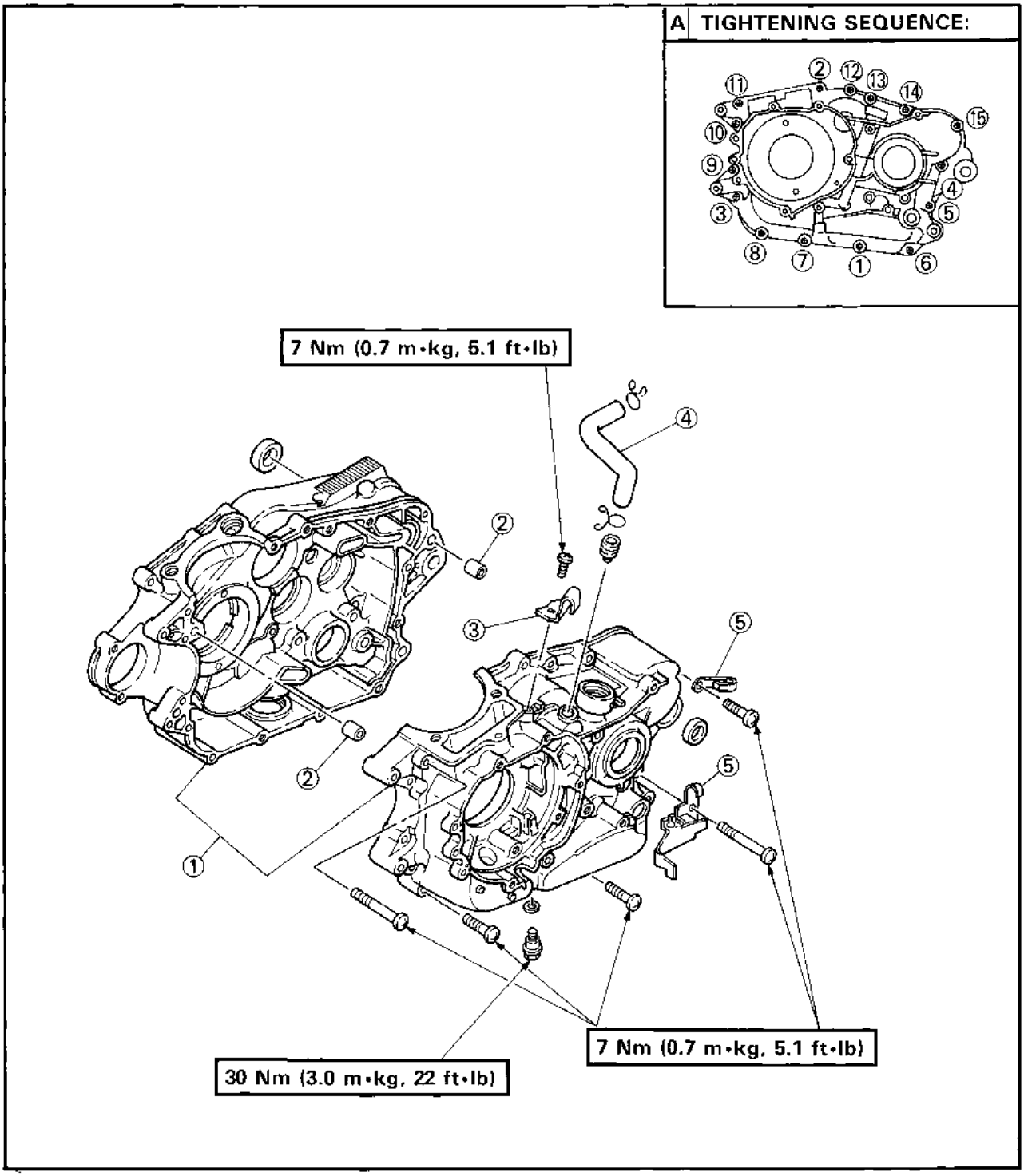
CAM CHAIN AND CHAIN GUIDE

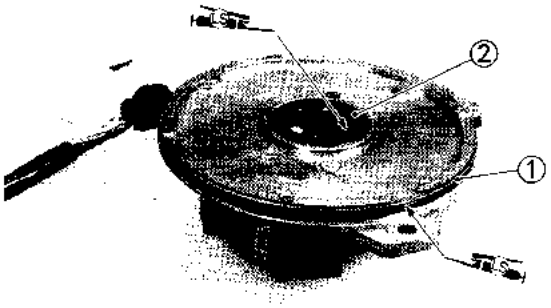
1. Install:
   • Chain guides ①
   • Cam chain ②

	Bolt (Chain Guide): 8 Nm (0.8 m•kg, 5.8 ft•lb) **Nut (Chain Guide): 12 Nm (1.2 m•kg, 8.7 ft•lb)**

CRANKCASE

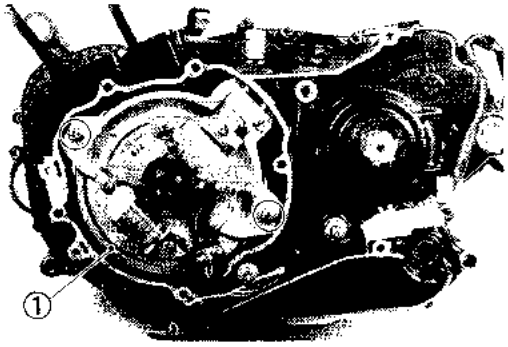
① Crankcase
② Dowel pin
③ Clutch cable holder
④ Crankcase ventilation hose
⑤ Clamp





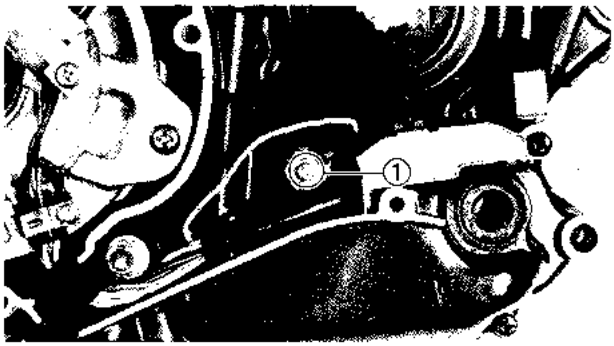
C.D.I. MAGNETO

1. Lubricate:
   - Lithium soap base grease
   To the O-ring ① and oil seal lips ②.



2. Install:
   - C.D.I. base assembly ①

	Screws (C.D.I. Base Assembly): 7 Nm (0.7 m•kg, 5.1 ft•lb)



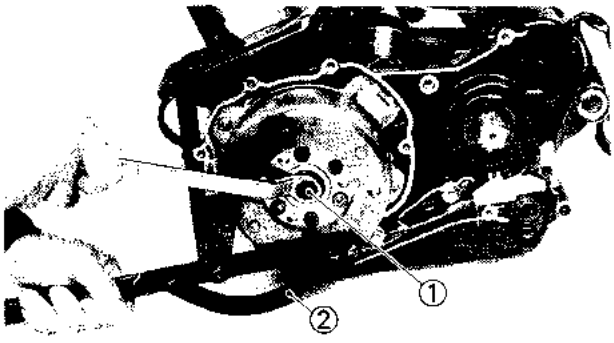
3. Install:
   - Neutral switch ①

4. Clamp:
   - C.D.I. magneto lead

5. Install:
   - Key ①
   - C.D.I. magneto ②

NOTE:

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

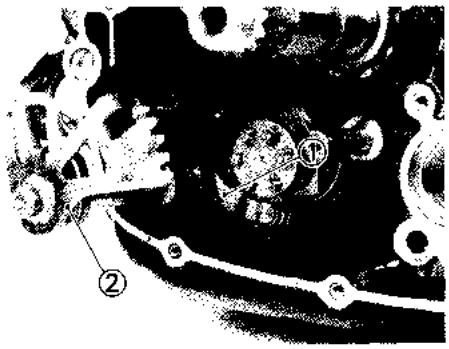


6. Tighten:
   - Bolt ① (C.D.I. magneto)

NOTE:

Use the Rotor Holder (YU-01235) ② to hold the C.D.I. magneto.

	Bolt (C.D.I. Magneto): 60 Nm (6.0 m•kg, 43 ft•lb)

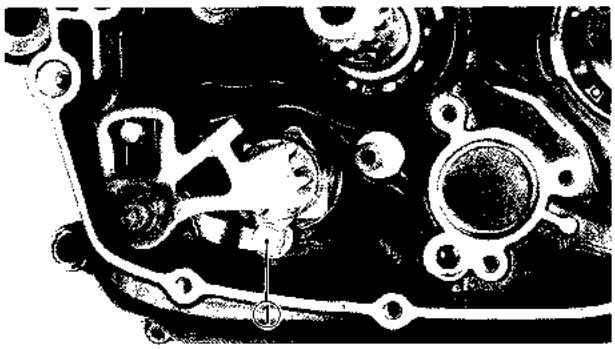


SHIFT SHAFT

1. Lubricate:
   - Engine oil

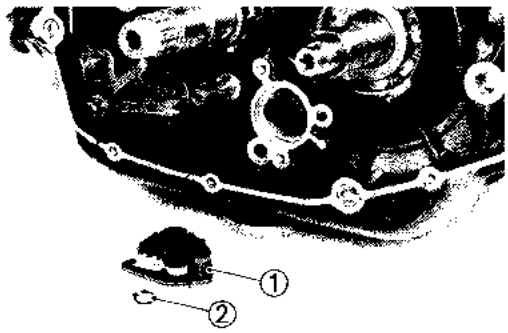
   To the shift shaft.

2. Install:
   - Stopper lever ①
   - Shift shaft ②

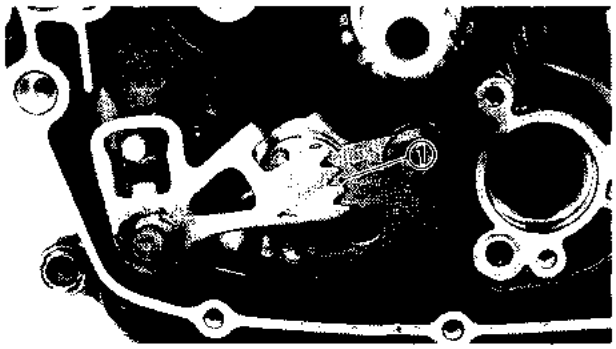


NOTE:

- Mesh the stopper lever ① with the shift cam.

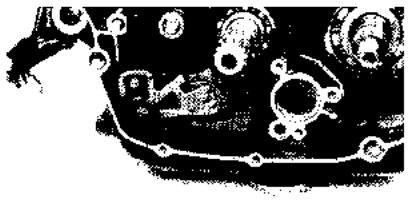


3. Install:
   - Shift lever ①
   - Circlip ②



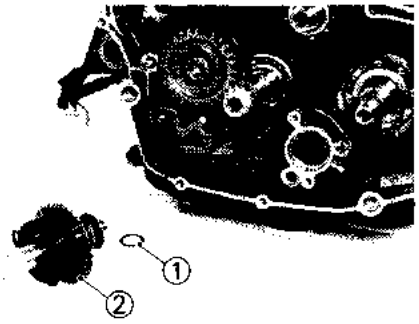
NOTE:

- Mesh the shift lever 2 mark ① with change lever pawl center.

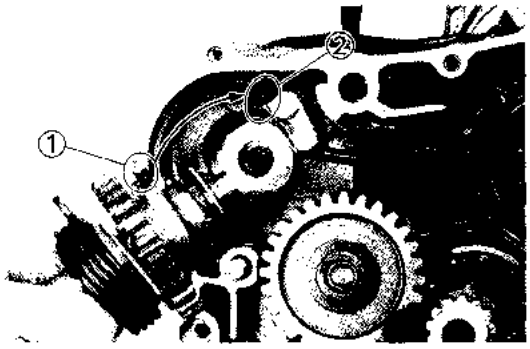


KICK AXLE

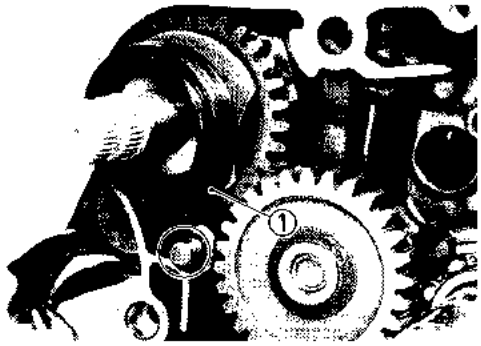
1. Install:
   - Kick idle gear ①
   - Plain washer ②
   - Circlips ③



2. Install:
   - Plain washer ①
   - Kick axle assembly ②

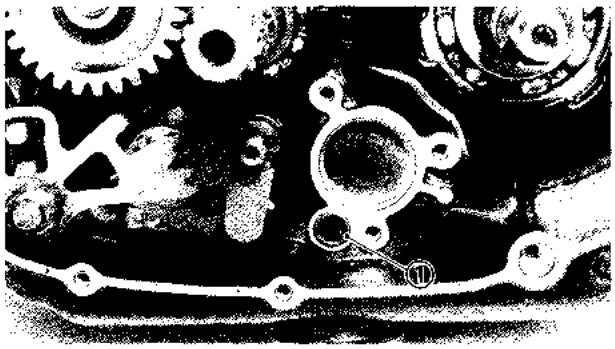


NOTE:
Make sure that ratchet wheel pawl ① is stopped at the ratchet wheel stopper ②.



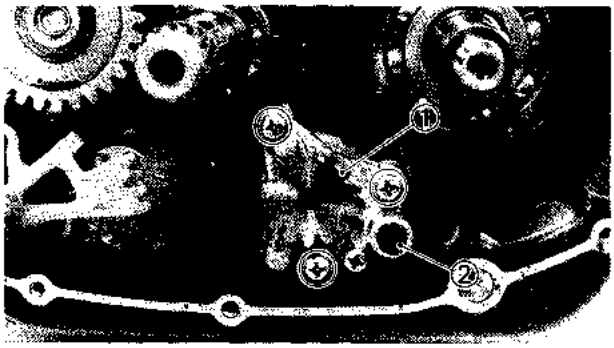
3. Hook:
   - Spring ①

   Onto the spring stopper.



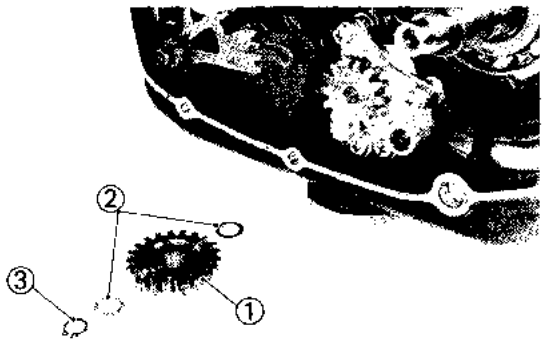
OIL PUMP

1. Install:
   - O-ring ①

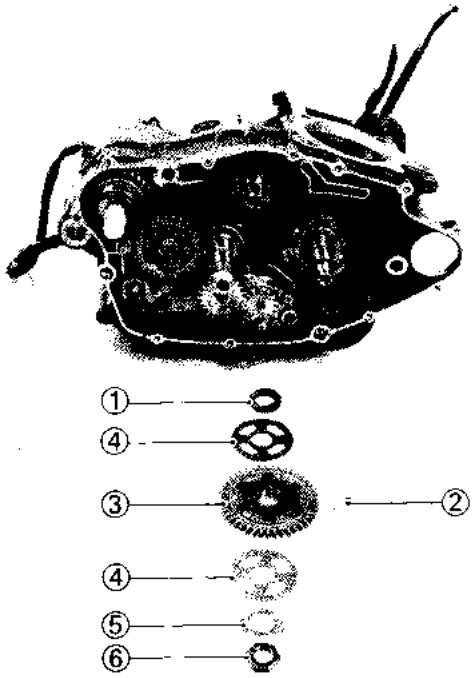


2. Install:
   - Oil pump ①
   - O-ring ②

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



3. Install:
   - Oil pump drive gear ①
   - Plain washers ②
   - Circlip ③

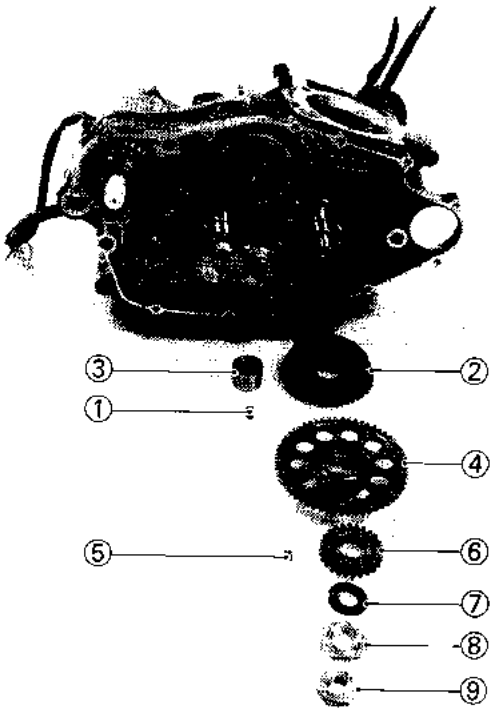


PRIMARY DRIVE GEAR AND BALANCER GEAR

1. Install:
   - Collar ①
   - Key ②
   - Balancer gear ③
   - Washers ④
   - Lock washer ⑤
   - Nut ⑥

WARNING:

Use a new lock washer.



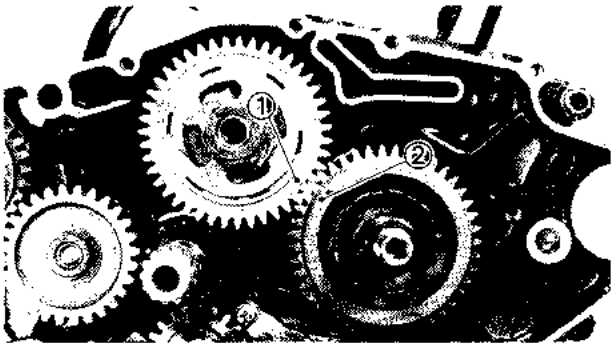
2. Install:
   - Key ①
   - Balancer drive gear ②
   - Collar ③
   - Starter gear ④
   - Key ⑤
   - Primary drive gear ⑥
   - Washer ⑦
   - Lock washer ⑧
   - Nut ⑨

NOTE:

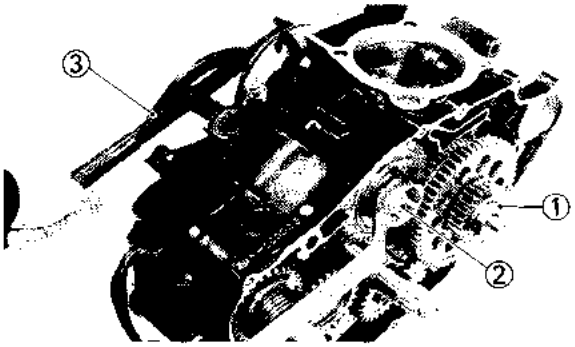
Lubricate an engine oil to the one-way clutch.

WARNING:

Use a new lock washer.



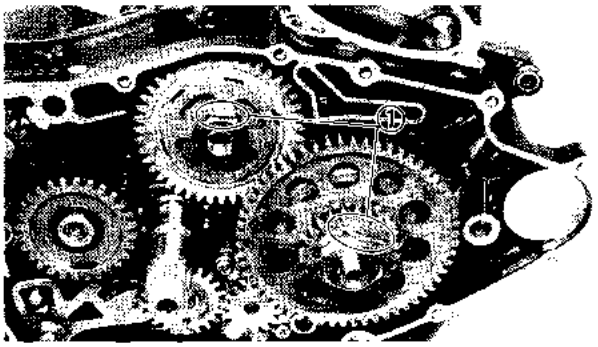
NOTE:
Align the balancer gear mark ① with the balancer drive gear mark ②.



3. Tighten:
   - Nut ① (Primary drive gear)
   - Nut ② (Balancer gear)

NOTE:
Use the Rotor Holder (YU-01235) ③ to tighten the nuts.

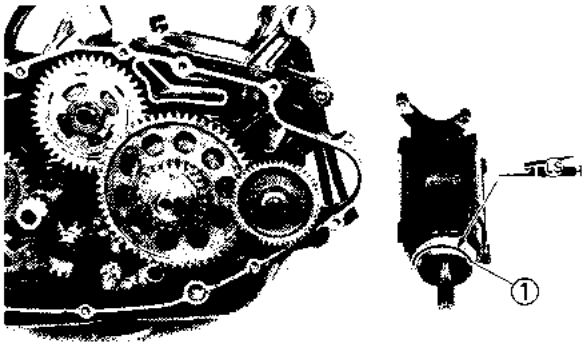
Nut (Primary Drive Gear):
80 Nm (8.0 m•kg, 58 ft•lb)
Nut (Balancer Gear):
60 Nm (6.0 m•kg, 43 ft•lb)

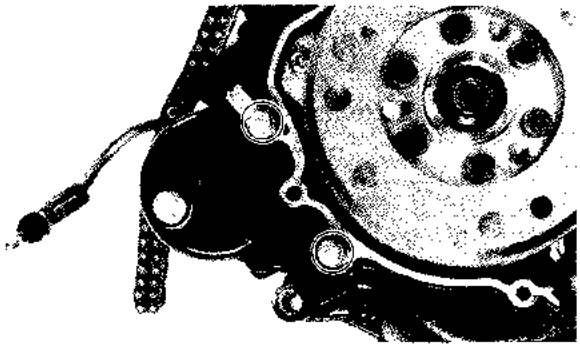


4. Bend both lock washer tabs ① along both nut flats.

STARTER MOTOR

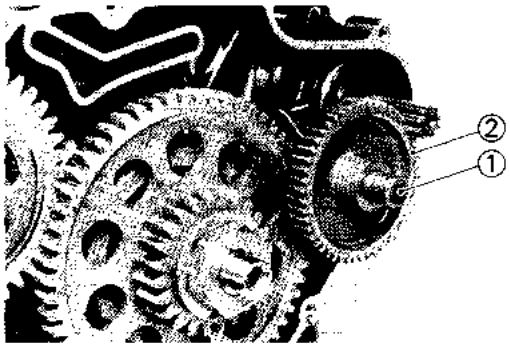
1. Lubricate:
   - Lithium soap base grease
     Onto the O-ring ① (Starter motor).





2. Install:
   - Starter motor

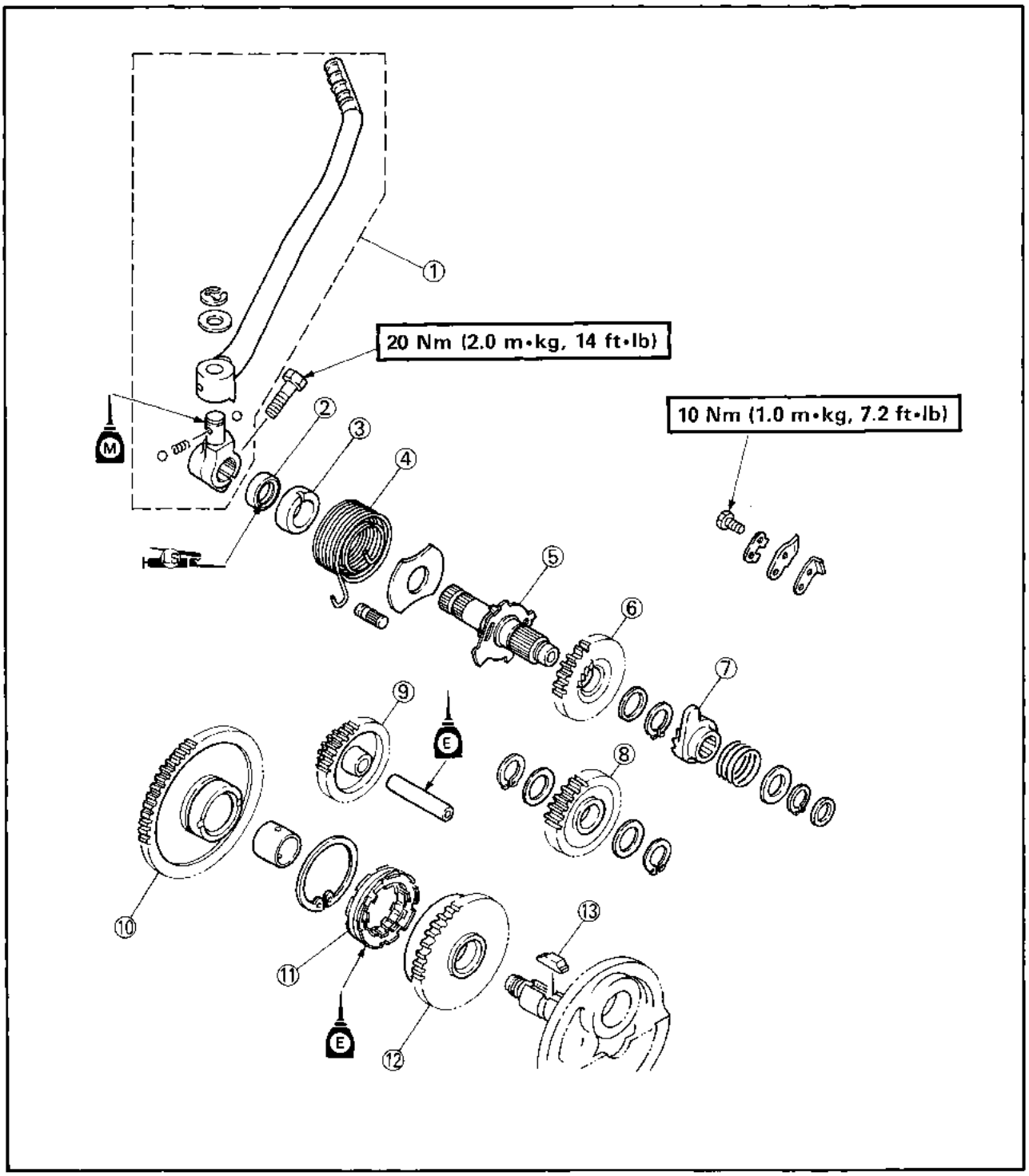
Bolts (Starter Motor):
10 Nm (1.0 m•kg, 7.2 ft•lb)

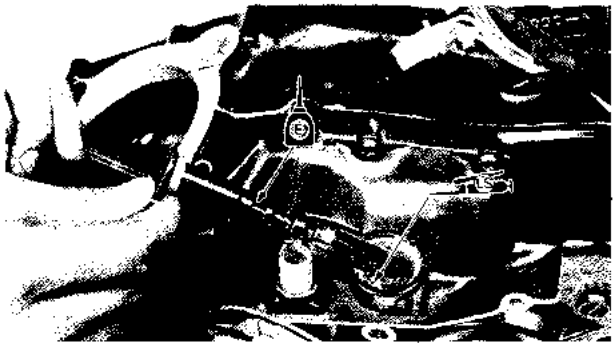


3. Install:
   - Shaft ①
   - Idle gear ② (Starter motor)

STARTER

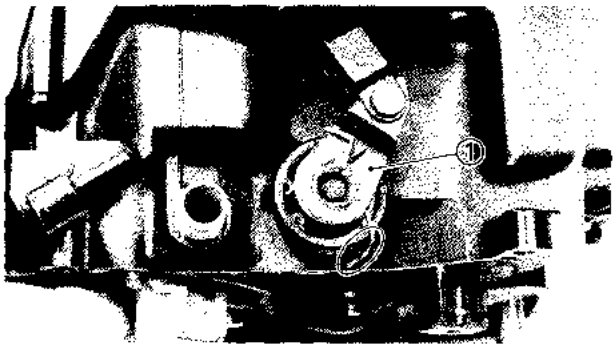
① Kick crank
② Oil seal
③ Spring guide
④ Return spring
⑤ Kick axle
⑥ Kick gear
⑦ Ratchet wheel
⑧ Kick idle gear
⑨ Starter idle gear
⑩ Starter gear
⑪ One-way clutch
⑫ Balancer drive gear
⑬ Key



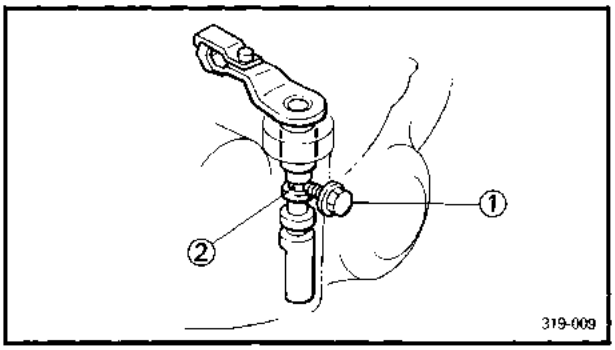


CLUTCH

1. Lubricate:
   - Engine oil
     To the push lever.
   - Lithium soap base grease
     To the oil seal lips.



2. Install:
   - Push lever ①

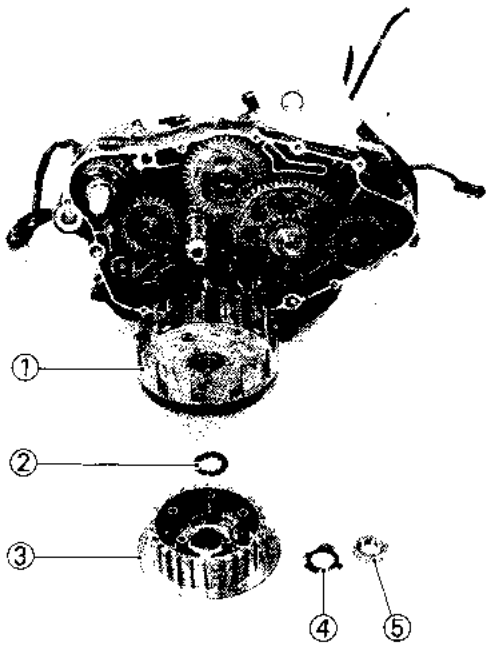


3. Install:
   - Stopper screw ①

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

NOTE:

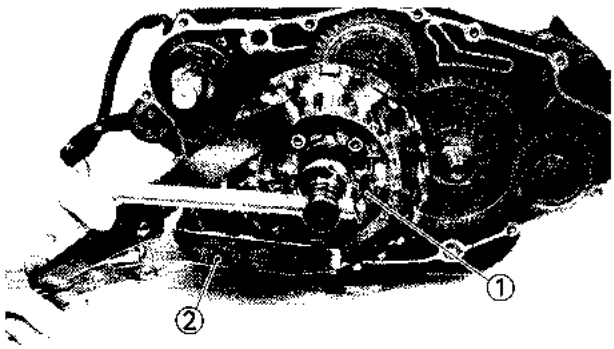
The stopper screw should lock the top groove ② of the push lever.



4. Install:
   - Clutch housing ①
   - Thrust washer ②
   - Clutch boss ③
   - Lock washer ④
   - Nut ⑤ (Clutch boss)

WARNING:

Use a new lock washer.

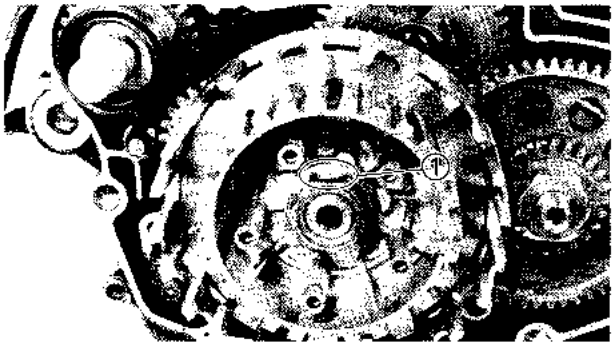


5. Tighten:
   - Nut ① (Clutch boss)

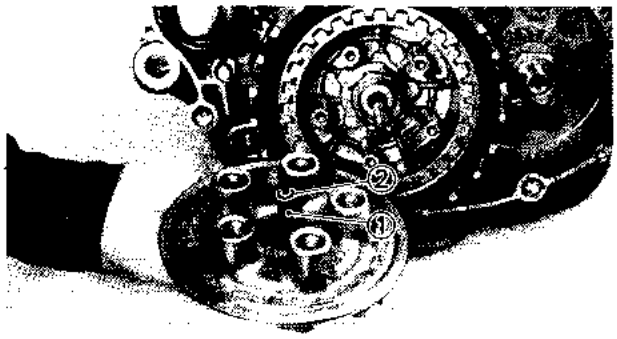
NOTE:

Use the Universal Clutch Holder (YM-91042) ② to hold the clutch boss.

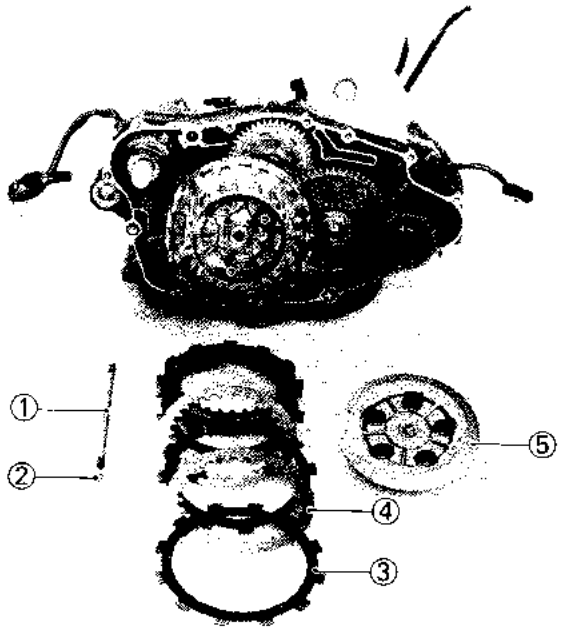
	Nut (Clutch Boss): **80 Nm (8.0 m•kg, 58 ft•lb)**



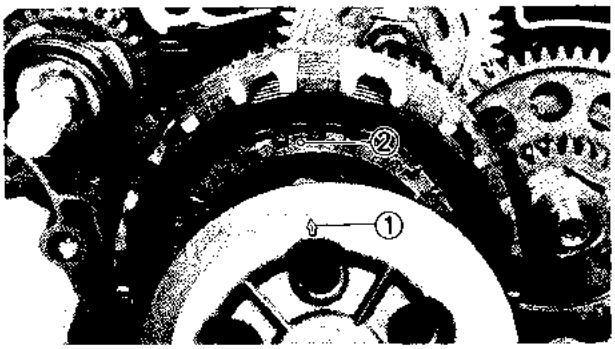
6. Bend the lock washer tab ① along the nut flats.



7. Lubricate:
   - Engine oil
     To the push rod ①.
   - Lithium soap base grease
     To the O-ring ② on the push rod.

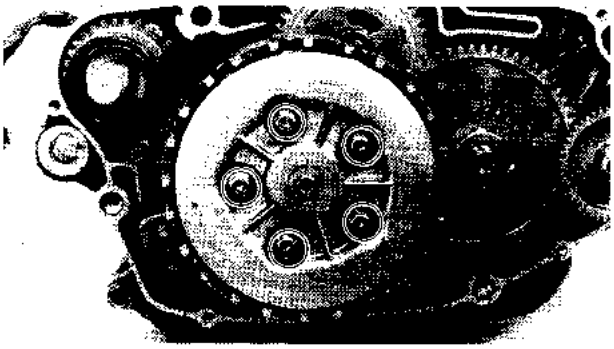


8. Install:
   - Push rod #2 ①
   - Ball ②
   - Friction plates ③
   - Clutch plates ④
   - Pressure plate ⑤



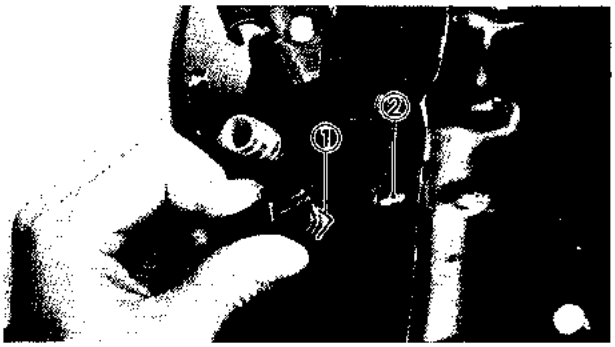
NOTE:

Align the pressure plate arrow mark ① with the clutch boss mark ②.



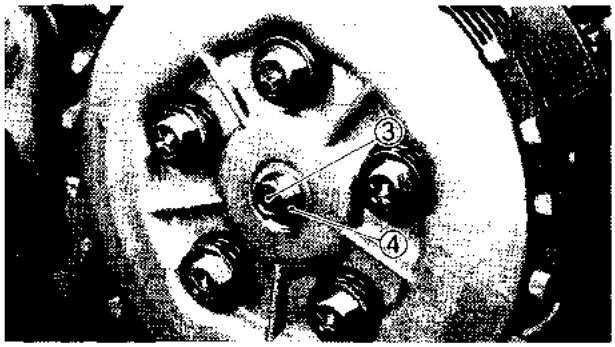
9. Install:
   - Springs (Pressure plate)
   - Bolts (Pressure plate)

Bolts (Pressure Plate):
10 Nm (1.0 m•kg, 7.2 ft•lb)



10. Turn:
    - Push lever
    (To align the push lever pointer ① with the crankcase embossed mark ②)

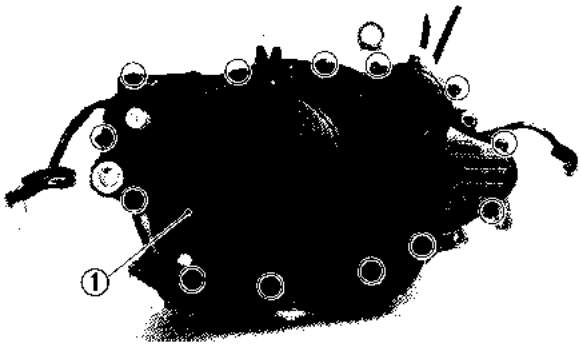
11. Turn:
    - Push rod #1
    (in or out until it lightly seats against a push rod ball)



③ Push rod #1
② Locknut

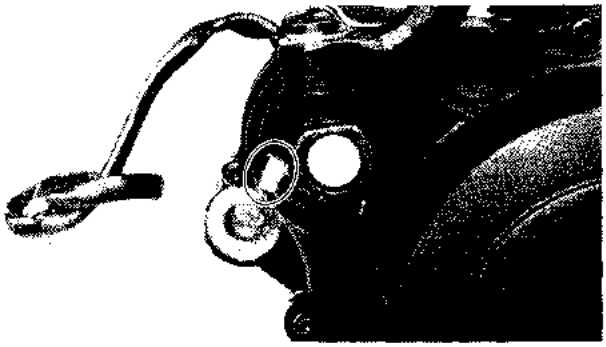
12. Tighten:
    - Locknut

Push Rod Locknut:
8 Nm (0.8 m•kg, 5.8 ft•lb)



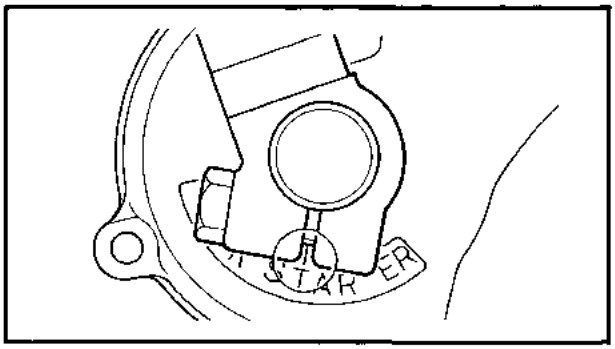
13. Install:
    - Dowel pins
    - Gasket (Crankcase cover)
    - Crankcase cover ① (Right)

Screws (Crankcase Cover):
7 Nm (0.7 m•kg, 5.1 ft•lb)



14. Install:
    - Kick crank

	Bolt (Kick Crank): **20 Nm (2.0 m·kg, 14 ft·lb)**

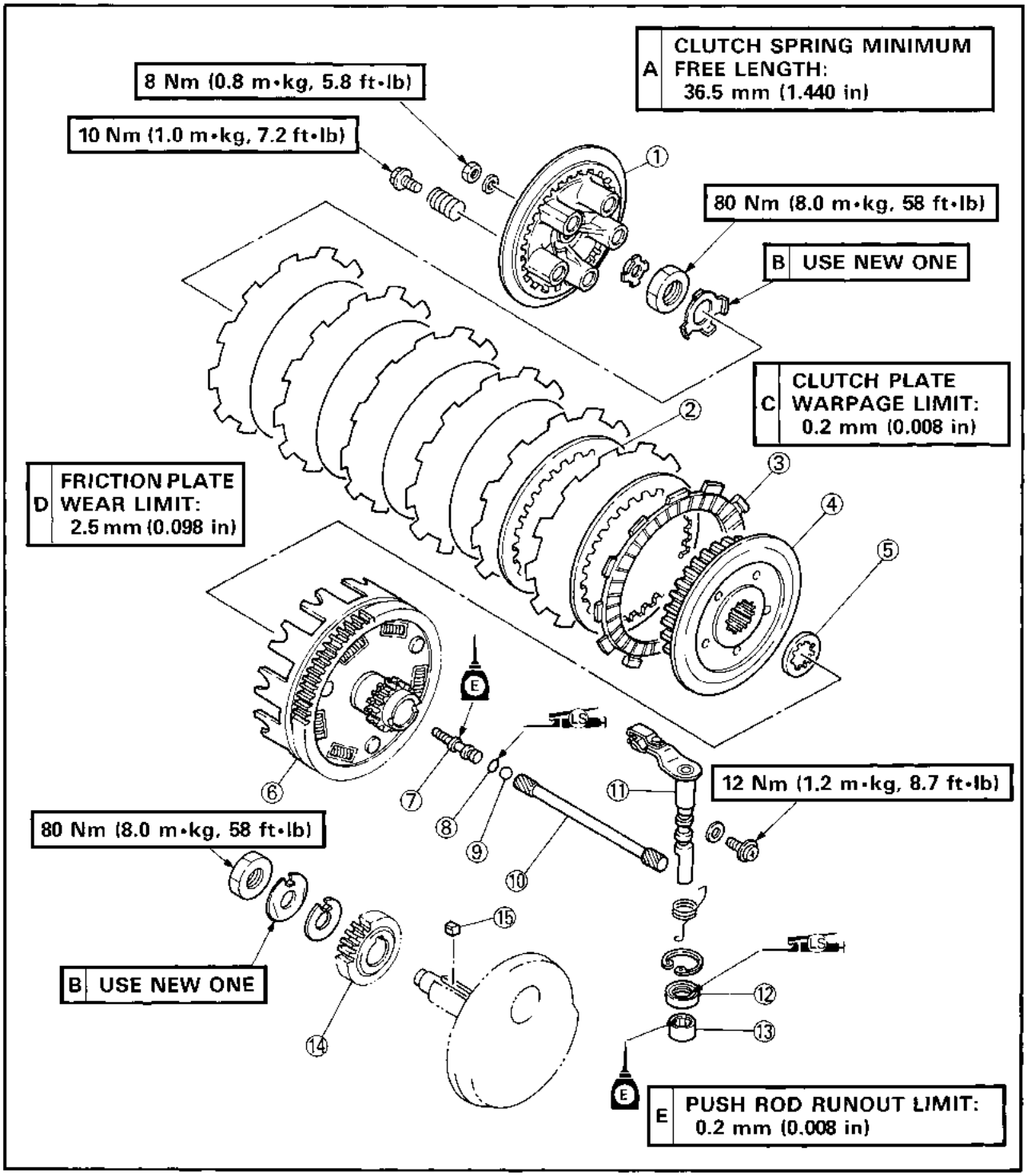


NOTE:

Install the kick crank onto the kick axle as shown.

CLUTCH

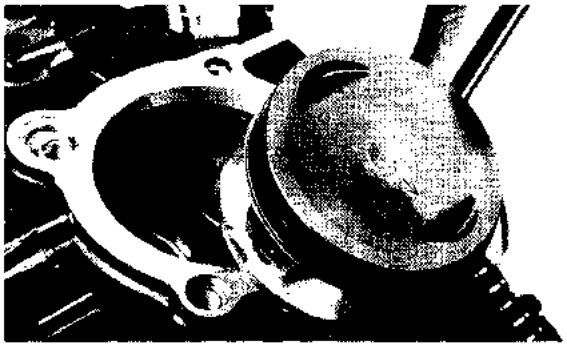
① Pressure plate
② Clutch plate
③ Friction plate
④ Clutch boss
⑤ Thrust washer
⑥ Clutch housing
⑦ Push rod #1
⑧ O-ring
⑨ Ball
⑩ Push rod #2
⑪ Push lever
⑫ Oil seal
⑬ Bearing
⑭ Primary drive gear
⑮ Key



PISTON

1. Apply:
   - Engine oil

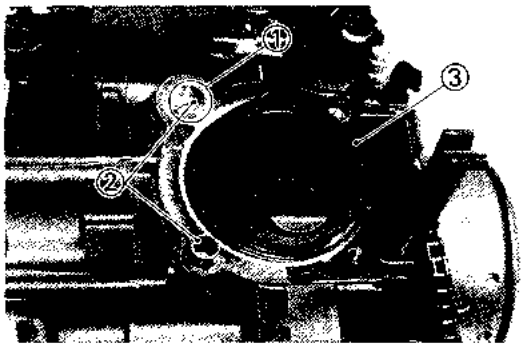
   To the piston pin, bearing, piston ring grooves and piston skirt areas.



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

NOTE:

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

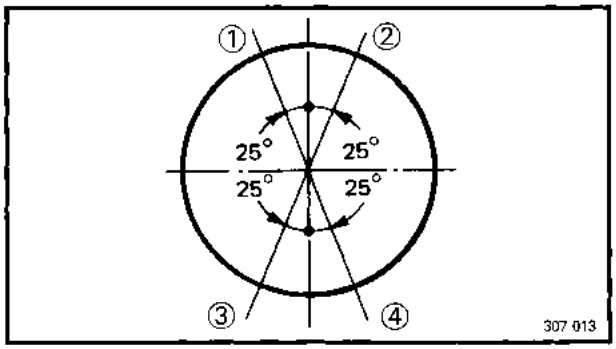


CYLINDER

1. Install:
   - O-ring ①
   - Dowel pins ②
   - Gasket ③ (Cylinder)

2. Lubricate:
   - Engine oil

   To the piston rings.

