



YAMAHA

FZ600S FZ600SC

Service Manual

**FZ600S/FZ600SC
SERVICE MANUAL**

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1st Edition, March 1986**

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U.S.A. is expressly prohibited.**

Printed in U.S.A.

P/N LIT-11616-05-48

NOTICE

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

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

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

NOTE:

This Service Manual contains information regarding periodic maintenance to the emission control system for the FZ600S/SC. Please read this material carefully.

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

HOW TO USE THIS MANUAL

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.

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

CAUTION:

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

WARNING:

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

MANUAL FORMAT

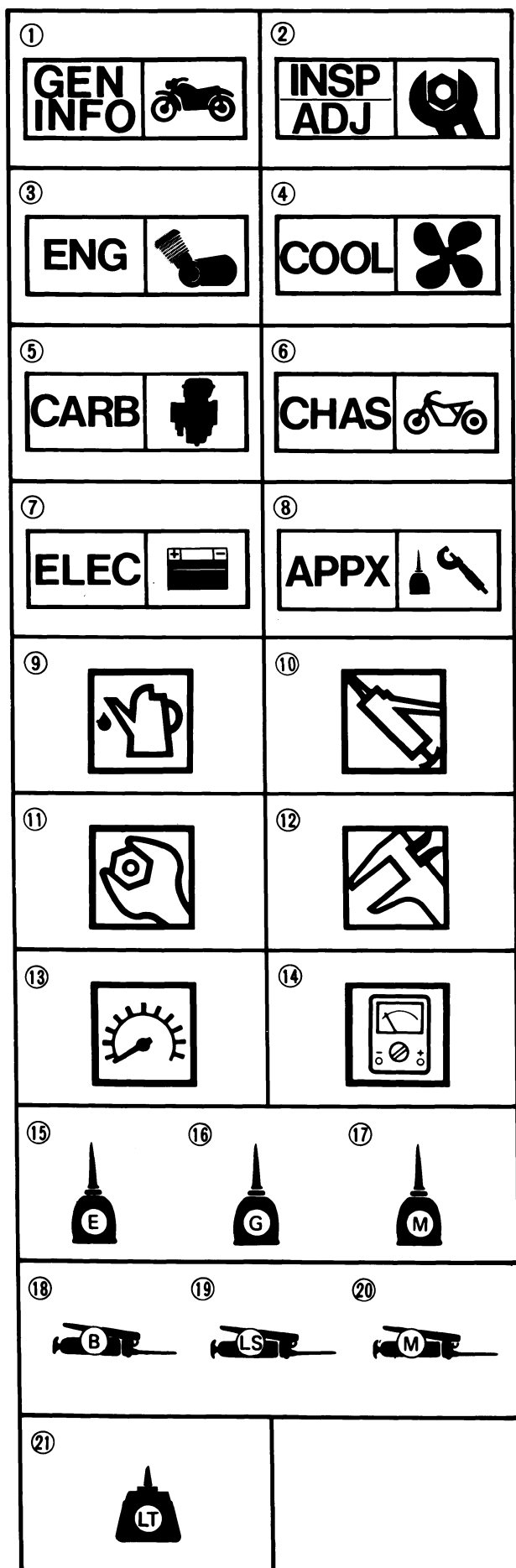
All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspection operations.

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

- Bearings
Pitting/Damage → Replace.

EXPLODED DIAGRAM

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



ILLUSTRATED SYMBOLS (Refer to the illustration)

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

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








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

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

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

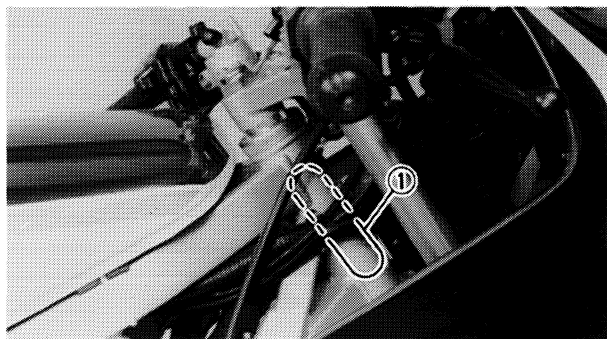
- ⑮ Apply engine oil
- ⑯ Apply gear oil
- ⑰ Apply molybdenum disulfide oil
- ⑱ Apply wheel bearing grease
- ⑲ Apply lightweight lithium-soap base grease
- ⑳ Apply molybdenum disulfide grease
- ㉑ Apply locking agent (LOCTITE®)

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CHAPTER 1 GENERAL INFORMATION

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GENERAL INFORMATION

MOTORCYCLE IDENTIFICATION VEHICLE IDENTIFICATION NUMBER

The vehicle identification number ① is stamped into the right side of the steering head pipe.

Starting Serial Number:

FZ600S (Except for California)

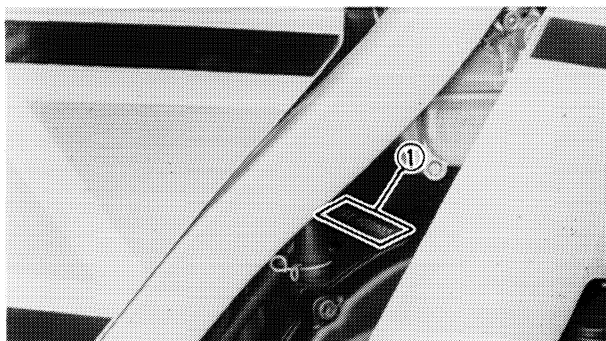
JYA2AX00 * GA000101

FZ600SC (For California)

JYA2AY00 * GA000101

NOTE:

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



ENGINE SERIAL NUMBER

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

Starting Serial Number:

FZ600S (Except for California)

2AX-000101

FZ600SC (For California)

2AY-000101

NOTE:

- The first three digits of these numbers are for model identifications; the remaining digits are the unit production number.
- Designs and specifications are subject to change without notice.

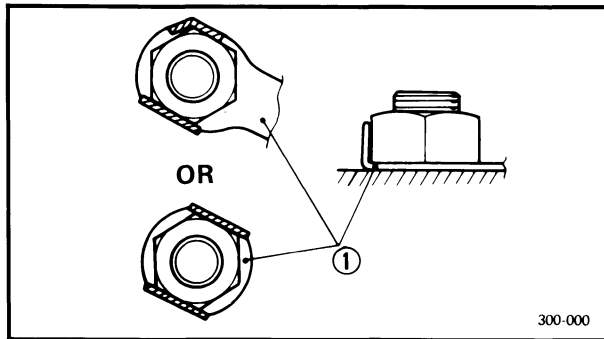
IMPORTANT INFORMATION

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.

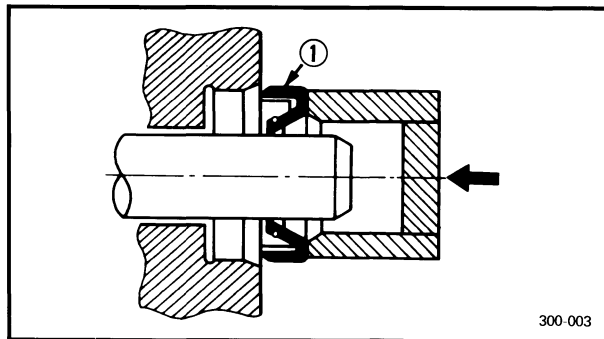
GASKETS, OIL SEALS, AND O-RINGS

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.



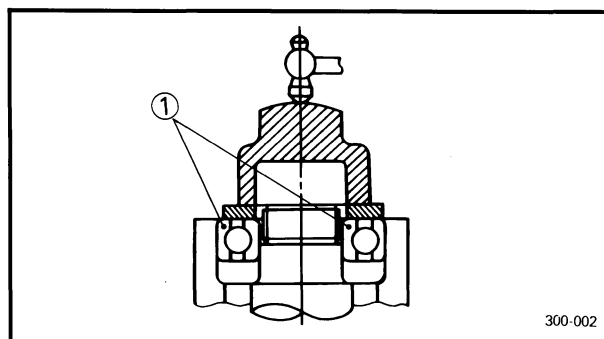
BEARINGS AND OIL SEALS

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:

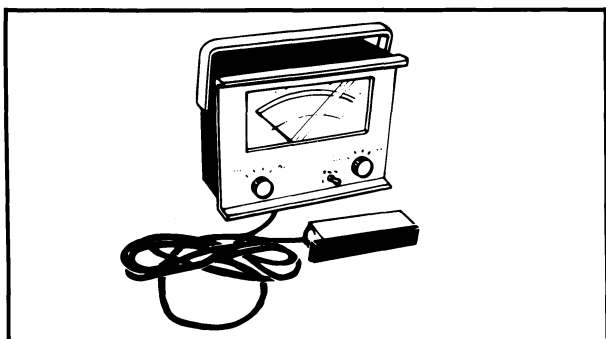
Do not use compressed air to spin the bearings dry. This causes damage to the bearing surfaces.



① Bearing

SPECIAL TOOLS

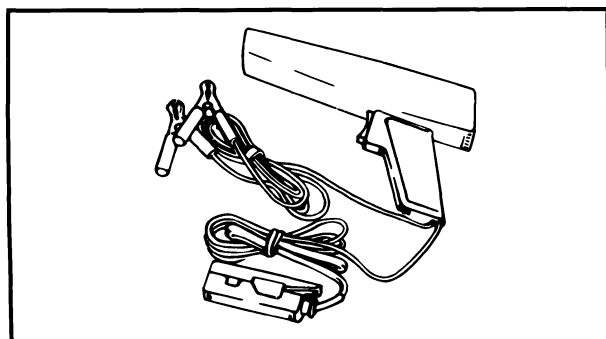
The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques.



FOR TUNE UP

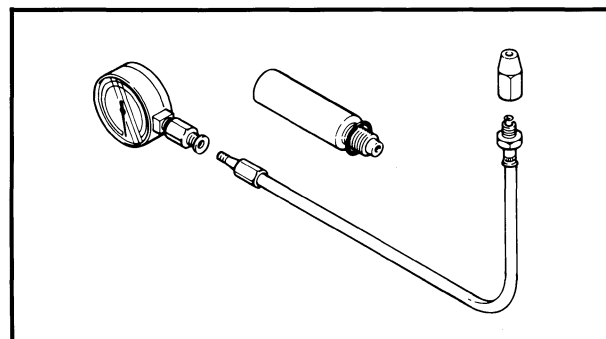
1. Inductive Tachometer
P/N. YU-08036

This tool is needed for detecting engine rpm.



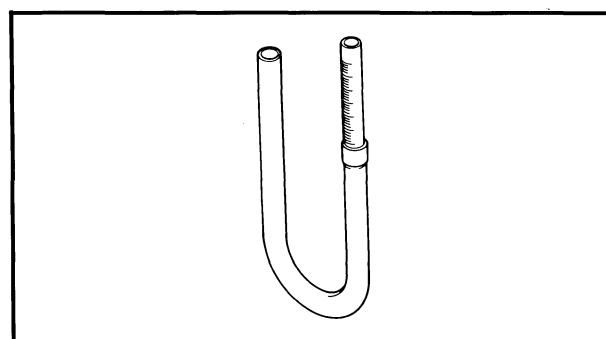
2. Inductive Timing Light
P/N. YU-08037

This tool is necessary for adjusting timing.



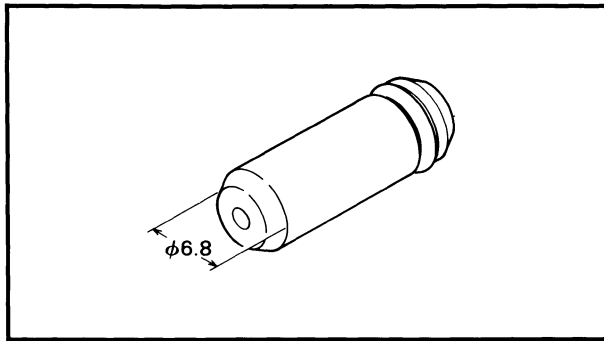
3. Compression Gauge
P/N. YU-33223

This gauge is used to measure the engine compression.



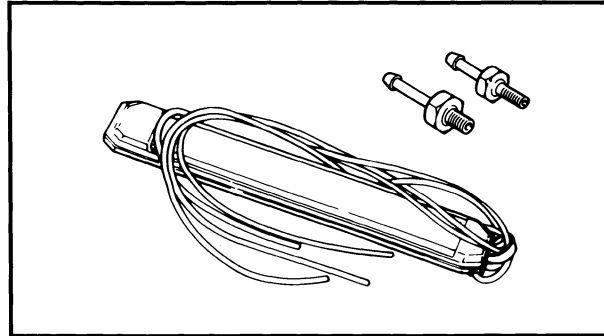
4. Fuel Level Gauge
P/N. YM-01312

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



5. Fuel Level Gauge Adapter
P/N. YM-01329

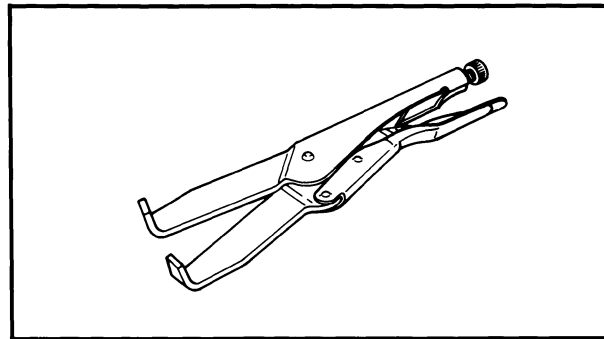
This tool is needed when measuring the carburetor fuel level together with fuel level gauge.



6. Vacuum Gauge
P/N. YU-08030

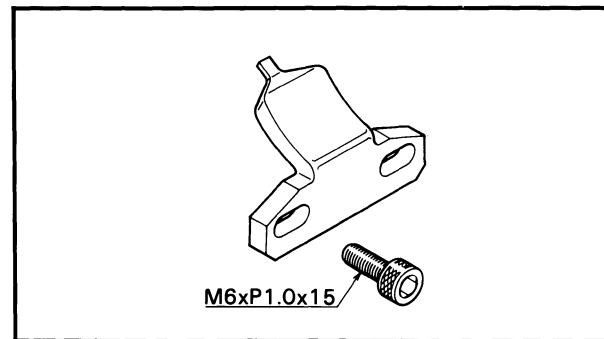
This gauge is needed for carburetor synchronization.

FOR ENGINE SERVICE



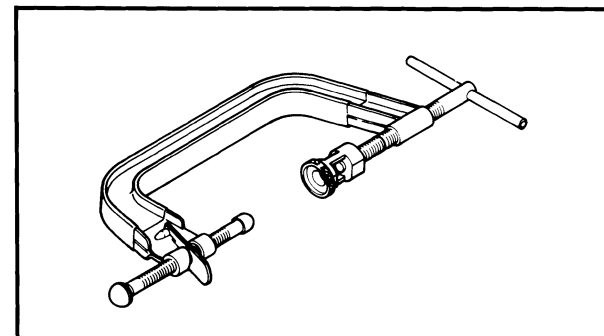
1. Universal Clutch Holder
P/N. YM-91042

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



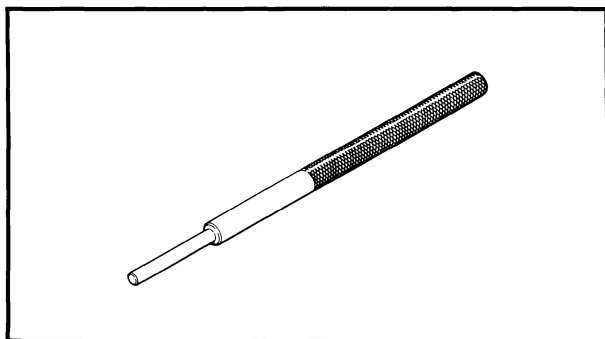
2. Tappet Adjusting Tool
P/N. YM-01245

This tool is necessary to replace valve adjusting pads.



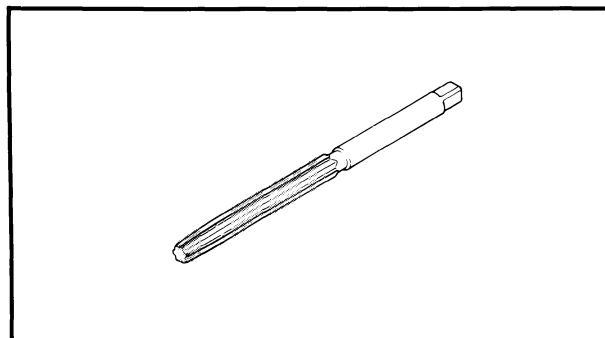
3. Valve Spring Compressor
P/N. YM-04019

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



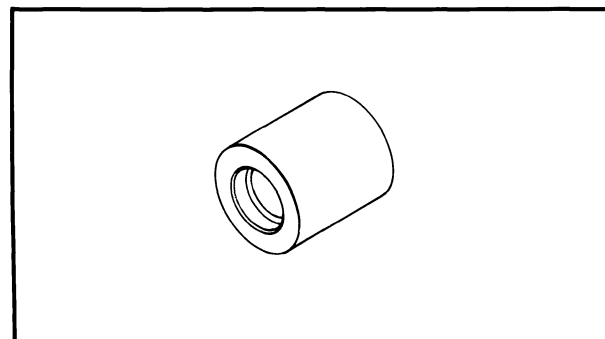
4. Valve Guide Remover
P/N. YM-04064

This tool is used to remove the valve guides.



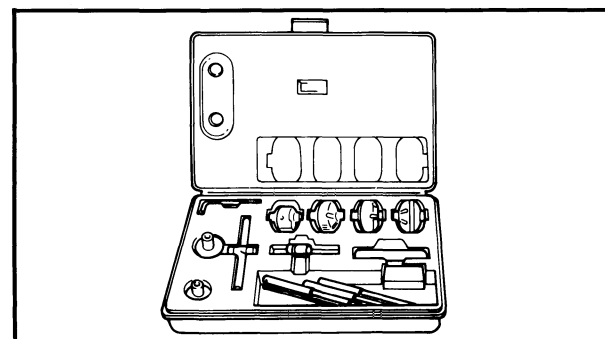
5. Valve Guide Reamer
P/N. YM-04066

This tool is used to rebores the new valve guide.



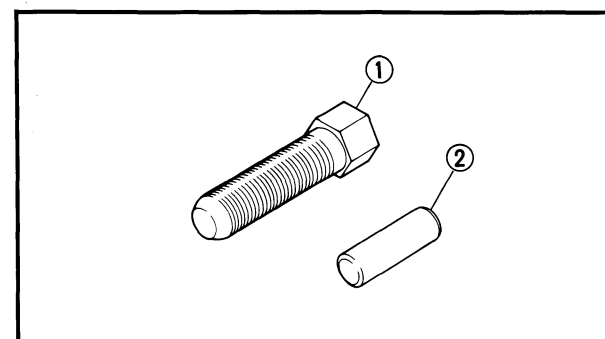
6. Valve Guide Installer
P/N. YM-04065

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



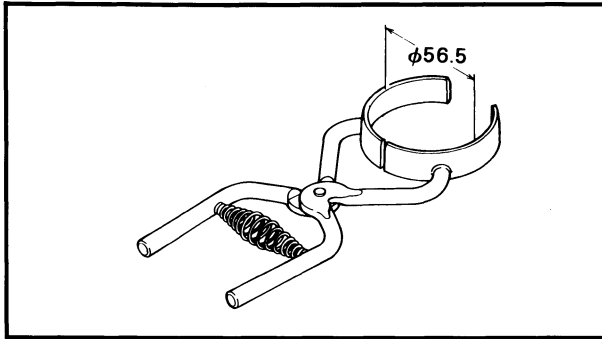
7. Valve Seat Cutter Set
P/N. YM-91043

This tool is needed to resurface the valve seat.



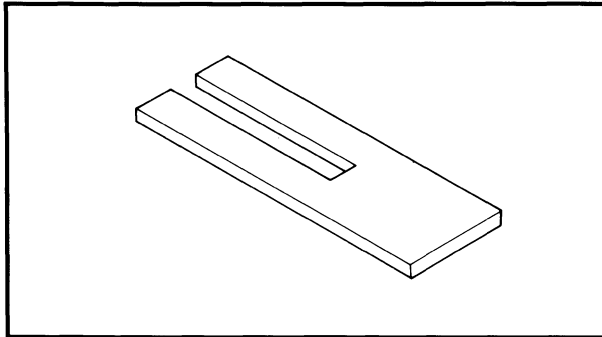
8. Rotor Puller ①
P/N. YM-01080
Pin ②
P/N. YM-04052

This tool is needed to remove the A.C. Generator rotor.



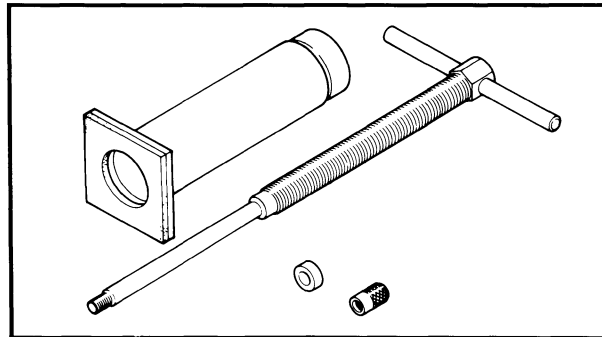
9. Piston Ring Compressor
P/N. YM-04047

This tool is used when installing the piston into the cylinder.



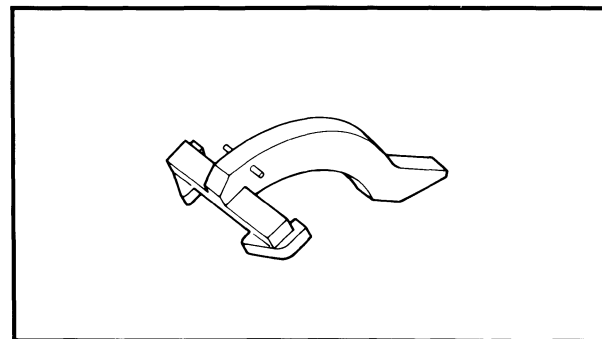
10. Piston Base
P/N. YM-01067

Use 4 of these to hold the pistons during cylinder installation.



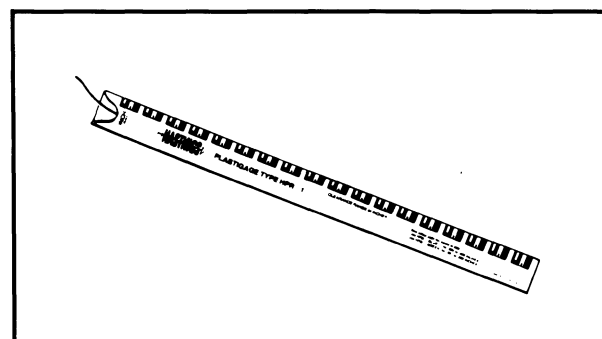
11. Piston Pin Puller
P/N. YU-01304

This tool is used to remove the piston pin.



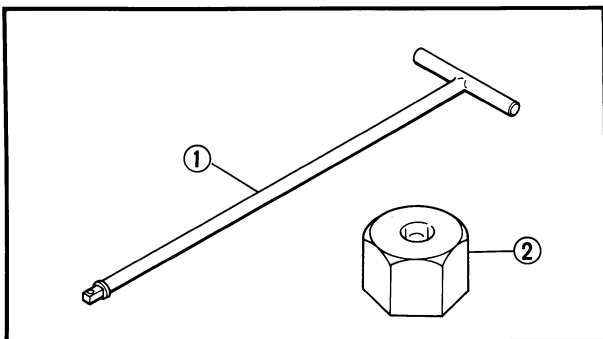
12. Rotor Holding Tool
P/N. YM-04043

This tool is used to hold the A.C. Generator rotor during removal and installation.



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

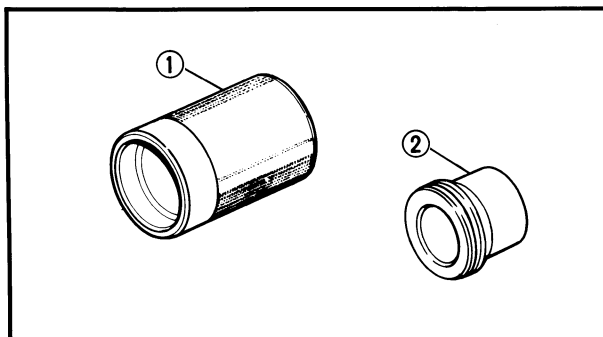
This gauge is needed to measure the clearance for the connecting rod bearing.



FOR CHASSIS SERVICE

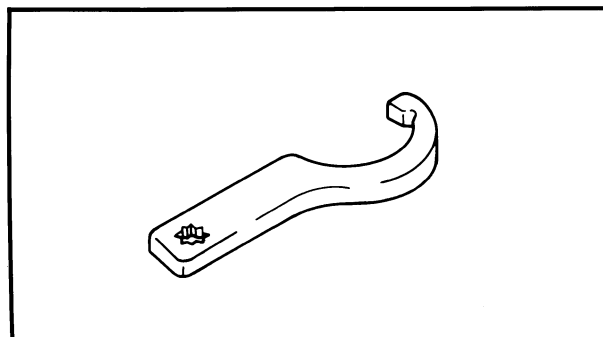
1. T-Handle ①
P/N. YM-01326
Front Fork Cylinder Holder ②
P/N. YM-33298

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



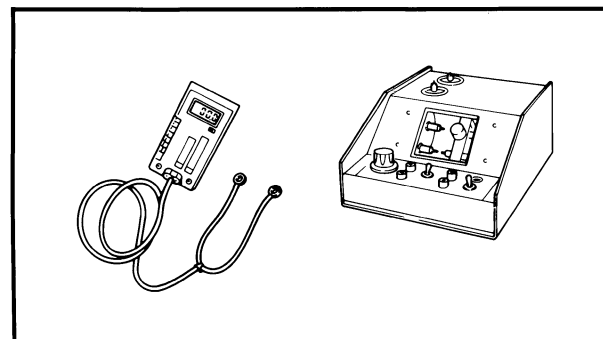
2. Front Fork Seal Driver (Weight) ①
P/N. YM-33963
Adapter ②
P/N. YM-08010

These tools are used when installing the fork seal.



3. Ring Nut Wrench
P/N. YU-33975

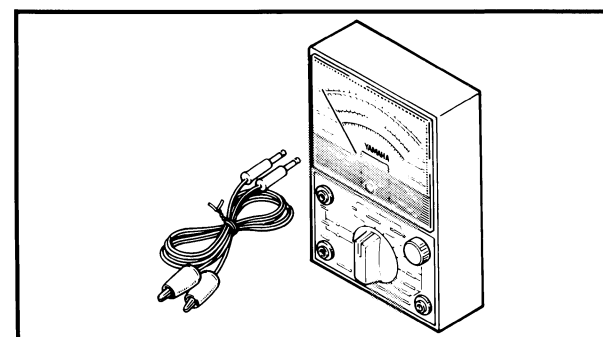
This tool is used to loosen and tighten the steering ring nut.



FOR ELECTRICAL COMPONENTS

1. Electro Tester
P/N. YU-33260

This instrument is necessary for checking the ignition system components.



2. Pocket Tester
P/N. YU-03112

This instrument is invaluable for checking the electrical system.

CHAPTER 2

PERIODIC INSPECTIONS AND ADJUSTMENTS

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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.

MAINTENANCE INTERVALS CHART

Proper periodic maintenance is important. Especially important are the maintenance services related to emissions controls. These controls not only function to ensure cleaner air but are also vital to proper engine operation and maximum performance. In the following maintenance tables, the services related to emissions control are grouped separately.

PERIODIC MAINTENANCE EMISSION CONTROL SYSTEM

No.	Item	Remarks	Initial	Odometer readings				
			1,000 km or 1 month (600 mi)	**1 7,000 km or 7 months (4,400mi)	**2 13,000 km or 13 months (8,200mi)	19,000 km or 19 months (12,000mi)	**3 25,000 km or 25 months (15,800mi)	31,000 km or 31 months (19,600mi)
1*	Cam chain	Adjust chain tension.	*○	○	○	○	○	○
2*	Valve clearance	Check and adjust valve clearance when engine is cold.					○	
3	Spark plug	Check condition. Adjust gap and clean. Replace at 13,000 km (or 13 months) and thereafter every 12,000 km (or 12 months).		○	Replace	○	Replace	○
4*	Crankcase ventilation system	Check ventilation hose for cracks or damage. Replace if necessary.		○	○	○	○	○
5*	Fuel line	Check fuel hose and vacuum pipe for cracks or damage. Replace if necessary.		○		○	○	○
6*	Exhaust system	Check for leakage. Retighten if necessary. Replace gasket(s) if necessary.		○	○	○	○	○
7*	Carburetor synchronization	Adjust synchronization of carburetors.	*○	○	○	○	○	○
8*	Idle speed	Check and adjust engine idle speed. Adjust cable free play.		○	○	○	○	○

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

NOTE:

For father odometer reading, repeat the above maintenance at the period established; **1: Every 6,000 km (3,800 mi), **2: Every 12,000 km (7,600 mi), and **3: Every 24,000 km (15,200 mi) intervals.

MAINTENANCE INTERVALS CHART



GENERAL MAINTENANCE/LUBRICATION

No.	Item	Remarks	Type	Initial	Odometer readings					
				1,000 km or 1 month (600 mi)	**1 7,000 km or 7 months (4,400mi)	**2 13,000 km or 13 months (8,200mi)	19,000 km or 19 months (12,000mi)	**3 25,000 km or 25 months (15,800mi)	31,000 km or 31 months (19,600mi)	
1	Engine oil	Warm-up engine before draining	*1) Yamalube 4-cycle oil or SAE 20W40 type "SE" motor oil *2) SAE 10W30 type "SE" motor oil	○	○	○	○	○	○	
2*	Oil filter	Replace.	—	○		○		○		
3*	Air filter	Clean with compressed air. Replace if necessary.	—		○	○	○	○	○	
4*	Brake system	Adjust free play. Replace pads if necessary.	—	○	○	○	○	○	○	
5*	Clutch	Adjust free play.	—	○	○	○	○	○	○	
6	Drive Chain	Check chain condition. Adjust and lubricate chain thoroughly.	SAE 30W-50W motor oil.		Every 500 km (300 mi)					
7	Control and meter cable	Apply chain lube thoroughly.	Yamaha chain and cable lube or SAE 10W30 motor oil.	○	○	○	○	○	○	
8*	Rear arm pivot shaft and rear suspension link pivots.	Apply grease lightly.	Lithium soap base grease.					○		
9	Brake/Clutch lever pivot shaft	Apply chain lube lightly.	Yamaha chain and cable lube or SAE 10W30 motor oil.		○	○	○	○	○	
10	Brake pedal and change pedal shaft	Lubricate. Apply chain lube lightly.	Yamaha chain and cable lube or SAE 10W30 motor oil.		○	○	○	○	○	
11*	Side stand pivots	Check operation and lubricate. Apply chain lube lightly.	Yamaha chain and cable lube or SAE 10W30 motor oil.		○	○	○	○	○	

MAINTENANCE INTERVALS CHART

No.	Item	Remarks	Type	Initial	Odometer readings				
				1,000 km or 1 month (600mi)	**1 7,000 km or 7 months (4,400mi)	**2 13,000 km or 13 months (8,200mi)	19,000 km or 19 months (12,000mi)	**3 25,000 km or 25 months (15,800mi)	31,000 km or 31 months (19,600mi)
12*	Front fork oil	Check operation and leakage.	Yamaha Fork Oil 10WT or equivalent		○	○	○	○	○
13*	Steering bearing	Check bearings assembly for looseness. Moderately repack every 24,000 km (15,000 mi).	Medium weight wheel bearing grease.		○	○	○	Repack	○
14*	Wheel bearings	Check bearings for smooth rotation.	—		○	○	○	○	○
15	Battery	Check specific gravity and breather pipe for proper operation.	—		○	○	○	○	○
16*	A.C. Generator	Replace generator brushes.	—			○		○	
17*	Sidestand switch	Check and clean or replace if necessary.	—	○	○	○	○	○	○

*1) If ambient temperature does not go below 5°C (41°F).

*2) If ambient temperature does not go below 15°C (59°F).

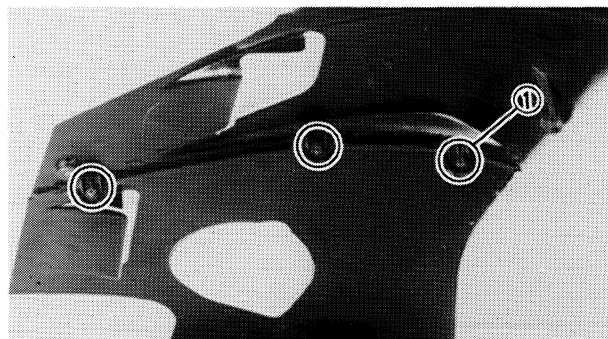
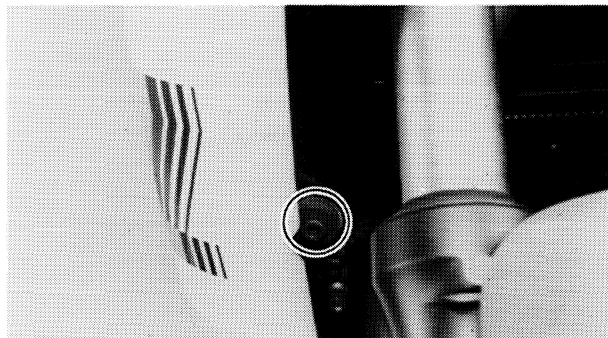
* It is recommended that these items be serviced by a Yamaha dealer or other qualified mechanic.

NOTE:

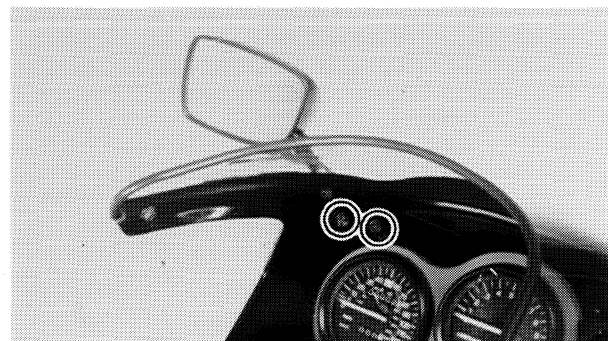
For father odometer reading, repeat the above maintenance at the period established, **1: Every 6,000 km (3,800 mi), **2: Every 12,000 km (7,600 mi) and **3: Every 24,000 km (15,200 mi) intervals.

**COWLING AND LOWER COWL****REMOVAL****1. Remove:**

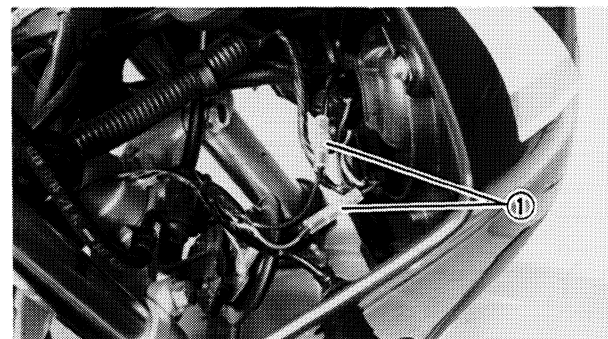
- Center cowls ① (Right and left)
- Lower cowls ② (Right and left)

**2. Remove:**

- Screws ①

**3. Remove:**

- Rear view mirrors

**4. Remove:**

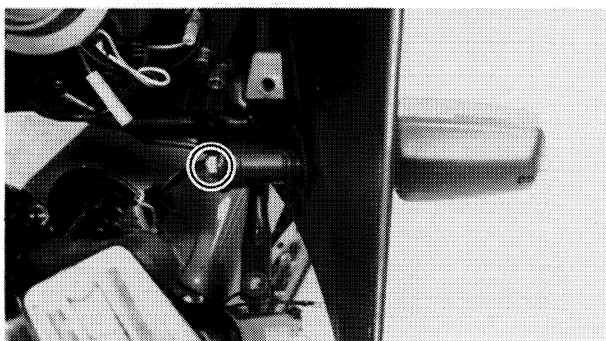
- Headlight covers

5. Disconnect:

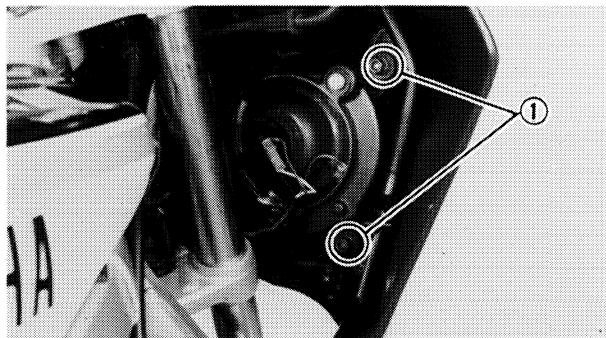
- Flasher light leads ①

NOTE: _____

Never disconnect headlight leads.



6. Remove:
- Flasher lights



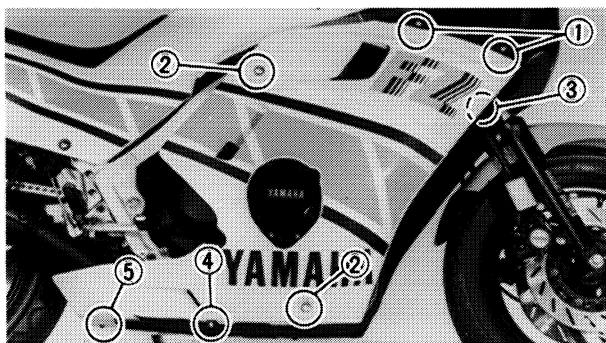
7. Remove:
- Bolts (4 pcs.) ①
8. Remove:
- Cowling

CAUTION:

Be careful so that the headlight assembly does not fall off.

INSTALLATION

1. Install:
- Reverse removal steps.
- Cowling
 - Flasher lights
 - Headlight covers
 - Rear view mirrors
 - Center cowls (Right and left)
 - Lower cowls (Right and left)



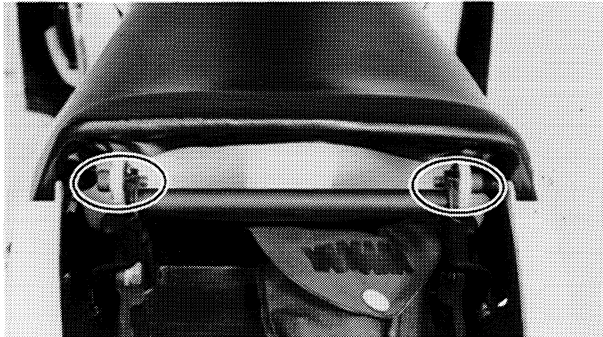
- ① Hexagon socket head bolt with plastic washer
- ② Hexagon socket head bolt (Large)
- ③ Bolt
- ④ Crown nut
- ⑤ Nut (Black)

ENGINE

VALVE CLEARANCE ADJUSTMENT

NOTE:

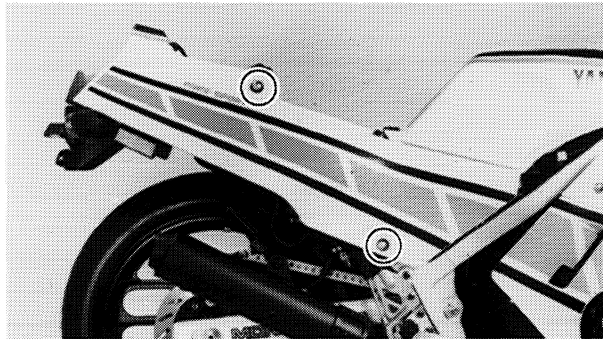
- Valve clearance must be measured and adjusted when the engine is cool to the touch.
- Measure and adjust valve clearance when piston is at TDC on compression stroke.



1. Turn the fuel cock to "ON" position.

2. Remove:

- Passenger seat
- Rider seat



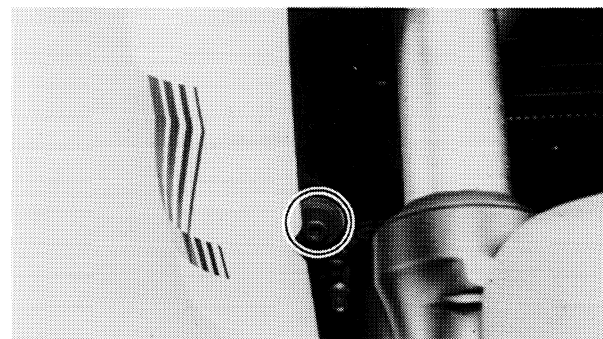
3. Remove:

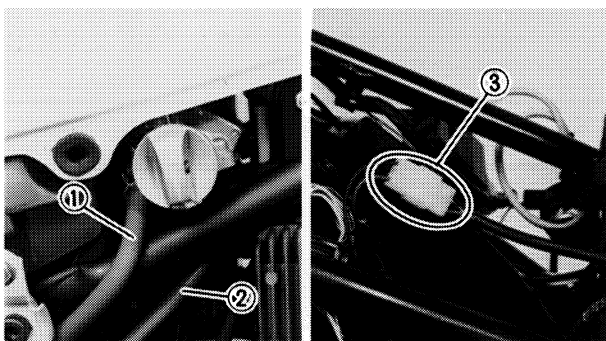
- Side covers
- Remove side cover downward.



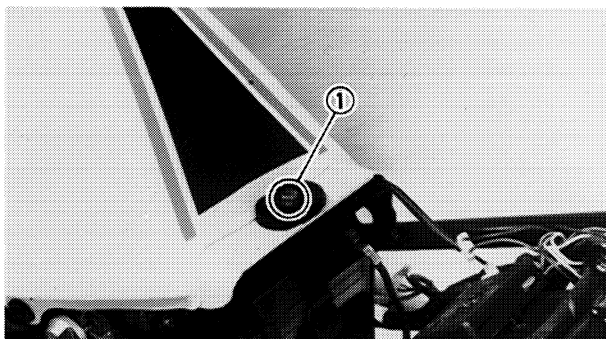
4. Remove:

- Center cowls (Right and left) ①
- Lower cowls (Right and left) ②

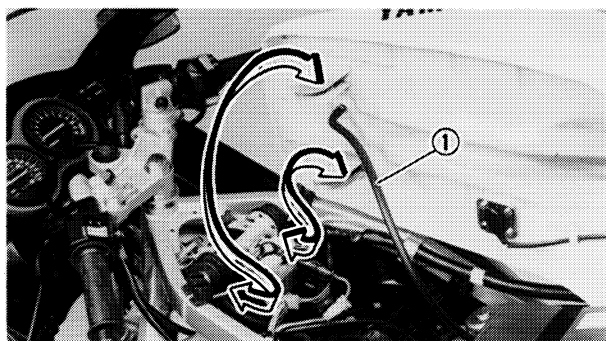




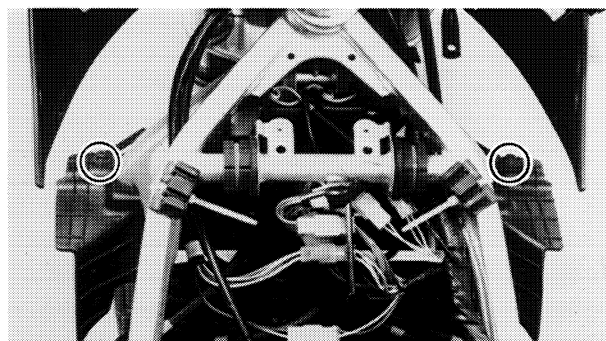
5. Disconnect:
- Fuel pipe ①
 - Vacuum pipe ②
 - Fuel gauge lead ③



6. Remove:
- Bolt ①
 - Fuel tank



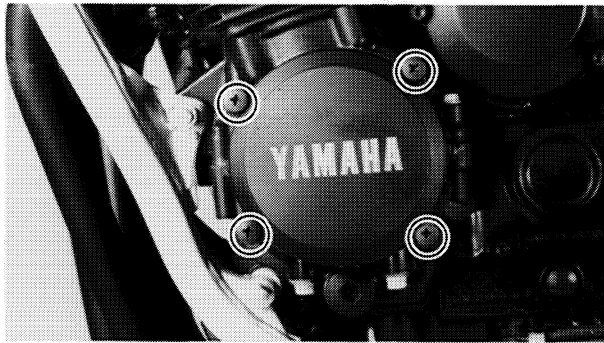
7. Disconnect:
- Fuel tank breather pipe ①



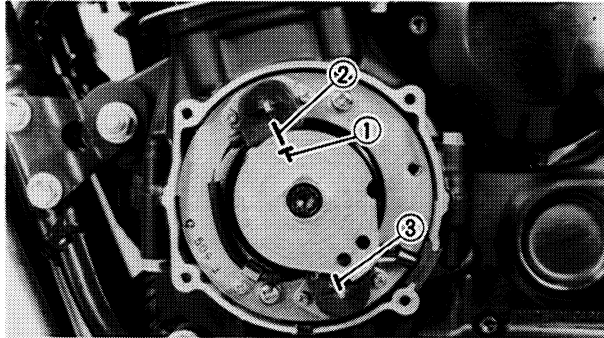
8. Remove:
- Air ducts (Right and left)



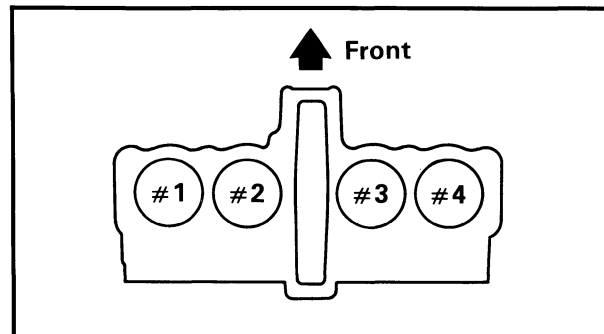
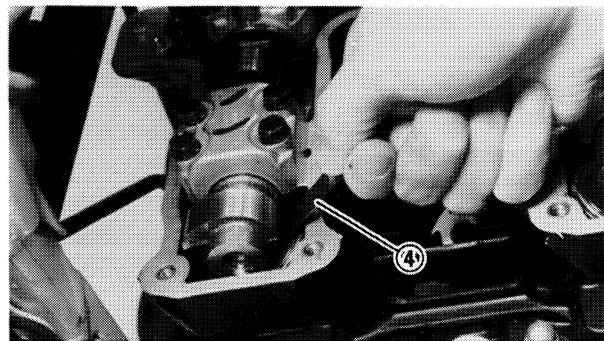
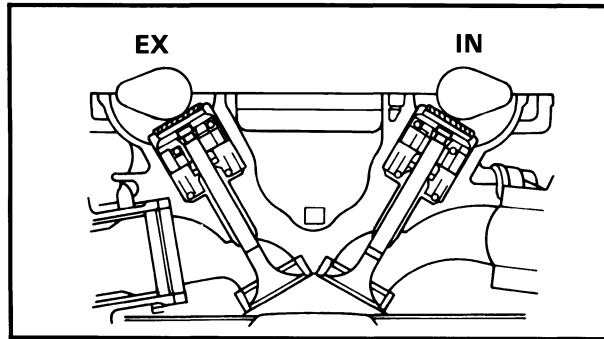
9. Remove:
- Cylinder head cover
 - Spark plugs



10. Remove:
- Crankcase cover



11. Measure:
- Valve clearance



Valve clearance measurement steps:

- Turn the crankshaft counterclockwise.
- Align the "T" mark ① on the timing plate with the pickup coil mark (② or ③) when the piston is at Top Dead Center (T.D.C.) on compression stroke.

NOTE:

- Compression T.D.C. can be found when the cam lobes are apart from each other, as shown.
- Measure the valve clearance by aligning the "T" mark with the upper pickup coil mark ② for the #1 and #4 cylinders and with the lower pickup coil mark ③ for the #2 and #3 cylinders.
- Measure the valve clearance using feeler gauge ④.
Out of specification → Adjust valve clearance.



Intake Valve (Cold):

0.11 ~ 0.15 mm (0.004 ~ 0.006 in)

Exhaust Valve (Cold):

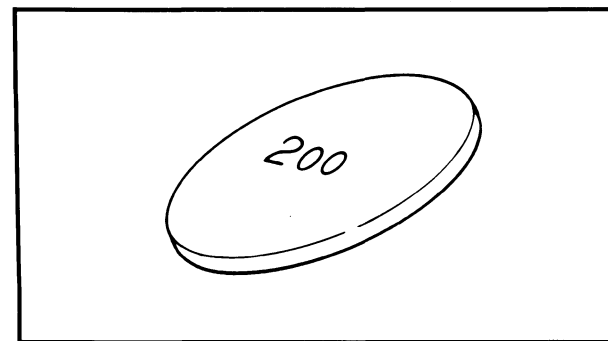
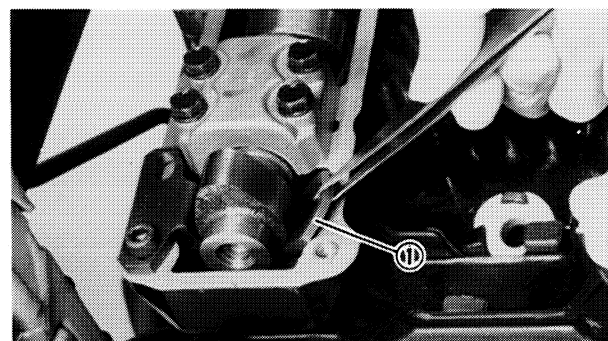
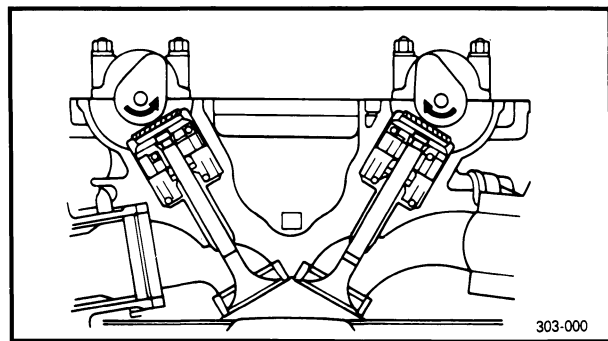
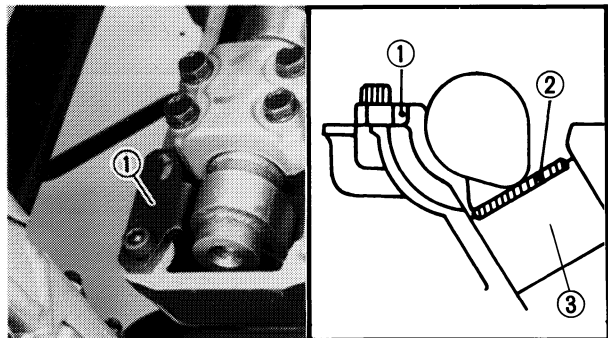
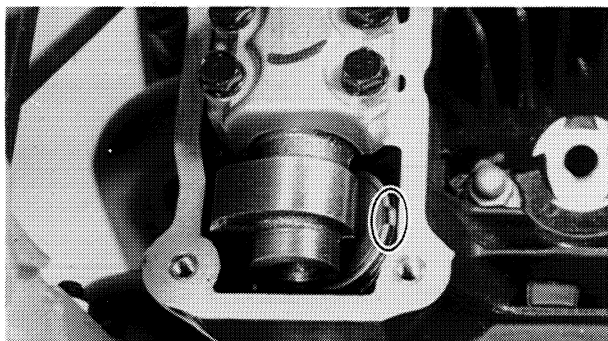
0.16 ~ 0.20 mm (0.006 ~ 0.008 in)

NOTE:

- Record the measured amount if the clearance is incorrect.
- Measure valve clearance in sequence.

Measuring Sequence:

#1 → #2 → #4 → #3



12. Adjust:
- Valve clearance

Valve clearance adjustment steps:

- Position the valve lifter slots (intake and exhaust) opposite each other.

- Turn the camshaft until the lobe fully depresses the valve lifter and opens the valve.
- Attach the Tappet Adjusting Tool ① (YM-01245) onto the cylinder head.

NOTE:

Make sure that the tool contacts the lifter ③ only, and not the pad ②.

- Carefully rotate the camshaft so that the pads can be removed. To avoid cam touching the adjusting tool, turn cams as shown.

Intake: Carefully rotate CLOCKWISE.
Exhaust:
Carefully rotate COUNTER-CLOCKWISE.

- Remove the pads ① from the lifters. Use a small screwdriver and a pair of tweezers for removal.
Note pad numbers.
- Select the proper valve adjusting pad from the chart below:

Pad range		Pad availability: 25 increments
No. 200 ~ No. 320	2.00 mm (0.079 in)	Pads stepped in 0.05 mm (0.002 in) increments
	3.20 mm (0.126 in)	

NOTE:

Thickness of each pad is marked on the pad face that contacts the valve lifter (not the cam).

- Round off the hundredths digit of the original pad number to the nearest 0.05 mm increment.

Hundredths digit	Rounded valve
0 or 2	0
5	(NOT ROUNDED OFF)
8	10

EXAMPLE:

Original pad number = 258 (2.58 mm)

Rounded off digit = 260

NOTE: _____

Pads can only be selected in 0.05 mm (0.002 in) increments.

- Locate the "Installed Pad Number" on the chart, and then find the measured valve clearance. The point where these coordinates intersect is the new pad number.

NOTE: _____

Use the new pad number as a guide only as the number must be verified.


INTAKE

[B] MEASURED CLEARANCE	[A] INSTALLED PAD NUMBER																															
	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320							
0.00 ~ 0.05			200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320					
0.06 ~ 0.10		200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320						
0.11 ~ 0.15																																
0.16 ~ 0.20	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320								
0.21 ~ 0.25	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320									
0.26 ~ 0.30	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320										
0.31 ~ 0.35	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320											
0.36 ~ 0.40	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320												
0.41 ~ 0.45	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320													
0.46 ~ 0.50	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320														
0.51 ~ 0.55	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320															
0.56 ~ 0.60	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320																
0.61 ~ 0.65	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320																	
0.66 ~ 0.70	255	260	265	270	275	280	285	290	295	300	305	310	315	320																		
0.71 ~ 0.75	260	265	270	275	280	285	290	295	300	305	310	315	320																			
0.76 ~ 0.80	265	270	275	280	285	290	295	300	305	310	315	320																				
0.81 ~ 0.85	270	275	280	285	290	295	300	305	310	315	320																					
0.86 ~ 0.90	275	280	285	290	295	300	305	310	315	320																						
0.91 ~ 0.95	280	285	290	295	300	305	310	315	320																							
0.96 ~ 1.00	285	290	295	300	305	310	315	320																								
1.01 ~ 1.05	290	295	300	305	310	315	320																									
1.06 ~ 1.10	295	300	305	310	315	320																										
1.11 ~ 1.15	300	305	310	315	320																											
1.16 ~ 1.20	305	310	315	320																												
1.21 ~ 1.25	310	315	320																													
1.26 ~ 1.30	315	320																														
1.31 ~ 1.35	320																															

VALVE CLEARANCE (cold):
0.11 ~ 0.15 mm (0.004 ~ 0.006 in)

Example: Installed is 250
Measured clearance is 0.32 mm (0.013 in)
Replace 250 pad with 270 pad
Pad number: (example)
Pad No. 250 = 2.50 mm (0.098 in)
Pad No. 255 = 2.55 mm (0.100 in)
Always install pad with number down.

VALVE CLEARANCE (cold):
 0.11 ~ 0.15 mm (0.004 ~ 0.006 in)
 Example: Installed is 250
 Measured clearance is 0.32 mm
 (0.013 in)
 Replace 250 pad with 270 pad
 Pad number: (example)
 Pad No. 250 = 2.50 mm (0.098 in)
 Pad No. 255 = 2.55 mm (0.100 in)
 Always install pad with number down.

EXHAUST

[B] MEASURED CLEARANCE	[A] INSTALLED PAD NUMBER																															
	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320							
0.00 ~ 0.05				200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320				
0.06 ~ 0.10			200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320					
0.11 ~ 0.15		200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320						
0.16 ~ 0.20																																
0.21 ~ 0.25	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320								
0.26 ~ 0.30	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320									
0.31 ~ 0.35	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320										
0.36 ~ 0.40	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320											
0.41 ~ 0.45	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320												
0.46 ~ 0.50	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320													
0.51 ~ 0.55	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320														
0.56 ~ 0.60	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320															
0.61 ~ 0.65	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320																
0.66 ~ 0.70	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320																	
0.71 ~ 0.75	255	260	265	270	275	280	285	290	295	300	305	310	315	320																		
0.76 ~ 0.80	260	265	270	275	280	285	290	295	300	305	310	315	320																			
0.81 ~ 0.85	265	270	275	280	285	290	295	300	305	310	315	320																				
0.86 ~ 0.90	270	275	280	285	290	295	300	305	310	315	320																					
0.91 ~ 0.95	275	280	285	290	295	300	305	310	315	320																						
0.96 ~ 1.00	280	285	290	295	300	305	310	315	320																							
1.01 ~ 1.05	285	290	295	300	305	310	315	320																								
1.06 ~ 1.10	290	295	300	305	310	315	320																									
1.11 ~ 1.15	295	300	305	310	315	320																										
1.16 ~ 1.20	300	305	310	315	320																											
1.21 ~ 1.25	305	310	315	320																												
1.26 ~ 1.30	310	315	320																													
1.31 ~ 1.35	315	320																														
1.36 ~ 1.40	320																															

VALVE CLEARANCE (cold):
0.16 ~ 0.20 mm (0.006 ~ 0.008 in)

Example: Installed is 250

Measured clearance is 0.32 mm (0.013 in)

Replace 250 pad with 265 pad

Pad number: (example)

Pad No. 250 = 2.50 mm (0.098 in)

Pad No. 255 = 2.55 mm (0.100 in)

Always install pad with number down.

Pad number verification steps:

- Install the new pad with the number down.
- Remove the adjusting tool.
- Recheck the valve clearance.
- If the clearance is incorrect, repeat all of the clearance adjustment steps until the proper clearance is obtained.

13. Install:

Reverse removal steps.

- Crankcase cover (Left)
- Cylinder head cover
- Air ducts
- Spark plugs
- Fuel tank
- Center cowls (Right and left)
- Lower cowls (Right and left)

**Screw (Crankcase Cover):**

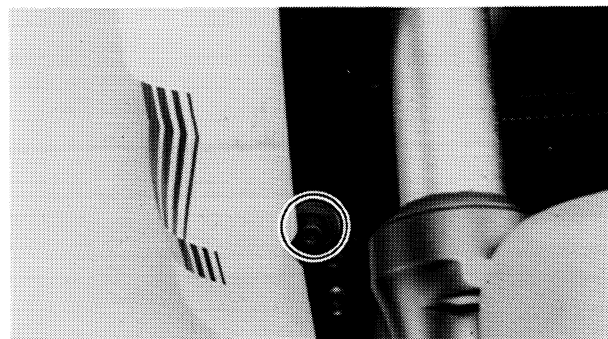
10 Nm (1.0 m•kg, 7.2 ft•lb)

Bolt (Cylinder Head Cover):

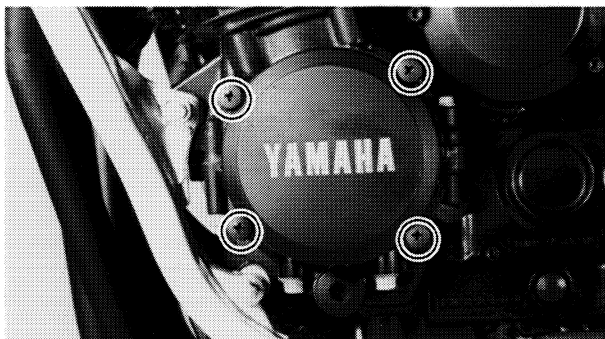
10 Nm (1.0 m•kg, 7.2 ft•lb)

Spark Plug:

18 Nm (1.8 m•kg, 13 ft•lb)

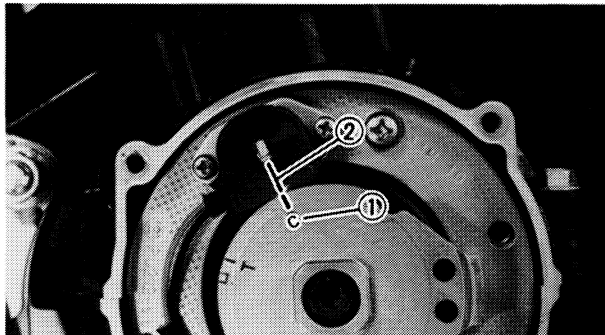
**CAM CHAIN ADJUSTMENT****1. Remove:**

- Center cowls ① (Right and left)
- Lower cowls ② (Right and left)

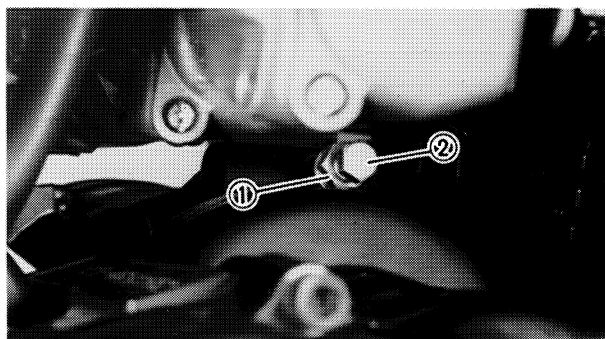


2. Remove:
- Crankcase cover (Left)

3. Turn crankshaft counterclockwise.



4. Align the timing plate "C" mark ① with the upper pickup coil mark ②.



5. Loosen:
- Locknut (Chain tensioner) ①
 - Stopper bolt (Chain tensioner) ②

6. Tighten:
- Locknut (Chain tensioner)
 - Stopper bolt (Chain tensioner)



Locknut:

6 Nm (0.6 m•kg, 4.3 ft•lb)

Stopper Bolt:

9 Nm (0.9 m•kg, 6.5 ft•lb)

7. Install:
- Crankcase cover (Left)



Screw (Crankcase Cover):

10 Nm (1.0 m•kg, 7.2 ft•lb)

- Center cowls (Right and left)
- Lower cowls (Right and left)

CARBURETOR SYNCHRONIZATION

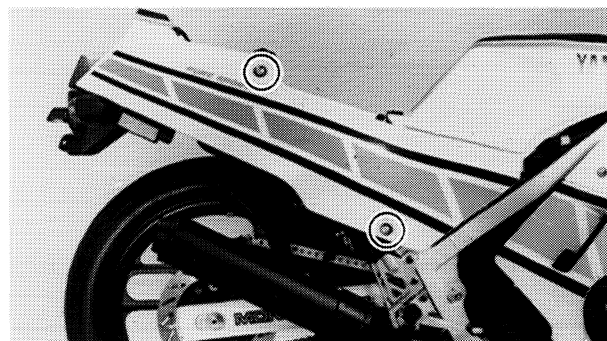
Carburetors must be adjusted to open and close simultaneously.