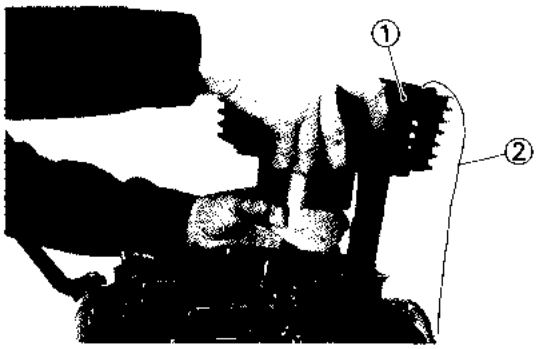


3. Offset the piston ring end gaps as shown.

NOTE:

Be sure to check the manufacturer's marks or numbers stamped on the rings are on the top side of the rings.

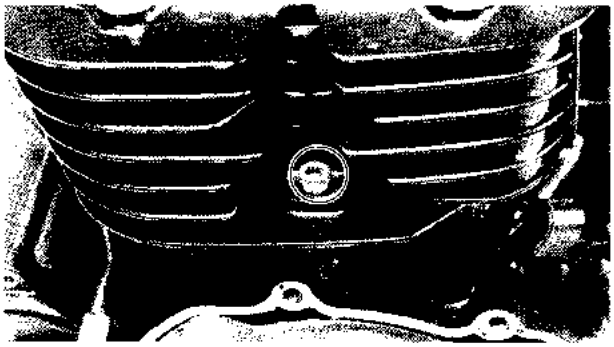
① Top ring end
② Oil ring end (lower rail)
③ Oil ring end (upper rail)
④ 2nd ring end



4. Install:
   - Cylinder ①

NOTE:

- Install the cylinder with one hand while compressing the piston rings with the other hand.
- Tie the cam chain with a piece of mechanics wire ②, and feed it through the chain opening.



5. Tighten:
   - Bolt (Cylinder)

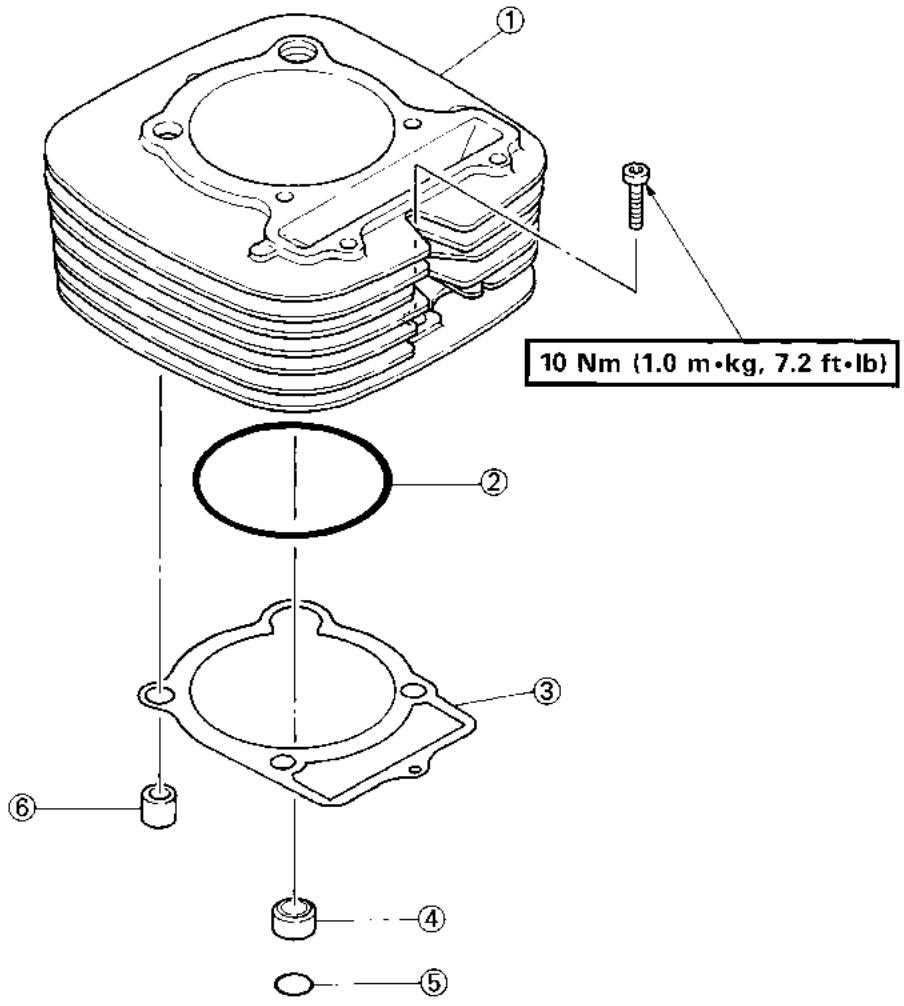
	Bolt (Cylinder): **10 Nm (1.0 m•kg, 7.2 ft•lb)**

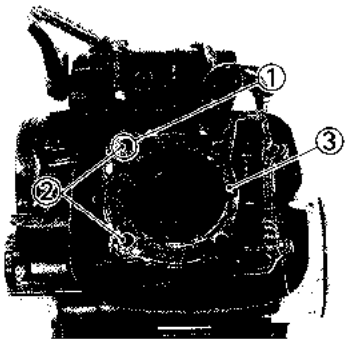
CYLINDER

① Cylinder
② O-ring
③ Gasket
④ Dowel pin
⑤ O-ring
⑥ Dowel pin

A	BORE SIZE: 82.97 – 83.02 mm (3.267 – 3.269 in) <LIMIT>: <84.0 mm (3.307 in)>

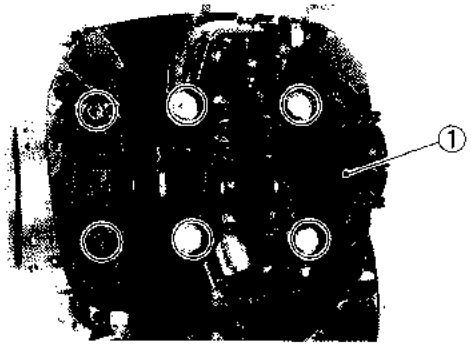
B	PISTON-TO-CYLINDER CLEARANCE: 0.04 – 0.06 mm (0.001 – 0.002 in) <LIMIT>: <0.1 mm (0.004 in)>





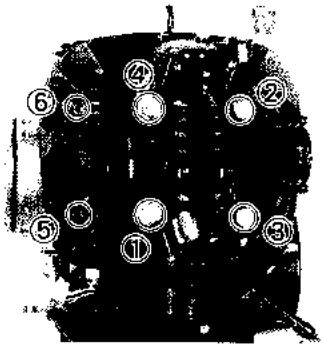
CYLINDER HEAD

1. Install:
   - O-ring ①
   - Dowel pins ②
   - Gasket ③ (Cylinder head)

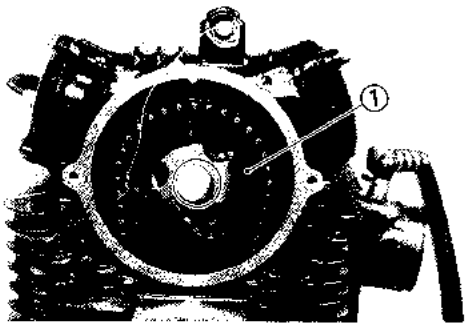


2. Install:
   - Cylinder head ①
   - Spark plug

Bolts (Cylinder Head):
M8 (Socket Head Bolt)
20 Nm (2.0 m•kg, 14 ft•lb)
M10 (Flange Bolt)
40 Nm (4.0 m•kg, 29 ft•lb)
Spark Plug:
18 Nm (1.8 m•kg, 13 ft•lb)

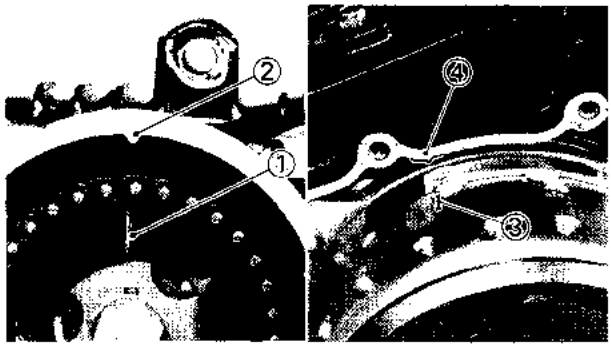


NOTE:
The numbers in the photo designate the cylinder head tightening sequence.

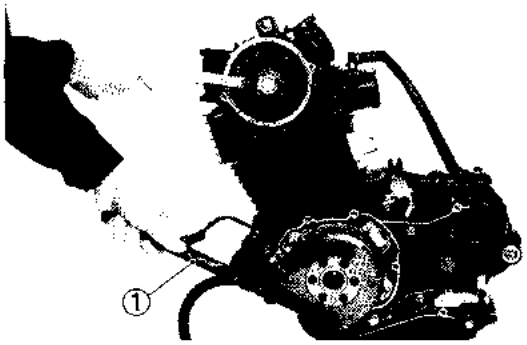


3. Install:
   - Cam sprocket ①

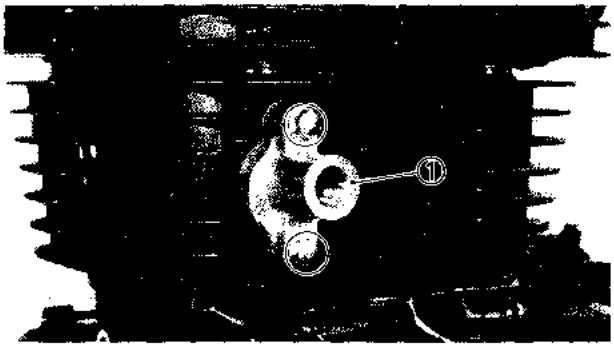
Bolt (Cam Sprocket):
60 Nm (6.0 m•kg, 43 ft•lb)



NOTE:
Align the sprocket timing mark ① with the cylinder head timing mark ② and at the same time, align the C.D.I. magneto timing mark ③ with the crankcase timing mark ④.

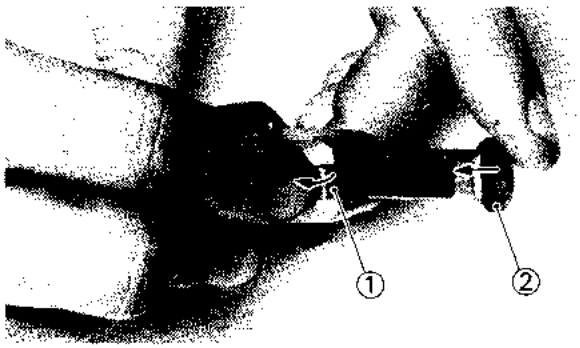


NOTE:
If difficult to tighten the cam sprocket securing bolts; hold the C.D.I. magneto with the Rotor Holding Tool ① (YU-01235).

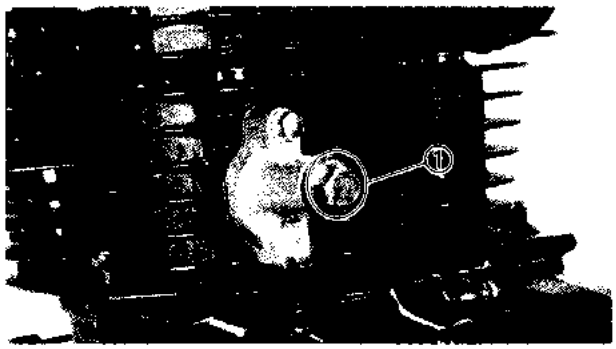


4. Install:
   • Chain tensioner ①

	Bolts (Chain Tensioner): **10 Nm (1.0 m•kg, 7.2 ft•lb)**



NOTE:
Before installing the chain tensioner, unhook the ratchet ① and push the rod ② into the body.

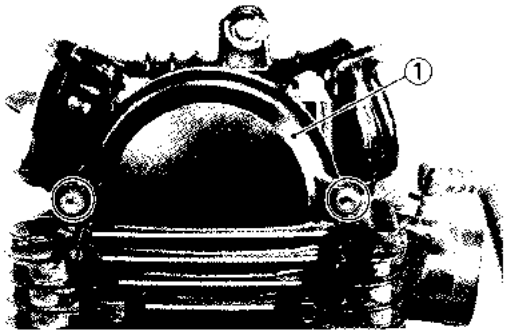


5. Install:
   • Blind plug ①

	Blind Plug: **30 Nm (3.0 m•kg, 22 ft•lb)**

6. Adjust:
   • Valve clearance
   Refer to the "VALVE CLEARANCE ADJUSTMENT" section in the "CHAPTER 2."

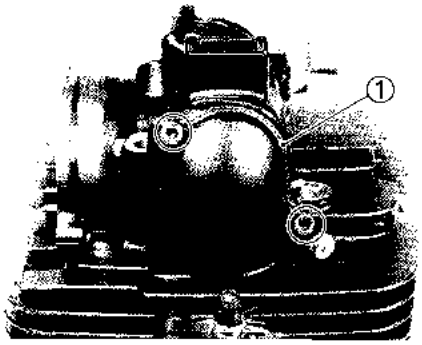
	Valve Clearance (Cold): **Intake** **0.06 ~ 0.10 mm (0.002 ~ 0.004 in)** **Exhaust** **0.16 ~ 0.20 mm (0.006 ~ 0.008 in)**



7. Install:
   • Cam sprocket cover (1)

	Bolts (Cam Sprocket Cover): 10 Nm (1.0 m•kg, 7.2 ft•lb)

A

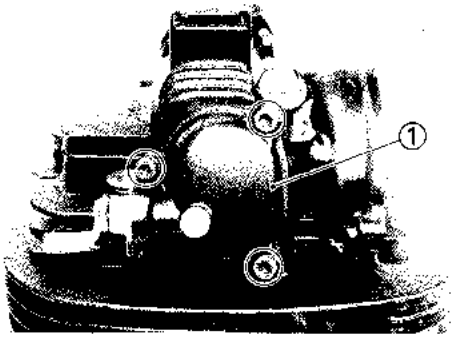


8. Install:
   • Valve covers (1)

A Valve cover (Intake)
B Valve cover (Exhaust)

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

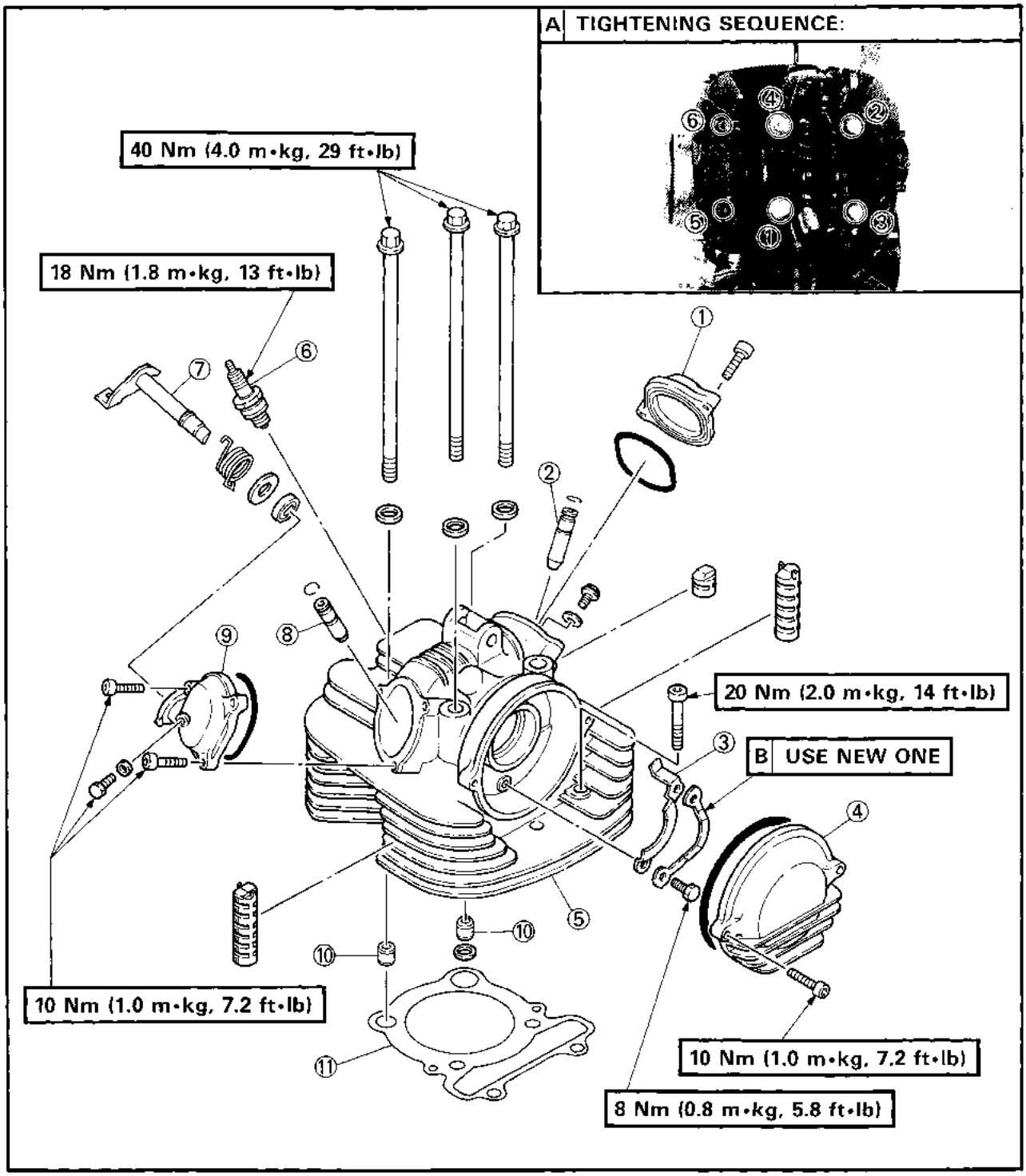
B

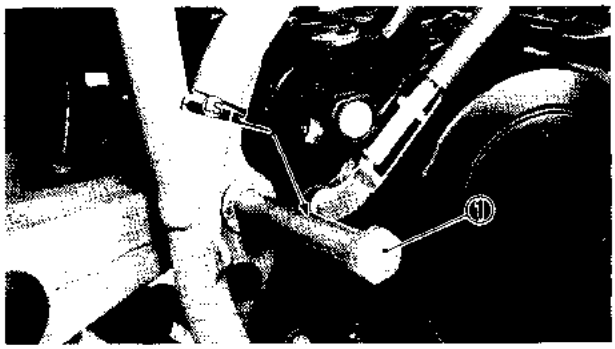


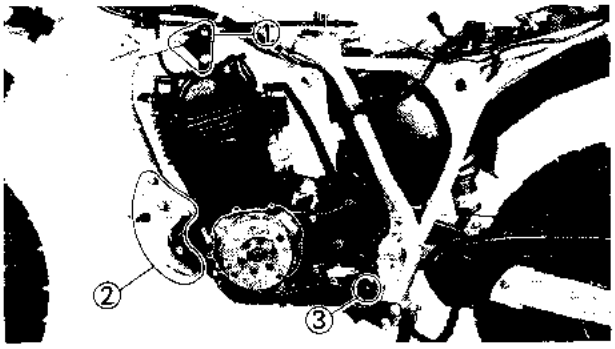
ENGINE ASSEMBLY AND ADJUSTMENT

CYLINDER HEAD

① Valve cover (Intake)
② Valve guide (Intake)
③ Bearing holder
④ Cam sprocket cover
⑤ Cylinder head
⑥ Spark plug
⑦ Decompression lever
⑧ Valve guide (Exhaust)
⑨ Valve cover (Exhaust)
⑩ Dowel pin
⑪ Gasket







REMOUNTING ENGINE

When remounting the engine, reverse the "REMOVAL" procedure. Note the following points.

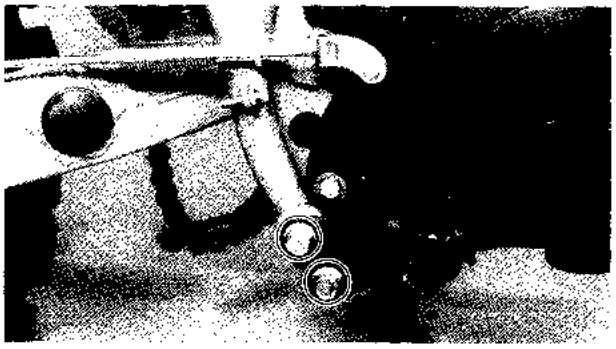
1. Install:
   - Engine
   - Pivot shaft ①

NOTE:

Apply the grease to the pivot shaft.

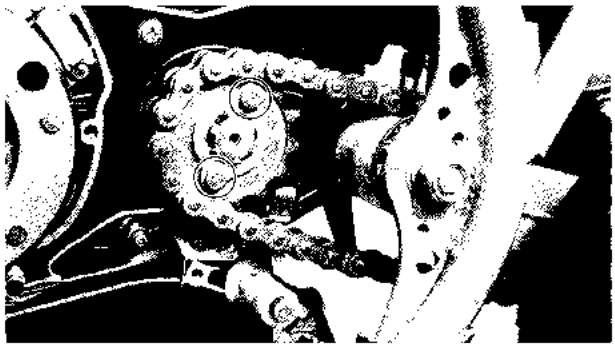
2. Install:
   - Engine mounting bolt (Rear)
   - Engine mounting stays (Upper)
   - Engine mounting stays (Front)

Upper Mounting Bolts ①:
33 Nm (3.3 m•kg, 24 ft•lb)
Front Mounting Bolts ②:
33 Nm (3.3 m•kg, 24 ft•lb)
Rear Mounting Bolts ③:
33 Nm (3.3 m•kg, 24 ft•lb)



3. Install:
   - Footrest

Bolts (Footrest)
45 Nm (4.5 m•kg, 32 ft•lb)

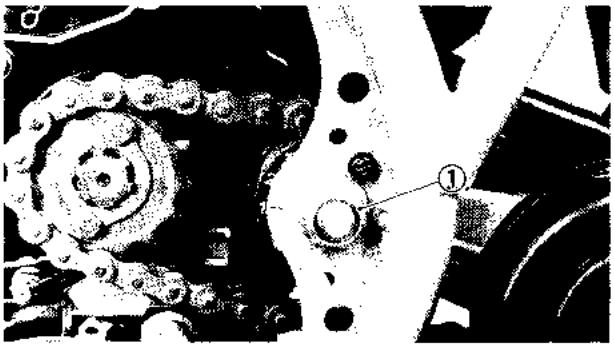


4. Install:
   - Drive sprocket

Drive Chain Sprocket Bolt:
10 Nm (1.0 m•kg, 7.2 ft•lb)

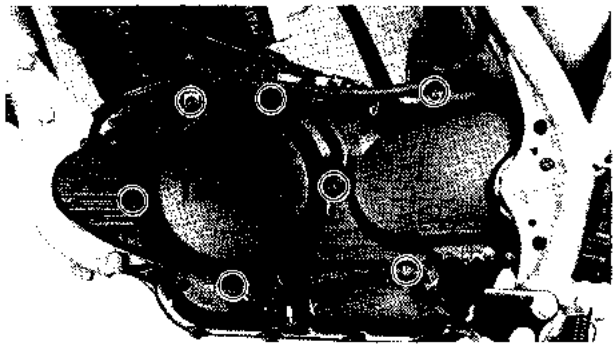
5. Adjust:
   • Drive chain slack (Primary drive chain)
   Refer to "CHAPTER 2—DRIVE CHAIN SLACK ADJUSTMENT" section.

Drive Chain Slack:
10 ~ 40 mm (0.39 ~ 1.57 in)



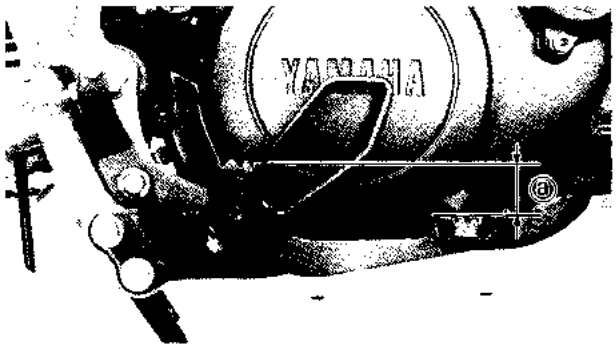
6. Tighten:
   • Nut (Pivot shaft) ①

Nut (Pivot Shaft):
90 Nm (9.0 m•kg, 65 ft•lb)



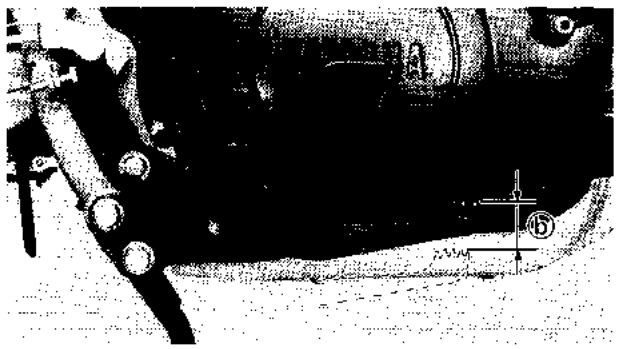
7. Install:
   • Crankcase cover (Left)

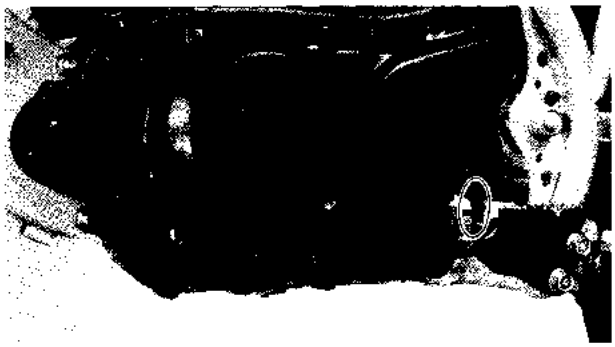
Screws (Crankcase Cover):
7 Nm (0.7 m•kg, 5.1 ft•lb)



8. Adjust:
   • Rear brake pedal position ⓐ
   • Rear brake free play ⓑ
   Refer to "CHAPTER 2—REAR BRAKE ADJUSTMENT" section.

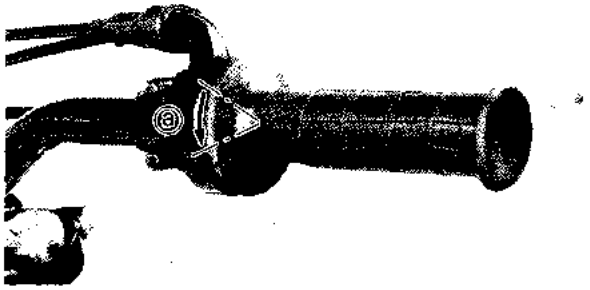
Rear Brake Pedal Position:
15 mm (0.59 in)
Rear Brake Free Play:
20 ~ 30 mm (0.79 ~ 1.18 in)





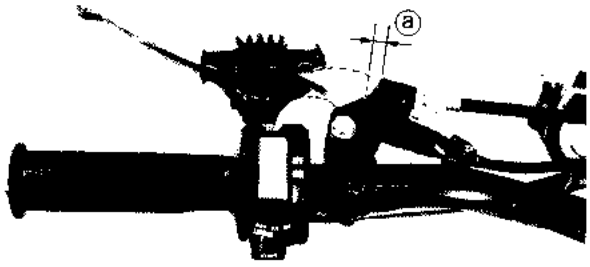
9. Install:
   • Change pedal

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



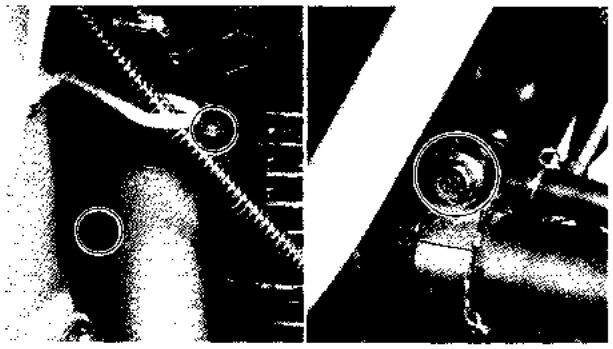
10. Adjust:
   • Throttle cable free play ⓐ
   Refer to "CHAPTER 2—THROTTLE CABLE FREE PLAY ADJUSTMENT" section.

	Throttle Cable Free Play: **2 ~ 5 mm (0.08 ~ 0.20 in)**



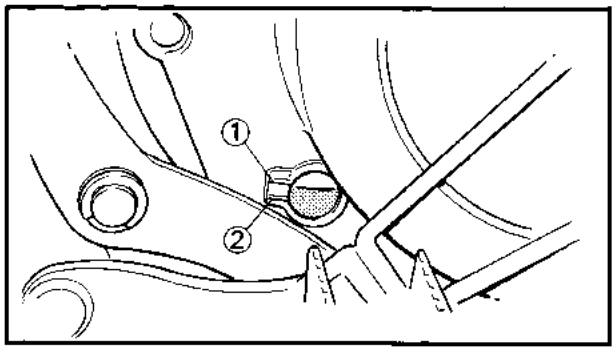
11. Adjust:
   • Clutch free play ⓐ
   Refer to "CHAPTER 2—CLUTCH ADJUSTMENT" section.

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



12. Install:
   • Exhaust pipe

	Exhaust Pipe Mounting Bolts: **12 Nm (1.2 m•kg, 8.7 ft•lb)** **Muffler Clamp Bolts:** **20 Nm (2.0 m•kg, 14 ft•lb)**



13. Fill:
   • Crankcase
   Refer to "CHAPTER 2—ENGINE OIL REPLACEMENT" section.

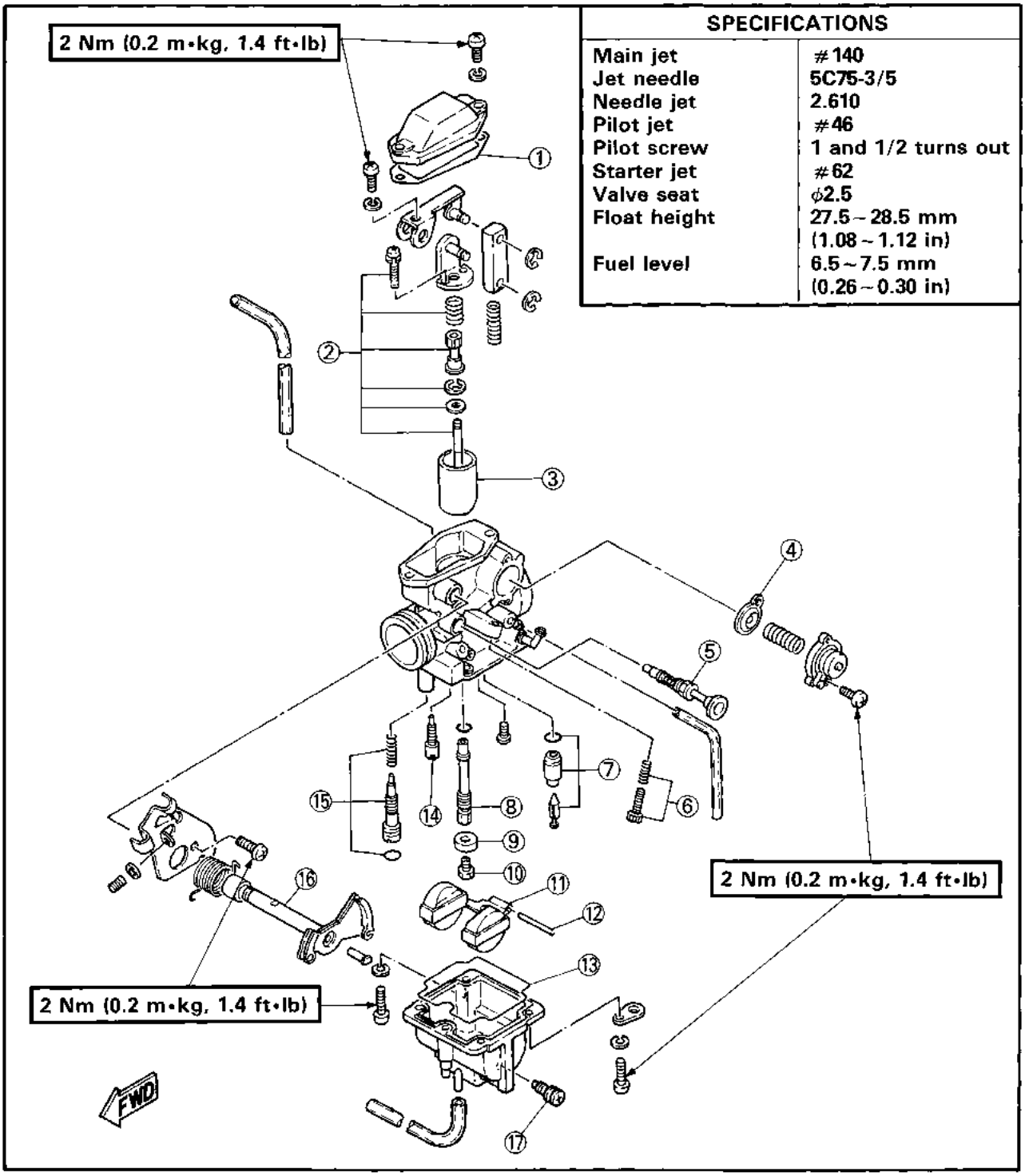
① Maximum level
② Minimum level

CHAPTER 4
CARBURETION

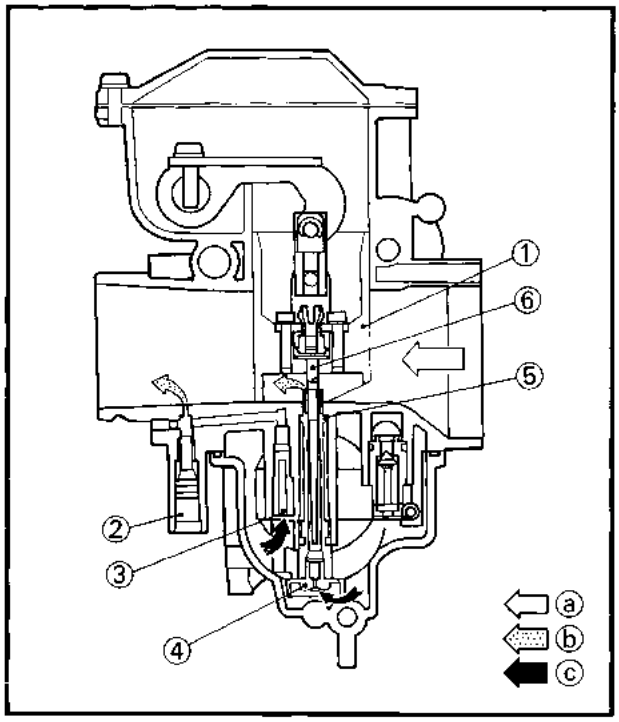
CARBURETION

CARBURETOR

① Gasket
② Jet needle set
③ Throttle valve
④ Diaphragm
⑤ Starter plunger
⑥ Throttle stop screw set
⑦ Valve seat assembly
⑧ Main nozzle
⑨ Main jet cover
⑩ Main jet
⑪ Float
⑫ Float pin
⑬ O-ring
⑭ Pilot jet
⑮ Pilot screw set
⑯ Throttle shaft
⑰ Drain screw



SPECIFICATIONS	
Main jet	#140
Jet needle	5C75-3/5
Needle jet	2.610
Pilot jet	#46
Pilot screw	1 and 1/2 turns out
Starter jet	#62
Valve seat	ϕ2.5
Float height	27.5 – 28.5 mm (1.08 – 1.12 in)
Fuel level	6.5 – 7.5 mm (0.26 – 0.30 in)



SECTION VIEW

① Throttle valve
② Pilot screw
③ Pilot jet
④ Main jet
⑤ Main nozzle
⑥ Jet needle

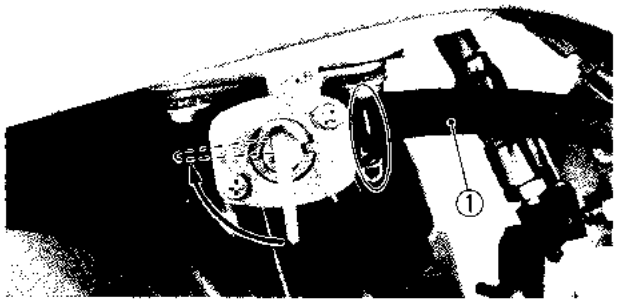
ⓐ Air
ⓑ Mixture
ⓒ Fuel

REMOVAL

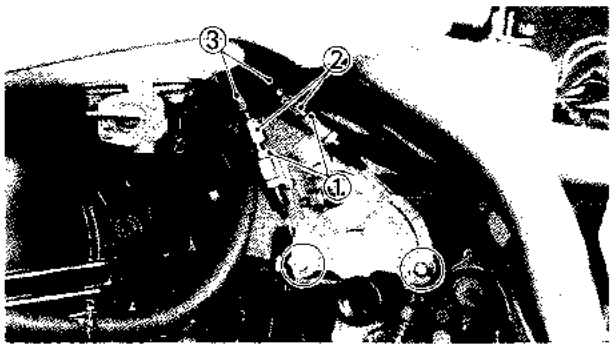
NOTE:

The following parts can be cleaned and inspected without carburetor removal.

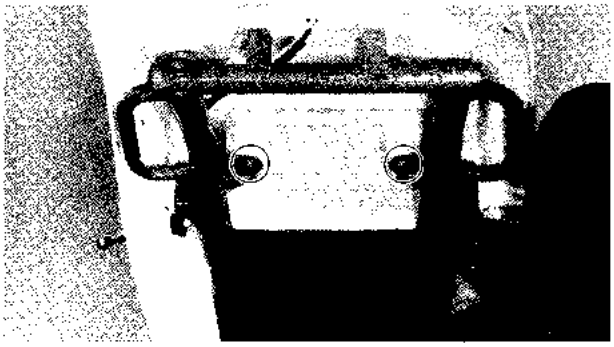
- Starter plunger
- Diaphragm (Coasting enricher)
- Float
- Valve seat
- Main jet
- Pilot jet
- Pilot screw



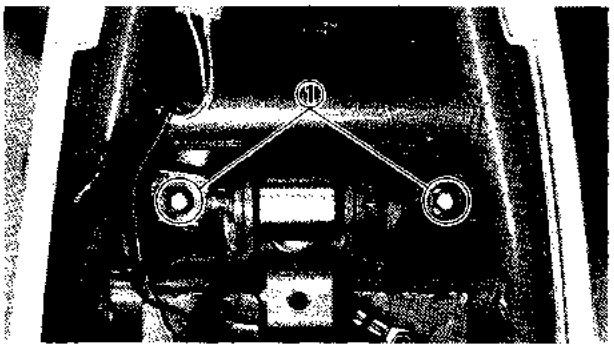
1. Turn the fuel cock to "OFF" position and disconnect the fuel hose ①.



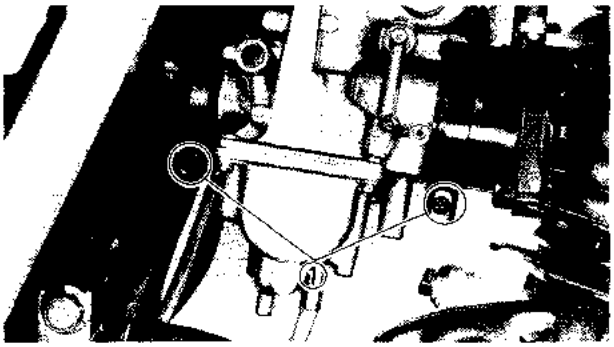
2. Loosen:
   - Locknuts ①
   - Adjusters ②
3. Remove:
   - Throttle cables ③



4. Remove:
   - Seat



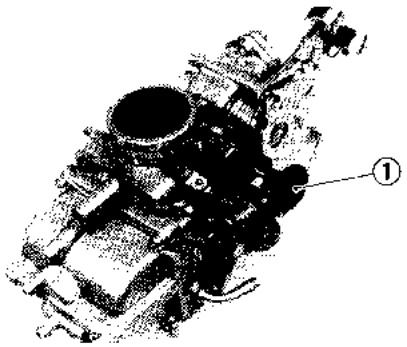
5. Remove:
   - Bolts ① (Air cleaner case)



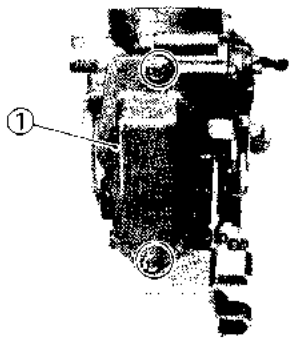
6. Loosen:
   - Screws ① (Carburetor joint)

7. Remove:
   - Carburetor assembly

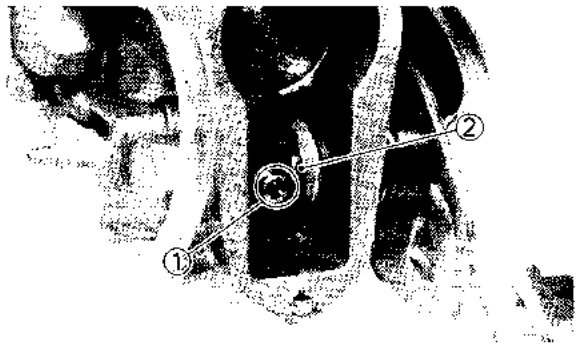
DISASSEMBLY



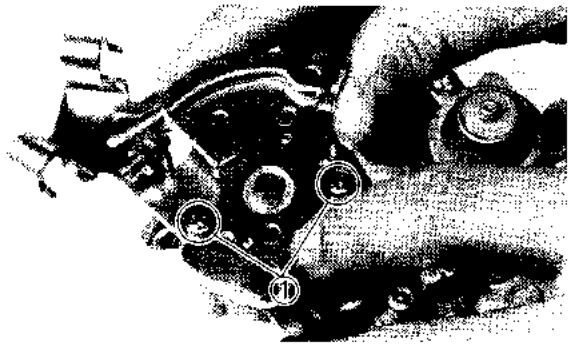
1. Remove:
   - Starter plunger ①



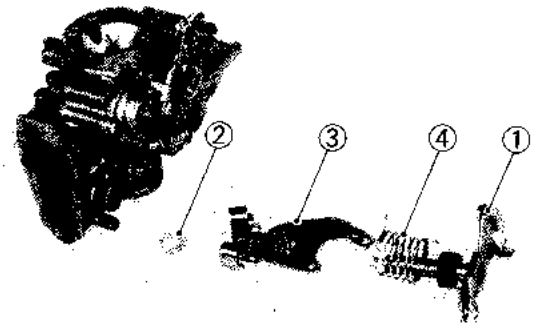
2. Remove:
   - Top cover ①



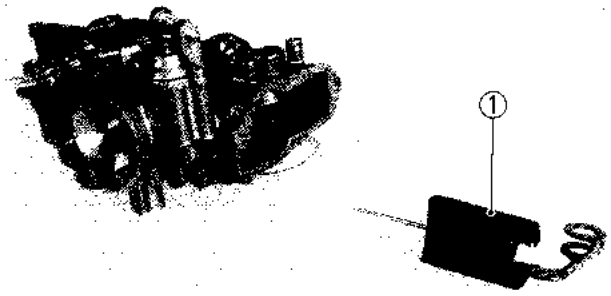
3. Remove:
   - Screw ① (Connecting arm)
   - Circlip ② (Throttle shaft)



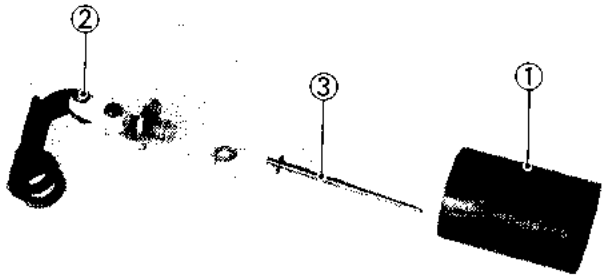
4. Remove:
   - Screws ① (Throttle cable holder)



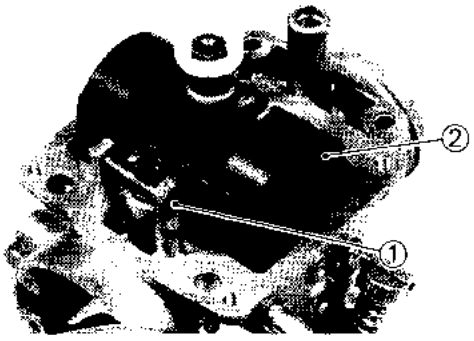
5. Remove:
   - Throttle shaft ①
   - Plastic washer ②
   - Throttle cable holder ③
   - Return spring ④



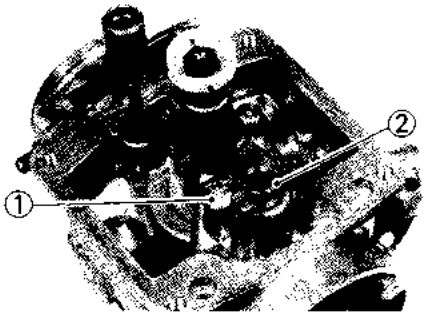
6. Remove:
   - Throttle valve assembly ①



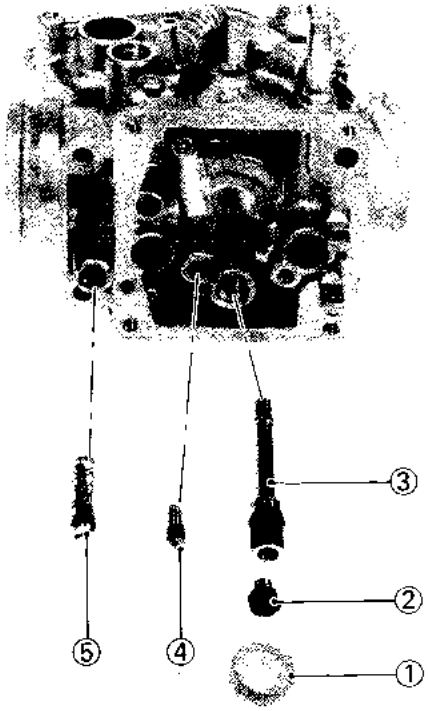
7. Remove:
   - Throttle valve ①
   - Connecting arm ②
   - Jet needle ③



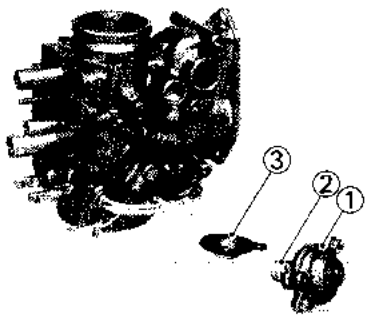
8. Remove:
   - Float chamber
   - Float pin ①
   - Float ②



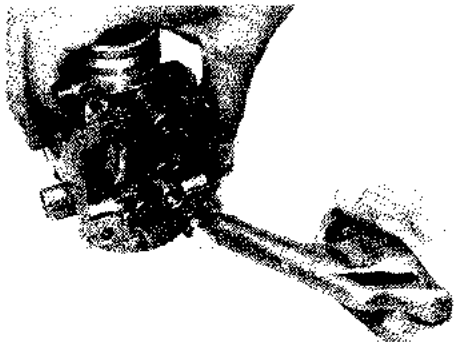
9. Remove:
   - Screw ① (Valve seat)
   - Valve seat assembly ②



10. Remove:
    - Main jet cover ①
    - Main jet ②
    - Main nozzle ③
    - Pilot jet ④
    - Pilot screw ⑤



11. Remove:
    - Cover ① (Coasting enricher)
    - Spring ② (Coasting enricher)
    - Diaphragm ③ (Coasting enricher)

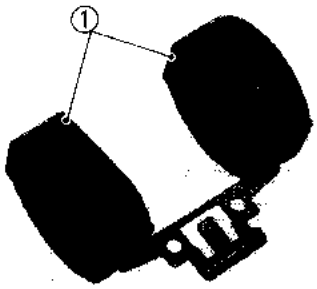


INSPECTION

1. Inspect:
   - Carburetor body
   - Fuel passage

   Contamination → Clean as indicated.

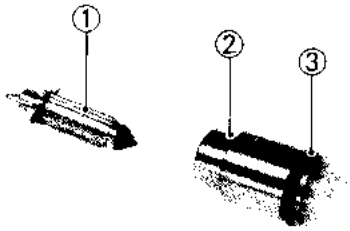
Carburetor cleaning steps:
- Wash carburetor in petroleum based solvent. (Do not use any caustic carburetor cleaning solution).
- Blow out all passages and jets with compressed air.



2. Inspect:
   - Floats ①

   Damage → Replace.
   - Gasket/O-ring

   Damage → Replace.



3. Inspect:
   - Float needle valve ①
   - Seat ②
   - O-ring ③

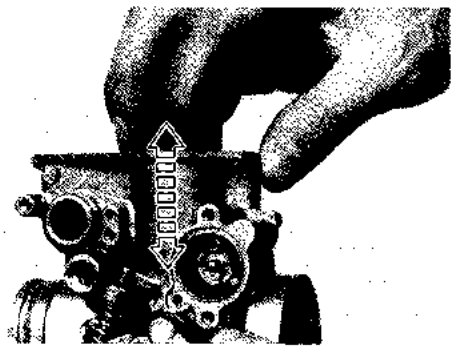
   Damage/Wear/Contamination → Replace.

NOTE:

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

4. Inspect:
   - Throttle valve

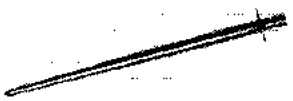
   Wear/Damage → Replace.



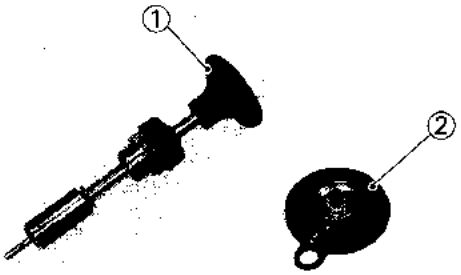
5. Check:
   - Free movement

   Stick → Replace.

   Insert the throttle valve into the carburetor body, and check for free movement.



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



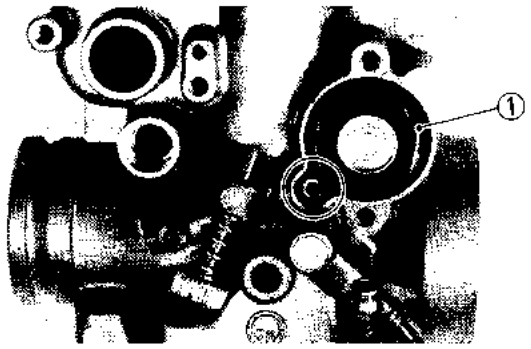
7. Inspect:
   - Starter plunger ①
     Wear/Damage→Replace.
   - Diaphragm (Coasting enricher) ②
     Damage→Replace.

ASSEMBLY

To assemble the carburetors, reverse the "DISASSEMBLY" procedures. Note the following points.

CAUTION:

Before reassembling, wash all parts in clean gasoline.



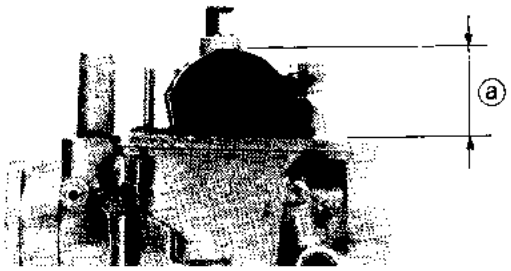
1. Install:
   - Diaphragm ①

NOTE:

Match the tab on the diaphragm to the matching recess in the coasting enricher.

2. Tighten:
   - Screws (Coasting enricher cover)

	Screws: **2 Nm (0.2 m•kg, 1.4 ft•lb)**



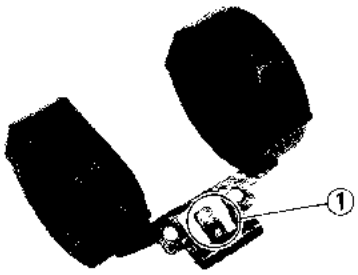
3. Adjust:
   - Float height ⓐ
     Out of specification→Adjust.
     By the following steps.

Float Height ⓐ:
27.5 – 28.5 mm (1.08 – 1.12 in)

Float height measurement and adjustment steps:
- Hold the carburetor in an upside down position.
- Measure the distance between the mating surface of the float chamber and top of the float using a gauge.

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

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



4. Tighten:
   - Screws (Float chamber)
   - Screws (Throttle cable holder)
   - Screw (Connecting arm)
   - Screws (Top cover)

Screws (Float Chamber):
2 Nm (0.2 m•kg, 1.4 ft•lb)
Screws (Throttle Cable Holder):
2 Nm (0.2 m•kg, 1.4 ft•lb)
Screw (Connecting Arm):
2 Nm (0.2 m•kg, 1.4 ft•lb)
Screws (Top Cover)
2 Nm (0.2 m•kg, 1.4 ft•lb)

INSTALLATION

Reverse the "REMOVAL" procedures.
Note the following points.

1. Tighten:
   - Bolts (Seat)

	Bolts (Seat): **5 Nm (0.5 m•kg, 3.6 ft•lb)**

2. Adjust:
   - Idle speed

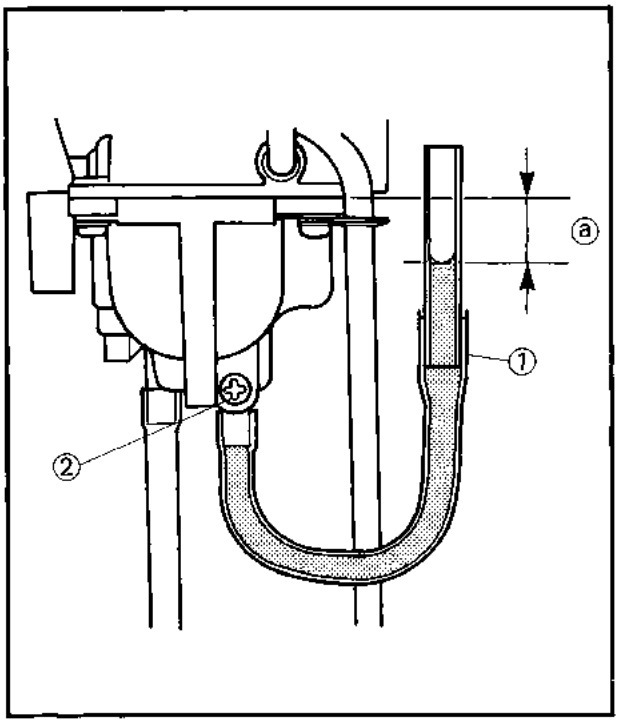
   Refer to the "IDLE SPEED ADJUSTMENT" section in the "CHAPTER 2".

	Engine Idle Speed: **1,500 r/min**

3. Adjust:
   - Throttle cable free play

   Refer to the "THROTTLE CABLE FREE PLAY ADJUSTMENT" section in the "CHAPTER 2".

	Throttle Cable Free Play: **2~5 mm (0.08~0.20 in)**

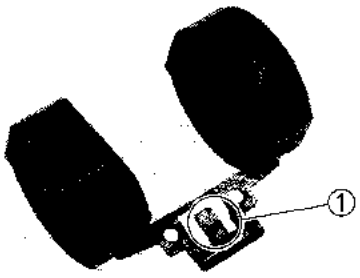


FUEL LEVEL ADJUSTMENT

1. Place the machine on a level place.
2. Use a garage jack under the engine to ensure that the carburetor is positioned vertically.
3. Attach the Fuel Level Gauge ① (YM-01312) to the float chamber nozzle.
4. Loosen the drain screw ②, and warm up the engine for several minutes.
5. Measure:
   - Fuel level ⓐ

   Out of specification→Adjust.

	Fuel Level ⓐ: **6.5~7.5 mm (0.26~0.30 in)** **Below the Carburetor Body Edge**



7. Adjust:
   • Fuel level

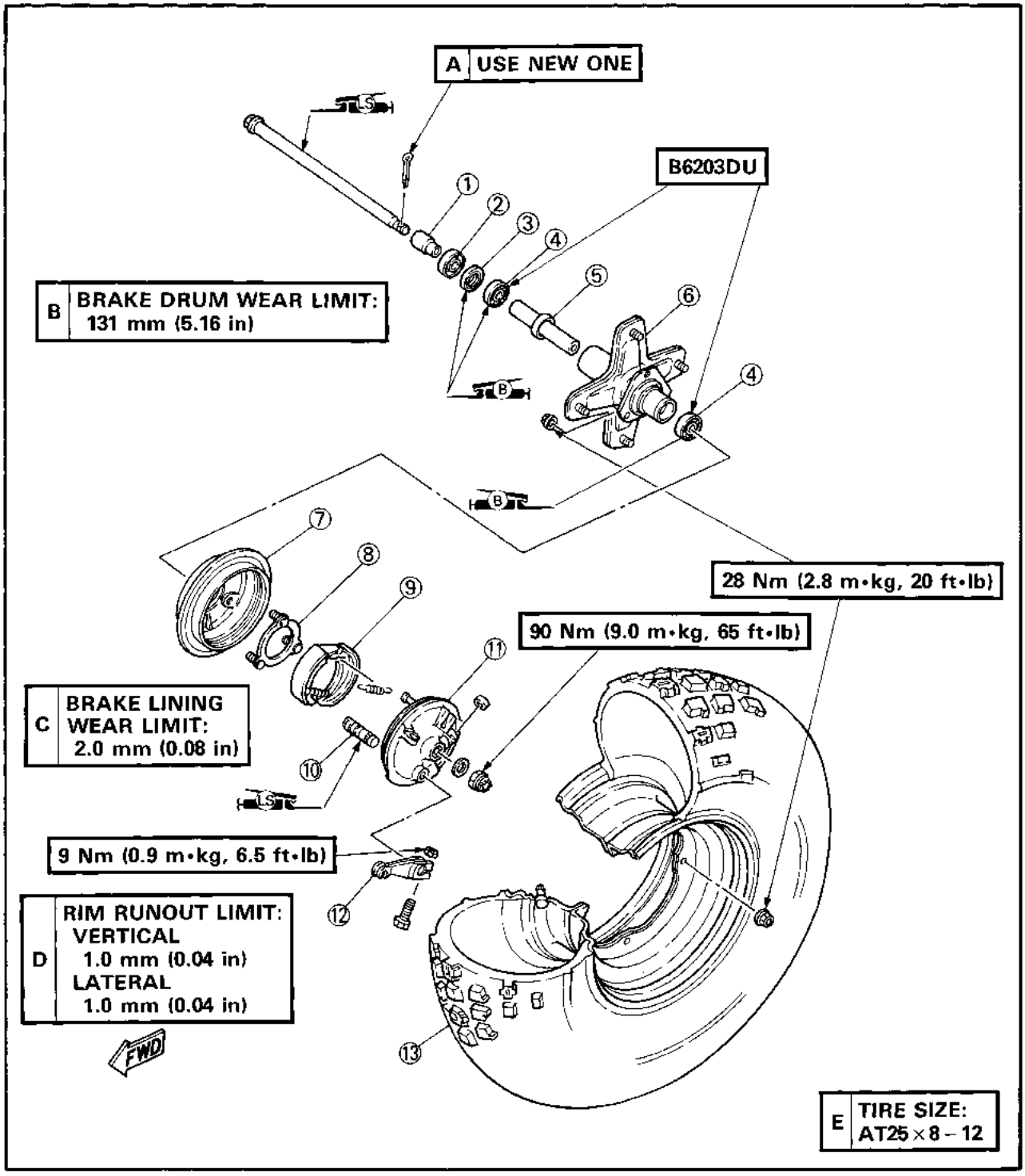
Adjustment steps:
- Remove the carburetor.
- Inspect the valve seat and needle valve.
- If either is worn, replace them both.
- If both are fine, adjust the float height by bending the float tang ① on the float.
- Recheck the fuel level.

CHAPTER 5
CHASSIS

CHASSIS

FRONT WHEEL

① Collar
② Dust cover
③ Oil seal
④ Bearing
⑤ Spacer
⑥ Hub
⑦ Drum
⑧ Ring
⑨ Brake shoe
⑩ Camshaft
⑪ Brake shoe plate
⑫ Camshaft lever
⑬ Front wheel assembly

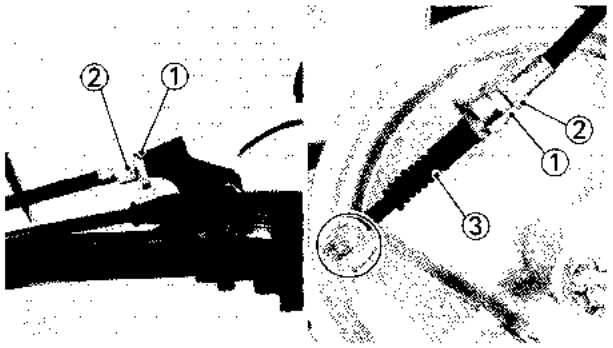


REMOVAL

1. Elevate the front wheel by placing a suitable stand under the engine.

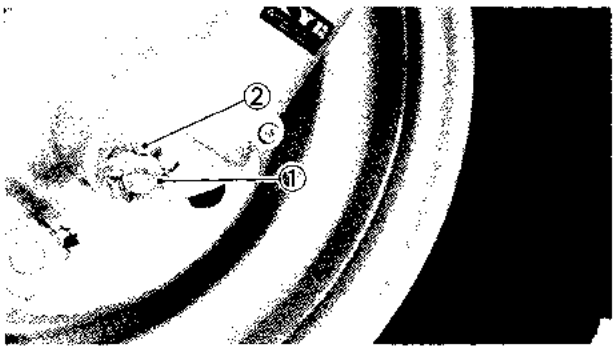
WARNING:

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

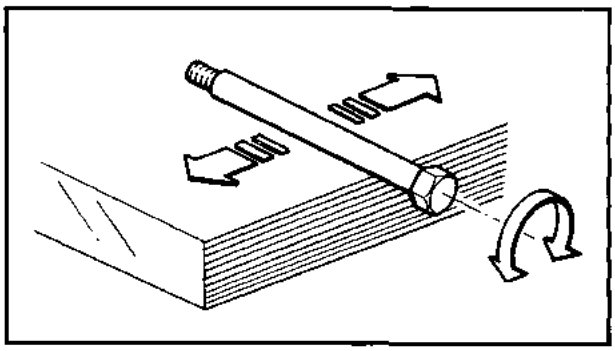


2. Loosen:
   - Locknuts ①
   - Adjuster ②

3. Remove:
   - Brake cable ③



4. Remove:
   - Cotter pin ①
   - Axle nut ②
   - Front wheel assembly
   - Brake shoe plate assembly



INSPECTION

1. Inspect:
   - Axle shaft

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

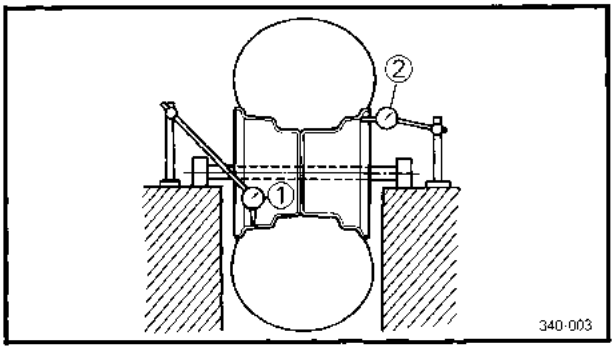
WARNING:

Do not attempt to straighten a bent axle shaft.

2. Inspect:
   - Wheel:

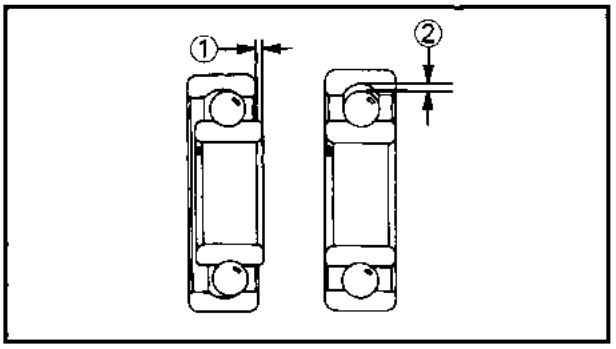
   Cracks/Bends/Warpage→Replace.

5



3. Measure:
   • Wheel runout
   Out of specification → Inspect the wheel and bearing play.

Rim Runout Limits:
Radial ①: 1.0 mm (0.04 in)
Lateral ②: 1.0 mm (0.04 in)



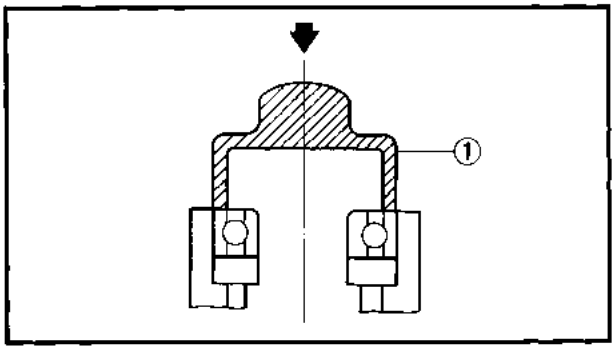
4. Inspect:
   • Wheel bearings
   Bearings allow play in the wheel hub or wheel turns roughly → Replace.

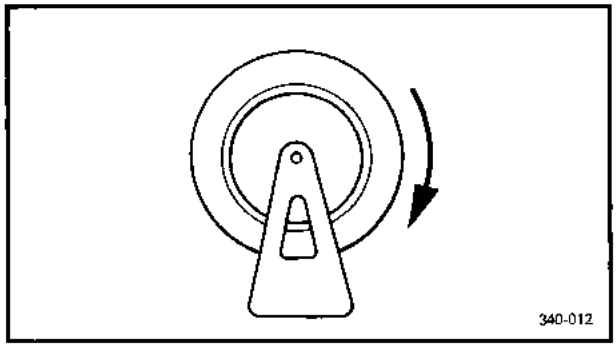
① Lateral free play
② Radial free play

Wheel bearing replacement steps:
- Clean the outside of the wheel hub.
- Remove the bearing using a general bearing puller.
- Install the new bearing.

NOTE:
Use a socket ① that matches the outside diameter of the race of the bearing.

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

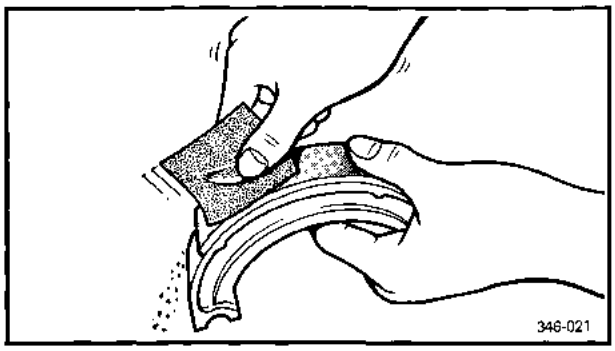




5. Check:
   • Wheel balance
   Wheel is not statically balanced if it comes to rest at the same point after several light rotations.
   Out of balance → Install appropriate balance weight at lightest point (on top).

NOTE:

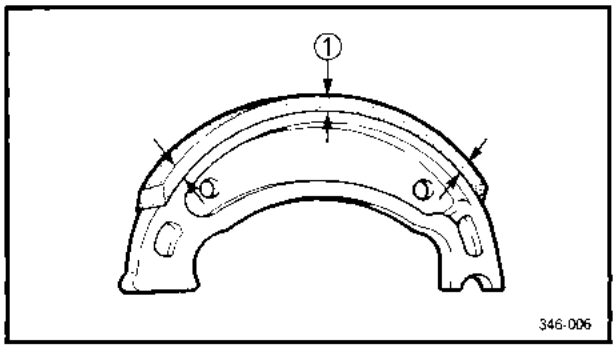
Balance wheels with the brake shoe plate installed.



6. Inspect:
   - Brake lining surface
     Blazed areas→Remove.
     Use a coarse sand paper.

NOTE:

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



7. Measure:
   - Brake lining thickness
     Out of specification→Replace.

① Measuring points

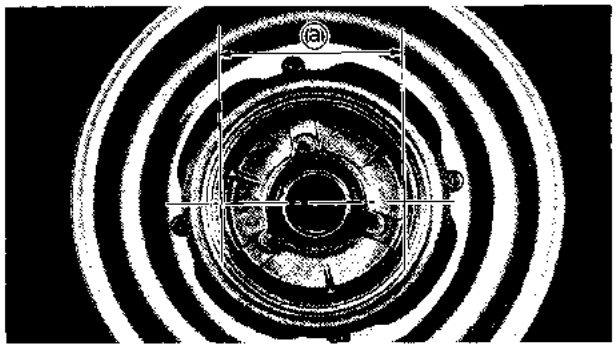
Brake Lining Thickness:
4 mm (0.16 in)
Wear Limit:
2 mm (0.08 in)

NOTE:

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

8. Inspect:
   - Brake drum inner surface
     Oil/Scratches→Remove.

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



9. Measure:
   • Brake drum inside diameter ⓐ
   Out of specification → Replace.

Brake Drum Wear Limit:
131 mm (5.16 in)

INSTALLATION

Reverse the removal procedure.
Note the following points.

1. Apply:
   • Lithium soap base grease
   To the oil seal lips and axle shaft.
   • Wheel bearing grease
   To the wheel bearing.

2. Install:
   • Brake shoe plate

NOTE:

Check for proper engagement of the boss on the outer fork tube with the locating slot on the brake shoe plate.

3. Tighten:
   • Axle nut

Axle Nut:
90 Nm (9.0 m•kg, 65 ft•lb)

4. Adjust:
   • Front brake
   Refer to the "FRONT BRAKE ADJUSTMENT" section in the "CHAPTER 2".

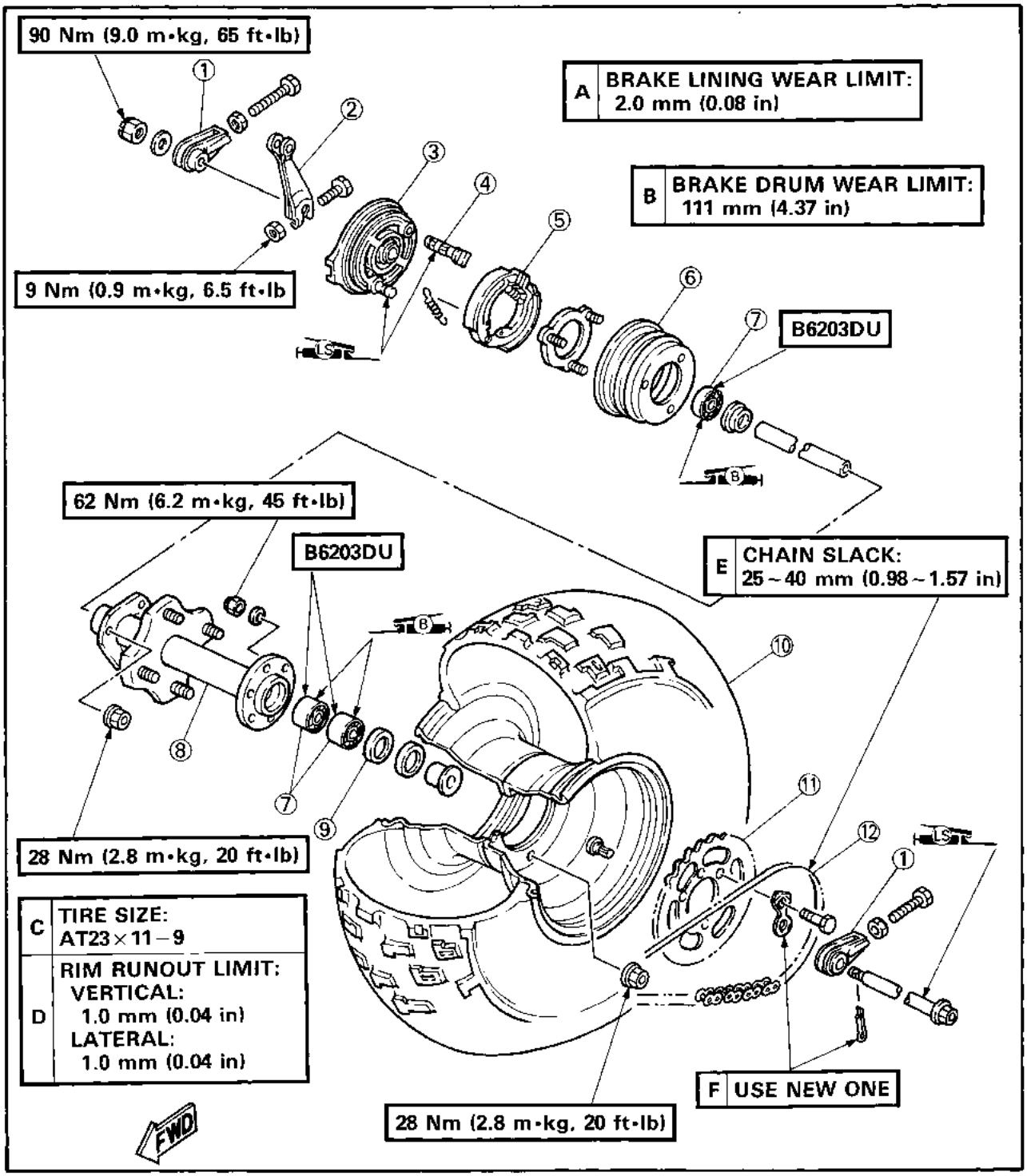
5. Install:
   • Cotter pin
   Bend the ends of the cotter pin.

WARNING:

Always use a new cotter pin.

REAR WHEEL

① Chain puller
② Camshaft lever
③ Brake shoe plate
④ Camshaft
⑤ Brake shoe
⑥ Brake drum
⑦ Bearing
⑧ Wheel hub
⑨ Dust cover
⑩ Rear wheel assembly
⑪ Driven sprocket
⑫ Drive chain

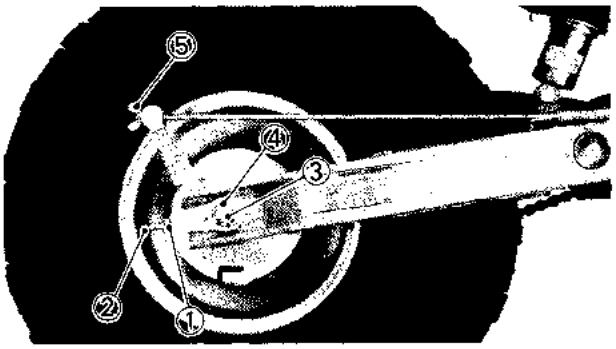


REMOVAL

1. Elevate the rear wheel by placing a suitable stand under the engine.

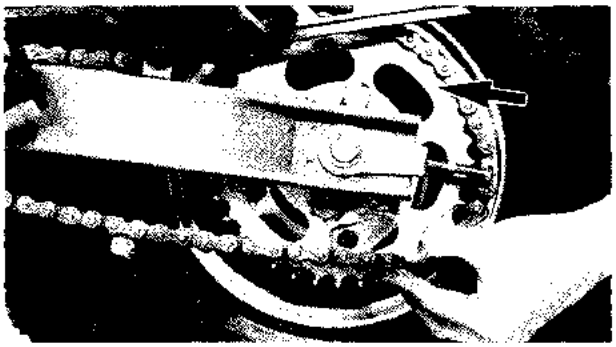
WARNING:

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



2. Loosen:
   - Locknuts ①
   - Adjusters ②

3. Remove:
   - Cotter pin ③
   - Axle nut ④
   - Adjuster (Rear brake) ⑤



4. Push the wheel forward and remove the drive chain.

5. Remove:
   - Rear wheel assembly
   - Brake shoe plate

INSPECTION

1. Inspect:
   - Axle shaft

   Refer to "FRONT WHEEL—INSPECTION" section.
2. Inspect:
   - Wheel

   Refer to "FRONT WHEEL—INSPECTION" section.
3. Measure:
   - Wheel runout

   Refer to "FRONT WHEEL—INSPECTION" section.

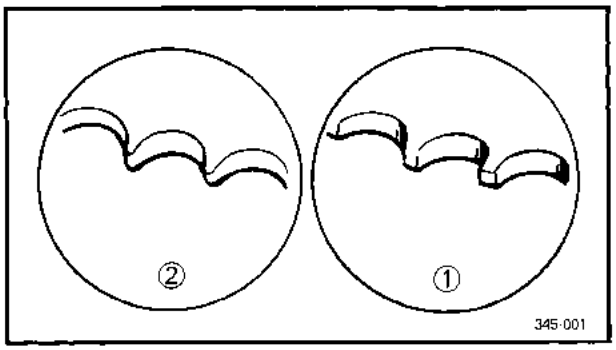
Rim Runout Limits:
Radial ①: 1.0 mm (0.04 in)
Lateral ②: 1.0 mm (0.04 in)

4. Check:
   • Wheel balance
   Refer to "FRONT WHEEL—INSPECTION" section.
5. Check:
   • Wheel bearings
   Refer to "FRONT WHEEL—INSPECTION" section.
6. Inspect:
   • Brake lining surface
   Refer to "FRONT WHEEL—INSPECTION" section.
7. Measure:
   • Brake lining thickness
   Refer to "FRONT WHEEL—INSPECTION" section.

Brake Lining Thickness:
4 mm (0.16 in)
Wear Limit:
2 mm (0.08 in)

8. Inspect:
   • Brake drum inner surface
   Refer to "FRONT WHEEL—INSPECTION" section.
9. Measure:
   • Brake drum inside diameter
   Refer to "FRONT WHEEL—INSPECTION" section.

Brake Drum Inside Diameter:
110 mm (4.33 in)
Wear Limit:
111 mm (4.37 in)



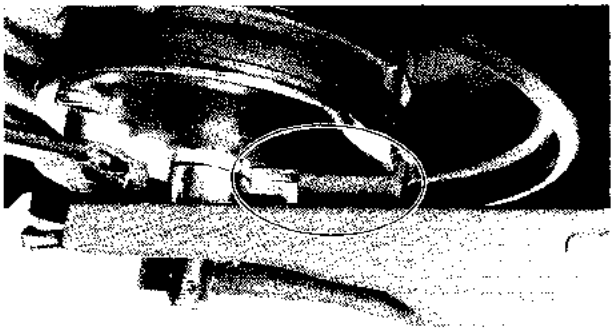
10. Inspect:
    • Sprocket
    Wear → Replace with the chain as a set.

① Good
② No good

INSTALLATION

Reverse the "REMOVAL" procedure.
Note the following points.

1. Apply:
   - Lithium soap base grease
     To the axle shaft and brake camshaft.
   - Wheel bearing grease
     To the bearings.



2. Install:
   - Rear wheel assembly
   - Brake shoe plate

NOTE:

Be sure the swingarm boss correctly engages the locating slot on the brake shoe plate.

3. Adjust:
   - Secondary drive chain slack
     Refer to the "DRIVE CHAIN SLACK ADJUSTMENT" section in the "CHAPTER 2".

Drive Chain Slack:
25 ~ 40 mm (0.98 ~ 1.57 in)

4. Adjust:
   - Rear brake
     Refer to the "REAR BRAKE ADJUSTMENT" section in the "CHAPTER 2".

Pedal Height:
15 mm (0.59 in)
Pedal Free Play:
20 ~ 30 mm (0.79 ~ 1.18 in)

5. Tighten:
   - Axle nut

Axle Nut:
90 Nm (9.0 m•kg, 65 ft•lb)

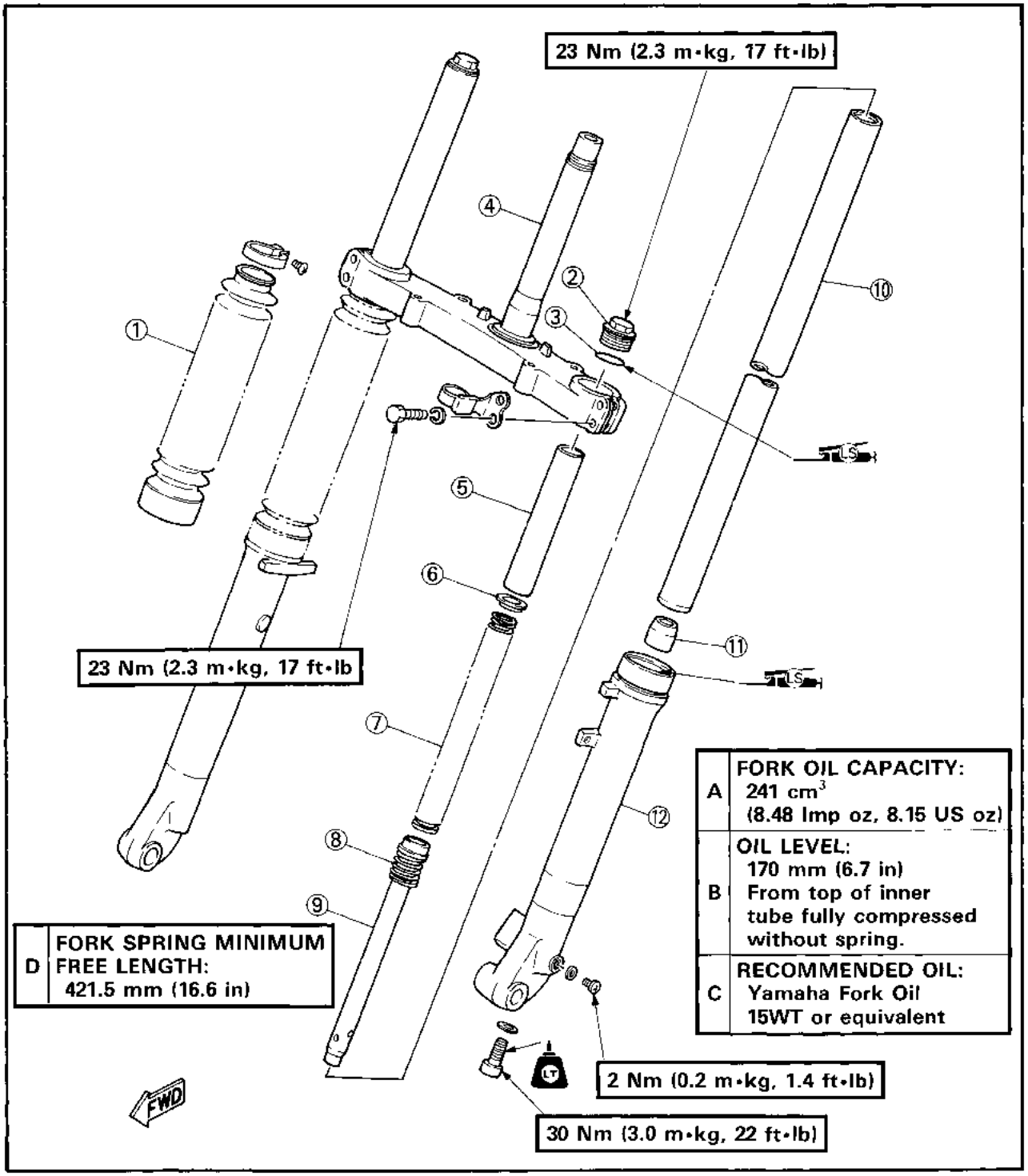
6. Install:
   - Cotter pin
     Bend the ends of the cotter pin.

WARNING:

Always use a new cotter pin.

FRONT FORK

① Fork boot
② Cap bolt
③ O-ring
④ Steering shaft
⑤ Collar
⑥ Spring seat
⑦ Fork spring
⑧ Rebound spring
⑨ Damper rod
⑩ Inner fork tube
⑪ Oil lock piece
⑫ Outer fork tube

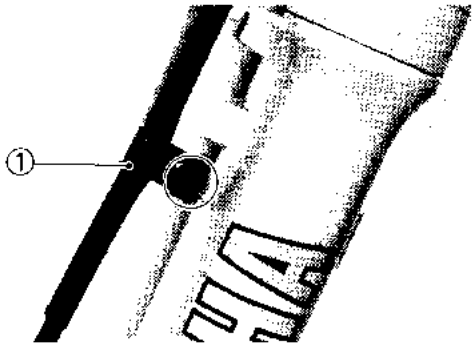


REMOVAL

1. Elevate the front wheel by placing a suitable stand under the engine.

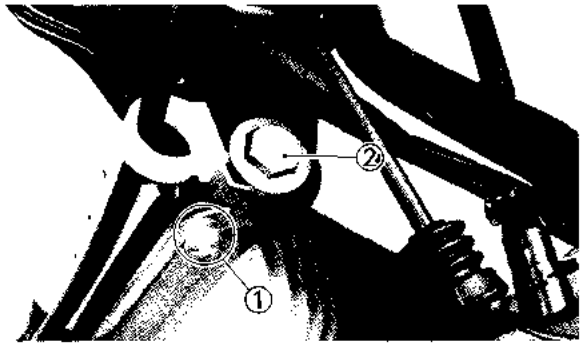
WARNING:

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

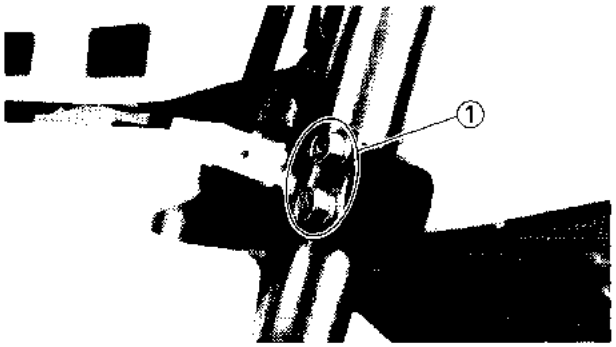


2. Remove:
   - Front wheel
     Refer to the "FRONT WHEEL—REMOVAL" section.

3. Remove:
   - Cable holder ①
     (at left front fork only)



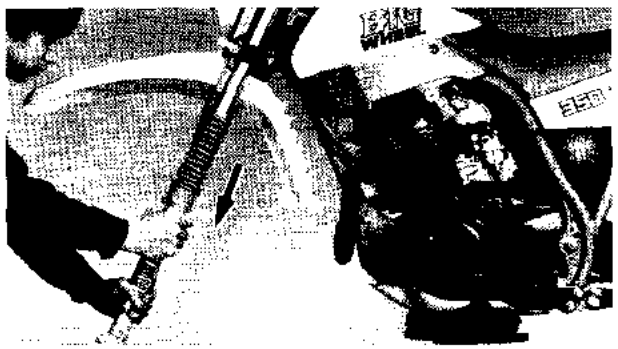
4. Loosen:
   - Pinch bolt ① (Handle crown)
   - Cap bolt ②



5. Loosen:
   - Pinch bolts ① (under bracket)

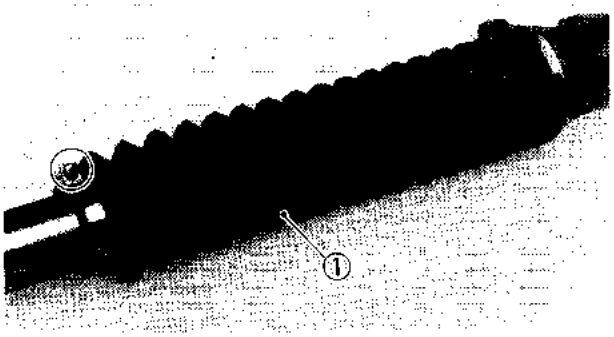
CAUTION:

Support the front fork before loosening the pinch bolts.

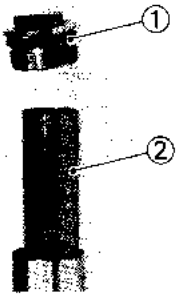


6. Remove:
   - Front fork

DISASSEMBLY

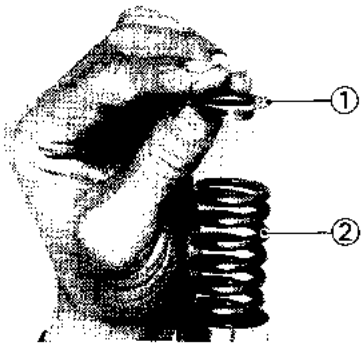


1. Remove:
   - Fork boot ①



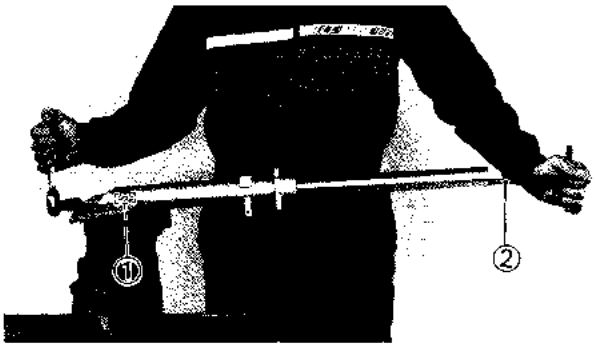
2. Remove:
   - Cap bolt ①
   - Collar ②

3. Compress the inner fork tube slowly.



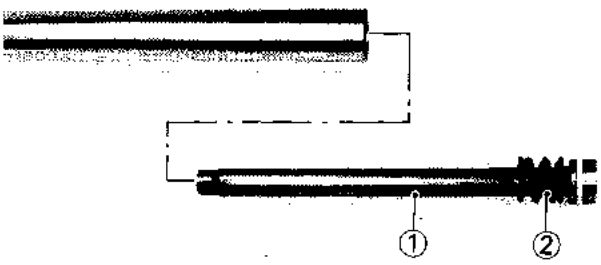
4. Remove:
   - Spring seat ①
   - Fork spring ②

5. Drain:
   - Fork oil

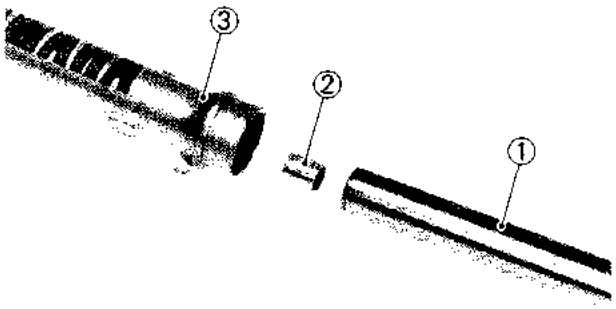


6. Remove:
   - Damper rod securing bolt

   Use the Damper Rod Holder ① (YM-33256) and T-Handle ② (YM-01326) to lock the damper rod.



7. Remove:
   - Damper rod ①
   - Rebound spring ②



8. Remove:
   - Inner fork tube ①
   - Oil lock piece ②
   - Outer fork tube ③

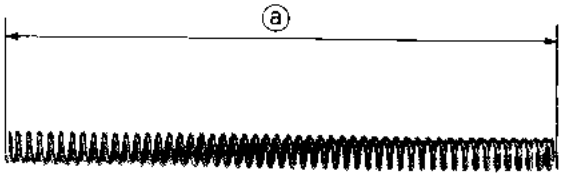
INSPECTION

1. Inspect:
   - Inner fork tube
   - Outer fork tube

   Scratches/Bends/Damage→Replace.