NOTE:

Valve clearance must be set properly before synchronizing the carburetors.



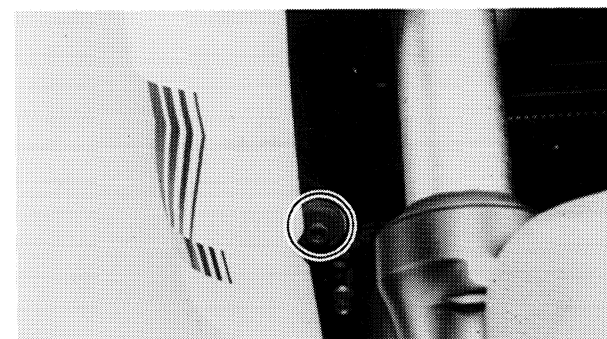
1. Turn the fuel cock to "ON" position.
2. Remove:
 - Passenger seat
 - Rider seat

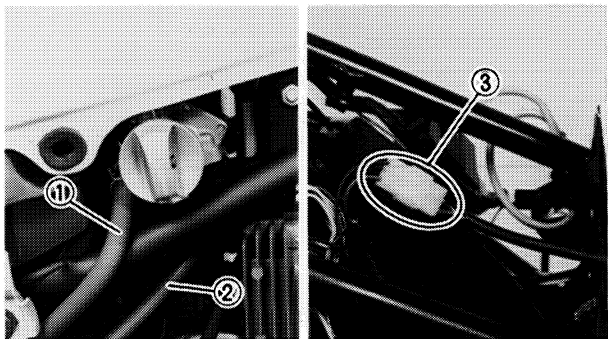


3. Remove:
 - Side coversRemove side cover downward.

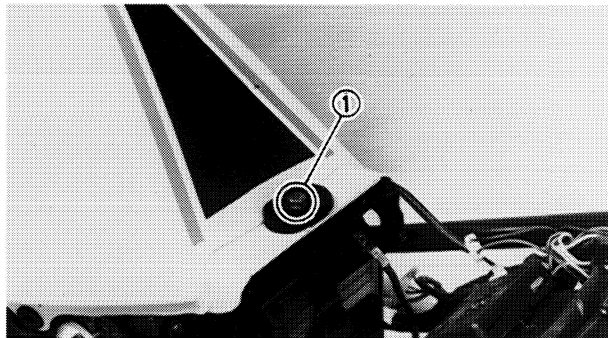


4. Remove:
 - Center cowls ① (Right and left)
 - Lower cowls ② (Right and left)

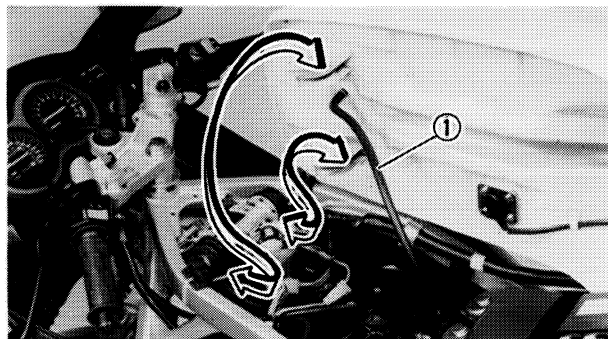




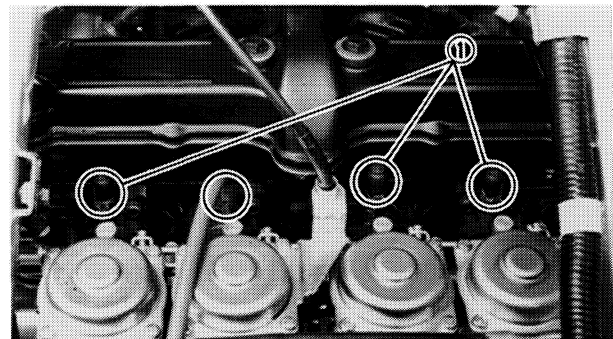
5. Disconnect:
- Fuel pipe ①
 - Vacuum pipe ②
 - Fuel gauge lead ③



6. Remove:
- Bolt ①
 - Fuel tank

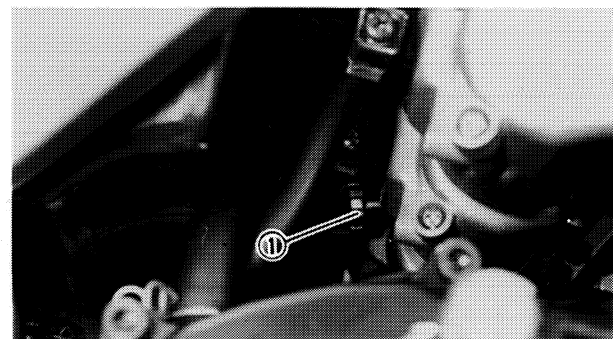


7. Disconnect:
- Fuel tank breather pipe



8. Remove:
- Vacuum plugs ①
- Install:
- Vacuum gauge (YU-08030)
 - Sub-fuel tank

9. Start the engine and let it warm up.

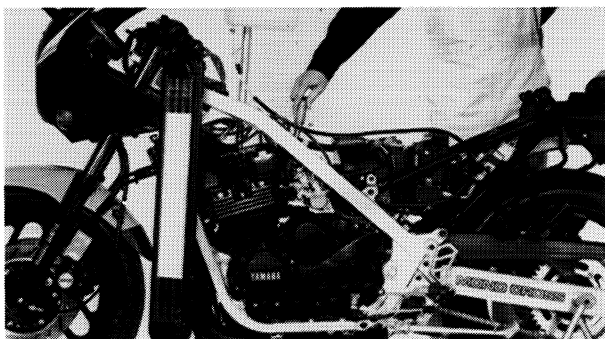
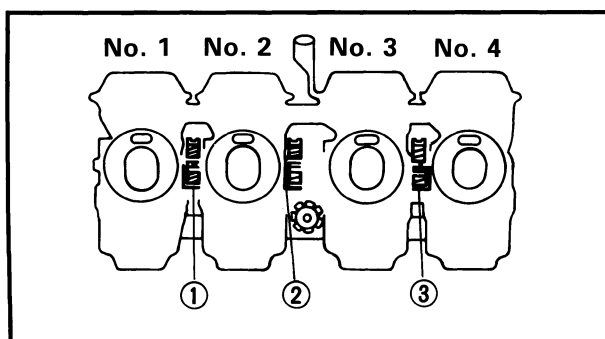


10. Adjust:
- Idle speed
- Turn the throttle stop screw ① .

Turn in	Engine speed is increased.
Turn out	Engine speed is decreased.

	Idle Speed: 1,150 ~ 1,250 r/min
--	---------------------------------

IDLE SPEED ADJUSTMENT



11. Adjust:
- Carburetors

Carburetor adjustment steps:

- Synchronize carburetor No. 1 to carburetor No. 2 by turning synchronizing screw ① until both gauges read the same.
- Rev the engine for a fraction of a second, two or three times, and check the synchronization again.

Vacuum Pressure at Idle Speed:

22.7 ~ 24.0 kPa

(170 ~ 180 mm Hg, 6.69 ~ 7.09 in Hg)

Vacuum Synchronous Difference:

1.33 kPa (10 mm Hg, 0.4 in Hg)

- Repeat the above steps to synchronize carburetor No. 4 to carburetor No. 3 by turning synchronizing screw ③ until both gauges read the same.
- Repeat the same steps to synchronize No. 2 carburetor to No. 3 carburetor by turning synchronizing screw ② until both gauges read the same.

12. Adjust:
- Idle speed

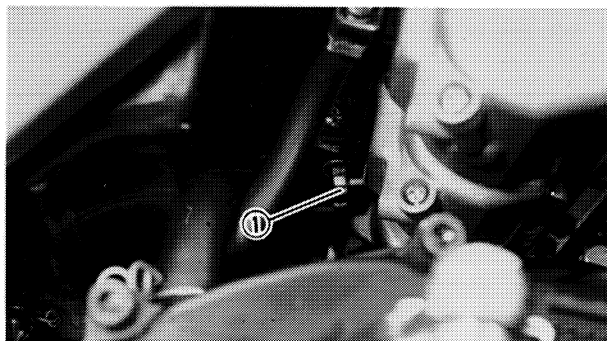
13. Install:
- Bolt (Fuel tank)
 - Side covers
 - Seat
 - Vacuum plugs
 - Center cowls
 - Lower cowls

IDLE SPEED ADJUSTMENT

1. Inspect:
- Idle speed
- Out of specification → Adjust.



1,150 ~ 1,250 r/min



2. Adjust:

- Idle speed

Turn the throttle stop screw ①.

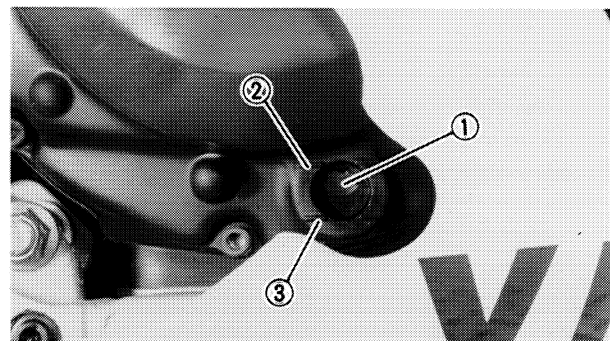
Turn in	Engine speed is increased.
Turn out	Engine speed is decreased.

ENGINE OIL LEVEL INSPECTION

1. Place the motorcycle on a level place and warm up the engine for several minutes.

NOTE:

Be sure the motorcycle is positioned straight up and on both wheels.



2. Stop the engine and visually check the oil level through the level window ①.

3. Inspect:

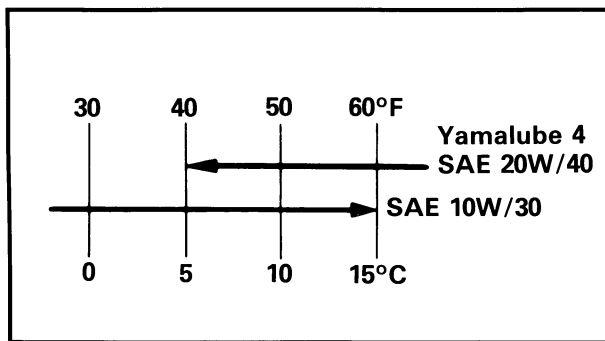
- Oil level

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 5°C (40°F) or Higher:

Yamalube 4-cycle Oil or
SAE 20W40 Type SE Motor Oil

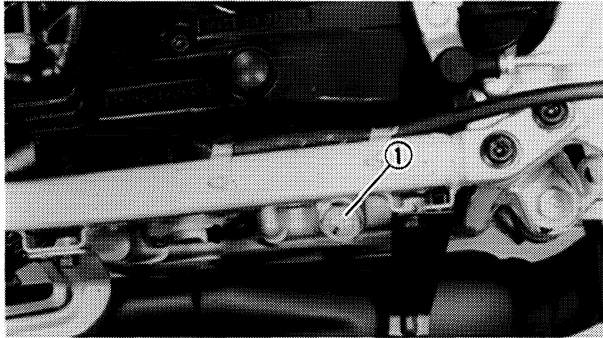
At 15°C (60°F) or Lower:

SAE 10W30 Type SE Motor Oil

ENGINE OIL REPLACEMENT


Without Filter Change

1. Warm up the engine for several minutes.
2. Remove:
 - Center cowls (Right and left)
 - Lower cowls (Right and left)
3. Place a receptacle under the engine.
4. Remove:
 - Oil filler cap




5. Remove:
 - Drain plug ①
 Drain the engine oil.

6. Install:
 - Drain plug ①



43 Nm (4.3 m•kg, 31 ft•lb)

7. Fill:
 - Crankcase


2.2 L (1.9 Imp qt, 2.3 US qt)

CAUTION:

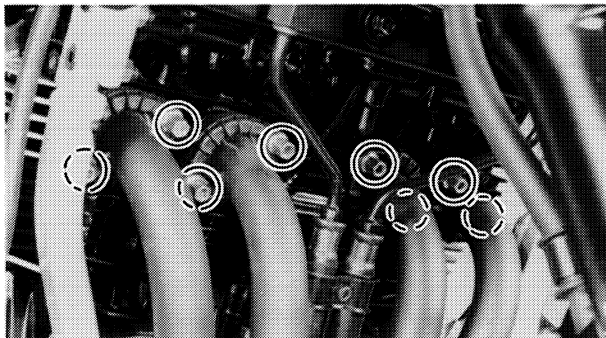
Do not allow foreign material to enter the crankcase.


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

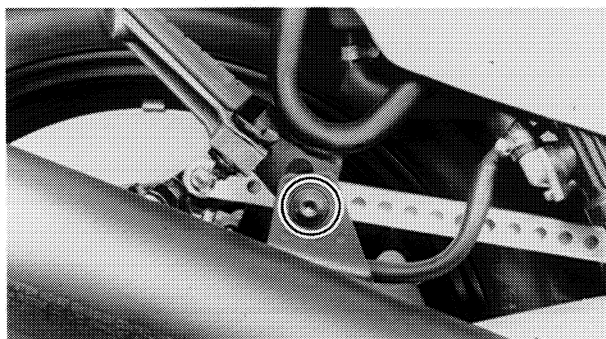
8. Install:
 - Oil filler cap
 - Center cowls
 - Lower cowls

With Filter Change

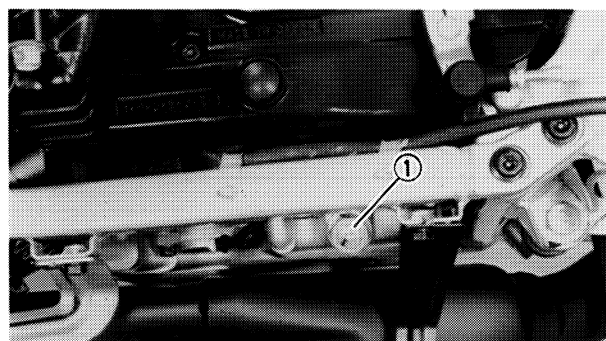
1. Warm up the engine for several minutes.
2. Remove:
 - Center cowls (Right and left)
 - Lower cowls (Right and left)



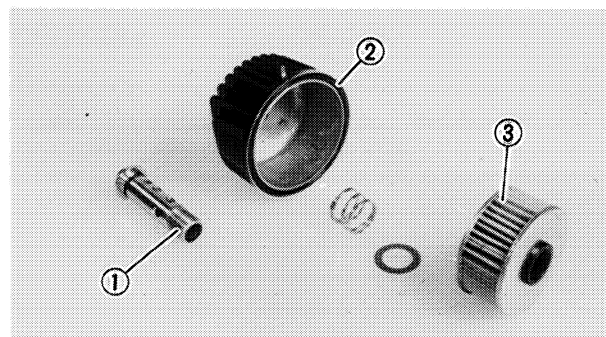
3. Remove:
 - Muffler
4. Place a receptacle under the engine.

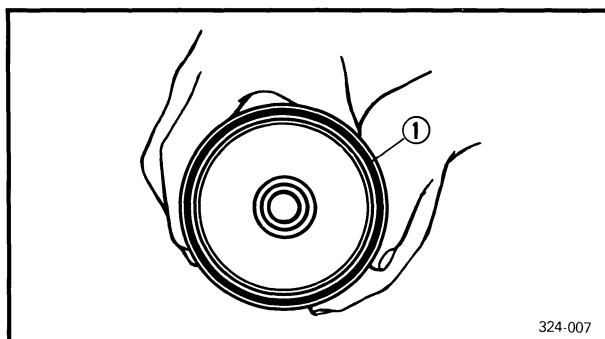


5. Remove:
 - Oil filler cap
 - Drain plug ①
 Drain the engine oil.



6. Remove:
 - Oil filter bolt ①
 - Filter cover ②
 - Oil filter ③





7. Install:

- Drain plug
- Oil filter (New)
- Plain washer
- Spring
- Filter cover
- Oil filter bolt

NOTE:

Be sure the O-ring ① is positioned properly.



Drain Plug:

43 Nm (4.3 m•kg, 31 ft•lb)

Oil Filter Bolt:

15 Nm (1.5 m•kg, 11 ft•lb)

8. Fill:

- Crankcase



2.6 L (2.29 Imp qt, 2.75 US qt)

CAUTION:

Do not allow foreign material to enter the crankcase.



Recommended Oil:

At 5°C (40°F) or Higher:

Yamalube 4-cycle Oil or

SAE 20W40 Type SE Motor Oil

At 15°C (60°F) or Lower:

SAE 10W30 Type SE Motor Oil

9. Install:

- Oil filler cap
- Muffler
- Center cowls
- Lower cowls



Exhaust Pipe Joint:

10 Nm (1.0 m•kg, 7.2 ft•lb)

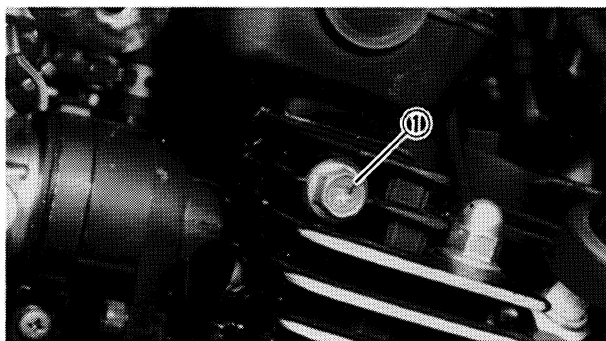
Muffler:

25 Nm (2.5 m•kg, 18 ft•lb)

10. Warm up engine and check for oil leaks.

Stop engine instantly if leaking occurs.

Leaks → Check cause.



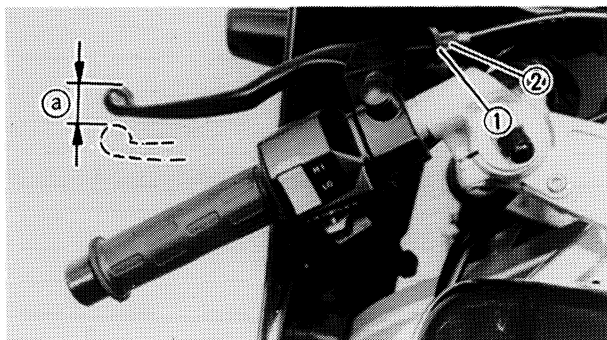
CAUTION:

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:
7 Nm (0.7 m•kg, 5.1 ft•lb)



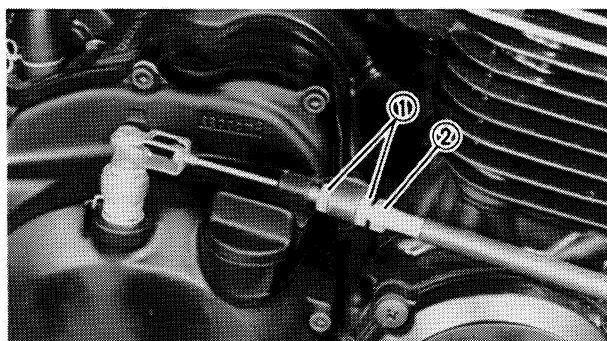
CLUTCH LEVER FREE PLAY ADJUSTMENT

- Loosen:
 - Locknut ①
- Adjust:
 - Clutch lever free play ③
 - Turn the adjuster ② in or out.

Turn in	Free play is increased.
Turn out	Free play is decreased.



Free Play:
8 ~ 12 mm (0.3 ~ 0.5 in)



- If free play can not be adjusted, adjust free play by the adjuster ① at right side of the crankcase.
- Loosen:
 - Locknut ②

5. Adjust:

- Clutch lever free play
Turn the adjuster in or out.

Turn in	Free play is increased.
Turn out	Free play is decreased.

6. Tighten:

- Locknut

COMPRESSION PRESSURE MEASUREMENT

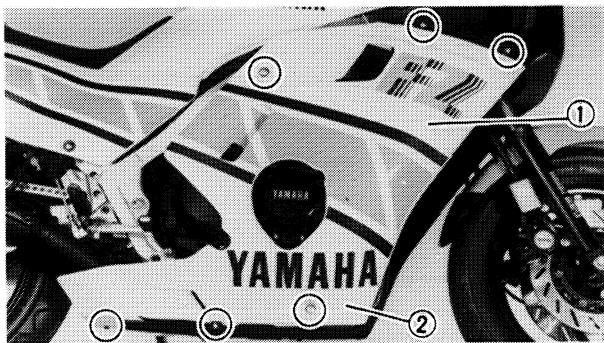
NOTE: _____

Insufficient compression pressure will result in performance loss.

1. Measure:

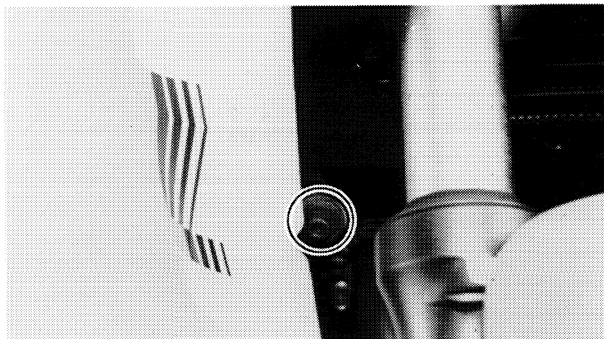
- Valve clearance
Out of specification → Adjust.
Refer to "VALVE CLEARANCE ADJUSTMENT" section.

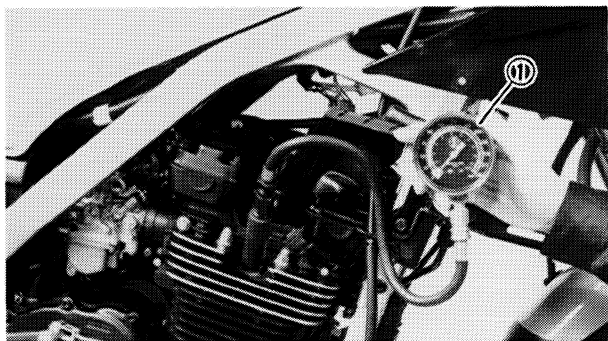
2. Warm up the engine.



3. Remove:

- Center cowls ① (Right and left)
- Lower cowls ② (Right and left)





4. Remove:
- Spark plugs
5. 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: 1,079 kPa (11 kg/cm ² , 156 psi) Minimum: 980 kPa (10 kg/cm ² , 142 psi) Maximum: 1,128 kPa (11.5 kg/cm ² , 164 psi)
--

WARNING:

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

- Repeat the previous steps for the other cylinders.
- If pressure falls bellow the minimum level:

1. Squirt a few drops of oil into the affected cylinder.

2. Measure the compression again.

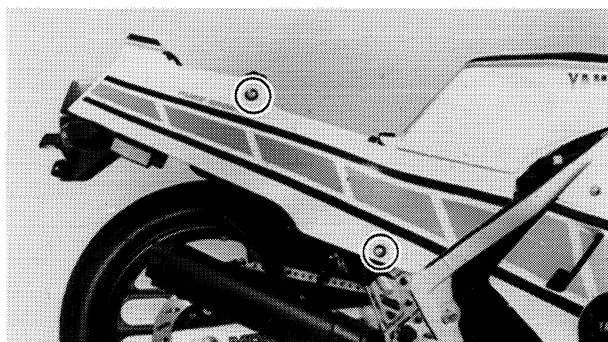
Compression Pressure (with oil introduced into cylinder)	
Reading	Diagnosis
Higher than without oil	Worn or damaged pistons
Same as without oil	Defective ring(s), valves, cylinder head gasket or piston is possible.
Above maximum level	Inspect cylinder head, valve surfaces, or piston crown for carbon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



NOTE:

The difference between the highest and lowest cylinder compression readings must not vary more than the specified value.

Difference Between Each Cylinder:
Less than 98 kPa (1 kg/cm², 14 psi)



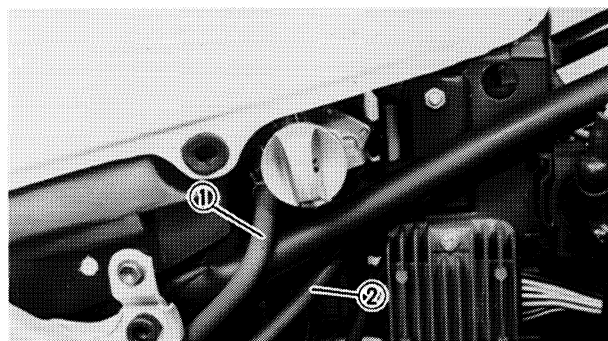
FUEL LINE INSPECTION

1. Remove:

- Rider seat
- Passenger seat
- Side cover (Left)

2. Inspect:

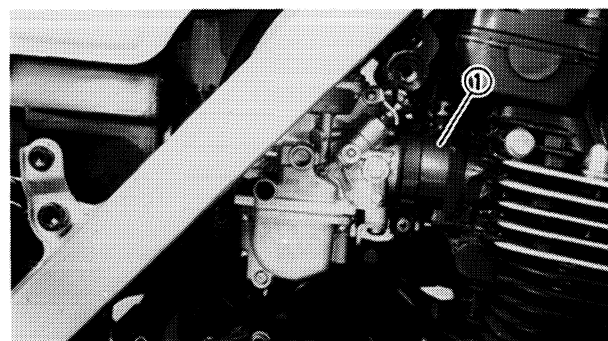
- Fuel pipe ①
 - Vacuum pipe ②
- Cracks/Damage → Replace.



CARBURETOR JOINT INSPECTION

1. Inspect:

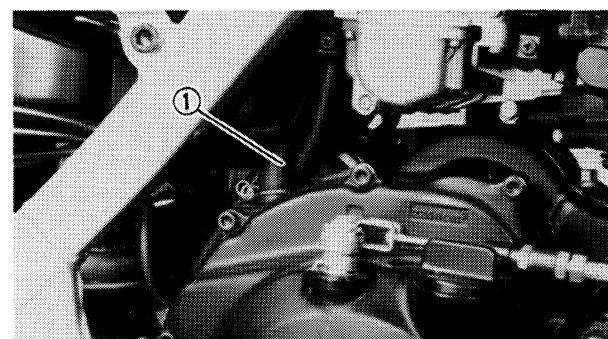
- Carburetor joint ①
- Cracks/Damage → Replace.



CRANKCASE VENTILATION PIPE INSPECTION

1. Inspect:

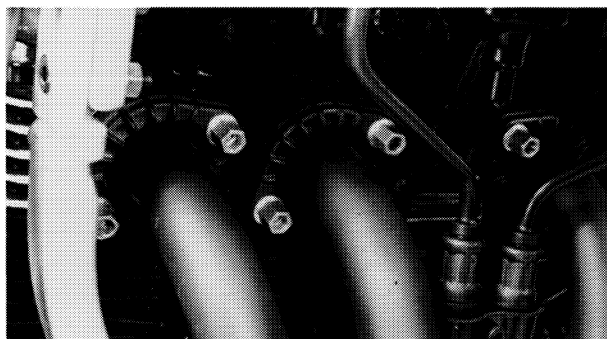
- Crankcase ventilation pipe ①
- Cracks/Damage → Replace.



EXHAUST SYSTEM INSPECTION

1. Remove:

- Center cowls (Right and left)
- Lower cowls (Right and left)



2. Inspect:

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

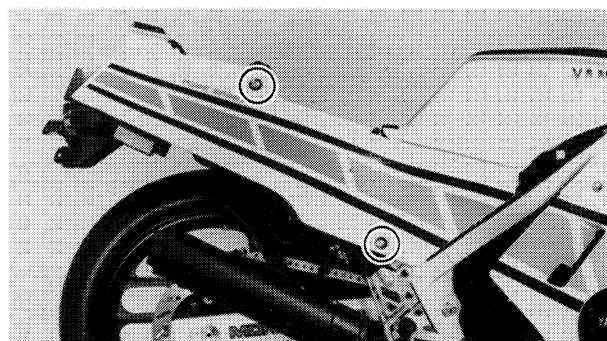


AIR FILTER CLEANING

1. Turn the fuel cock to "ON" position.

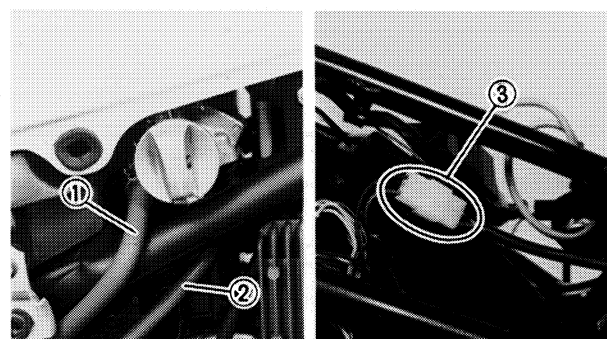
2. Remove:

- Passenger seat
- Rider seat



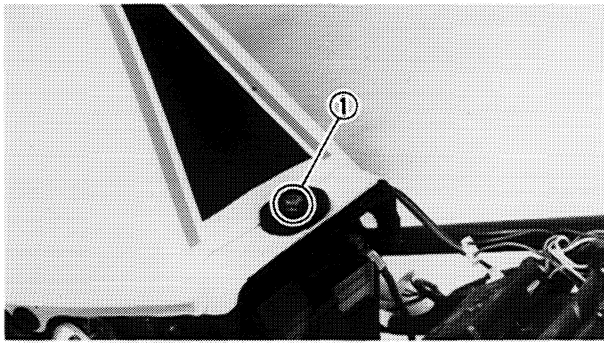
3. Remove:

- Side covers
- Remove side cover downward.

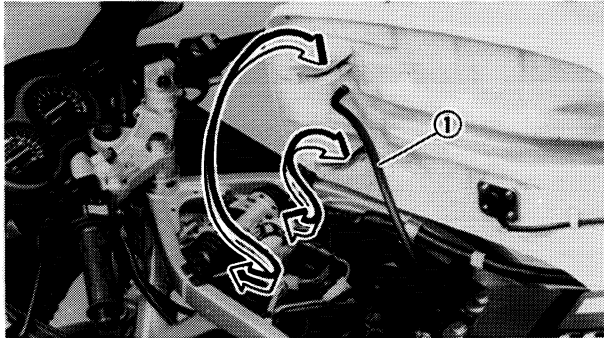


4. Disconnect:

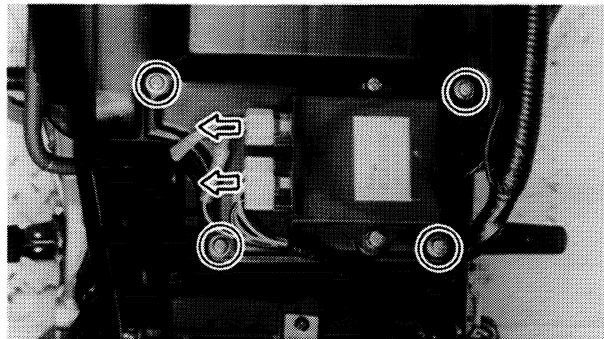
- Fuel pipe ①
- Vacuum pipe ②
- Fuel gauge lead ③



5. Remove:
- Bolt ①
 - Fuel tank



6. Disconnect:
- Fuel tank breather pipe ①



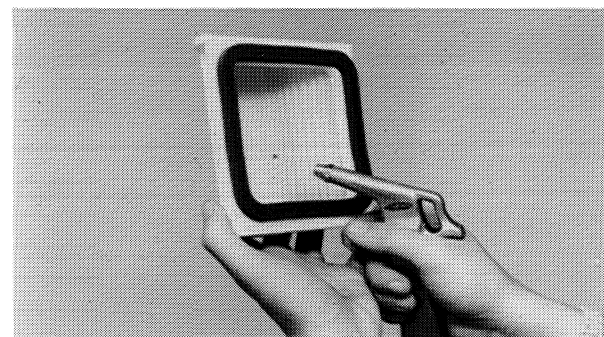
7. Remove:
- Air filter case cover



8. Remove:
- Air filter element

CAUTION:

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



9. Clean:
- Air filter element
 - Blow out dust in the element from the inner surface using compressed air.
10. Inspect:
- Air filter element
 - Damage → Replace.

11. Install:

- Air filter element
- Air filter case cover
- Fuel tank
- Side covers
- Seats



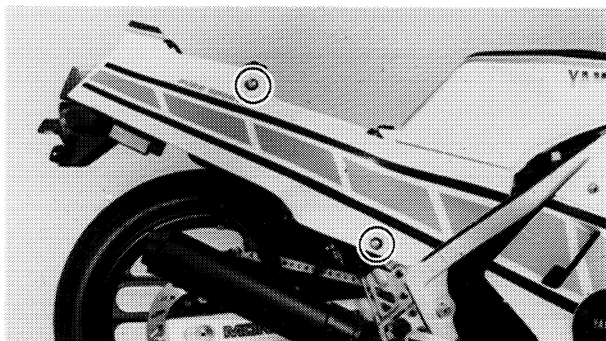
CHASSIS

FUEL COCK CLEANING

1. Turn the fuel cock to "ON" position.

2. Remove:

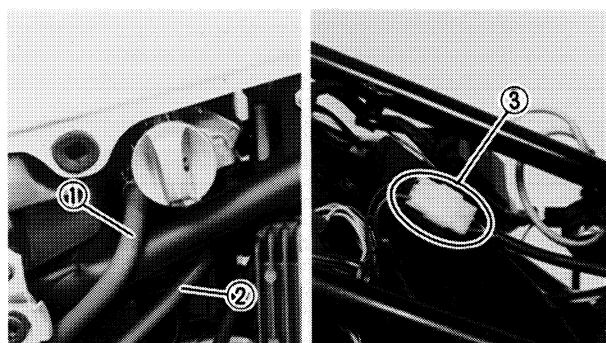
- Passenger seat
- Rider seat



3. Remove:

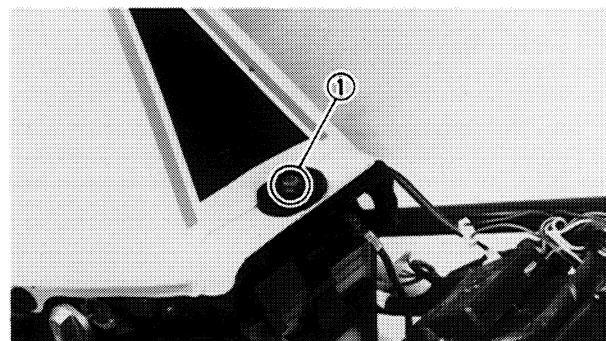
- Side covers

Remove side cover downward.



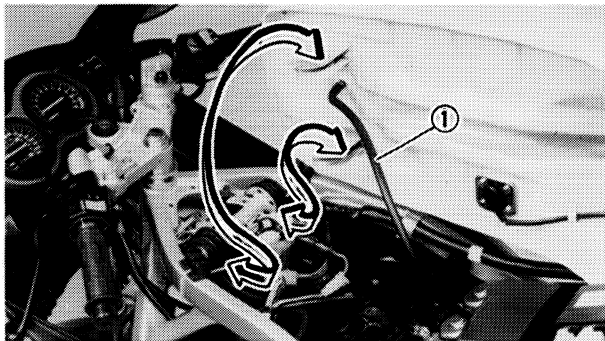
4. Disconnect:

- Fuel pipe ①
- Vacuum pipe ②
- Fuel gauge lead ③



5. Remove:

- Bolt ①
- Fuel tank

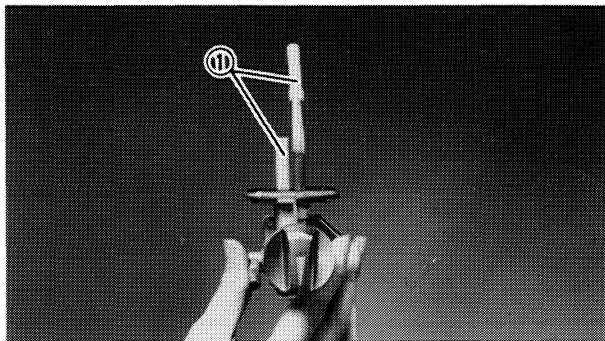


6. Disconnect:
 - Fuel tank breather pipe ①
7. Drain:
 - Fuel

WARNING:

FUEL IS HIGHLY FLAMMABLE:

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

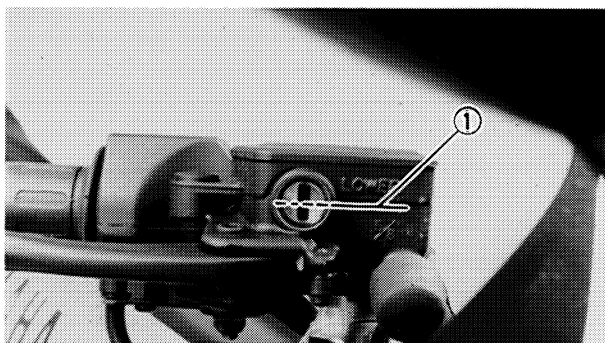


8. Remove:
 - Fuel cock
9. Clean:
 - Filter screen ①
 - Clean it with solvent.

10. Inspect:
 - Filter screen
 - O-ring
 - Damage → Replace.
11. Install:
 - Fuel cock
 - Fuel tank
 - Side covers
 - Seats

NOTE:

Be careful not to clamp the fuel cock too tightly as this may unseat the O-ring and lead to a fuel leak.



BRAKE FLUID INSPECTION

1. Inspect:

- Brake fluid level
Fluid at lower level → Replenish.

① Front brake fluid lower level

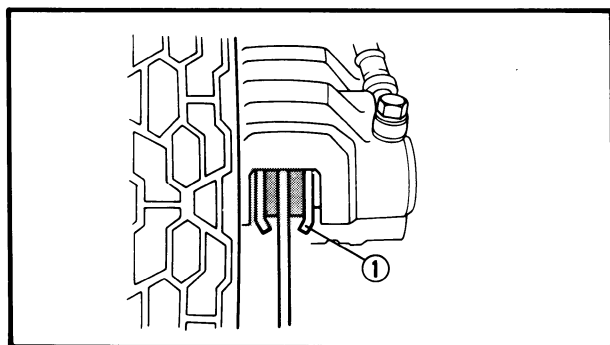
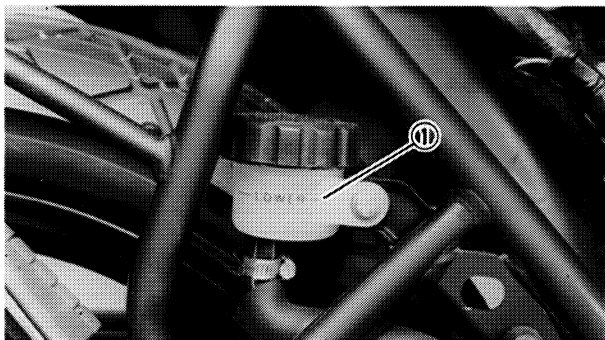


Brake Fluid: DOT #3

WARNING:

- Use only designated quality brake fluid to avoid poor brake performance.
- Refill with same type and brand of brake fluid; mixing fluids could result in poor brake performance.
- Be sure that water or other contaminants do not enter master cylinder when refilling.
- Clean up spilled fluid immediately to avoid erosion of painted surfaces or plastic parts.

① Rear brake fluid lower level

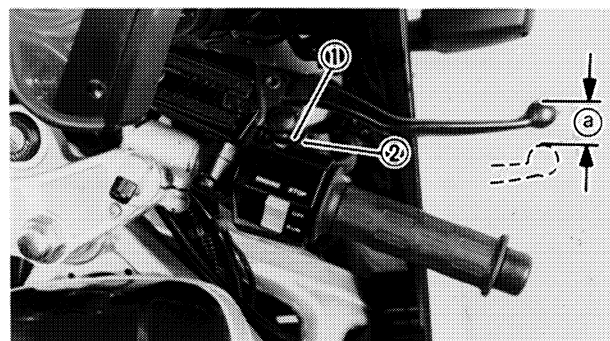


BRAKE PAD INSPECTION

1. Activate the brake lever or brake pedal.

2. Inspect:

- Wear indicator ①
Indicator almost contacts disc → Replace pads.



FRONT BRAKE LEVER FREE PLAY ADJUSTMENT

1. Loosen:

- Locknut ①

2. Adjust:

- Free play ②
Turn the adjuster ② in or out.

REAR BRAKE PEDAL HEIGHT ADJUSTMENT/ REAR BRAKE LIGHT SWITCH ADJUSTMENT

**INSP
ADJ**



Turn in	Free play is decreased.
Turn out	Free play is increased.

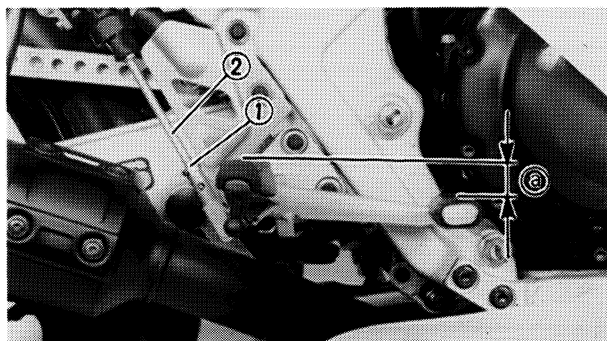


Free Play:
0 ~ 1 mm (0 ~ 0.04 in)

CAUTION:

Proper lever free play is essential to avoid excessive brake drag.

3. Tighten:
 - Locknut



REAR BRAKE PEDAL HEIGHT ADJUSTMENT

1. Loosen:
 - Adjuster locknut ①
2. Adjust:
 - Brake pedal height

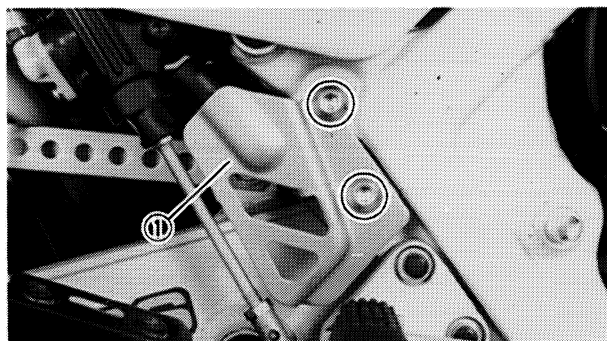
Turn the adjuster ② until the brake pedal position is at the specified height.



Brake Pedal Height ② :
40 mm (1.6 in)
Below the Top of the Footrest

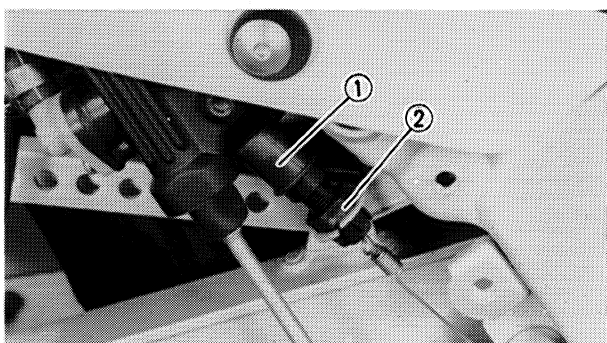
WARNING:

After adjusting the brake pedal height, visually check the adjuster end through the hole of the joint holder. The adjuster end must appear within this hole.



REAR BRAKE LIGHT SWITCH ADJUSTMENT

1. Remove:
 - Plate ①



2. Adjust:

- Rear brake light switch

Hold the switch body ① with your hand so it does not rotate and turn the adjuster ②.

NOTE:

Proper adjustment is achieved when the brake light comes on just before the brake begins to take effect.

DRIVE CHAIN SLACK CHECK

NOTE:

Before checking and/or adjusting the chain slack, rotate the rear wheel through several revolutions. Check the chain slack several times to find the point where the chain is the tightest. Check and/or adjust the chain slack where the rear wheel is in this "tight chain" position.



1. Place the motorcycle on a level place.

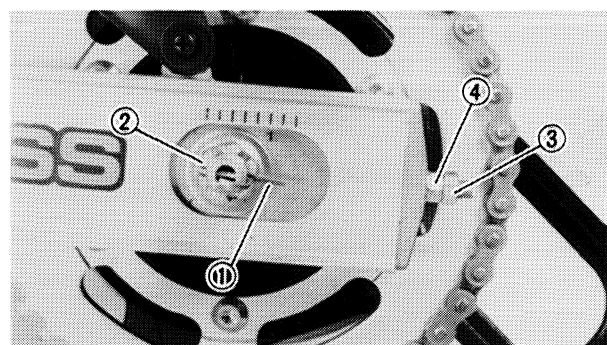
2. Measure:

- Drive chain slack (a)

Out of specification → Adjust.



Drive Chain Slack:
20 ~ 30 mm (0.78 ~ 1.18 in)



DRIVE CHAIN SLACK ADJUSTMENT

1. Remove:

- Cotter pin ①

2. Loosen:

- Nut (Rear axle) ②
- Locknut ③

3. Adjust:

- Chain slack

Turn the adjuster ④ in or out.

Turn in	Chain slack is decreased.
Turn out	Chain slack is increased.

NOTE:

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

CAUTION:

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

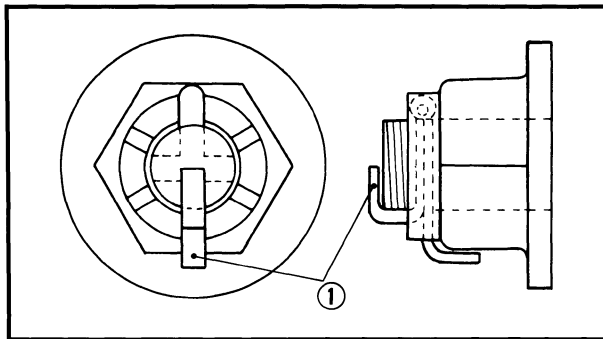
4. Tighten:

- Locknut
- Nut (Rear axle)



Nut (Rear Axle):

105 Nm (10.5 m•kg, 75 ft•lb)



5. Install:

- Cotter pin ① (New)

NOTE:

Do not loosen the axle nut after torque tightening. If the axle nut groove is not aligned with the wheel shaft cotter pin hole, align groove to hole by tightening up on the axle nut.

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.

This motorcycle has a drive chain with small rubber O-rings between the chain plates. Steam cleaning, high-pressure washes, and certain solvents 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.

CABLE INSPECTION AND LUBRICATION

Cable inspection and lubrication steps:

- Hold cable end high and apply several drops of lubricant to cable.
- Coat metal surface of disassembled throttle twist grip with suitable all-purpose grease to minimize friction.
- Check for damage to cable insulation.
Replace any corroded or obstructed cables.
- Lubricate any cables that do not operate smoothly.



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

LEVER AND PEDAL LUBRICATION

Lubricate pivoting parts of each lever and pedal.



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

SIDESTAND LUBRICATION

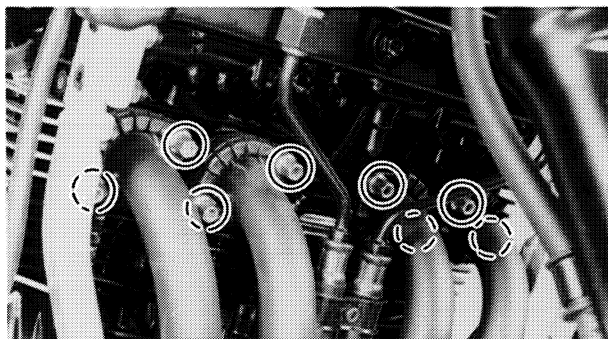
Lubricate sidestand at their pivot points.

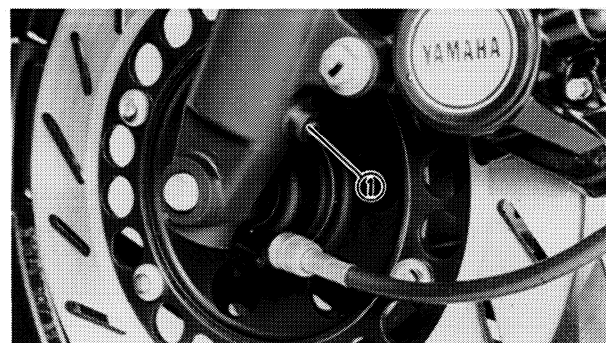
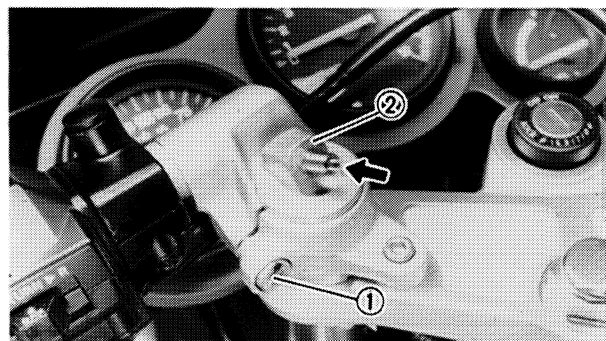
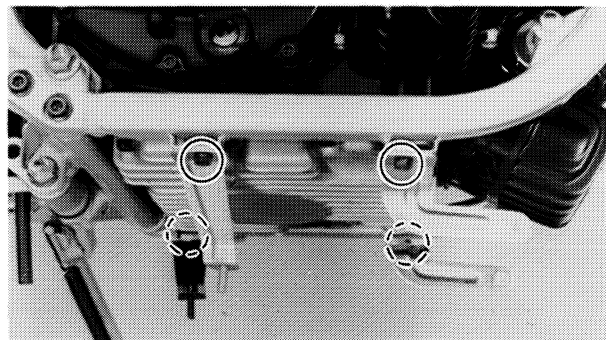
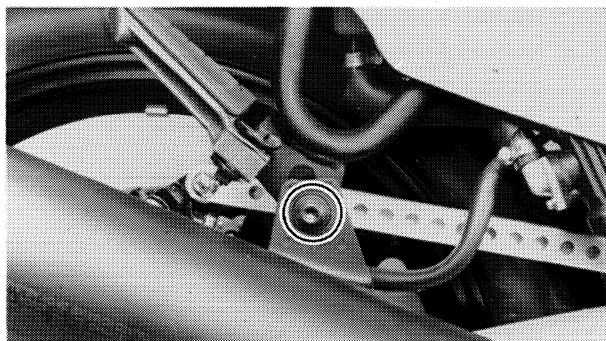


**Yamaha Chain and Cable Lube or
SAE 10W30 Motor Oil**

FRONT FORK OIL CHANGE

1. Place the motorcycle on a level place.
2. Remove:
 - Center cowls (Right and left)
 - Lower cowls (Right and left)
3. Remove:
 - Muffler





4. Remove:

- Lower cowl stays

5. Elevate the front wheel.

6. Remove:

- Air valve cap

7. Keep the air valve open so that the air can be let out of the inner tube.

8. Loosen:

- Bolt ①
- Cap bolt ②

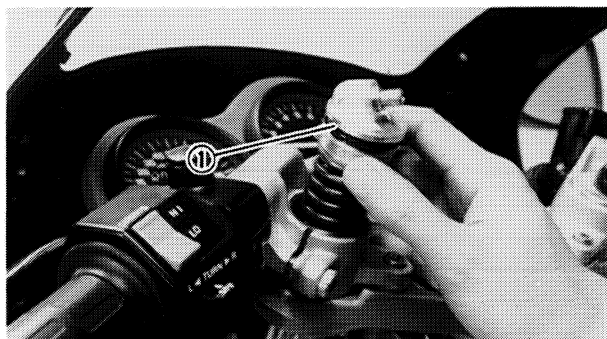
9. Place a receptacle under the drain hole.

10. Remove:

- Cap bolt
 - Drain screw ①
- Drain the fork oil

WARNING:

Do not allow any oil to contact the disc brake components. If oil is discovered, be sure to remove it, otherwise diminished braking capacity and damage to the rubber components of the brake assembly will occur.



11. Inspect:
 - O-ring (Cap bolt) ①
 - Gasket (Drain screw)
 - Wear/Damage → Replace.
12. Install:
 - Drain screw
 - Gasket
13. Fill:
 - Front fork



Recommended Oil:
Yamaha Fork Oil 10WT or
Equivalent
For Oil Capacity (Each Fork):
315 cm³ (11.1 Imp oz, 10.7 US oz)

14. After filling pump the forks slowly up and down to distribute the oil.
15. Tighten:
 - Cap bolt
 - Bolt (Handle crown)



Cap Bolt:
23 Nm (2.3 m·kg, 17 ft·lb)
Bolt (Handle Crown):
20 Nm (2.0 m·kg, 14 ft·lb)

16. Face:
 - Air valve as shown

NOTE:

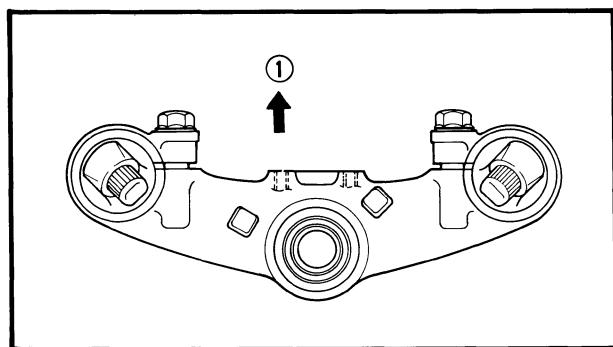
If the air valve does not face as show, loosen the pinch bolts on the under bracket and reset the forks in the following procedure:

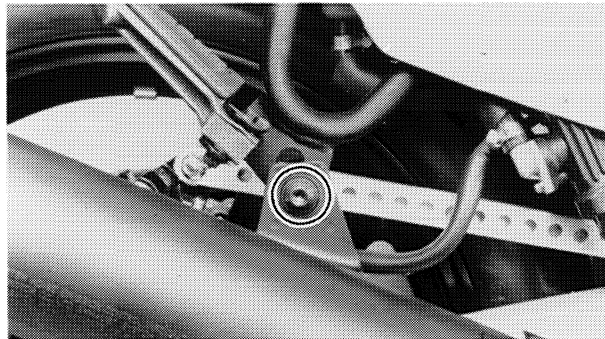
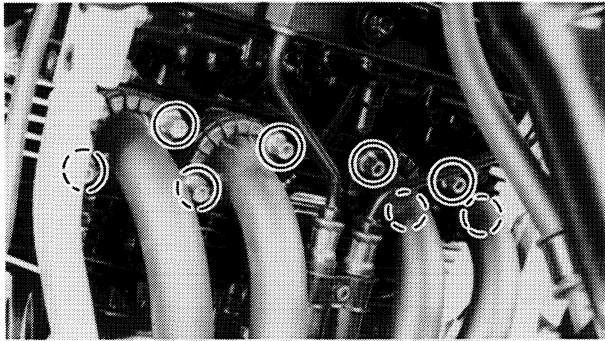
- a. Level the top of the inner tube with the top of the handlebar.
- b. Face the air valve as shown.

- ① Forward

17. Fill:
 - Front fork with air
 - Refer to "FRONT FORK ADJUSTMENT" section.

Maximum Air Pressure:
98 kPa (1.0 kg/cm², 14 psi)





18. Install:

- Lower cowl stays
- Muffler
- Lower cowls
- Center cowls



Exhaust Pipe Joint:

10 Nm (1.0 m·kg, 7.2 ft·lb)

Muffler:

25 Nm (2.5 m·kg, 18 ft·lb)

FRONT FORK ADJUSTMENT

WARNING:

Always adjust each fork preload to the same setting. Uneven adjustment can cause poor handling and loss of stability.

1. Remove:

- Center cowls (Right and left)
- Lower cowls (Right and left)
- Muffler
- Lower cowl stays

2. Elevate the front wheel.

NOTE:

When checking and adjusting the air pressure, there should be no weight on the front end of the motorcycle.

3. Remove:

- Air valve cap

4. Check:

- Air pressure



NOTE: _____

If the air pressure is increased, the suspension becomes stiffer, and if decreased, it becomes softer.

To increase:

Use an air pump or pressurized air supply.

To decrease:

Release the air by pushing the valve.

Standard Air Pressure:
 39 kPa (0.4 kg/cm², 5.7 psi)
Maximum Air Pressure:
 98 kPa (1.0 kg/cm², 14 psi)
Minimum Air Pressure:
 Zero

CAUTION: _____

Never exceed the maximum pressure, or oil seal damage may occur.

WARNING: _____

The difference between both the left and right tubes should be 9.8 kPa (0.1 kg/cm², 1.4 psi) or less.

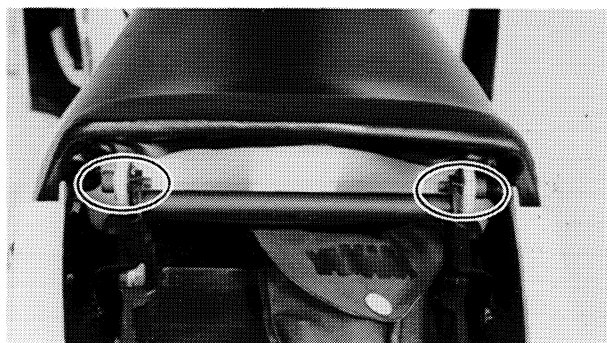
5. Install:

- Lower cowl stays
- Muffler
- Lower cowls
- Center cowls



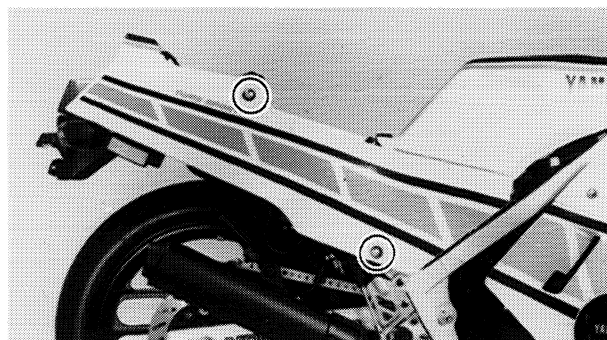
Exhaust Pipe Joint:
 10 Nm (1.0 m·kg, 7.2 ft·lb)
Muffler:
 25 Nm (2.5 m·kg, 18 ft·lb)

REAR SHOCK ABSORBER ADJUSTMENT

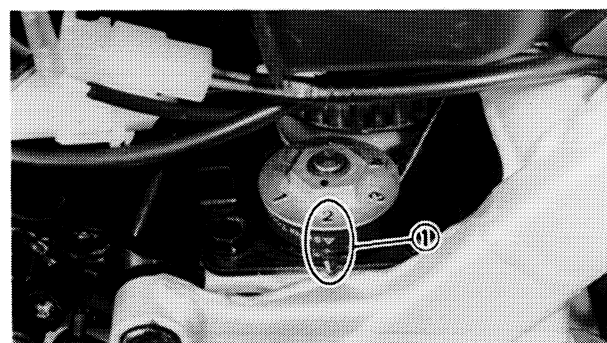


REAR SHOCK ABSORBER ADJUSTMENT

1. Remove:
 - Passenger seat
 - Rider seat



2. Remove:
 - Side cover (Right)



3. Adjust:
 - Shock absorber preload

	← Stiffer			Std.	Softer
Adjusting position	5	4	3	2	1

① Match mark

4. Install:
 - Side cover (Right)
 - Rider seat
 - Passenger seat

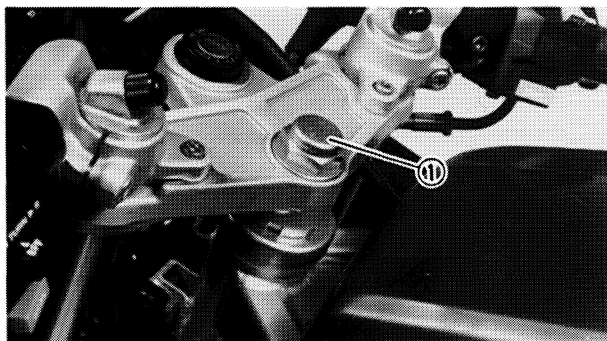
Recommended combinations of the front fork and the rear shock absorber settings

Use this table as a guide for specific riding and motorcycle load conditions.

	Front fork Air pressure	Rear shock absorber Spring seat	Loading condition			
			Solo rider	With passenger	With accessories and equipment	With accessories, equipment and passenger
1.	39.2 ~ 58.9 kPa (0.4 ~ 0.6 kg/cm ² , 5.7 ~ 8.5 psi)	1 ~ 2	○			
2.	39.2 ~ 59.0 kPa (0.4 ~ 0.6 kg/cm ² , 5.7 ~ 8.5 psi)	3 ~ 5		○		
3.	58.9 ~ 78.5 kPa (0.6 ~ 0.8 kg/cm ² , 8.5 ~ 11 psi)	3 ~ 5			○	
4.	78.5 kPa (0.8 kg/cm ² , 11 psi)	5				○

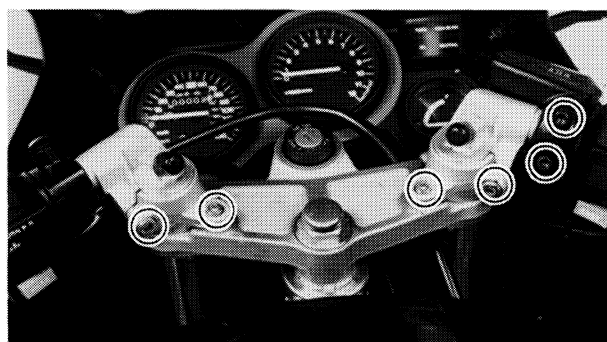
STEERING HEAD INSPECTION

1. Place the motorcycle on a level place, then elevate the front wheel.
2. Check:
 - Steering assembly bearings
Grasp the bottom of the forks and gently rock the fork assembly back and forth.
Looseness → Adjust steering head.

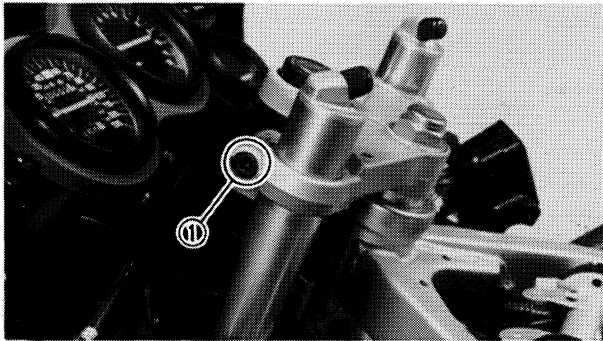


STEERING HEAD ADJUSTMENT

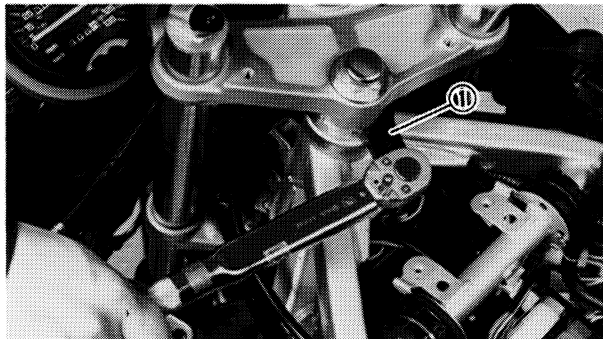
1. Loosen:
 - Bolt (Steering stem) ①



2. Remove:
 - Master cylinder
 - Handlebar
 - Seats
 - Side covers
 - Fuel tank



3. Loosen:
 - Bolts (Handle crown) ①
4. Lift the handle crown.



5. Tighten:
 - Ring nut
 Use the Ring Nut Wrench ① (YU-33975).



Ring Nut:
38 Nm (3.8 m·kg, 27 ft·lb)

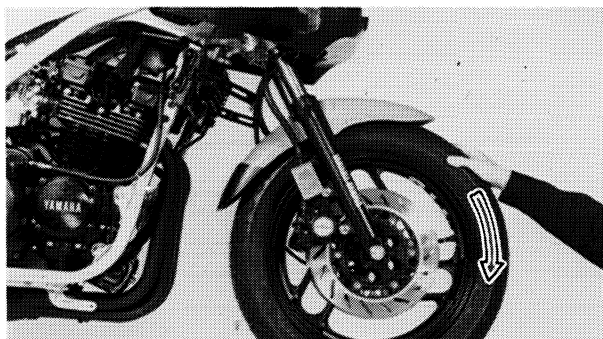
NOTE:

If steering is binded, loosen the ring nut so that there is no free play on bearing.

6. Install:
 - Handle crown
 - Handlebar



Bolt (Steering Stem):
110 Nm (11.0 m·kg, 80 ft·lb)
Bolt (Handle Crown):
20 Nm (2.0 m·kg, 14 ft·lb)
Handlebar and Inner Tube:
20 Nm (2.0 m·kg, 14 ft·lb)
Handlebar and Handle Crown:
10 Nm (1.0 m·kg, 7.2 ft·lb)




FRONT WHEEL BEARING INSPECTION

1. Raise the front end of the motorcycle, and spin the wheel by hand. Touch the axle or front fender while spinning the wheel.
Excessive vibration → Replace bearings.



REAR WHEEL BEARING INSPECTION

- Remove:
 - Cotter pin
 - Rear wheel
- Check:
 - Bearing movement
With the fingers.
Roughness/Wear→Replace.
- Install:
 - Rear wheel
- Adjust:
 - Drive chain slack
Refer to "DRIVE CHAIN SLACK ADJUSTMENT" section.
- Tighten:
 - Nut (Rear axle)



Nut (Rear axle):
 105 Nm (10.5 m•kg, 75 ft•lb)

- Install:
 - Cotter pin (New)

TUBELESS TIRES AND ALUMINUM WHEELS INSPECTION

WARNING:

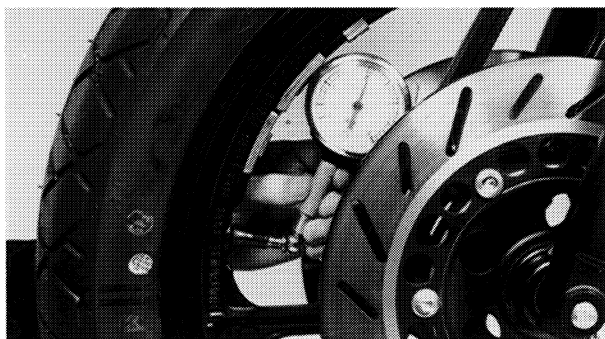
Do not attempt to use tubeless tires on a wheel designed for tube type tires only. Tire failure and personal injury may result from sudden deflation.

Wheel	Tire
Tube type	Tube type only
Tubeless	Tube type or tubeless

Be sure to install the correct tube when using tube type tires.

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

TUBELESS TIRES AND ALUMINUM WHEELS INSPECTION



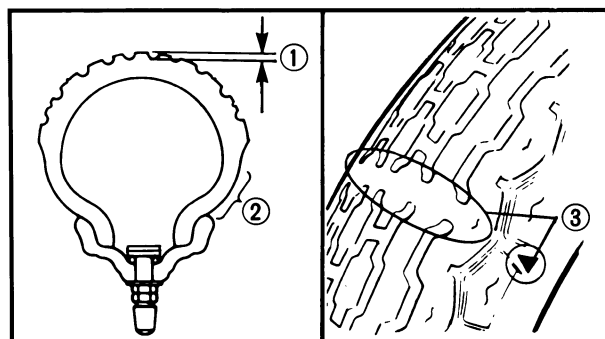
1. Measure:

- Tire pressure

Out of specification → Adjust.

Basic weight: With oil and full fuel tank	202 kg (409 lb)	
Maximum load*	178 kg (392 lb)	
Cold tire pressure	Front	Rear
Up to 90 kg (198 lb) load*	177 kPa (1.8 kg/cm ² , 26 psi)	196 kPa (2.0 kg/cm ² , 28 psi)
90 kg (198 lb) ~ Maximum load*	196 kPa (2.0 kg/cm ² , 28 psi)	245 kPa (2.5 kg/cm ² , 36 psi)
High speed riding	196 kPa (2.0 kg/cm ² , 28 psi)	226 kPa (2.3 kg/cm ² , 32 psi)

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



2. Inspect:

- Tire surfaces

Wear/Damage → Replace.



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

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

3. Inspect:

- Aluminum wheels

Damage/Bends → Replace.

Never attempt even small repairs to the wheel.

NOTE: _____

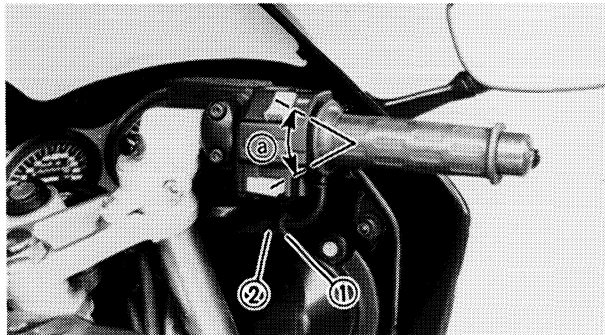
Always balance the wheel when a tire or wheel has been changed or replaced.



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.

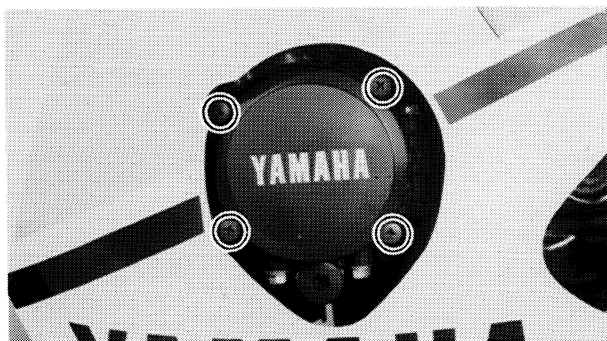

THROTTLE CABLE ADJUSTMENT

1. Loosen:
 - Lock nut ①
2. Adjust:
 - Throttle cable free play ②
 Turn the adjuster ② in or out.

Turn in	Free play is increased.
Torn out	Free play is decreased.



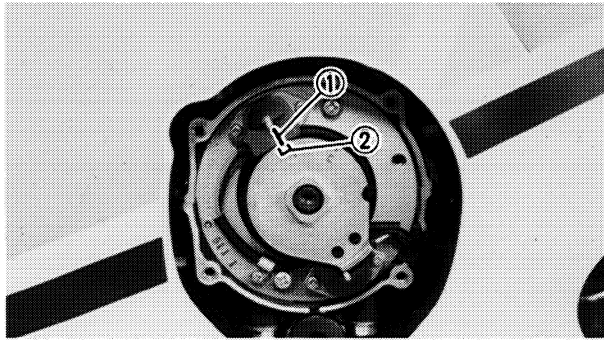
Free play:
2~5 mm (0.08~0.20 in)


ELECTRICAL
IGNITION TIMING CHECK

1. Remove:
 - Crankcase cover (Left)
2. Connect:
 - Timing light (YM-33277)
(To the #1 spark plug lead)
3. Warm up the engine and allow it to idle at the specified speed.



Engine Idle Speed:
1,150 ~ 1,250 r/min



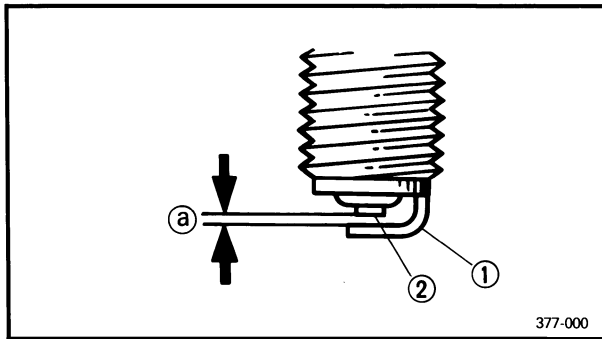
4. Check:
- Ignition timing

Ignition timing checking steps:

- Visually check the upper pickup coil mark ① is within the firing range ② indicated on timing plate.

Incorrect firing range → Check flywheel and/or pickup assembly (tightness damage)
Refer to Chapter 6, "ELECTRICAL" for further information.

5. Install:
- Crankcase cover



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.

① 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:
D8EA (NGK), X24ES-U (N.D.)

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: _____

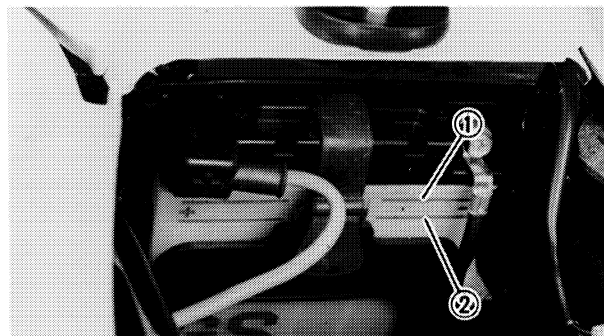
Before installing a spark plug, clean the gasket surface and plug surface.



Spark Plug:
17.5 Nm (1.75 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 part finger tight. Have the spark plug torqued to the correct value as soon as possible with a torque wrench.



BATTERY INSPECTION

1. Remove:

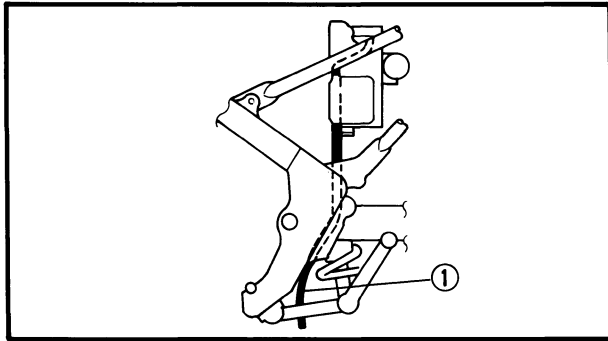
- Passenger seat
- Rider seat

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. Connect:

- Breather pipe ①

Be sure the hose is properly attached and routed.

4. Inspect:

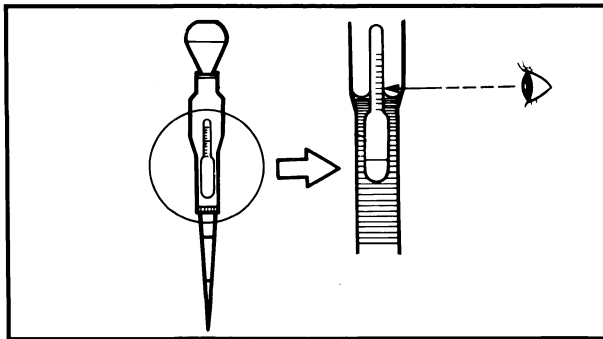
- Breather pipe

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 motorcycle can occur.



5. 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.
- Warping or buckling of plates or insulators is evident.

CAUTION:

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


WARNING:

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

Always follow these preventive measures:

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

Antidote (EXTERNAL):

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

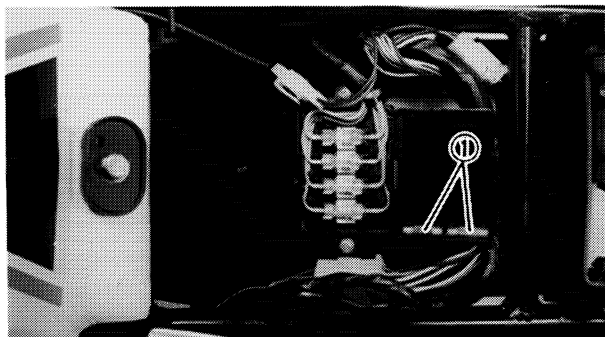
Antidote (INTERNAL):

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

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

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

KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.


FUSE INSPECTION

The fuse panel is located under the seat.

1. Inspect:

- Fuses
 - Defective → Replace.
 - Blown fuse (New) → Inspect circuit.

NOTE:

Install new fuses of proper amperage.

① Spare fuses

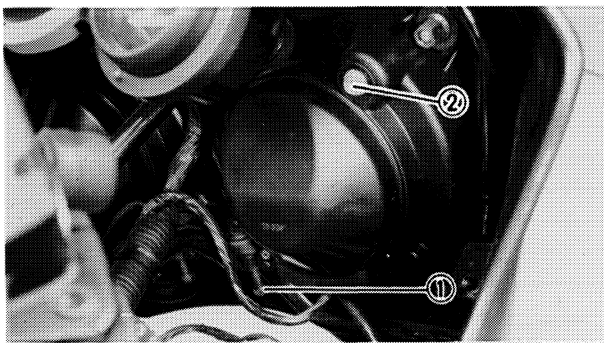
Description	Amperage	Quantity
Main	30A	1
Headlight	20A	1
Signal	10A	1
Ignition	10A	1
Reserve	10A	1
	20A	1
	30A	1

Blown fuse replacement steps:

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

WARNING:

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



HEADLIGHT BEAM ADJUSTMENT

1. Adjust:

• Horizontal adjustment:

To adjust the beam to the right, turn the adjusting screw ① clockwise.

To adjust the beam to the left, turn the screw ① counterclockwise.

2. Adjust:

• Vertical adjustment:

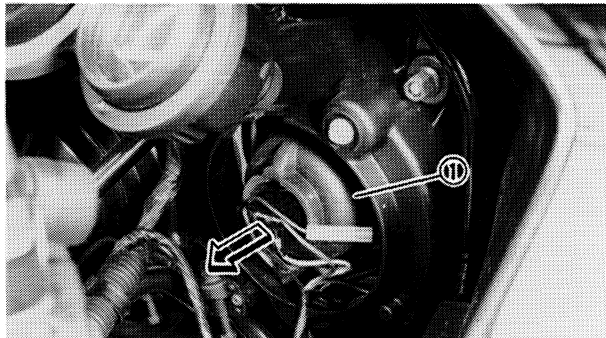
To raise the beam, turn the adjusting screw ② clockwise.

To lower the beam, turn the screw ② counterclockwise.

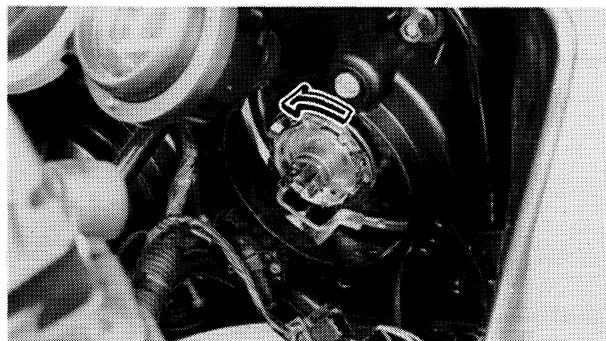


HEADLIGHT BULB REPLACEMENT

1. Remove:
 - Headlight cover



2. Disconnect:
 - Headlight lead
 - Cover ①



3. Remove:
 - Bulb

Turn the bulb holder counterclockwise to release 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.

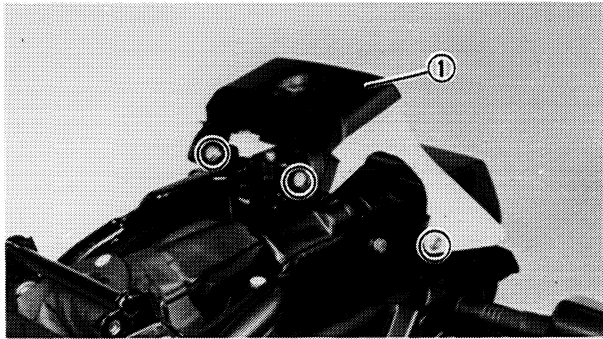
4. Install:
 - Bulb (New)

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.

5. Install:
 - Cover
 - Headlight cover



TAILLIGHT BULB REPLACEMENT

1. Remove:
 - Passenger seat
 - Rider seat
 - Side covers
 - Tail cowl ①
2. Remove:
 - Bulb socketTurn the bulb socket approximately 30° counterclockwise.
3. Replace:
 - Defective bulb
4. Install:
 - Bulb socket
 - Tail cowl
 - Side covers
 - Rider seat
 - Passenger seat

CARBURETOR AIR VENT SYSTEM INSPECTION (CALIFORNIA ONLY)

1. Inspect:
 - Hoses
 - Air vent control valveRefer to "CHAPTER 6-CARBURETOR AIR VENT SYSTEM" section.



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ENGINE OVERHAUL

ENGINE REMOVAL

NOTE:

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

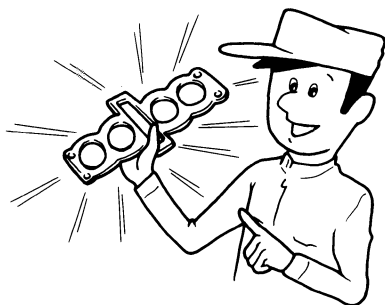
- Cylinder head
- Cylinder
- Piston
- Clutch
- AC magneto

PREPARATION FOR REMOVAL

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

NOTE:

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



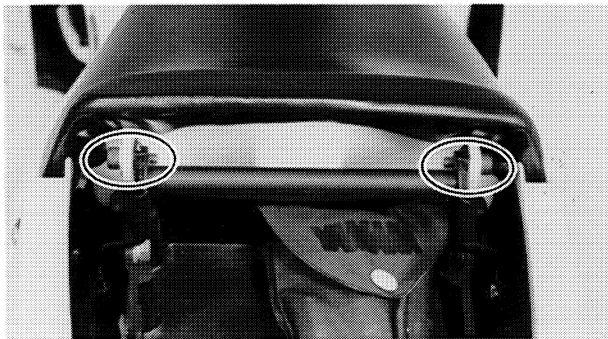
3. During engine disassembly, clean all parts and place them in trays in the order of disassembly. This will speed up assembly time and help assure that all parts are correctly reinstalled in the engine.



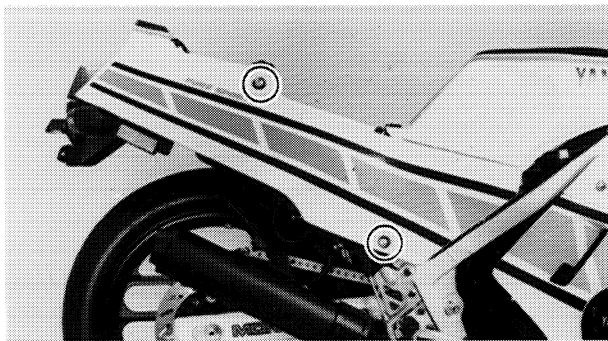
4. Start the engine and allow it to warm up.
5. Drain the transmission oil completely. Refer to "CHAPTER 2. PERODIC INSPECTIONS AND ADJUSTMENTS—ENGINE OIL REPLACEMENT" section.

SEAT AND FUEL TANK

1. Place the motorcycle on a level place.
2. Turn the fuel cock to "ON" position.



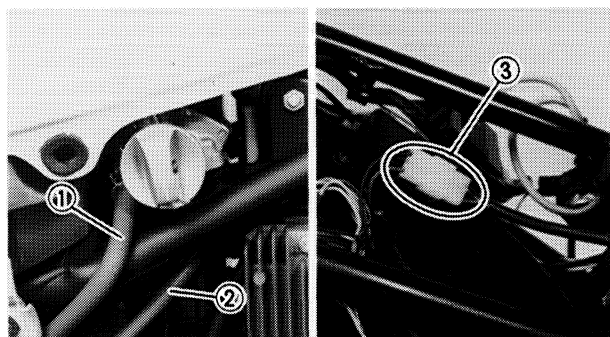
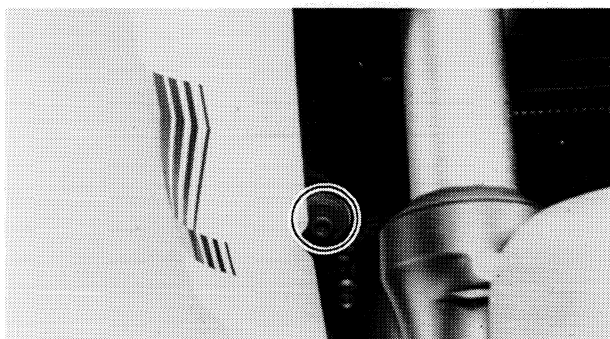
3. Remove:
 - Passenger seat
 - Rider seat



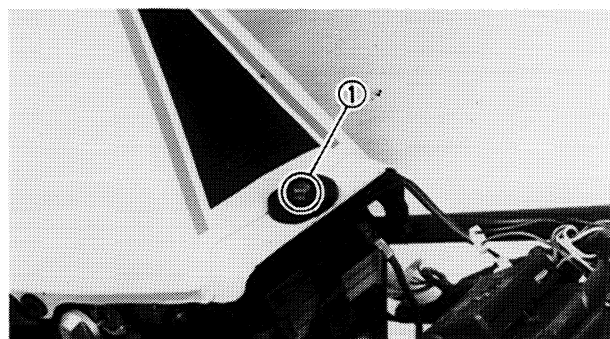
4. Remove:
 - Side covers (Right and left)Remove side cover downward.



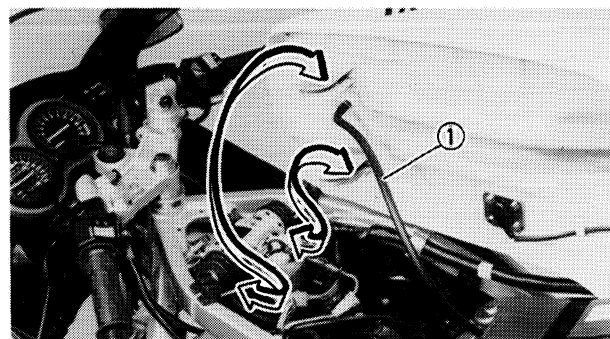
5. Remove:
 - Center cowls (Right and left) ①
 - Lower cowls (Right and left) ②


6. Disconnect:

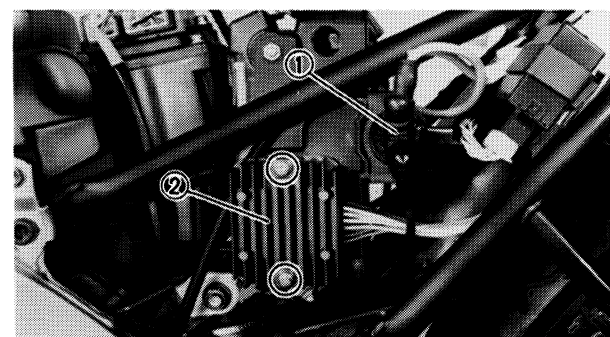
- Fuel pipe ①
- Vacuum pipe ②
- Fuel gauge lead ③


7. Remove:

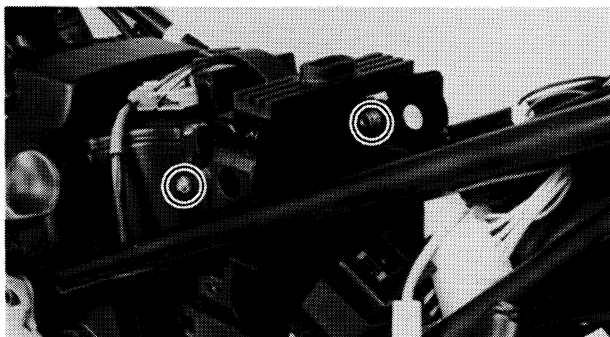
- Bolt ①
- Fuel tank


8. Disconnect:

- Fuel tank breather pipe ①


CARBURETOR
1. Remove:

- Starter relay ①
- Rectifier/Regulator ②

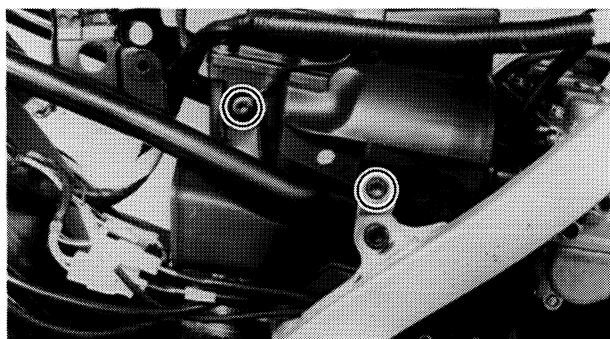


2. Remove:

- Battery
- Battery case

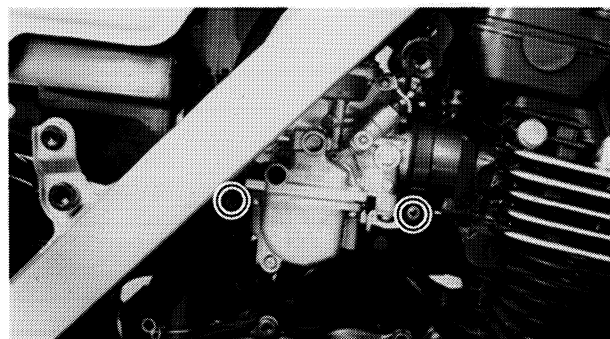
CAUTION:

Disconnect the negative lead first, and then disconnect the positive lead.



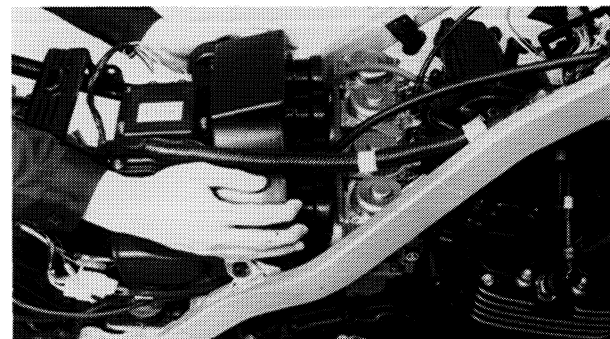
3. Remove:

- Bolt (Air cleaner case)

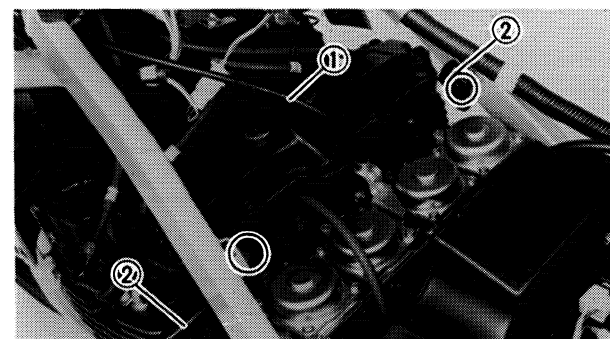


4. Loosen:

- Screws (Carburetor joint)

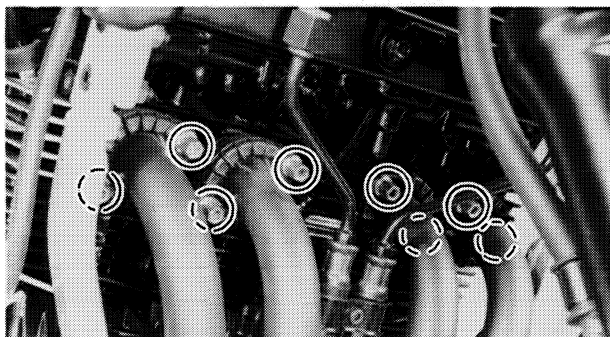


5. Slide the air cleaner case backward.

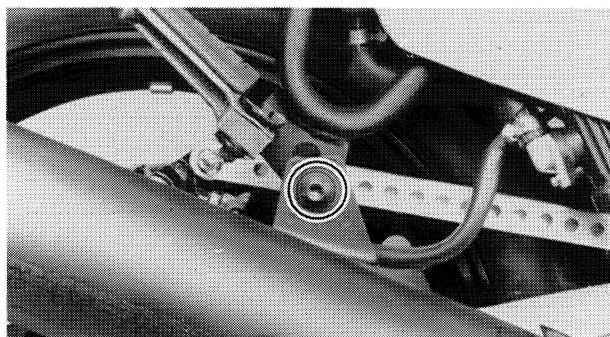


6. Remove:

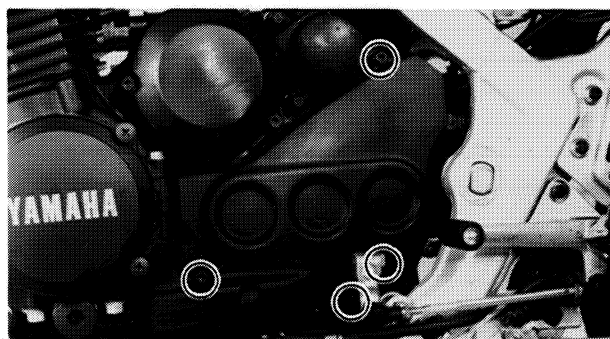
- Throttle cable ①
- Air bent hose
- Cowling stay ②
- Carburetor assembly

**EXHAUST PIPES AND MUFFLER**

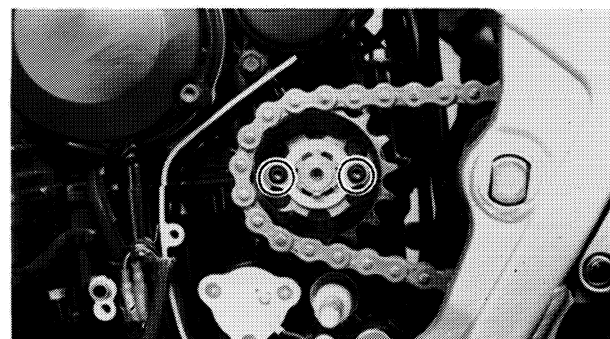
1. Remove:
 - Nuts (Exhaust pipe)



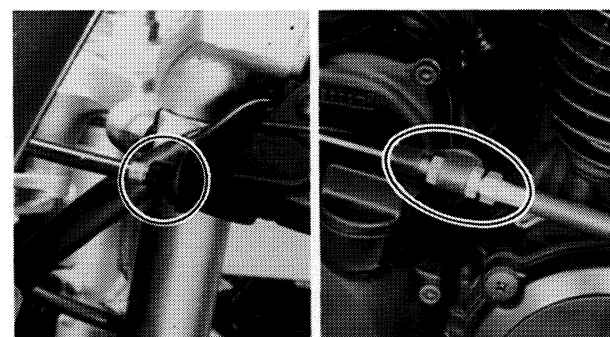
2. Remove:
 - Bolt (Muffler)
 - Muffler

**DRIVE CHAIN**

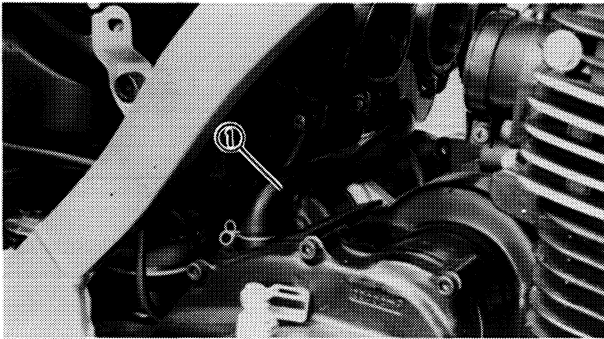
1. Remove:
 - Change pedal link
 - Drive sprocket cover



2. Remove:
 - Drive sprocket
 - Drive chain

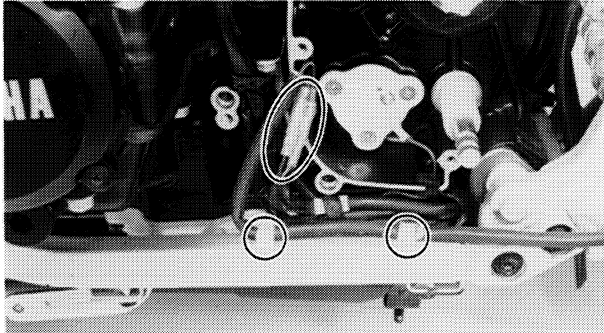
**CABLE AND PIPE**

1. Loosen:
 - Adjusters (Clutch cable)
2. Remove:
 - Clutch cable



3. Disconnect:

- Crankcase ventilation hose ①



LEADS

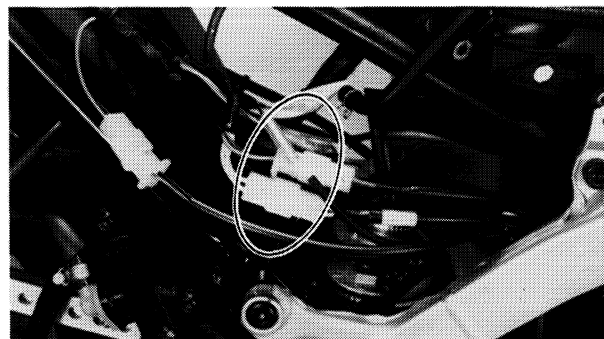
1. Disconnect:

- Sidestand switch leads



2. Remove:

- Starter motor lead
- Starter motor

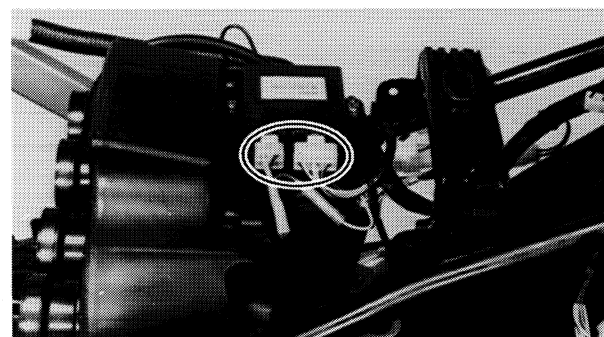


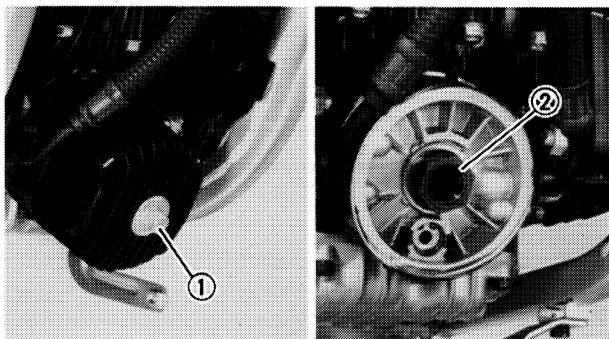
3. Disconnect:

- Pickup coil leads
- Oil level switch leads
- Neutral switch leads
- AC magneto leads

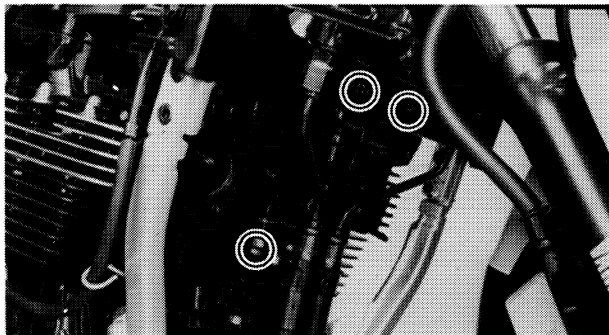
4. Remove:

- Spark plug leads

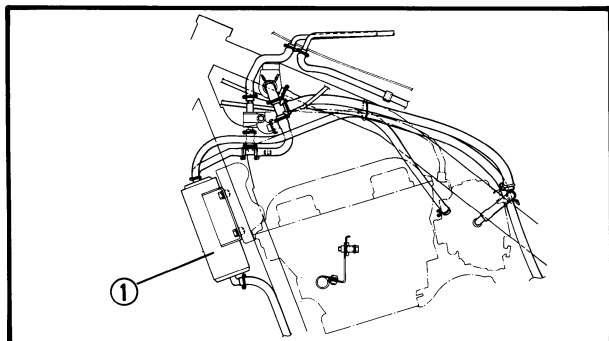


**OIL COOLER**

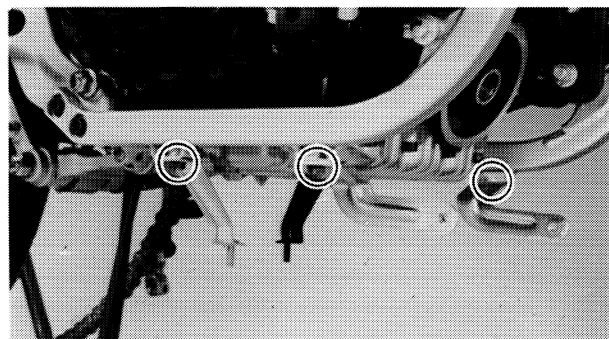
1. Remove:
 - Oil filter bolt ①
 - Spacer nut ②



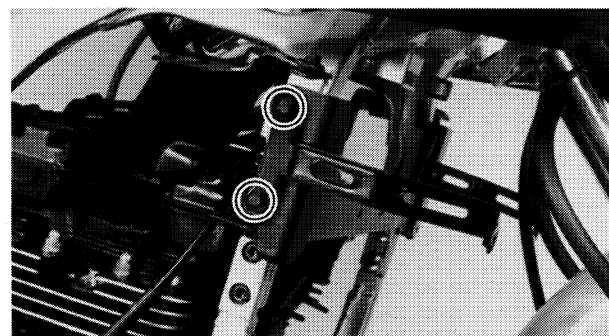
2. Remove:
 - Oil cooler

**CANISTER (CALIFORNIA ONLY)**

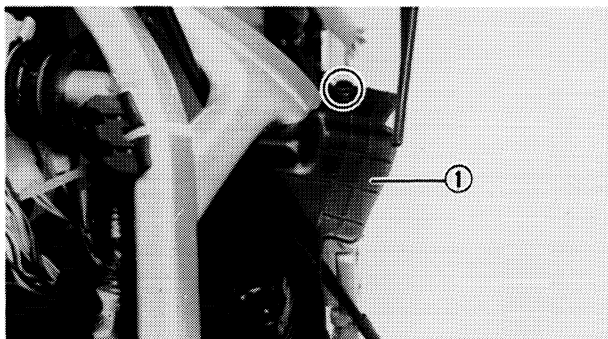
1. Remove:
 - Canister ①
(at front of the engine)

**ENGINE REMOVAL**

1. Remove:
 - Lower cowl stays

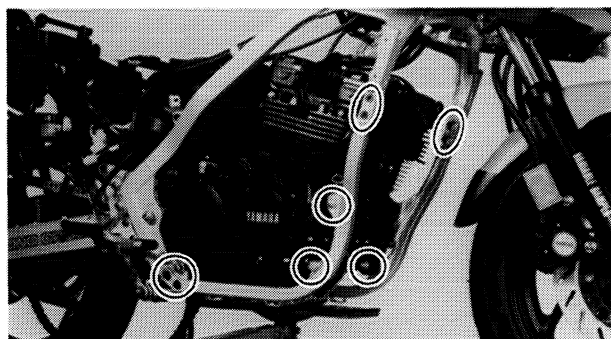


2. Remove:
 - Oil cooler stay



3. Remove:

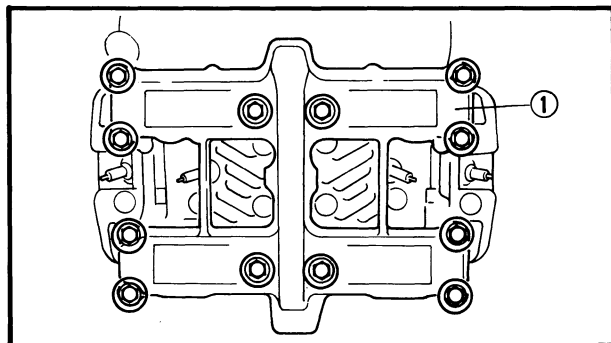
- Air duct ① (Right and left)



4. Place a suitable stand under the engine.

5. Remove:

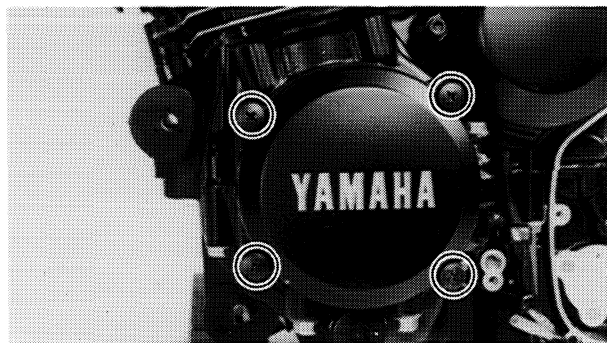
- Mounting bolts
- Down flame tube
- Engine assembly (from right chassis)



ENGINE DISASSEMBLY CYLINDER HEAD AND CAMSHAFT

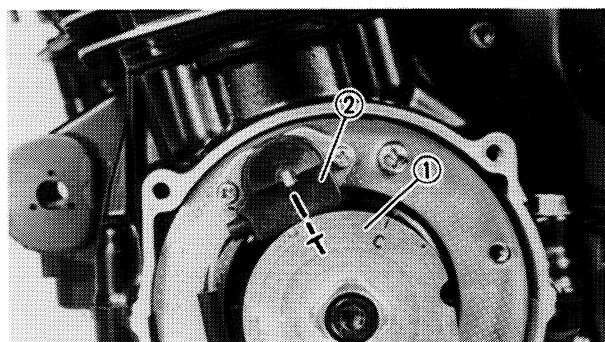
1. Remove:

- Cylinder head cover ①
- Spark plugs



2. Remove:

- Crankcase cover (Left)

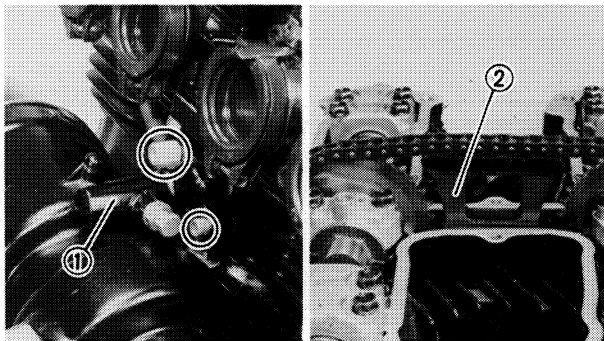


3. Turn:

- Crankshaft (Counterclockwise)

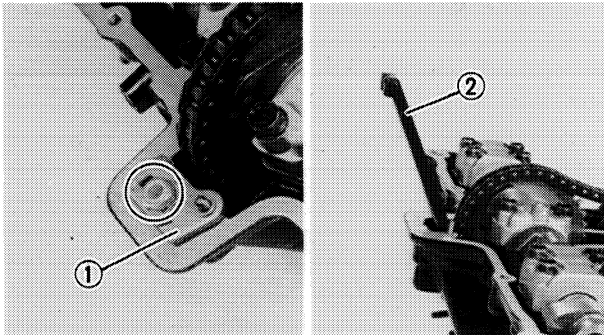
4. Align:

- Timing plate "T" mark ① (with the upper pickup coil mark ②)



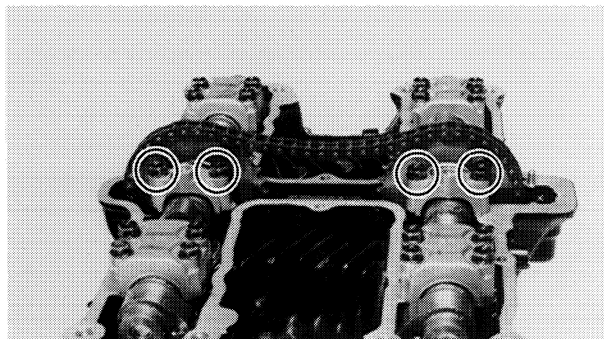
5. Remove:

- Tensioner assembly ①
- Upper chain guide ②



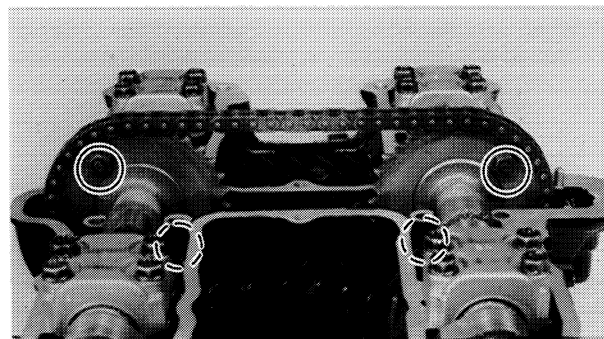
6. Remove:

- Chain guide stopper ①
- Chain guide (Exhaust side) ②



7. Remove:

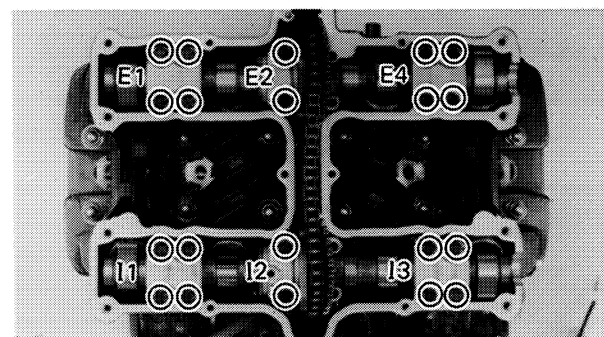
- Intake cam cap (#3)
- Exhaust cam cap (#3)



8. Remove:

- Bolts (Camshaft sprocket)

9. Dismount the sprockets from camshaft sprocket seats.

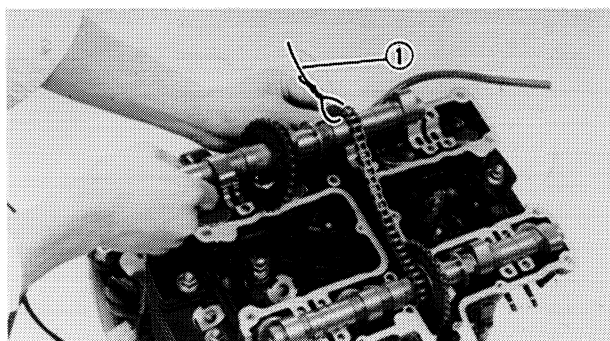


10. Remove:

- Cam caps
- Dowel pins

CAUTION:

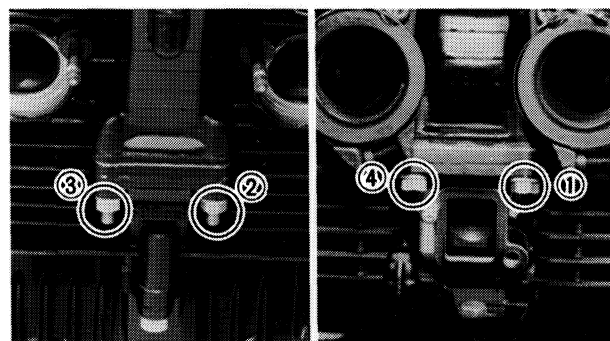
Do not rotate the camshaft or valve damage may occur.



11. Remove:
- Camshafts

NOTE:

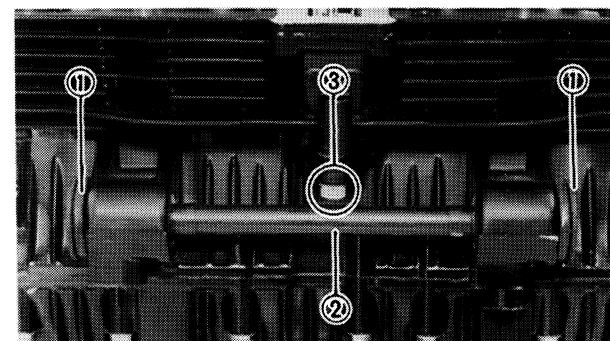
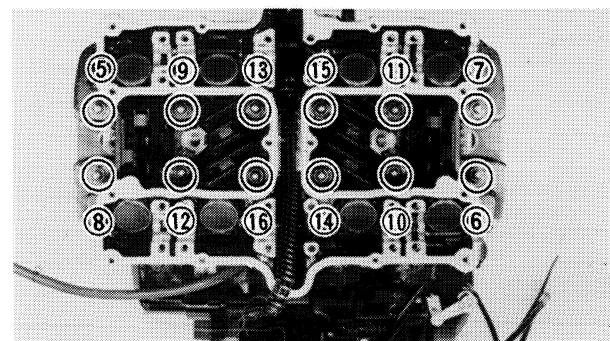
Fasten safety wire (1) to the cam chain to prevent it from falling into the crankcase.



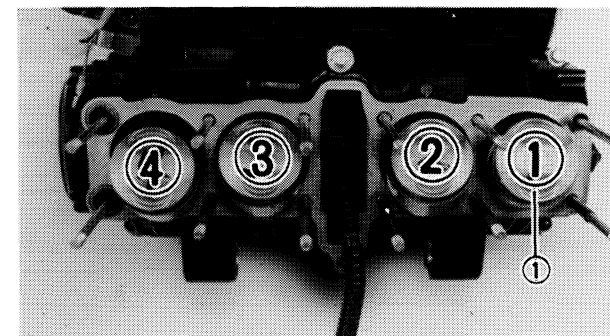
12. Remove:
- Cylinder head

NOTE:

Loosen the nuts in their proper loosening sequence.



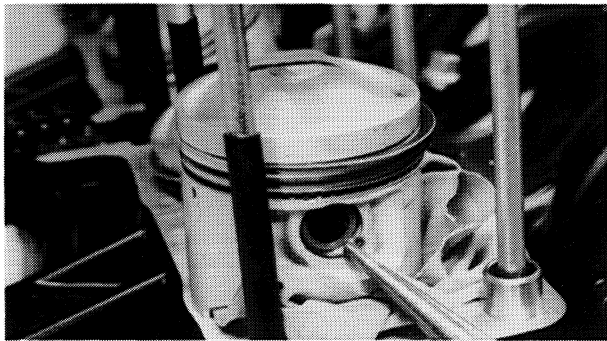
13. Remove:
- Damper (1)
 - Front engine mount spacer (2)
 - Nut (3)
 - Cylinder (4)



PISTON AND INTAKE SIDE CAM CHAIN GUIDE

1. Mark:

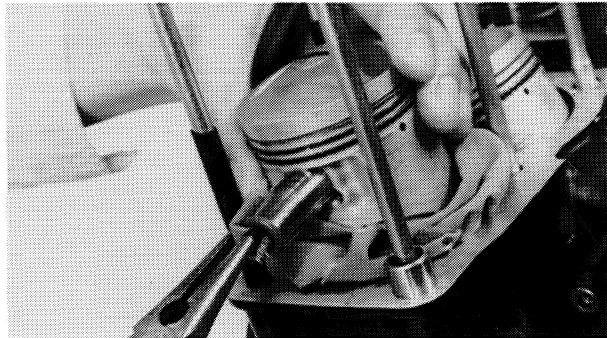
- Pistons (with piston number (1) designations as shown.)



2. Remove:
- Piston pin circlips

NOTE:

Before removing piston pin circlip, cover crankcase with a clean rag to prevent circlip from falling into crankcase cavity.



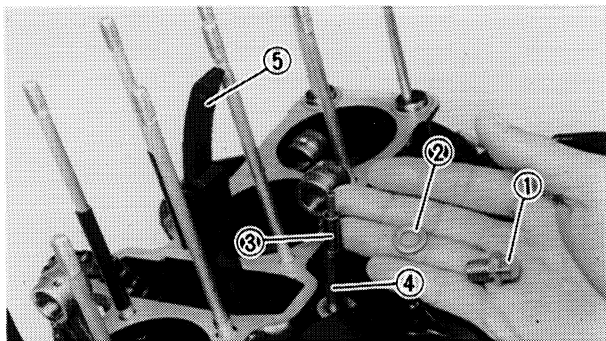
3. Remove:
- Piston pins
 - Pistons

NOTE:

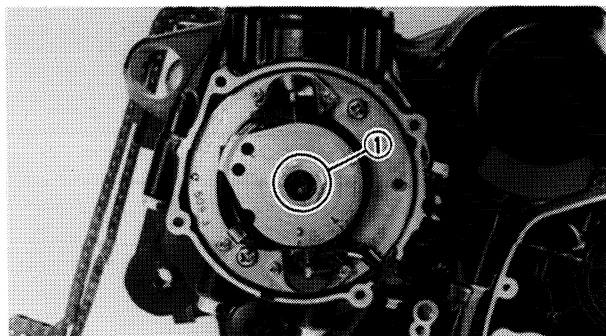
Before removing the piston pin, deburr the clip grooved and pin hole area. If the piston pin groove is deburred and piston pin is still difficult to remove, use Piston Pin Puller (YU-01304).

CAUTION:

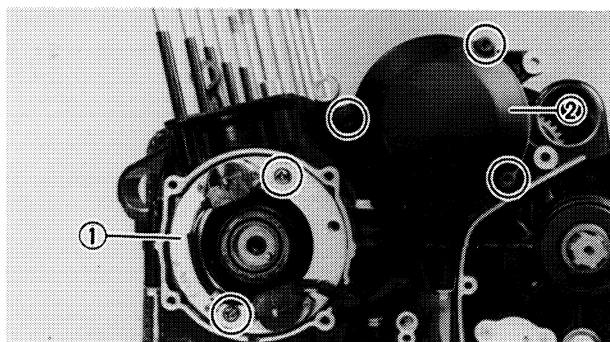
Do not use a hammer to drive the piston pin out.



4. Remove:
- Bolt ①
 - Plate washer ②
 - Spring ③
 - Stopper shaft ④
 - Intake side cam chain guide ⑤

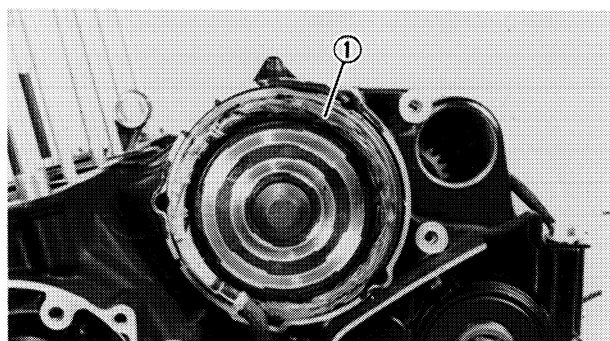
**PICKUP COIL AND GENERATOR**

1. Remove:
- Bolt ① (Timing plate)



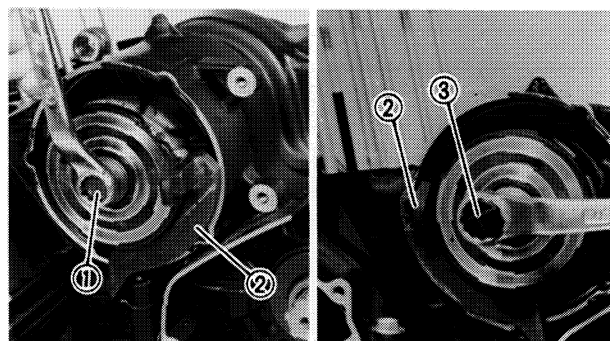
2. Remove:

- Pickup coil assembly ①
- Generator cover ②



3. Remove:

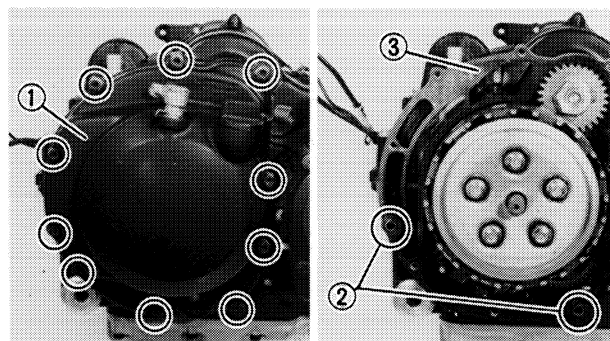
- Stator coil ①



4. Remove:

- Rotor securing bolt ①
- Rotor

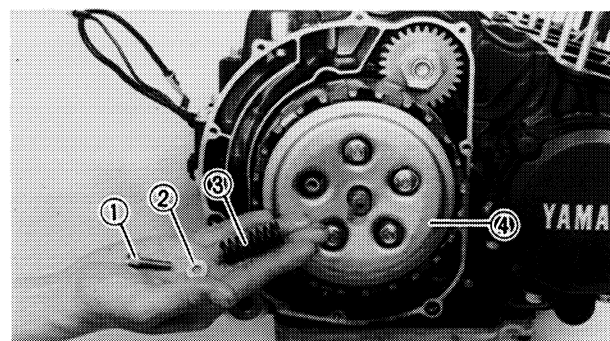
Use Rotor Holding Tool ② (YM-04043), Rotor Puller ③ (YM-01080) and Pin (YM-04052).



CLUTCH

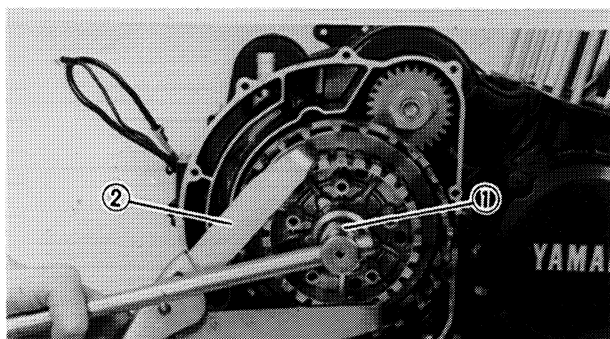
1. Remove:

- Right crankcase cover ①
- Dowel pins ②
- Gasket ③



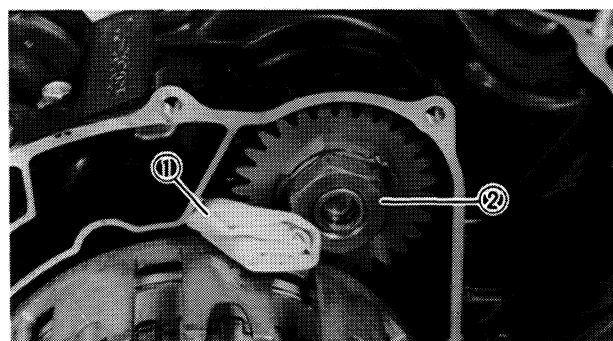
2. Remove:

- Bolts ①
- Plate washers ②
- Springs ③
- Pressure plate ④
- Friction plates
- Clutch plates

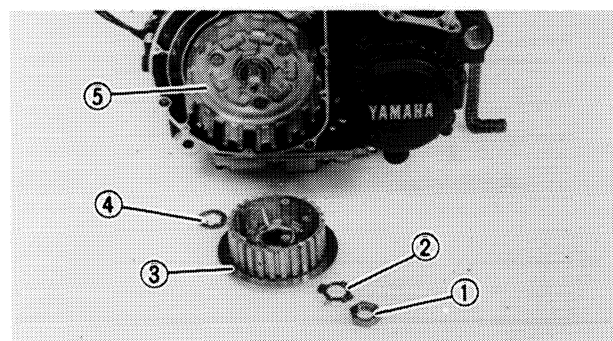


3. Loosen:

- Nut ①
- Use Universal Clutch Holder ② (YM-91042).

**NOTE:**

If you need to remove the primary drive gear at this stage, place a piece of rolled rag ① or lead between the primary drive gears. Then loosen the drive gear nut ②.