WARNING:

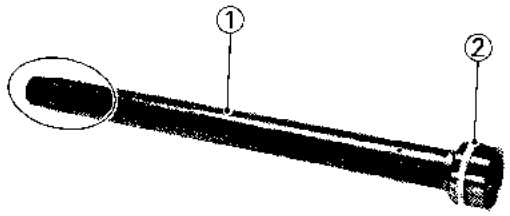
Do not attempt to straighten a bent fork tube as this may dangerously weaken the tube.



2. Measure:
   - Fork spring free length ⓐ

   Out of specification→Replace.

Fork Spring Free Length:
426.5 mm (16.8 in)
Limit:
421.5 mm (16.6 in)

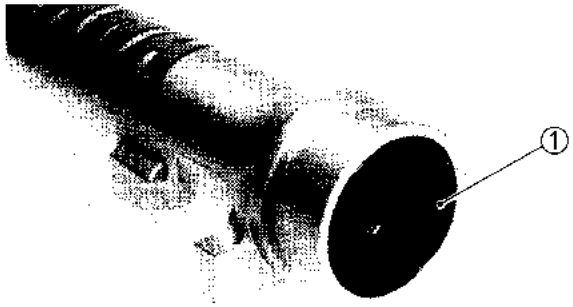


3. Inspect:
   - Damper rod ①
   - Piston ring ②

   Wear/Damage→Replace.

NOTE:

Blow out all oil passages with compressed air.



4. Inspect:
   - Oil seal ①

   Damage→Replace the outer fork tube assembly.

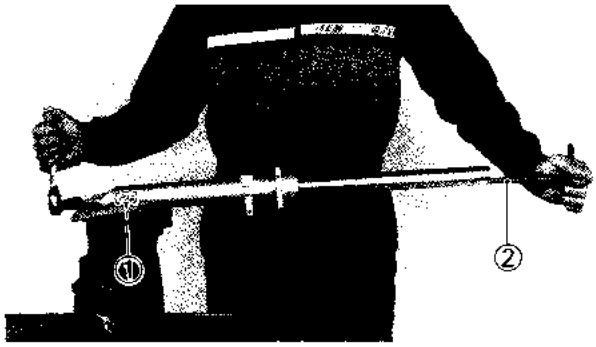
5. Inspect:
   • O-ring ① (Cap bolt)
   Damage → Replace.

ASSEMBLY

Reverse the "DISASSEMBLY" procedure.
Note the following points.

NOTE:

Be sure all components are clean before assembly.



1. Apply:
   • Lithium soap base grease
   To the oil seal and O-ring.
2. Tighten:
   • Damper rod securing bolt
   Use the Damper Rod Holder ① (YM-33256) and T-Handle ② (YM-01326) to lock the damper rod.

Damper Rod Securing Bolt:
30 Nm (3.0 m•kg, 22 ft•lb)
Use LOCTITE®.

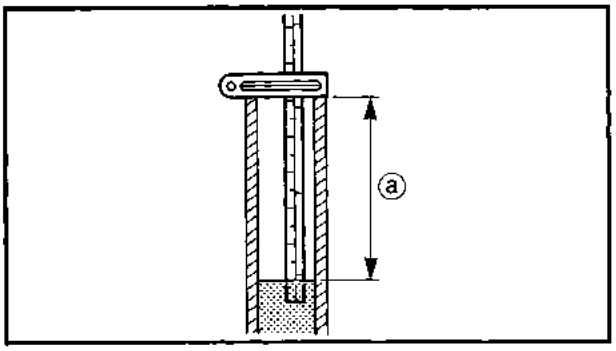
3. Supply:
   • Fork oil

Fork Oil Capacity:
241 cm³ (8.48 Imp oz, 8.15 US oz)
Recommended Oil:
Yamaha Fork Oil 15WT or equivalent

NOTE:

After supplying the fork oil, pump the front fork up and down to distribute the oil.

5

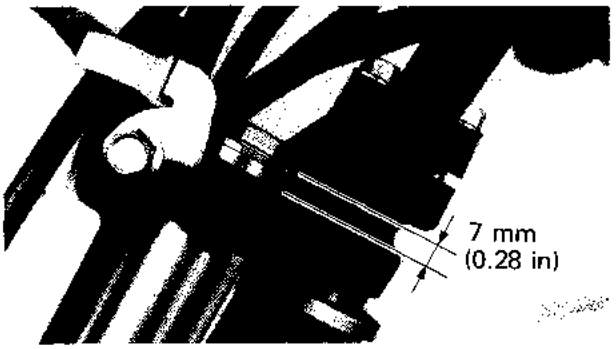


4. Measure:
   • Oil level ⓐ
   Out of specification→Add or reduce oil.

Oil Level:
170 mm (6.7 in)
From the top of the inner fork tube.

NOTE:
- When measuring the oil level, fully compress the inner fork tube without fork spring.
- Place the front fork on upright position.

5. Before installing the front fork, temporary tighten the cap bolt.



INSTALLATION

Reverse the "REMOVAL" procedure.
Note the following points.

1. Install:
   • Front fork
   Temporary tighten the pinch bolts.

NOTE:
Hold the inner tube with its top 7 mm (0.28 in) above the top of the steering crown.

2. Tighten:
   • Pinch bolts (under bracket)

Pinch Bolts (Under Bracket):
23 Nm (2.3 m•kg, 17 ft•lb)

NOTE:
Do not tighten the pinch bolt (Handle crown).

3. Tighten:
   - Cap bolt
   - Pinch bolt (Handle crown)

Cap Bolt:
23 Nm (2.3 m·kg, 17 ft·lb)
Pinch Bolt (Handle Crown):
23 Nm (2.3 m·kg, 17 ft·lb)

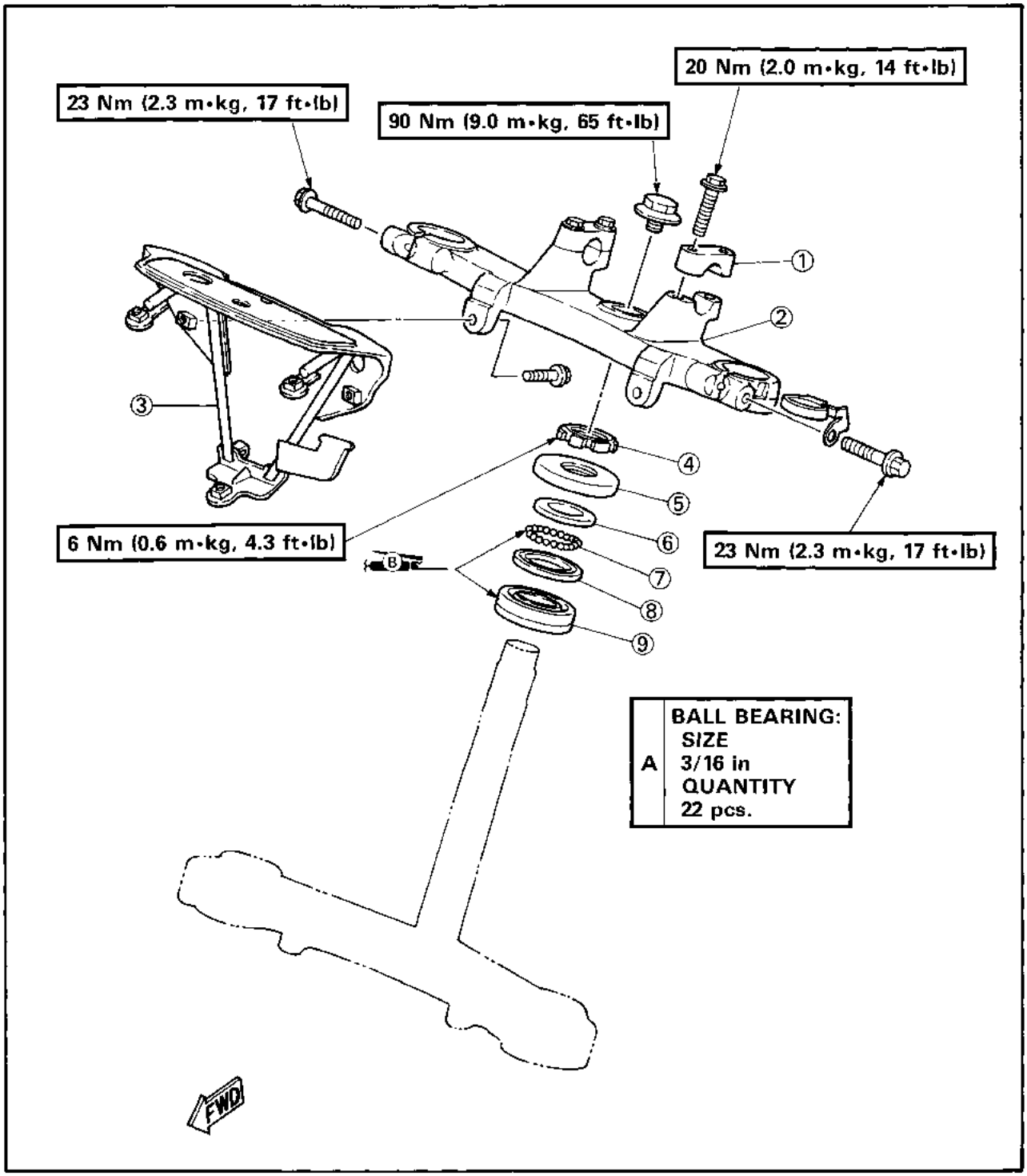
4. Install:
   - Front wheel

   Refer to the "FRONT WHEEL—INSTALLATION" section.
5. Adjust:
   - Front brake

   Refer to the "FRONT BRAKE ADJUSTMENT" section in the "CHAPTER 2".

STEERING HEAD

① Handlebar holder
② Handle crown
③ Headlight stay
④ Ring nut
⑤ Bearing race cover
⑥ Bearing race
⑦ Ball bearing
⑧ Bearing race
⑨ Bearing



REMOVAL

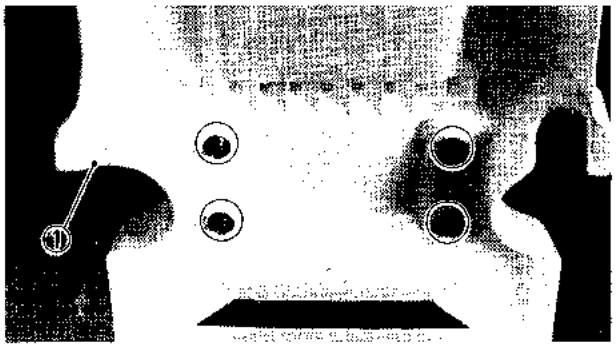
1. Elevate the front wheel by placing a suitable stand under the engine.

WARNING:

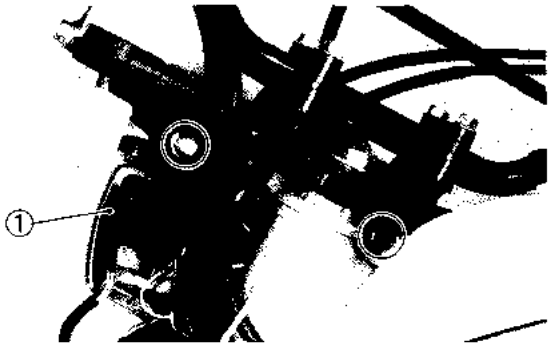
Support the machine securely so there is no danger of it falling over.

2. Remove:
   - Front wheel
   Refer to the "FRONT WHEEL—REMOVAL" section.

3. Remove:
   - Front forks
   Refer to the "FRONT FORK—REMOVAL" section.

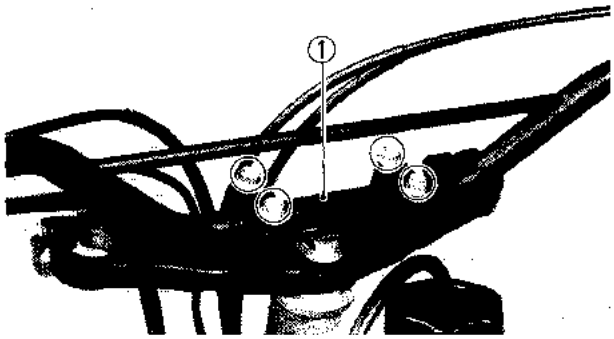


4. Remove:
   - Front fender ①

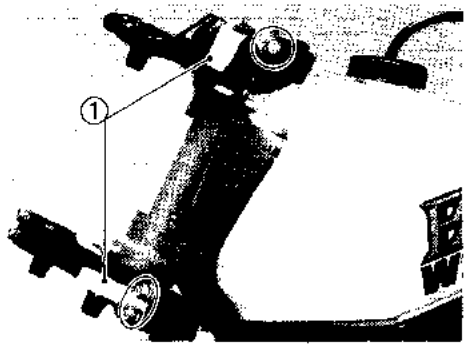


5. Remove:
   - Headlight unit ①

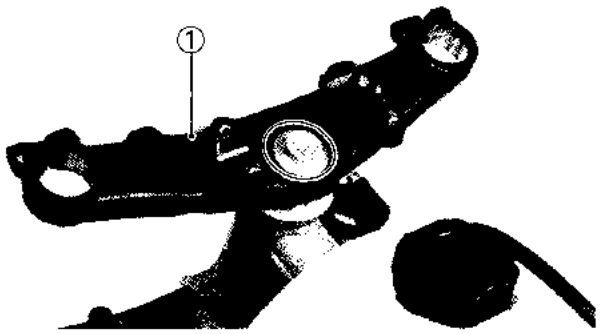
6. Disconnect:
   - Main switch leads
   - Headlight leads
   - "NEUTRAL" indicator light leads
   - Starting circuit cut-off relay leads



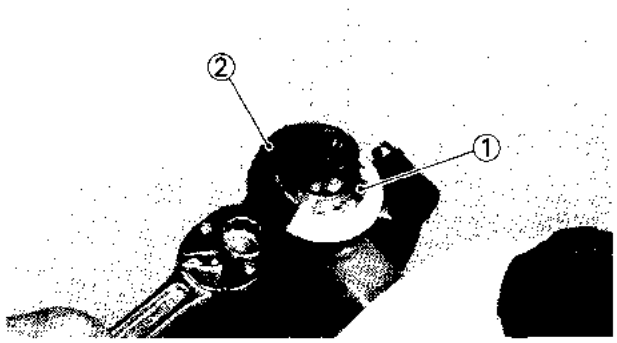
7. Remove:
   • Handlebar ①



8. Remove:
   • Cable holders ①



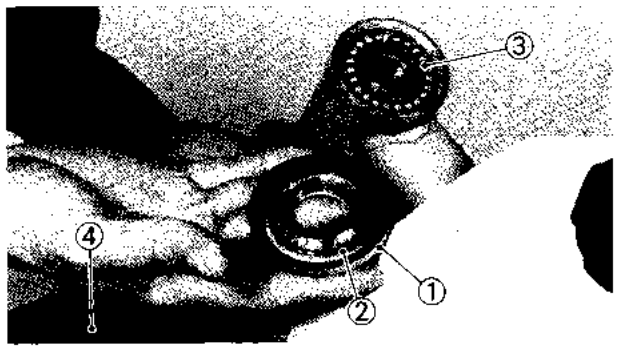
9. Remove:
   • Handle crown ①



10. Remove:
    • Ring nut ①
      Use a Ring Nut Wrench ② (YU-33975).

WARNING:

Support the under bracket so that it may not fall down.



11. Remove:
    • Bearing race cover ①
    • Bearing race ②
    • Ball bearings ③
    • Under bracket ④

INSPECTION

1. Wash the bearings in a solvent.

2. Inspect:
   - Bearings
     Pitting/Damage→Replace.
   - Bearing race
     Pitting/Damage→Replace.

NOTE:
Always replace ball bearing and race as a set.

INSTALLATION

Reverse the "REMOVAL" procedure.
Note the following points.

1. Apply:
   - Grease
     To the bearings (upper and lower).

	Wheel Bearing Grease

2. Install:
   - Under bracket

CAUTION:
Hold the under bracket until it is secured.

3. Tighten:
   - Ring nut

Ring nut tightening steps:
- Tighten the ring nut using the Ring Nut Wrench (YU-33975).

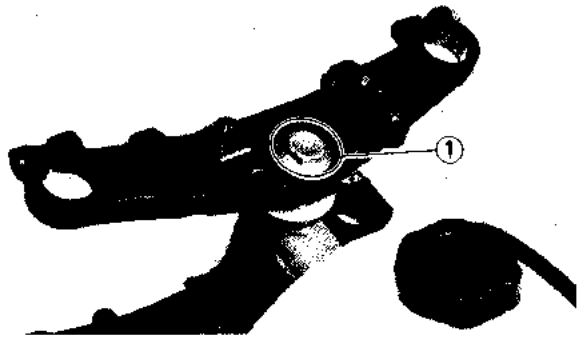
NOTE:
Set the torque wrench to the ring nut wrench so that they form a right angle.

	Ring Nut (Initial Tightening): 37 Nm (3.7 m•kg, 27 ft•lb)

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

WARNING:
Avoid over-tightening.

	Ring Nut (Final Tightening): 6 Nm (0.6 m•kg, 4.3 ft•lb)

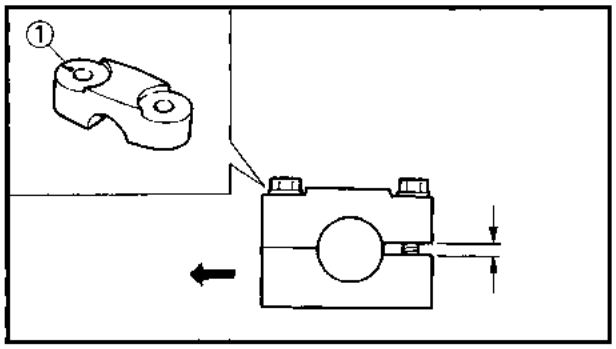


4. Install:
   • Handle crown
   Temporary tighten the steering fitting bolt ①.

5. Install:
   • Front forks
   Refer to the "FRONT FORK—INSTALLATION" section.

6. Tighten:
   • Steering fitting bolt

	Steering Fitting Bolt: **90 Nm (9.0 m•kg, 65 ft•lb)**



7. Install:
   • Handlebar

	Bolts (Handlebar Holder): **20 Nm (2.0 m•kg, 14 ft•lb)**

NOTE:

The upper handlebar holder should be installed with the punched mark ① forward.

CAUTION:

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

8. Install:
   • Front fender

	Bolts (Front Fender): **5 Nm (0.5 m•kg, 3.6 ft•lb)**

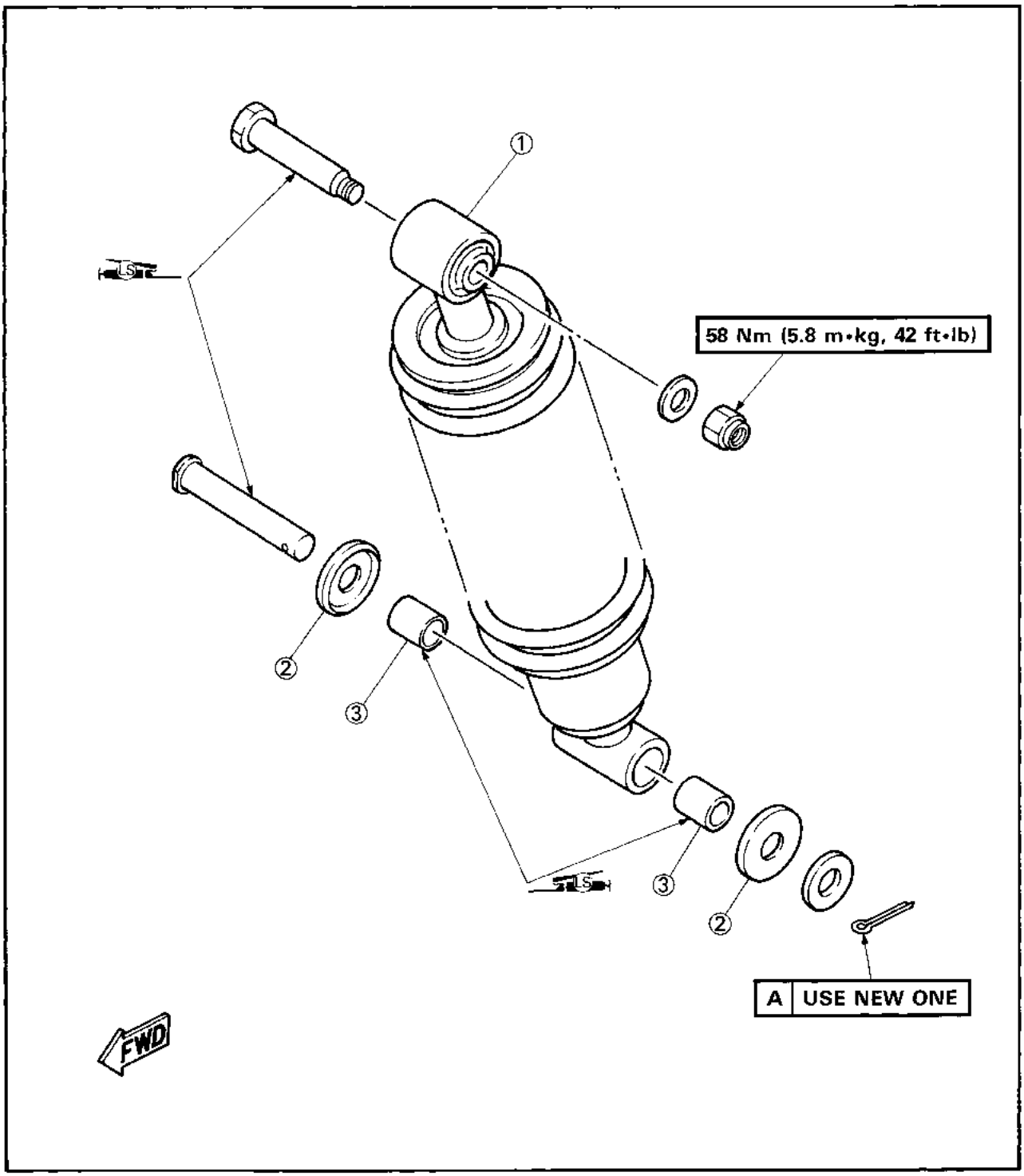
9. Install:
   • Front wheel
   Refer to the "FRONT WHEEL—INSTALLATION" section.

10. Adjust:
    • Front brake
    Refer to the "FRONT BRAKE ADJUSTMENT" section in the "CHAPTER 2".

REAR SHOCK ABSORBER

(MONOCROSS SUSPENSION "DE CARBON" SYSTEM)

① Rear shock absorber
② Thrust cover
③ Bush



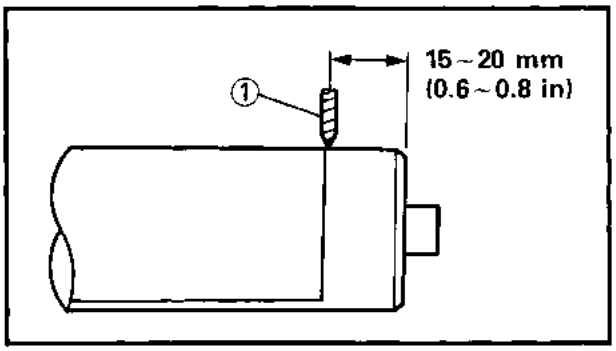
REAR SHOCK ABSORBER

HANDLING NOTES

WARNING:

This shock absorber contains highly pressurized nitrogen gas. Read and understand the following information before handling the shock absorber. The manufacturer cannot be held responsible for property damage or personal injury that may result from improper handling.

- **Do not tamper with or attempt to open the cylinder assembly.**
- **Do not subject shock absorber to an open flame or other high heat source. This may cause the unit to explode due to excessive gas pressure.**
- **Do not deform or damage the cylinder in any way. Cylinder damage will result in poor damping performance.**
- **Take care not to scratch the contact surface of the piston rod with the cylinder; or oil could leak out.**
- **When scrapping the shock absorber, follow the instructions on disposal.**



NOTES ON DISPOSAL

Shock absorber diaposal steps:

Gas pressure must be released before disposing of shock absorber. To do so, drill ① a 2 ~ 3 mm (0.08 ~ 0.12 in) hole through the cylinder wall at a point 15 ~ 20 mm (0.6 ~ 0.8 in) from the bottom end of the gas chamber.

CAUTION:

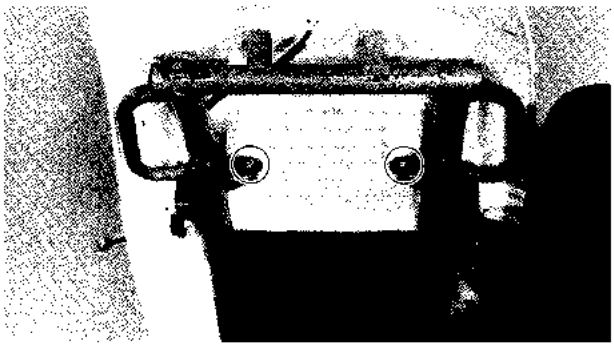
Wear eye protection to prevent eye damage from escaping gas and/or metal chips.

REMOVAL

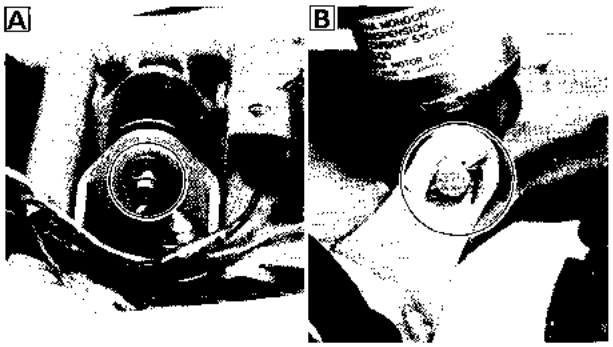
1. Place a suitable stand under the engine.

WARNING:

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



2. Remove:
   - Seat



3. Remove:
   - Rear shock absorber

A Upper
B Lower

INSPECTION

1. Inspect:
   - Shock absorber rod
     Bends/Damage → Replace absorber assembly.
   - Shock absorber
     Oil leaks → Replace absorber assembly.
     Gas leaks → Replace absorber assembly.
   - Spring
     Fatigue → Replace absorber assembly.

5

INSTALLATION

Reverse the "REMOVAL" procedure.

Note the following points.

1. Apply:
   - Lithium soap base grease

   To the bushes, thrust covers and pivoting points.

2. Tighten:
   - Nut (Rear shock absorber)

	**Nut (Rear Shock Absorber): 58 Nm (5.8 m•kg, 42 ft•lb)**

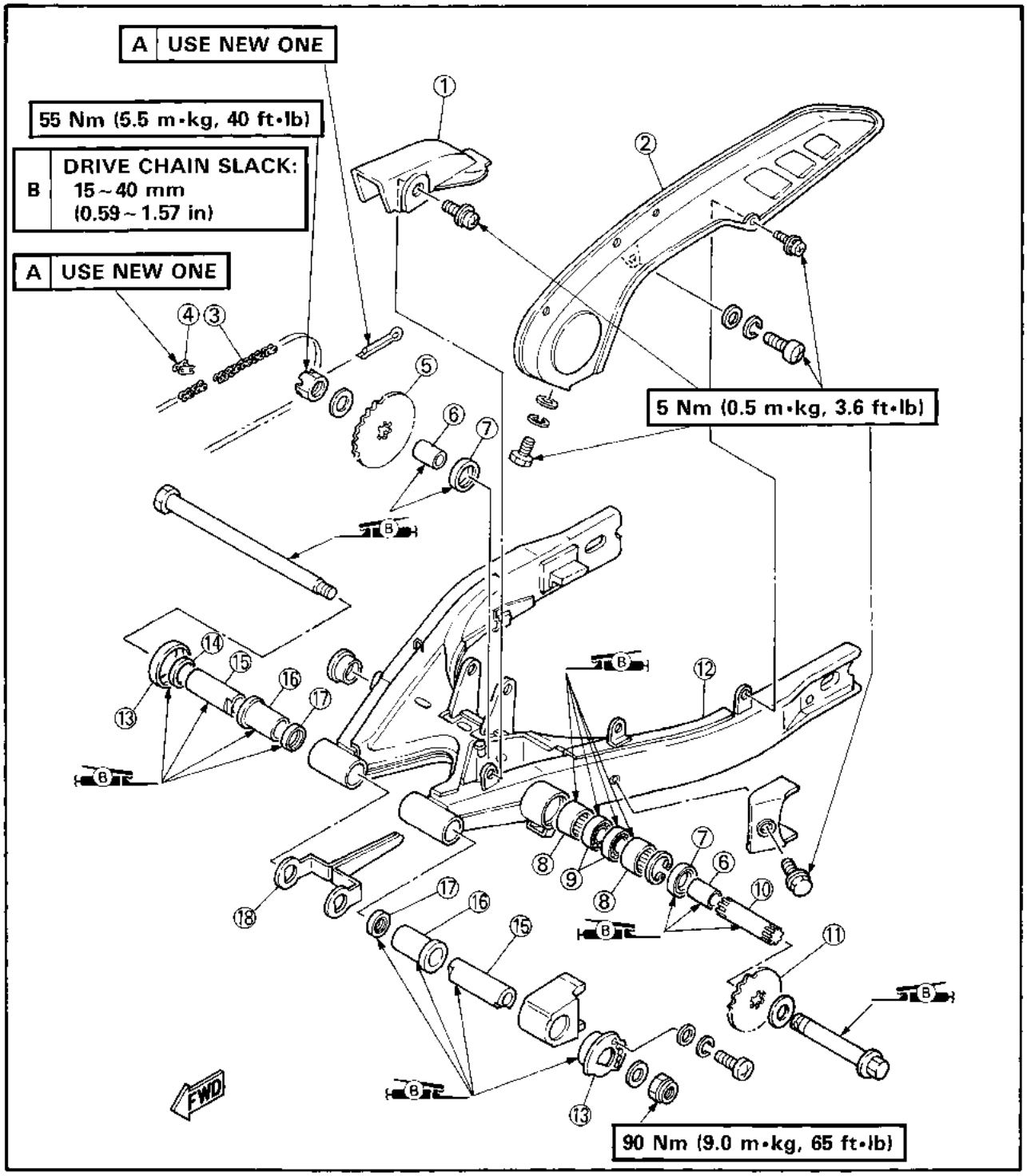
3. Install:
   - Cotter pin

WARNING:

Always use a new cotter pin.

SWINGARM, MIDDLE SPROCKET SHAFT AND DRIVE CHAIN

① Chain guard
② Chain guard
③ Primary drive chain
④ Joint
⑤ Driven sprocket
⑥ Collar
⑦ Oil seal
⑧ Bearing
⑨ Bearing
⑩ Middle sprocket shaft
⑪ Drive sprocket
⑫ Swingarm
⑬ Thrust cover
⑭ Shim
⑮ Bush
⑯ Bush (Flange type)
⑰ Oil seal
⑱ Lever



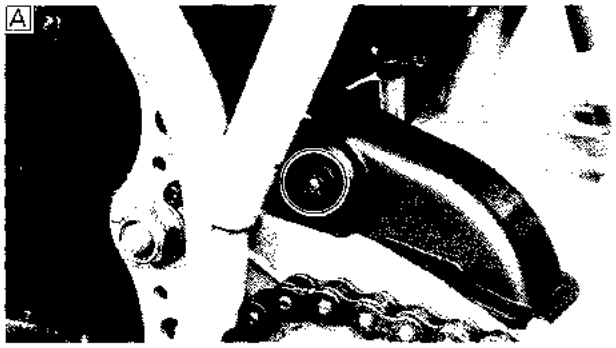
SWINGARM, MIDDLE SPROCKET SHAFT AND DRIVE CHAIN

REMOVAL

1. Place a suitable stand under the engine.

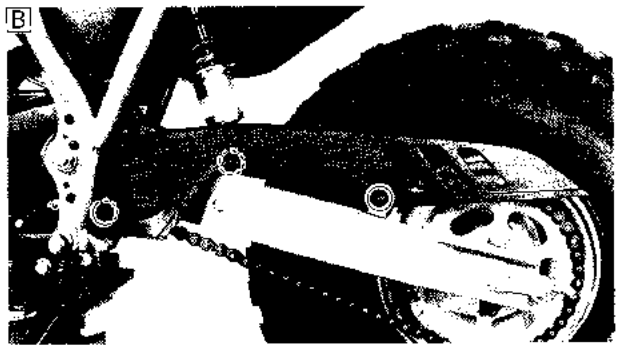
WARNING:

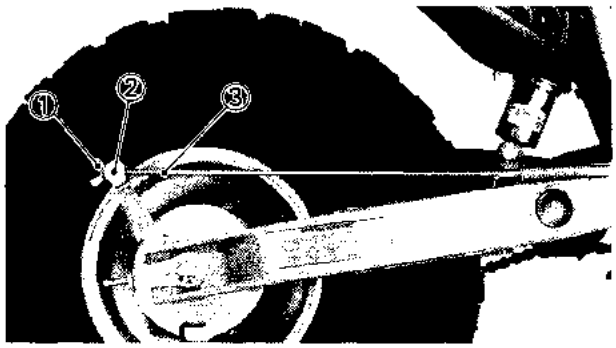
Securely support the machine so there is no danger of it falling over.



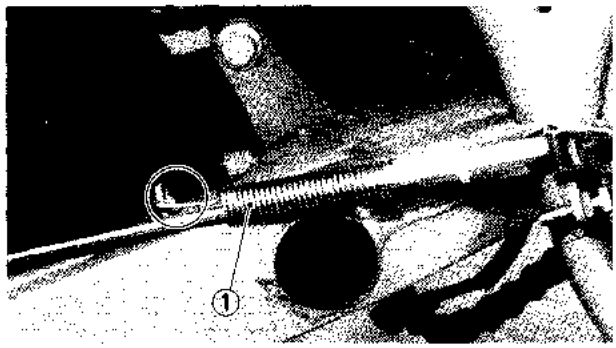
2. Remove:
   - Chain guards

A For primary drive chain
B For secondary drive chain

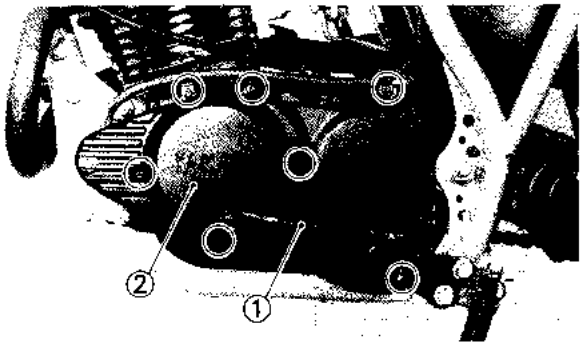




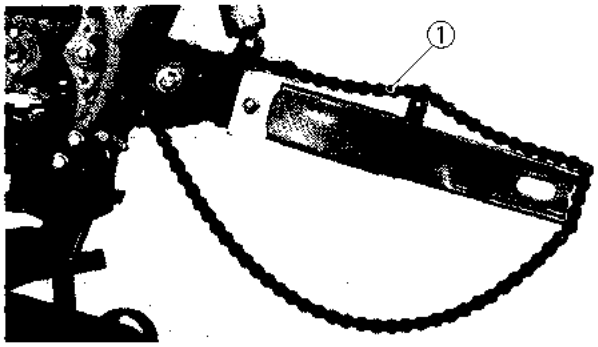
3. Remove:
   - Adjuster ① (Rear brake)
   - Pin ②
   - Spring ③



4. Unhook:
   - Spring ①

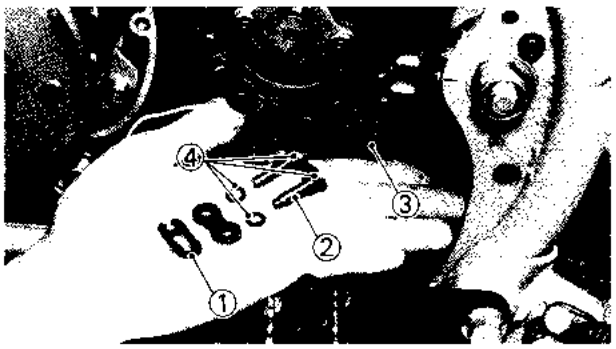


5. Remove:
   - Change pedal ①
   - Crankcase cover ②
   - Gasket (Crankcase cover)

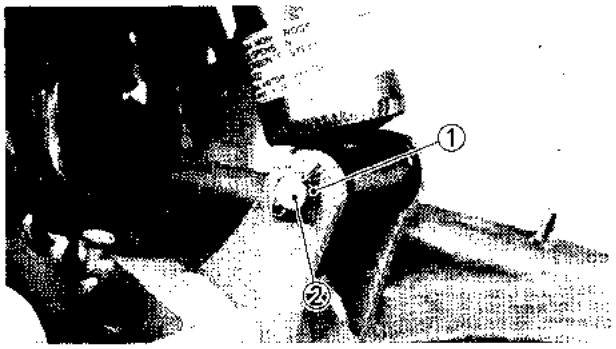


6. Remove:
   - Rear wheel
     Refer to the "REAR WHEEL—REMOVAL" section.

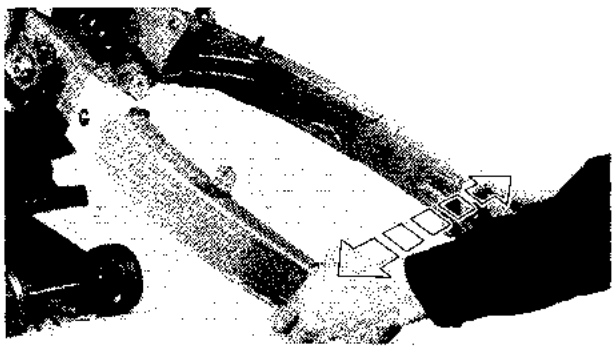
7. Remove:
   - Secondary drive chain ①



8. Remove:
   - Clip ①
   - Joint ②
   - Primary drive chain ③
   - O-rings ④



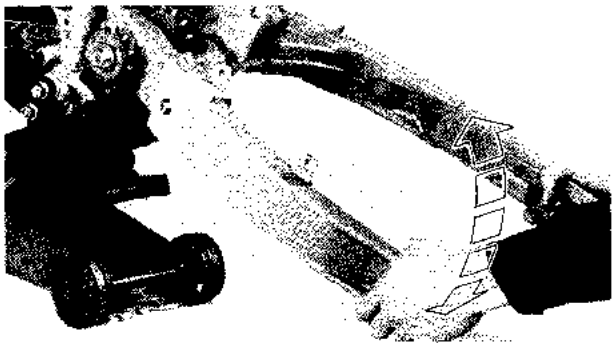
9. Remove:
   - Cotter pin ①
   - Shaft ②



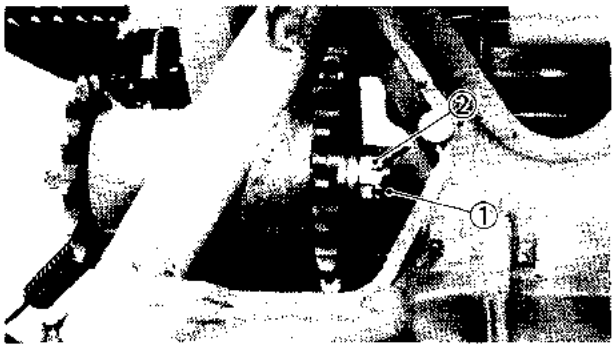
10. Check:
    - Swingarm (side play)
      Over specified limit→Replace bush or adjust side clearance.
      Move swingarm from side to side.

Side Play (At End of Swingarm):
1.0 mm (0.04 in)

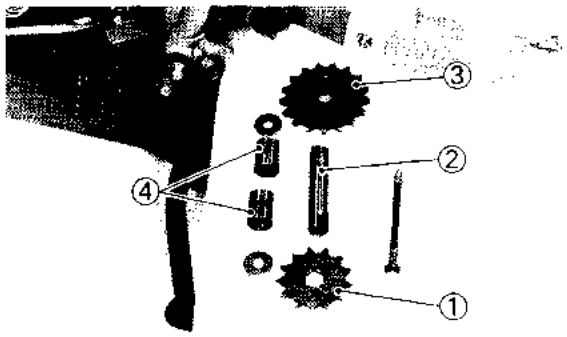
SWINGARM, MIDDLE SPROCKET SHAFT AND DRIVE CHAIN



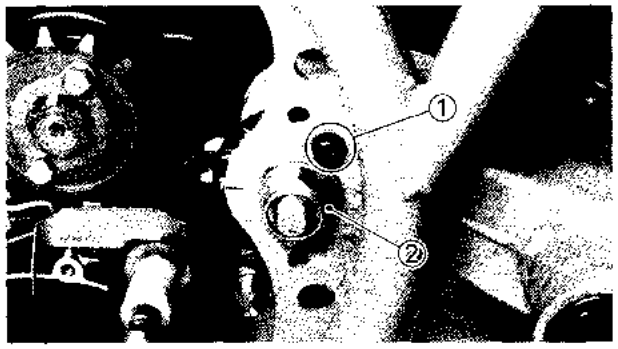
11. Check:
    - Swingarm (Vertical movement)
      Move swingarm up and down.
      Tightness/Binding/Rough Spots→Replace bush.



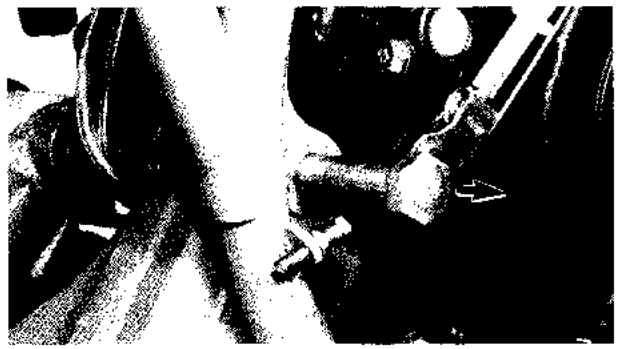
12. Remove:
    - Cotter pin ①
    - Nut ②



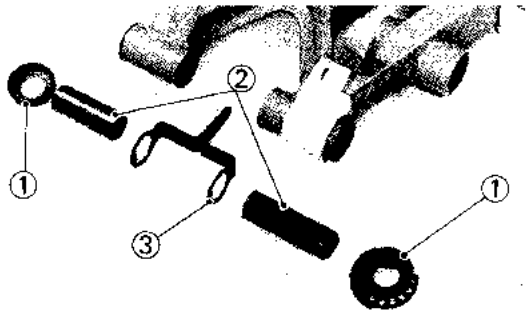
13. Remove:
    - Drive sprocket ①
    - Middle sprocket shaft ②
    - Driven sprocket ③
    - Collars ④



14. Remove:
    - Stopper screw ①
    - Axle nut ②



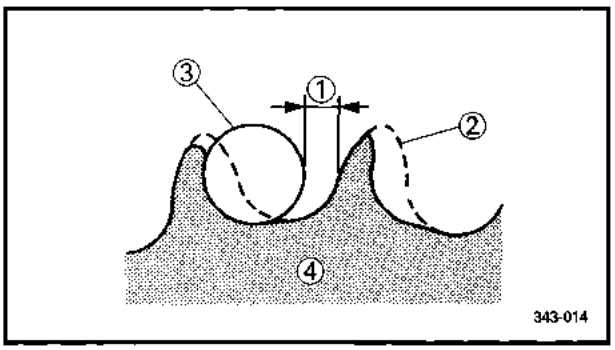
15. Remove:
    - Axle shaft
    - Swingarm



16. Remove:
    - Thrust covers ①
    - Bushes ②
    - Lever ③

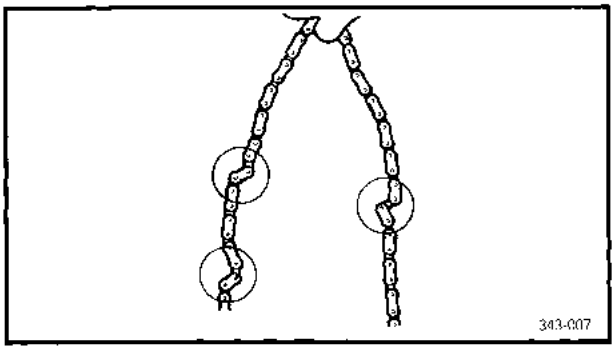
INSPECTION

1. Inspect:
    - Thrust covers and oil seals
      Damage → Replace.
    - Bushings
      Scratches/Damage → Replace.
    - Bearings
      Pitting/Damage → Replace.



2. Inspect:
    - Sprocket
      Wear → Replace the sprockets and chain as a set.

① 1/4 tooth ② Correct ③ Roller ④ Sprocket

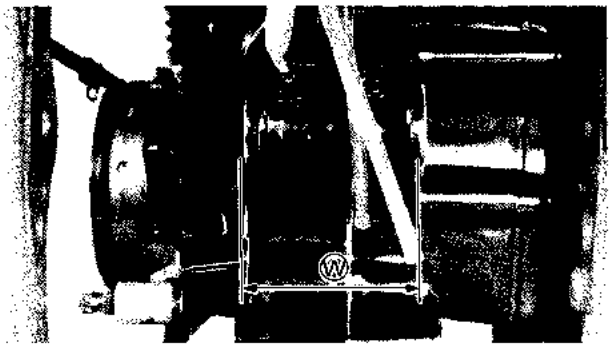


3. Inspect:
    - Drive chain
      Stiff → Lubricate or replace.

NOTE:

For the primary drive chain checking, this method is not available.

    - Side plates/Rollers
      Damage/Play → Replace.