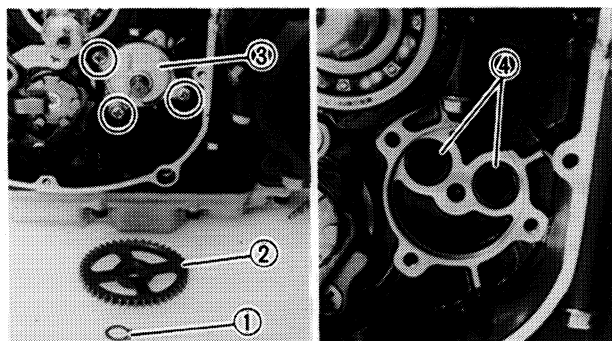
4. Remove:

- Nut ①
- Lock washer ②
- Clutch boss ③
- Thrust washer ④
- Clutch housing ⑤

OIL PUMP AND SHIFT SHAFT

1. Remove:

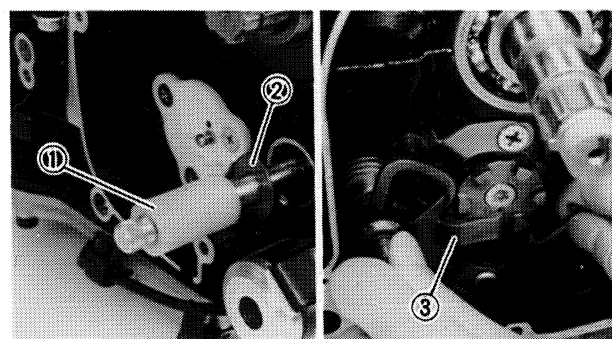
- Circlip ①
- Oil pump driven gear ②
- Oil pump assembly ③
- O-rings ④

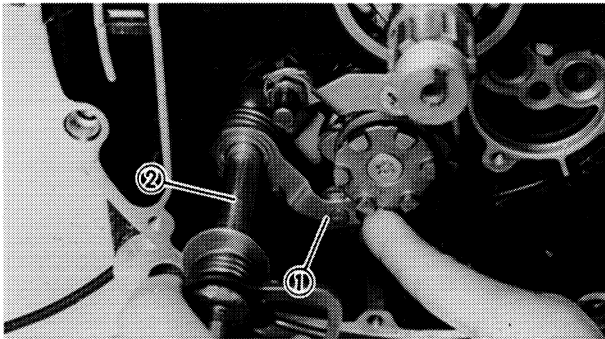


2. Remove:

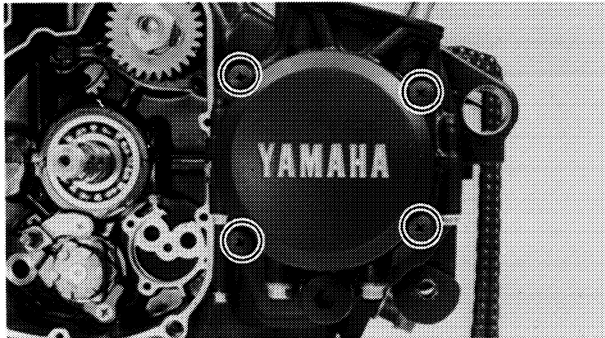
- Collar ①
- Plate washer ②
- (from left side shift shaft.)

3. Unhook the shift lever 2 ③ and pull the shift shaft.



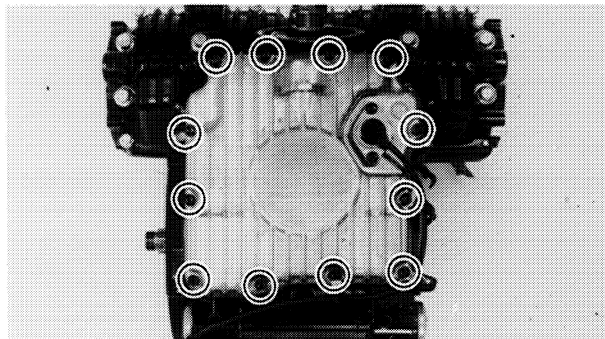


4. Unhook the stopper lever ①
5. Remove:
 - Shift shaft assembly ②

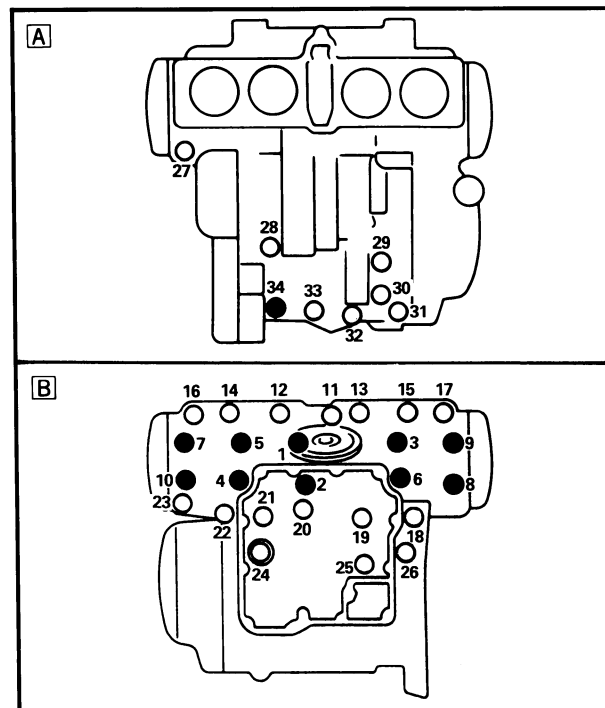


CRANKCASE DISASSEMBLY

1. Remove:
 - Right-front crankcase cover



2. Remove:
 - Oil pan



3. Remove:
 - Upper crankcase bolts [A]
 - Lower crankcase bolts [B]

NOTE: _____

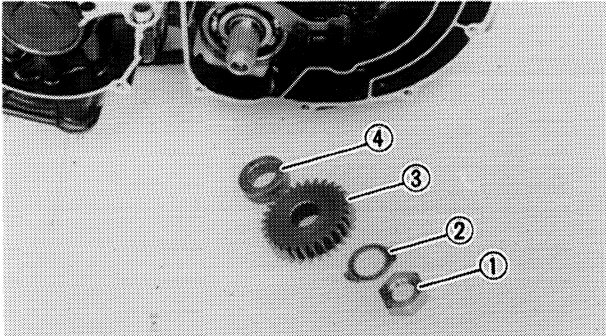
- Remove the bolts starting with the highest numbered one.
- The embossed numbers in the crankcase designate the crankcase tightening sequence.

- 8 mm (0.32 in) Bolt
- 6 mm (0.24 in) Bolt



4. Remove:

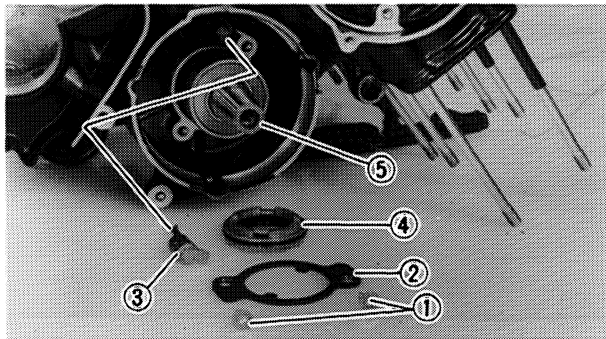
- Lower crankcase
- Use a rubber hammer.



UPPER CRANKCASE

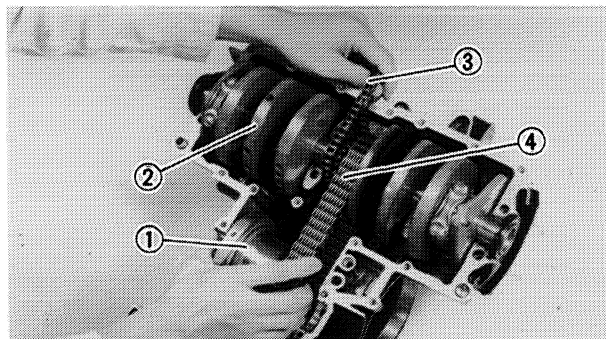
1. Remove:

- Nut ①
- Lock washer ②
- Primary drive gear ③
- Collar ④



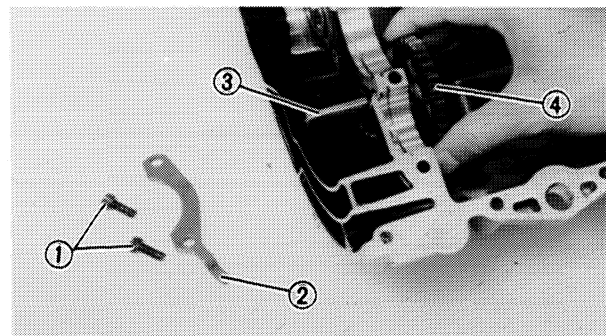
2. Remove:

- Screw ①
- Cover plate ②
- Oil spray nozzle ③
- Bearing housing ④
- A.C.G. shaft ⑤



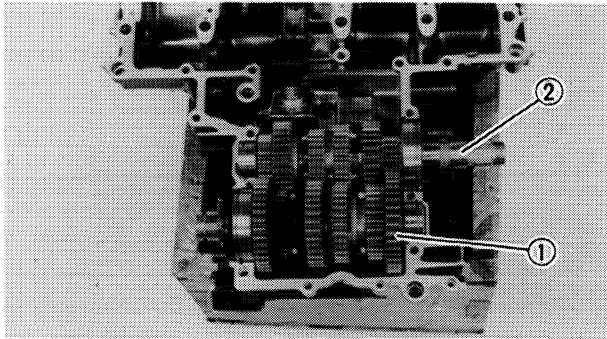
3. Remove:

- Starter clutch damper assembly ①
- Crankshaft assembly ②
- Cam chain ③
- HY-VO chain ④



4. Remove:

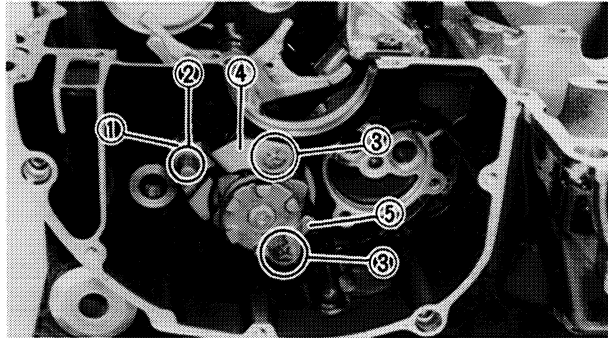
- Screws ①
- Bearing stopper ②
- Shaft ③
- Starter idler gear ④



LOWER CRANKCASE

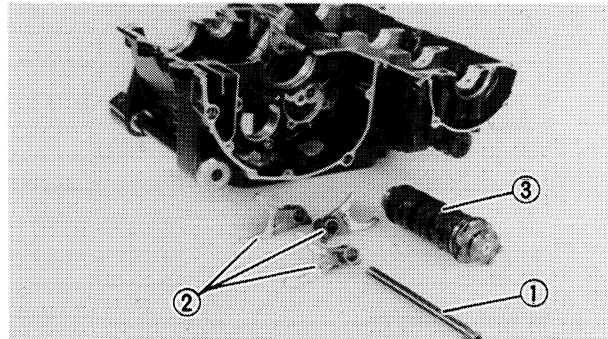
1. Remove:

- Drive axle assembly ①
- Main axle assembly ②



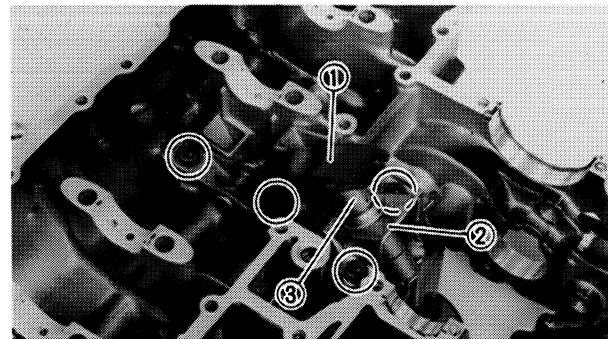
2. Remove:

- Lock washer ①
- Stopper screw ②
- Screws ③
- Guide bar stopper ④
- Bearing stopper ⑤



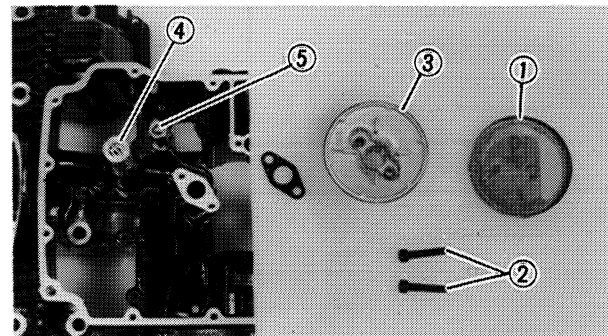
3. Remove:

- Guide bar ①
- Shift forks ②
- Shift cam assembly ③



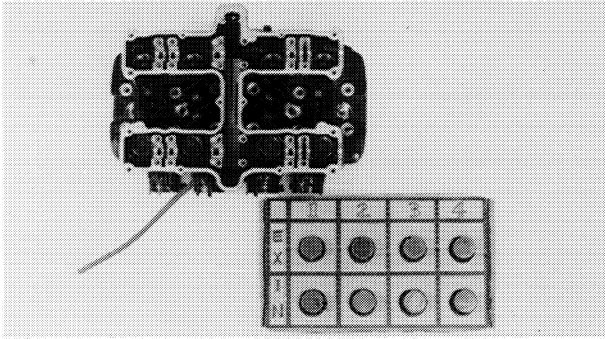
4. Remove:

- HY-VO chain guide ①
- HY-VO chain tensioner ②
- Tensioner plunger ③
- Spring



5. Remove:

- Oil strainer ①
- Screw ②
- Strainer housing ③
- Relief valve ④
- Tensioner side relief valve ⑤



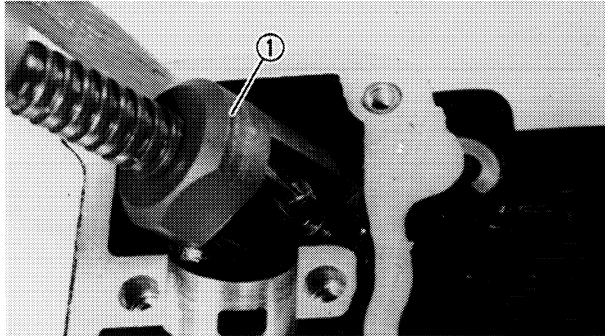
INSPECTION AND REPAIR CYLINDER HEAD

1. Remove:

- Valve pads
- Lifters
- Spark plugs

NOTE:

Identify each lifter and pad position very carefully so that it can be reinstalled in its original place.

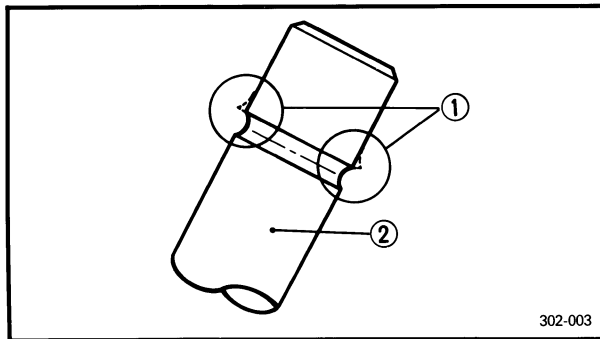
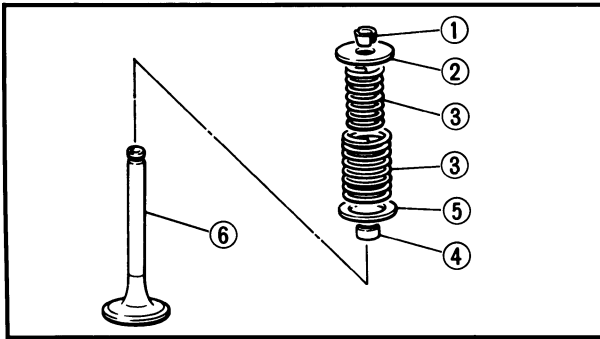


2. Attach:

- Valve Spring Compressor (YM-04019) ①

3. Remove:

- Valve retainers ①
- Valve spring seat ②
- Valve springs ③
- Oil seal ④
- Valve spring seat ⑤
- Valve ⑥



302-003

NOTE:

Deburr any deformed valve stem end. Use an oil stone to smooth the stem end.

- ① Deburr
- ② Valve stem

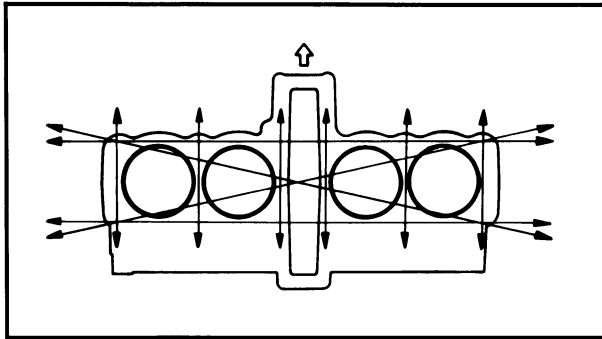
4. Eliminate:

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

NOTE:

Do not use a sharp instrument and avoid damaging or scratching:

- Spark plug threads
- Valve seat
- Aluminum



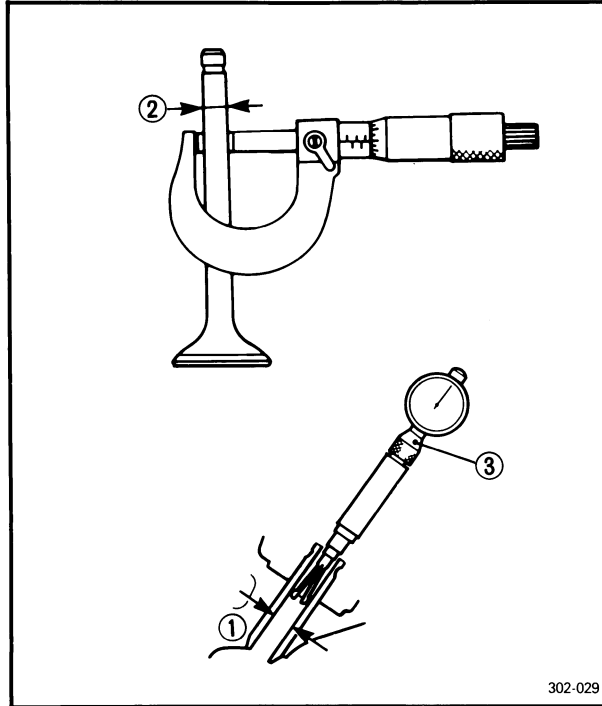
5. Measure:

- Warpage

Exceeds allowable limit → Resurface.



Cylinder Head Warpage:
 Less than 0.03 mm (0.0012 in)
Allowable Limit:
 0.25 mm (0.010 in)



VALVE, VALVE GUIDE, VALVE SEATS AND VALVE SPRING

1. Measure:

- Valve stem clearance

Valve Stem Clearance =
Valve Guide Inside Diameter ①
 – **Valve Stem Diameter ②**

Out of specification → Replace valve or guide.



Valve Stem Clearance		Maximum
Intake	0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in)	0.10 mm (0.004 in)
Exhaust	0.025 ~ 0.052 mm (0.0010 ~ 0.0020 in)	0.12 mm (0.005 in)

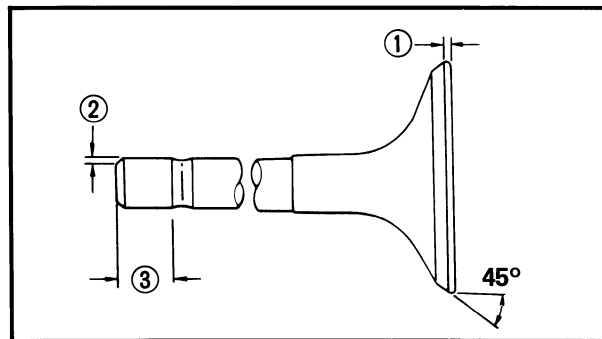
③ Bore gauge

2. Measure:

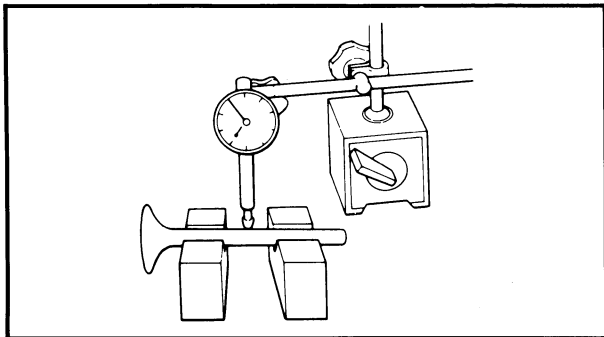
- Valve face

Pitting/Wear → Re grind.

Out of specification → Replace.



Minimum Thickness
(Service Limit) ①:
 0.7 mm (0.0276 in)
Beveled ②: 0.5 mm (0.020 in)
Minimum Length
(Service Limit) ③:
 4.0 mm (0.157 in)

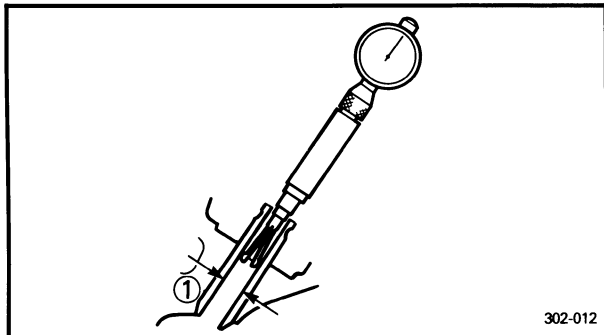


3. Check:

- Valve stem end
Mushroom shape or diameter larger than rest of stem → Replace.
- Runout
Out of specification → Replace.



Valve Stem Runout Limit:
0.03 mm (0.0012 in)



4. Measure:

- Valve guide (inside diameter) ①
Out of specification → Replace.



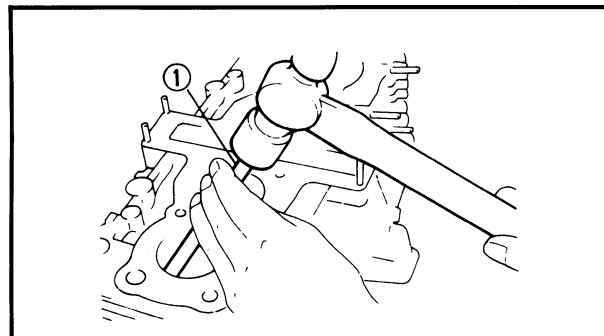
Guide Inside Diameter Limit:
IN. 6.045 mm (0.238 in)
EX. 6.020 mm (0.237 in)

5. Inspect:

- Valve guide
Wear/Oil leakage → Replace.

NOTE:

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

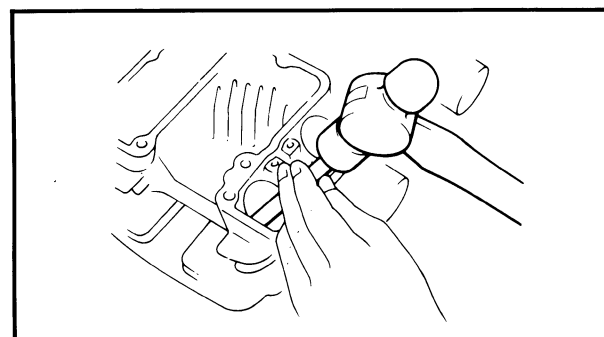
**Valve Guide Replacement**

1. Remove:

- Valve guide
Use Valve Guide Remover (YM-04064) ①.

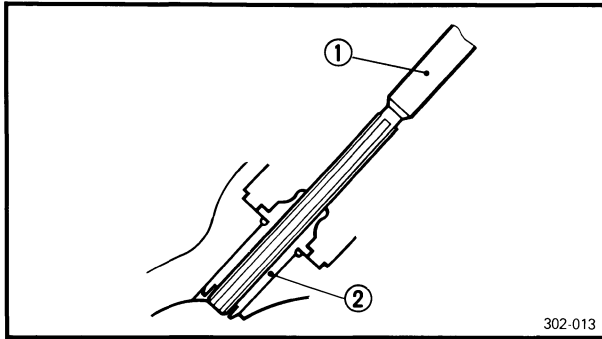
NOTE:

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



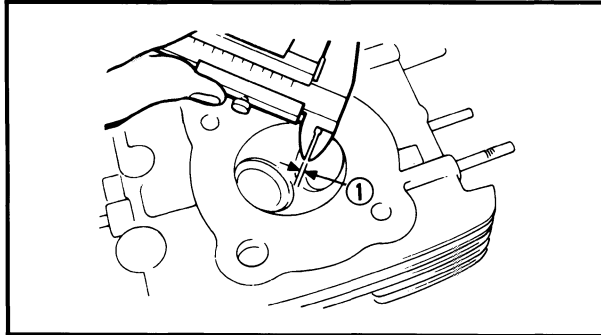
2. Install:

- Valve guide (new)
Use Valve Guide Installer (YM-04065) and Valve Guide Remover (YM-04064).



3. Bore valve guide (2) to obtain proper valve stem clearance.

Use 6 mm (0.24 in) Reamer (YM-04066) (1).




Valve Seat

1. Inspect:

- Valve seat
Pitting/Wear → Cut.

2. Measure:

- Valve seat width (1)
Out of specification → Follow next steps.

	Standard width	Wear limit
Valve seat width	1.0 ± 0.1 mm (0.039 ± 0.0039 in)	2.0 mm (0.078 in)

3. Apply:

- Mechanic's bluing dye (Dykem)
(to valve and seat)

4. Position:

- Valve
(into cylinder head)

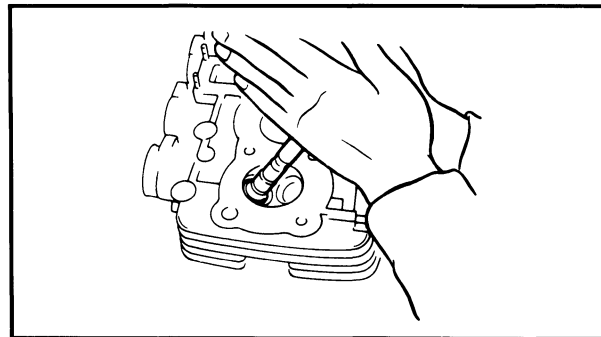
5. Spin it rapidly back and forth, then lift valve and clean off all grinding compound.

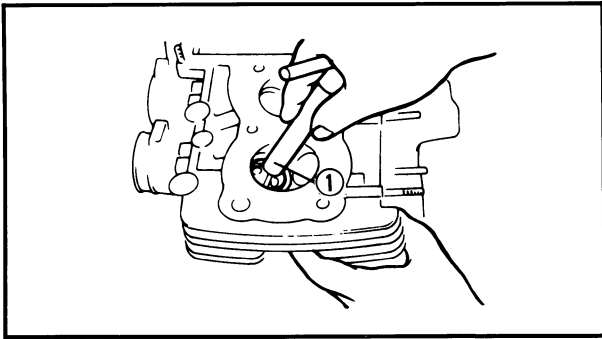
6. Inspect:

- Valve seat surface
Wherever valve seat and valve face made contact, bluing will have been removed.

7. Measure:

- Valve seat width
Valve seat width must be uniform in contact area.
Out of specification → Cut.





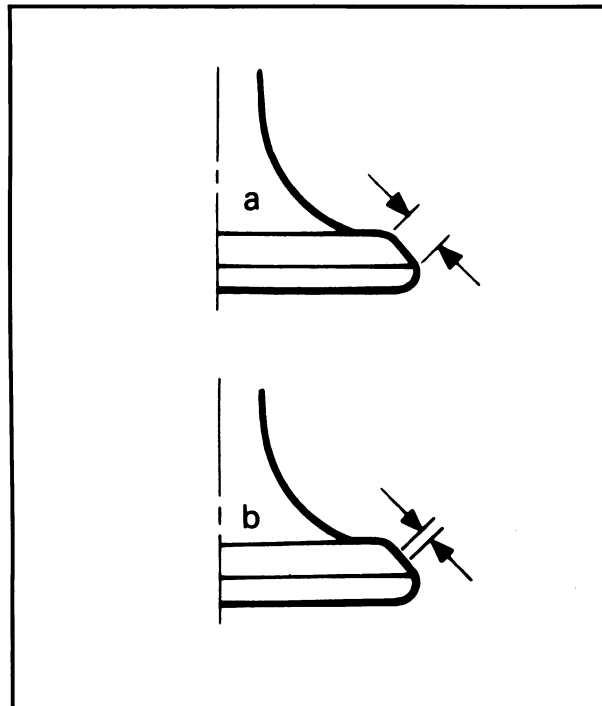
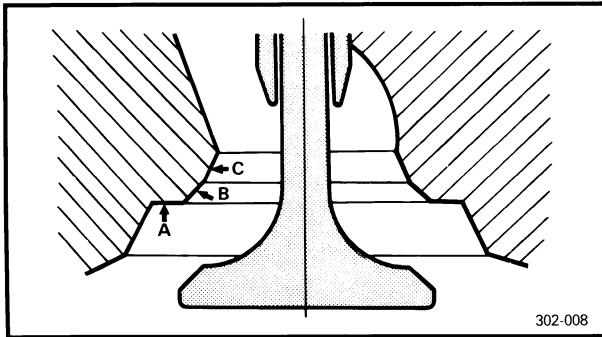
8. Cut valve seat.

NOTE:

Cut valve seat using valve seat cutter ① if valve seat width exceeds limit or if valve seat is pitted or worn.

CAUTION:

When twisting cutter, keep an even downward pressure to prevent cutter marks.



Valve seat recutting steps are necessary if:

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

Cut Valve Seat As Follows:

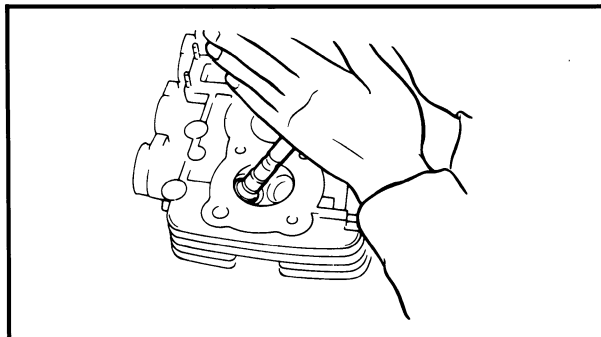
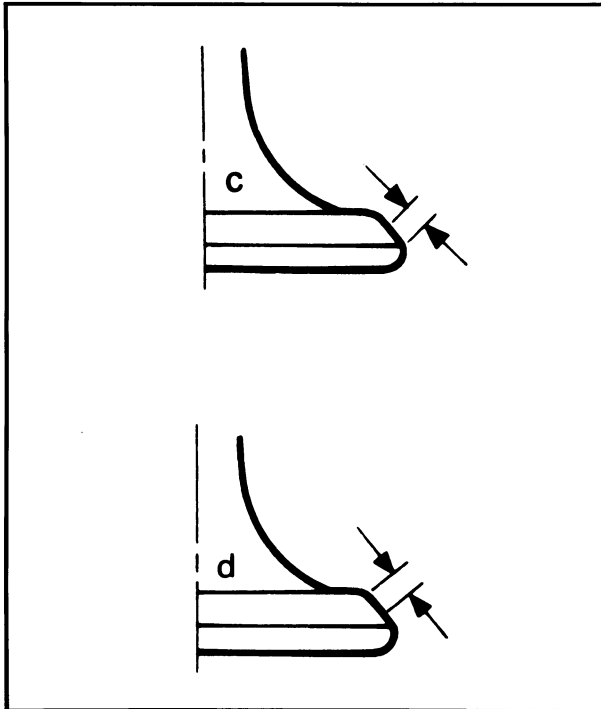
Section A	0° Cutter
Section B	45° Cutter
Section C	60° Cutter

- Valve face indicates that valve seat is centered on valve face but is wide (See "a" diagram).

Valve Seat Cutter Set		Desired Result
Use	0° Cutter	to reduce valve seat width.
	60° Cutter	

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

Valve Seat Cutter Set		Desired Result
Use	45° Cutter	to achieve a uniform valve seat width (Standard specification).



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

Valve Seat Cutter Set		Desired Result
Use	0° Cutter, first	to obtain correct seat width.
	45° Cutter	

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

Valve Seat Cutter Set		Desired Result
Use	60° Cutter, first	to obtain correct seat width.
	45° Cutter	

NOTE:

Lap valve/valve seat assembly if:

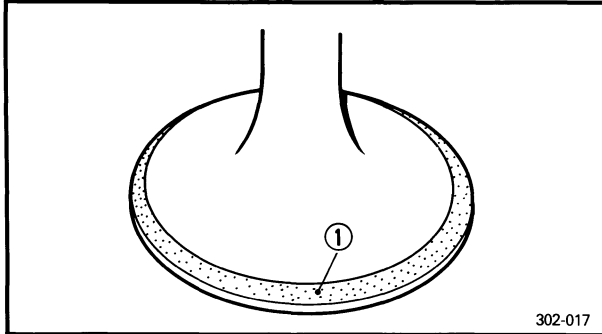
- Valve face/valve seat are used or severely worn.
- Valve and valve guide has been replaced.
- Valve seat has been cut.

Valve/Valve Seat Assembly Lapping

1. Apply:
 - Coarse lapping compound (Small amount) (to valve face)
2. Position:
 - Valve (in cylinder head)
3. Rotate:
 - Valve
Turn until valve and valve seat are evenly polished, then clean off compound.



4. Repeat above steps with fine compound and continue lapping until valve face shows a completely smooth surface uniformly.



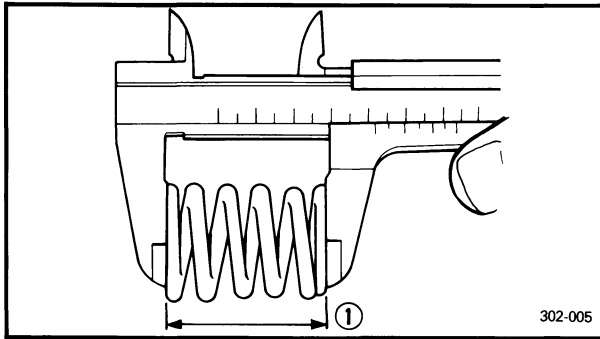
5. Eliminate:
 - Compound
(from valve face)
6. Apply:
 - Mechanic's bluing dye (Dykem) ①
(to valve face and seat)
7. Rotate:
 - Valve
Valve must make full seat contact indicated by grey surface all around valve face where bluing was removed.
8. Apply:
 - Solvent
(into each intake and exhaust port)
Leakage past valve seat → Replace valve until seal is complete.

NOTE:

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

Relapping steps:

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

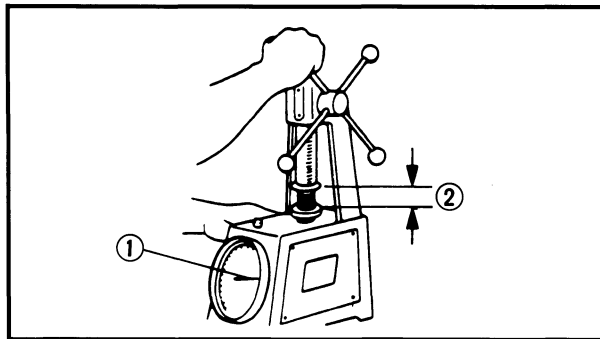
**Valve Spring Measurement**

1. Measure:

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

**Valve Spring Free Length**

Inner spring		Outer spring	
Standard	Wear limit	Standard	Wear limit
35.5 mm (1.398 in)	33.5 mm (1.319 in)	37.2 mm (1.465 in)	35.2 mm (1.386 in)



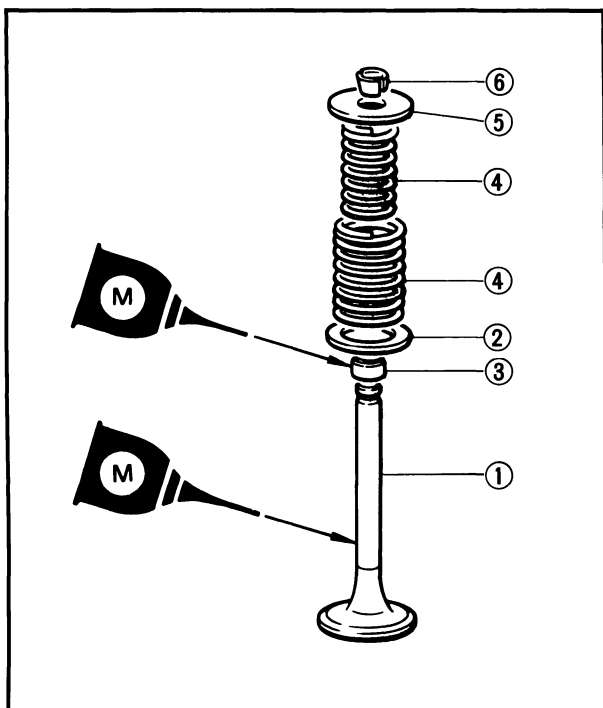
2. Measure:

- Valve spring installed force ①
- Out of specification → Replace.

**Valve Spring Installed Force**

Inner spring		Outer spring	
②	①	②	①
30.5 mm (1.20 in)	9.3 kg (20.5 lb)	32.0 mm (1.26 in)	18.5 kg (40.8 lb)

② Installed length



Valve Installation

1. Lubricate:

- Valve stem
- Oil seal



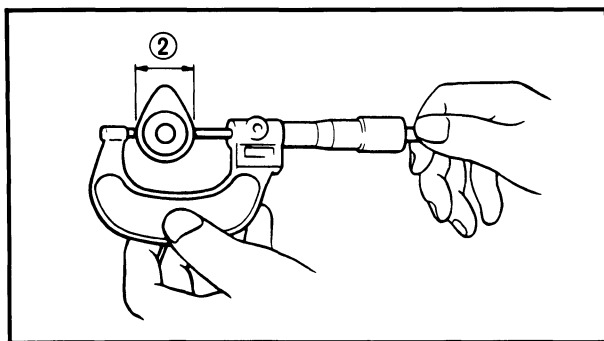
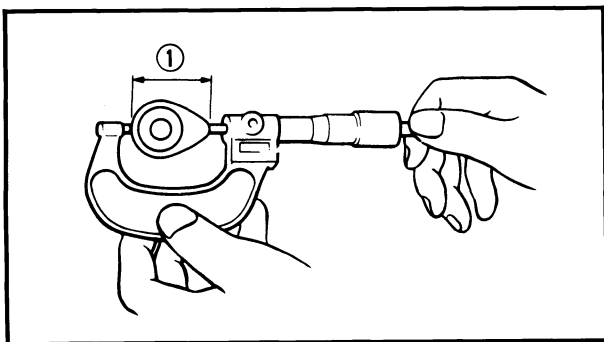
High-Quality Molybdenum Disulfide Motor Oil or Molybdenum Disulfide Grease

2. Install:

- Valve ①
- Valve spring seat ②
- Oil seal ③
- Valve springs ④
- Valve spring seat ⑤
- Valve retainers ⑥

NOTE:

Install all springs with wider-gapped coils facing upwards as shown.



CAMSHAFT, CAM CHAIN AND CAM SPROCKET

Camshaft

1. Measure:

- Large cam lobe length ①
- Small cam lobe length ②

Use a micrometer.

Out of specification → Replace.

	Intake	Exhaust
①	36.25 ~ 36.35 mm (1.427 ~ 1.431 in)	35.75 ~ 35.85 mm (1.408 ~ 1.411 in)
②	28.10 ~ 28.20 mm (1.106 ~ 1.110 in)	28.05 ~ 28.15 mm (1.104 ~ 1.108 in)

**Camshaft/Cap Clearance Measurement**

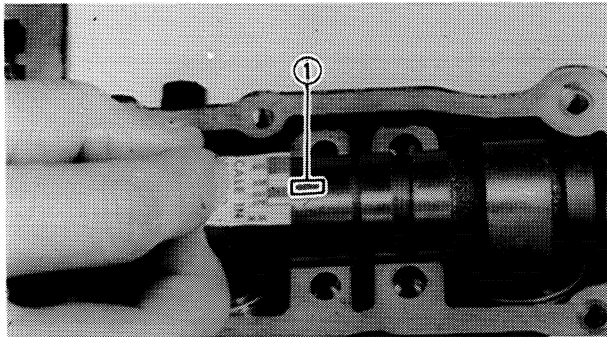
1. Install:
 - Camshaft
2. Position:
 - Strip of Plastigage® (YU-33210)
(onto camshaft.)
3. Install:
 - Dowel pins
 - Camshaft caps



10 Nm (1.0 m•kg, 7.2 ft•lb)

NOTE:

Do not turn the camshaft when measuring clearance with Plastigage®.



4. Remove:
 - Camshaft caps

5. Measure:
 - Width of Plastigage® ①

Out of specification → Follow step 6.

**Camshaft-to cap Clearance:**

Standard: 0.020 ~ 0.054 mm
(0.0008 ~ 0.0021 in)

Maximum: 0.160 mm (0.006 in)

6. Measure:
 - Camshaft bearing surface diameter

Use micrometer.

Out of specification → Replace camshaft.

Within specification → Replace cylinder head.

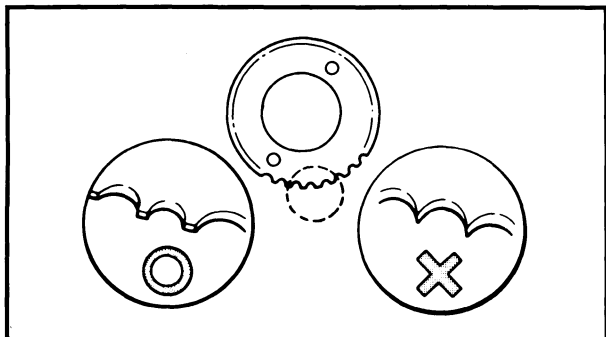
**Bearing Surface Diameter:**

Standard: 24.967 ~ 24.980 mm
(0.9830 ~ 0.9835 in)

Cam Chain

1. Inspect:
 - Cam chain

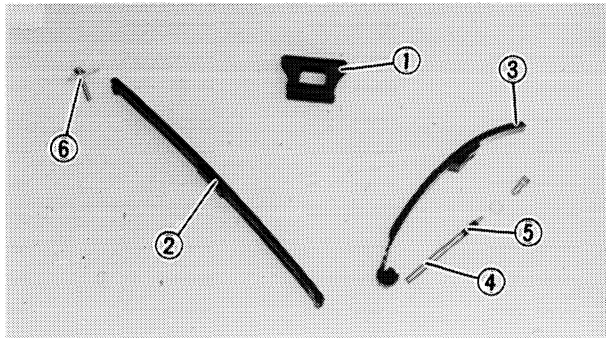
Chain stretch/Cracks → Replace.



Cam Sprockets

1. Inspect:

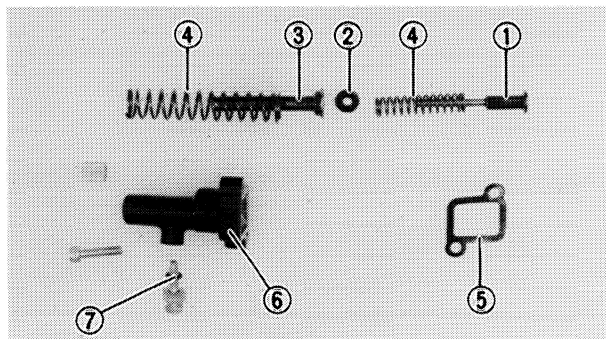
- Cam sprockets
- Wear/Damage → Replace.



Cam Chain Dampers

1. Inspect:

- Upper damper ①
- Exhaust side chain guide ②
- Intake side chain guide ③
- Chain guide stopper ④
- Spring ⑤
- Guide stopper plate ⑥
- Wear/Damage → Replace.



Cam Chain Tensioner

1. Inspect:

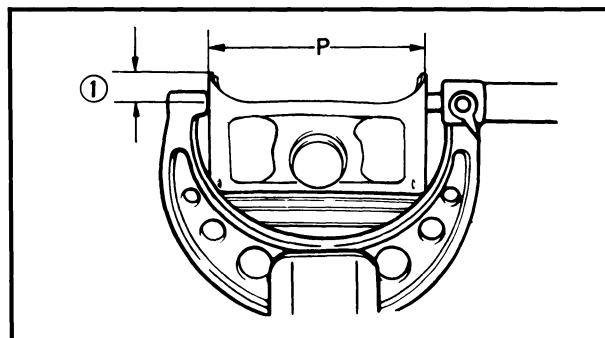
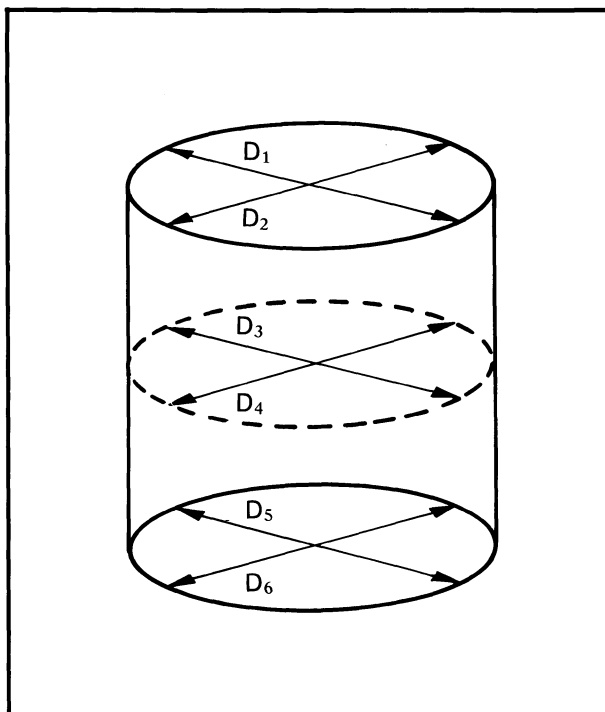
- All parts
- Damage/Wear → Replace.

- ① Tensioner rod (Small)
- ② Damper
- ③ Tensioner rod (Large)
- ④ Spring
- ⑤ Gasket
- ⑥ Tensioner body
- ⑦ O-ring

CYLINDER

1. Inspect:

- Cylinder walls
- Vertical scratches → Rebore or Replace cylinder.



2. Measure:

- Cylinder inside diameter

NOTE:

Obtain measurements at three depths by placing measuring instrument parallel to and at right angles to crankshaft.

Out of specification → Rebore cylinder, and replace piston and piston rings.

	Standard	Wear limit
Cylinder bore: C	58.5 mm (2.303 in)	58.6 mm (2.307 in)
Cylinder taper: T	—	0.05 mm (0.002 in)

C = Maximum D

T = Maximum D_1, D_2 — Minimum D_5, D_6

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

1. Measure:

- Piston skirt diameter "P"

NOTE:

Measure the piston skirt diameter where the distance 7.0 mm (0.276 in) ① from the piston bottom edge.

	Piston size
Standard	58.50 mm (2.303 in)
Oversize 2	59.00 mm (2.323 in)
Oversize 4	60.00 mm (2.362 in)

2. Measure:

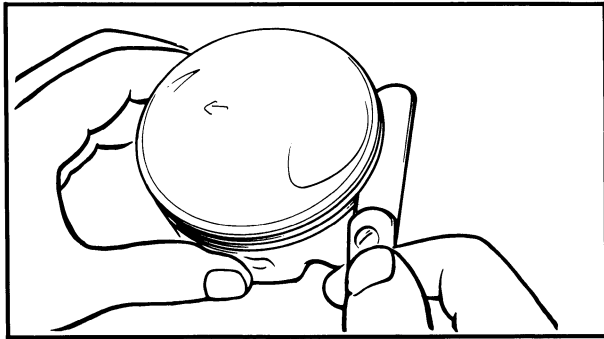
- Piston clearance

Out of specification → Rebore cylinder or replace piston.



Piston Clearance = C — P:
 0.025 ~ 0.045 mm
 (0.0010 ~ 0.0019 in)

C: Cylinder bore P: Piston outside diameter



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:

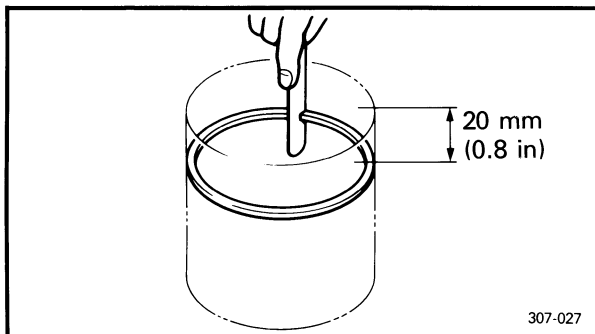
Top	0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)
2nd	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)

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.



307-027

3. Measure:

- Ring end gap

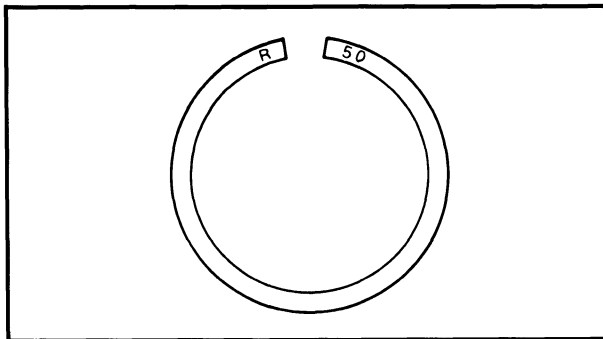
Out of specification → Replace.

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.

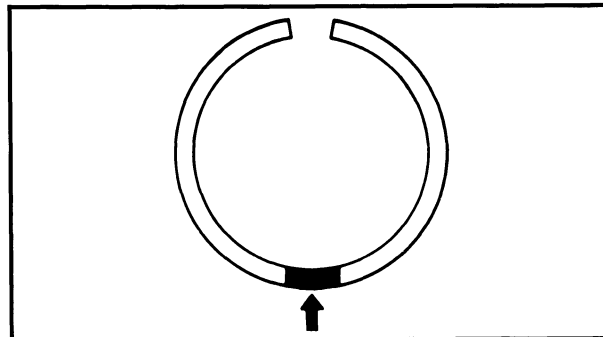


	Standard	Limit
Top ring	0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in)	0.70 mm (0.0276 in)
2nd ring	0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in)	0.70 mm (0.0276 in)
Oil control (Rails)	0.2 ~ 0.7 mm (0.008 ~ 0.028 in)	—

**Piston Ring Oversize**

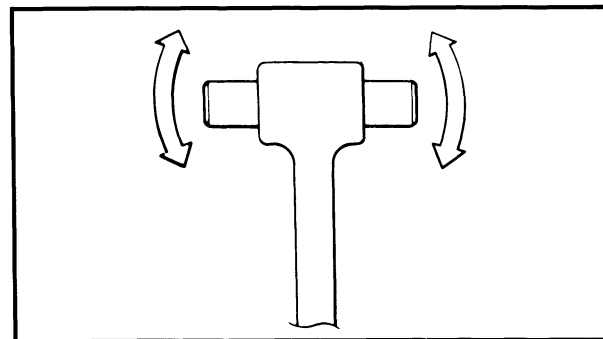
- Top and 2nd piston ring
Oversize top and middle ring sizes are stamped on top of ring.

Oversize 2	50
Oversize 4	100

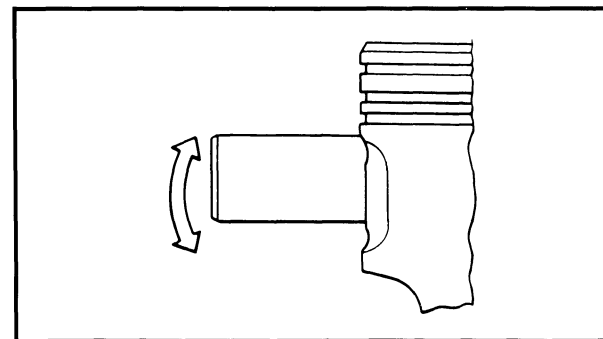


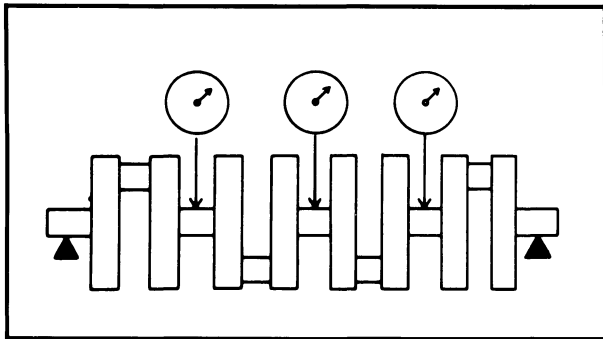
- Oil control ring
Expander spacer of bottom ring (oil control ring) is color-coded to identify sizes.

Size	Color
Oversize 2	Blue
Oversize 4	Yellow

**Piston Pin**

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



**CRANKSHAFT AND CONNECTING ROD****Crankshaft Runout**

1. Place both ends of crankshaft on V-blocks.
2. Rotate:
 - Crankshaft
3. Measure:
 - Crankshaft runout
(at main journal bearings)
Use a Dial Gauge.



Crankshaft Runout Limit:
0.03 mm (0.0012 in)

Connecting Rod Bearings

1. Inspect:
 - Bearings
Burns/Flaking/Roughness/Scratches→
Replace.

Connecting Rod Bearing Clearance

1. Clean all parts thoroughly.
2. Install:
 - Connecting rod bearings
(into connecting rod and cap)
3. Attach:
 - Plastigage®
(onto crankpin)
4. Position:
 - Connecting rod
(onto crankshaft)
 - Connecting rod cap
5. Apply:
 - Molybdenum disulfide grease
(to bolt threads)
Torque both ends of rod cap evenly.

NOTE: _____

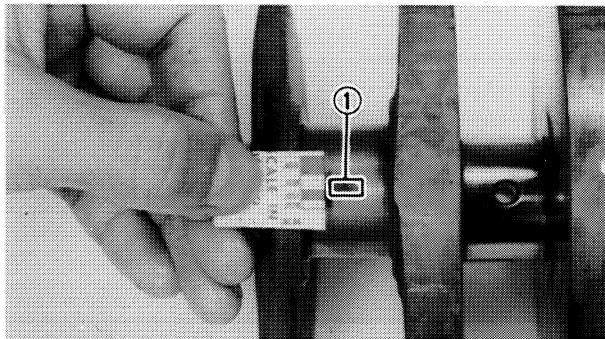
Do not move connecting rod until a clearance measurement has been completed.

**CAUTION:**

Tighten to full torque specification without pausing. Apply continuous torque between 2.0 and 2.5 m•kg. Once you reach 2.0 m•kg **DO NOT STOP TIGHTENING** until final torque is reached. If tightening is interrupted between 2.0 and 2.5 m•kg, loosen nut to less than 2.0 m•kg and start again.



25 Nm (2.5 m•kg, 18 ft•lb)



6. Remove:

- Connecting rod cap
Remove carefully.

7. Measure:

- Plastigage® width ①
Out of specification → Replace connecting rod bearing.

**Connecting Rod Bearing Clearance:**

0.016 ~ 0.040 mm
(0.0006 ~ 0.0016 in)

Crankshaft Main Bearing Clearance Measurement

1. Clean all parts.
2. Position:
 - Upper crankcase half
Place on a bench in an upside down position.
3. Install:
 - Bearings
(into the upper crankcase)
4. Attach:
 - Plastigage® (YU-33210)
(onto the crankshaft journal surface)

NOTE:

Do not move crankshaft until clearance measurement has been completed)



5. Install:

- Bearings
(into lower crankcase)
- Lower crankcase

6. Tighten:

- Bolts

CAUTION:

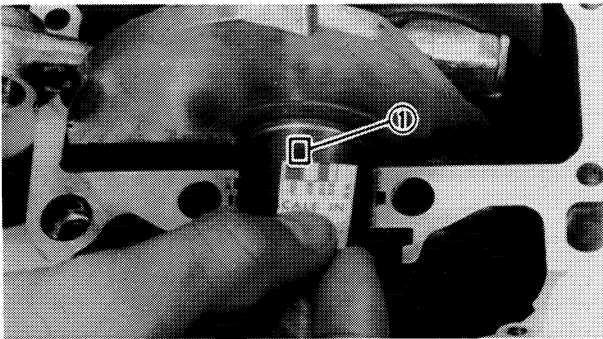
Tighten to full torque in torque sequence
cast on the crankcase.



8 mm (0.3 in) Bolt:
24 Nm (2.4 m•kg, 17 ft•lb)

7. Remove:

- Bolts
Reverse assembly order
- Lower crankcase
Use care in removing.

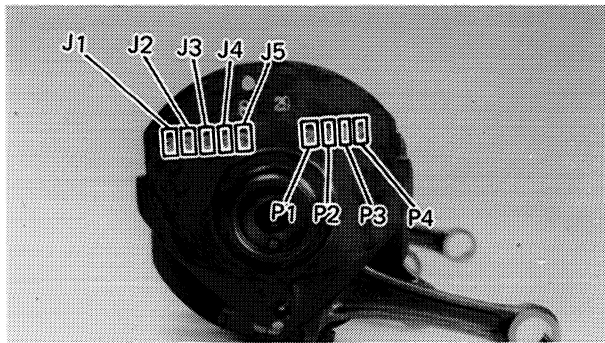


8. Measure:

- Plastigage® width ⑪ (YU-33210)
Out of specification → Replace bearings;
replace crankshaft if necessary.

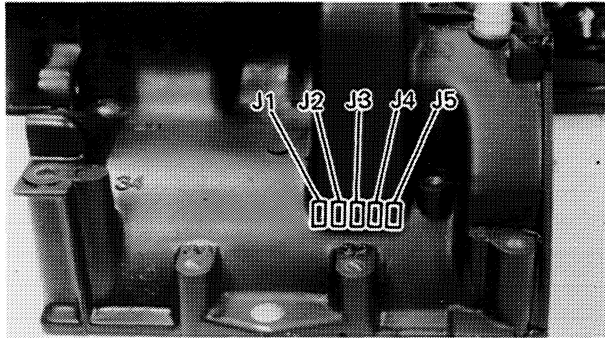


Main Bearing Oil Clearance:
0.021 ~ 0.044 mm
(0.0008 ~ 0.0017 in)

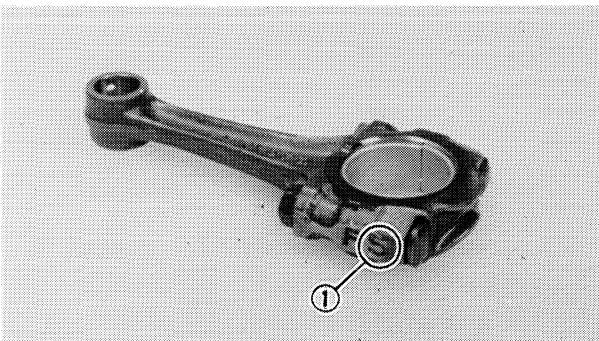
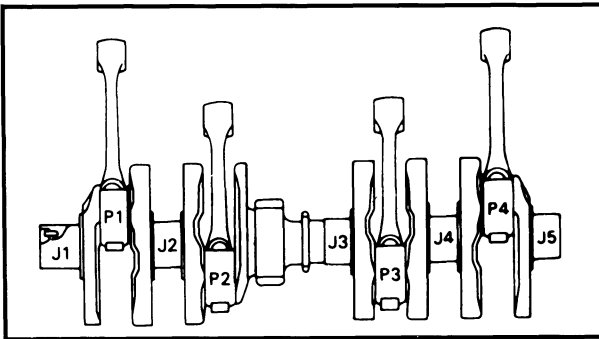


Crankshaft Main and Connecting Rod Bearing Selection

- Numbers used to indicate crankshaft journal sizes are stamped on the LH crankweb. The first five (5) are main bearing journal numbers, starting with the left journal. The four (4) rod bearing journal numbers follow in the same sequence.



- The upper crankcase half is numbered J1, J2, J3, J4, and J5 on the rear right bosse as shown.



- The numbers are stamped in ink on the rod cap ①.

Bearing color code	
No. 1	Blue
No. 2	Black
No. 3	Brown
No. 4	Green
* No. 5	Yellow

* No. 5 applies only to the crankshaft main bearing selection.

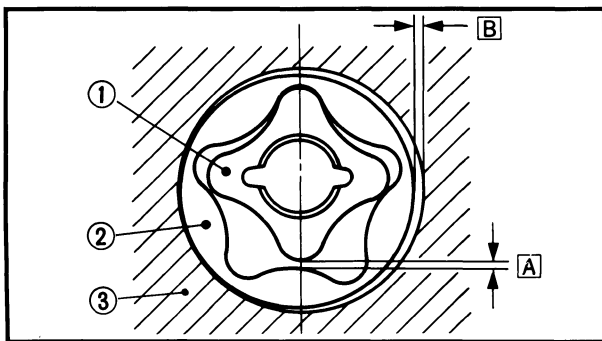
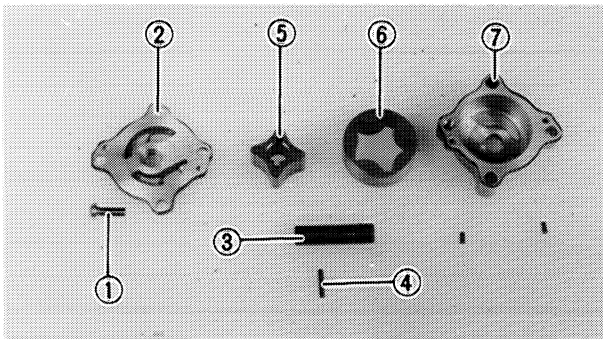


Example 1: Selection of the crankshaft main bearing; If the crankcase J1 and crankshaft J1 sizes are No. 4 and No. 1, respectively, the bearing size No. is:

$$\begin{aligned}\text{Bearing size No.} &= \\ \text{Crankcase No.} - \text{Crankshaft No.} &= \\ 4 - 1 &= 3 \text{ (Brown)}\end{aligned}$$

Example 2: Selection of the connecting rod bearing; If the connecting rod P1 and crankshaft P1 sizes are No. 4 and No. 1, respectively, the bearing size No. is:

$$\begin{aligned}\text{Bearing size No.} &= \\ \text{Connecting rod No.} - \text{crankshaft No.} &= \\ 4 - 1 &= 3 \text{ (Brown)}\end{aligned}$$



OIL PUMP

1. Remove:

- Screw ①
- Pump cover ②
- Shaft ③
- Pin ④
- Inner rotor ⑤
- Outer rotor ⑥
- Pump housing ⑦

2. Measure:

- Clearance "A"
(between inner rotor ① and outer rotor ②)
- Clearance "B"
(between outer rotor ② and pump housing ③)

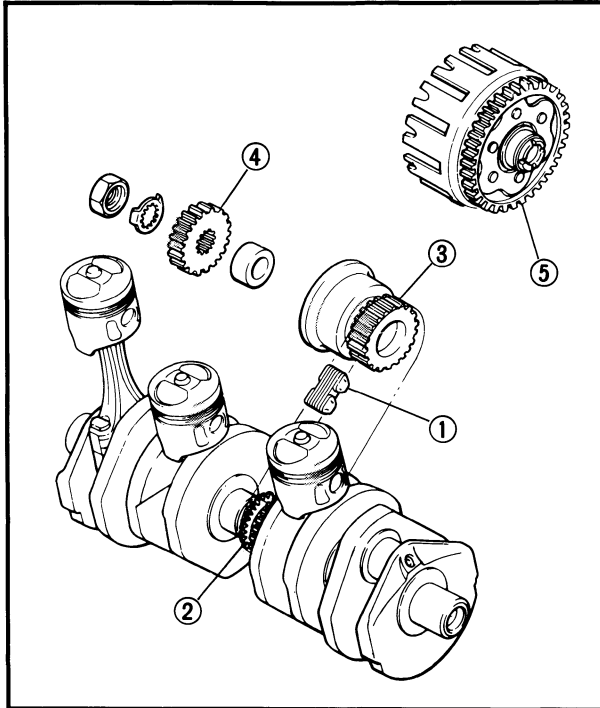
Oil Pump Clearance:	
Clearance "A"	0.09 ~ 0.15 mm (0.0035 ~ 0.0059 in)
Clearance "B"	0.03 ~ 0.08 mm (0.0012 ~ 0.0031 in)



3. Install:
 - Oil pump parts
4. Tighten:
 - Screw



7 Nm (0.7 m•kg, 5.1 ft•lb)

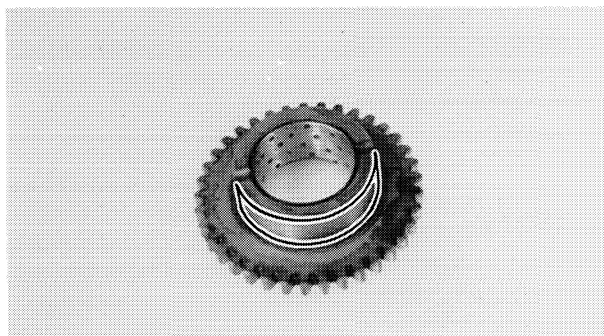


PRIMARY DRIVE

1. Inspect:
 - HY-VO chain ①
 - Crankshaft drive sprocket ②
 - Clutch damper driven sprocket ③
 - Primary drive gear ④
 - Primary driven gear ⑤

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

Primary reduction ratio		
No. of teeth		Ratio
③/②	⑤/④	
22/21	65/28	2.431



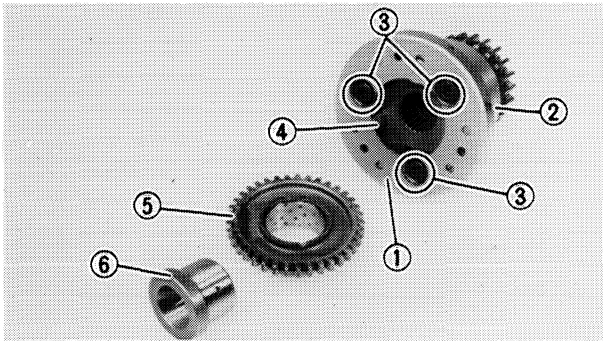
STARTER DRIVES

Electric Starter Clutch

1. Check:
 - Ball operation
 - Spring operation
 - Spring cap operation

Unsmooth operation→Replace one-way clutch.
2. Inspect:
 - Surface of the idle gear

Pitting/Wear/Damage→Replace.


3. Installation:
a. Install:

- Cover ①
- Outer starter clutch ②

b. Tighten:

- Bolts ③



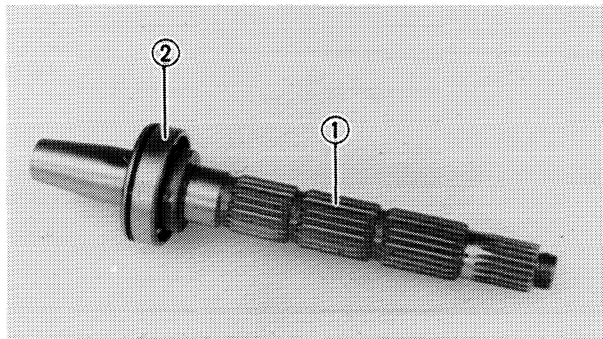
24 Nm (2.4 m•kg, 17 ft•lb)

LOCTITE®

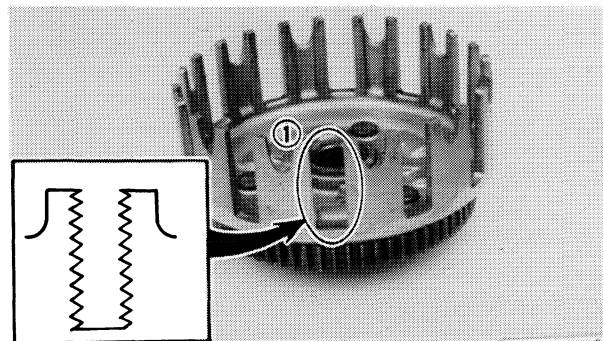
Stake Over the End of the Bolt

c. Install:

- Spring
- Spring cap
- Ball ④
- Idle gear ⑤
- Collar ⑥


Starter Clutch Shaft
1. Check:

- Shaft ①
Wear/Damage → Replace.
- Bearing ②
Unsmooth operation → Replace.


CLUTCH
1. Inspect:

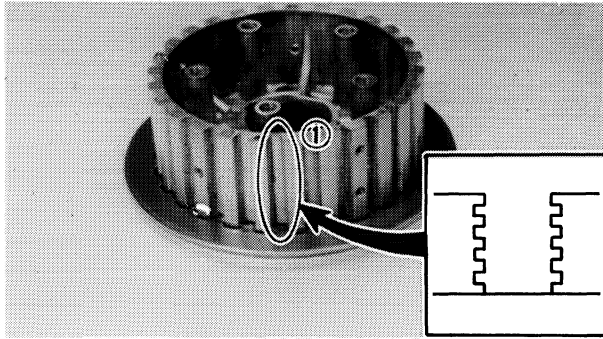
- Clutch housing dogs ①
Cracks/Pitting (edges):
Moderate → Deburr.
Severe → Replace clutch housing.

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 ①

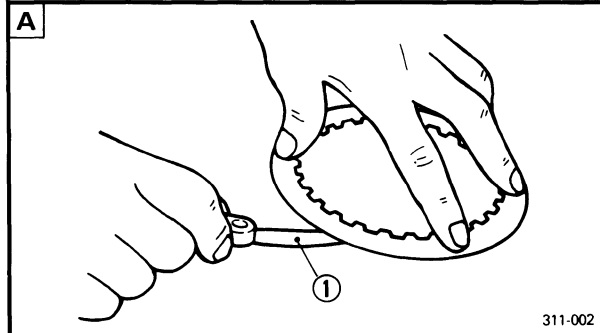
Pitting:

Moderate→Debur.

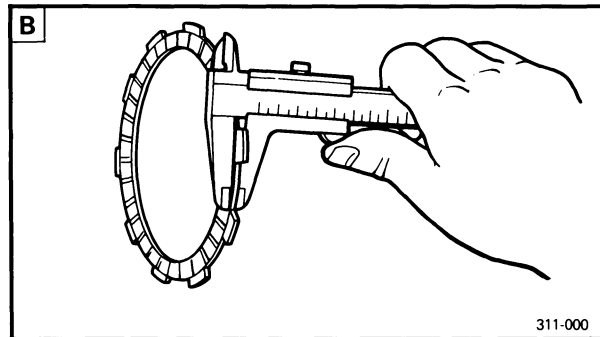
Severe→Replace.

NOTE:

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



311-002



311-000

4. Measure:

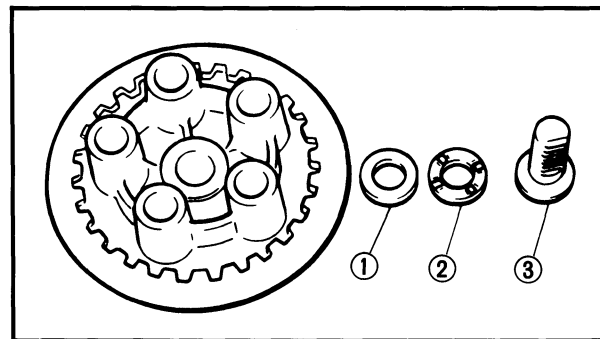
- Clutch plate warpage [A]

- Friction plate thickness [B]

Out of specification→Replace.

Clutch or friction plate as a set.

	Standard	Wear limit
Friction plate thickness	2.9~3.1 mm (0.114~0.122 in)	2.7 mm (0.106 in)
Clutch plate warp limit	—	0.15 mm (0.006 in)



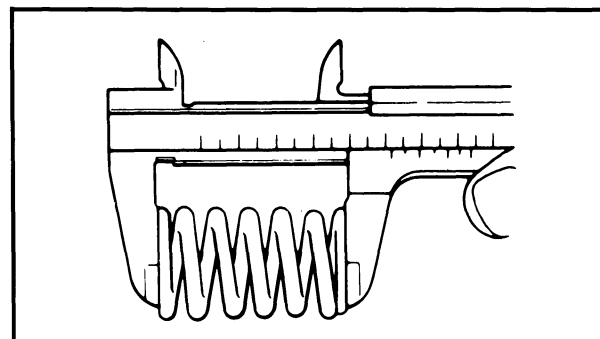
5. Inspect:

- Washer ①

- Thrust bearing ②

- Pull rod ③

Damage→Replace.



6. Measure:

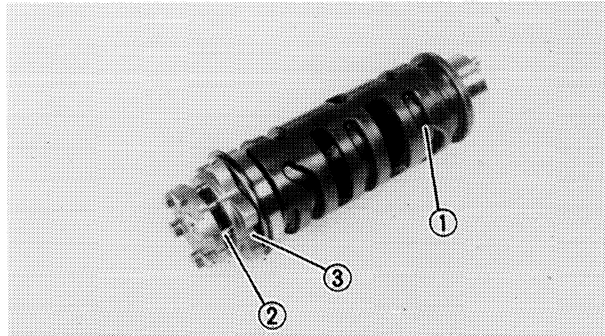
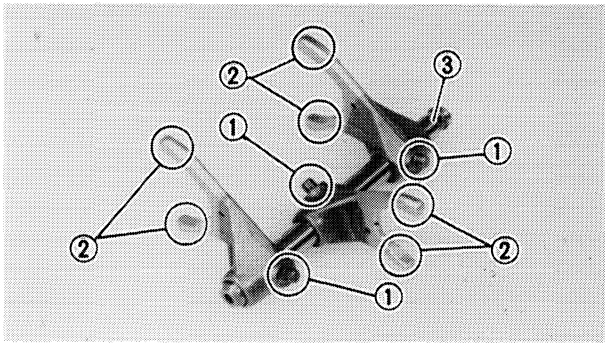
- Clutch spring free play

Out of specification→Replace spring as a set.



Clutch Spring Minimum Free Length:

41.8 mm (1.64 in)



TRANSMISSION

1. Inspect:

- Shift fork cam follower ①
 - Shift fork pawl ②
- Scoring/Bends/Wear → Replace.

2. Check:

- Guide bar ③
- Roll across a surface plate.
Bends → Replace.

3. Inspect:

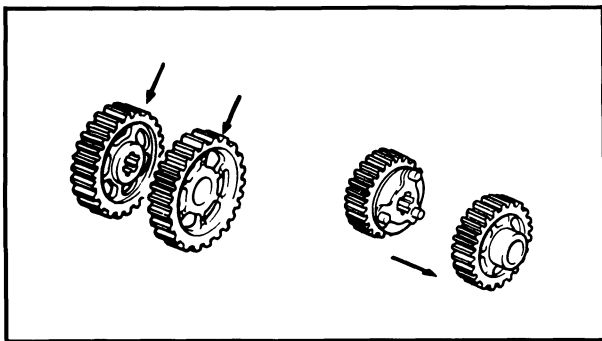
- Shift cam groove ①
 - Shift cam dowel ② and side plate
 - Shift cam stopper plate ③ circlip and stopper.
- Wear/Damage → Replace.

4. Measure:

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

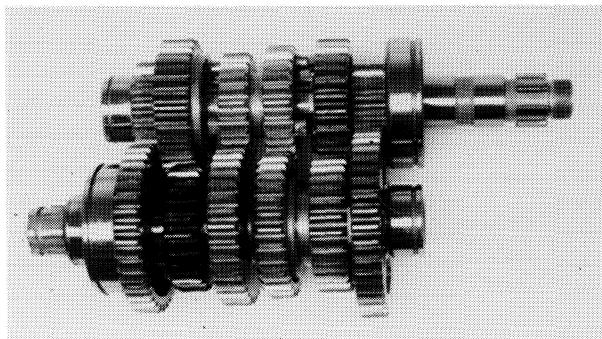


Runout Limit:
0.08 mm (0.0031 in)



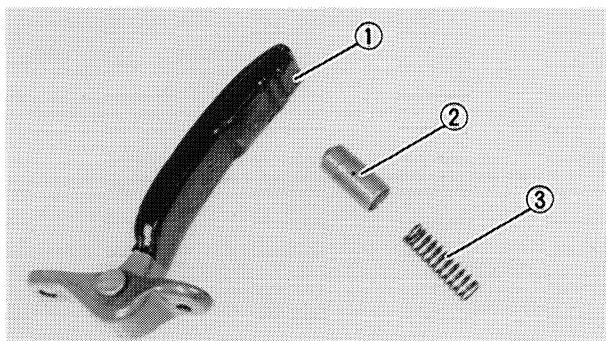
5. Inspect:

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



6. Check:

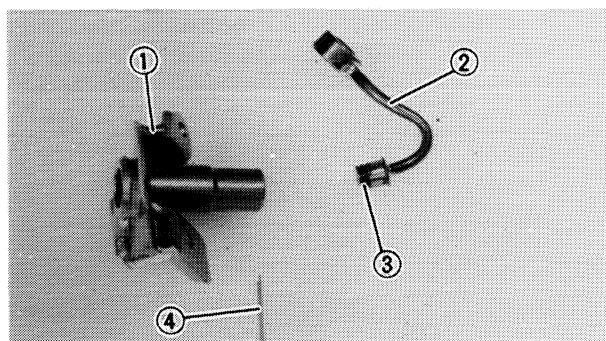
- Proper gear engagement (Each gear)
(to its counter part)
- Incorrect → Reassemble.
- Gear movement
- Roughness → Replace.



HY-VO CHAIN GUIDE AND TENSIONER

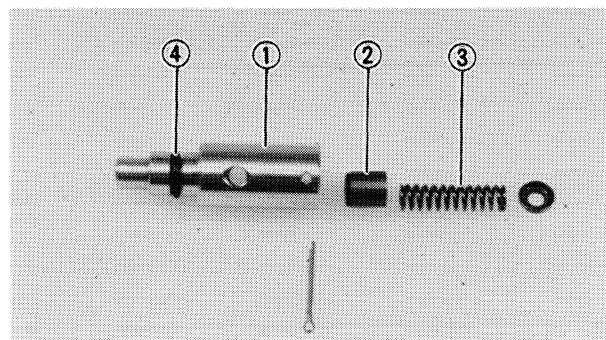
1. Check:

- HY-VO chain guide ①
 - Tensioner plunger ②
 - Spring ③
- Damage/Wear→Replace.



2. Check:

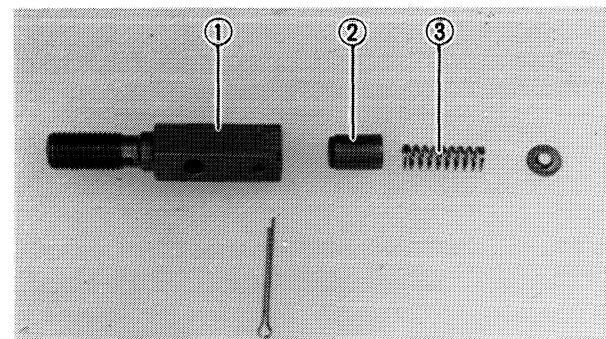
- HY-VO chain tensioner ①
 - Oil delivery pipe ②
 - O-ring ③
 - Cotter pin ④
- Damage→Replace.



RELIEF VALVES

1. Check:

- Relief valve body ①
 - Plunger ②
 - Spring ③
 - O-ring ④
- Damage/Wear→Replace.



2. Check:

- Tensioner side relief valve body ①
 - Plunger ②
 - Spring ③
- Damage/Wear→Replace.

CRANKCASE

1. Inspect:

- Case halves
 - Bearing seat
 - Fitting
- Damage→Replace.

**BEARINGS AND OIL SEALS**

1. Inspect:

•Bearing

Clean and lubricate, then rotate inner race with finger.

Roughness→Replace bearing (see Removal).

2. Inspect:

•Oil seals

Damage/Wear→Replace (see Removal).

CIRCLIPS AND WASHERS

1. Inspect:

•Circlips

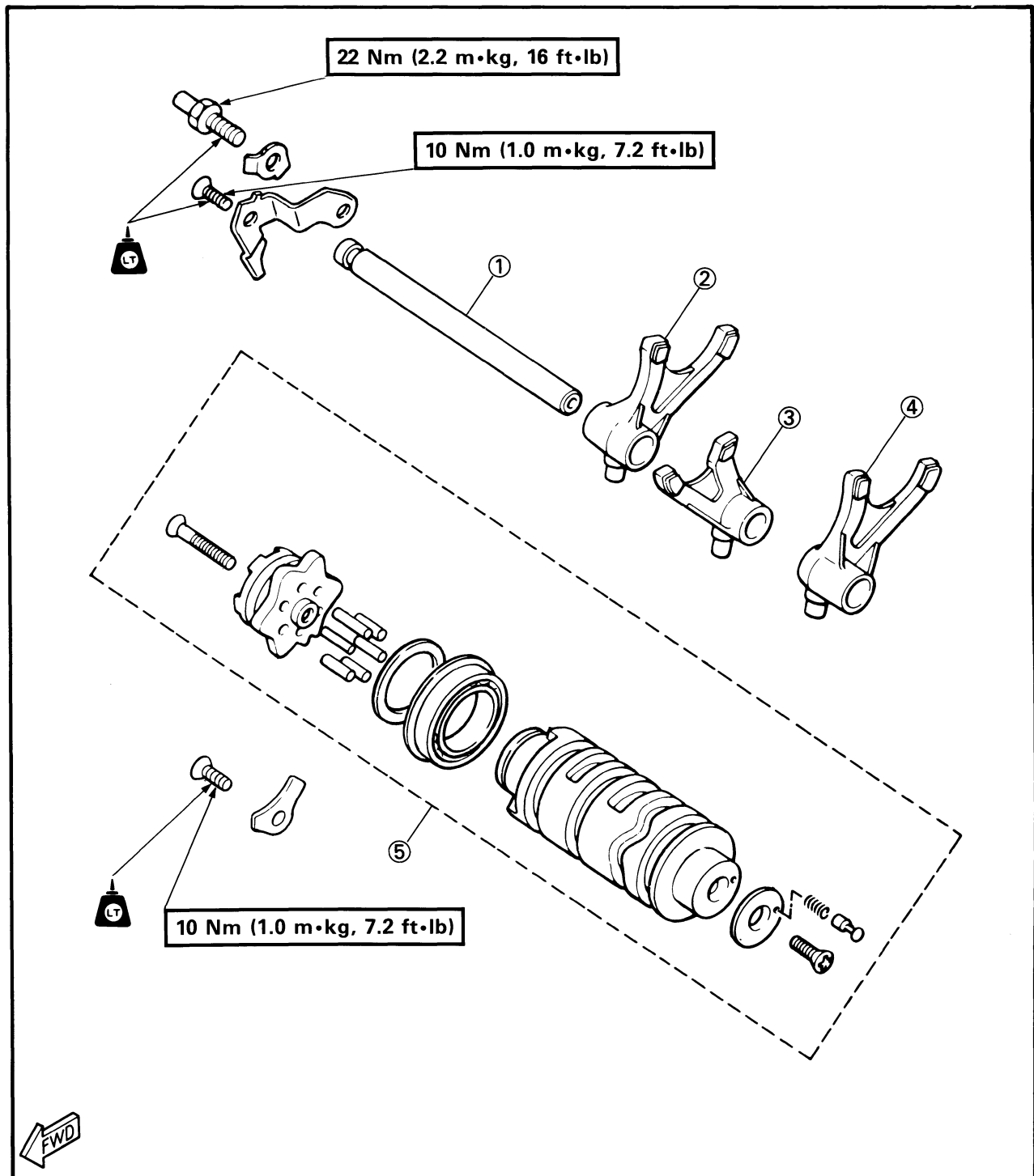
•Washers

Damage/Looseness/Bends→Replace.



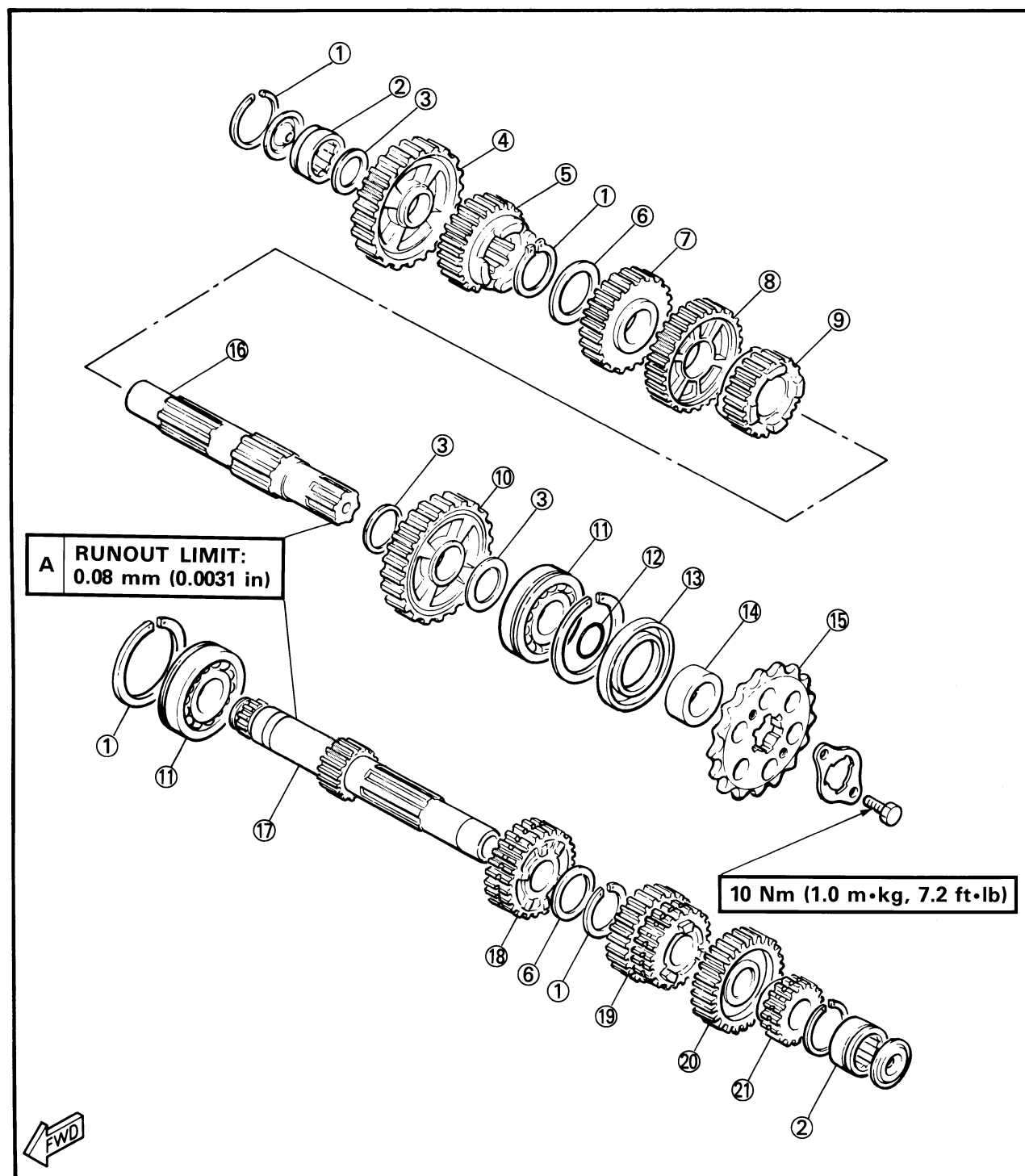
SHIFTER

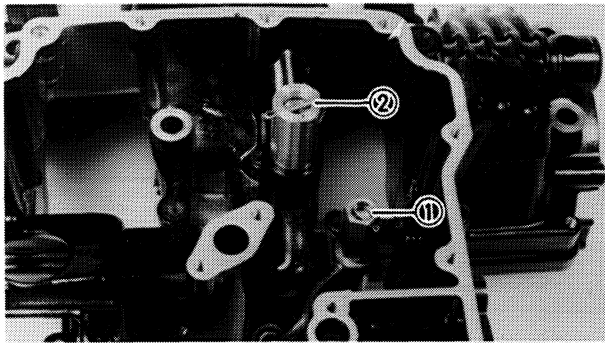
- ① Guide bar
- ② Shift fork (#3)
- ③ Shift fork (#2)
- ④ Shift fork (#1)
- ⑤ Shift cam assembly




TRANSMISSION

- | | | |
|-----------------------|------------------|-----------------------|
| ① Circlip | ⑧ 3rd wheel gear | ⑮ Drive sprocket |
| ② Cylindrical bearing | ⑨ 6th wheel gear | ⑯ Drive axle |
| ③ Plate washer | ⑩ 2nd wheel gear | ⑰ Main axle |
| ④ 1st wheel gear | ⑪ Bearing | ⑱ 5th pinion gear |
| ⑤ 5th wheel gear | ⑫ O-ring | ⑲ 3rd/4th pinion gear |
| ⑥ Washer | ⑬ Oil seal | ⑳ 6th pinion gear |
| ⑦ 4th wheel gear | ⑭ Collar | ㉑ 2nd pinion gear |





ENGINE ASSEMBLY AND ADJUSTMENT

LOWER CRANKCASE

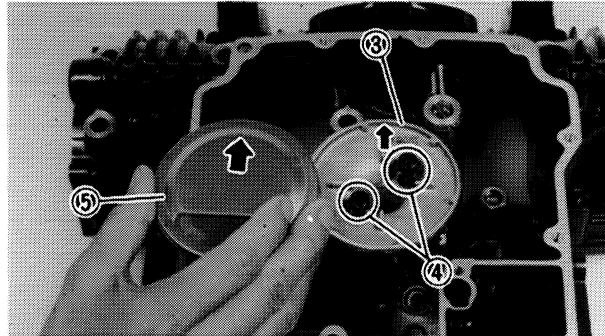
1. Install:

- Tensioner side relief valve ①
- Copper washers



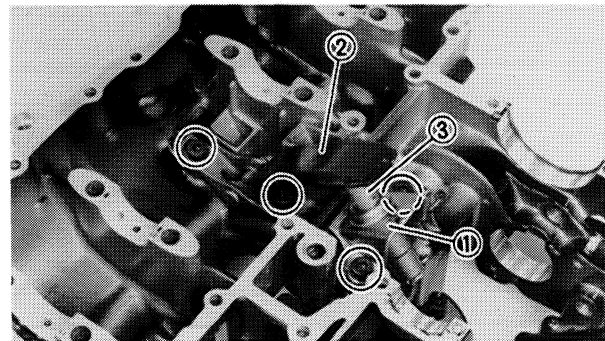
20 Nm (2.0 m•kg, 14 ft•lb)

- Relief valve ②
- Strainer housing ③
- Screws ④



10 Nm (1.0 m•kg, 7.2 ft•lb)

- Oil strainer ⑤



2. Install:

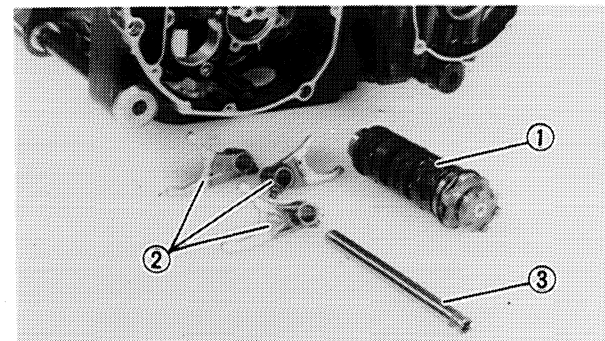
- HY-VO chain tensioner ①



Screw:

10 Nm (1.0 m•kg, 7.2 ft•lb)
Apply LOCTITE®

- HV-VO chain guide ②
- Spring
- Tensioner plunger ③

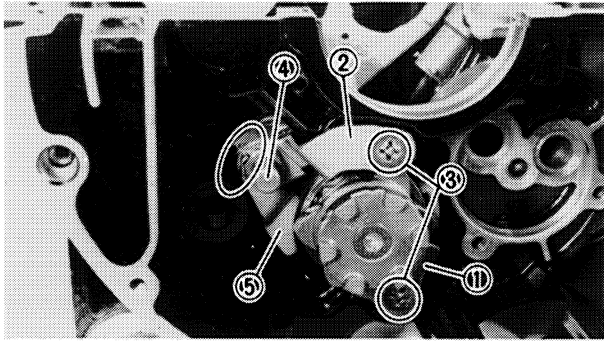


3. Install:

- Shift cam assembly ①
- Shift forks ②
- Guide bar ③

NOTE:

All shift fork numbers should face the right side and be in sequence (1,2,3) beginning from the right.



4. Install:

- Bearing stopper ①
- Guide bar stopper ②
- Screws ③



10 Nm (1.0 m•kg, 7.2 ft•lb)
Apply LOCTITE®.

- Stopper screw ④

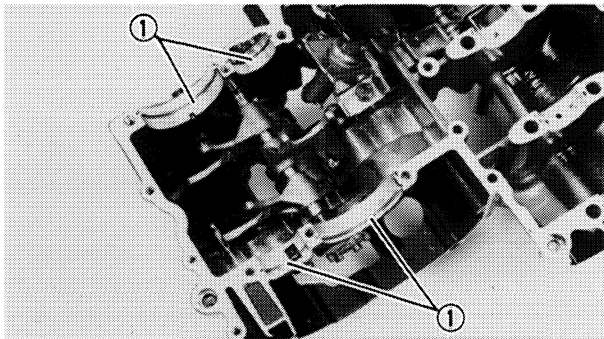


22 Nm (2.2 m•kg, 16 ft•lb)
Apply LOCTITE®.

- Lock washer ⑤

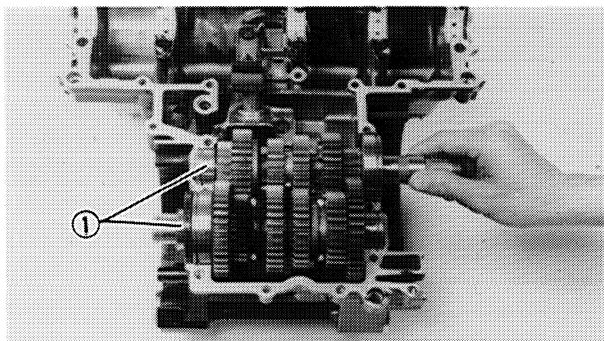
NOTE: _____

Bend lockwasher tab along nut flat.



5. Install:

- Circlips ①
- Oil seal



6. Install:

- Transmission assembly ①

NOTE: _____

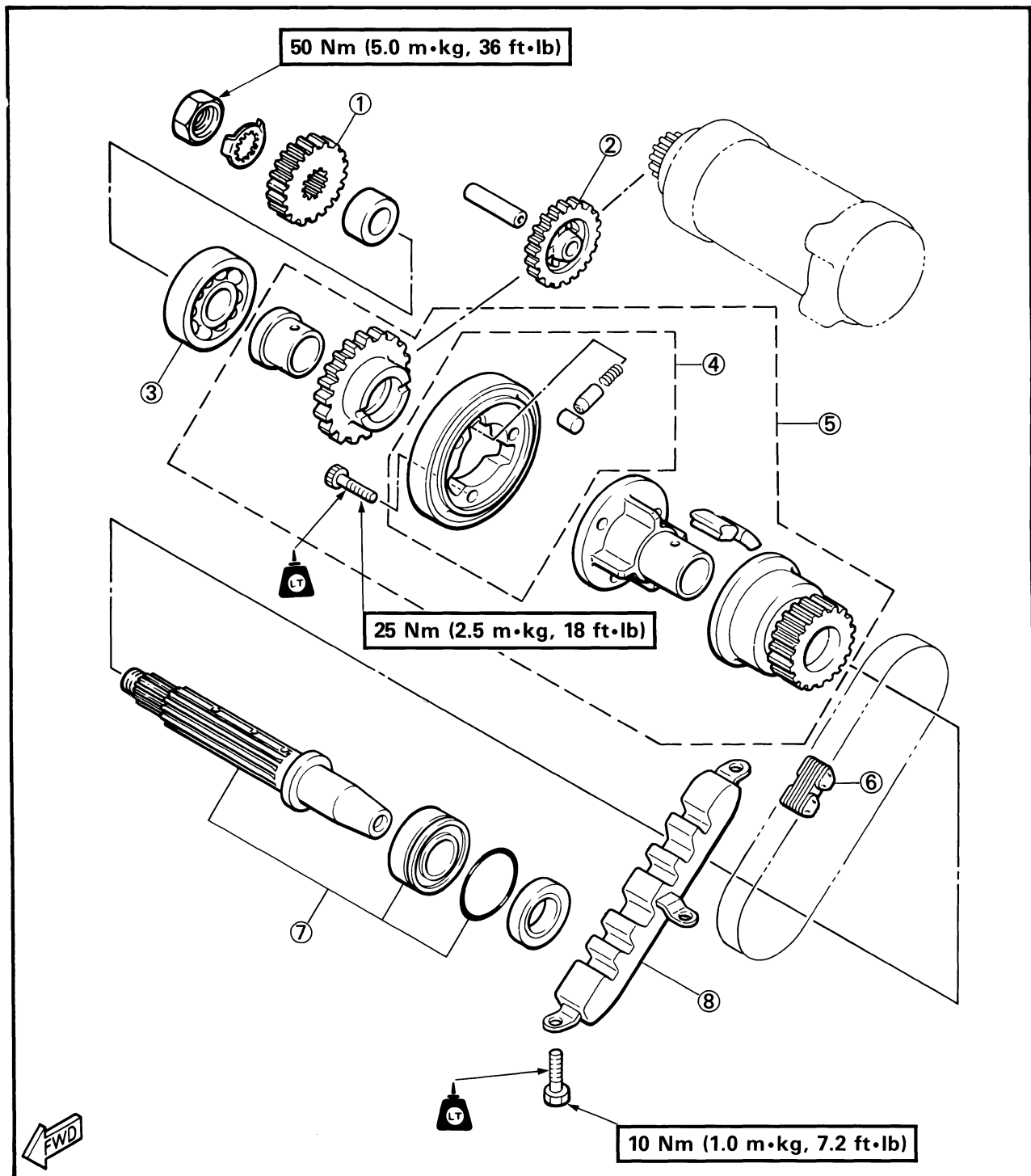
Be sure axle circlips are fitted to bearings and circlips have been positioned in circlip grooves.

7. Check:

- Shifter operation.
Unsmooth operation → Repair.
- Transmission operation
Unsmooth operation → Repair.

**STARTER**

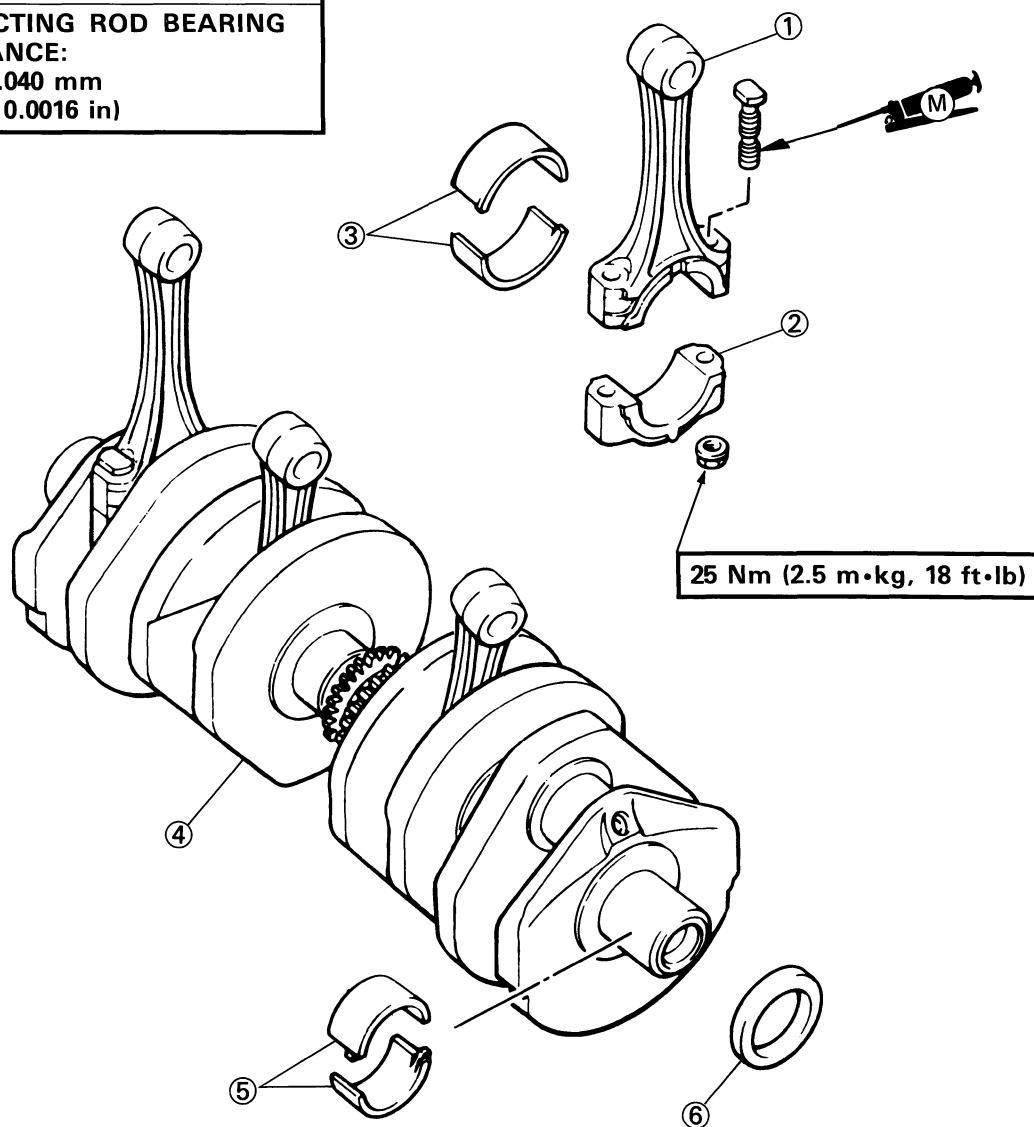
- ① Primary drive gear
- ② Starter idle gear
- ③ Bearing
- ④ Starter clutch
- ⑤ Starter clutch damper assembly
- ⑥ HY-VO chain
- ⑦ A.C.G. shaft
- ⑧ HY-VO chain guide



**CRANKSHAFT**

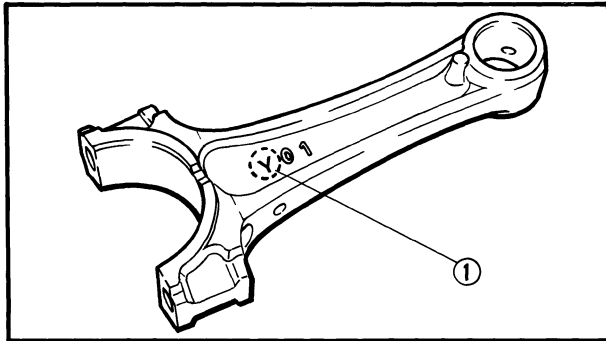
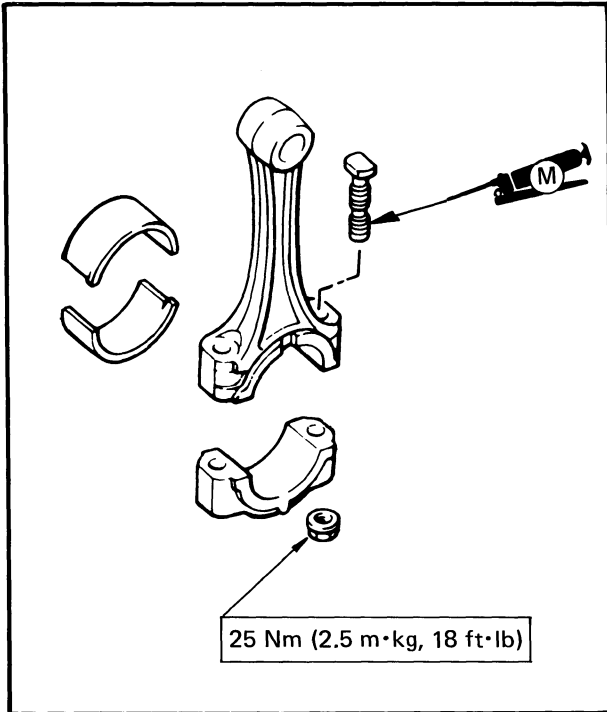
- ① Connecting rod
- ② Big end cap
- ③ Bearing
- ④ Crankshaft assembly
- ⑤ Bearing
- ⑥ Oil seal

A	CRANKSHAFT RUNOUT LIMIT: 0.03 mm (0.0012 in)
B	CONNECTING ROD BEARING CLEARANCE: 0.016 ~ 0.040 mm (0.0006 ~ 0.0016 in)



C	MAIN BEARING OIL CLEARANCE: 0.021 ~ 0.044 mm (0.0008 ~ 0.0017 in)
---	--





CRANKSHAFT

1. Clean:
 - Crankshaft
 - Connecting rods
2. Install:
 - Connecting rod bearings
(into connecting rod and cap)
3. Lubricate:
 - Connecting rod bolt threads



Molybdenum Disulfide Grease

4. Apply engine oil to the crankshaft pins.

5. Install:
 - Connecting rods
 - Rod caps

NOTE:

- Be sure the letter on both components align to form a perfect character.
- The stamped "Y" mark on the connecting rods ① should face towards the left side of the crankcase.

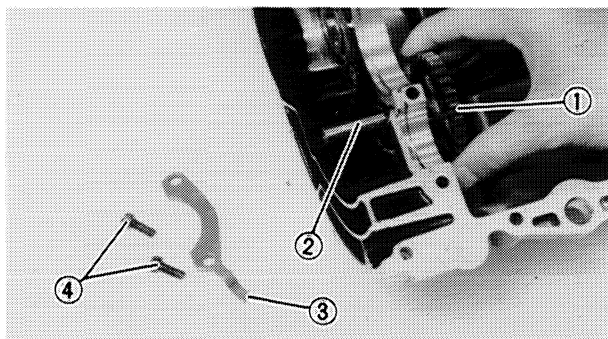
6. Tighten:
 - Connecting rod cap nuts

CAUTION:

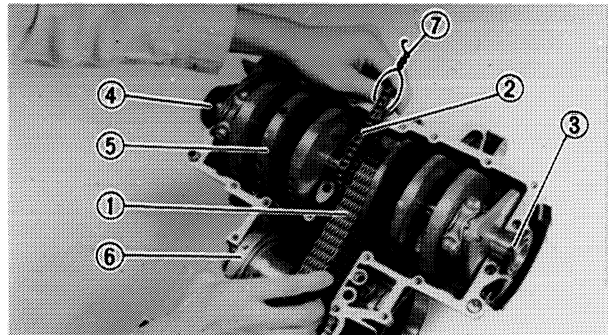
Tighten to full torque specification without pausing. Apply continuous torque between 3.0 and 3.8 m·kg. Once you reach 3.0 m·kg, DO NOT STOP TIGHTENING until final torque is reached. If tightening is interrupted between 3.0 and 3.6 m·kg, loosen nut to less than 3.0 m·kg and start again.



Connecting Rod Cap:
25 Nm (2.5 m·kg, 18 ft·lb)

**UPPER CRANKCASE****1. Install:**

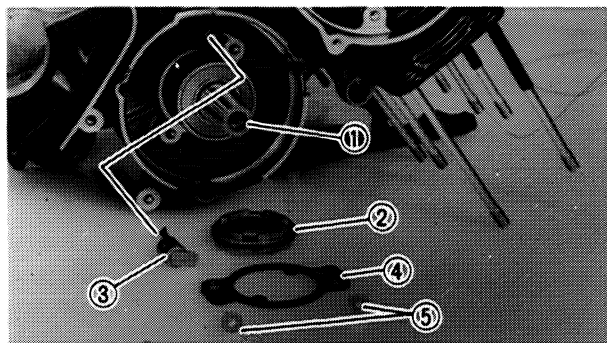
- Starter idle gear ①
- Shaft ②
- Bearing stopper ③
- Screws ④

**2. Install:**

- HY-VO chain ①
- Cam chain ②
- Oil seal ③
- Plug ④
(onto crankshaft)
- Crankshaft assembly ⑤
- Starter clutch damper assembly ⑥

NOTE:

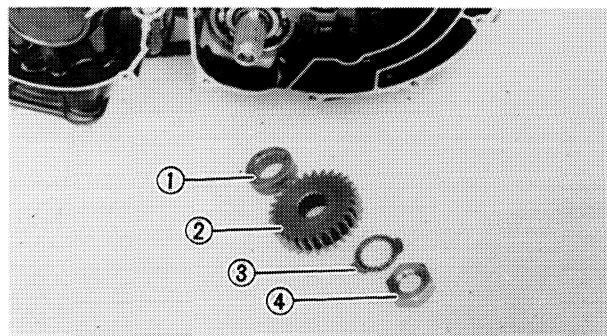
- The crankshaft pin (timing plate stopper pin) should face to the left.
- Pass the cam chain through the cam chain cavity. Be sure to attach a retaining wire ⑦ to the cam chain.

**3. Install:**

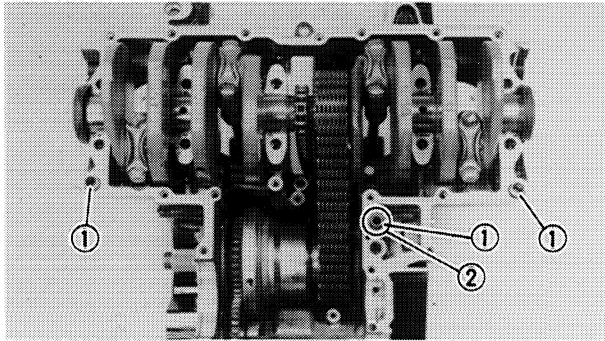
- A.C.G shaft ①
- Bearing housing ②
- Oil spray nozzle ③
- Cover plate ④
- Screw ⑤



**10 Nm (1.0 m•kg, 7.2 ft•lb)
Apply LOCTITE®.**

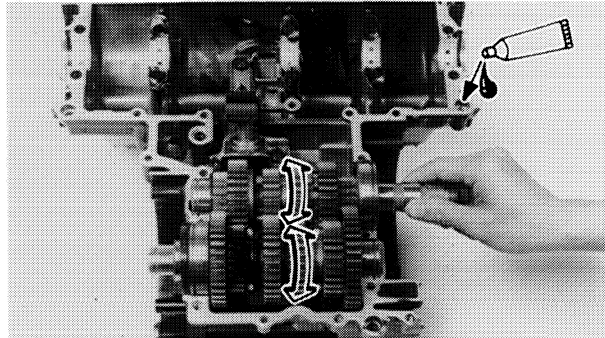
**4. Install:**

- Collar ①
- Primary drive gear ②
- Lock washer ③
- Nut ④



5. Install:

- Dowel pins ①
- O-ring ②

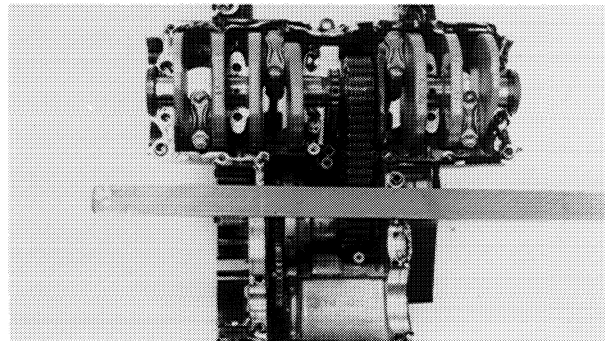


CRANKCASE ASSEMBLY

1. Apply Quick Gasket® (ACC-11001-05-01) to crankcase matching surfaces.

NOTE:

DO NOT ALLOW any sealant to come in contact with the oil gallery O-ring, or crankshaft bearings. Do not apply sealant to within 2~3 mm (0.08~0.12 in) of the bearings.

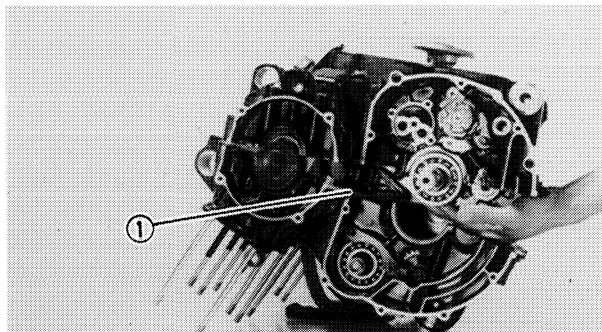


2. Set shift cam and transmission gears in NEUTRAL position.
3. Place suitable bar on the upper crankcase.

4. Place lower crankcase assembly on the upper crankcase assembly.

NOTE:

Push HY-VO chain damper to prevent tensioner plunger from falling into crankcase cavity.



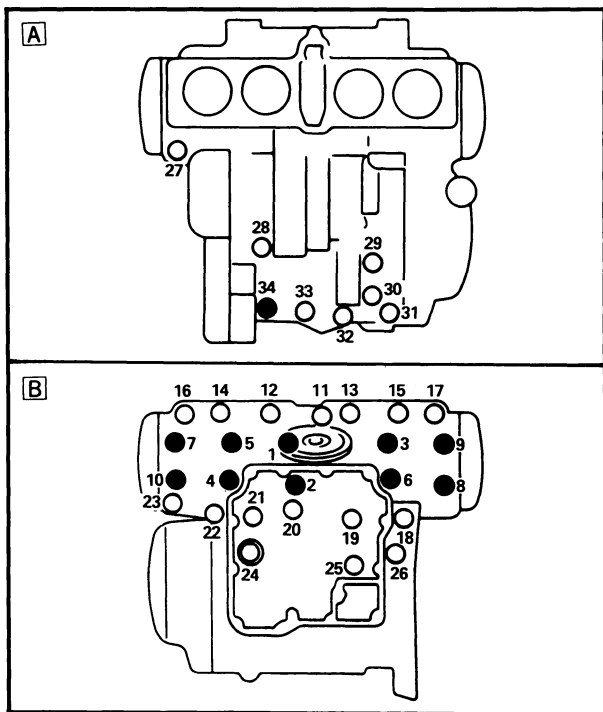
5. Install:

- Lower crankcase

**CAUTION**

Before tightening the crankcase bolts, check the following points:

- Remove bar ①.
- Be sure the gear shifts correctly while hand-turning the shift cam.

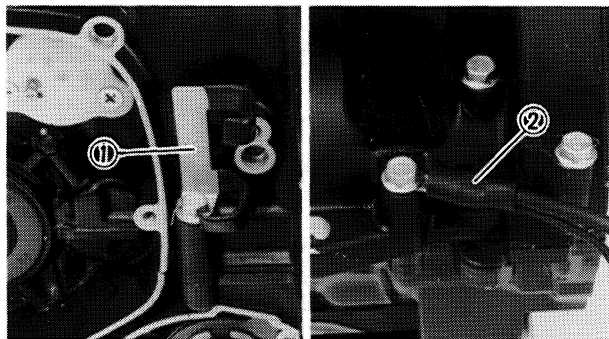


6. Tighten:

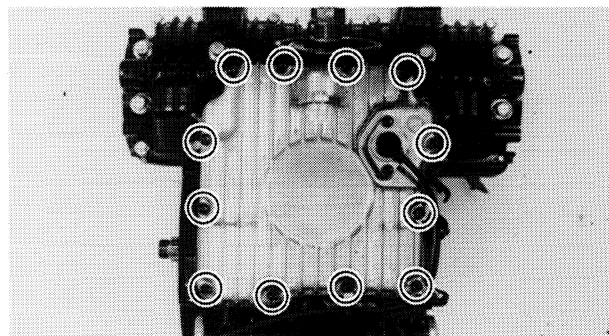
- Lower crankcase bolt [B]
- Upper crankcase bolt [A]
(Follow proper tightening sequence.)



- 6 mm (0.24 in):
12 Nm (1.2 m•kg, 8.7 ft•lb)
- 8 mm (0.31 in):
24 Nm (2.4 m•kg, 17 ft•lb)

**NOTE:**

- Install the clamp ① on Bolt No. 26.
- Install the ground lead ② on Bolt No. 32.

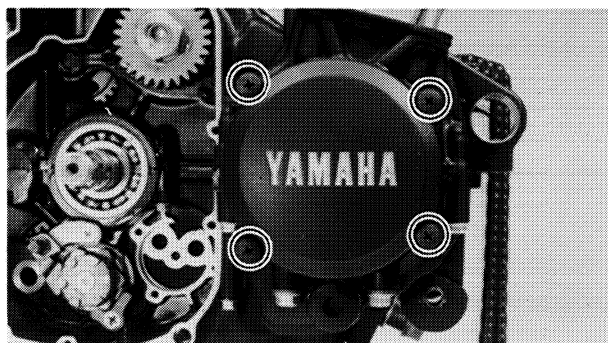


7. Install:

- Oil pan



10 Nm (1.0 m•kg, 7.2 ft•lb)



8. Install:

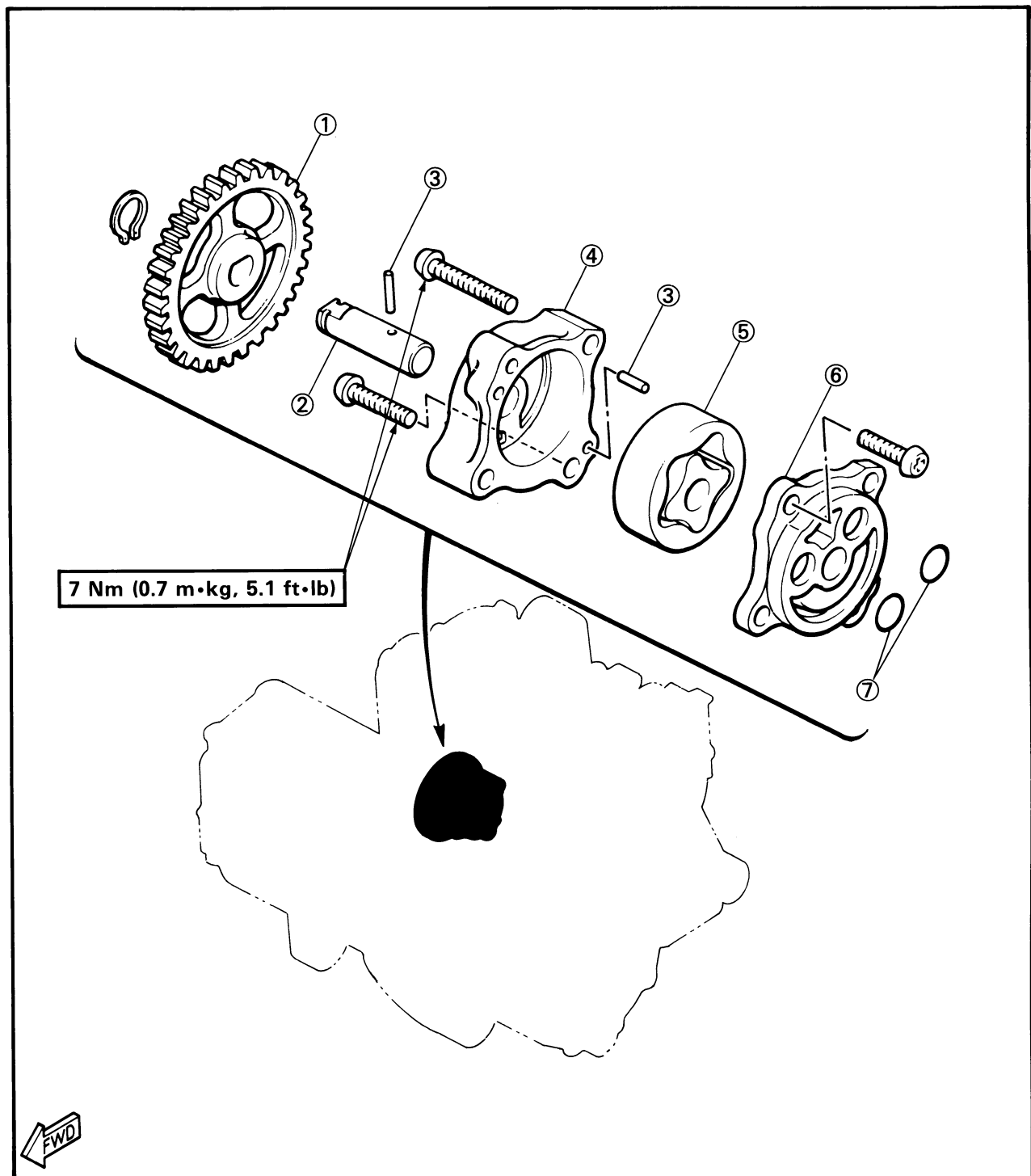
- Right-front crankcase cover



10 Nm (1.0 m•kg, 7.2 ft•lb)

**OIL PUMP**

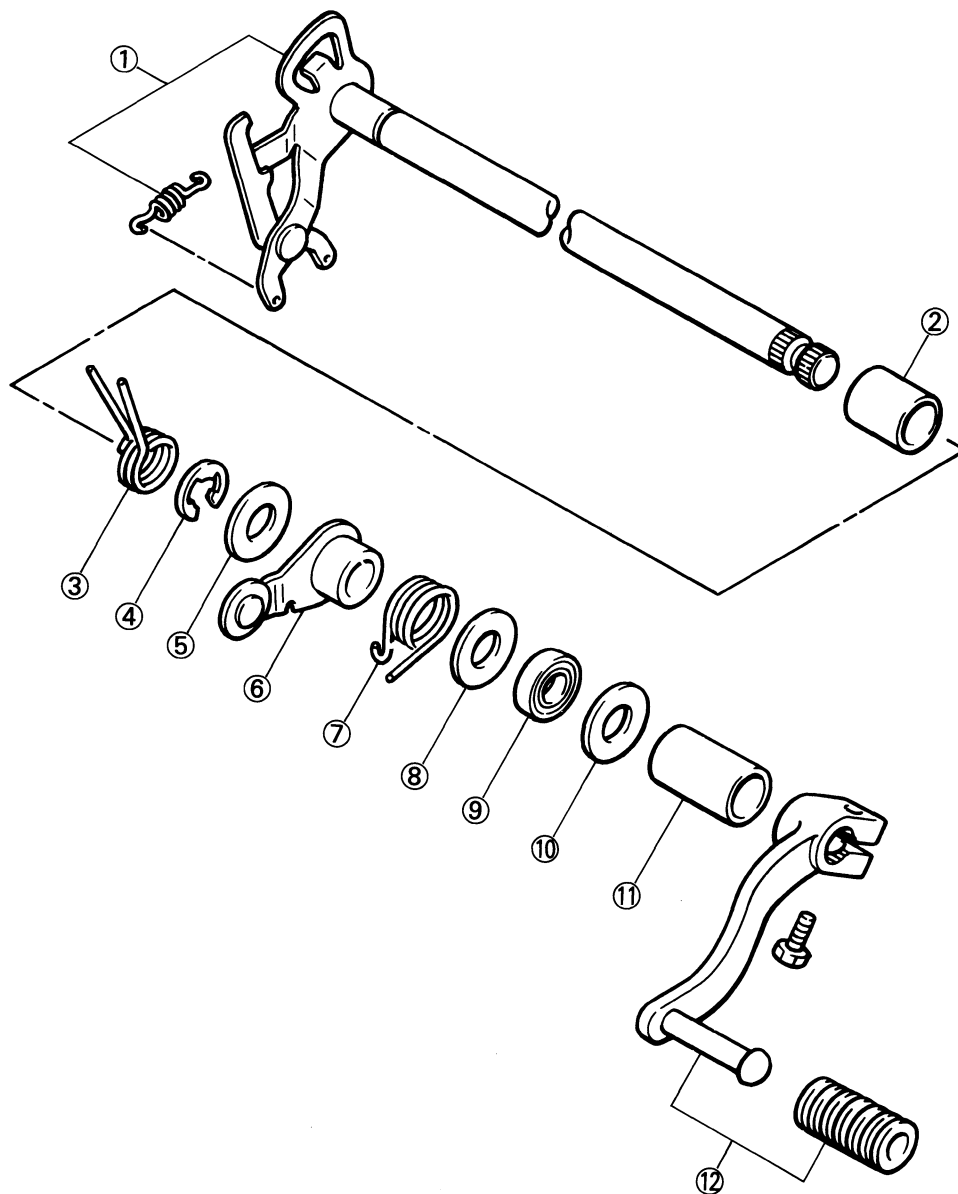
- ① Oil pump drive gear
- ② Shaft
- ③ Pin
- ④ Oil pump housing
- ⑤ Rotor
- ⑥ Pump cover
- ⑦ O-ring

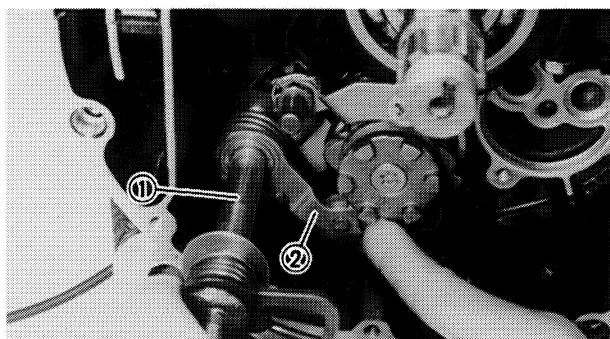




SHIFT SHAFT

- | | |
|-----------------|----------------|
| ① Shift shaft | ⑧ Plain washer |
| ② Collar | ⑨ Oil seal |
| ③ Spring | ⑩ Plain washer |
| ④ Circlip | ⑪ Collar |
| ⑤ Plain washer | ⑫ Change pedal |
| ⑥ Stopper lever | |
| ⑦ Spring | |

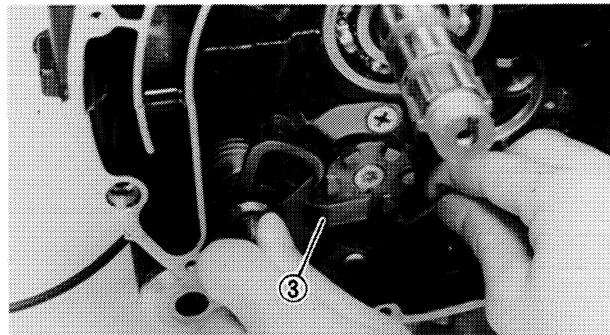


**OIL PUMP AND SHIFT SHAFT**

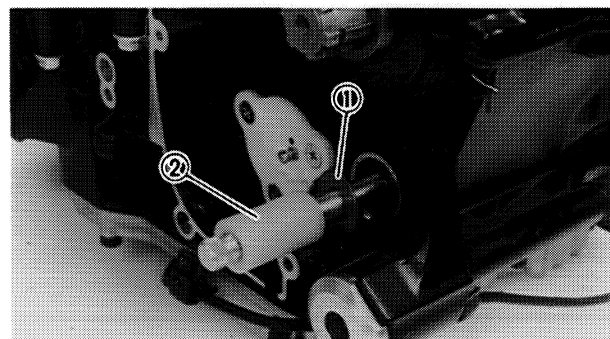
1. Install:

- Shift shaft assembly ①

2. Mesh the stopper lever ② with shift cam stopper.

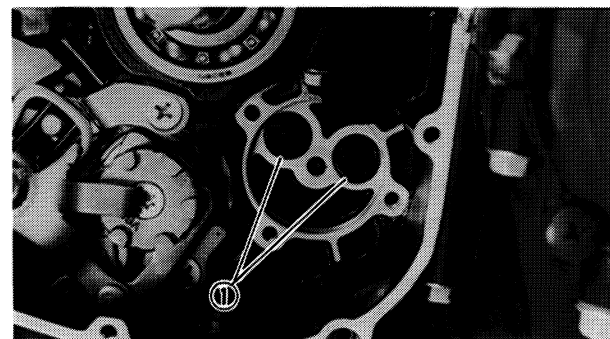


3. Pull the shift lever 2 ③ and push shift shaft assembly.



4. Install:

- Plate washer ①
- Collar ②
(on left side shift shaft)



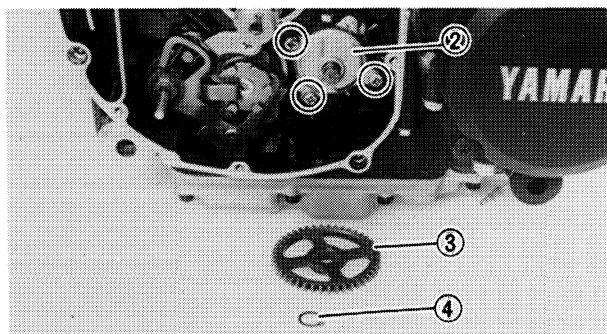
5. Install:

- O-rings ①
- Oil pump assembly ②



7 Nm (0.7 m•kg, 5.1 ft•lb)

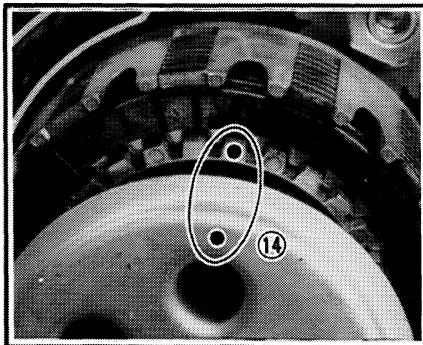
- Oil pump driven gear ③
- Circlip ④



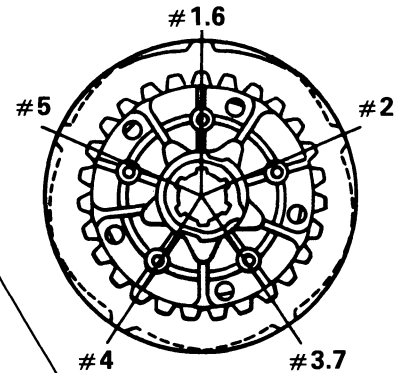


CLUTCH

- | | |
|-----------------------|----------------------|
| ① Plate washer | ⑧ Clutch plate |
| ② Oil seal | ⑨ Clutch boss spring |
| ③ Circlip | ⑩ Seat |
| ④ Lock washer | ⑪ Thrust plate |
| ⑤ Clutch plate (#1) | ⑫ Bearing |
| ⑥ Friction plate (#1) | ⑬ Pull rod |
| ⑦ Wire clip | ⑭ Match mark |



D CLUTCH PLATE POSITION



70 Nm (7.0 m•kg, 50 ft•lb)

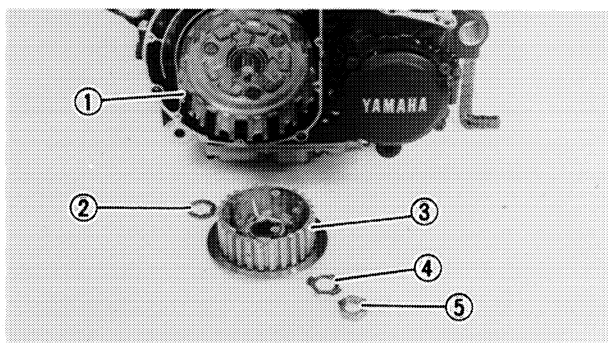
8 Nm (0.8 m•kg, 5.8 ft•lb)

A SPRING FREE LENGTH
LIMIT:
41.8 mm (1.64 in)

B CLUTCH PLATE
WARP LIMIT:
0.15 mm (0.006 in)

C FRICTION PLATE
WEAR LIMIT:
2.7 mm (0.106 in)

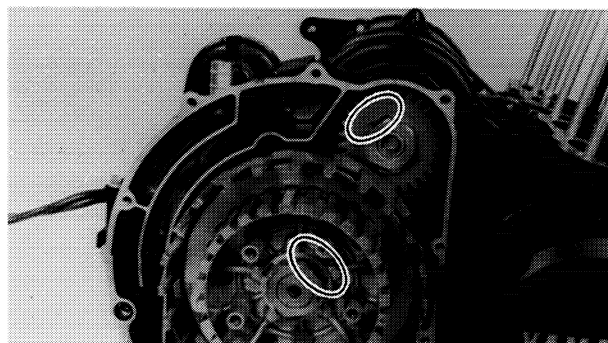
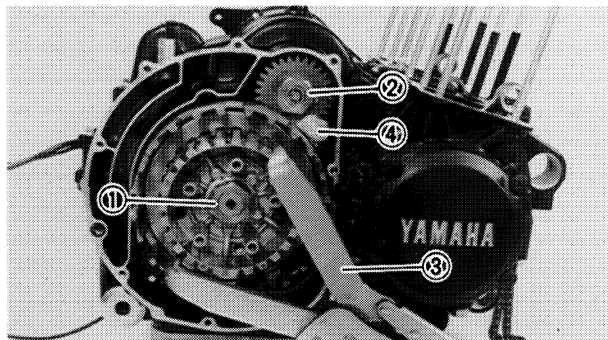


**CLUTCH****1. Install:**

- Clutch housing ①
- Thrust washer ②
- Clutch boss ③
- Lock washer ④
- Nut ⑤

2. Tighten:

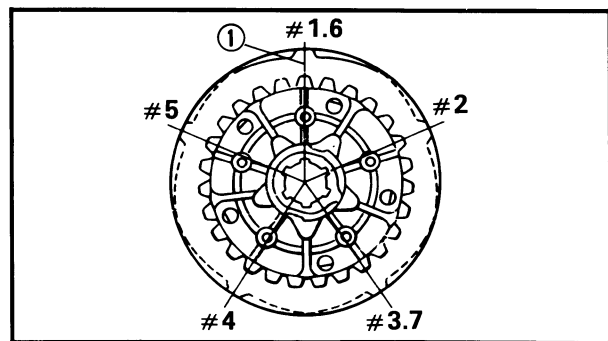
- Nut ① (clutch boss)
Use Universal Clutch Holder
(YM-91042) ③.
- Nut ② (Primary drive gear)
Place the folded rag ④ between the teeth
of the drive gear and driven gear to lock
them.