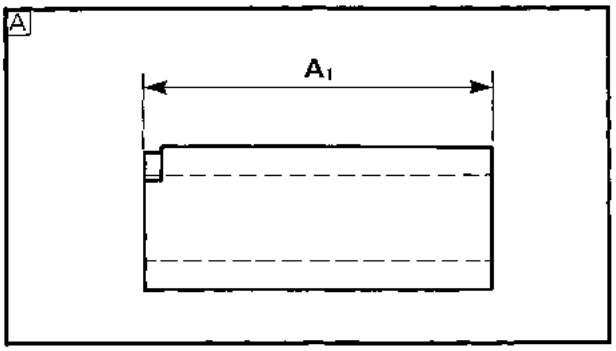


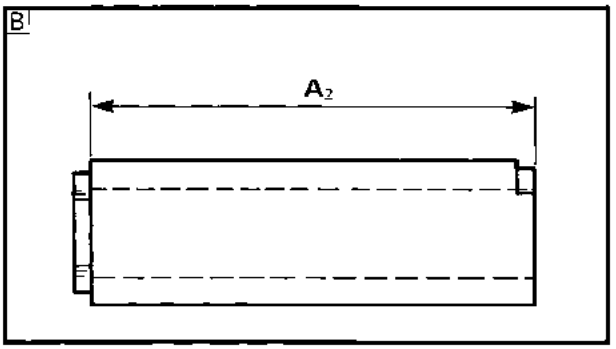
SIDE CLEARANCE ADJUSTMENT

1. Measure:
    - Engine mounting boss width "W"

5

SWINGARM, MIDDLE SPROCKET SHAFT AND DRIVE CHAIN



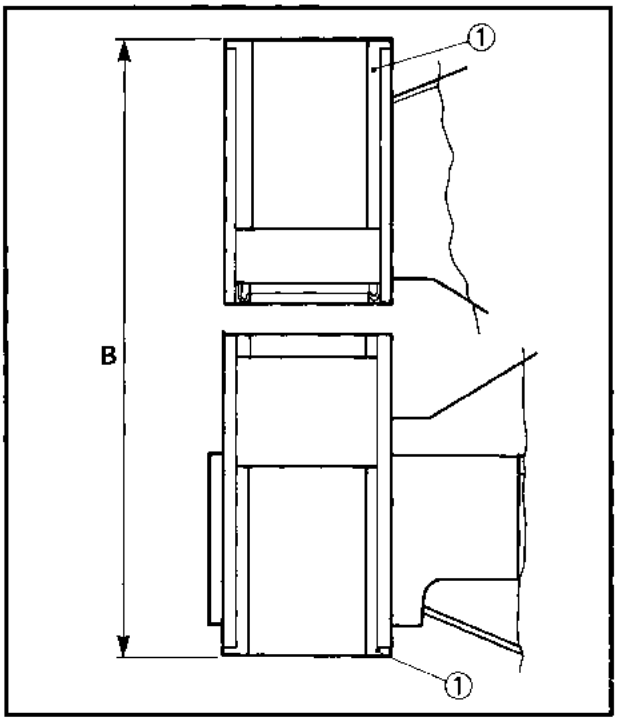


2. Measure:
   - Bush length "A_1" and "A_2"

   Out of specification → Replace bushes.

Specified Length:
A_1: 65.3 ~ 65.5 mm (2.571 ~ 2.579 in)
A_2: 79.7 ~ 79.9 mm (3.138 ~ 3.146 in)

A Bush (Right hand)
B Bush (Left hand)



3. Install:
   - Bush (1) (Flange type)

   To swingarm.

4. Measure:
   - Length "B"

5. Calculate:
   - Swingarm side clearance "C"

   Out of specification → Adjust side clearance using shim.
   By using formula given below.

$$C = (A_1 + A_2 + W) - B$$

Side Clearance "C":
0.4 ~ 0.7 mm (0.016 ~ 0.028 in)

Example:
a. If the bushing length A_1, A_2 and the engine mounting boss width "W" are below.
A_1 .....65.4 mm (2.575 in)
A_2 .....79.8 mm (3.142 in)
W.....74.0 mm (2.913 in)
b. If the length B is below.
B .....218 mm (8.583 in)

Side Clearance "C"
= (65.4 + 79.8 + 74.0) − 218.0
= 1.2 mm (0.047 in)

Then, install the two shims.

Shim Thickness:
0.3 mm (0.012 in)

NOTE:
Install the shim(s) to the right side only.

INSTALLATION

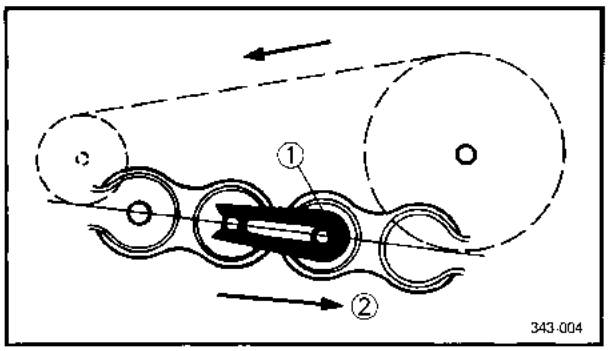
Reverse the "REMOVAL" procedure.
Note the following points.

1. Apply:
   •Wheel bearing grease
   To the bushes, oil seals and bearings.

2. Tighten:
   •Nut (Middle sprocket shaft)

Nut (Middle Sprocket Shaft):
55 Nm (5.5 m•kg, 40 ft•lb)

3. Install:
   • Swingarm
   Temporary tighten the axle nut.



4. Install:
   • Primary drive chain

NOTE:

When installing the chain, make certain the closed end of the master link clip ① is facing direction of rotation ②.

WARNING:

Use the new clip and joint as a set.

5. Adjust:
   • Primary drive chain slack
   Refer to the "DRIVE CHAIN SLACK ADJUSTMENT" section in the "CHAPTER 2".

Drive Chain Slack:
15 ~ 40 mm (0.59 ~ 1.57 in)

6. Tighten:
   • Nut (Pivot shaft)

Nut (Pivot Shaft):
90 Nm (9.0 m•kg, 65 ft•lb)

7. Install:
   • Secondary drive chain
   • Rear wheel
   Refer to the "REAR WHEEL—INSTALLATION" section.

8. Adjust:
   • Secondary drive chain slack
   Refer to the "DRIVE CHAIN SLACK ADJUSTMENT" section in the "CHAPTER 2".

Drive Chain Slack:
25 ~ 40 mm (0.98 ~ 1.57 in)

9. Tighten:
   • Axle nut (Rear wheel)

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

10. Install:
    • Cotter pins

WARNING:

Use a new cotter pin.

11. Tighten:
    • Bolt (Chain guard)
    • Screws (Chain guard)

	**Bolt (Chain Guard):** **5 Nm (0.5 m•kg, 3.6 ft•lb)** **Screws (Chain Guard):** **5 Nm (0.5 m•kg, 3.6 ft•lb)**

12. Adjust:
    • Rear brake pedal height
    • Rear brake pedal free play
    Refer to the "REAR BRAKE ADJUSTMENT" section in the "CHAPTER 2".

	**Pedal Height:** **15 mm (0.59 in)** **Free Play:** **20 ~ 30 mm (0.8 ~ 1.2 in)**

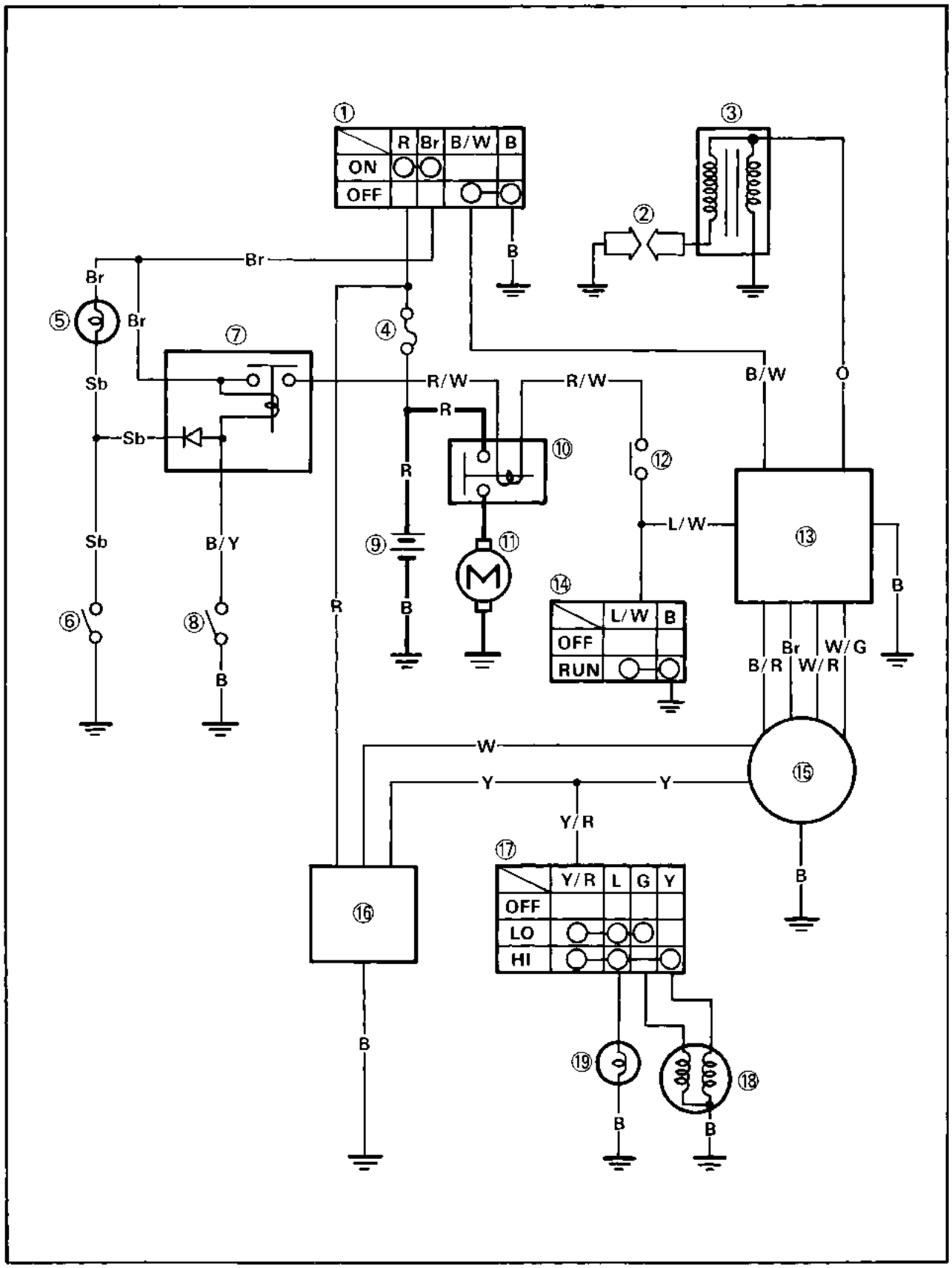
13. Tighten:
    • Screws (Crankcase cover)
    • Bolt (Change pedal)

	**Screws (Crankcase Cover):** **7 Nm (0.7 m•kg, 5.1 ft•lb)** **Bolt (Change Pedal):** **10 Nm (1.0 m•kg, 7.2 ft•lb)**

CHAPTER 6
ELECTRICAL

ELECTRICAL

BW350T CIRCUIT DIAGRAM



① Main switch
② Spark plug
③ Ignition coil
④ Fuse
⑤ "NEUTRAL" indicator light
⑥ Neutral switch
⑦ Starting circuit cut-off relay
⑧ Clutch switch
⑨ Battery
⑩ Starter relay
⑪ Starter motor
⑫ "START" switch
⑬ C.D.I. unit
⑭ "ENGINE STOP" switch
⑮ C.D.I. magneto
⑯ Rectifier/Regulator
⑰ "LIGHTS" switch
⑱ Headlight
⑲ Taillight

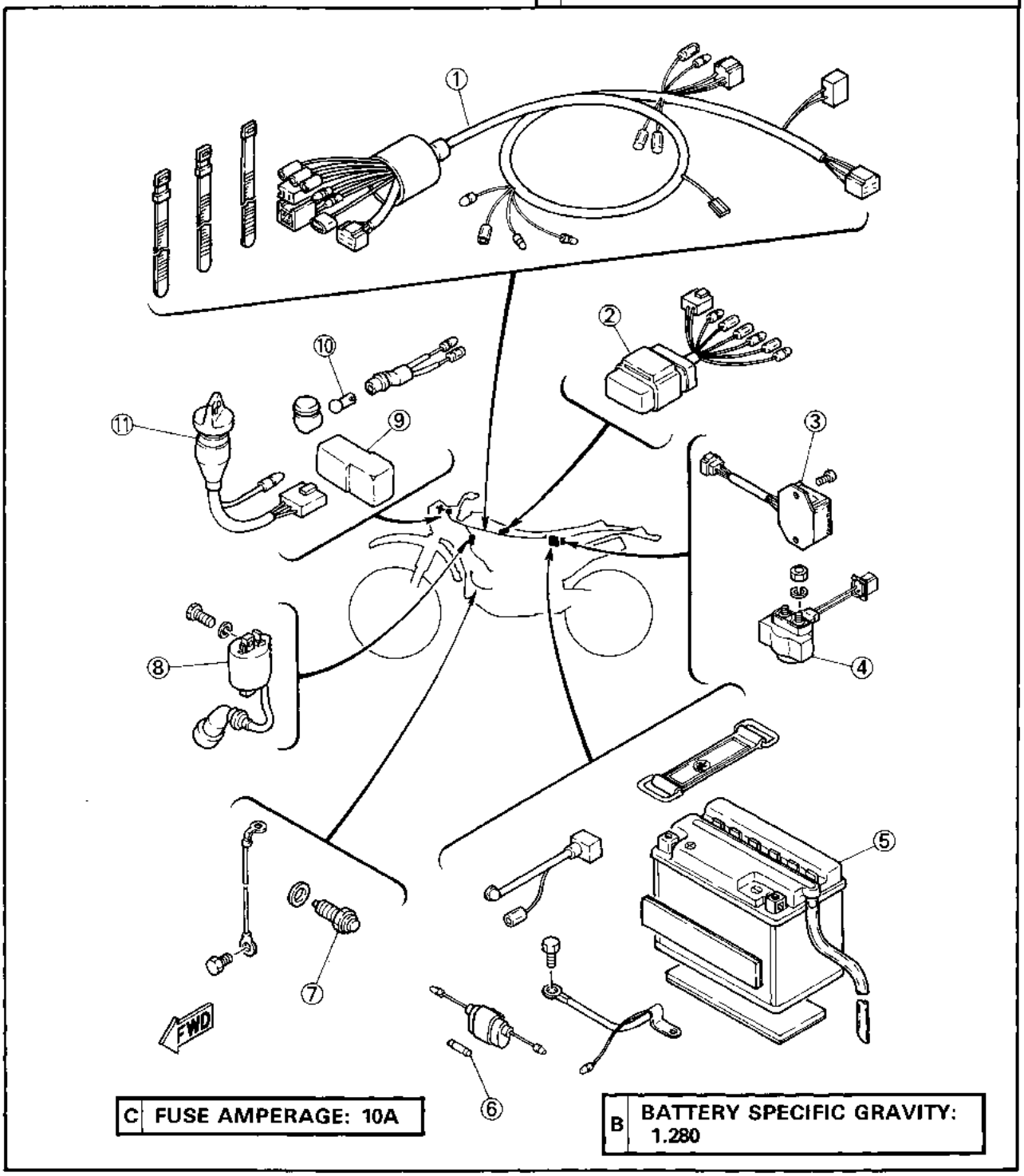
COLOR CODE

B	Black	B/R	Black/Red
Br	Brown	B/W	Black/White
G	Green	B/Y	Black/Yellow
L	Blue	L/W	Blue/White
O	Orange	R/W	Red/White
R	Red	W/G	White/Green
Sb	Sky blue	W/R	White/Red
W	White	Y/R	Yellow/Red
Y	Yellow		

ELECTRICAL COMPONENTS

① Wire harness
② C.D.I. unit
③ Rectifier/Regulator
④ Starter relay
⑤ Battery
⑥ Fuse
⑦ Neutral switch
⑧ Ignition coil
⑨ Starting circuit cut-off relay
⑩ "NEUTRAL" indicator light
⑪ Main switch

A	**IGNITION COIL RESISTANCE:** **PRIMARY COIL:** **0.72 ~ 1.08Ω at 20°C (68°F)** **SECONDARY COIL:** **5.68 ~ 8.52kΩ at 20°C (68°F)**



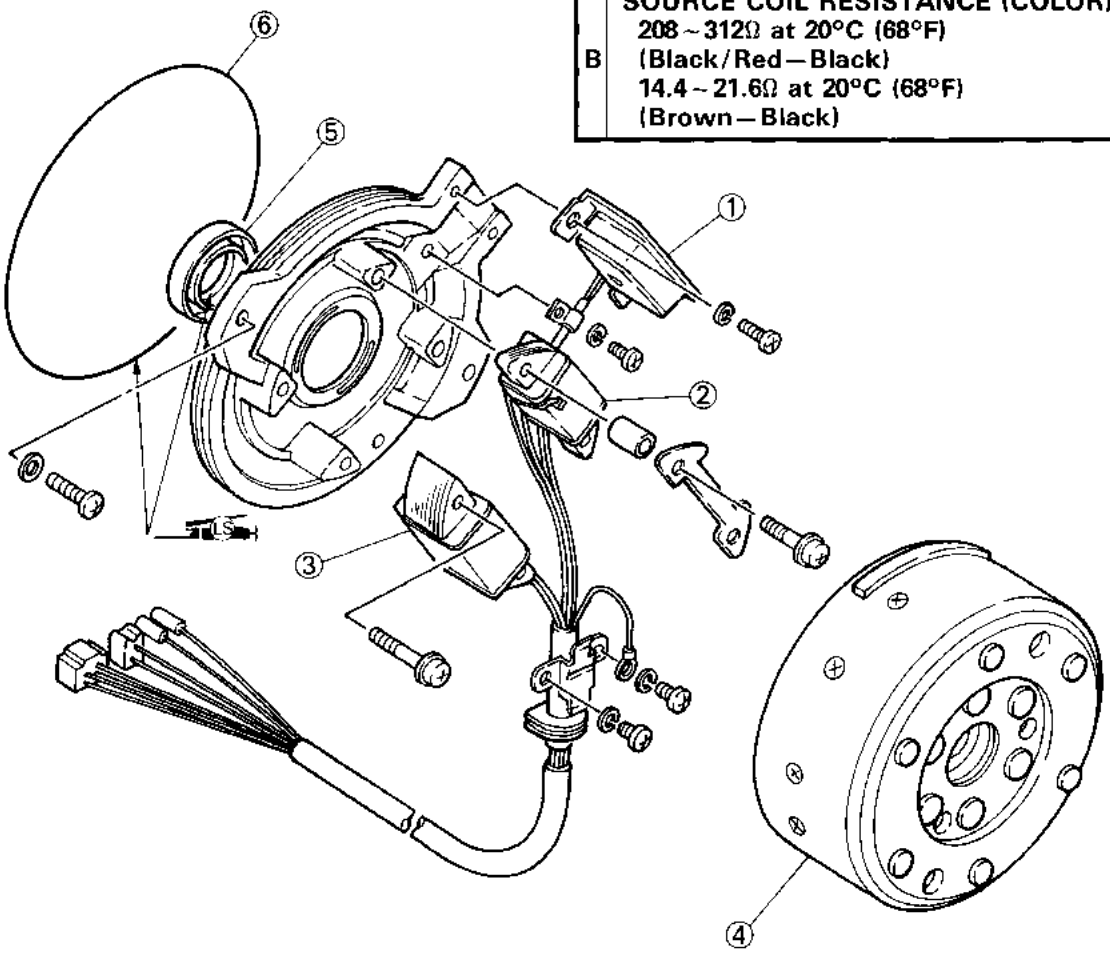
C	**FUSE AMPERAGE: 10A**

B	**BATTERY SPECIFIC GRAVITY:** **1.280**

① Pickup coil
② Source coil
③ Lighting coil and charging coil
④ C.D.I. magneto
⑤ Oil seal
⑥ O-ring

A	PICKUP COIL RESISTANCE (COLOR): 640 ~ 960Ω at 20°C (68°F) (White/Green — White/Red)

B	SOURCE COIL RESISTANCE (COLOR): 208 ~ 312Ω at 20°C (68°F) (Black/Red — Black) 14.4 ~ 21.6Ω at 20°C (68°F) (Brown — Black)



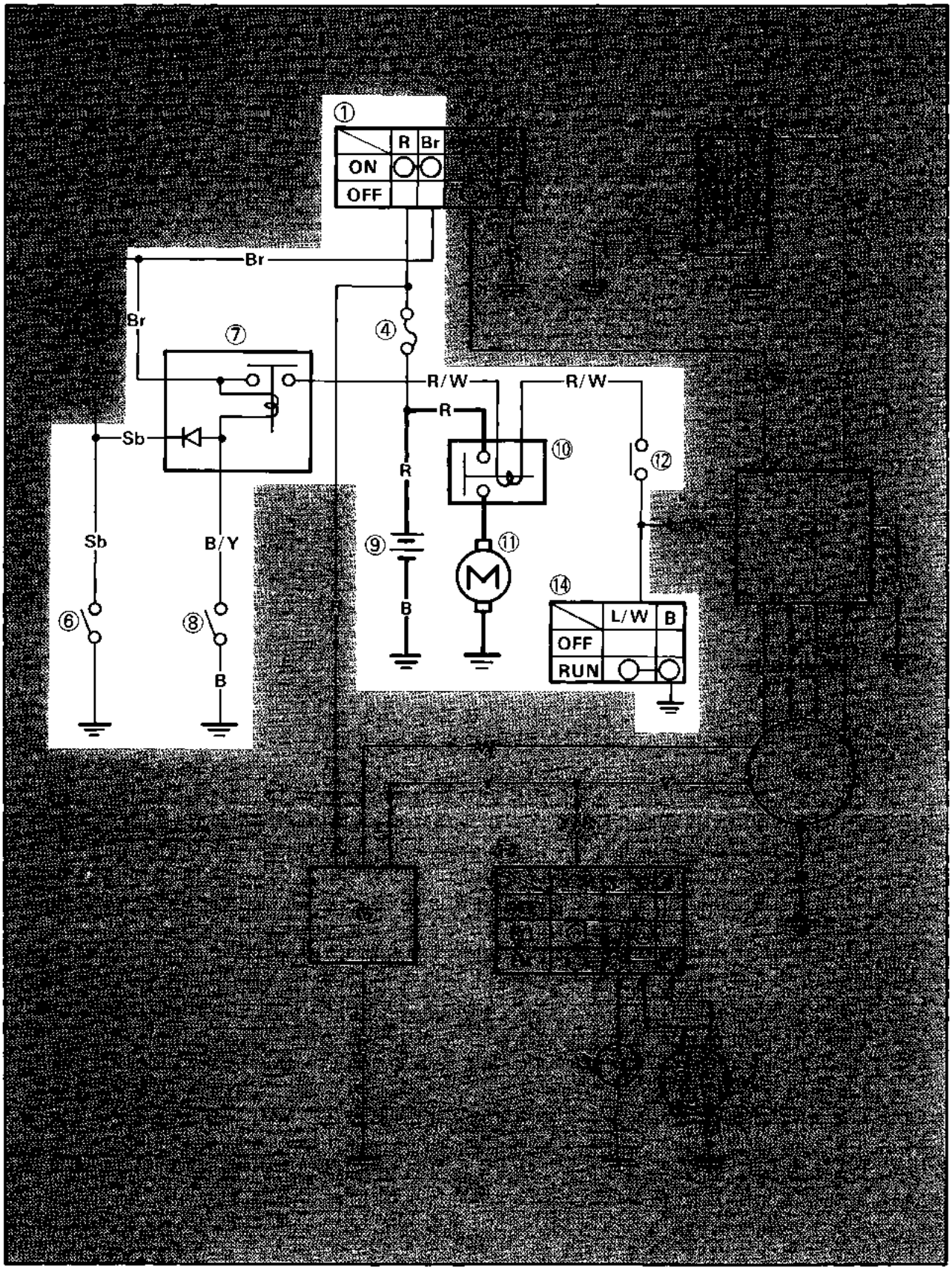
C	LIGHTING COIL RESISTANCE (COLOR): 0.16 ~ 0.24Ω at 20°C (68°F) (Black — Yellow)

D	CHARGING COIL RESISTANCE (COLOR): 0.24 ~ 0.36Ω at 20°C (68°F) (Black — White)

ELECTRICAL STARTING SYSTEM

CIRCUIT DIAGRAM

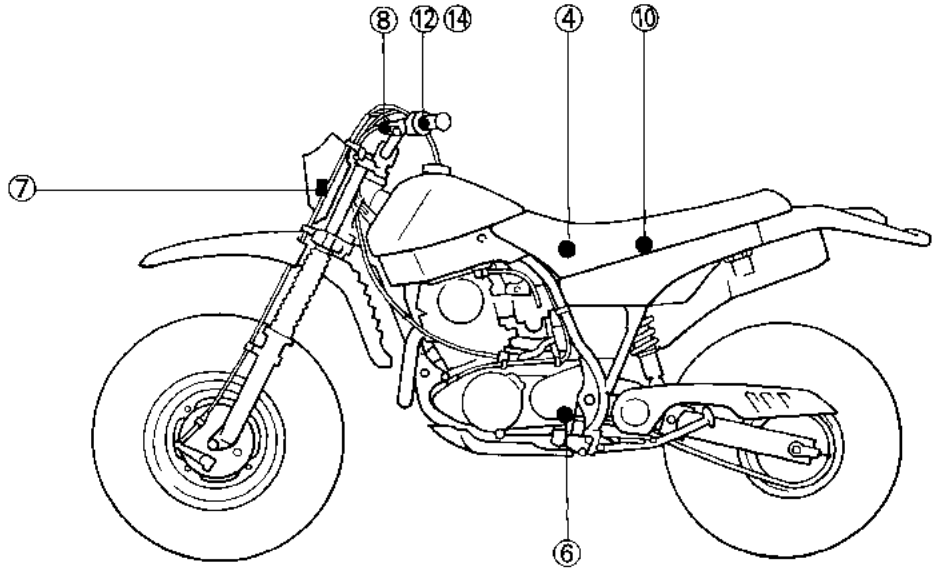
Below circuit diagram shows electrical starting circuit.

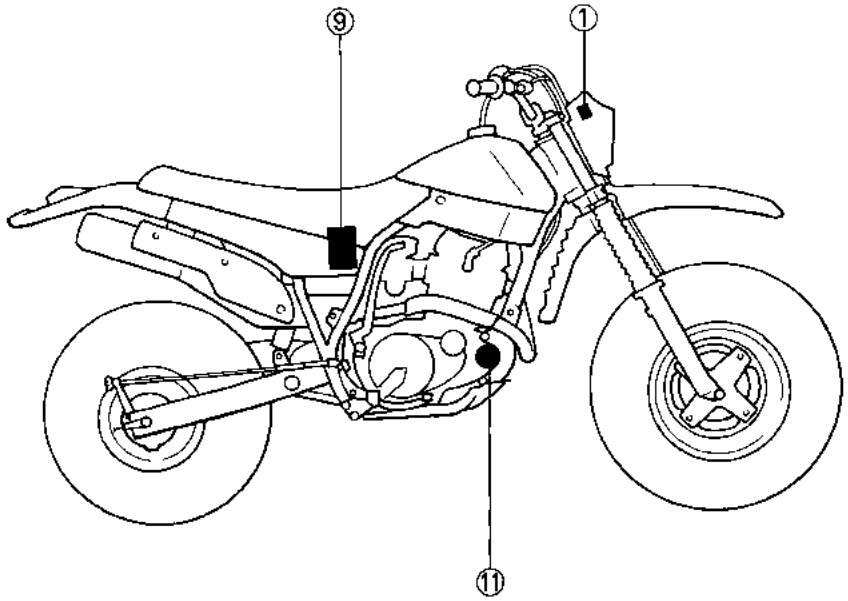


NOTE:

For the color codes, see page 6-2.

① Main switch
④ Fuse
⑥ Neutral switch
⑦ Starting circuit cut-off relay
⑧ Clutch switch
⑨ Battery
⑩ Starter relay
⑪ Starter motor
⑫ "START" switch
⑭ "ENGINE STOP" switch



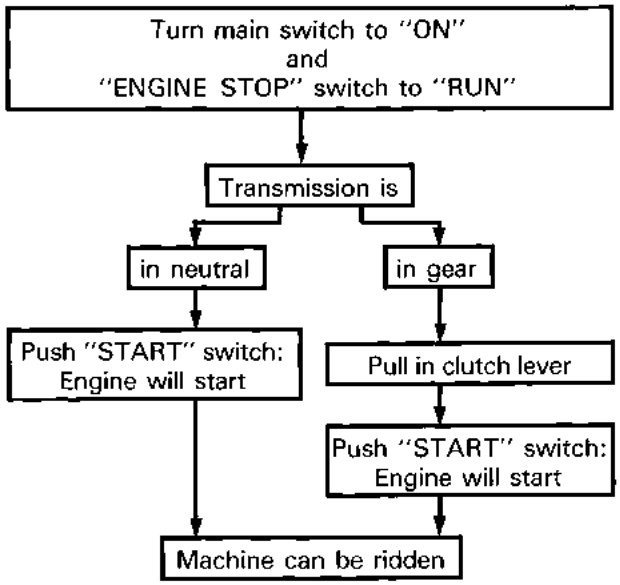


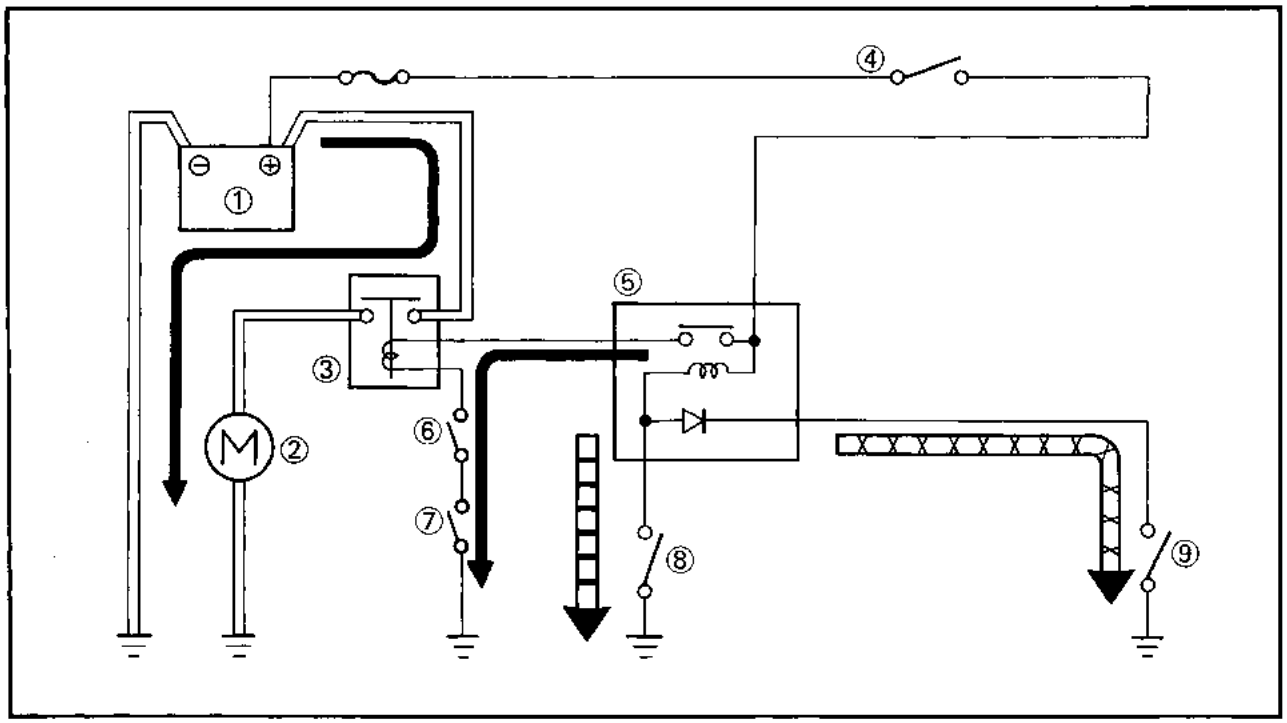
ELECTRICAL STARTING SYSTEM

STARTING CIRCUIT OPERATION

The starting circuit on this model consists of the starter motor, starter relay and starting circuit cut-off relay. If the "ENGINE STOP" switch and the main switch are both on, the starter motor can operate only if:

- The transmission is in neutral (the neutral switch is on).
- The clutch lever is pulled in (clutch switch is on).





① Battery
② Starter motor
③ Starter relay
④ Main switch
⑤ Starting circuit cut-off relay
⑥ "START" switch
⑦ "ENGINE STOP" switch
⑧ Clutch switch
⑨ Neutral switch

WHEN THE TRANSMISSION IS IN NEUTRAL.

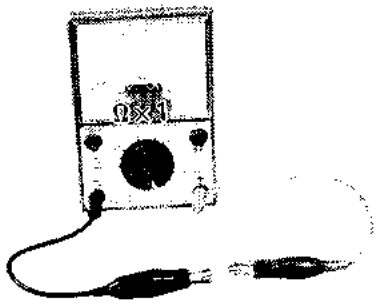
WHEN THE CLUTCH LEVER IS PULLED IN.

TROUBLESHOOTING

STARTER MOTOR DOES NOT OPERATE.

NOTE:

Before this troubleshooting, remove side covers and seat.



1. Fuse inspection
   - Remove fuse.
   - Connect Pocket Tester (YU-03112) to fuse and check it for continuity.

NOTE:

Set tester selector to "Ω × 1" position.

Continuity (0Ω) ↓ Discontinuity (∞)

Replace fuse.

2. Battery inspection
   - Fluid level
   - Battery terminals
   - Fluid specific gravity

   Refer to "BATTERY INSPECTION" section in "CHAPTER 2".

OK ↓ No good

Correct or replace battery.

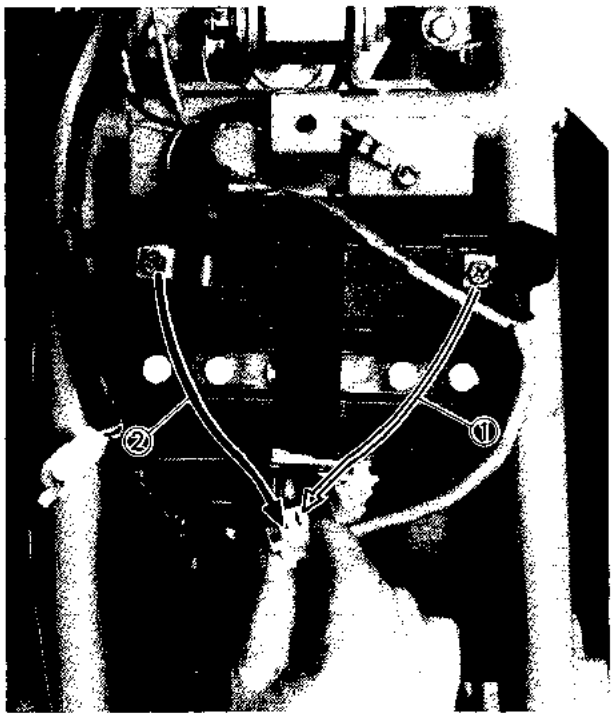
3. Connect battery positive (+) lead and starter motor lead; use heavy duty jumper lead.

WARNING:

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

Starter motor runs. ↓ Starter motor does not run.

Inspect and repair the starter motor. Refer to "STARTER MOTOR" section.



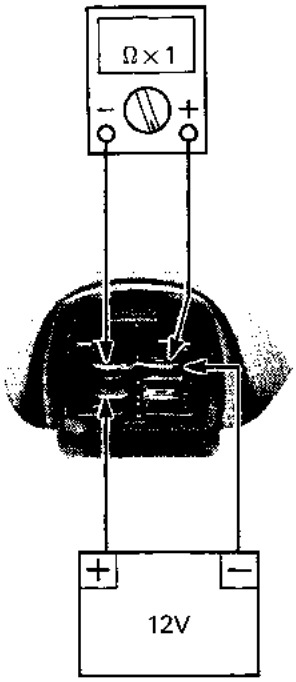
4. Starter relay conduct check
   - Disconnect starter relay leads (Blue/White, Red/White) and connect them to battery positive and negative lead use a jumper leads.

① Positive lead
② Negative lead

Starter motor runs. ↓ Starter motor does not run.

Starter relay is faulty, replace it.

5. Starting circuit cut-off relay conduct check
   - Remove starting circuit cut-off relay ① from headlight stay.

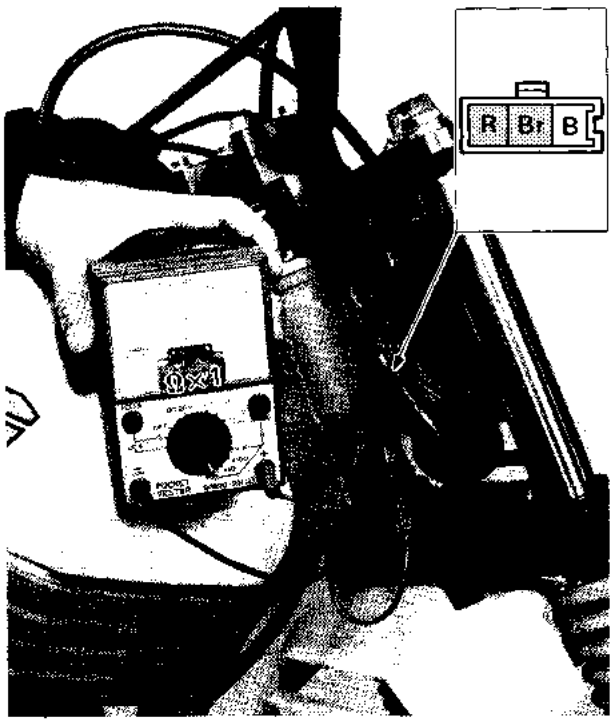


•Connect 12V battery and Pocket Tester (YU-03112) to starting circuit cut-off relay terminals as shows.

NOTE:
- Use full charge battery.
- Set tester selector to "Ω×1" position.

Continuity (0Ω) ⇩ Discontinuity (∞)

Starting circuit cut-off relay is faulty, replace it.



6. Main switch conduct check
   - Disconnect main switch coupler (Brown, Red, Black).
   - Connect Pocket Tester (YU-03112) to main switch leads (Brown, Red).

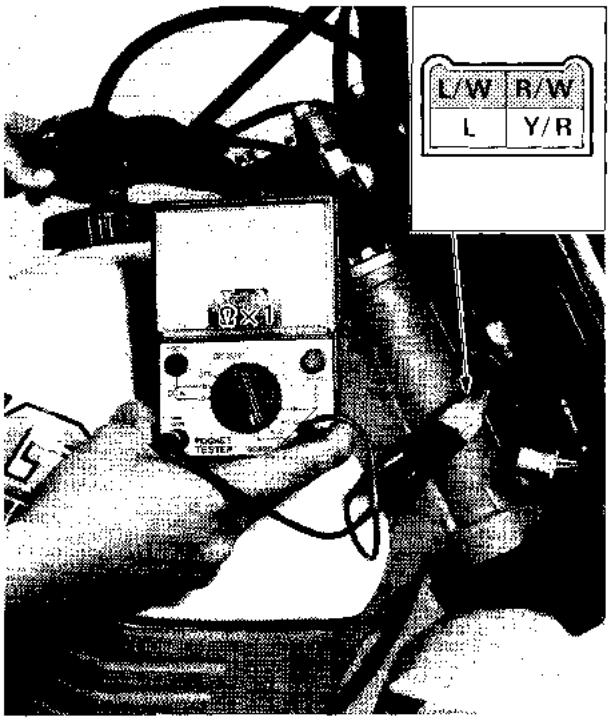
Tester (+) Lead→Red Lead
Tester (−) Lead→Brown Lead

NOTE:
Set tester selector to "Ω×1" position.

•Turn main switch to "ON" position and check it for continuity.

Continuity (0Ω) ⇩ Discontinuity (∞)

Main switch is faulty, replace it.



7. "START" switch conduct check
   - Disconnect handlebar switch coupler (Yellow/Red, Blue, Red/White, Blue/White).
   - Connect Pocket Tester (YU-03112) to handlebar switch leads (Red/White, Blue/White).

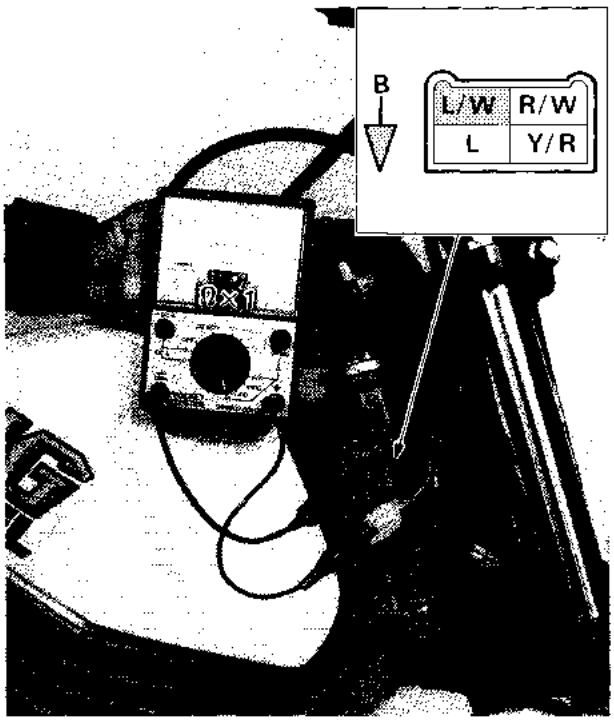
Tester (+) Lead→Blue/White Lead
Tester (−) Lead→Red/White lead

NOTE:
Set tester selector to "Ω×1" position.

   - Push on "START" switch and check it for continuity.

Continuity (0Ω) → Discontinuity (∞)

"START" switch is faulty, replace handlebar switch.



8. "ENGINE STOP" switch conduct check
   - Disconnect handlebar switch coupler (Yellow/Red, Blue, Red/White, Blue/White) and ground lead (Black).
   - Connect Pocket Tester (YU-03112) to handlebar switch leads (Blue/White, Black).

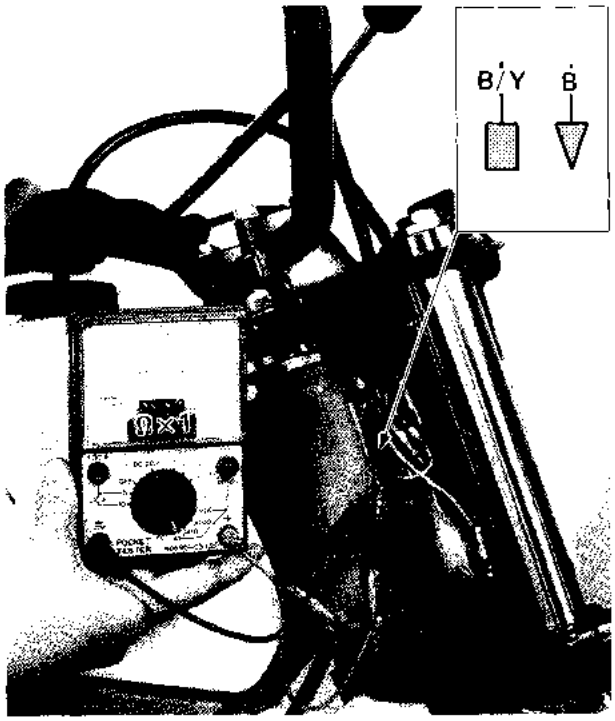
Tester (+) Lead→Blue/White Lead
Tester (−) Lead→Black Lead

NOTE:
Set tester selector to "Ω×1" position.

   - Turn "ENGINE STOP" switch to "RUN" position and check "ENGINE STOP" switch for continuity.

Continuity (0Ω) ⬇ Discontinuity (∞)

"ENGINE STOP" switch is faulty, replace handlebar switch.



9. Clutch switch conduct check
   - Disconnect clutch switch leads (Black/Yellow, Black).
   - Connect Pocket Tester (YU-03112) to clutch switch leads.

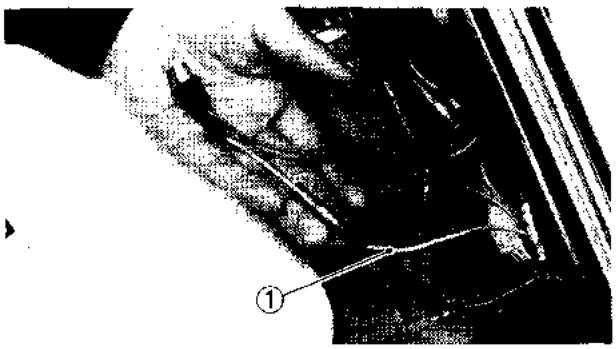
Tester (+) Lead→Black/Yellow Lead
Tester (−) Lead→Black Lead

NOTE:
Set tester selector to "Ω×1" position.

- Clutch lever is pulled and check clutch switch for continuity.