Nut (Clutch Boss):
70 Nm (7.0 m•kg, 50 ft•lb)
Nut (Primary Drive Gear):
50 Nm (5.0 m•kg, 36 ft•lb)

NOTE:

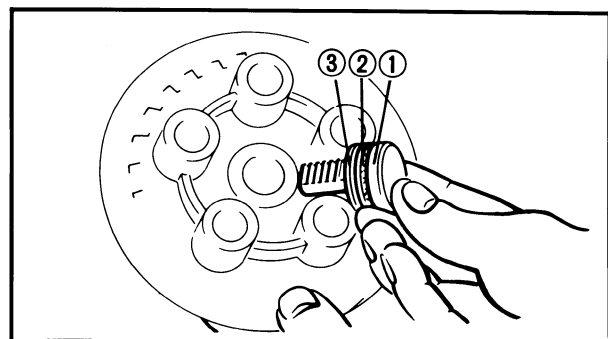
Bend the lock washer tab along the nut flat.

**3. Install:**

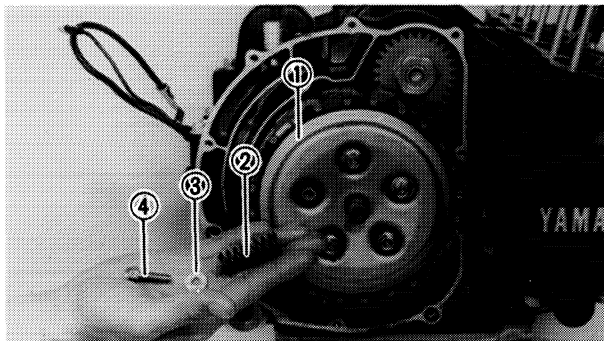
- Friction plates
- Clutch plates

NOTE:

- Mount friction and clutch plates alternately.
- Align the clutch plate mark ① as shown.

**4. Install:**

- Thrust bearing ②
- Plate washer ③
(on the pull rod)
- Pull rod ①
(into the pressure plate)



5. Install:

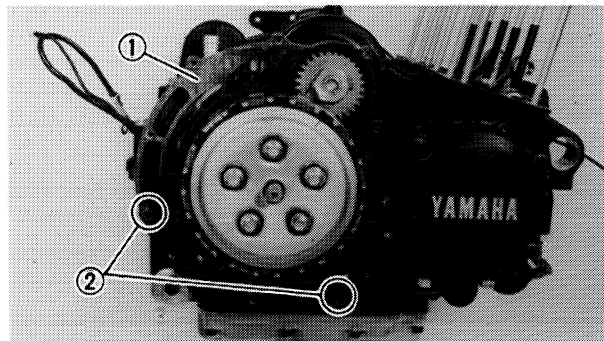
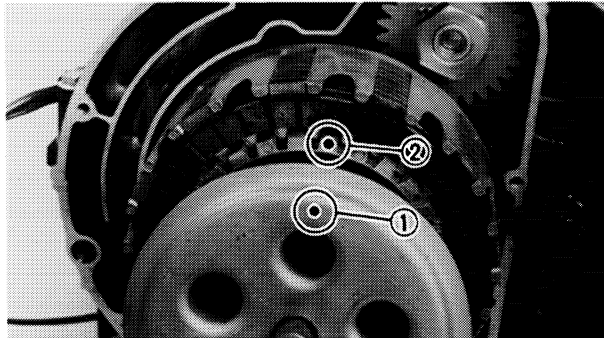
- Pressure plate ①
- Spring ②
- Plate washer ③
- Bolt ④



8 Nm (0.8 m•kg, 5.8 ft•lb)

NOTE:

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

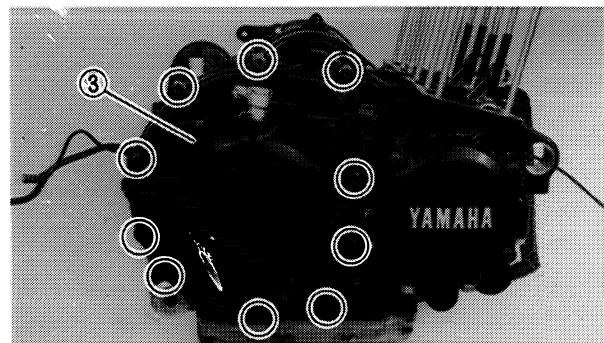


6. Install:

- Gasket ①
- Dowel pins ②
- Right crankcase cover ③

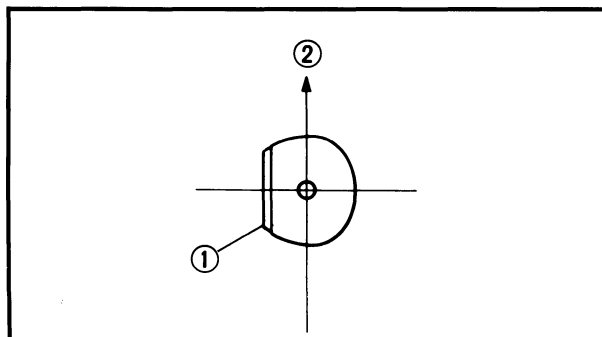


10 Nm (1.0 m•kg, 7.2 ft•lb)



NOTE:

Be sure the pull rod gear ① face to rear of engine.

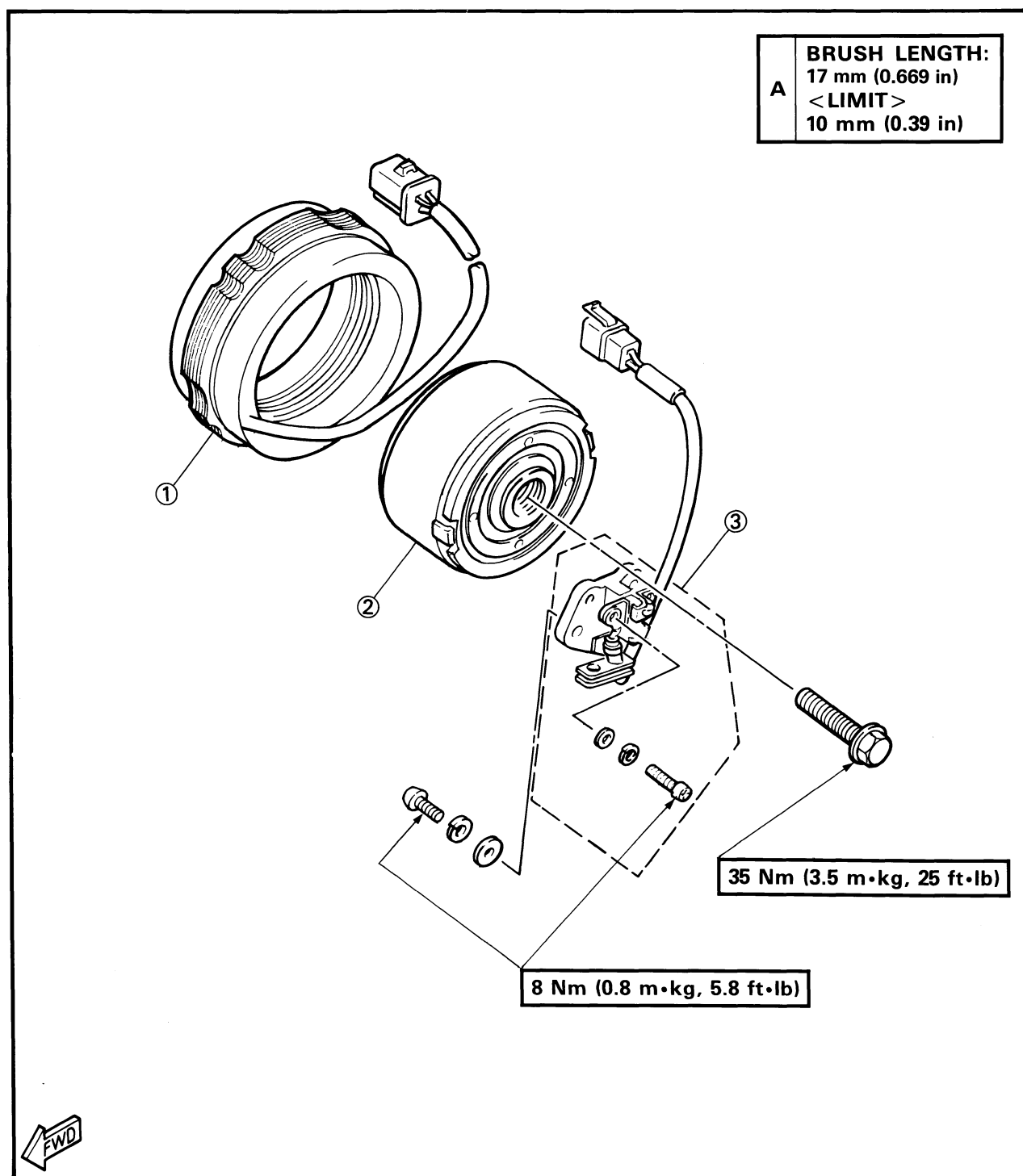


② Upper



GENERATOR

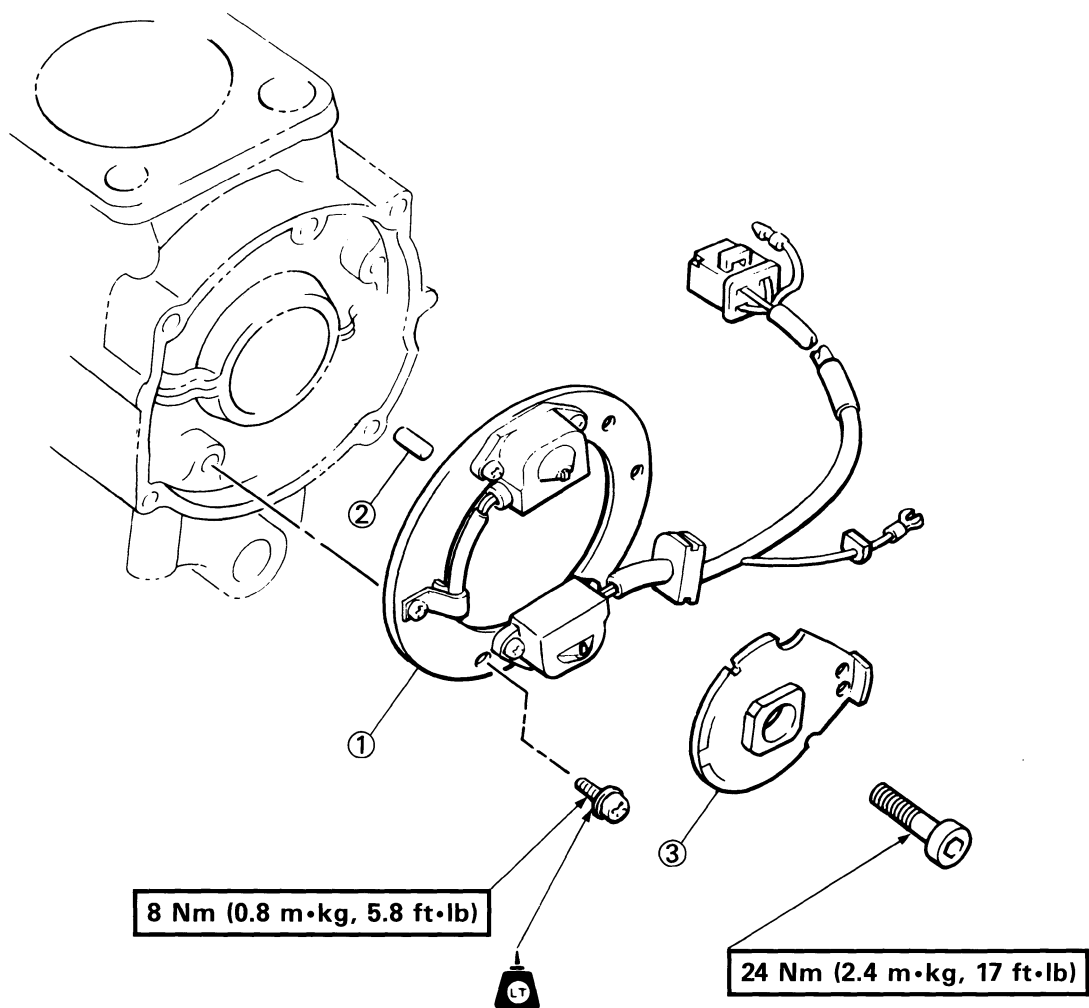
- ① Stator coil
- ② Rotor
- ③ Brush assembly

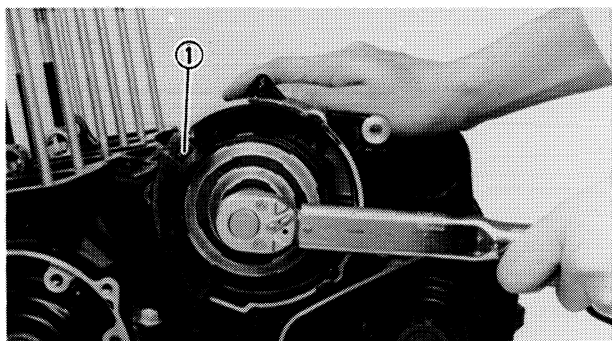


**PICKUP COIL**

- ① Pickup coil assembly
- ② Pin
- ③ Timing plate

A PICKUP COIL RESISTANCE:
108 ~ 132 Ω at 20°C (68°F)

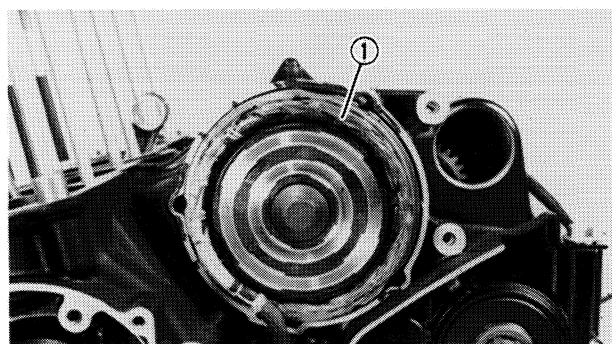


**PICKUP COIL AND GENERATOR**

1. Install:

- Rotor
- Bolt

Use Rotor Holding Tool (YM-04043) ①.

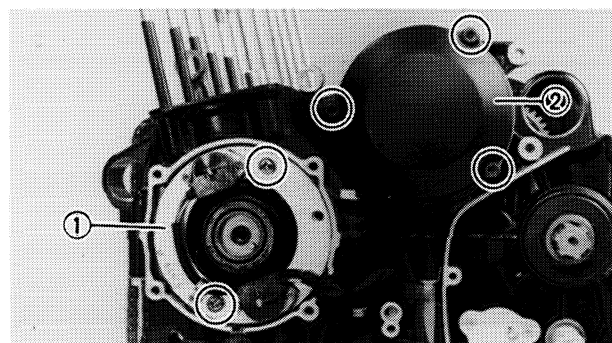
**35 Nm (3.5 m•kg, 25 ft•lb)**

2. Install:

- Stator coil ①

NOTE:

Align the stator core grooves with the bolt holes.

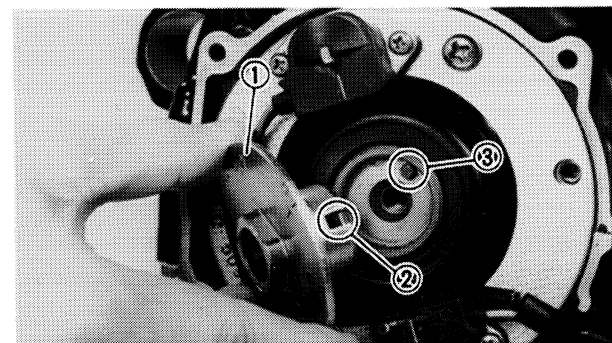


3. Install:

- Generator cover ②
- Pickup coil assembly ①



Screw (Pickup Coil Assembly):
8 Nm (0.8 m•kg, 5.8 ft•lb)
Apply LOCTITE®.

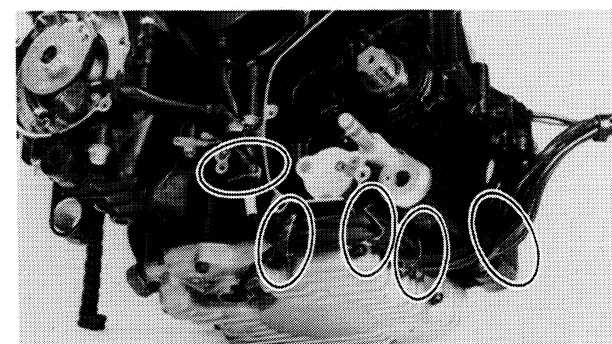


4. Install:

- Timing plate ①
- Screw

**24 Nm (2.4 m•kg, 17 ft•lb)**

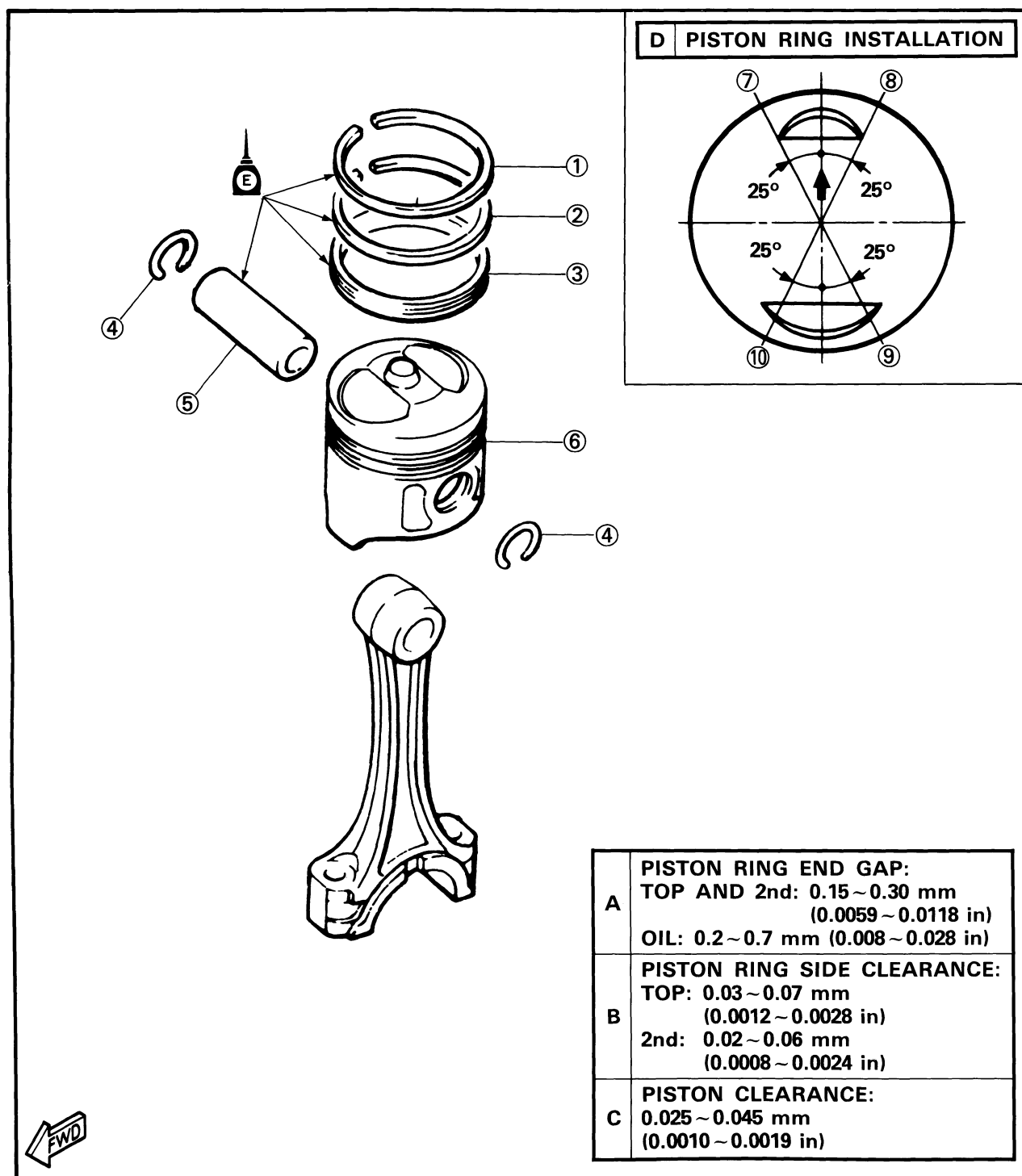
Mesh the timing plate groove ② with the crankshaft pin ③.

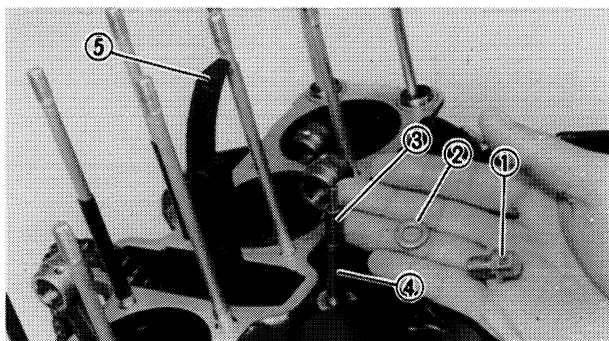


5. Clamp the A.C.G leads and pickup leads.

**PISTON**

- ① Top ring
- ② Second ring
- ③ Oil ring
- ④ Circlip
- ⑤ Piston pin
- ⑥ Piston
- ⑦ Top ring
- ⑧ Oil ring (Lower rail)
- ⑨ Second ring
- ⑩ Oil ring (Upper rail)





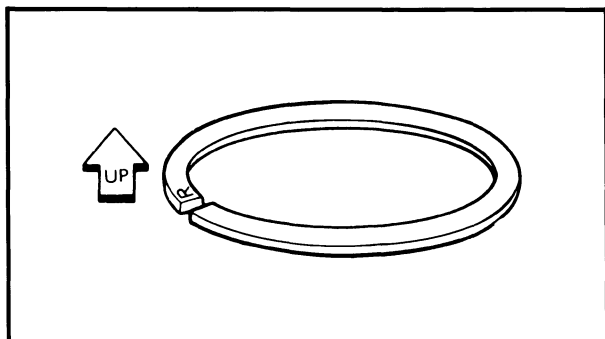
PISTON AND INTAKE SIDE CAM CHAIN GUIDE

1. Install:

- Intake side cam chain guide ①
- Stopper shaft ②
- Spring ③
- Plate washer
- Bolt ④

NOTE:

The lower end of chain guide must rest in the cam chain guide slot in the crankcase.

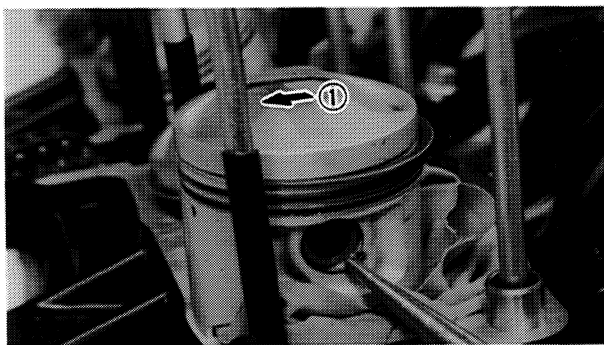


2. Install:

- Piston rings

NOTE:

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

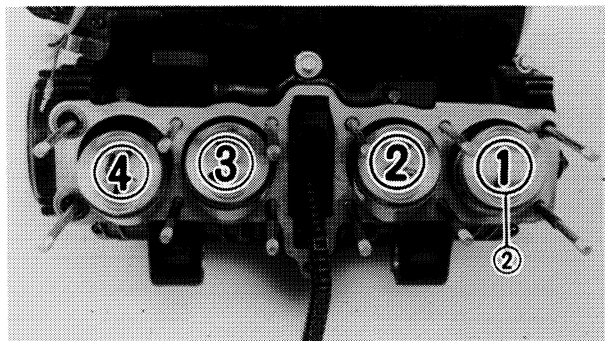


3. Install:

- Piston pin
- Piston
- Piston pin circlip (New)

NOTE:

- Be sure the piston arrow mark ① face to exhaust side.
- Before installing piston pin circlip, cover crankcase with a clean rag to prevent circlip from falling into crankcase cavity.
- Be sure the marked piston numbers ② should be in sequence (1,2,3,4) beginning from the left.

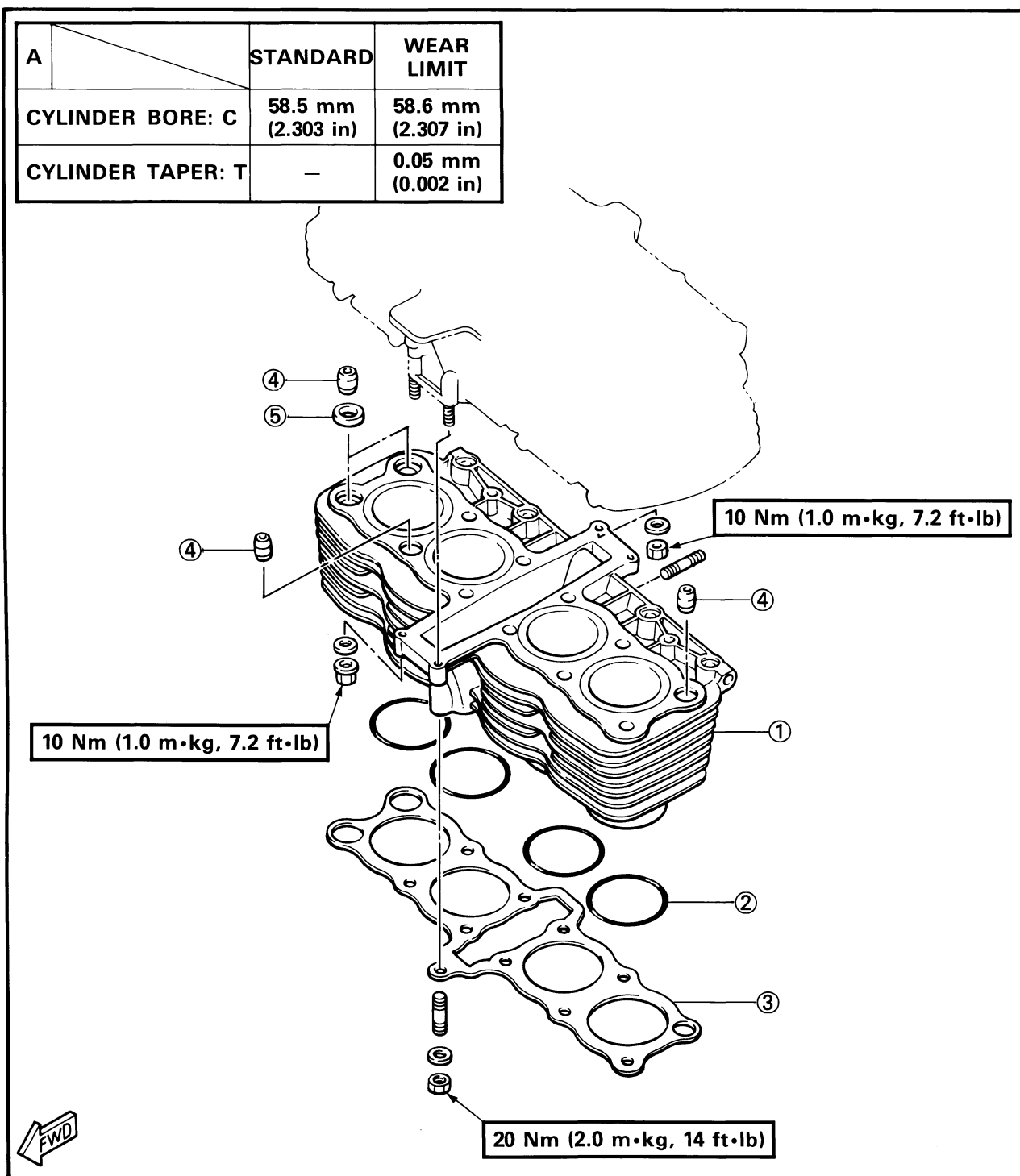


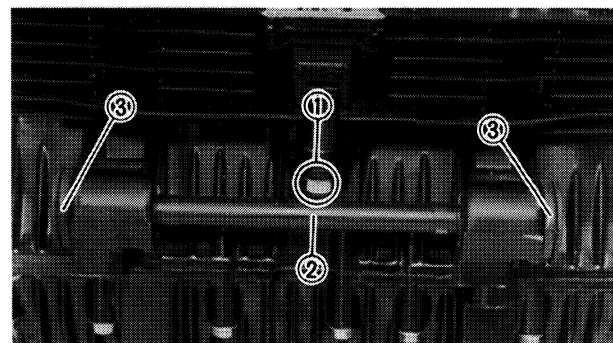
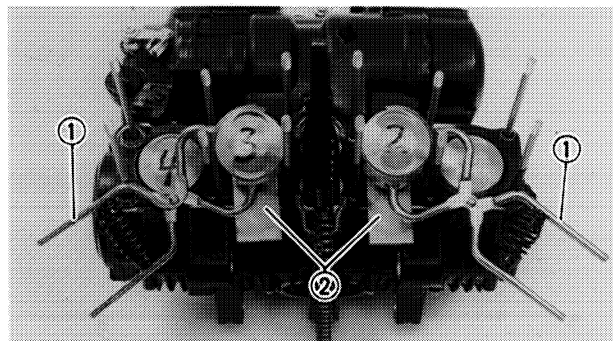
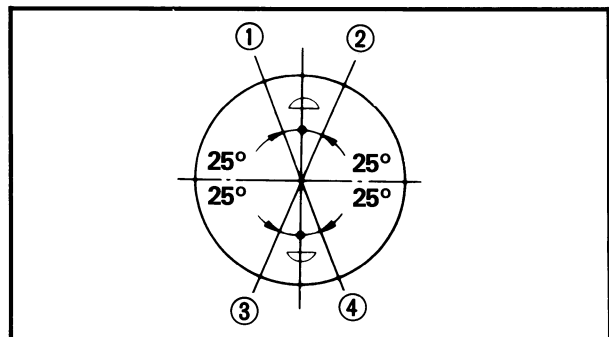
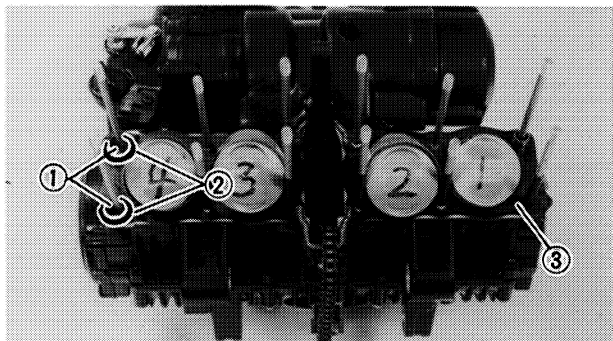


CYLINDER

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

A		STANDARD	WEAR LIMIT
	CYLINDER BORE: C	58.5 mm (2.303 in)	58.6 mm (2.307 in)
	CYLINDER TAPER: T	—	0.05 mm (0.002 in)





CYLINDER

1. Install:

- Dowel pins ①
- O-rings ②
- Cylinder gasket ③

2. Oil liberally:

- Piston
- Rings
- Cylinders

3. Set:

- Top ring end ①
- Oil ring end (Lower) ②
- Oil ring end (Upper) ③
- 2nd ring end ④

4. Install:

- Cylinder

Use Piston Ring Compressor ① (YM-04047) and Piston Base ② (YM-01067).

Pass the cam chain and exhaust side cam chain guide through cam chain cavity.

5. Tighten:

- Cylinder nut ①



20 Nm (2.0 m•kg, 14 ft•lb)

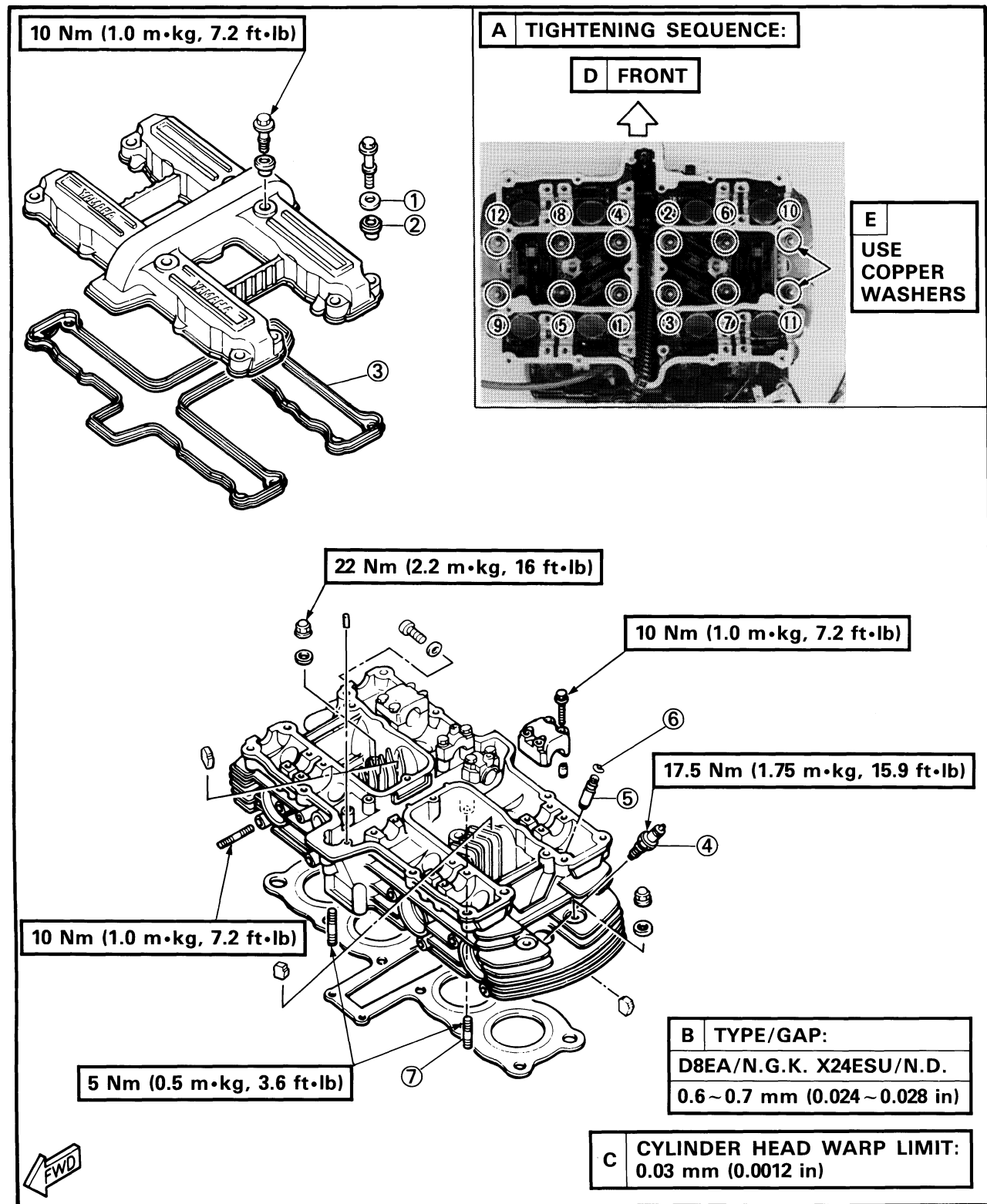
6. Install:

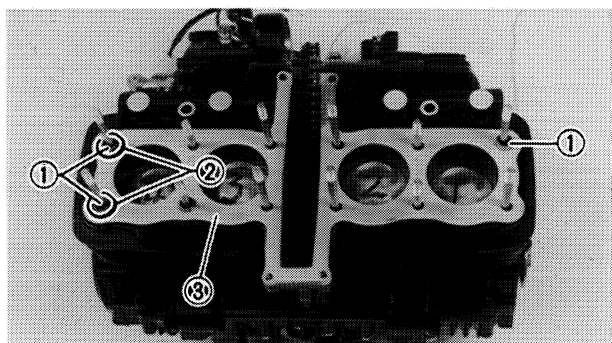
- Front engine mount spacer ②
- Damper ③



CYLINDER HEAD

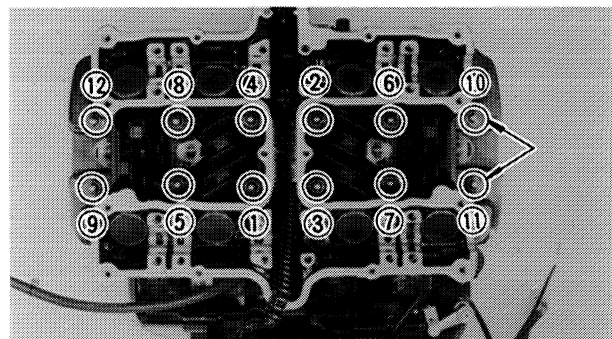
- ① Washer
- ② Rubber washer
- ③ Gasket
- ④ Spark plug
- ⑤ Valve guide
- ⑥ Circlip
- ⑦ Stud bolt



**CYLINDER HEAD**

1. Install:

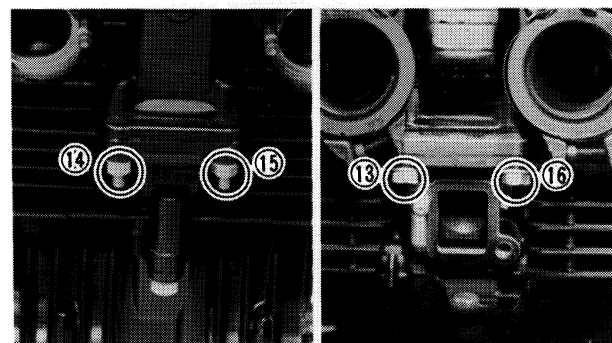
- Dowel pins ①
- O-rings ②
- Head gasket ③ (New)
- Cylinder head



2. Tighten:

- Cylinder head nuts

In sequence as shown and torque nuts in two stages.

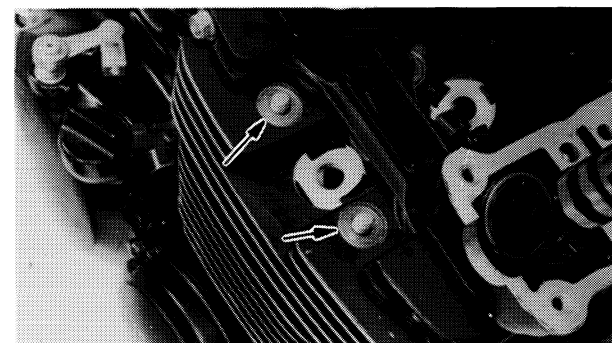


Nut No. ① ~ ⑫:

22 Nm (2.2 m•kg, 16 ft•lb)

Nut No. ⑬ ~ ⑯:

10 Nm (1.0 m•kg, 7.2 ft•lb)



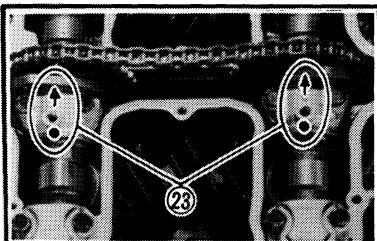
NOTE: _____

Use copper washers.

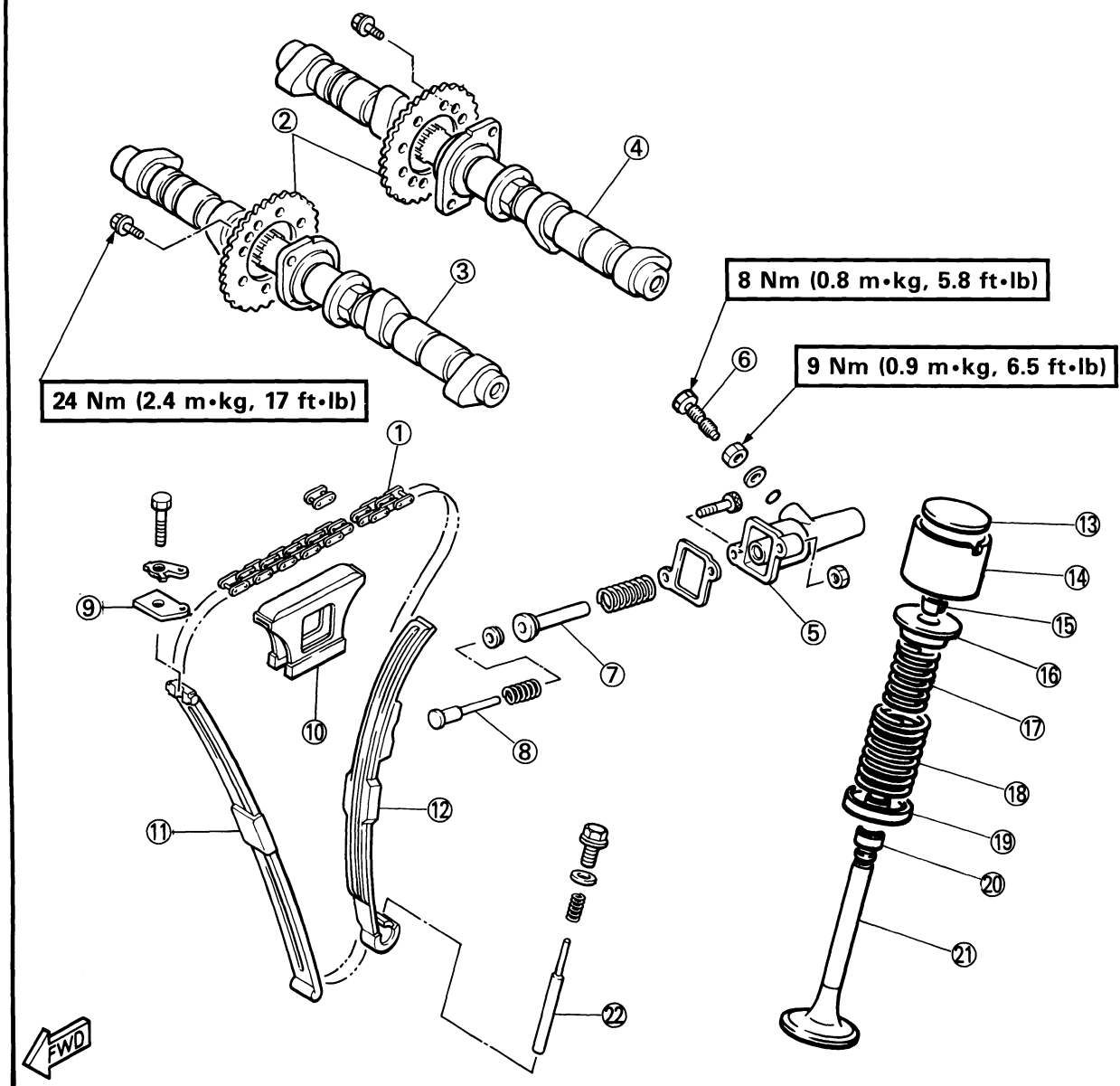


CAMSHAFT

- | | | |
|-------------------------|----------------------------|-----------------------|
| ① Cam chain | ⑨ Guide stopper plate | ⑰ Inner spring |
| ② Cam sprocket | ⑩ Upper chain guide | ⑱ Outer spring |
| ③ Camshaft (Exhaust) | ⑪ Exhaust side chain guide | ⑲ Spring seat |
| ④ Camshaft (Intake) | ⑫ Intake side chain guide | ⑳ Oil seal |
| ⑤ Chain tensioner body | ⑬ Adjusting pad | ㉑ Valve |
| ⑥ Tensioner lock bolt | ⑭ Valve lifter | ㉒ Chain guide stopper |
| ⑦ Tensioner rod (Large) | ⑮ Valve retainer | ㉓ Match mark |
| ⑧ Tensioner rod (Small) | ⑯ Spring seat | |



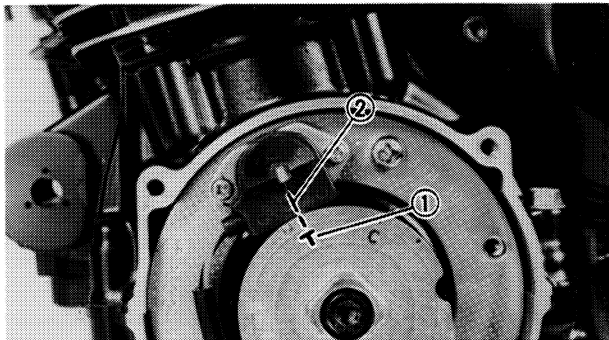
A VALVE CLEARANCE (COLD):		
B	INTAKE	0.11 ~ 0.15 mm (0.004 ~ 0.006 in)
C	EXHAUST	0.16 ~ 0.20 mm (0.006 ~ 0.008 in)



**CAMSHAFT**

1. Rotate:

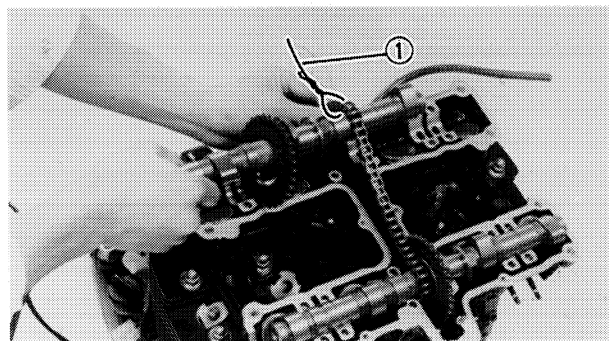
- Crankshaft
Counterclockwise



2. Align:

- "T" mark ①

On the timing plate with the upper pickup coil mark ② when No. 1 piston is at TDC on compression stroke.



3. Install:

- Cam chain sprockets
(on the camshafts)
- "I" and "E" camshafts

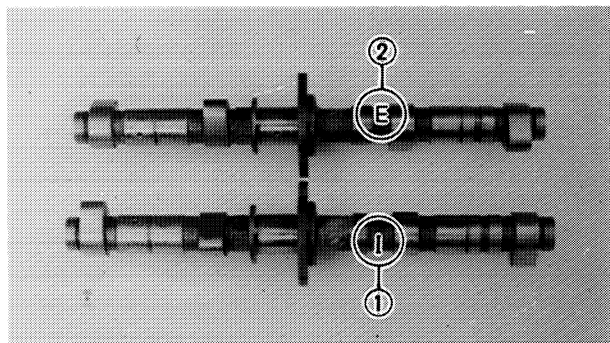
Apply engine oil to camshaft bearing surfaces before installing camshafts.

4. Remove:

- Retaining wire ①

NOTE:

- "I" mark ① for intake camshaft
- "E" mark ② for exhaust camshaft



5. Install:

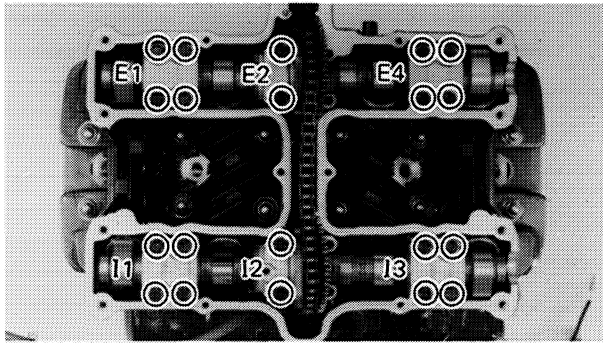
- Dowel pins
- Cam caps



10 Nm (1.0 m•kg, 7.2 ft•lb)

NOTE:

Do not install No. 3 intake (I-3) and No. 3 exhaust (E-3) cam caps at in this stage.

**CAUTION:**

The cam caps must be tightened evenly or damage to the cylinder head, cam caps and cam will result. The spaces between the caps and cylinder head should be equal.

Cam Chain

1. Rotate:
 - Exhaust camshaft
2. Align:
 - Exhaust camshaft timing mark
(with the "E-2" cam cap arrow mark)

CAUTION:

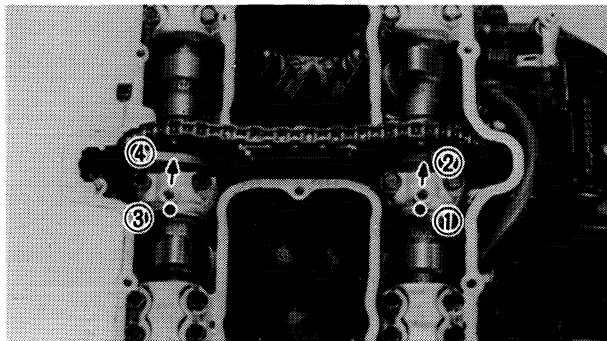
Do not rotate the camshaft over 1/2 turn or damage to the piston and valve will result.

3. Position:
 - Cam chain
(onto sprockets)
4. Install:
 - Sprockets
(onto camshafts)
5. Force the exhaust sprocket clockwise (viewing from left side engine) to remove all cam chain slack.
6. Align:
 - Sprocket, hole
(with the exhaust camshaft thread hole)

NOTE:

If the sprocket hole do not align with the camshaft hole, adjust chain links between crankshaft and exhaust camshaft.

7. Install:
 - Exhaust sprocket bolt
(temporarily tighten)



8. Rotate:
- Intake camshaft

9. Align:
- Intake camshaft timing mark ①
(with the "I-2" cam cap arrow mark ②)

- ③ Exhaust camshaft timing mark
- ④ "E-2" cam cap arrow mark

CAUTION:

Do not rotate the camshaft over 1/2 turn or damage to the piston and valve will result.

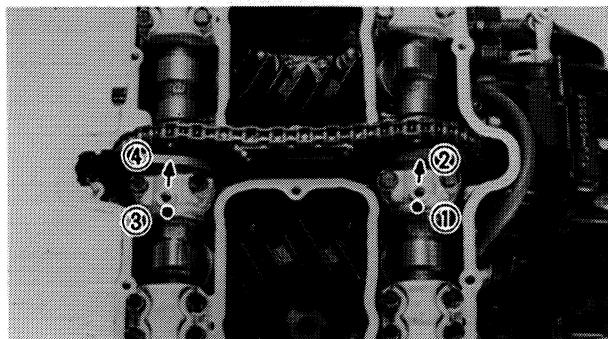
10. Force the intake sprocket clockwise (viewing from left side engine) to remove all cam chain slack.

11. Align:
- Intake sprocket hole
(with the intake camshaft thread hole)

NOTE:

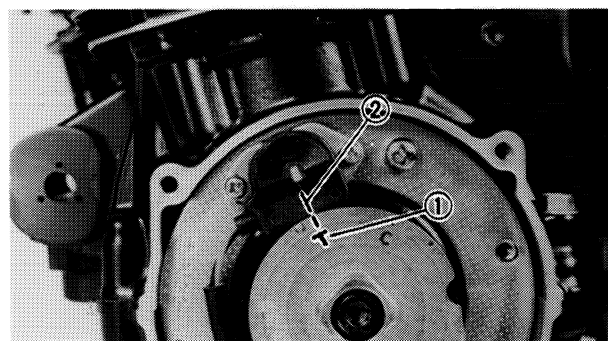
If the sprocket hole do not align with the camshaft thread hole, adjust chain links between exhaust and intake camshafts.

12. Install:
- Intake sprocket bolt
(temporarily tighten)



NOTE:

- Be sure the camshaft timing marks (① or ③) align with the cam cap arrow mark (② or ④).
- Be sure the "T" mark on the timing plate align with the upper pickup coil mark.

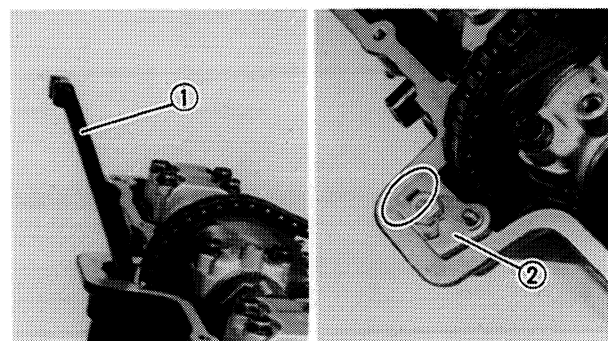


13. Rotate:

- Crankshaft
Counterclockwise

14. Align:

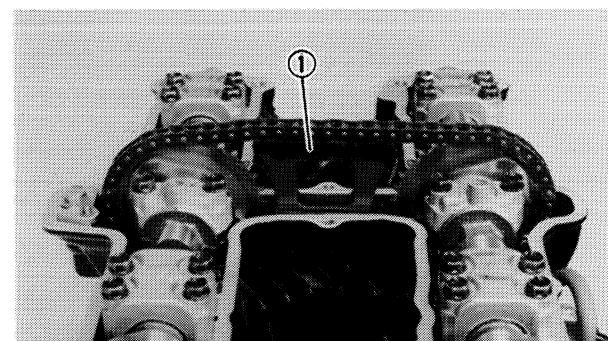
- Timing plate "T" mark ①
(with the upper pickup coil mark ②)



15. Install:

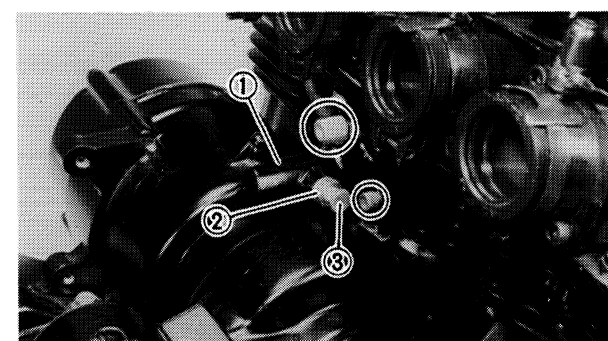
- Exhaust side chain guide ①
- Chain guide stopper ②
- Bolt
- Lock washer

16. Bend the lock washer tab against bolt flat.



17. Install:

- Upper chain guide ①



18. Install:

- Cam chain tensioner ①



10 Nm (1.0 m·kg, 7.2 ft·lb)

19. Loosen:

- Locknut ②
- Tensioner lock bolt ③



20. Tighten:

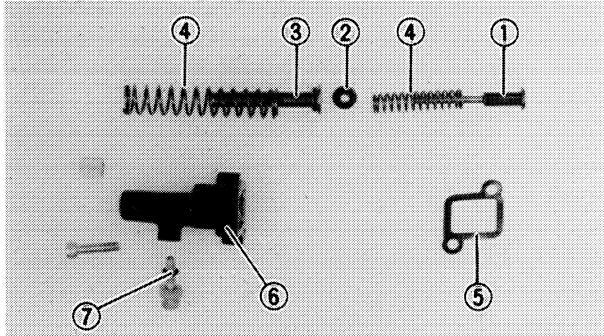
- Tensioner lock bolt
- Locknut

**Bolt:**

8 Nm (0.8 m•kg, 5.8 ft•lb)

Locknut:

9 Nm (0.9 m•kg, 6.5 ft•lb)

**Cam chain tensioner installation steps:**

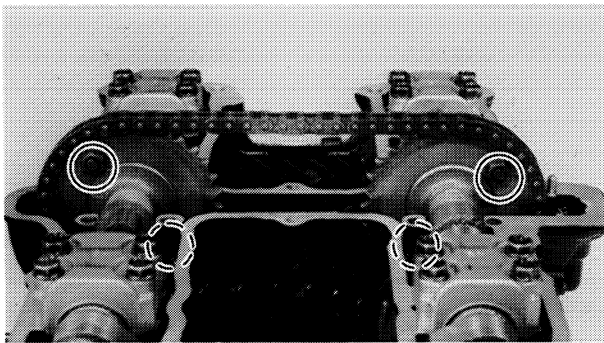
- Install the spring ④, large tensioner rod ③, damper ②, small spring ④, and small tensioner rod ① into the tensioner body ⑥.
- Push the tensioner rod assembly into the body.

NOTE:

Face the large rod surface to the lock bolt ⑦.

- Tighten lock bolt.
- Lock the locknut.

⑤ Gasket



21. Rotate:

- Crankshaft
- Counterclockwise

22. Install:

- Sprocket bolts (all)



24 Nm (2.4 m•kg, 18 ft•lb)

23. Adjust:

- Cam chain

Refer to "CHAPTER 2 – CAM CHAIN ADJUSTMENT" section.



24. Install:

- No. 3 intake cam cap
- No. 3 exhaust cam cap



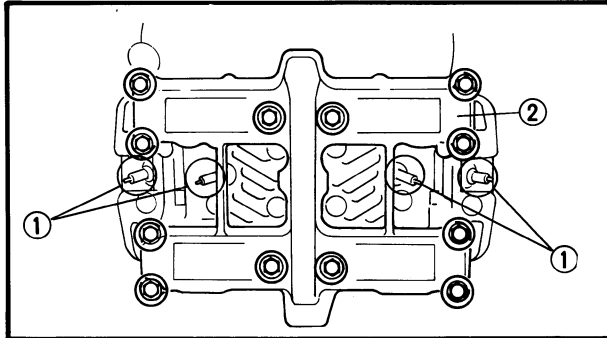
Bolts (Cam Cap):
10 Nm (1.0 m•kg, 7.2 ft•lb)

25. Install:

- Left crankcase cover



Screw:
10 Nm (1.0 m•kg, 7.2 ft•lb)



26. Install:

- Spark plug ①



17.5 Nm (1.75 m•kg, 12.7 ft•lb)

- Head cover gasket
- Head cover ②



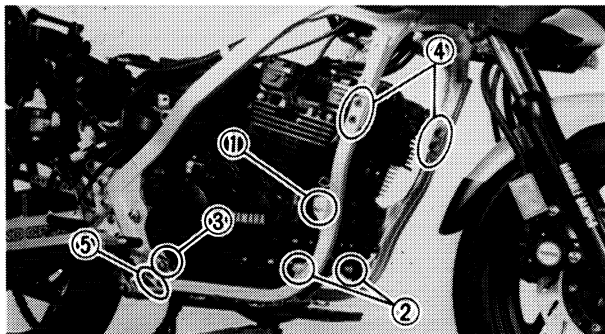
Bolt:
10 Nm (1.0 m•kg, 7.2 ft•lb)

REMounting ENGINE

Reverse the removal procedure. Note the following points.

1. Tighten:

- Engine mounting bolts



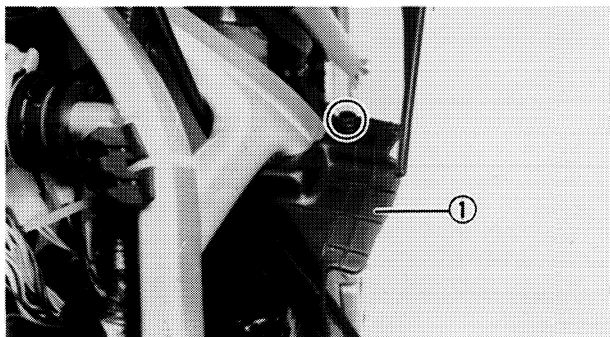
Front Upper Bolts ① :
42 Nm (4.2 m•kg, 30 ft•lb)

Front Lower Bolts ② :
42 Nm (4.2 m•kg, 30 ft•lb)

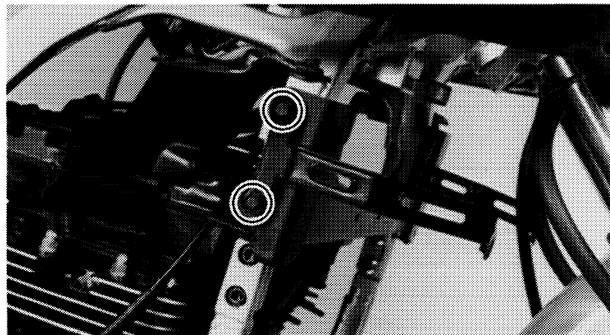
Rear Bolts ③ :
90 Nm (9.0 m•kg, 65 ft•lb)

Down Tube (Upper) ④ :
26 Nm (2.6 m•kg, 19 ft•lb)

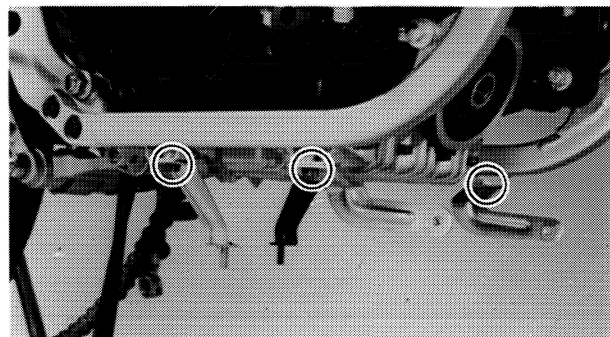
Down Tube (Lower) ⑤ :
40 Nm (4.0 m•kg, 29 ft•lb)



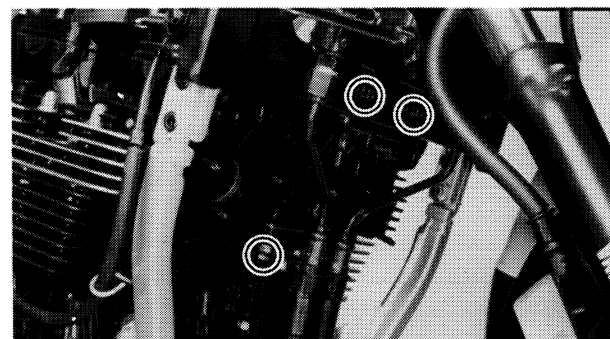
2. Tighten:
- Air duct ① (Right and left)



3. Tighten:
- Oil cooler stay



4. Tighten:
- Lower cowl stay

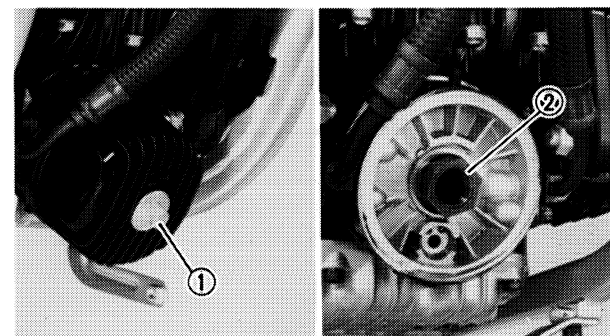


5. Tighten:



Oil Cooler:
10 Nm (1.0 m·kg, 7.2 ft·lb)

Hose Clamp:
10 Nm (1.0 m·kg, 7.2 ft·lb)



6. Tighten:



Spacer Nut ② :
50 Nm (5.0 m·kg, 36 ft·lb)

Oil Filter Bolt ① :
15 Nm (1.5 m·kg, 11 ft·lb)

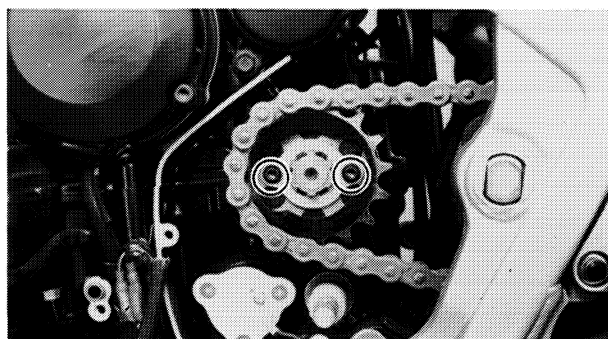


7. Install:

- Starter motor



Bolt (Starter Motor):
10 Nm (1.0 m·kg, 7.2 ft·lb)

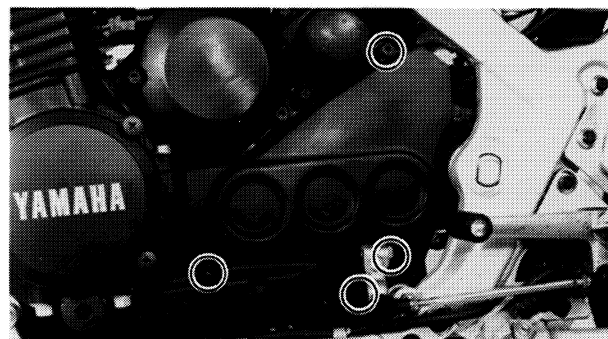


8. Install:

- Drive chain
- Drive sprocket



Bolts (Drive Sprocket):
10 Nm (1.0 m·kg, 7.2 ft·lb)

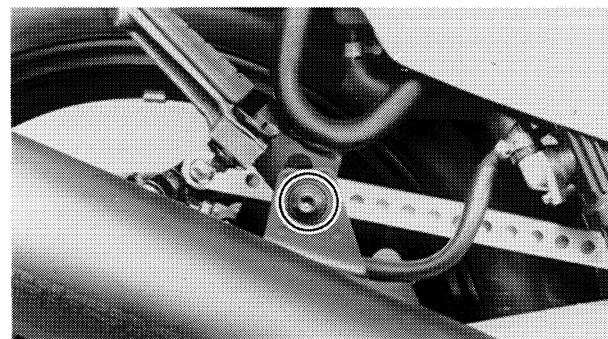


9. Install:

- Drive sprocket cover
- Change pedal link



Bolt (Change Pedal Link):
10 Nm (1.0 m·kg, 7.2 ft·lb)



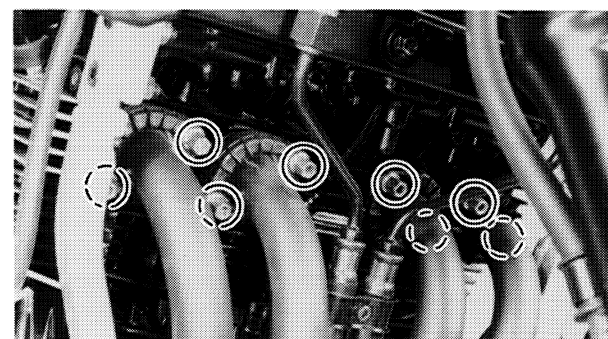
10. Install:

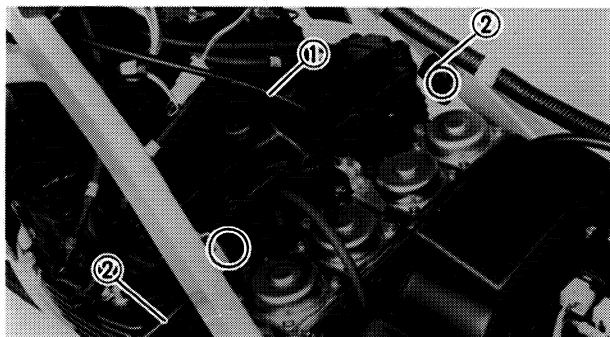
- Muffler



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

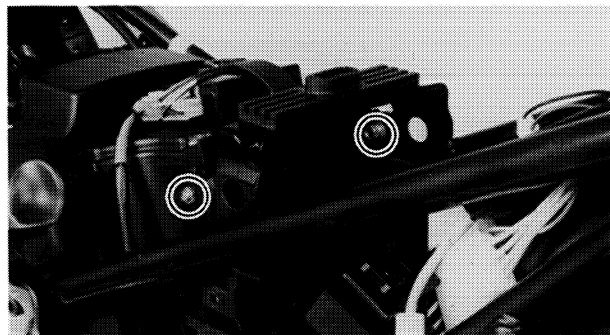
Bolts (Muffler):
25 Nm (2.5 m·kg, 18 ft·lb)





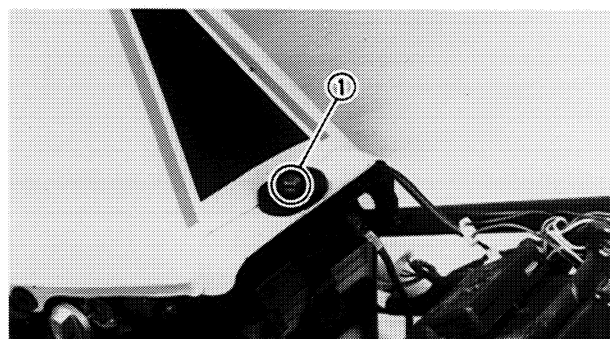
11. Install:

- Carburetor assembly
- Cowling stay ②
- Air bent hose
- Throttle cable ①



12. Install:

- Battery case



13. Install:

- Fuel tank

① Bolt (Fuel tank)

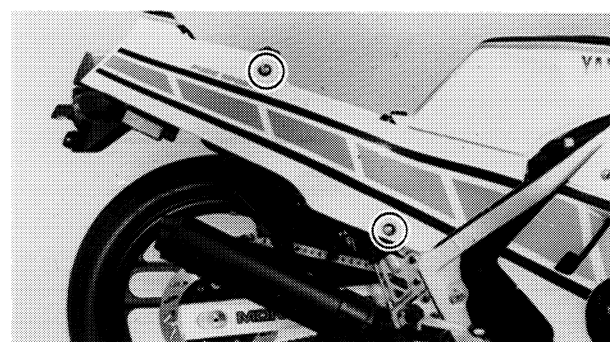
14. Install:

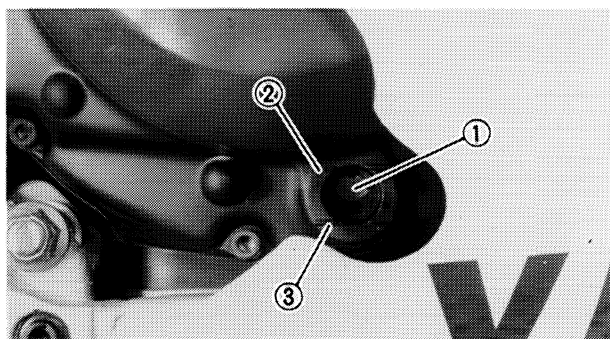
- Center cowls ①
- Lower cowls ②



15. Install:

- Side covers
- Seats





16. Fill:
- Crankcase



Recommended Oil:
Yamalube 4, SAE 20W40 Type
SE Motor oil or SAE 10W30
Type SE Motor oil

Refer to "CHAPTER 2—ENGINE OIL LEVEL INSPECTION" section.

- ① Level window
- ② Maximum mark
- ③ Minimum mark

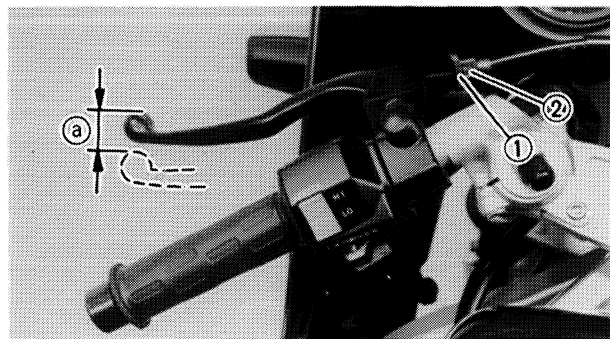


17. Adjust:
- Drive chain slack ①a



Drive Chain Slack:
20 ~ 30 mm (0.8 ~ 1.2 in)

Refer to "CHAPTER 2—DRIVE CHAIN SLACK ADJUSTMENT" section.



18. Adjust:
- Clutch lever free play ①a



Free Play:
8 ~ 12 mm (0.3 ~ 0.5 in)

Refer to "CHAPTER 2—CLUTCH LEVER FREE PLAY ADJUSTMENT" section.

- ① Locknut
- ② Adjuster

19. Adjust:
- Idle speed



1,150 ~ 1,250 r/min

Refer to "CHAPTER 2—IDLE SPEED ADJUSTMENT" section.

CHAPTER 4

CARBURETION

CARBURETOR

SECTION VIEW

REMOVAL

DISASSEMBLY

INSPECTION

ASSEMBLY

INSTALLATION

ADJUSTMENT

4-1

4-2

4-3

4-5

4-7

4-8

4-9

4-10

AIR CLEANER AND CRANKCASE VENTILATION SYSTEM

4-13



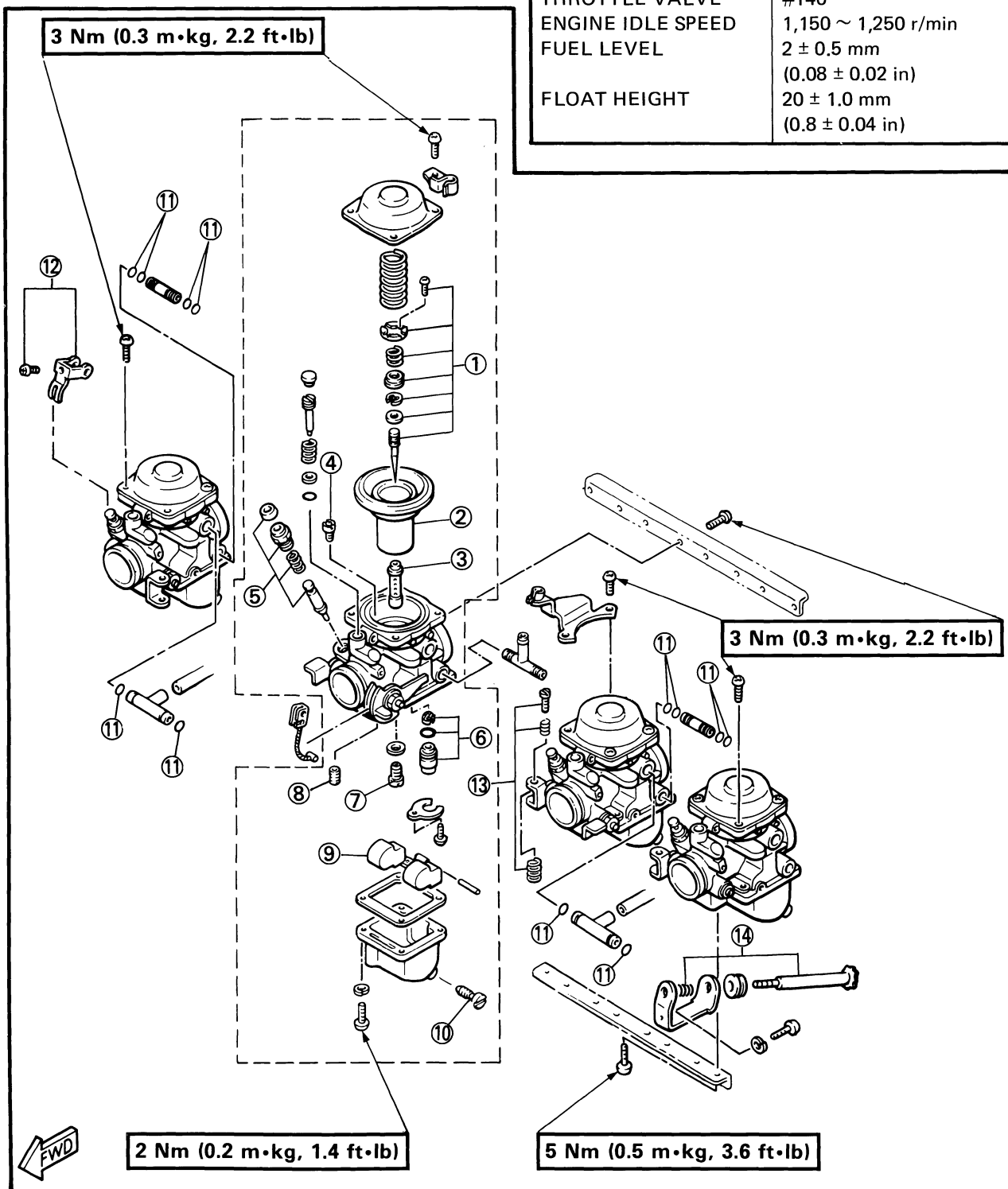
CARBURETION

CARBURETOR

- | | |
|-----------------------|-----------------------|
| ① Jet needle set | ⑧ Pilot jet |
| ② Throttle valve | ⑨ Float |
| ③ Main nozzle | ⑩ Drain screw |
| ④ Pilot air jet | ⑪ O-ring |
| ⑤ Starter plunger set | ⑫ Starter lever |
| ⑥ Valve seat set | ⑬ Synchronizing screw |
| ⑦ Main jet | ⑭ Throttle stop screw |

SPECIFICATIONS

MAIN JET	#107.5
MAIN AIR JET	#140
PILOT JET	#30
PILOT AIR JET	#135
JET NEEDLE	4CHP2
PILOT SCREW	PRESET
THROTTLE VALVE	#140
ENGINE IDLE SPEED	1,150 ~ 1,250 r/min
FUEL LEVEL	2 ± 0.5 mm (0.08 ± 0.02 in)
FLOAT HEIGHT	20 ± 1.0 mm (0.8 ± 0.04 in)



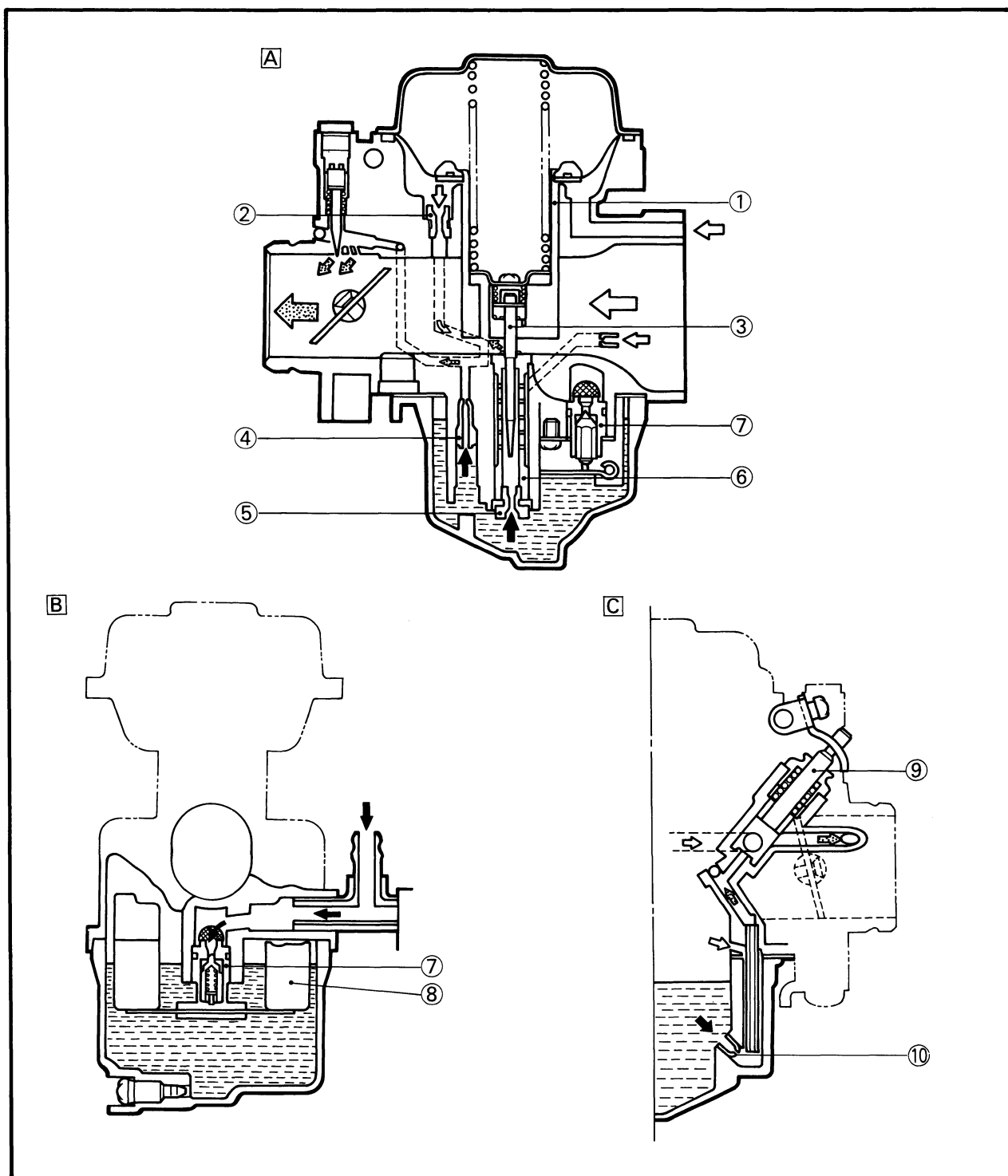


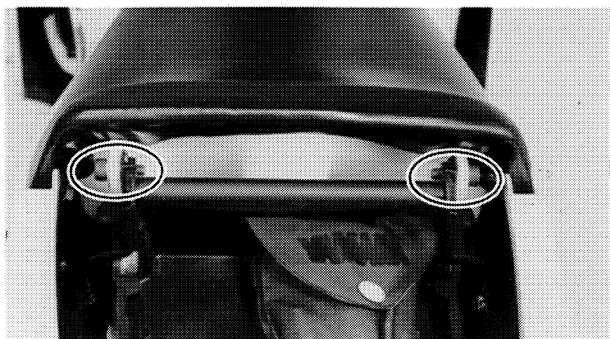
SECTION VIEW

- ① Throttle valve
- ② Pilot air jet
- ③ Jet needle
- ④ Pilot jet
- ⑤ Main jet
- ⑥ Main nozzle
- ⑦ Valve seat
- ⑧ Float
- ⑨ Starter plunger
- ⑩ Starter jet

- A** Main metering system
- B** Float system
- C** Starter system

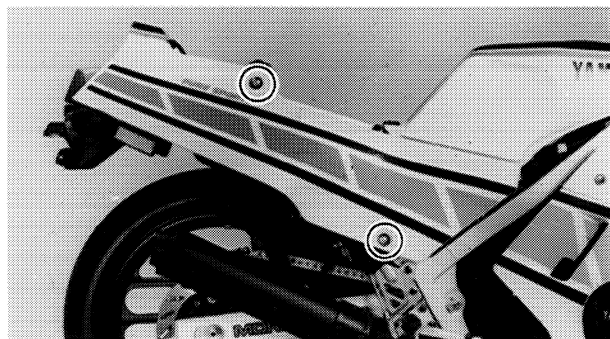
- ← Air
- ← Fuel
- ← Mixture



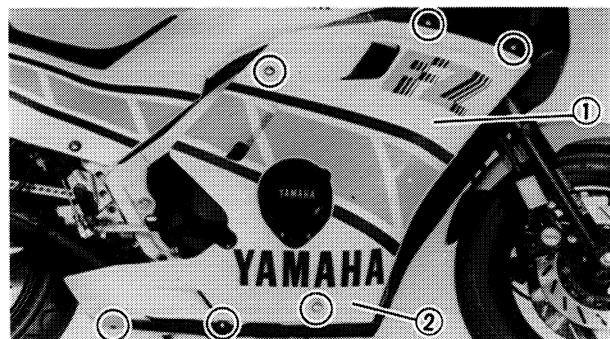


REMOVAL

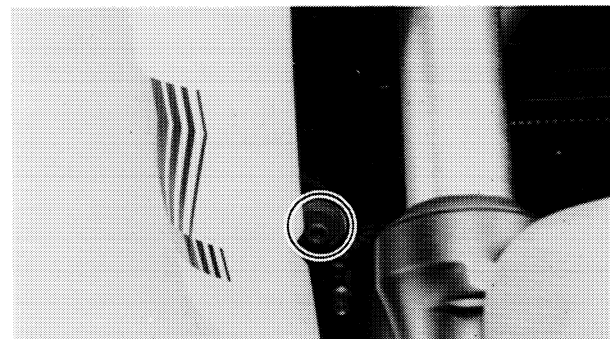
1. Turn the fuel cock to "ON" position.
2. Remove:
 - Passenger seat
 - Rider seat



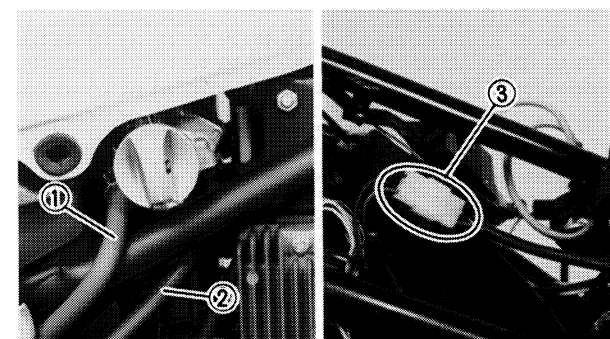
3. Remove:
 - Side covers (Right and left)
 Remove side cover downward.

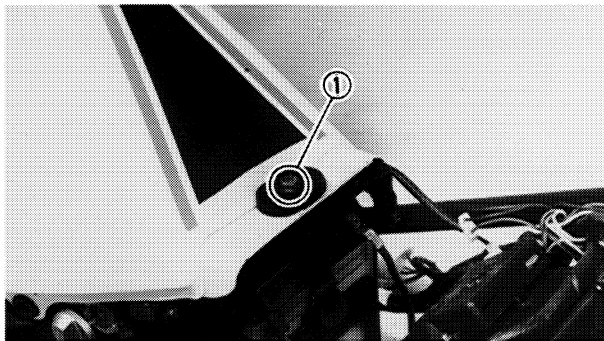


4. Remove:
 - Center cowls (Right and left) ①
 - Lower cowls (Right and left) ②

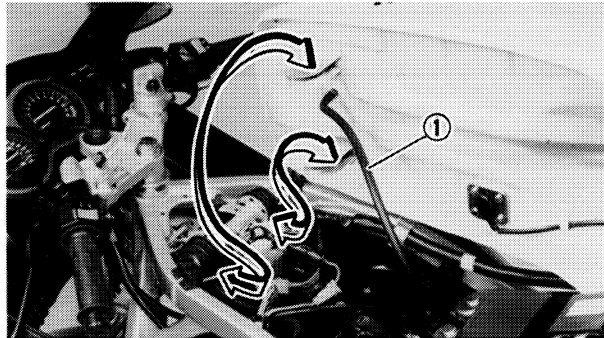


5. Disconnect:
 - Fuel pipe ①
 - Vacuum pipe ②
 - Fuel gauge lead ③

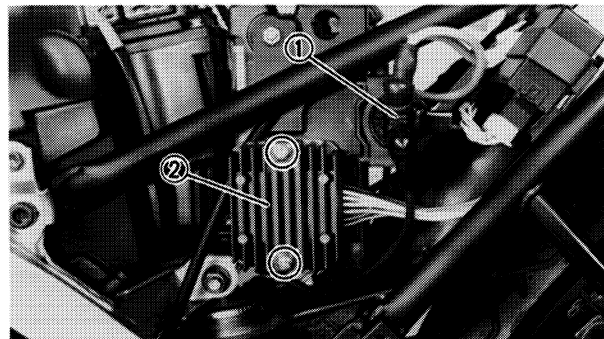




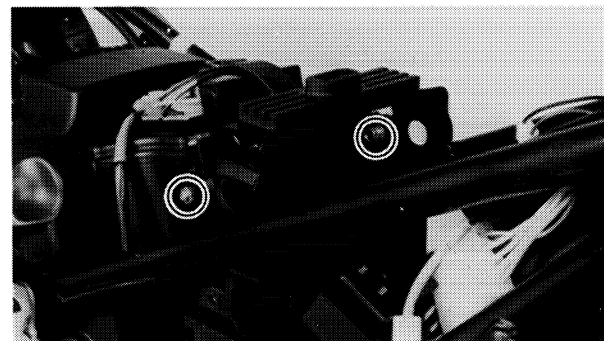
6. Remove:
- Bolt ①
 - Fuel tank



7. Disconnect:
- Fuel tank breather pipe ①



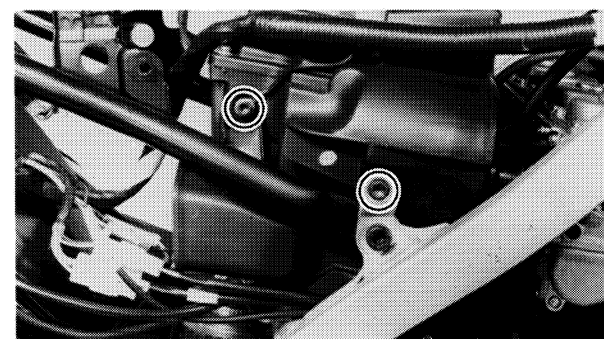
8. Remove:
- Starter relay ①
 - Rectifier/Regulator ②



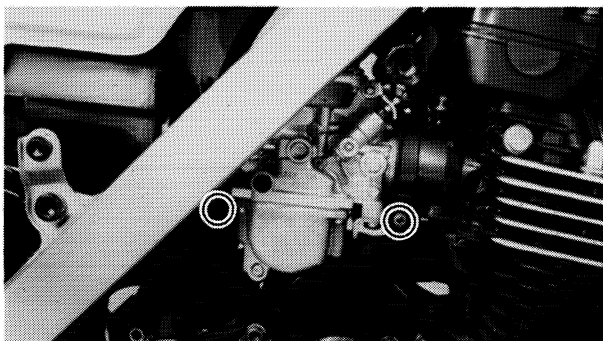
9. Remove:
- Battery
 - Battery case

CAUTION:

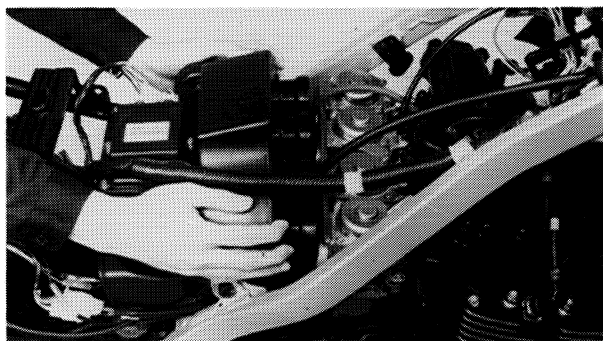
Disconnect the negative lead first, and then disconnect the positive lead.



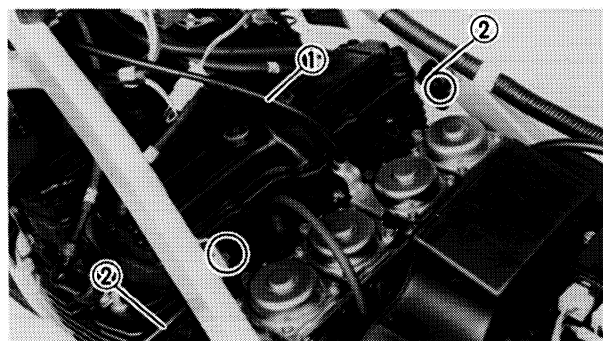
10. Remove:
- Bolt (Air cleaner case)



11. Loosen:
 - Screws (Carburetor joint)



12. Slide the air cleaner case backward.



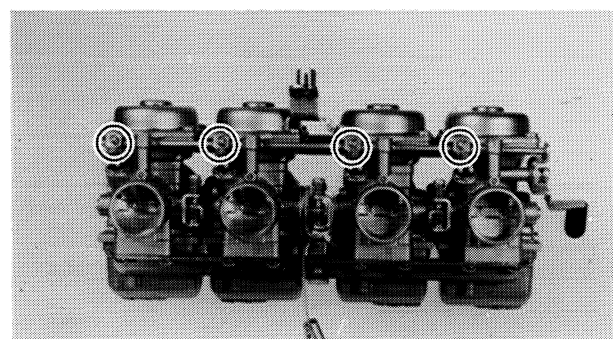
13. Remove:
 - Throttle cable ①
 - Air bent hose
 - Cowling stay ②
 - Carburetor assembly

DISASSEMBLY

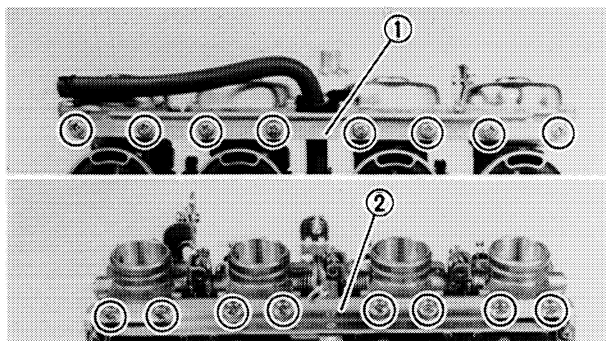
NOTE: _____

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

- Throttle valve
 - Starter plunger
 - Float chamber components
-

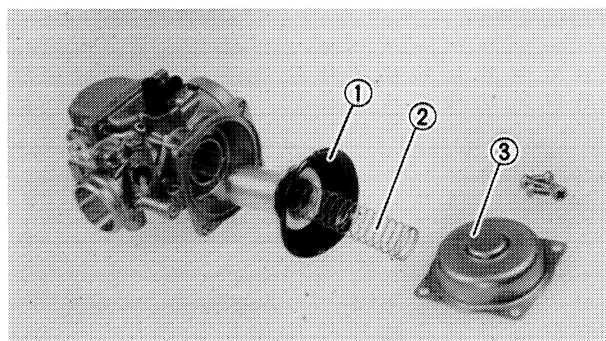


1. Remove:
 - Starter lever shaft



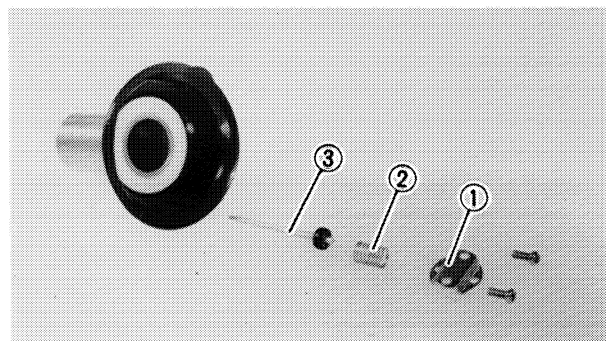
2. Remove:

- Upper bracket ①
- Lower bracket ②



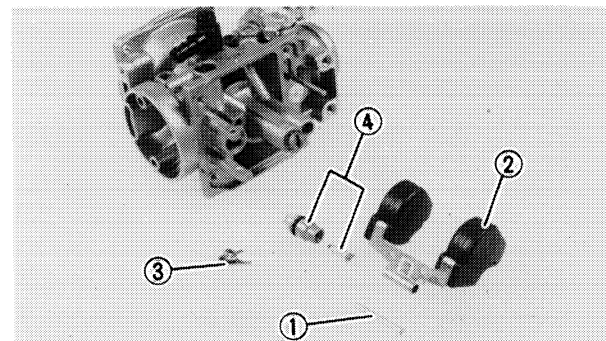
3. Remove:

- Vacuum chamber cover ①
- Spring ②
- Throttle valve assembly ③



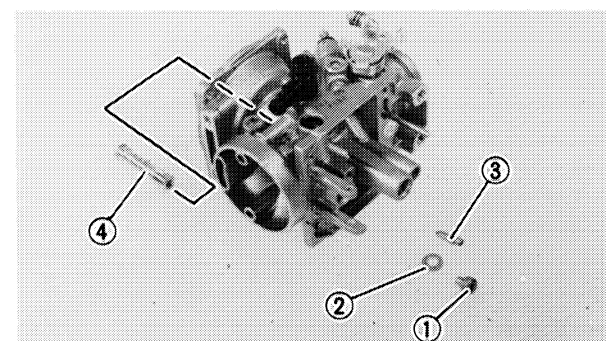
4. Remove:

- Jet needle cover ①
- Spring ②
- Jet needle ③



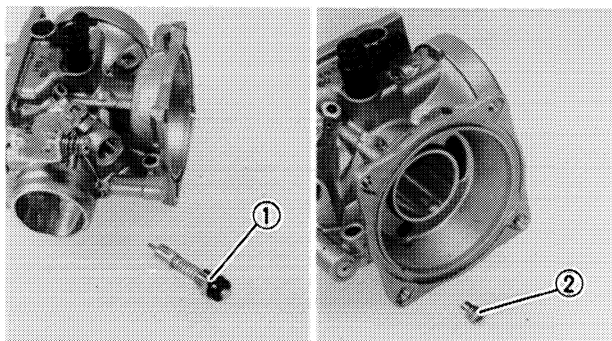
5. Remove:

- Float chamber cover
- Gasket
- Float pin ①
- Float ②
- Valve seat plate ③
- Valve seat assembly ④



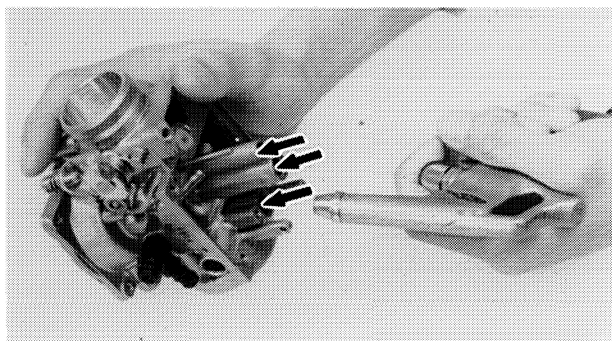
6. Remove:

- Main jet ①
- Washer ②
- Pilot jet ③
- Main nozzle ④



7. Remove:

- Starter plunger ①
- Pilot air jet ②



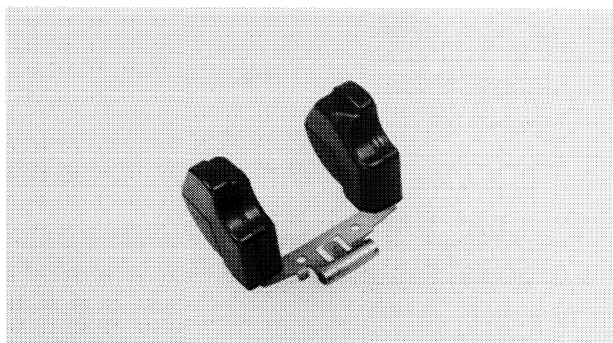
INSPECTION

1. Inspect:

- Carburetor body
 - Fuel passage
- Contamination → Clean as indicated.

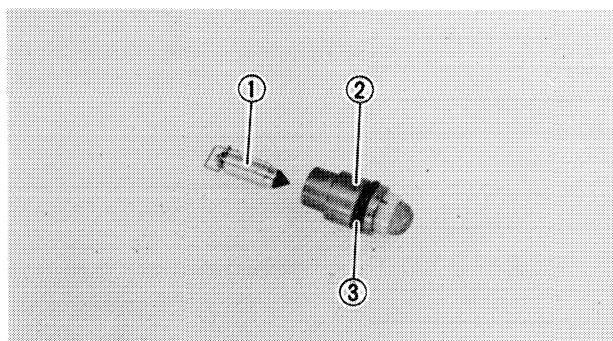
Carburetor cleaning steps:

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



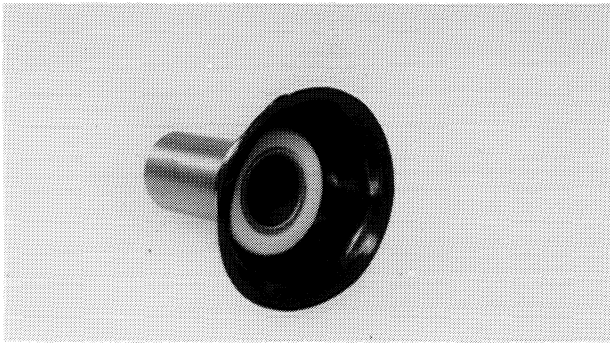
2. Inspect:

- Floats
- Damage → Replace.



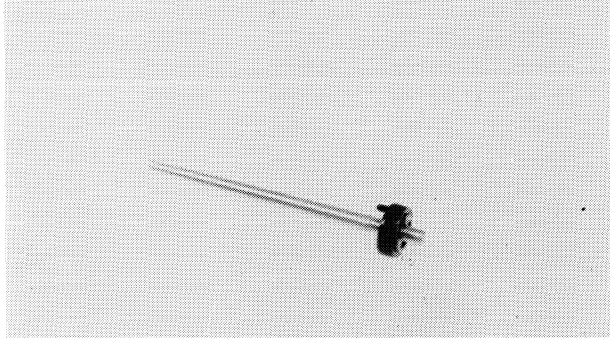
3. Inspect:

- Float needle valve ①
 - Seat ②
 - O-ring ③
- Damage/Wear/Contamination → Replace as a set.



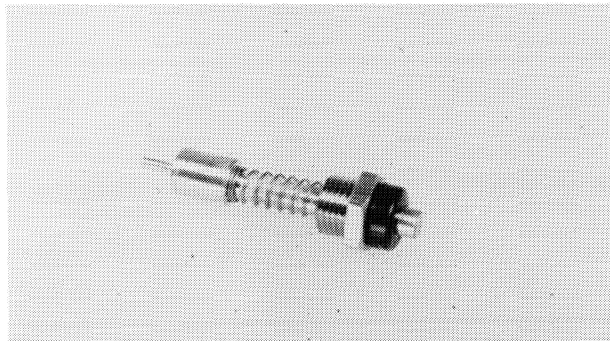
4. Inspect:

- Throttle valve
Scratches → Replace.
- Rubber diaphragm
Tears → Replace.



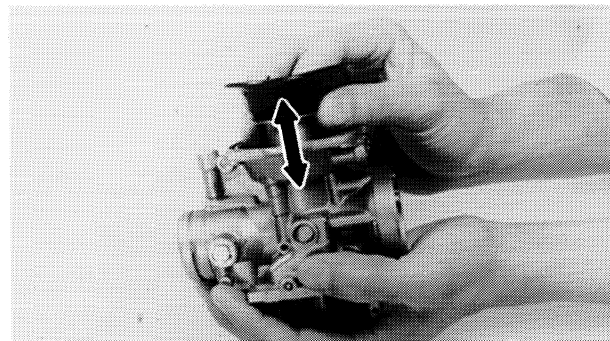
5. Inspect:

- Jet needle
Bends/Wear → Replace.



6. Inspect:

- Starter plunger
Wear/Damage → Replace.



7. Check:

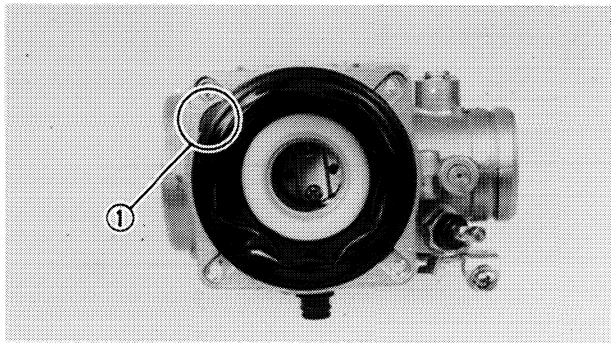
- Free movement
Insert the throttle valve into the carburetor body, and check for free movement.
Stick → Replace.

ASSEMBLY

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

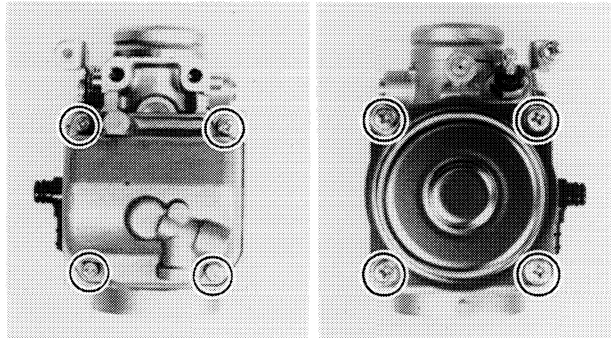
CAUTION:

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




1. Install:
 - Throttle valve

NOTE: _____
 Note position of tab ① on diaphragm. This tab must be placed in the cavity of the carburetor body during reassembly.

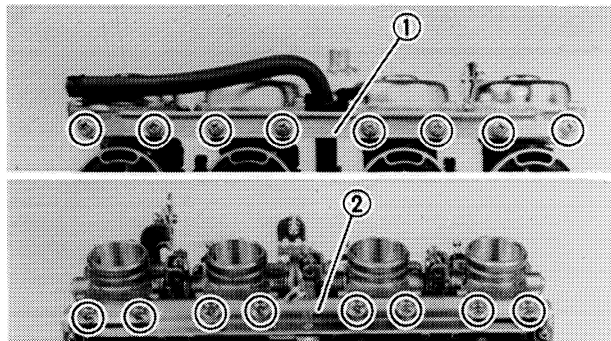


2. Install:
 - Float chamber cover
 - Vacuum chamber cover




Screw (Float Chamber Cover):
 2 Nm (0.2 m•kg, 1.4 ft•lb)

Screw (Vacuum Chamber Cover):
 3 Nm (0.3 m•kg, 2.2 ft•lb)

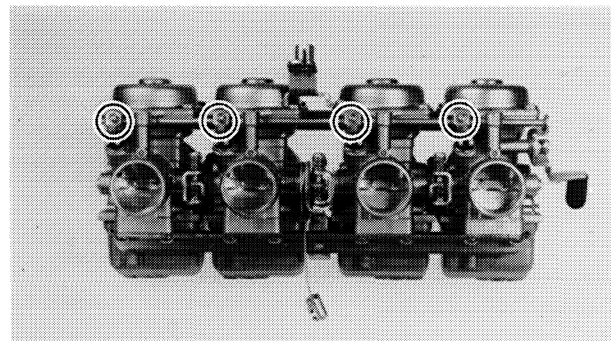


3. Install:
 - Upper bracket ①
 - Lower bracket ②




Screw (Upper Bracket):
 3 Nm (0.3 m•kg, 2.2 ft•lb)

Screw (Lower Bracket):
 5 Nm (0.5 m•kg, 3.6 ft•lb)



4. Install:
 - Starter lever shaft



Screw (Starter Lever Shaft):
 3 Nm (0.3 m•kg, 2.2 ft•lb)

Apply LOCTITE®.

INSTALLATION

1. Install:
 - Carburetor assembly

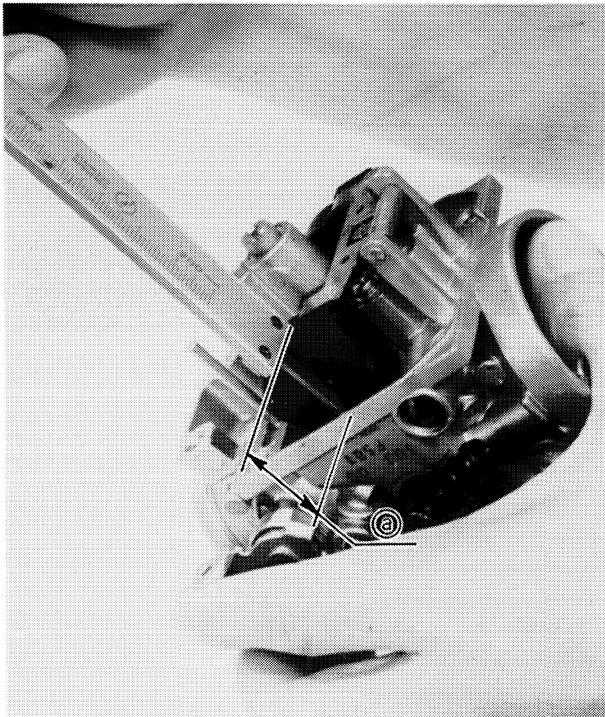
Reverse the removal procedure.

ADJUSTMENT**NOTE:** _____

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

CAUTION: _____

The pilot screw settings are adjusted for maximum performance at the factory. Any attempt to change these settings will decrease engine performance.

**Float Height Adjustment****1. Measure:**

- Float height (a)

Out of specification → Adjust it by the following adjustment steps.

**Float Height:**

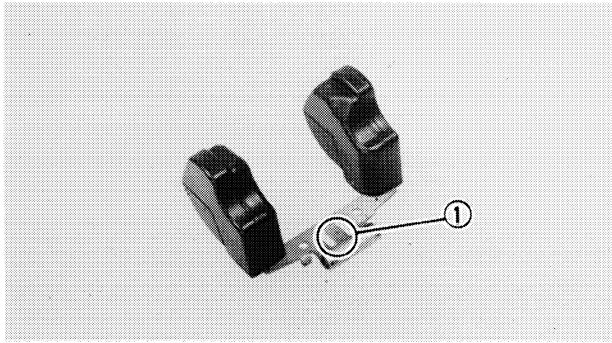
20.0 ± 1.0 mm (0.8 ± 0.04 in)

Float height measurement steps:

- Hold the carburetor in an upside down position.
- Incline the carburetor at $60 \sim 70^\circ$ (so that the end of the float valve does not hang down as a result of float weight).
- Measure the distance from the mating surface of the float chamber (gasket removed) to the top of the float.

NOTE: _____

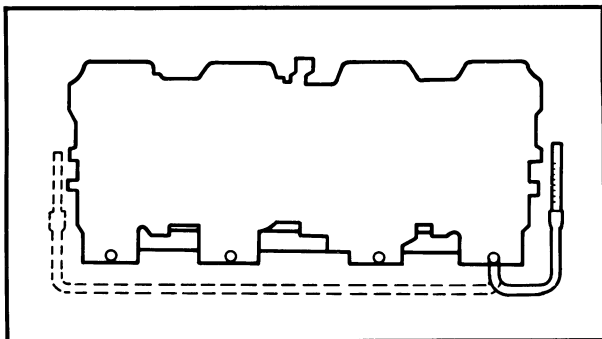
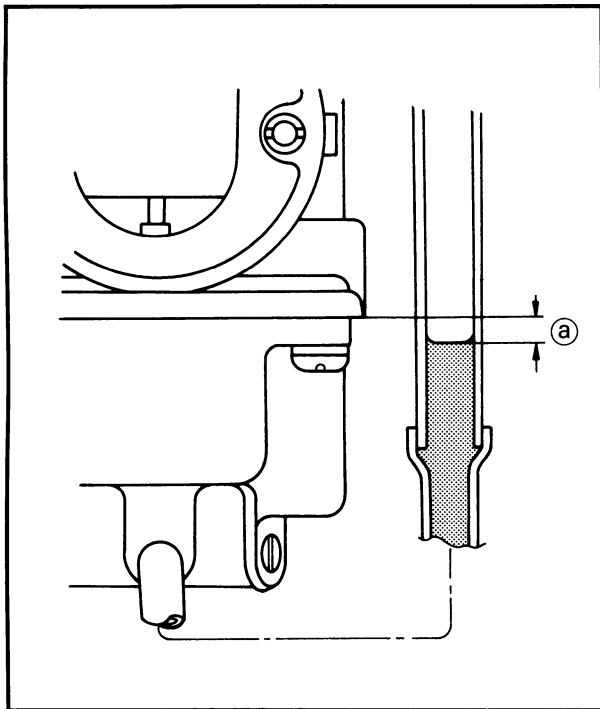
The float should be just resting on, but not depressing, the spring loaded inlet needle.



2. Adjust:
 - Float height

Float height adjustment steps:

- Remove the float, valve seat and the needle valve.
- Inspect the valve seat and the needle valve. If either is worn, replace as a set.
- If both are fine, adjust the float height by bending the float tang ①.
- Recheck the float height.


Fuel Level Adjustment

1. Measure:
 - Fuel level ①
 Out of specification → Adjust it by the following adjustment steps.


Fuel Level ①:

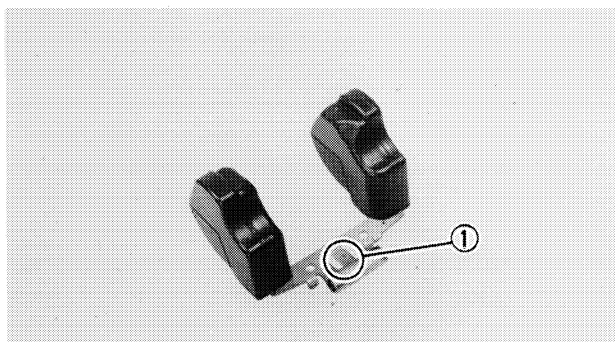
2.0 ± 0.5 mm (0.08 ± 0.02 in)
Below the Carburetor Body Edge.

Fuel level measurement steps:

- Place the motorcycle on the level place.
- Install the Fuel Level Gauge Adapter (YM-01329) to the drain hole of the carburetor.
- Connect the Fuel Level Gauge (YM-01312) to the Adapter.
- Place the Gauge vertically next to the center of the mating line of the mixing body and float chamber cover.
- Loosen the drain screw.
- Warm up the engine, then shut it off after a few minutes.
- Measure the fuel level. It should be within the specified range.

NOTE:

Fuel level readings of both side of carburetor line should be equal.



2. Adjust:
- Fuel level

Fuel level adjustment steps:

- Remove the carburetor assembly.
Refer to "REMOVAL" section.
- Remove the float, valve seat and the needle valve.
- Inspect the valve seat and the needle valve.
If either is worn, replace as a set.
- If both are fine, adjust the float height by bending the float tang ①.
- Recheck the fuel level.

AIR CLEANER AND CRANKCASE VENTILATION SYSTEM

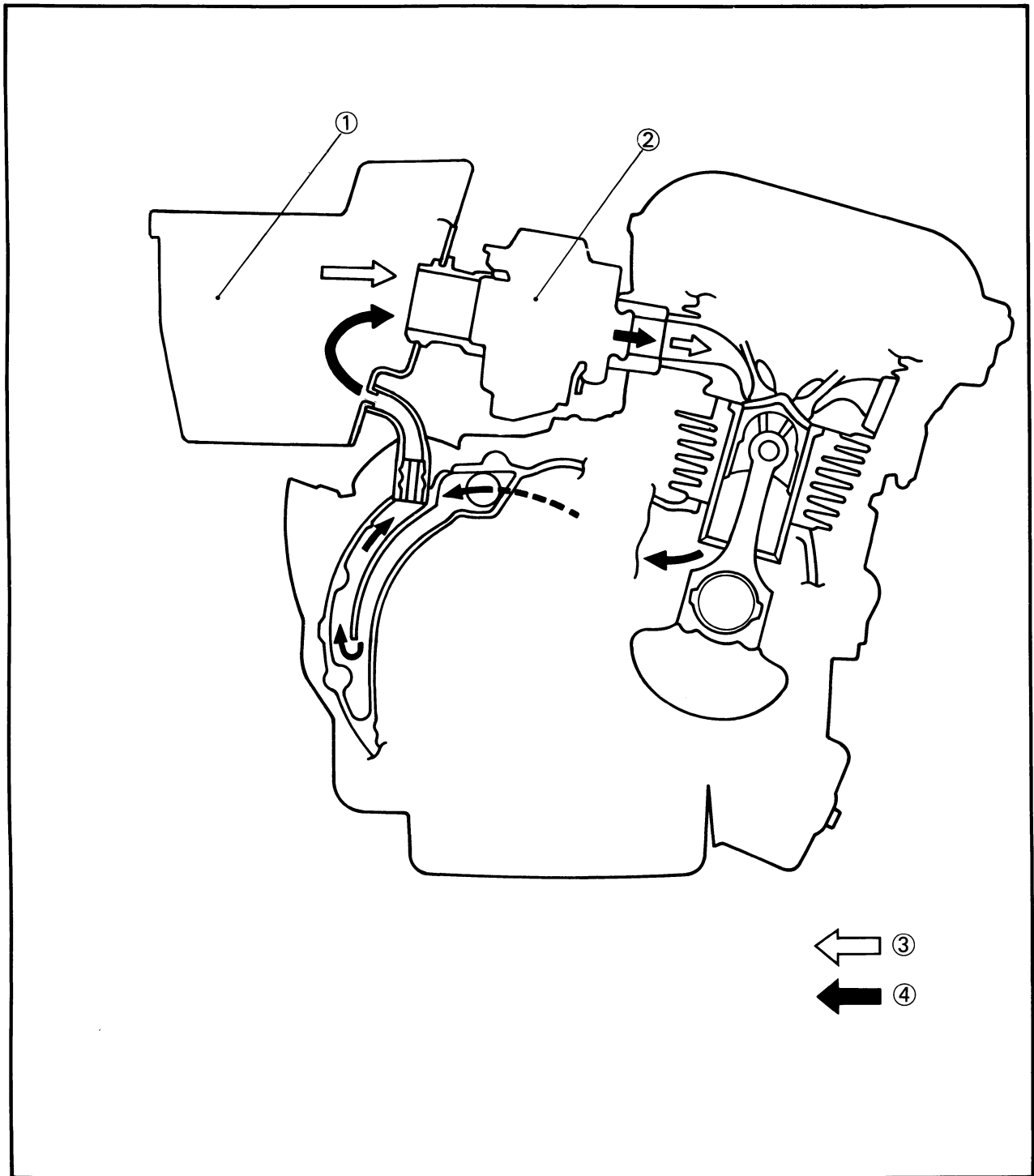
Refer to “CHAPTER2—AIR CLEANER CLEAN-ING” for air cleaner maintenance.