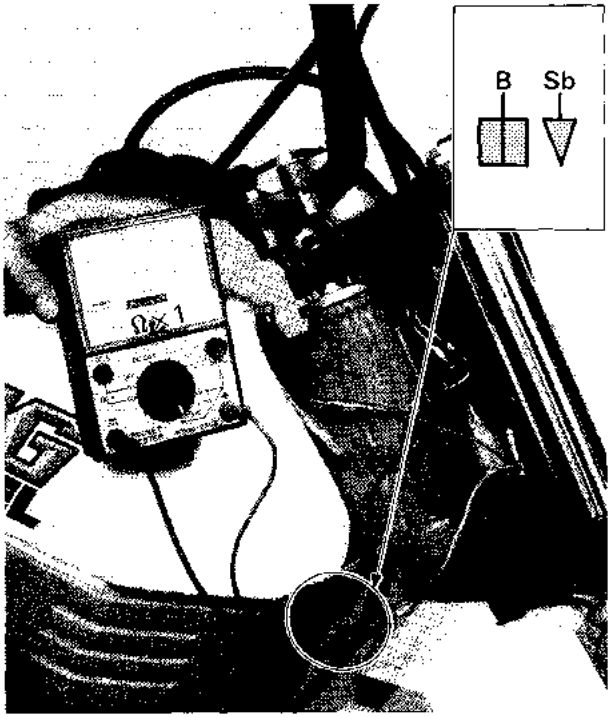
Continuity (0Ω) ⬇ Discontinuity (∞)

Clutch switch is faulty, replace it.



10. Neutral switch conduct check
    - Disconnect neutral switch lead ① (Sky blue).

ELECTRICAL STARTING SYSTEM



•Connect Pocket Tester (YU-03112) to neutral switch lead and frame earth lead.

Tester (+) Lead→Sky blue Lead
Tester (−) Lead→Frame earth Lead

NOTE:
Set tester selector to "Ω×1" position.

•Transmission is in neutral and check neutral switch for continuity.

Continuity (0Ω) → Neutral switch is faulty, replace it.

No continuity (∞)

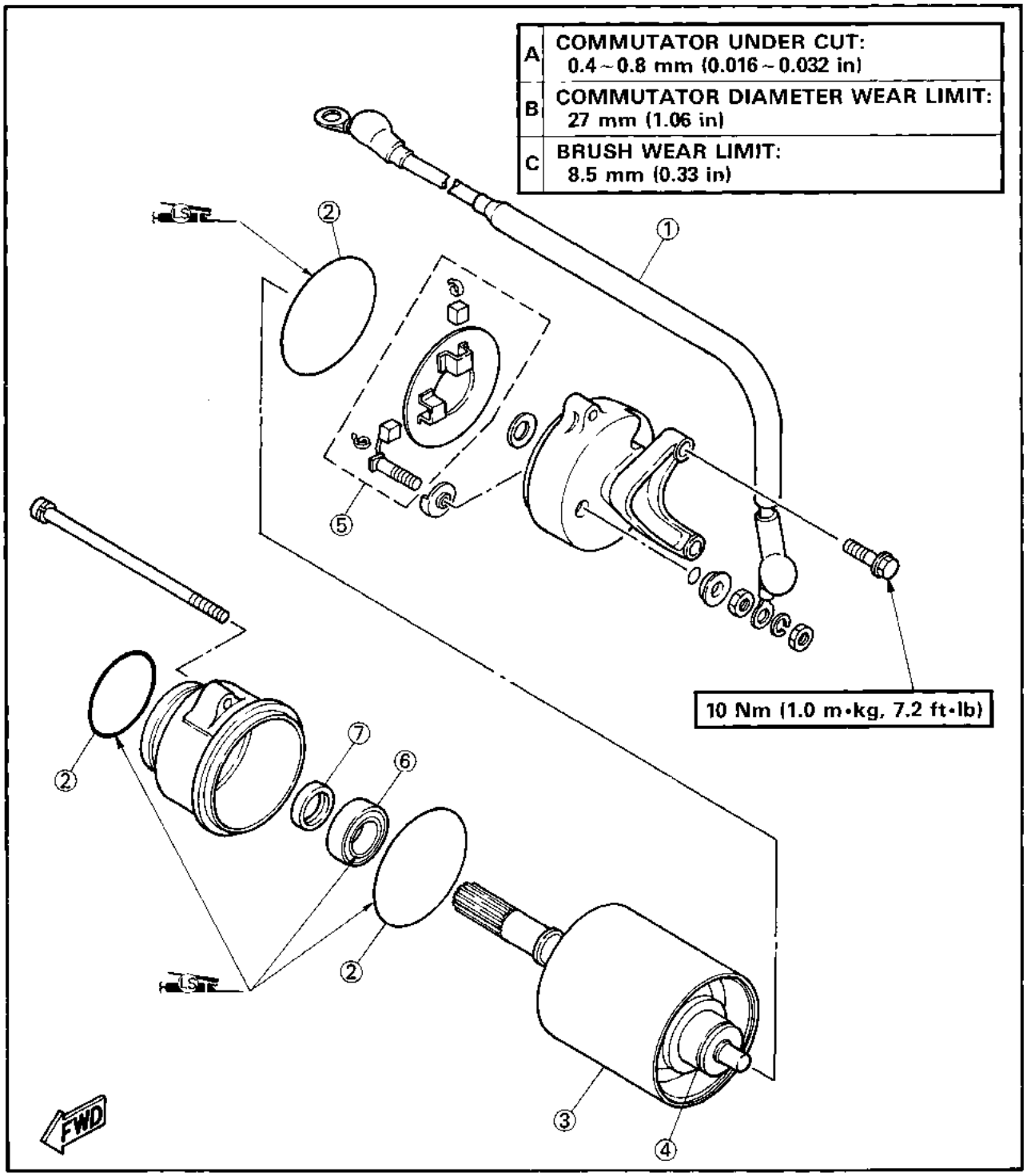
11. Check entire electrical starting system for connections. Refer to "WIRING DIAGRAM" section.

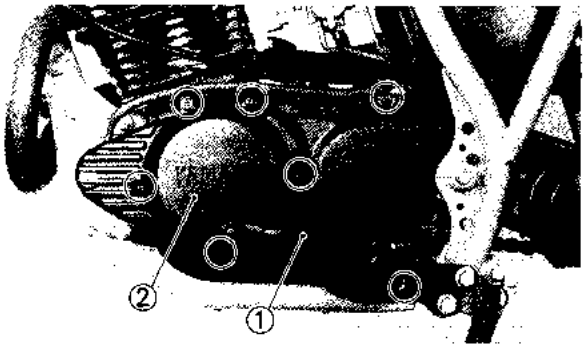
OK → Electrical starting system is good.

Poor connection → Correct.

STARTER MOTOR

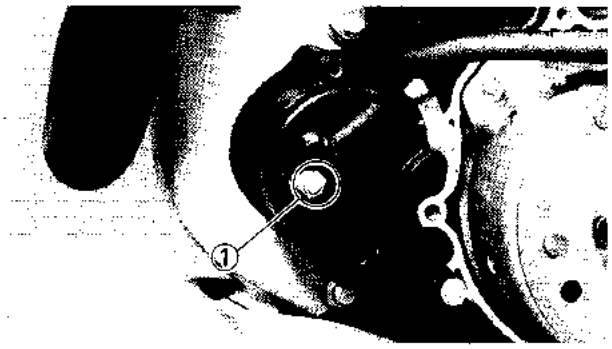
① Starter motor lead
② O-ring
③ Yoke assembly
④ Armature coil assembly
⑤ Brush assembly
⑥ Bearing
⑦ Oil seal



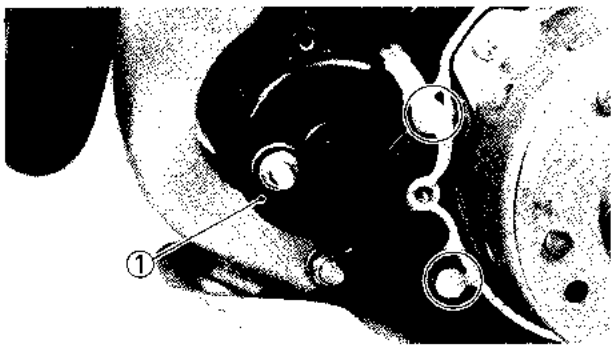


Removal

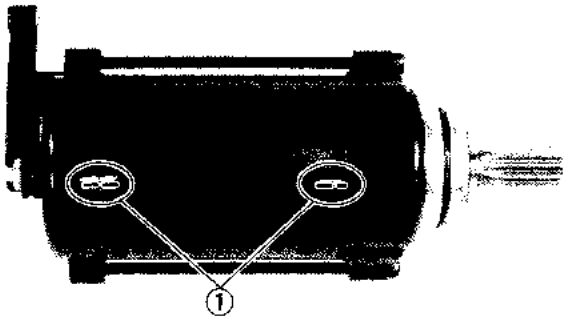
1. Remove:
   - Change pedal ①
   - Crankcase cover ② (Left)
   - Gasket (Crankcase cover)



2. Remove:
   - Nut ① (Starter motor lead)

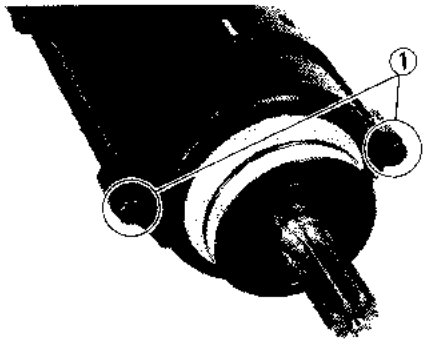


3. Remove:
   - Starter motor ①

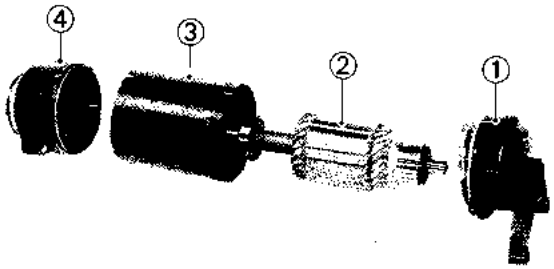


Disassembly

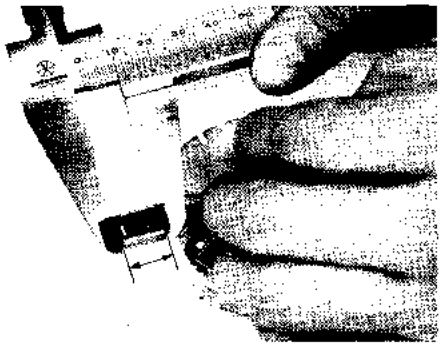
1. For reassembly, put identifying marks ①, as shown.



2. Remove:
   - Screws ①



3. Remove:
   - Brush assembly ①
   - Yoke assembly ②
   - Armature coil assembly ③
   - Bracket ④



Inspection and repair

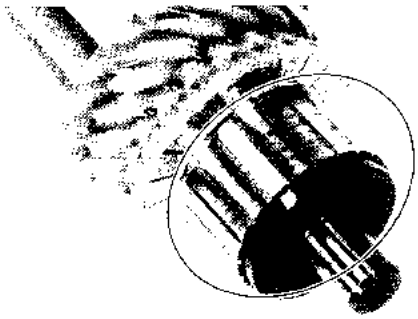
1. Measure:
   - Brush length (each)

   Out of specification→Replace brush assembly.

Minimum Brush Length:
8.5 mm (0.33 in)

2. Inspect:
   - Brush spring

   Damage→Replace brush assembly.

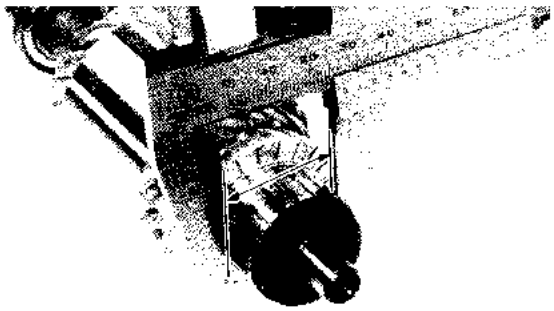


3. Inspect:
   - Commutator (Outer surface)

   Grooved wear/Burning/Scratches→Smooth out using a sandpaper (#500 ~ 600).

NOTE:

Sand the commutator outer surface lightly and evenly.

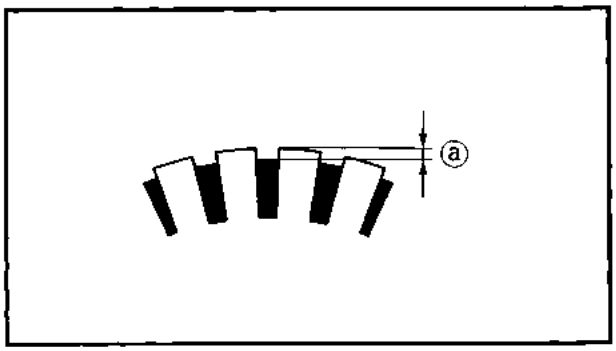


4. Measure:
   - Commutator diameter

   Out of specification→Replace starter motor.

Outside Diameter Limit:
27 mm (1.06 in)

6



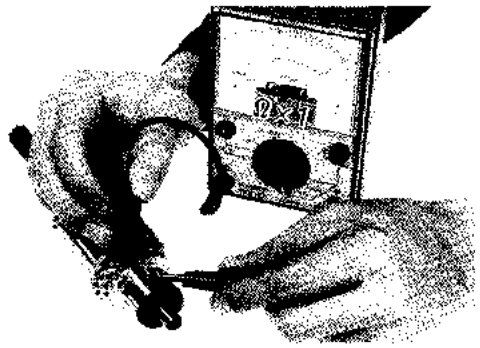
5. Measure:
   - Mica undercut ⓐ

   Out of specification → Scrape mica using a hacksaw blade.

Mica Undercut ⓐ:
0.4 ~ 0.8 mm (0.016 ~ 0.032 in)

NOTE:

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



6. Measure:
   - Armature coil resistance

   Out of specification → Replace starter motor.

Armature Coil Resistance:
0.012 ~ 0.014Ω at 20°C (68°F)

7. Check:
   - Armature coil insulation

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

   Continuity → Replace starter motor.

8. Inspect:
   - O-ring
   - Oil seal

   Damage → Replace.
   - Bearing

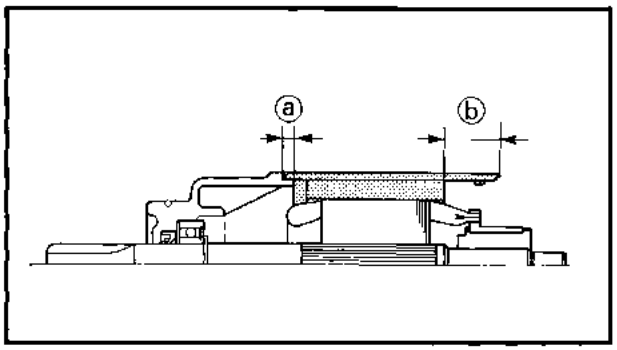
   Pitting/Damage → Replace.

Assembly

Reverse the "Disassembly" procedure.
Note the following points.

1. Apply:
   - Lithium soap base grease

   To oil seal lips and O-rings.

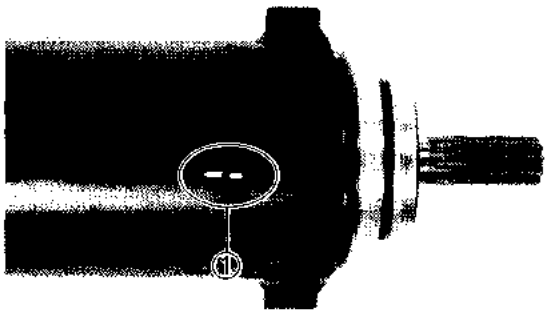


2. Install:
   - Armature coil assembly
   - Yoke assembly

NOTE:

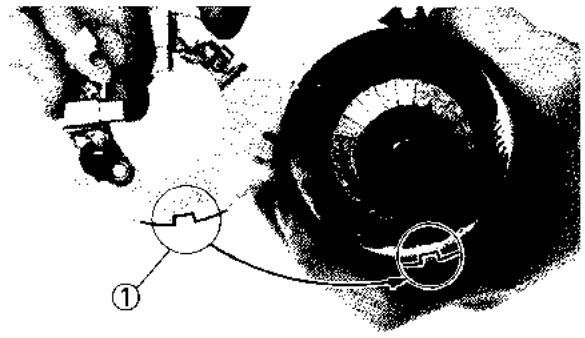
Install the yoke assembly with its short skirt ⓐ as shown.

ⓐ Short skirt
ⓑ Long skirt



NOTE:

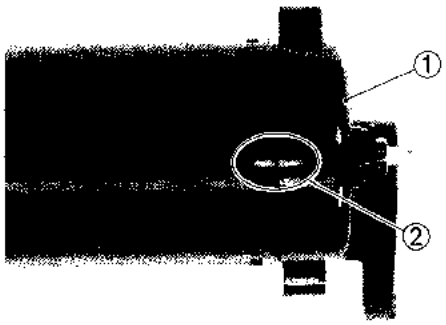
Align identifying marks ①, as shown.



3. Install:
   - Brush assembly

NOTE:

Fit the recess ① to the projection.



4. Install:
   - Brush cap ①

NOTE:

Align identifying marks ②, as shown.

Installation

Reverse the "Removal" procedure.
Note the following points.

1. Install:
   - Starter motor
   - Gasket (crankcase cover)
   - Crankcase cover (Left)
   - Change pedal

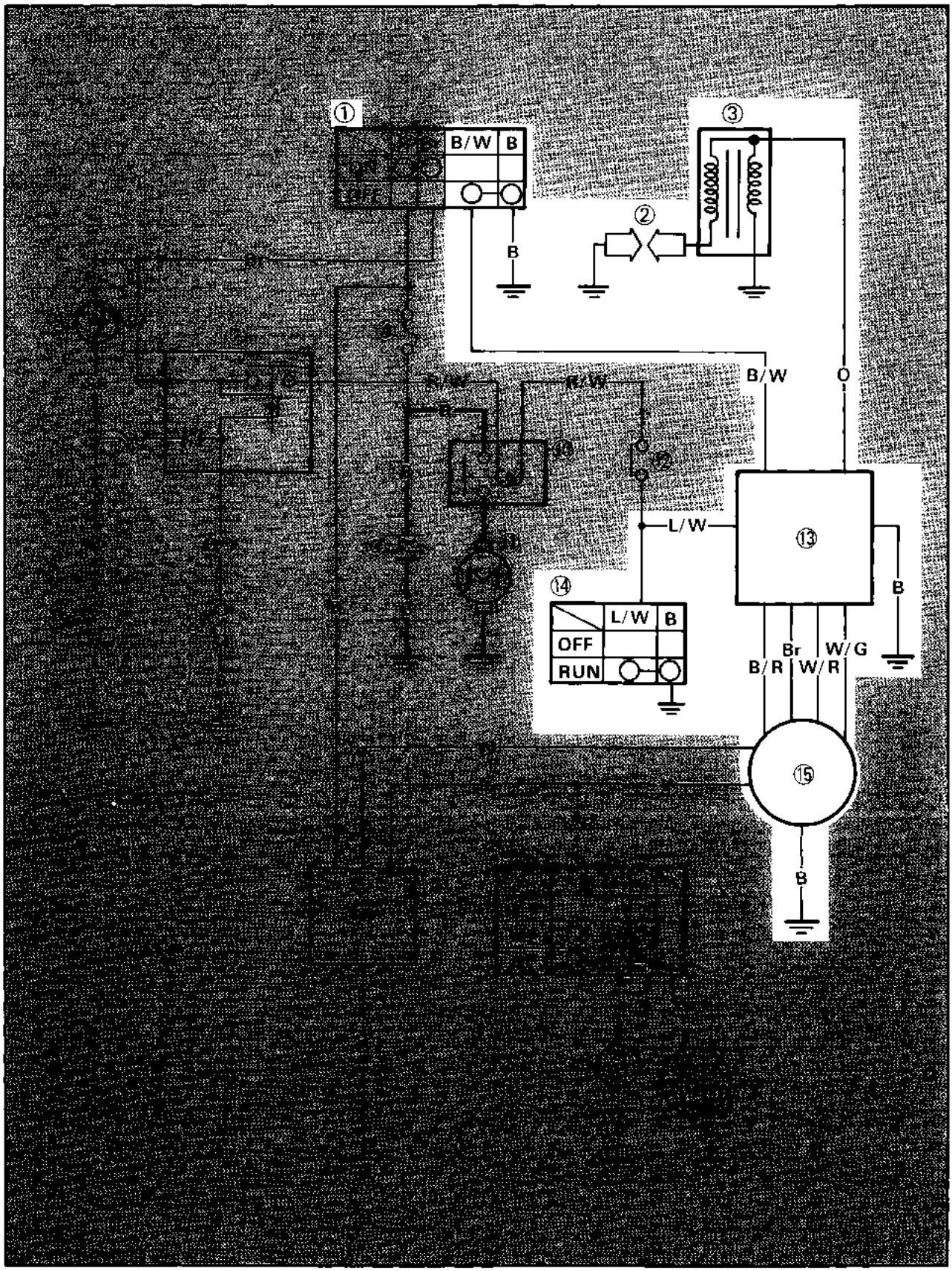
Bolts (Starter Motor):
10 Nm (1.0 m•kg, 7.2 ft•lb)
Screws (Crankcase Cover):
7 Nm (0.7 m•kg, 5.1 ft•lb)
Bolt (Change Pedal):
10 Nm (1.0 m•kg, 7.2 ft•lb)

—MEMO—

IGNITION SYSTEM

CIRCUIT DIAGRAM

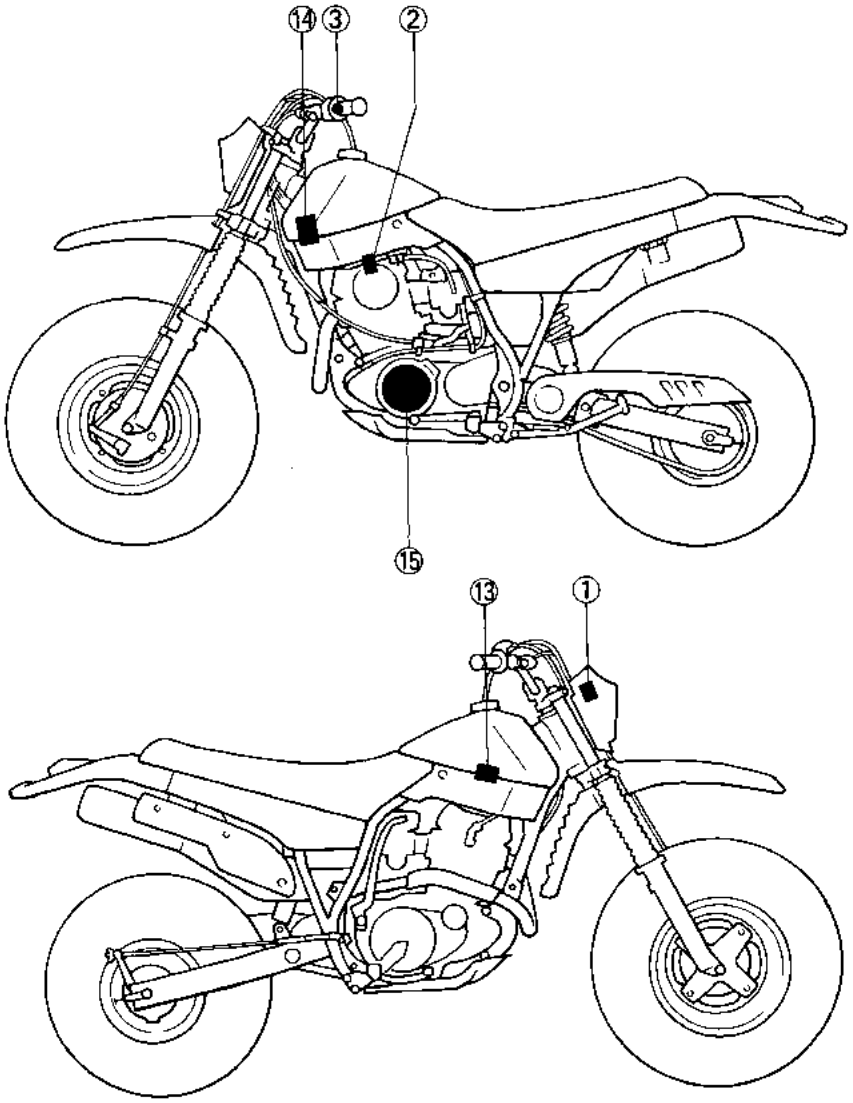
Below circuit diagram shows ignition circuit.



NOTE:

For the color codes, see page 6-2.

① Main switch
② Spark plug
③ Ignition coil
⑬ C.D.I. unit
⑭ "ENGINE STOP" switch
⑮ C.D.I. magneto

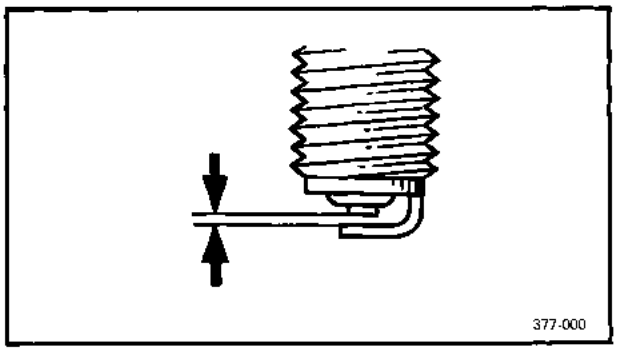


TROUBLESHOOTING

IF IGNITION SYSTEM SHOULD BECOME INOPERATIVE (NO SPARK OR INTERMITTENT SPARK).

NOTE:

Before this troubleshooting, remove side covers, seat and fuel tank.



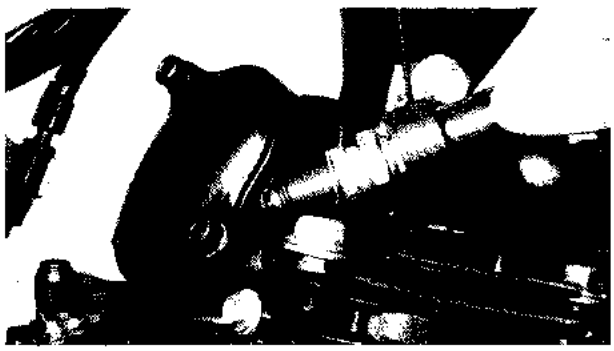
1. Spark plug inspection
   - Remove spark plug.
   - Clean spark plug with spark plug cleaner, if necessary.
   - Inspect electrode, insulator and plug gap. Refer to "CHAPTER 2—SPARK PLUG INSPECTION" section.

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

OK

No good

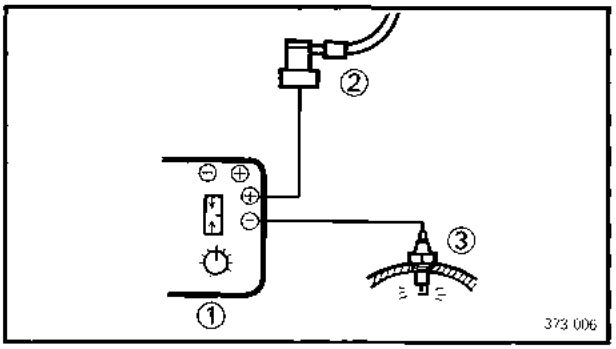
Replace or regap spark plug.



2. Ignition spark test
   - Install spark plug to plug cap.
   - Ground spark plug to cylinder head.
   - Turn main switch to "ON".
     Then, kick starter or start starter motor (Push on "START" switch).

No spark ⇩ Spark

Ignition circuit is good.



3. Ignition spark gap test:
   - Connect the Electro Tester (YU-33260) ① as shown.

② Spark plug cap
③ Spark plug

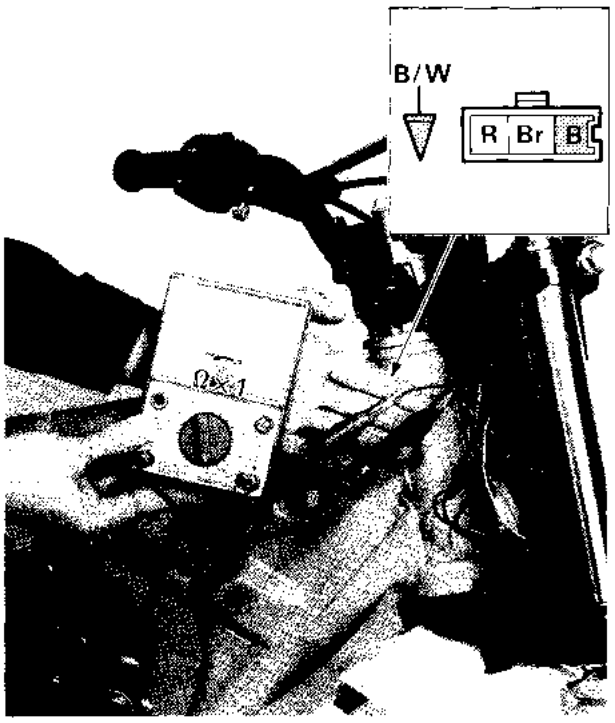
   - Start the engine, and increase the spark gap until misfire occurs.

Minimum Spark Gap:
6.0 mm (0.24 in)

Out of specification ⇩ Meets the specification

Ignition system is good.

4. Main switch conduct check
   - Disconnect main switch coupler (Brown, Red, Black) and lead (Black/White).



• Connect Pocket Tester (YU-03112) to main switch leads (Black, Black/White).

Tester (+) Lead→Black/White Lead
Tester (−) Lead→Black Lead

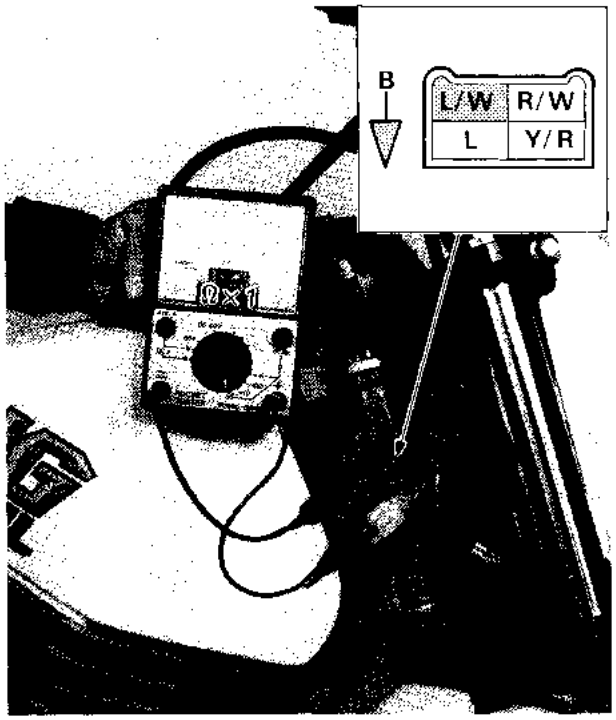
NOTE:

Set tester selector to "Ω×1" position.

• Turn main switch to "OFF" position and check it for continuity.

Continuity (0Ω) → Discontinuity (∞)

Main switch is faulty, replace it.



5. "ENGINE STOP" switch conduct check
   • Disconnect handlebar switch coupler (Blue/White, Red/White, Blue, Yellow/Red) and ground lead (Black).
   • Connect Pocket Tester (YU-03112) to handlebar switch leads.

Tester (+) Lead→Blue/White Lead
Tester (−) Lead→Black Lead

NOTE:

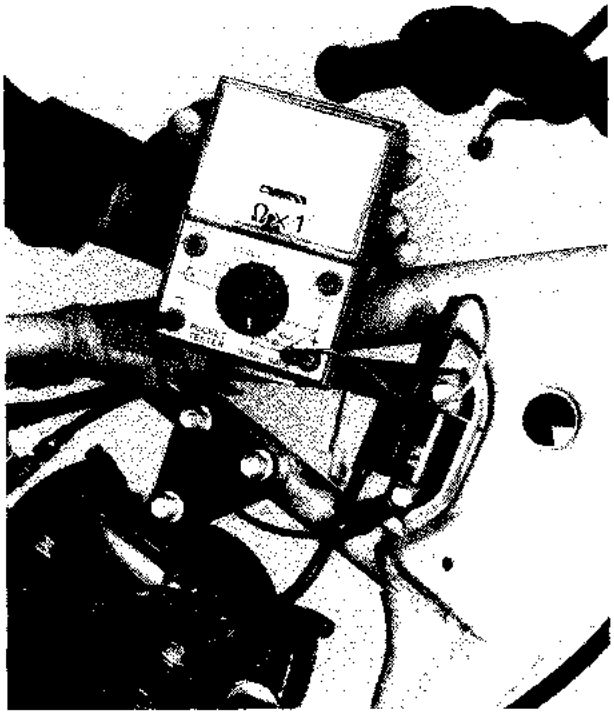
Select tester selector to "Ω×1" position.

• Turn "ENGINE STOP" switch to "RUN" position and check it for continuity.

Continuity (0Ω)

Discontinuity (∞)

Handlebar switch is faulty, replace it.



6. Ignition coil resistance test
   - Disconnect ignition coil lead (Orange).
   - Connect Pocket Tester (YU-03112) to ignition coil terminal and ignition coil base.

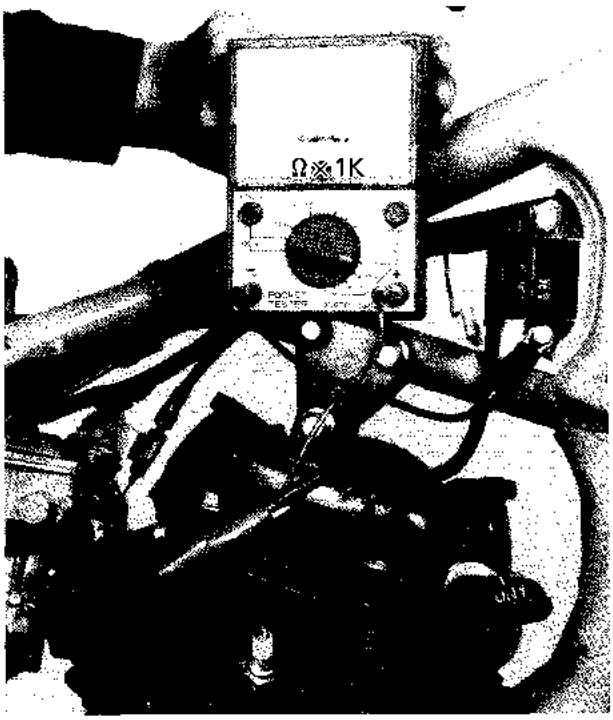
Tester (+) Lead→Terminal
Tester (−) Lead→Ignition Coil Base

NOTE:

Set tester selector to "Ω×1" position.

- Measure primary coil resistance.

Primary Coil Resistance:
0.72 ~ 1.08Ω at 20°C (68°F)



- Connect Pocket Tester (YU-03112) to ignition coil lead (Orange) and spark plug lead.

Tester (+) Lead→Orange Lead
Tester (−) Lead→Spark Plug Lead

NOTE:

Set tester selector to "Ω×1K" position.

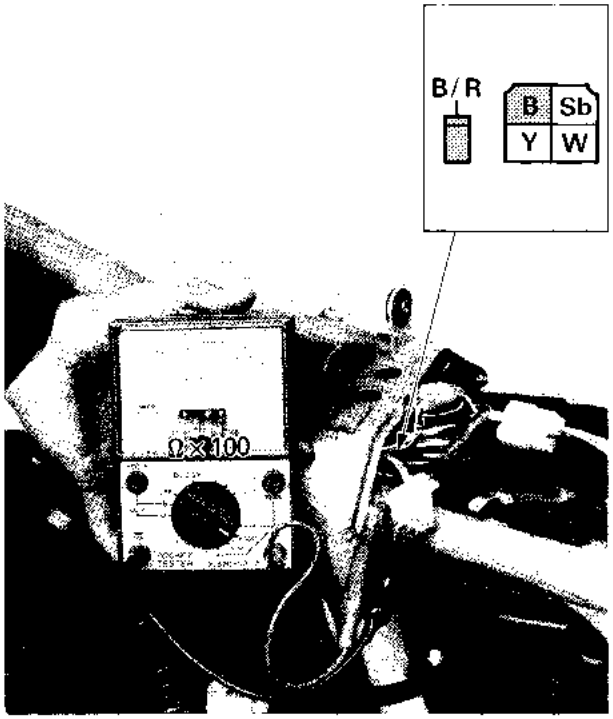
- Measure secondary coil resistance.

Secondary Coil Resistance:
5.68 ~ 8.52kΩ at 20°C (68°F)

6

Both resistances meet specifications → Out of specification

Ignition coil is faulty, replace it.



7. Source coil resistance test
   - Disconnect C.D.I. magneto coupler (Whtie, Black, Sky blue, Yellow) and C.D.I. magneto leads (Black/Red, Brown).
   - Connect Pocket Tester (YU-03112) to C.D.I. magneto leads (Black, Black/Red).

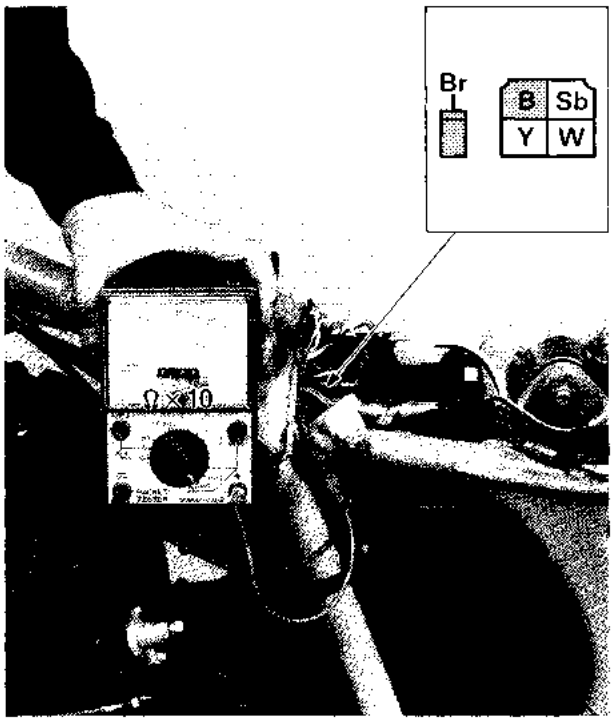
Tester (+) Lead→Black/Red Lead
Tester (−) Lead→Black Lead

- Measure source coil (1) resistance.

NOTE:

Set tester selector to "Ω×100" position.

Source Coil (1) Resistance (B/R−B):
208~312Ω at 20°C (68°F)



- Connect Pocket Tester to C.D.I. magneto leads (Brown, Black).

Tester (+) Lead→Brown Lead
Tester (−) Lead→Black Lead

- Measure source coil (2) resistance.

NOTE:

Set tester selector to "Ω×10" position.

Source Coil (2) Resistance (Br−B):
14.4~21.6Ω at 20°C (68°F)

Both resistances meet specification ↓ Out of specification

Source coil is faulty, replace it.

8. Pick-up coil resistance test
   - Disconnect pick-up coil leads (White/Red, White/Green).
   - Connect Pocket Tester (YU-03112) to pick-up coil leads.

Tester (+) Lead→White/Red Lead
Tester (−) Lead→White/Green Lead

- Measure pick-up coil resistance.

NOTE:
Set tester selector to "Ω × 100" position.

Pick-up Coil Resistance (W/R—W/G):
640 – 960Ω at 20°C (68°F)

Resistance meets specification ↓ Out of specification

Pick-up coil is faulty, replace it.

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

OK ↓ Poor connection

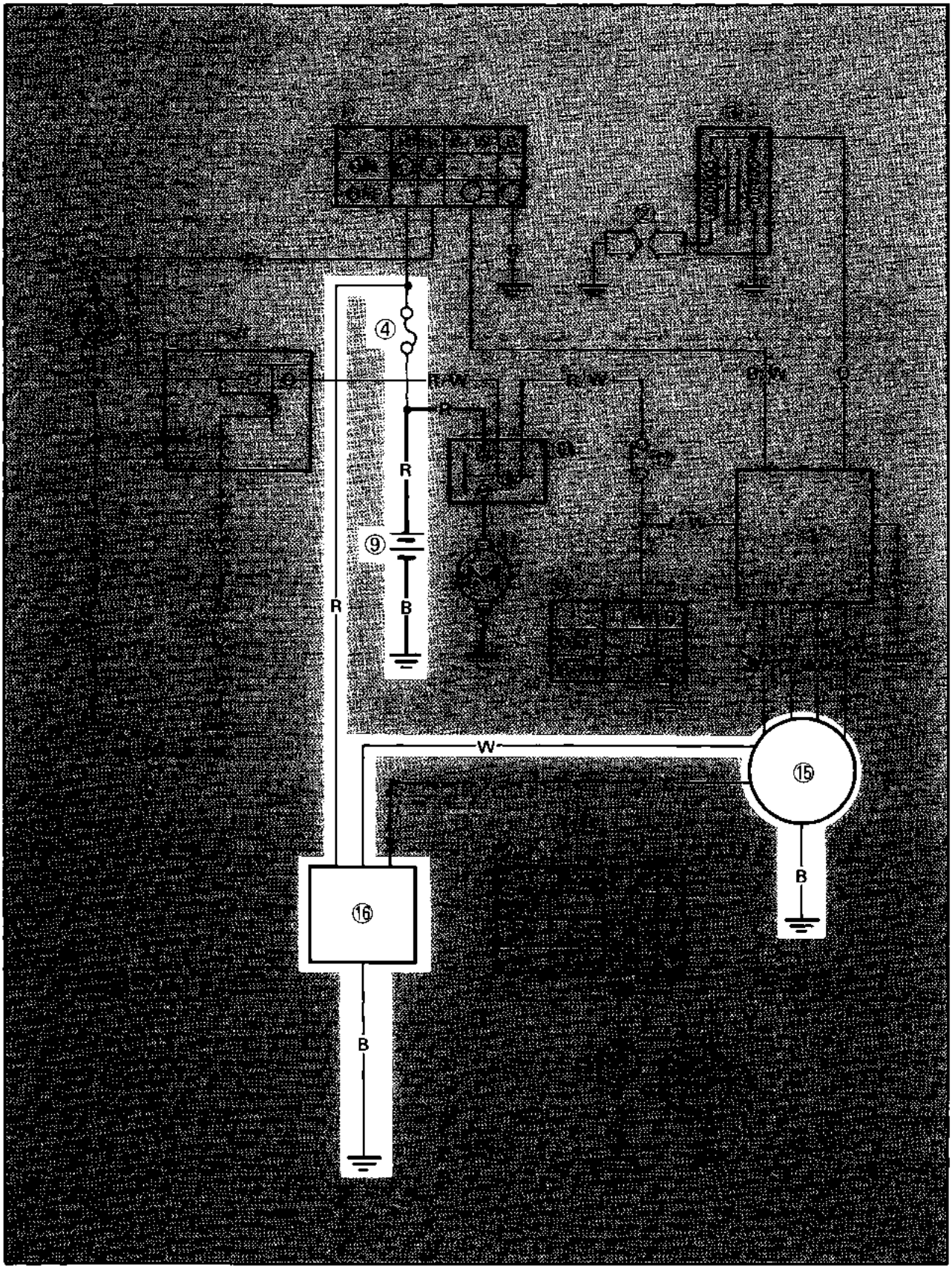
Correct.

C.D.I. unit is faulty, replace it.

CHARGING SYSTEM

CIRCUIT DIAGRAM

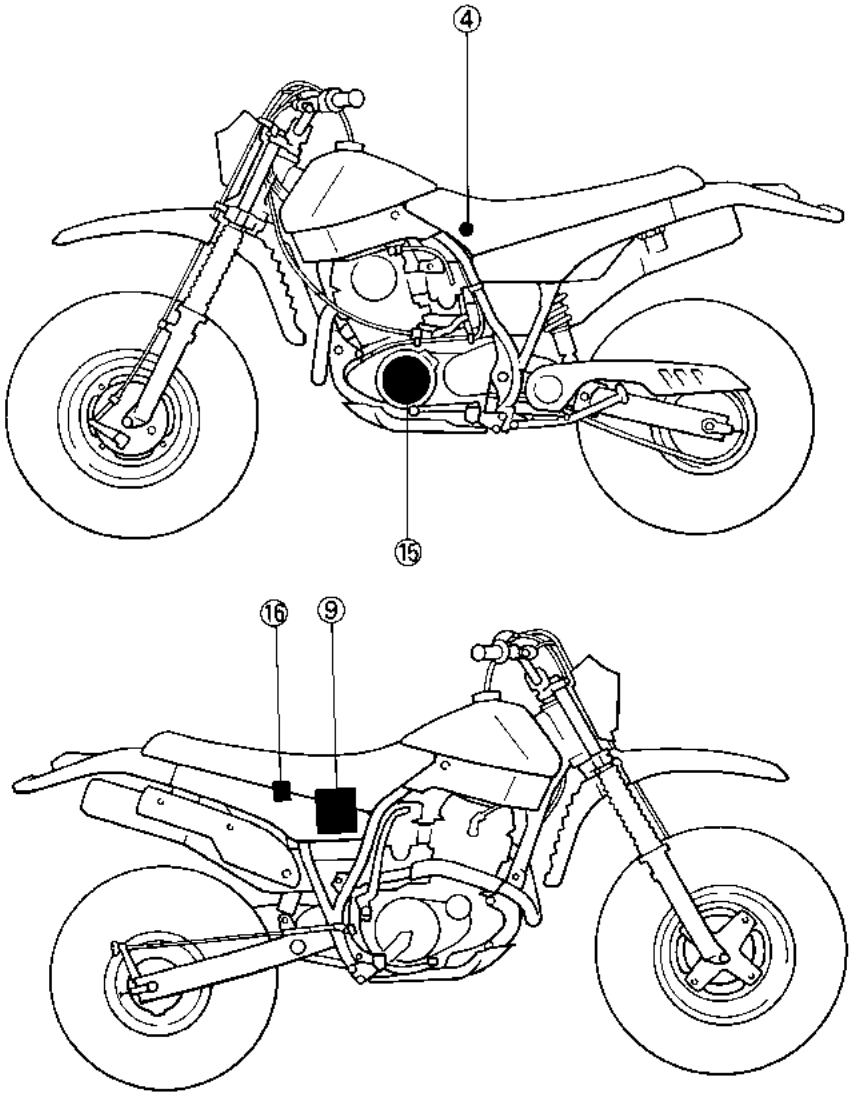
Below circuit diagram shows charging circuit.



NOTE:

For the color codes, see page 6-2.

④ Fuse
⑨ Battery
⑮ C.D.I. magneto
⑯ Rectifier/Regulator

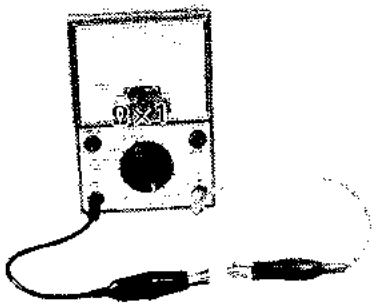


TROUBLESHOOTING

THE BATTERY IS NOT CHARGED.

NOTE:

Before this troubleshooting, remove side covers and seat.



1. Fuse inspection
   - Remove fuse.
   - Connect Pocket Tester (YU-03112) to fuse and check it for continuity.

NOTE:

Set tester selector to "Ω×1" position.

Continuity (0Ω) → OK

Discontinuity (∞) → No good

Replace fuse.

2. Battery inspection
   - Fluid level
   - Battery terminals
   - Fluid specific gravity

   Refer to "BATTERY INSPECTION" section in "CHAPTER 2".

Connect or replace battery.

3. Charging voltage test
   - Connect Inductive Tachometer (YU-08036) to spark plug lead.
   - Connect Pocket Tester (YU-03112) to battery.

NOTE:
Set tester selector to "DC20V" position.

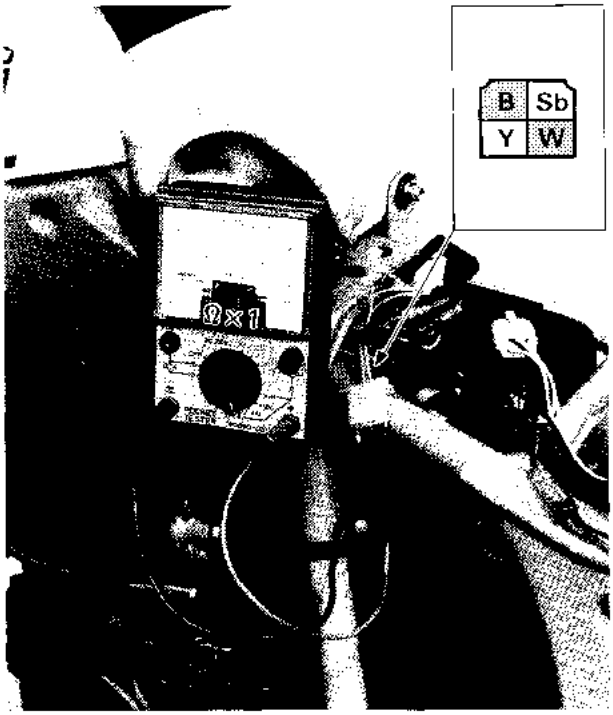
Tester (+) Lead→Battery (+) Terminal
Tester (−) Lead→Battery (−) Terminal

- Start engine and accelerate to about 3,000 r/min.
- Measure charging voltage.

Charging Voltage:
12.8~14.8V at 3,000 r/min

Out of specification → Battery is faulty, replace it.

Charging voltage meets specification



4. Charging coil resistance test
   - Disconnect C.D.I. magneto couplers (Yellow, White, Sky blue, Black).
   - Connect Pocket Tester (YU-03112) to C.D.I. magneto leads (White, Black).

NOTE:
Set tester selector to "Ω×1" position.

Tester (+) Lead→White Lead
Tester (−) Lead→Black Lead

- Measure charging coil resistance.

Charging Coil Resistance (W−B):
0.24~0.36Ω at 20°C (68°F)

6

Resistance meets specification

Out of specification

Charging coil is faulty, replace it.

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

OK

Poor connection

Correct.

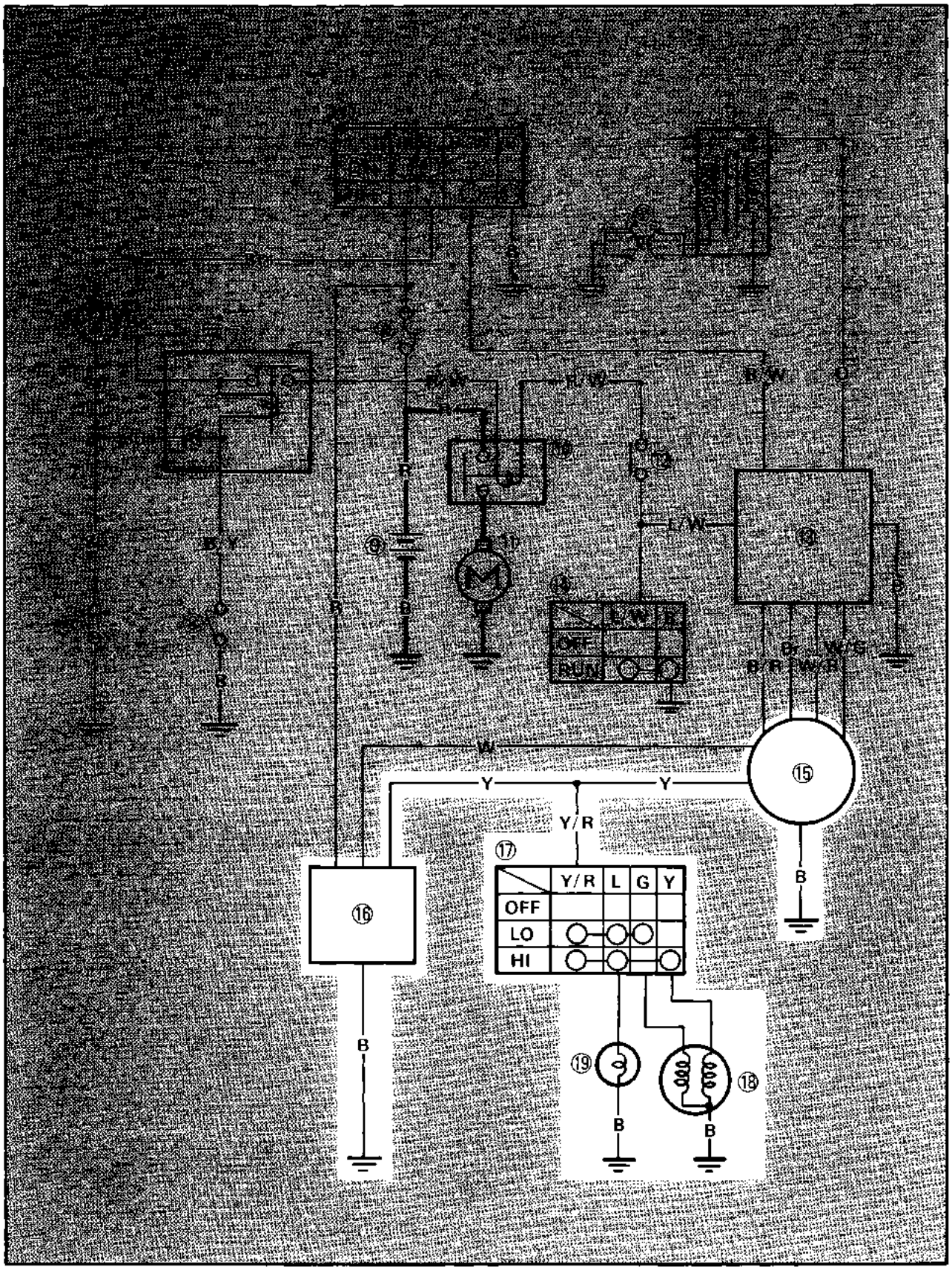
Rectifier/Regulator is faulty, replace it.

MEMO

LIGHTING SYSTEM

CIRCUIT DIAGRAM

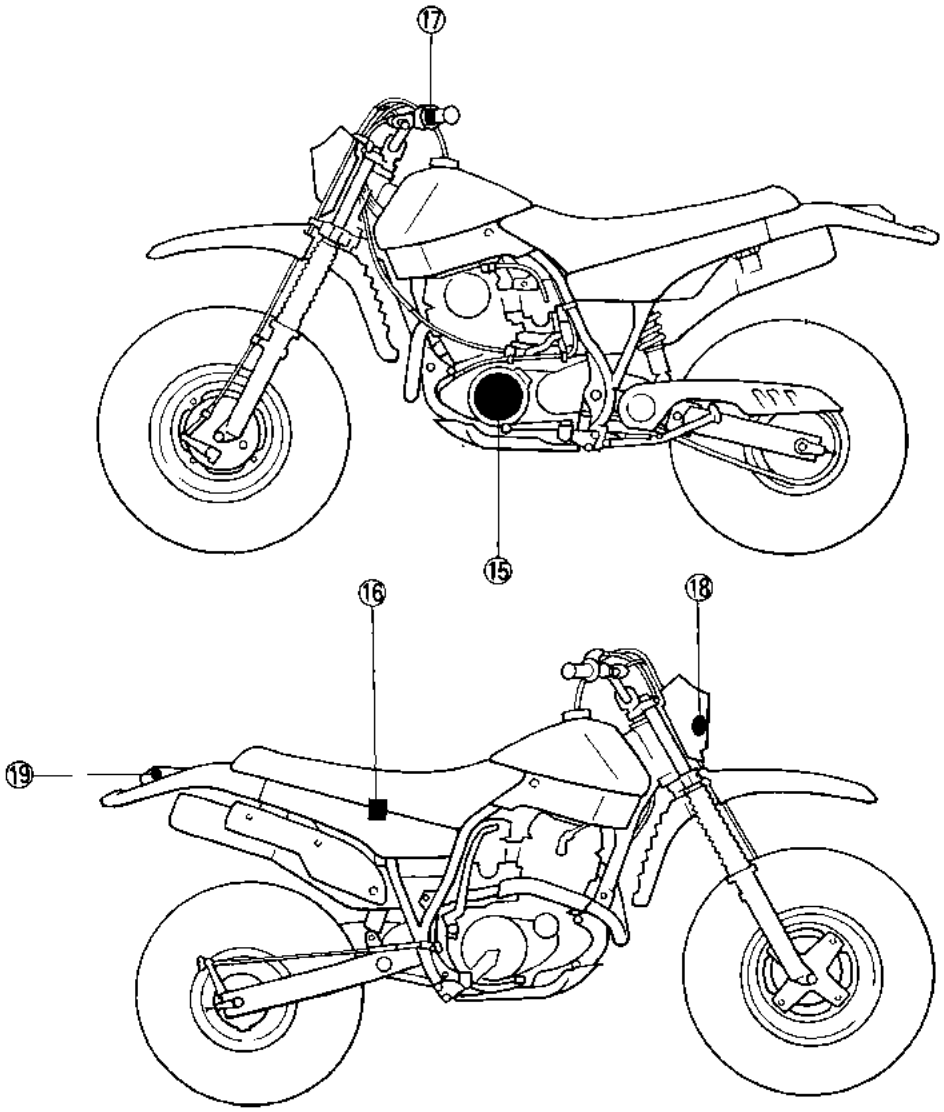
Below circuit diagram shows lighting circuit.



NOTE:

For the color codes, see page 6-2.

⑮ C.D.I. magneto
⑯ Rectifier/Regulator
⑰ "LIGHTS" switch
⑱ Headlight
⑲ Taillight



TROUBLESHOOTING

HEADLIGHT AND/OR TAILLIGHT DOES NOT COME ON.

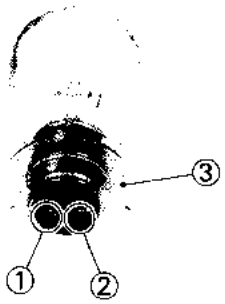
NOTE:

Before this troubleshooting, remove side covers and seat.

1. Headlight bulb conduct check
   - Disconnect headlight leads (Green, Yellow, Black) and remove headlight unit.
   - Remove headlight bulb.

WARNING:

Keep flammable products or your hands away from bulb while it is on, it will be hot. Do not touch bulb until it cools down.



- Connect Pocket Tester (YU-03112) to bulb terminals and check bulb for continuity.

Tester (+) Lead→Terminal 1 **Tester (−) Lead→Terminal 3**
Tester (+) Lead→Terminal 2 **Tester (−) Lead→Terminal 3**

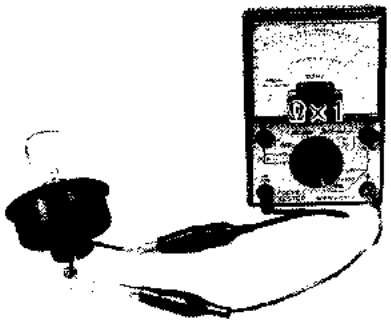
NOTE:

Set tester selector to "Ω×1" position.

Continuity exists on both circuits.

Continuity does not exist on one circuit.

Bulb is faulty, replace it.



2. Headlight bulb socket conduct check
   - Install bulb to headlight socket.
   - Connect Pocket Tester (YU-03112) to headlight leads and check it for continuity.

Tester (+) Lead→Green Lead **Tester (−) Lead→Black Lead**
Tester (+) Lead→Yellow Lead **Tester (−) Lead→Black Lead**

NOTE:
Set tester selector to "Ω×1" position.

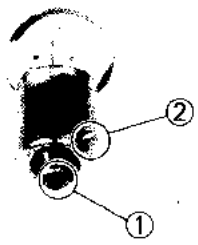
Continuity exists on both circuits.

Continuity does not exist on one circuit.

Bulb socket is faulty, replace it.

3. Taillight bulb conduct check
   - Remove taillight lens and bulb.

WARNING:
Keep flammable products or your hands away from bulb while it is on, it will be hot. Do not touch bulb until it cools down.



- Connect Pocket Tester (YU-03112) to bulb terminals and check bulb for continuity.

Tester (+) Lead→Terminal 1 **Tester (−) Lead→Terminal 2**

NOTE:
Set tester selector to "Ω×1" position.

4. Taillight bulb socket conduct check
   - Install bulb to taillight socket.
   - Disconnect taillight leads (Blue, Black).
   - Connect Pocket Tester (YU-03112) to taillight leads and check it for continuity.

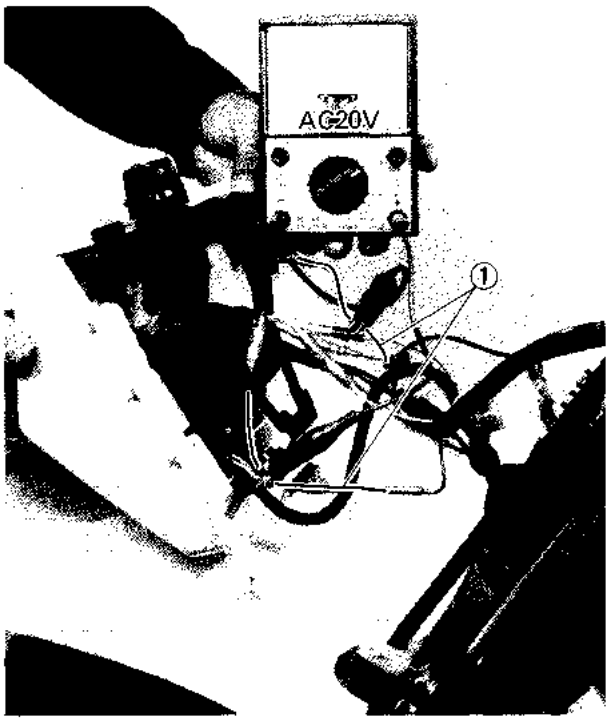
Tester (+) Lead→Blue Lead
Tester (−) Lead→Black Lead

NOTE:
Set tester selector to "Ω×1" position.

Continuity

Discontinuity (∞)

Bulb socket is faulty, replace it.



5. Lighting voltage test
   - Connect extension leads ① between head light lead and wire harness.
   - Connect Pocket Tester (YU-03112) to headlight leads (Green, Black).

Tester (+) Lead→Green Lead
Tester (−) Lead→Black Lead

NOTE:
Set tester selector "AC20V" position.

- Connect Inductive Tachometer (YU-08036) to spark plug lead.
- Turn "LIGHTS" switch to "LO" position.
- Start engine and accelerate to about 2,500 r/min.

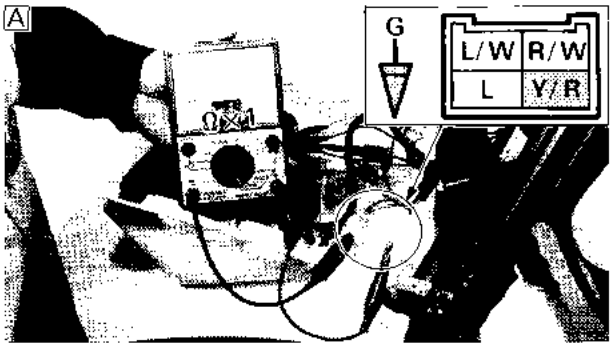
•Measure lighting voltage.

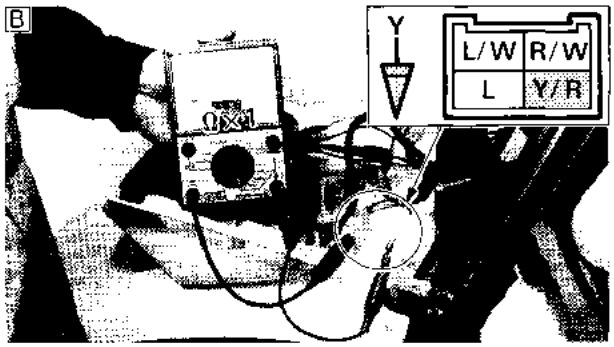
Lighting Voltage:
11V or more at 2,500 r/min

Out of specification

Lighting voltage meets specification

Lighting system is good.





6. "LIGHTS" switch conduct check
   - Disconnect handlebar switch coupler (Blue/White, Red/White, Blue, Yellow/Red) and headlight leads (Green, Yellow).
   - Connect Pocket Tester to "LIGHTS" switch leads and check it for continuity.

A If Switch is Turned to "LO" Position.
Tester (+) Lead→Yellow/Red Lead
Tester (−) Lead→Green Lead

B If Switch is Turned to "HI" Position.
Tester (+) Lead→Yellow/Red Lead
Tester (−) Lead→Yellow Lead

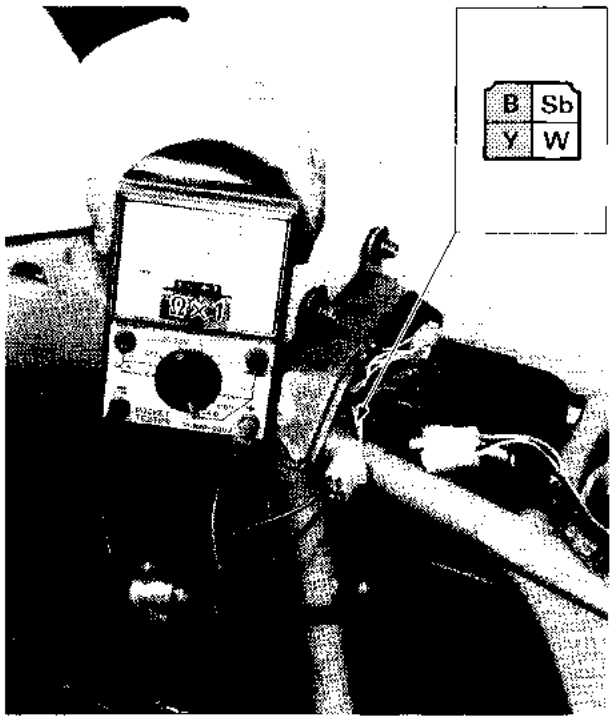
NOTE:
Set tester selector to "Ω×1" position.

Continuity exists on both circuits.

Continuity does not exist on one circuit.

"LIGHTS" switch is faulty, replace handlebar switch.

6



7. Lighting coil resistance test
   - Disconnect C.D.I. magneto coupler (Yellow, White, Sky blue, Black) at rectifier/regulator.
   - Connect Pocket Tester (YU-03112) to C.D.I. magneto leads.

NOTE:
Set tester selector to "Ω×1" position.

Tester (+) Lead→Yellow Lead
Tester (−) Lead→Black Lead

- Measure lighting coil resistance.

Lighting Coil Resistance (Y—B):
0.16~0.24Ω at 20°C (68°F)

Resistance meets specification

Out of specification

Lighting coil is faulty, replace it.

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

OK

Poor connection

Correct.

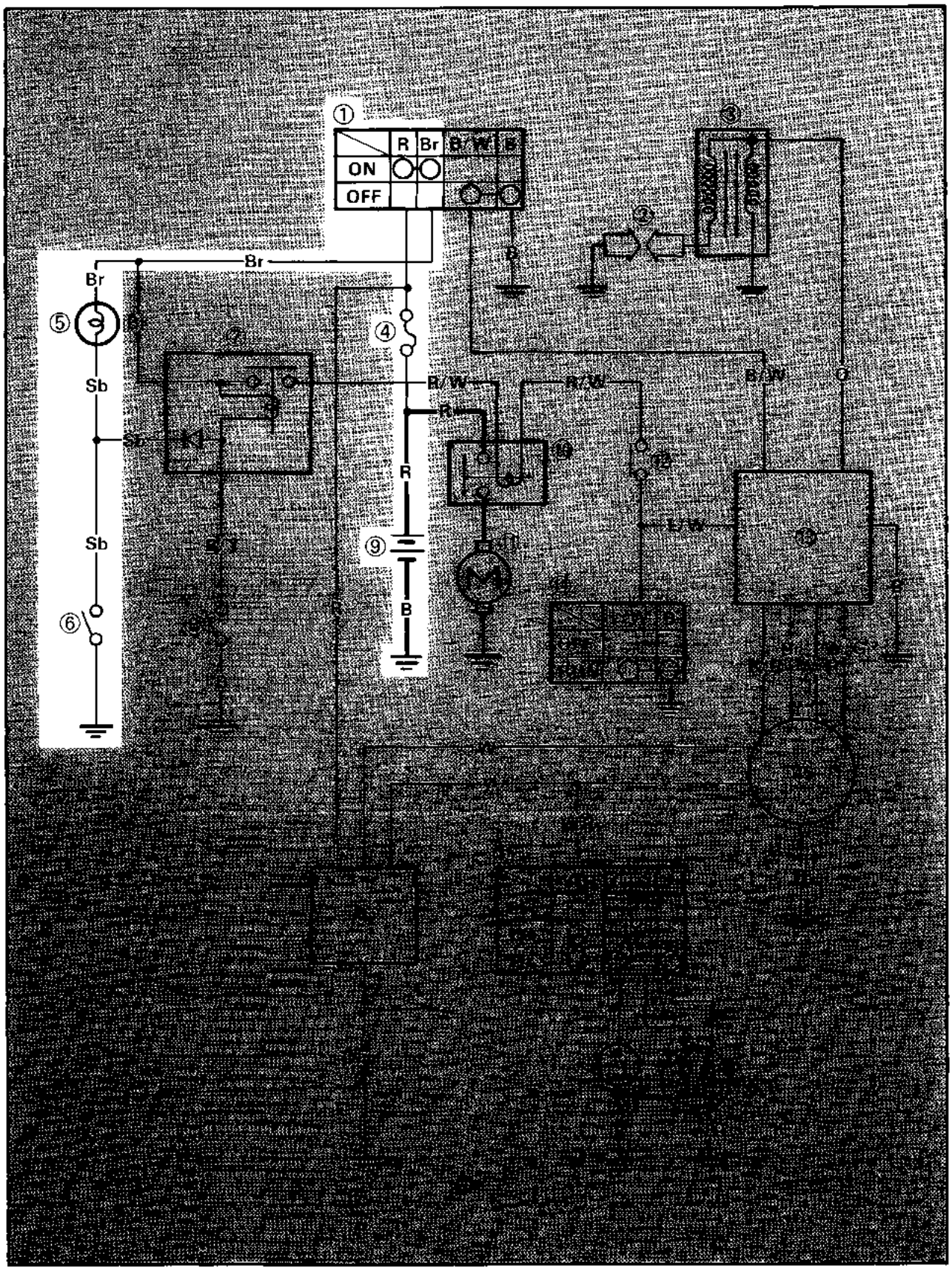
Rectifier/Regulator is faulty, replace it.

MEMO

SIGNAL SYSTEM

CIRCUIT DIAGRAM

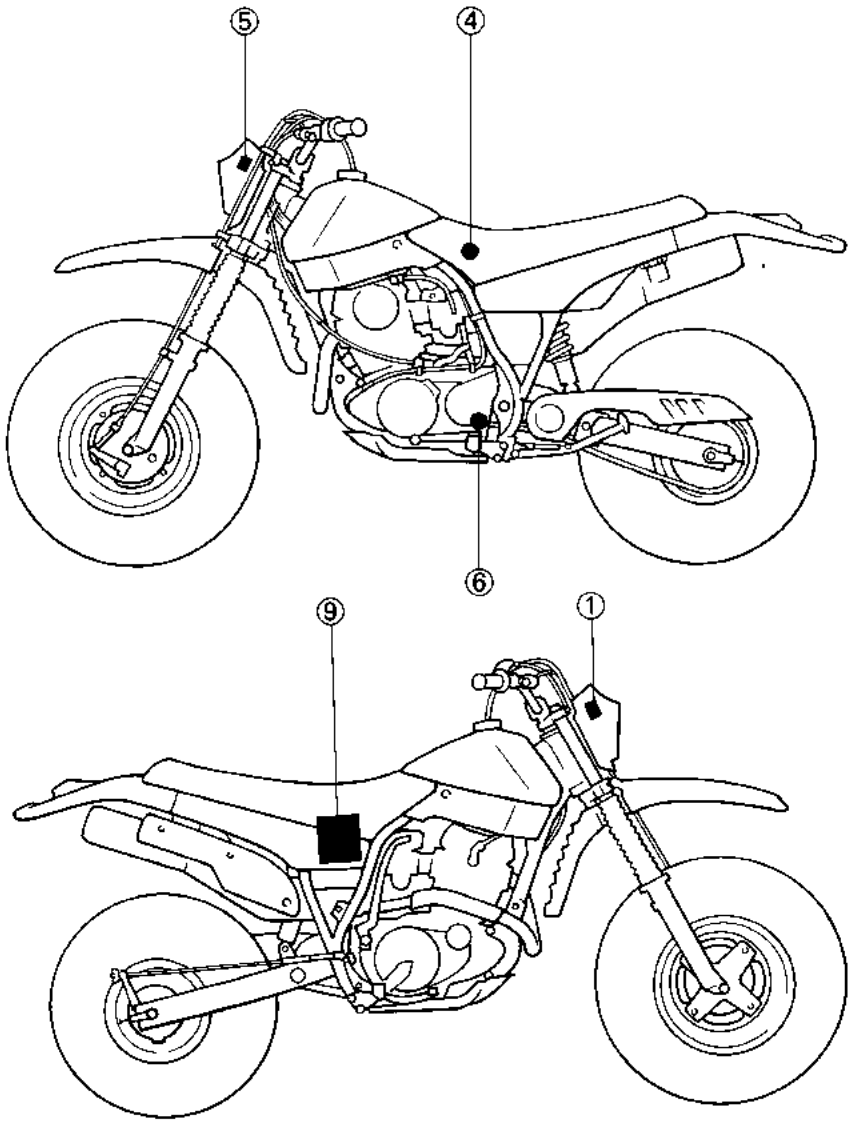
Below circuit diagram shows signal circuit.



NOTE:

For the color codes, see page 6-2.

① Main switch
④ Fuse
⑤ "NEUTRAL" indicator light
⑥ Neutral switch
⑨ Battery



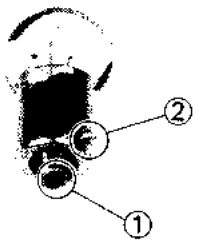
TROUBLESHOOTING

WHEN TRANSMISSION IS IN NEUTRAL, "NEUTRAL" INDICATOR LIGHT DOES NOT COME ON.

NOTE:

Before this troubleshooting, remove side covers and seat.

1. "NEUTRAL" indicator light bulb conduct check
   - Disconnect "NEUTRAL" indicator light leads (Sky blue, Brown) and remove it.
   - Remove bulb.
   - Connect Pocket Tester (YU-03112) to bulb terminals and check bulb for continuity.



Tester (+) Lead→Terminal 1
Tester (−) Lead→Terminal 2

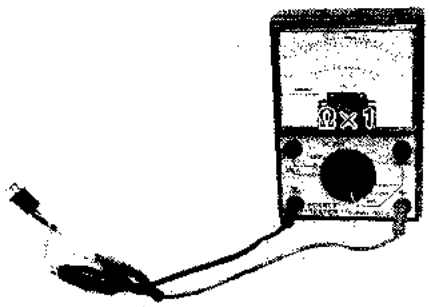
NOTE:

Set tester selector to "Ω×1" position.

Continuity (0Ω) ↓

Discontinuity (∞) ↓

Bulb is faulty, replace it.



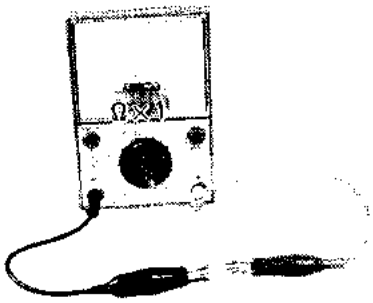
2. "NEUTRAL" indicator light socket conduct check
   - Install bulb to "NEUTRAL" indicator light socket.
   - Connect Pocket Tester (YU-03112) to indicator light leads (Sky blue, Brown) and check socket for continuity.

Tester (+) Lead→Sky blue Lead
Tester (−) Lead→Brown Lead

NOTE:
Set tester selector to "Ω×1" position.

Continuity (0Ω) ↓
Discontinuity (∞) ↓

3. Fuse inspection
   - Remove fuse.
   - Connect Pocket Tester (YU-03112) to fuse and check it for continuity.



NOTE:
Set tester selector to "Ω×1" position.

Continuity (0Ω) ↓
Discontinuity (∞) ↓

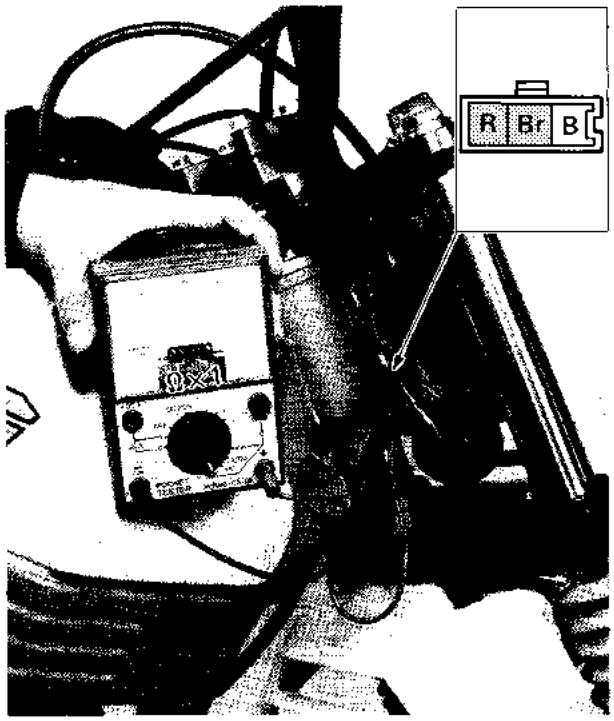
Replace fuse.

4. Battery inspection
   - Fluid level
   - Battery terminals
   - Fluid specific gravity

   Refer to "BATTERY INSPECTION" section in "CHAPTER 2".

OK → No good

Correct or replace battery.



5. Main switch conduct check
   - Disconnect main switch coupler (Brown, Red, Black).
   - Connect Pocket Tester (YU-03112) to main switch leads (Brown, Red).

Tester (+) Lead→Red Lead
Tester (−) Lead→Brown Lead

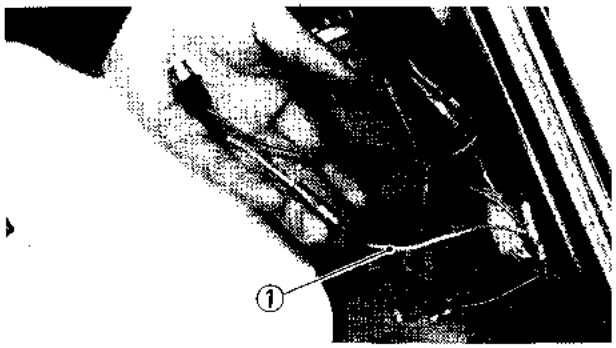
NOTE:

Set tester selector to "Ω × 1" position.

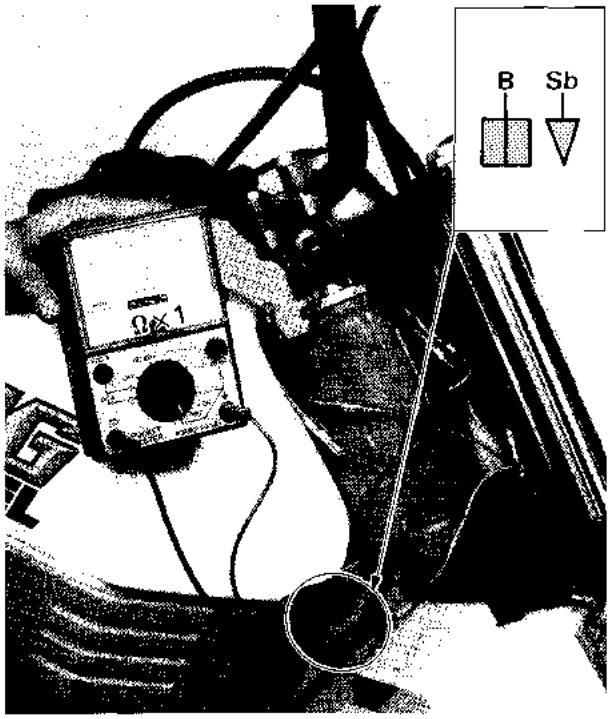
- Turn main switch to "ON" position and check it for continuity.

Continuity (0Ω) → Discontinuity (∞)

Main switch is faulty, replace it.



6. Neutral switch conduct check
   - Disconnect neutral switch lead ① (Sky blue).



• Connect Pocket Tester (YU-03112) to neutral switch lead and frame earth lead.

Tester (+) Lead→Sky blue Lead
Tester (−) Lead→Frame earth Lead

NOTE:
Set tester selector to "Ω×1" position.

• Transmission is in neutral and check neutral switch for continuity.

Continuity (0Ω) → Discontinuity (∞)

Neutral switch is faulty, replace it.

7. Check entire signal system for connections. Refer to "WIRING DIAGRAM" section.

OK → Poor connection

Correct.

Signal system is good.

CHAPTER 7.
APPENDICES

APPENDICES

SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	BW350T
Model Code Number	2JN
Vehicle Identification Number	JYA2JN00*HC000101
Engine Starting Number	2JN-000101
Dimensions:	
Overall Length	2,060 mm (81.1 in)
Overall Width	830 mm (32.7 in)
Overall Height	1,100 mm (43.3 in)
Seat Height	815 mm (32.1 in)
Wheelbase	1,400 mm (55.1 in)
Minimum Ground Clearance	240 mm (9.45 in)
Basic Weight:	
With Oil and Full Fuel Tank	141 kg (310 lb)
Engine:	
Engine Type	Air cooled, 4-stroke, gasoline, SOHC
Cylinder Arrangement	Single cylinder, Forward inclined
Displacement	348 cm^3
Bore × Stroke	83.0 × 64.5 mm (3.27 × 2.54 in)
Compression Ratio	8.8 : 1
Starting System	Electric and kick starter
Lubrication System	Wet sump
Oil Type or Grade:	
Engine Oil	Yamalube "4", SAE 10W30 Type SE motor oil or SAE 10W40 Type SE motor oil
Oil Capacity:	
Engine oil	
Periodic Oil Change	1.3 L (1.14 Imp qt, 1.37 US qt)
With Oil Filter Replacement	1.4 L (1.23 Imp qt, 1.47 US qt)
Total Amount	1.6 L (1.41 Imp qt, 1.69 US qt)
Air Filter	Wet type element
Fuel:	
Type	Regular gasoline
Tank Capacity	9.0 L (1.98 Imp gal, 2.38 US gal)
Reserve Amount	1.0 L (0.22 Imp gal, 0.26 US gal)
Carburetor:	
Type/Manufacturer	Y28P/TEIKEI

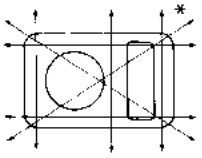
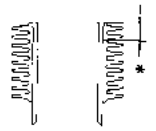
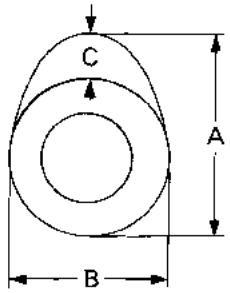
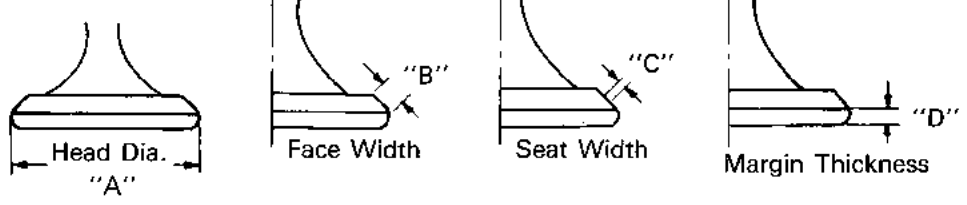
Model	BW350T
Spark Plug:	
Type/Manufacturer	For USA D8EA (NGK) or X24ES-U (N.D.) Except for USA DR8ES-L (NGK) or X24ERS-U (N.D.)
Gap	0.6 ~ 0.7 mm (0.024 ~ 0.028 in)
Clutch Type	Wet, multiple-disc
Transmission:	
Primary Reduction System	Gear
Primary Reduction Ratio	70/24 (2.917)
Secondary Reduction System	Chain drive
Secondary Reduction Ratio	17/14 × 37/13 (3.456)
Transmission Type	Constant mesh, 5-speed
Operation	Left foot operation
Gear Ratio	
1st	37/14 (2.642)
2nd	32/19 (1.684)
3rd	29/23 (1.260)
4th	28/29 (0.965)
5th	25/32 (0.781)
Chassis:	
Frame Type	Steel tube Diamond
Caster Angle	27°
Trail	80 mm (3.14 in)
Tire:	
Type	Tubeless
Size (Front)	AT25 × 8 – 12
Size (Rear)	AT23 × 11 – 9
Tire Pressure (Cold tire):	
Reference tire pressure	40 kPa (0.4 kg/cm^2, 5.8 psi)
Minimum	30 kPa (0.3 kg/cm^2, 4.4 psi)
Maximum	250 kPa (2.5 kg/cm^2, 36 psi)
Brake:	
Front Brake Type	Drum brake
Operation	Right hand operation
Rear Brake Type	Drum brake
Operation	Right foot operation
Suspension:	
Front Suspension	Telescopic fork
Rear Suspension	Swingarm
Shock Absorber:	
Front Shock Absorber	Coil spring/Oil damper
Rear Shock Absorber	Gas, Coil spring/Oil damper

SPECIFICATIONS

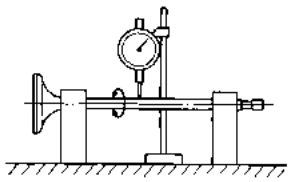
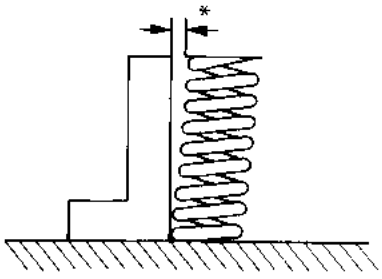
Model	BW350T
Wheel Travel:	
Front Wheel Travel	160 mm (6.30 in)
Rear Wheel Travel	160 mm (6.30 in)
Electrical:	
Ignition System	C.D.I. Magneto
Generator System	Flywheel magneto
Battery Type	YB-12B
Battery Capacity	12V 12AH
Headlight Type	Bulb type
Bulb Wattage (Quantity):	
Headlight	45W/45W (1 pc)
Taillight	6W (1 pc)
Indicator Light (Quantity):	
"NEUTRAL"	3.4W (1 pc)

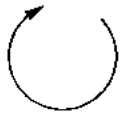
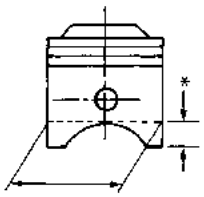
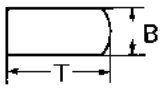
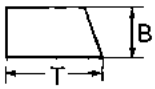
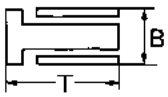
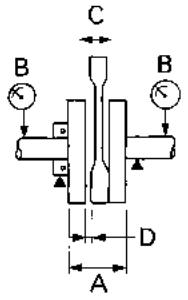
MAINTENANCE SPECIFICATIONS

Engine

Model	BW350T
Cylinder Head:	
Warp Limit 	0.03 mm (0.0012 in) *Lines indicate straightedge measurement.
Cylinder:	
Bore Size 	82.97 ~ 83.02 mm (3.267 ~ 3.269 in)
Measuring Point*	40 mm (1.57 in) (from the cylinder top)
<Limit>	84.0 mm (3.307 in)
Camshaft:	
Drive Method	Chain (Left)
Cam Dimensions	
Intake "A" 	40.28 ~ 40.38 mm (1.586 ~ 1.590 in)
"B"	32.14 ~ 32.24 mm (1.265 ~ 1.269 in)
"C"	8.329 mm (0.328 in)
Exhaust "A"	40.29 ~ 40.39 mm (1.586 ~ 1.590 in)
"B"	32.14 ~ 32.24 mm (1.265 ~ 1.269 in)
"C"	8.336 mm (0.328 in)
Camshaft Runout Limit	0.03 mm (0.001 in)
Cam Chain Type/Number of Links	BF05M/92 Links
Cam Chain Adjustment Method	Automatic
Rocker Arm/Rocker Arm Shaft:	
Rocker Arm Inside Diameter	12.000 ~ 12.018 mm (0.472 ~ 0.473 in)
Shaft Outside Diameter	11.981 ~ 11.991 mm (0.471 ~ 0.472 in)
Arm-to Shaft Clearance	0.009 ~ 0.037 mm (0.0004 ~ 0.0015 in)
Valve Clearance (Cold)	
IN.	0.06 ~ 0.10 mm (0.002 ~ 0.004 in)
EX.	0.16 ~ 0.20 mm (0.006 ~ 0.008 in)
Valve Dimensions:	
	
"A" Head Dia. IN.	37.9 ~ 38.1 mm (1.492 ~ 1.500 in)
EX.	31.9 ~ 32.1 mm (1.256 ~ 1.264 in)

SPECIFICATIONS

Model		BW350T
"B" Face Width	IN.	2.26 mm (0.089 in)
	EX.	2.26 mm (0.089 in)
"C" Seat Width	IN.	1.0 ~ 1.2 mm (0.039 ~ 0.047 in)
	EX.	1.0 ~ 1.2 mm (0.039 ~ 0.047 in)
"D" Margin Thickness	IN.	1.0 ~ 1.4 mm (0.039 ~ 0.055 in)
	EX.	0.8 ~ 1.2 mm (0.031 ~ 0.047 in)
Stem Outside Diameter	IN.	6.975 ~ 6.990 mm (0.274 ~ 0.275 in)
	EX.	6.955 ~ 6.970 mm (0.273 ~ 0.274 in)
Guide Inside Diameter	IN.	7.000 ~ 7.012 mm (0.275 ~ 0.276 in)
	EX.	7.000 ~ 7.012 mm (0.275 ~ 0.276 in)
Stem-to Guide Clearance	IN.	0.010 ~ 0.037 mm (0.0004 ~ 0.0014 in)
	EX.	0.030 ~ 0.057 mm (0.0012 ~ 0.0022 in)
Stem Runout Limit		0.03 mm (0.0012 in)
		
Valve Seat Width	IN.	1.0 ~ 1.2 mm (0.039 ~ 0.047 in)
	EX.	1.0 ~ 1.2 mm (0.039 ~ 0.047 in)
Valve Spring:		
Free Length		
Inner Spring	IN.	39.9 mm (1.57 in)
	EX.	39.9 mm (1.57 in)
Outer Spring	IN.	43.6 mm (1.72 in)
	EX.	43.6 mm (1.72 in)
Compressed Length (Valve Closed)		
Inner Spring	IN.	33.6 mm (1.32 in)
	EX.	33.6 mm (1.32 in)
Outer Spring	IN.	33.6 mm (1.32 in)
	EX.	33.6 mm (1.32 in)
Tilt Limit*		
Inner Spring	IN. & EX.	2.5° or 1.7 mm (0.067 in)
Outer Spring	IN. & EX.	2.5° or 1.9 mm (0.075 in)
		

Model		BW350T	
Direction of Winding (Top view)		Inner Spring	Outer Spring
			
Piston:			
Piston Size		82.92 ~ 82.97 mm (3.265 ~ 3.266 in)	
Measuring Point*		5.5 mm (0.217 in)	
		(From bottom line of piston skirt)	
Piston Offset		0.5 mm (0.012 in)	
Offset Direction		Intake side	
Piston-to-Cylinder Clearance		0.04 ~ 0.06 mm (0.001 ~ 0.002 in)	
<Limit>		<0.1 mm (0.004 in)>	
Oversize	2nd	83.50 mm (3.287 in)	
	4th	84.00 mm (3.307 in)	
Piston Ring:			
Sectional Sketch			
	Top Ring	Plain (Barrel face)	
	B	1.2 mm (0.047 in)	
	T	3.3 mm (0.130 in)	
	2nd Ring	Plain (Taper face)	
	B	1.5 mm (0.059 in)	
	T	3.4 mm (0.134 in)	
	Oil Ring		
	B	2.8 mm (0.110 in)	
	T	2.5 mm (0.098 in)	
End gap (Installed)	Top Ring	0.2 ~ 0.4 mm (0.008 ~ 0.016 in)	
	2nd Ring	0.2 ~ 0.4 mm (0.008 ~ 0.016 in)	
	Oil Ring	0.3 ~ 0.9 mm (0.012 ~ 0.035 in)	
<Limit>	Top Ring	0.6 mm (0.024 in)	
	2nd Ring	0.6 mm (0.024 in)	
Side Clearance	Top Ring	0.04 ~ 0.08 mm (0.001 ~ 0.003 in)	
	2nd Ring	0.03 ~ 0.07 mm (0.001 ~ 0.003 in)	
<Limit>	Top Ring	0.10 mm (0.004 in)	
	2nd Ring	0.10 mm (0.004 in)	
Crankshaft:			
Crank Width "A"		58.95 ~ 59.00 mm (2.321 ~ 2.323 in)	
Runout Limit "B"		0.03 mm (0.001 in)	

SPECIFICATIONS

Model		BW350T
Small End Free Play "C"		0.8 ~ 1.0 mm (0.031 ~ 0.039 in)
<Limit>		<2.0 mm (0.079 in)>
Big End Side Clearance "D"		0.35 ~ 0.85 mm (0.014 ~ 0.033 in)
Balancer Drive Method		Gear
Clutch:		
Friction Plate Thickness/Quantity		2.64 ~ 2.76 mm (0.104 ~ 0.109 in)/7 pcs.
Wear Limit		2.5 mm (0.098 in)
Clutch Plate Thickness/Quantity		1.5 ~ 1.7 mm (0.059 ~ 0.067 in)/6 pcs.
Warp Limit		0.2 mm (0.008 in)
Clutch Spring Free Length/Quantity		38.3 mm (1.508 in)/5 pcs.
Clutch Spring Minimum Length		36.5 mm (1.440 in)
Clutch Release Method		Inner push (Cam Push)
Push Rod Bending Limit		0.2 mm (0.008 in)
Transmission:		
Main Axle Deflection Limit		0.04 mm (0.001 in)
Drive Axle Deflection Limit		0.04 mm (0.001 in)
Shifter Type		Guide bar
Kick Starter:		
Kick Starter Type		Kick & Mesh
Air Filter Oil Grade (Oiled Filter)		Yamalube 2-cycle oil or Foam-Air-Filter Oil
Carburetor:		
Type/Manufacturer/Quantity		Y28P/TEIKEI/1 pc.
I.D. Mark		2JN00
Main Jet	(M.J.)	#140
Main Air Jet	(M.A.J.)	ϕ1.0
Jet Needle-clip Position	(J.N.)	5C75-3/5
Needle Jet	(N.J.)	2.610
Pilot Jet	(P.J.)	#46
Pilot Air Jet	(P.A.J.)	ϕ0.6
Pilot Outlet	(P.O.)	ϕ0.8
Pilot Screw	(P.S.)	1 and 1/2 turns out
Valve Seat	(V.S.)	ϕ2.5
Starter Jet	(G.S.)	#62
Fuel Level	(F.L.)	6.5 ~ 7.5 mm (0.26 ~ 0.30 in)
Throttle Valve Size	(Th. V)	#30
Bypass 1	(B.P. 1)	ϕ1.0
Bypass 2	(B.P. 2)	ϕ1.0
Float Height	(F.H.)	27.5 ~ 28.5 mm (1.08 ~ 1.12 in)
Engine Idling Speed		1,500 r/min

Model	BW350T
Lubrication System:	
Oil Filter Type	Paper Type
Oil Pump Type	Trochoid pump
Tip Clearance	0.15 mm (0.006 in)
Side Clearance	0.04 – 0.09 mm (0.002 ~ 0.004 in)
Oil Pressure (Hot)	28 kPa (0.28 kg/cm^2, 4 psi)
Pressure Check Location	Cylinder head

SPECIFICATIONS

Tightening Torque:

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Cylinder head	Flange bolt	M10×1.25	4	40	4.0	29	E
	Hexagon socket head bolt	M8 ×1.25	2	20	2.0	14	
Cam sprocket cover	Hexagon socket head bolt	M6 ×1.0	2	10	1.0	7.2	
Valve cover	Hexagon socket head bolt	M6 ×1.0	5	10	1.0	7.2	
Camshaft bearing holder	Hexagon bolt	M6 ×1.0	2	8	0.8	5.8	
Spark plug	—	M12×1.25	1	18	1.8	13	
Cylinder	Hexagon socket head bolt	M6 ×1.0	1	10	1.0	7.2	
Balancer	Hexagon nut	M16×1.0	1	60	6.0	43	
Flywheel magneto	Flange bolt	M10×1.25	1	60	6.0	43	
Locknut (Valve clearance adjuster)	Hexagon nut	M7 ×1.0	2	20	2.0	14	
Cam sprocket	Hexagon bolt	M10×1.25	1	60	6.0	43	
Cam chain tensioner	Flange bolt	M6 ×1.0	2	10	1.0	7.2	
Cam chain guide	Hexagon bolt	M8 ×1.25	1	8	0.8	5.8	
	Hexagon nut	M8 ×1.25	1	12	1.2	8.7	
Decompression lever	Hexagon bolt	M6 ×1.0	1	10	1.0	7.2	
Oil pump	Panhead screw	M6 ×1.0	3	7	0.7	5.1	
Drain plug	—	M40×1.5	1	32	3.2	23	
Oil filter cover	Hexagon socket head bolt	M6 ×1.0	1	10	1.0	7.2	
	Panhead screw	M6 ×1.0	2	7	0.7	5.1	
	Flange bolt	M5 ×0.8	1	5	0.5	3.6	
Carburetor joint	Hexagon socket head bolt	M8 ×1.25	2	20	2.0	14	
Clamp (Carburetor joint)	Panhead screw	M5 ×0.8	2	2	0.2	1.4	
Air filter case	Flange bolt	M6 ×1.0	2	8	0.8	5.8	
Exhaust pipe protector	Bind screw	M6 ×1.0	2	7	0.7	5.1	T
Muffler protector	Bind screw	M6 ×1.0	3	7	0.7	5.1	T
Band (Muffler)	Flange bolt	M8 ×1.25	1	20	2.0	14	
Exhaust pipe	Hexagon socket head bolt	M6 ×1.0	2	12	1.2	8.7	
Muffler	Flange nut	M8 ×1.25	2	20	2.0	14	
	Flange bolt	M8 ×1.25	1	20	2.0	14	
Crankcase	Panhead screw	M6 ×1.0	15	7	0.7	5.1	
Cable holder	Panhead screw	M6 ×1.0	1	7	0.7	5.1	
Cam chain tensioner blind plug (Crankcase)	Flange bolt	M10×1.25	1	30	3.0	22	
Crankcase cover	Panhead screw	M6 ×1.0	18	7	0.7	5.1	
Ratchet wheel guide	Hexagon bolt	M6 ×1.0	2	10	1.0	7.2	
Kick crank	Hexagon bolt	M8 ×1.25	1	20	2.0	14	

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Primary drive gear	Hexagon nut	M16×1.0	1	80	8.0	58	
Pressure plate	Flange bolt	M6 ×1.0	5	10	1.0	7.2	
Push rod	Hexagon nut	M6 ×1.0	1	8	0.8	5.8	
Clutch boss	Hexagon nut	M20×1.0	1	80	8.0	58	
Push lever	Flange bolt	M8 ×1.25	1	12	1.2	8.7	
Drive sprocket	Hexagon bolt	M6 ×1.0	2	10	1.0	7.2	
Shift cam	Flat head screw	M5 ×0.8	1	4	0.4	2.9	
Change pedal	Hexagon bolt	M6 ×1.0	1	10	1.0	7.2	
Stator	Panhead screw	M6 ×1.0	2	7	0.7	5.1	
Starter motor	Flange bolt	M6 ×1.0	2	10	1.0	7.2	

SPECIFICATIONS

Chassis

Model		BW350T
Steering System:		
Steering Bearing Type	Upper	Ball Bearing
	Lower	Taper Roller Bearing
Size of Steel Balls (Quantity)		3/16 in (22 pcs.)
Front Suspension:		
Front Fork Travel		160 mm (6.30 in)
Fork Spring Free Length		426.5 mm (16.8 in)
Spring Rate (K_1)		12 N/mm (1.2 kg/mm, 45.9 lb/in)
Stroke		0 ~ 160 mm (0 ~ 6.30 in)
Optional Spring		No.
Oil Capacity		241 cm^3 (8.5 Imp oz, 8.1 US oz)
Oil Level		170 mm (6.7 in) (From top of inner tube fully compressed without spring.)
Oil Grade		Yamaha fork oil 15 wt or equivalent
Rear Suspension:		
Shock Absorber Travel		56 mm (2.2 in)
Spring Free Length		190 mm (7.5 in)
Spring Rate (K_1)		125 N/mm (12.5 kg/mm, 688.5 lb/in)
Stroke		0 ~ 56 mm (0 ~ 2.2 in)
Optional Spring		No.
Enclosed Gas Pressure		250 kPa (25 kg/cm^2, 355.5 psi)
Rear Arm:		
Side Clearance Free Play Limit		
	Arm End	1.0 mm (0.04 in)
	Arm Pivot	0.4 ~ 0.7 mm (0.016 ~ 0.028 in)
Wheel:		
Front Wheel Type		Panel Wheel
Rear Wheel Type		Panel Wheel
Front Rim Size/Material		12 × 6.5 AT/Aluminum
Rear Rim Size/Material		9 × 9.0 AT/Steel
Rim Runout Limit	Vertical	1.0 mm (0.04 in)
	Lateral	1.0 mm (0.04 in)
Drive Chain:		
Type/Manufacturer	Primary	50 HDL 5/D.I.D.
	Secondary	520 DS/D.I.D.
No. of Links	Primary	40 Links
	Secondary	76 Links
Chain Free Play	Primary	15 ~ 40 mm (0.59 ~ 1.57 in)
	Secondary	25 ~ 40 mm (0.98 ~ 1.57 in)

Model		BW350T
Drum Brake:		
Type	Front	Leading and Trailing
	Rear	Leading and Trailing
Drum Inside Dia.	Front	130 mm (5.12 in)
	<Limit>	<131 mm (5.16 in)>
	Rear	110 mm (4.33 in)
	<Limit>	<111 mm (4.37 in)>
Lining Thickness		4 mm (0.16 in)
	<Limit>	<2 mm (0.08 in)>
Shoe Spring Free Length	Front	36.5 mm (1.44 in)
	Rear	50.5 mm (1.99 in)
Brake Lever & Brake Pedal:		
Brake Lever Free Play/Position		10~20 mm (0.39~0.79 in)/at lever end
Brake Pedal Position		15 mm (0.59 in) Vertical height below footrest top
Brake Pedal Free Play		20~30 mm (0.79~1.18 in)/ Vertical height below brake pedal top
Clutch Lever Free Play/Position		2~3 mm (0.08~0.12 in)/at lever pivot

SPECIFICATIONS

Tightening Torque:

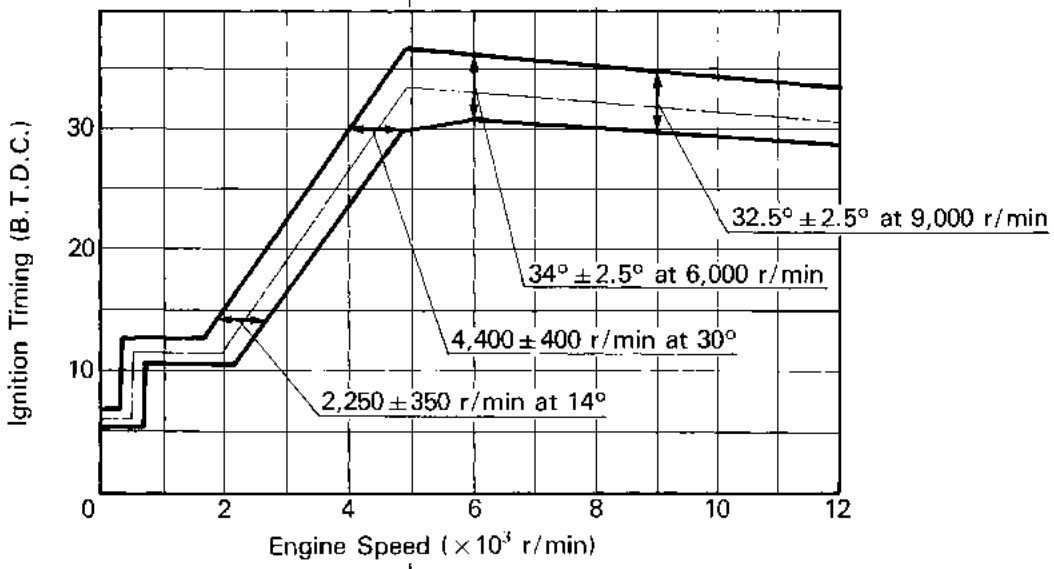
Part to be tightened	Thread size	Q'ty	Tightening torque			Remarks
			Nm	m•kg	ft•lb	
Front wheel axle	M14×1.5	1	90	9.0	65	
Front wheel and hub	M8 ×1.25	4	28	2.8	20	
Cam lever (Front brake)	M6 ×1.0	1	9	0.9	6.5	
Under bracket and inner tube	M8 ×1.25	4	23	2.3	17	
Handle crown and inner tube	M8 ×1.25	2	23	2.3	17	
Handle crown and steering shaft	M14×1.25	1	90	9.0	65	
Ring nut (steering shaft)	M25×1.0	1	6	0.6	4.3	Refer to "NOTE"
Handle crown and handlebar holder	M8 ×1.25	4	20	2.0	14	
Engine and engine stay (Front)	M8 ×1.25	2	33	3.3	24	
Engine stay (Front) and frame	M8 ×1.25	2	33	3.3	24	
Engine and engine stay (Upper)	M8 ×1.25	1	33	3.3	24	
Engine stay (Upper) and frame	M8 ×1.25	2	33	3.3	24	
Engine and frame (Lower)	M8 ×1.25	1	33	3.3	24	
Pivot shaft	M14×1.5	1	90	9.0	65	
Rear shock absorber	M12×1.25	1	58	5.8	42	
Footrest and frame	M10×1.25	4	45	4.5	32	
Middle sprocket shaft	M10×1.25	1	55	5.5	40	
Rear wheel axle	M16×1.5	1	90	9.0	65	
Rear wheel and hub	M8 ×1.25	4	28	2.8	20	
Driven sprocket and hub	M10×1.25	6	62	6.2	45	
Cam lever (Rear brake)	M6 ×1.0	1	9	0.9	6.5	
Rear brake drum and hub	M8 ×1.25	6	28	2.8	20	
Front fender	M6 ×1.0	4	5	0.5	3.6	
Rear fender	M6 ×1.0	4	5	0.5	3.6	
Mud guard	M6 ×1.0	2	5	0.5	3.6	
Fuel tank and fuel tank stay	M6 ×1.0	4	7	0.7	5.1	
Fuel tank stay and frame	M6 ×1.0	2	7	0.7	5.1	
Seat	M6 ×1.0	2	5	0.5	3.6	
Air scoop	M6 ×1.0	4	5	0.5	3.6	
Chain guard	M6 ×1.0	4	5	0.5	3.6	
Chain protector	M6 ×1.0	1	5	0.5	3.6	
Cap bolt (Front fork)	M30×1.0	2	23	2.3	17	
Damper rod securing bolt (Front fork)	M10×1.0	2	30	3.0	22	

NOTE:

1. First, tighten the ring nut approximately 37 Nm (3.7 m•kg, 27 ft•lb) by using the torque wrench, then loosen the ring nut one turn.
2. Retighten the ring nut to specification.

Electrical

Model	BW350T
Voltage:	12V
Ignition System:	
Ignition Timing (B.T.D.C.)	12° at 1,000 r/min
Advanced Timing (B.T.D.C.)	34° at 6,000 r/min
Advancer Type	Electrical Type
C.D.I.:	
Magneto Model/Manufacturer	2JN/YAMAHA
Pickup Coil Resistance	640 ~ 960Ω at 20°C (68°F)
(Color)	(White/Green — White/Red)
Source Coil Resistance (1)	208 ~ 312Ω at 20°C (68°F)
(Color)	(Black/Red — Black)
Source Coil Resistance (2)	14.4 ~ 21.6Ω at 20°C (68°F)
(Color)	(Brown – Black)
C.D.I. Unit Model/Manufacturer	2JN/YAMAHA
Ignition Coil:	
Model/Manufacturer	2JN/YAMAHA
Minimum Spark Gap	6 mm (0.24 in)
Primary Coil Resistance	0.72 ~ 1.08Ω at 20°C (68°F)
Secondary Coil Resistance	5.68 ~ 8.52kΩ at 20°C (68°F)
Spark Plug Cap:	
Type	Resin Type
Resistance	10kΩ
Charging System:	
Type	Flywheel Magneto



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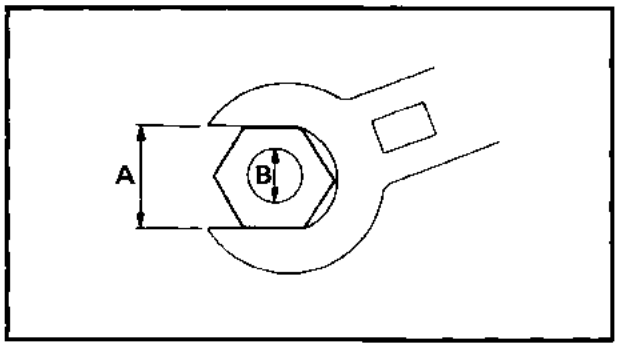
SPECIFICATIONS

Model		BW350T
Flywheel Magneto:		
Model/Manufacturer		2JN/YAMAHA
Charging Coil Resistance		0.24 ~ 0.36Ω at 20°C (68°F)
(Color)		(Black — White)
Charging Voltage		12.8V ~ 14.8V at 3,000 r/min
Charging Current	Day	2.5A or more at 3,000 r/min
	Night	1.4A or more at 3,000 r/min
Lighting Coil Resistance		0.16 ~ 0.24Ω at 20°C (68°F)
(Color)		(Black — Yellow)
Lighting Voltage		11V or more at 2,500 r/min
Rectifier/Regulator:		
Model/Manufacturer		55V/MATSUSHITA
Capacity		5A
Withstand Voltage		200V
Battery:		
Specific Gravity		1.280
Electric Starting System:		
Type		Constant Mesh Type
Starter Motor:		
Model/Manufacturer		2JN/NIPPON DENSO
I.D. Number		DB4DL
Out Put		0.7 kW
Armature Coil Resistance		0.012 ~ 0.014Ω at 20°C (68°F)
Brush Overall Length		12 mm (0.48 in)
<Wear Limit>		<8.5 mm (0.33 in)>
Brush Spring Pressure		650 ~ 950 g
Commutator Diameter		28 mm (1.10 in)
<Wear Limit>		<27 mm (1.06 in)>
Mica Undercut		0.4 ~ 0.8 mm (0.016 ~ 0.032 in)
Starter Relay:		
Model/Manufacturer		22U/HITACHI
Amperage Rating		100A
Starting Circuit Cut-off Relay:		
Model/Manufacturer		1RL/MATSUSHITA
Coil Resistance		72 ~ 88Ω at 20°C (68°F)
Diode		Yes
Circuit Breaker:		
Type		Fuse
Amperage for Individual:		
"MAIN"		10A

GENERAL TORQUE SPECIFICATIONS

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

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



A: Distance cross flats
B: Outside thread diameter

DEFINITION OF UNITS

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

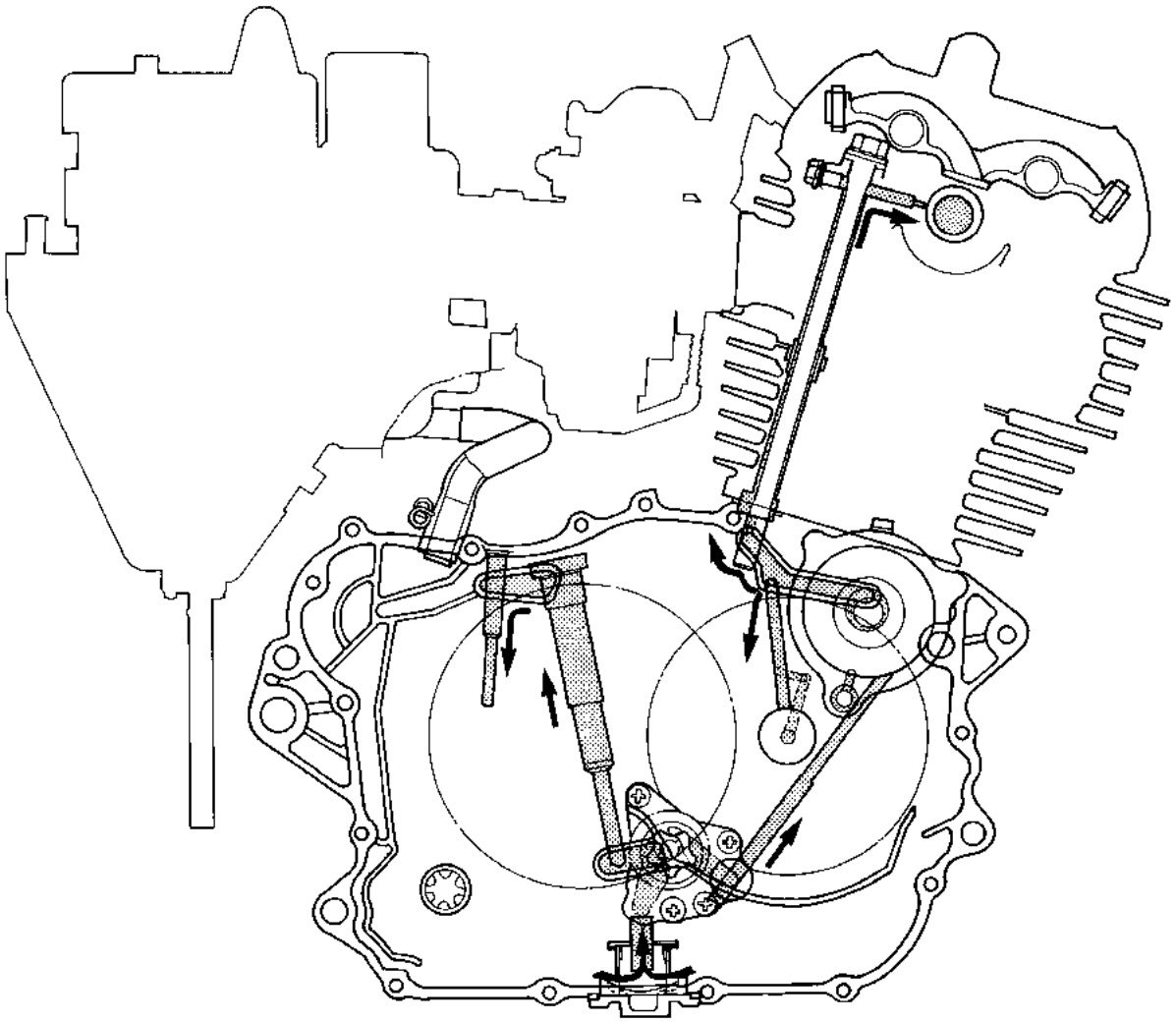
7

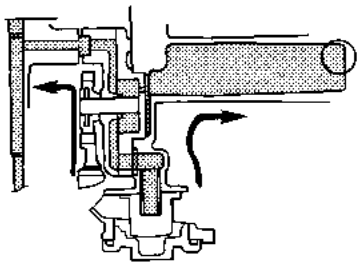
CONVERSION TABLES

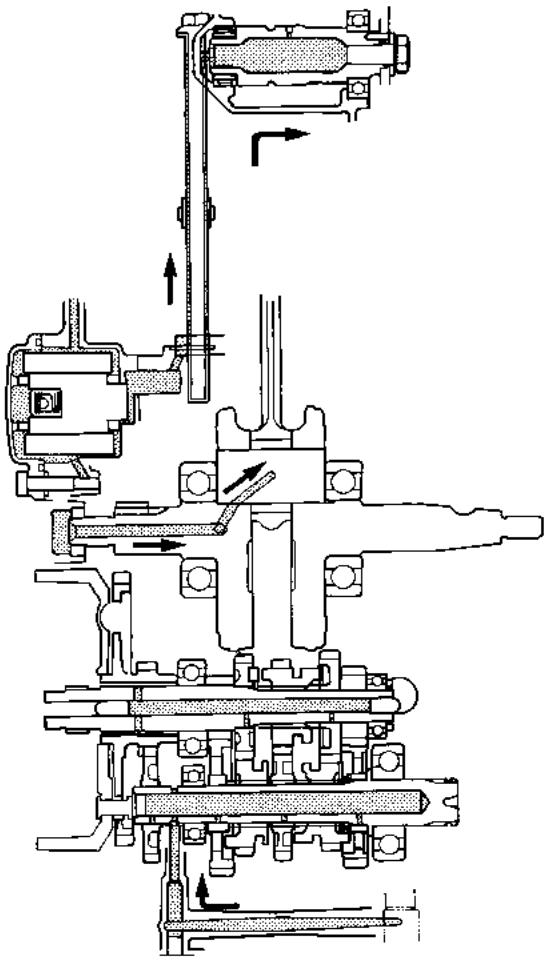
Metric to inch system		
Known	Multiplier	Result
m•kg	7.233	ft•lb
m•kg	86.80	in•lb
cm•kg	0.0723	ft•lb
cm•kg	0.8680	in•lb
kg	2.205	lb
g	0.03527	oz
km/lit	2.352	mpg
km/hr	0.6214	mph
km	0.6214	mi
m	3.281	ft
m	1.094	yd
cm	0.3937	in
mm	0.03937	in
cc (cm^3)	0.03382	oz (US liq)
cc (cm^3)	0.06102	cu in
lit (liter)	2.1134	pt (US liq)
lit (liter)	1.057	qt (US liq)
lit (liter)	0.2642	gal (US liq)
kg/mm	56.007	lb/in
kg/cm	14.2234	psi (lb/in)
Centigrade (°C)	9/5 (°C) + 32	Fahrenheit (°F)

Inch to metric system		
Known	Multiplier	Result
ft•lb	0.13862	m•kg
in•lb	0.01152	m•kg
ft•lb	13.831	cm•kg
in•lb	1.1521	cm•kg
lb	0.4535	kg
oz	28.352	g
mpg	0.4252	km/lit
mph	1.609	km/hr
mi	1.609	km
ft	0.3048	m
yd	0.9141	m
in	2.54	cm
in	25.4	mm
oz (US liq)	29.57	cc (cm^3)
cu in	16.387	cc (cm^3)
pt (US liq)	0.4732	lit (liter)
qt (US liq)	0.9461	lit (liter)
gal (US liq)	3.785	lit (liter)
lb/in	0.017855	kg/mm
psi (lb/in)	0.07031	kg/cm
Fahrenheit (°F)	5/9 (F°-32)	Centigrade (°C)

LUBRICATION DIAGRAMS

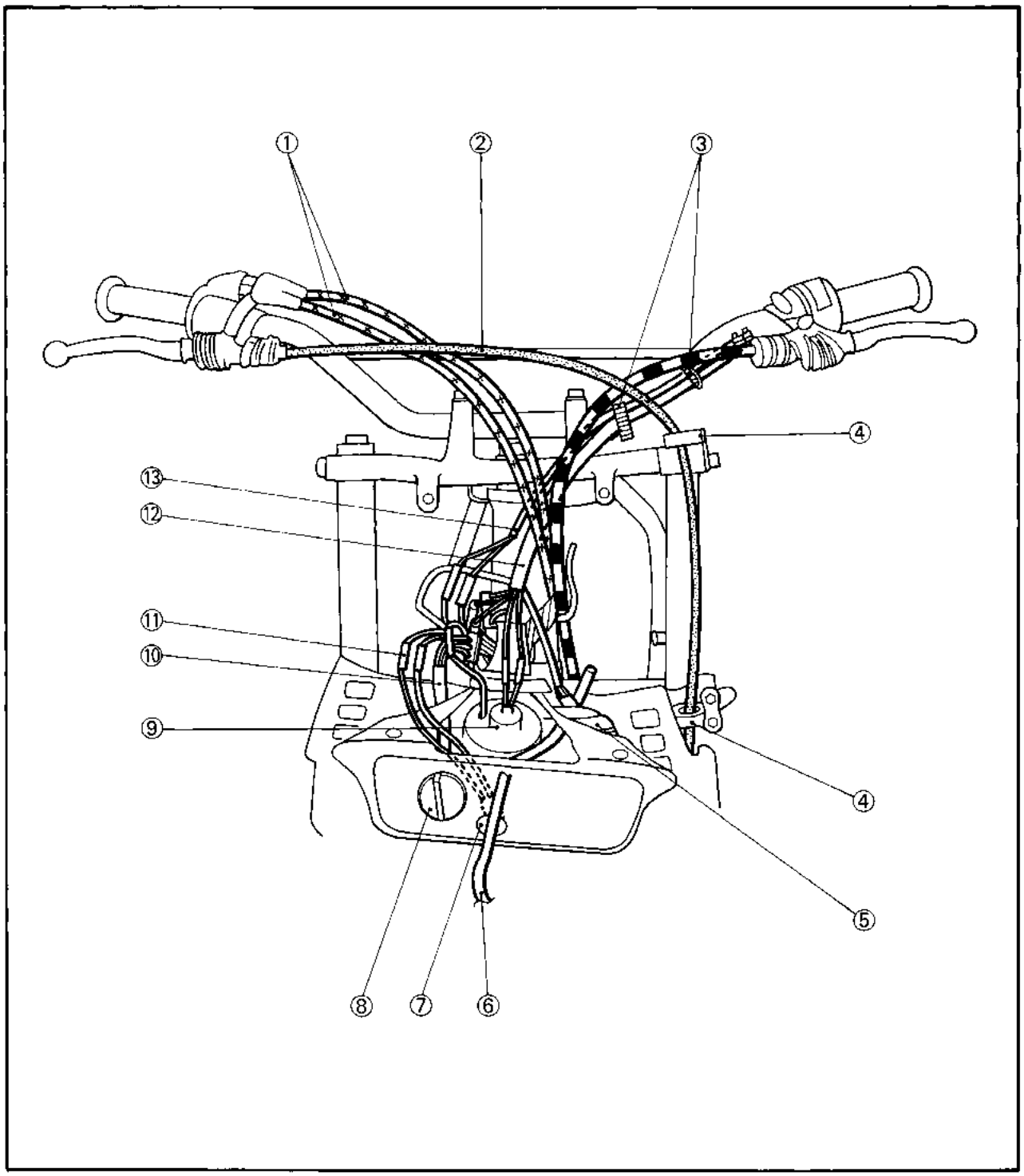






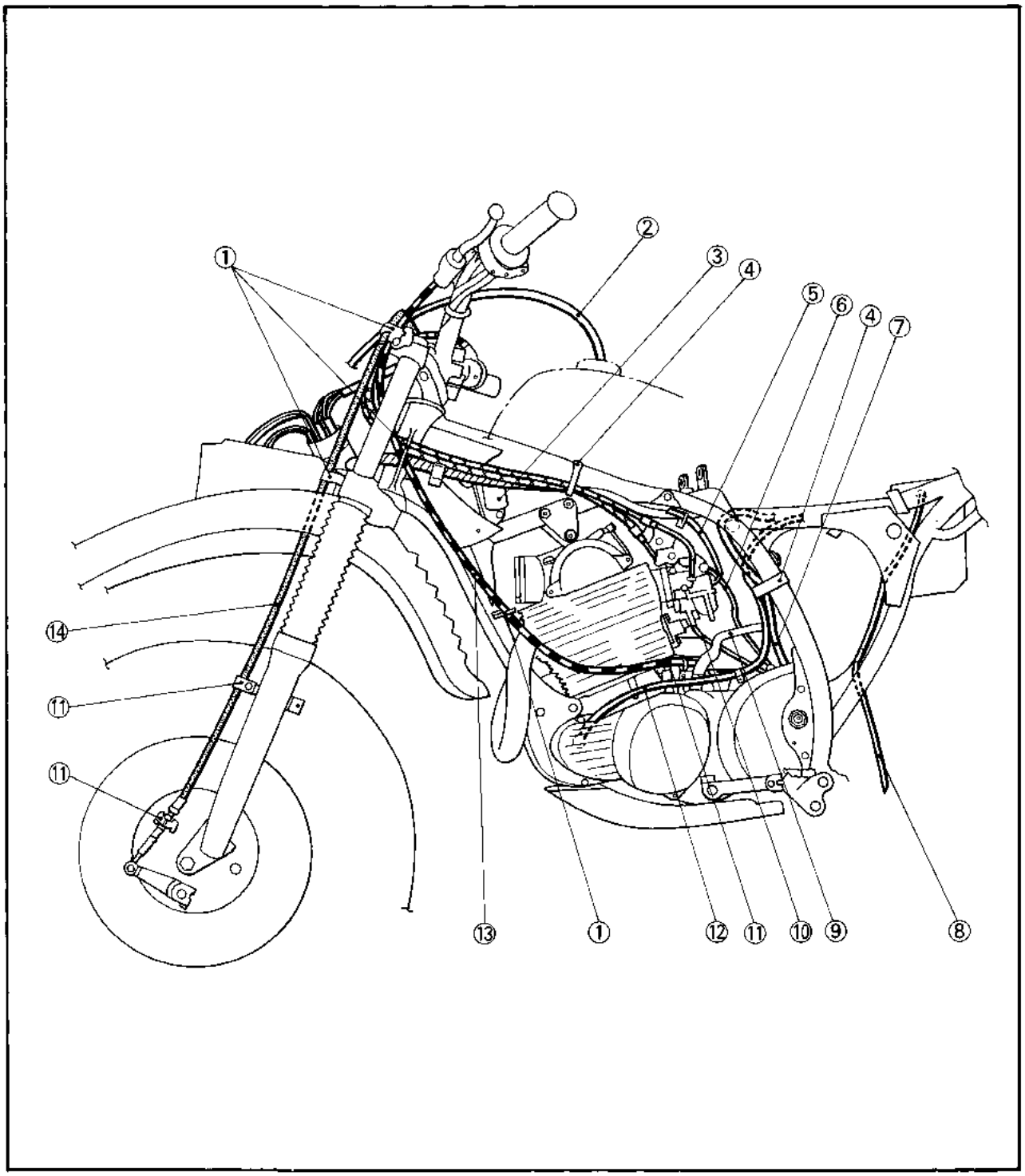
CABLE ROUTING

① Throttle cable
② Brake cable
③ Band
④ Cable guide
⑤ Starting ciruit cut-off relay
⑥ Fuel tank breather hose
⑦ "NEUTRAL" indicator light
⑧ Main switch
⑨ Headlight bulb
⑩ Main switch lead
⑪ "NEUTRAL" indicator light lead
⑫ Handlebar switch lead
⑬ Clutch switch lead

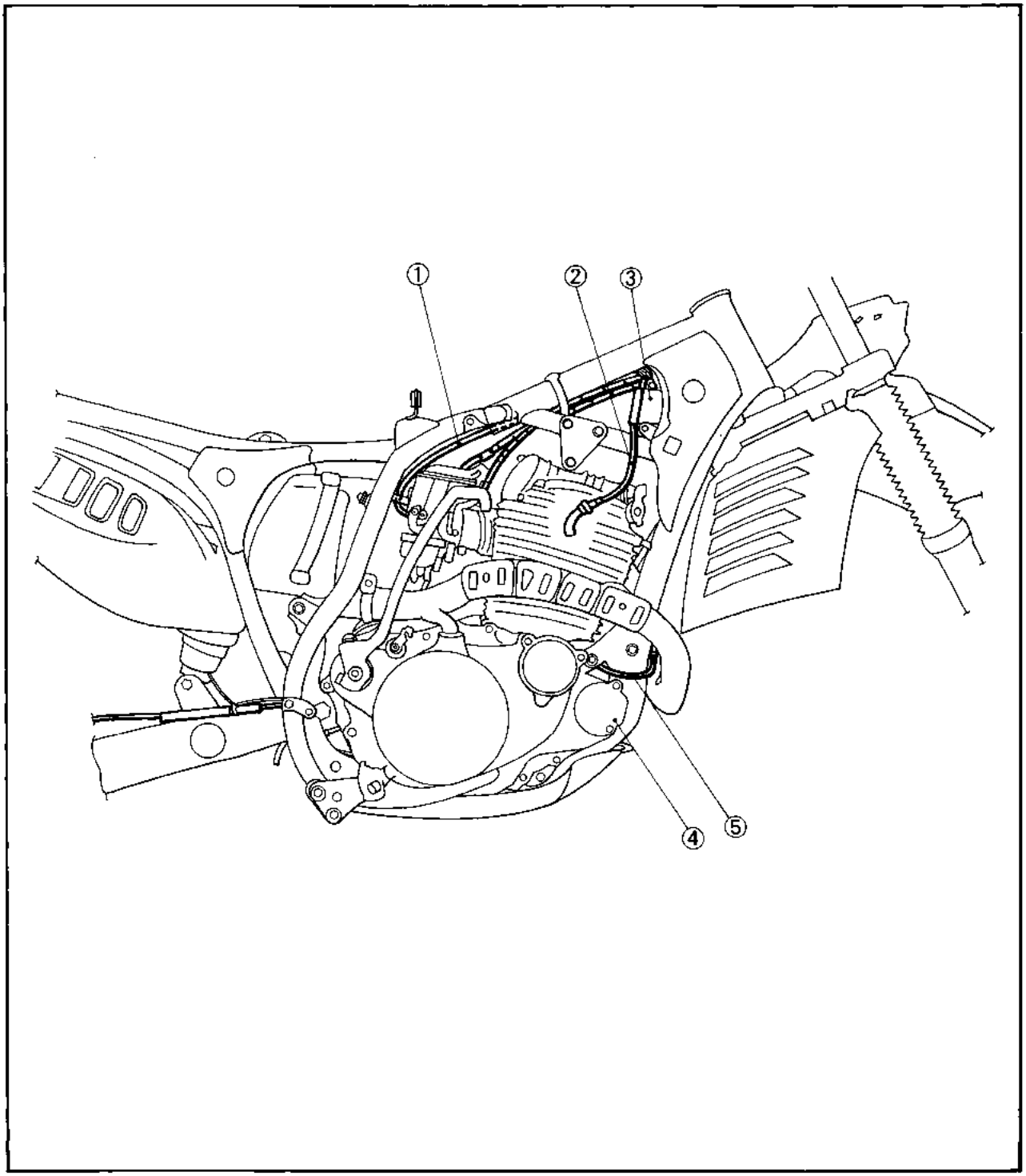


CABLE ROUTING

① Cable guide
② Fuel tank breather hose
③ Ignition coil
④ Band
⑤ Fuel hose
⑥ Carburetor air ventilation hose
⑦ C.D.I. magneto lead
⑧ Battery breather hose
⑨ Crankcase ventilation hose
⑩ Carburetor overflow hose
⑪ Cable holder
⑫ Starter motor lead
⑬ Clutch cable
⑭ Brake cable

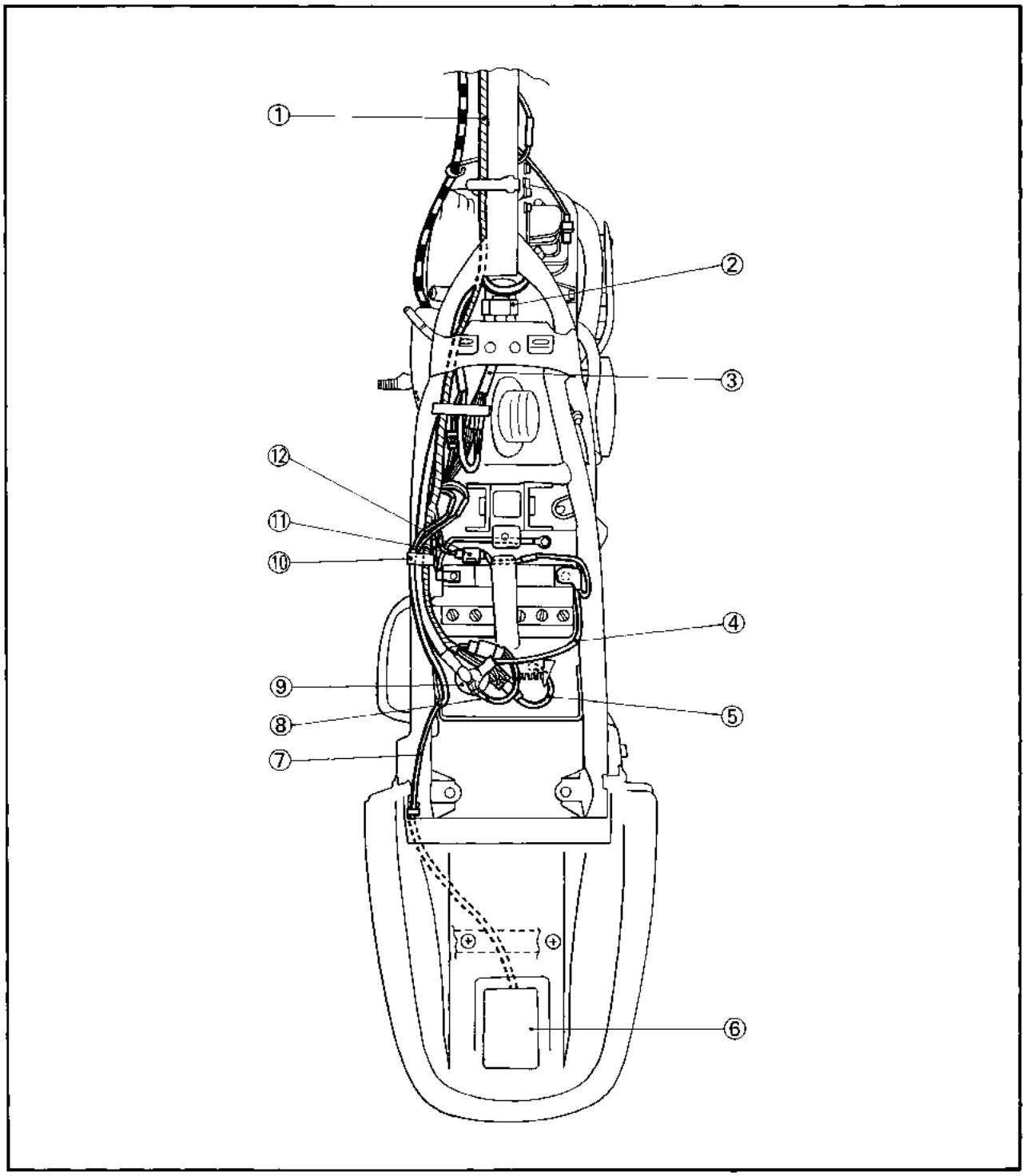


① Carburetor air ventilation hose
② Spark plug lead
③ Ignition coil
④ Starter motor
⑤ Starter motor negative lead

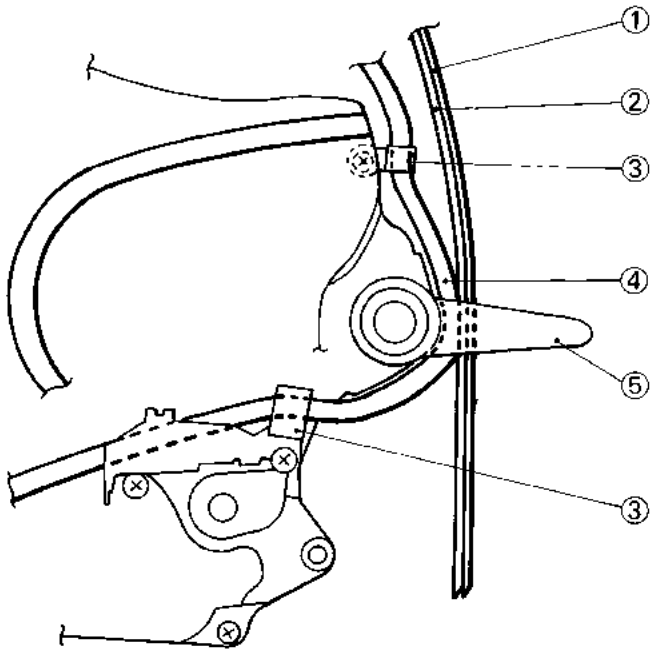


CABLE ROUTING

① Wire harness
② C.D.I. unit
③ C.D.I. unit lead
④ Battery positive lead
⑤ Rectifier/Regulator
⑥ Taillight
⑦ Tallight lead
⑧ Starter relay lead
⑨ Starter relay
⑩ Band
⑪ Battery negative lead
⑫ Fuse



① Carburetor overflow hose
② Carburetor air ventilation hose
③ Clamp
④ C.D.I. magneto lead
⑤ Lever



BW350T WIRING DIAGRAM

① Main switch
② Ignition coil
③ Spark plug
④ C.D.I. unit
⑤ C.D.I. magneto
⑥ Neutral switch
⑦ Taillight
⑧ Rectifier/Regulator
⑨ Battery
⑩ Fuse
⑪ Starter motor
⑫ Starter relay
⑬ Starting circuit cut-off relay
⑭ Clutch switch
⑮ Headlight
⑯ Handlebar switch (R)
⑰ "NEUTRAL" indicator light

COLOR CODE

B	Black	Y	Yellow
Br	Brown	B/W	Black/White
G	Green	B/Y	Black/Yellow
L	Blue	L/W	Blue/White
O	Orange	R/W	Red/White
R	Red	W/G	White/Green
Sb	Sky blue	W/R	White/Red
W	White	Y/R	Yellow/Red