- ① Air cleaner

② Carburetor

③ Fresh air

④ Blow by gas



CHAPTER 5.

CHASSIS

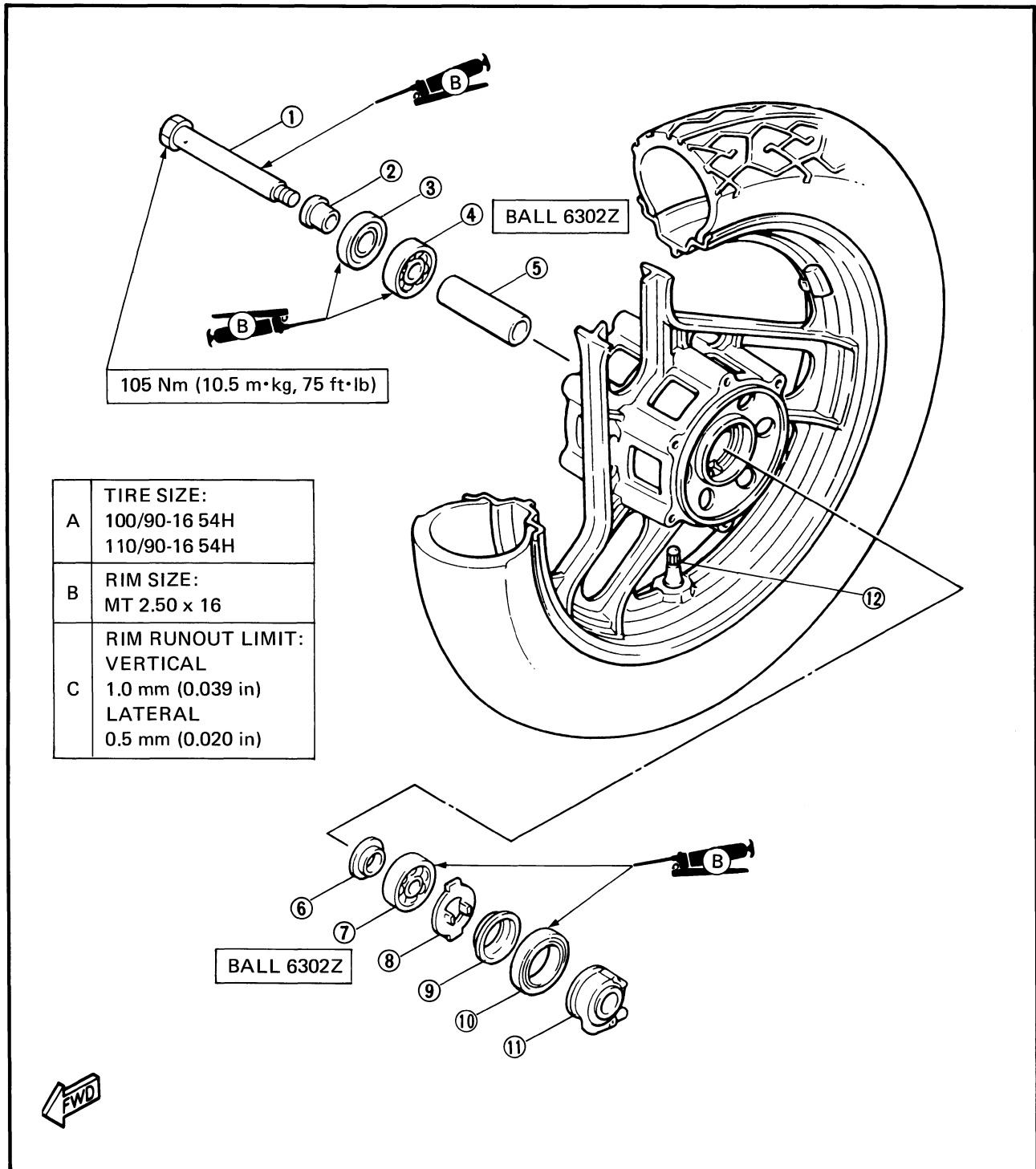
FRONT WHEEL	5-1
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INSTALLATION	5-5
REAR WHEEL	5-7
REMOVAL	5-8
INSPECTION	5-9
INSTALLATION	5-9
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BRAKE PAD REPLACEMENT	5-13
CALIPER DISASSEMBLY	5-14
INSPECTION	5-15
INSTALLATION	5-15
MASTER CYLINDER DISASSEMBLY	5-16
INSPECTION	5-17
INSTALLATION	5-18
AIR BLEEDING	5-19
REAR BRAKE	5-20
BRAKE PAD REPLACEMENT	5-22
CALIPER DISASSEMBLY	5-23
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REAR SHOCK ABSORBER	5-41
REMOVAL	5-42
INSPECTION	5-44
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 SWINGARM AND DRIVE CHAIN	5-46
REMOVAL	5-47
INSPECTION	5-49
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CHASSIS

FRONT WHEEL

- | | |
|-----------------|----------------------|
| ① Front axle | ⑦ Bearing |
| ② Collar | ⑧ Meter clutch |
| ③ Oil seal | ⑨ Clutch retainer |
| ④ Bearing | ⑩ Oil seal |
| ⑤ Spacer | ⑪ Gear unit assembly |
| ⑥ Flange spacer | ⑫ Front wheel |

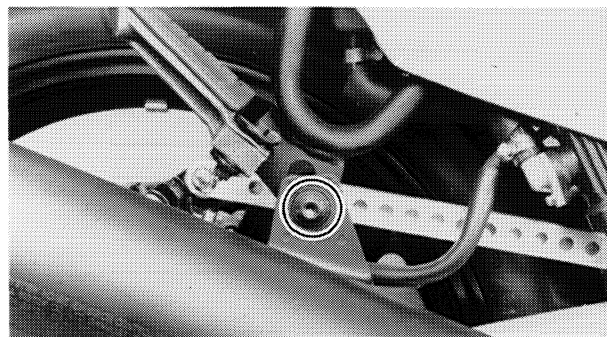
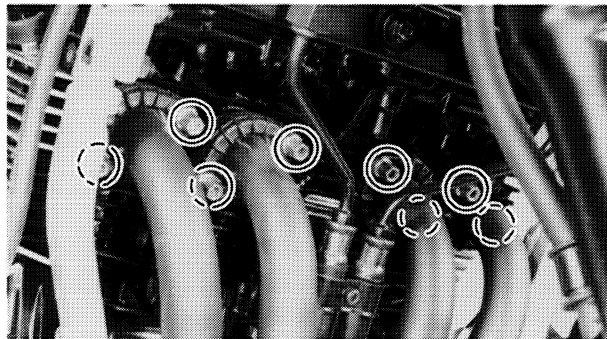
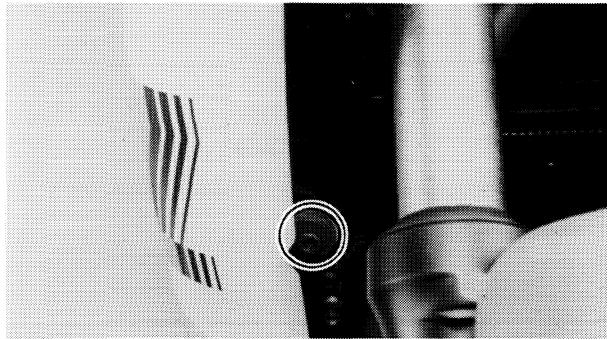


REMOVAL

1. Place the motorcycle on a level place.

WARNING:

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



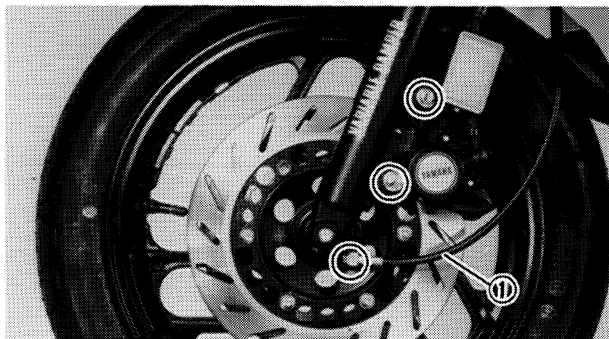
2. Remove:

- Center cowls (Right and left) ①
- Lower cowls (Right and left) ②

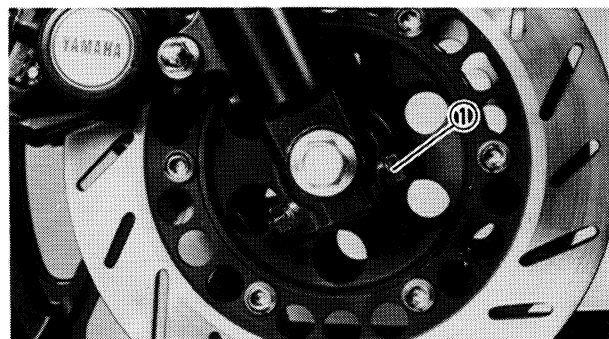
3. Remove:

- Muffler
- Lower cowl stays

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

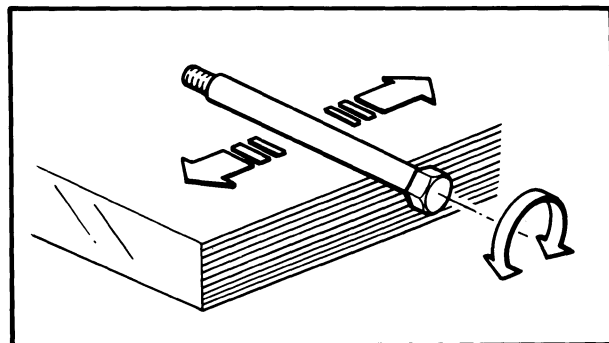


5. Remove:
 - Speedometer cable ①
 - Brake caliper (Left and right)



6. Loosen:
 - Pinch bolt ①
7. Remove:
 - Axle
 - Front wheel

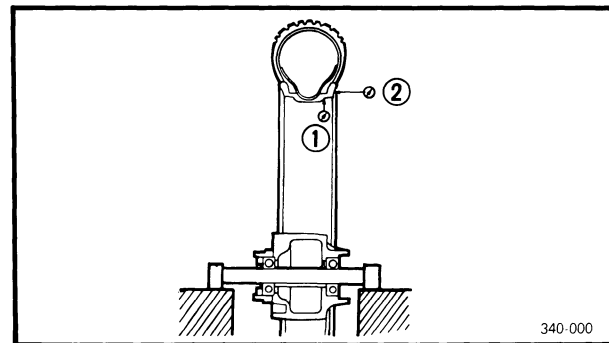
NOTE: _____
Do not depress the brake lever when the wheel is off the motorcycle otherwise the brake pads will be forced shut.




INSPECTION

1. Eliminate any corrosion from parts.
2. Inspect:
 - Front axle
 Roll the axle on a flat surface.
Bends → Replace.

WARNING: _____
Do not attempt to straighten a bent axle.



3. Measure:
 - Wheel runout
 Out of specification → Check the wheel and the bearing play.



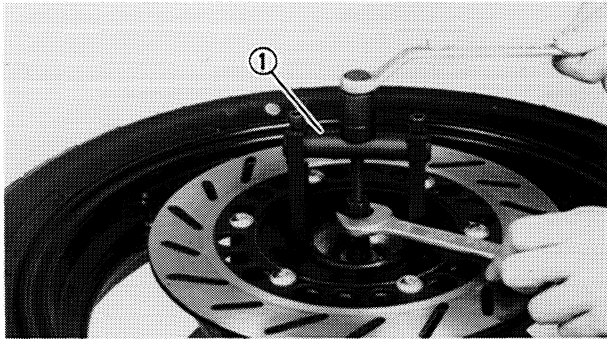
Rim Runout Limits:
 Radial ① : 1.0 mm (0.039 in)
 Lateral ② : 0.5 mm (0.020 in)

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

5. Check:

•Wheel bearings

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



Wheel bearing replacement steps:

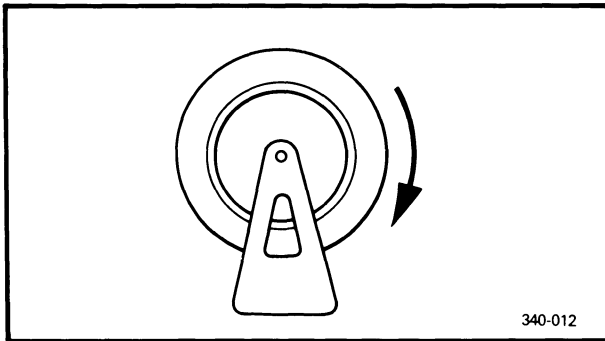
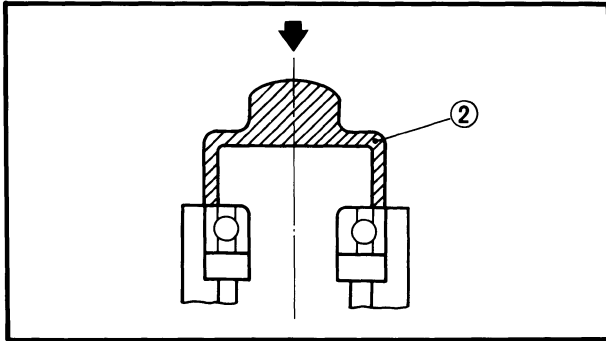
- Clean the out side of the wheel hub.
- Remove the bearing using a general bearing puller ① .
- Install the new bearing.

NOTE:

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

CAUTION:

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



340-012

6. Check:

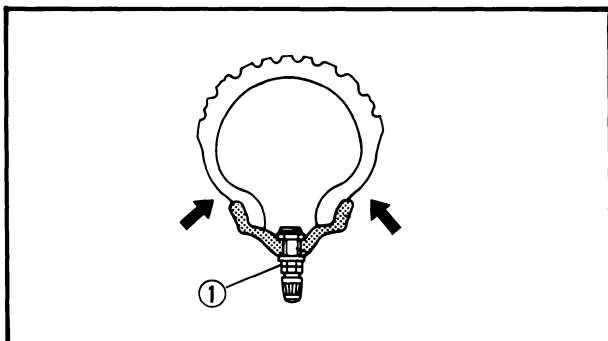
•Wheel balance

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 wheel with brake disc installed.

**WARNING:**

- After mounting a tire, ride conservatively to allow proper tire to rim seating. Failure to do so may cause an accident resulting in motorcycle damage and possible operator injury.
- After a tire repair or replacement, be sure to torque tighten the valve stem locknut ① to specification.



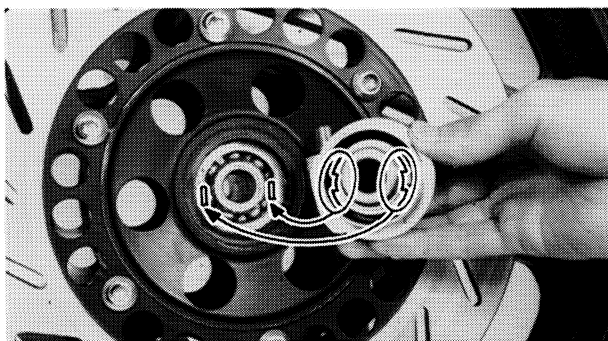
Valve-Stem Locknut:
1.5 Nm (0.15 m·kg, 1.1 ft·lb)

INSTALLATION

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

1. Apply:

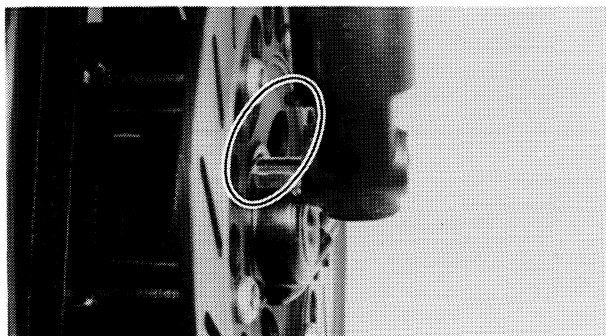
- Lithium base grease
Lightly grease to the oil seal and gear unit.

**2. Install:**

- Gear unit assembly

NOTE:

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

**3. Install:**

- Front wheel assembly

NOTE:

Be sure the boss on the outer fork tube correctly engages with the locating slot on the gear unit assembly.



4. Tighten:

- Axle nut

**105 Nm (10.5 m·kg, 75 ft·lb)**

- Bolts (Brake caliper)

**35 Nm (3.5 m·kg, 25 ft·lb)**

- Pinch bolt

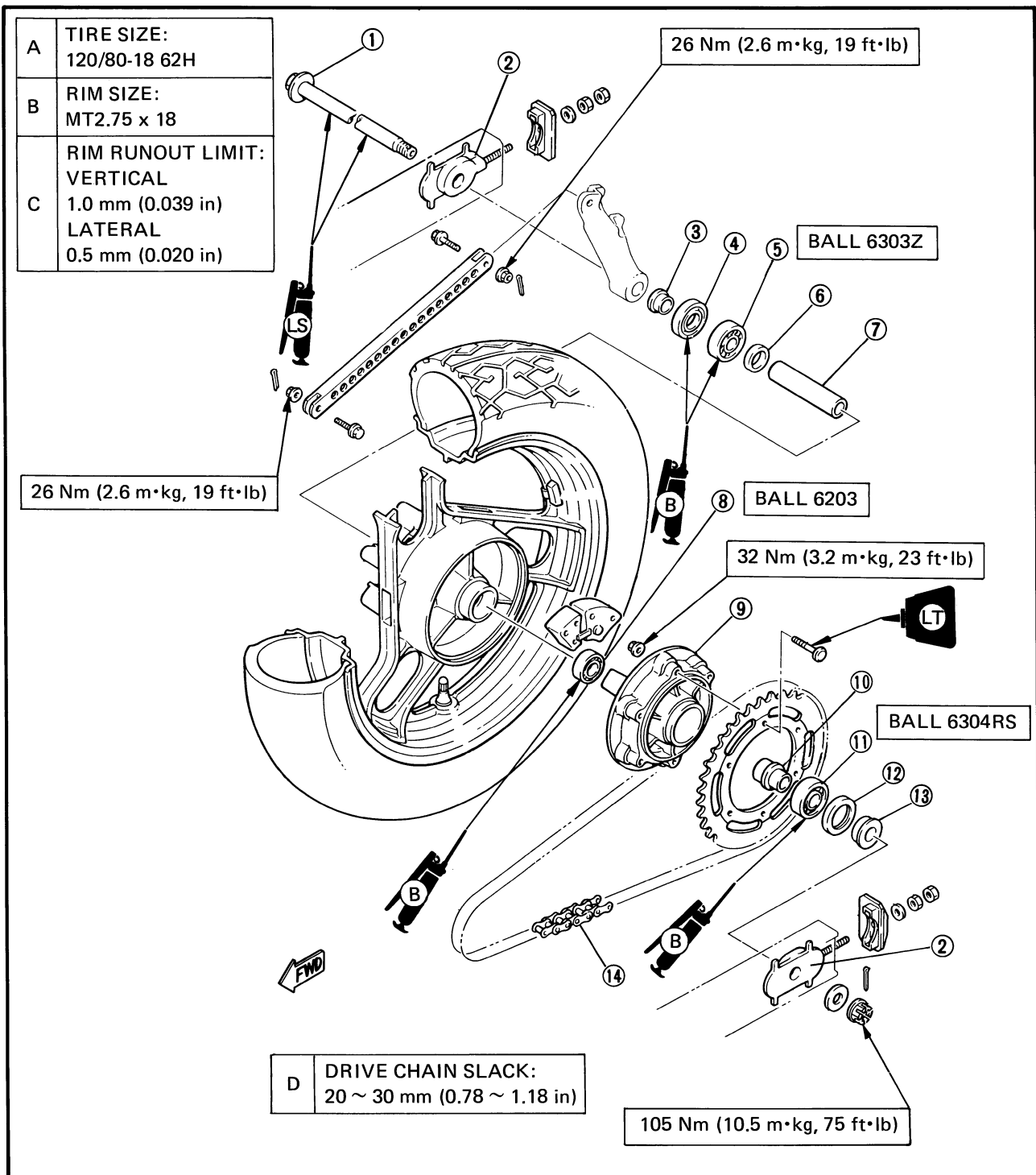
**20 Nm (2.0 m·kg, 14 ft·lb)**

- Muffler

**Nuts (Exhaust Pipe):****10 Nm (1.0 m·kg, 7.2 ft·lb)****Bolt (Muffler):****25 Nm (2.5 m·kg, 18 ft·lb)**

REAR WHEEL

- | | |
|-----------------|---------------|
| ① Rear axle | ⑧ Bearing |
| ② Chain puller | ⑨ Clutch hub |
| ③ Collar | ⑩ Collar |
| ④ Oil seal | ⑪ Bearing |
| ⑤ Bearing | ⑫ Oil seal |
| ⑥ Spacer flange | ⑬ Collar |
| ⑦ Spacer | ⑭ Drive chain |



REMOVAL

1. Place the motorcycle on a level place.

WARNING:

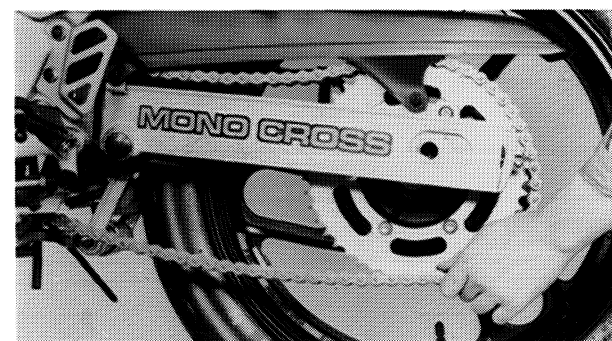
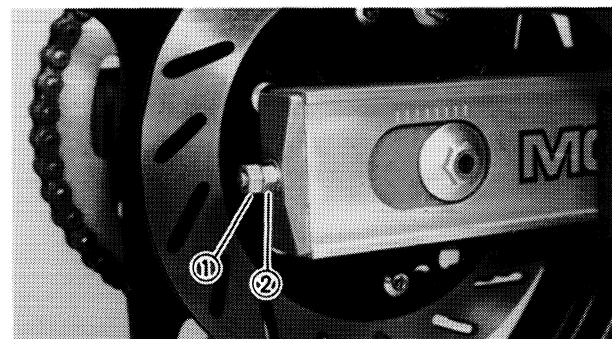
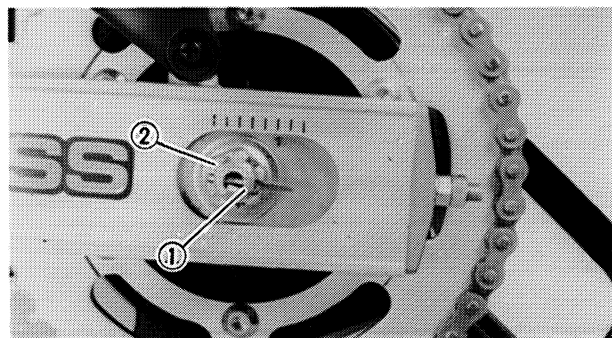
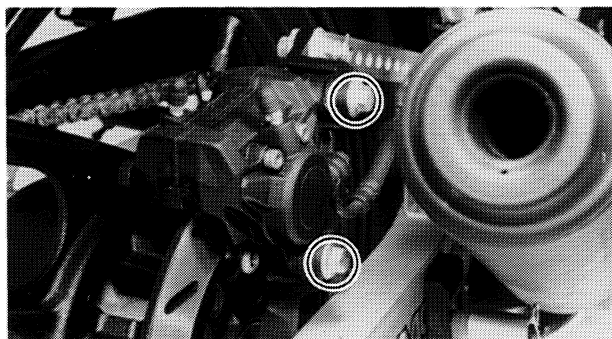
Support the motorcycle securely so there is no danger of it falling over.

2. Elevate the rear wheel by placing a suitable stand under the rear arm.

3. Remove:
 - Brake caliper

NOTE:

Do not depress the brake pedal when the disc is off the caliper as the brake pads will be forced shut.



4. Remove:
 - Cotter pin ①
5. Loosen:
 - Axle nut ②
6. Loosen:
 - Lock nut (Drive chain) ①
 - Adjuster (Drive chain) ②
7. Remove:
 - Axle nut
 - Axle
 - Rear wheel

INSPECTION

1. Inspect:
 - Rear axle
Refer to "FRONT WHEEL — INSPECTION" section.
2. Inspect:
 - Wheel runout
Refer to "FRONT WHEEL — INSPECTION" section.
3. Inspect:
 - Wheel
Refer to "FRONT WHEEL — INSPECTION" section.
4. Check:
 - Wheel bearings
Refer to "FRONT WHEEL — INSPECTION" section.
5. Check:
 - Wheel balance
Refer to "FRONT WHEEL — INSPECTION" section.

INSTALLATION

When installing the rear wheel, reverse the removal procedure.

Note the following points.

1. Apply:
 - Lithium base grease
Lightly grease to the oil seal lips.
2. Adjust:
 - Drive chain slack



Drive Chain Slack:
20 ~ 30 mm (0.78 ~ 1.18 in)

Refer to "CHAPTER 2 — DRIVE CHAIN SLACK ADJUSTMENT" section.

3. Tighten:
- Axle nut

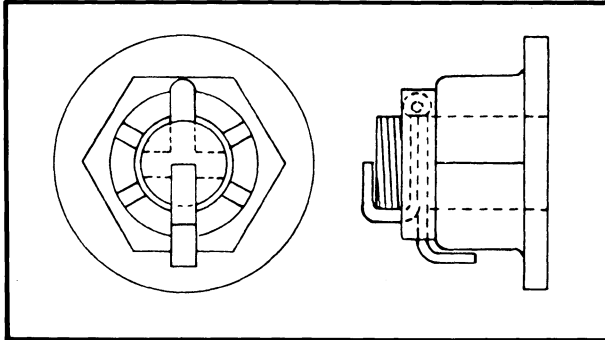


105 Nm (10.5 m·kg, 75 ft·lb)

4. Tighten:
- Brake caliper



35 Nm (3.5 m·kg, 25 ft·lb)



5. Install:
- Cotter pin

WARNING:

Always use a new cotter pin on the axle nut.

NOTE:

Do not loosen the axle nut after torque tightening.

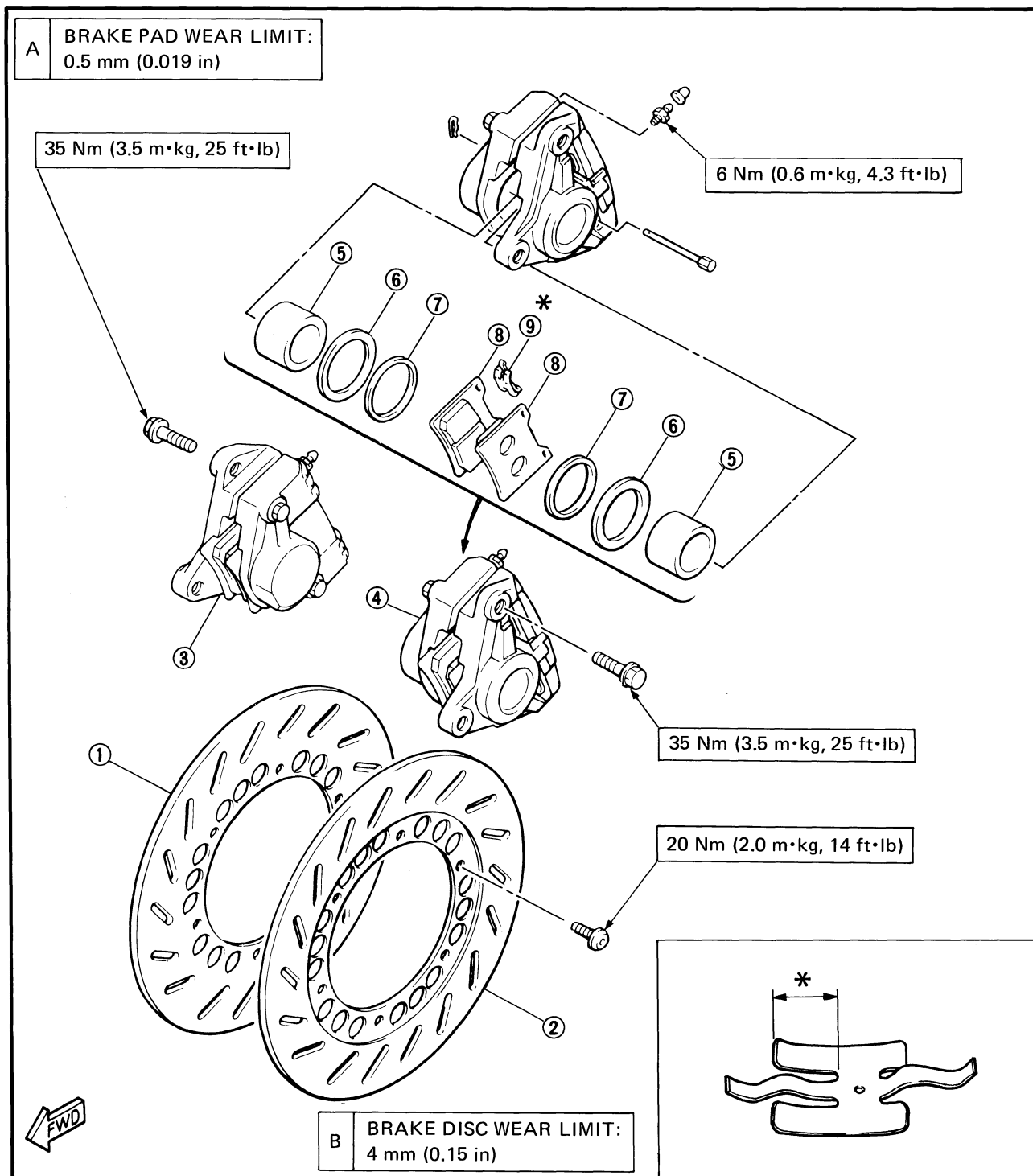
If the axle nut groove is not aligned with the wheel shaft cotter pin hole, align groove to hole by tightening up on the axle nut.

FRONT BRAKE

BRAKE CALIPER

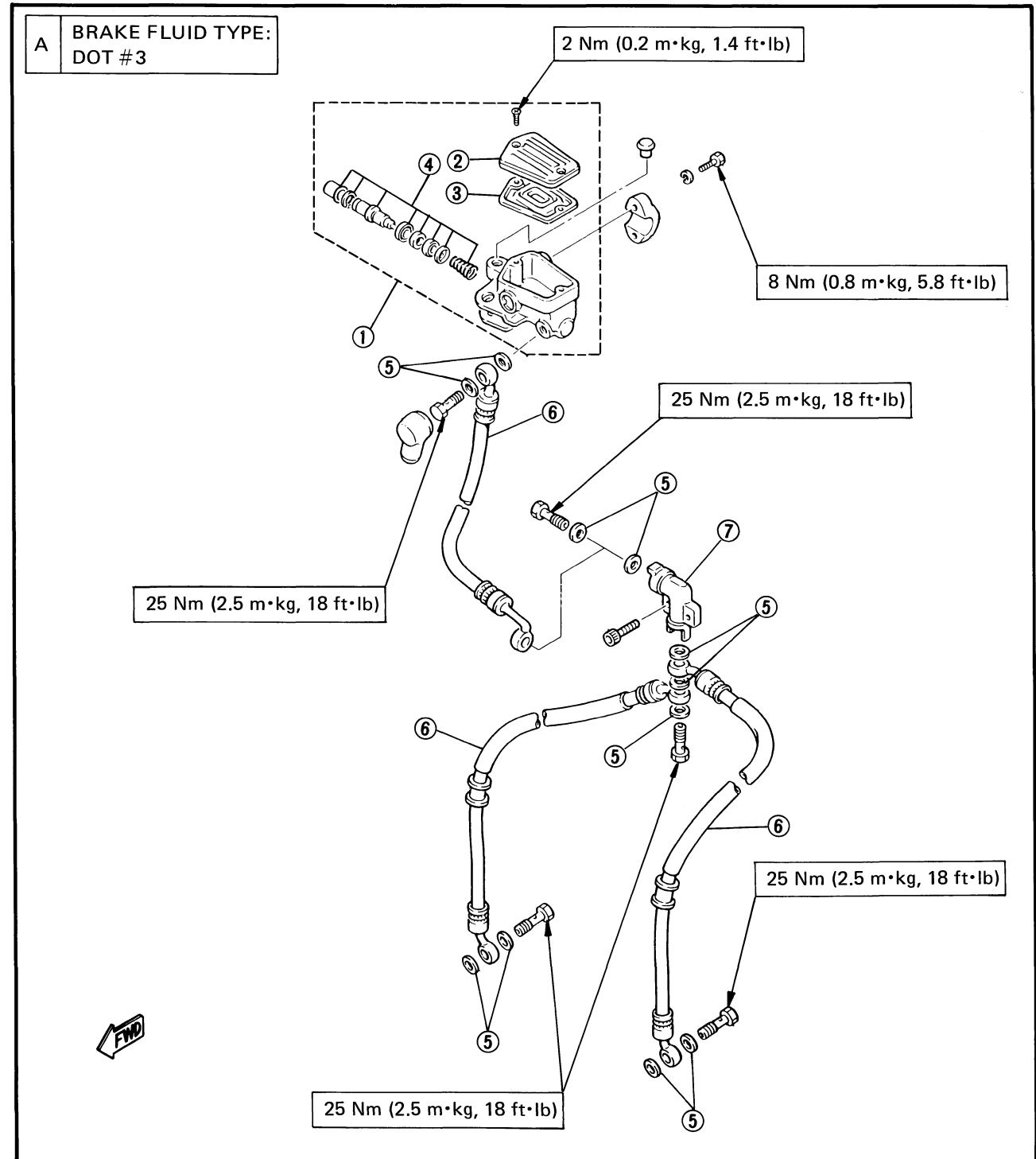
- | | |
|-------------------------|---------------|
| ① Brake disc (Right) | ⑥ Piston seal |
| ② Brake disc (Left) | ⑦ Dust seal |
| ③ Brake caliper (Right) | ⑧ Brake pad |
| ④ Brake caliper (Left) | ⑨ Pad spring |
| ⑤ Piston | |

* Install the pad spring with its longer tangs facing towards the disc rotation direction.



BRAKE MASTER CYLINDER

- ① Master cylinder assembly
- ② Master cylinder cap
- ③ Rubber seal
- ④ Master cylinder kit
- ⑤ Copper washer
- ⑥ Brake hose
- ⑦ Joint



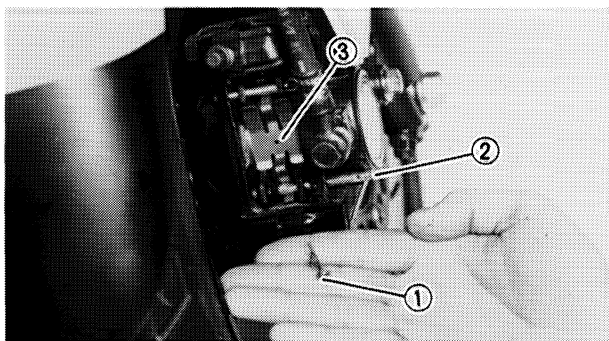
**CAUTION:**

Disc brake components rarely require disassembly. Do not disassemble components unless absolutely necessary. If any hydraulic connection in the system is opened, the entire system should be disassembled, drained, cleaned and then properly filled and bled upon reassembly. Do not use solvents on brake internal components.

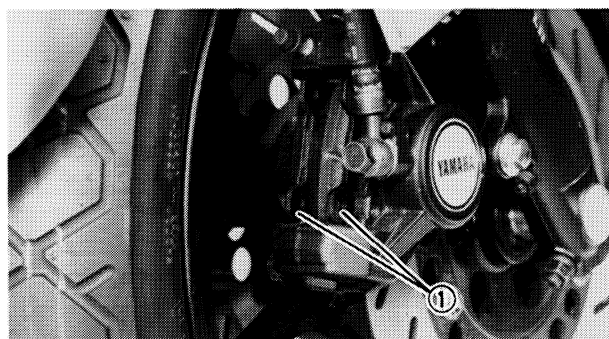
Solvents will cause seals to swell and distort. Use only clean brake fluid for cleaning. Use care with brake fluid. Brake fluid is injurious to eyes and will damage painted surfaces and plastic parts.

BRAKE PAD REPLACEMENT**NOTE:**

It is not necessary to disassemble the brake caliper and brake hose to replace the brake pads.

**1. Remove:**

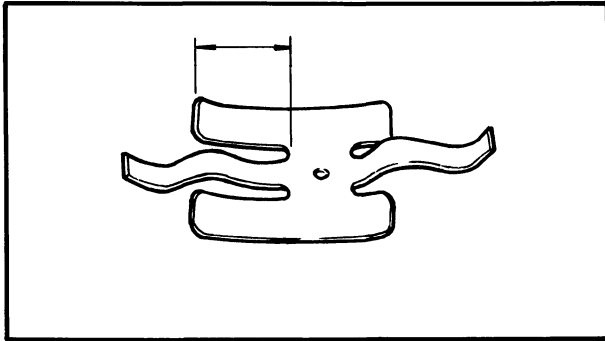
- Cover
- Clips ①
- Pins ②
- Pad spring ③

**2. Replace:**

- Brake pads ①

NOTE:

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

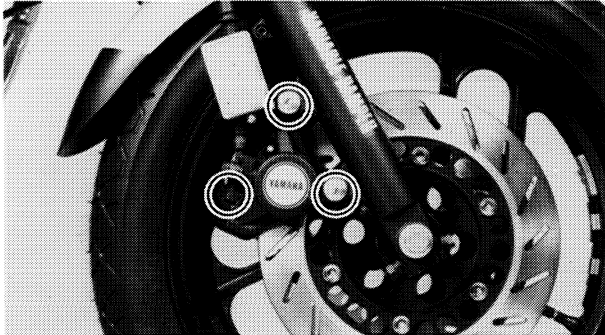


3. Install:

- Pad spring
- Pins
- Clips
- Cover

NOTE:

Install the pad spring with its longer tangs facing towards the disc rotation direction.



CALIPER DISASSEMBLY

NOTE:

Before disassembling the caliper, drain the brake fluid.

1. Remove:

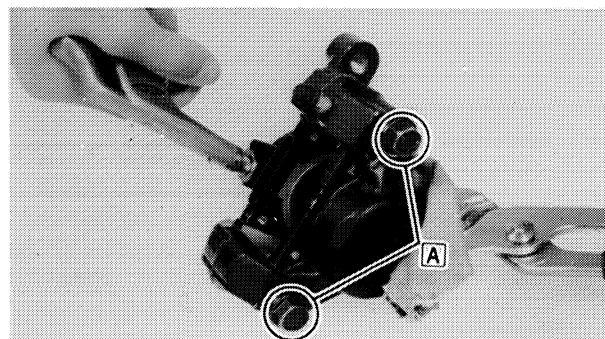
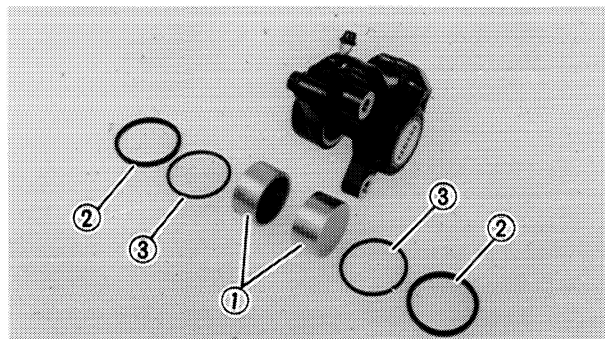
- Brake caliper

2. Remove:

- Brake pad
Refer to "BRAKE PAD REPLACEMENT" section.

3. Remove:

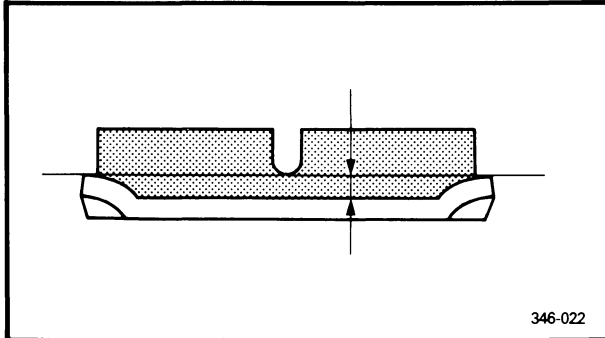
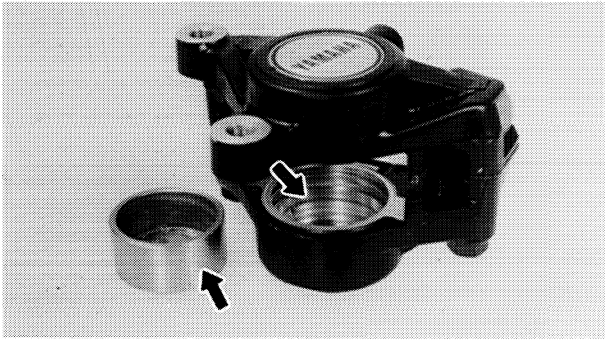
- Piston ①
- Piston seal ②
- Dust seal ③



Caliper piston removal steps:

- Using a rag, lock the right side piston.
- Blow compressed air into the hose joint opening to force out the left side piston from the caliper body.
- Remove the dust and piston seals and reinstall the piston.
- Repeat previous step to force out the right side piston from the caliper body.

A DO NOT LOOSEN



INSPECTION

1. Inspect:

- Caliper piston
Rust/Wear → Replace.
- Caliper cylinder body
Wear/Scratches → Replace.

- Brake pads
Out of specification → Replace.



Pad Wear Limit:
0.5 mm (0.02 in)

INSTALLATION

1. Assemble:

- Brake caliper(s)
Reverse disassembly steps.

WARNING:

- All internal parts should be cleaned in new brake fluid only.
- Internal parts should be lubricated with brake fluid when installed.

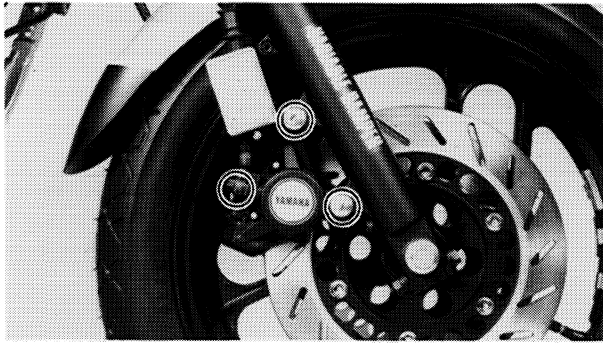


Brake Fluid:
DOT #3

- Replace the dust and piston seals whenever a caliper is disassembled.

2. Install:

- Brake caliper
- Brake hose



3. Tighten:

- Bolt (Brake hose)
- Bolts (Caliper)



Bolt (Brake hose):
25 Nm (2.5 m·kg, 18 ft·lb)

Bolts (Caliper):
35 Nm (3.5 m·kg, 25 ft·lb)

4. Fill:

- Brake system



Recommended Brake Fluid:
DOT #3

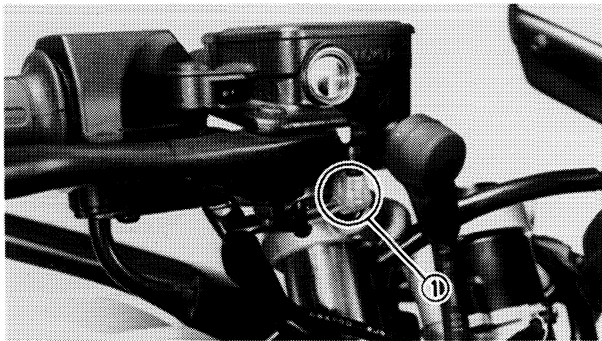
5. Bleed the air completely from the brake system.

Refer to "AIR BLEEDING" section.

6. Check:

- Brake fluid level

Refer to "CHAPTER 2 – FRONT BRAKE FLUID INSPECTION" section.



MASTER CYLINDER DISASSEMBLY

NOTE:

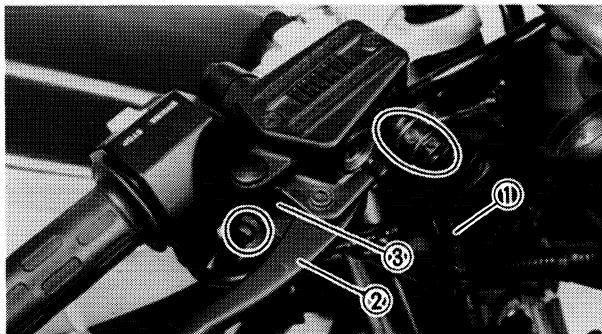
Before disassembling the master cylinder, drain the brake fluid.

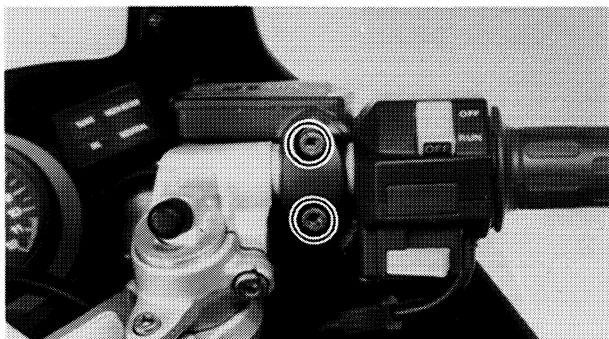
1. Disconnect:

- Brake switch leads ①

2. Remove:

- Brake hose ①
- Brake lever ②
- Spring ③

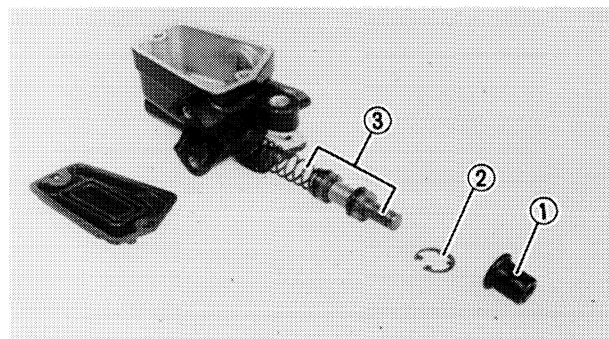




3. Remove:
- Master cylinder assembly



4. Remove:
- Master cylinder cap
 - Rubber seal



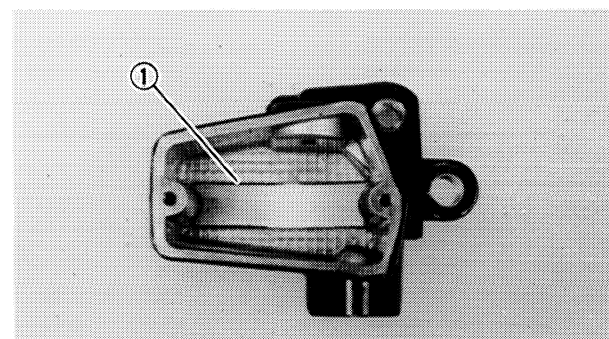
5. Remove:
- Dust boot ①
 - Circlip ②
 - Master cylinder kit ③

INSPECTION

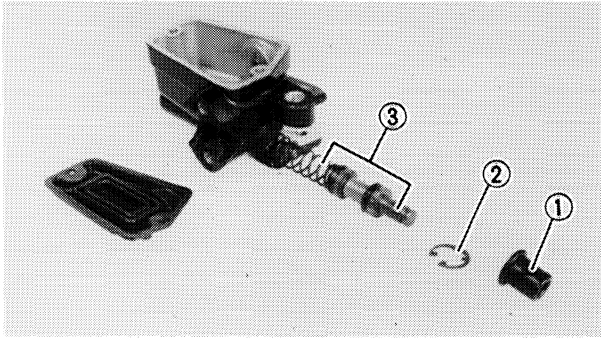
1. Inspect:
- Master cylinder body
Scratches/Wear → Replace.

NOTE: _____
Clean all passages with new brake fluid.

- Brake hoses
Cracks/Wear/Damage → Replace.
- Master cylinder kit
Scratches/Wear → Replace.



① Oil baffle plate



INSTALLATION

1. Install:

- Master cylinder kit ①

WARNING:

Internal parts should be lubricated with brake fluid when installed.

- Circlip ②
- Dust boot ③

2. Install:

- Master cylinder
- Brake hose (With copper washers)
- Brake lever

NOTE:

Grase the pivot point.

3. Tighten:

- Bolts (Master cylinder bracket)
- Bolt (Brake hose)



Bolts (Master cylinder bracket):
8 Nm (0.8 m·kg, 5.8 ft·lb)

Bolt (Brake hose):
25 Nm (2.5 m·kg, 18 ft·lb)

4. Connect:

- Brake switch leads

5. Fill:

- Brake system



Recommended Brake Fluid:
DOT #3

6. Bleed the air completely from the brake system.

Refer to "AIR BLEEDING" section.

7. Check:

- Brake fluid level
Refer to "CHAPTER 2 – FRONT BRAKE FLUID INSPECTION" section.

AIR BLEEDING

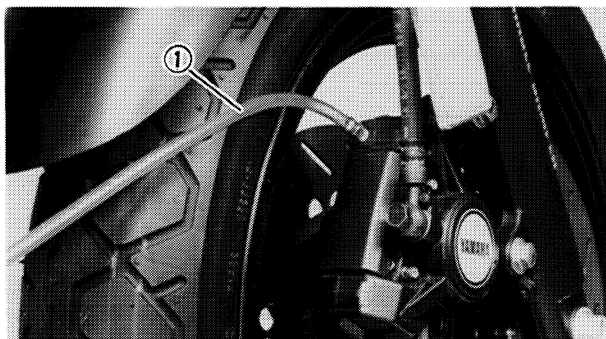
WARNING:

Bleed the brake system if:

- The system has been disassembled.
- A brake hose has been loosened or removed.
- The brake fluid is very low.
- The brake operation is faulty.

A dangerous loss of braking performance may occur if the brake system is not properly bled.

1. Air bleeding



Air bleeding steps:

- a. Add proper brake fluid to the reservoir.
- b. Install diaphragm.
Be careful not to spill any fluid or allow the reservoir to over flow.
- c. Connect the clear plastic tube (4.5 mm, 3/16 in inside dia.) tightly to the caliper bleed screw ①.
- d. Place the other end of the tube into a container.
- e. Slowly apply the brake lever several times.
- f. Pull the lever in. Hold the lever in position.
- g. Loosen the bleed screw and allow the lever to travel towards its limit.
- h. Tighten the bleed screw when the lever limit has been reached; then release the lever.
- i. Repeat steps (e) to (h) until of the air bubbles have been removed from the system.

NOTE:

If bleeding is difficult, it may be necessary to let the brake fluid system stabilize for a few hours. Repeat the bleeding procedure when the tiny bubbles in system have disappeared.

2. Tighten:

- Bleed screw
- Screws (Master cylinder cap)



Bleed Screw:

6 Nm (0.6 m·kg, 4.3 ft·lb)

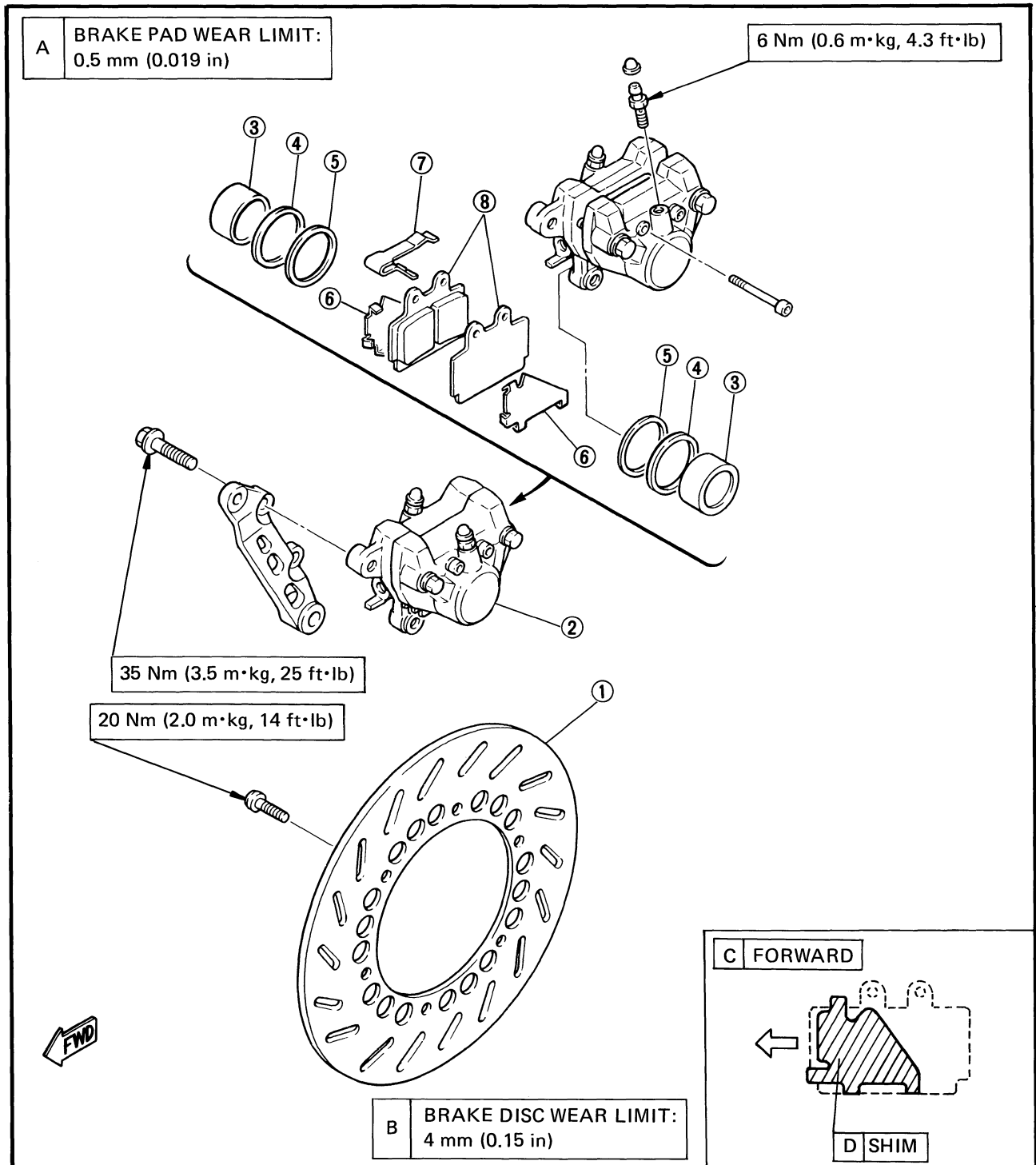
Screws (Master cylinder cap):

2 Nm (0.2 m·kg, 1.4 ft·lb)

REAR BRAKE

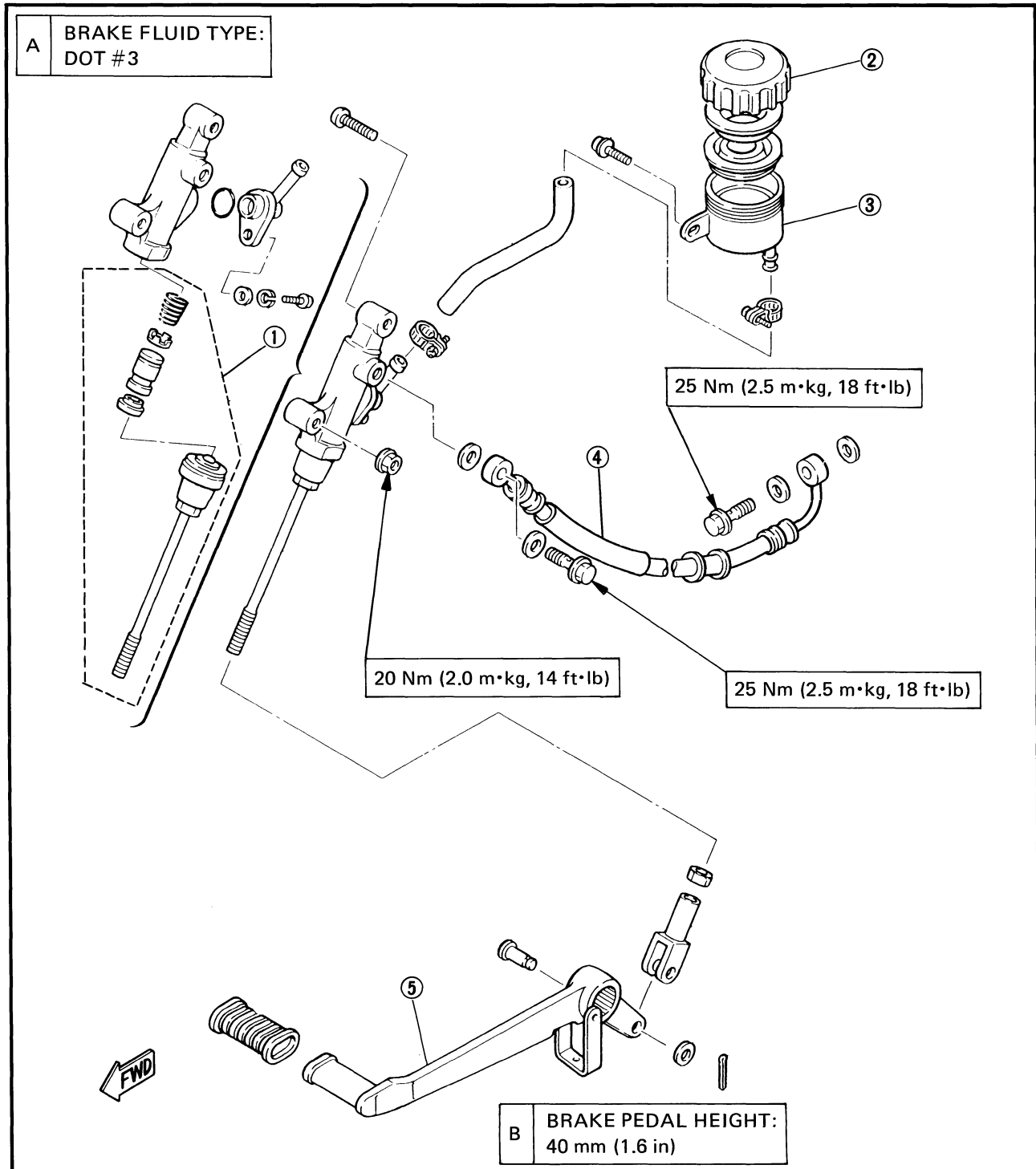
BRAKE CALIPER

- | | |
|-----------------|--------------|
| ① Brake disc | ⑤ Dust seal |
| ② Brake caliper | ⑥ Shim |
| ③ Piston | ⑦ Pad spring |
| ④ Piston seal | ⑧ Brake pad |



BRAKE MASTER CYLINDER

- ① Master cylinder kit
- ② Reservoir tank cap
- ③ Reservoir tank
- ④ Brake hose
- ⑤ Brake pedal



CAUTION:

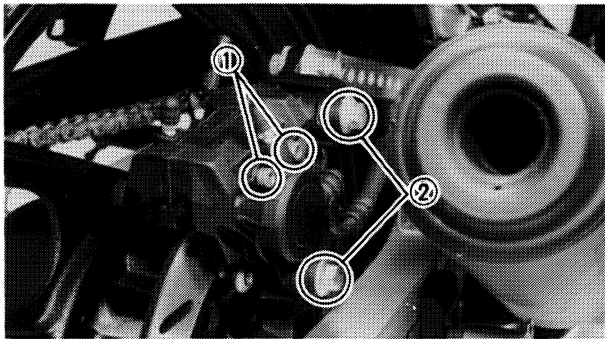
Disc brake components rarely require disassembly. Do not disassemble components unless absolutely necessary. If any hydraulic connection in the system is opened, the entire system should be disassembled, drained, cleaned and then properly filled and bled upon reassembly. Do not use solvents on brake internal components.

Solvents will cause seals to swell and distort. Use only clean brake fluid for cleaning. Use care with brake fluid. Brake fluid is injurious to eyes and will damage painted surfaces and plastic parts.

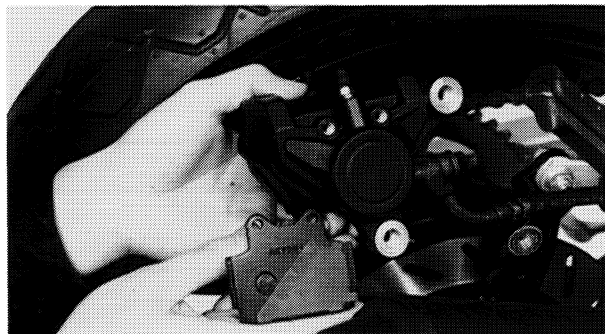
BRAKE PAD REPLACEMENT

NOTE:

It is not necessary to disassemble the brake caliper and brake hose to replace the brake pads.



1. Loosen:
 - Pad pins ①
2. Remove:
 - Bolts ②
 - Caliper



3. Remove:
 - Pad pins
4. Replace:
 - Brake pad

NOTE:

Be sure the installation direction of shim is correct.

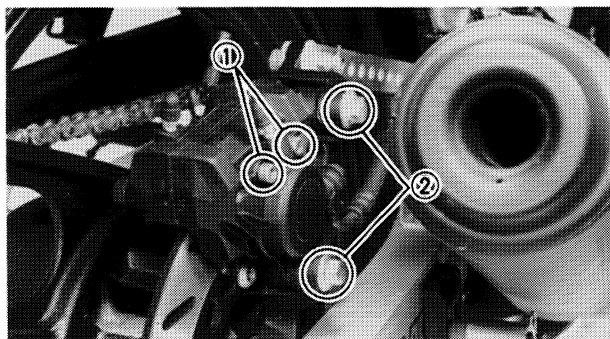
NOTE: _____
 Replace the pads as a set if either is found to be worn to the wear limit.

5. Tighten:
- Caliper



35 Nm (3.5 m·kg, 25 ft·lb)

- Pad pins



CALIPER DISASSEMBLY

Refer to “FRONT CALIPER DISASSEMBLY” section.

1. Loosen:
 - Pad pins ①
2. Remove:
 - Bolts ②
 - Caliper

INSPECTION

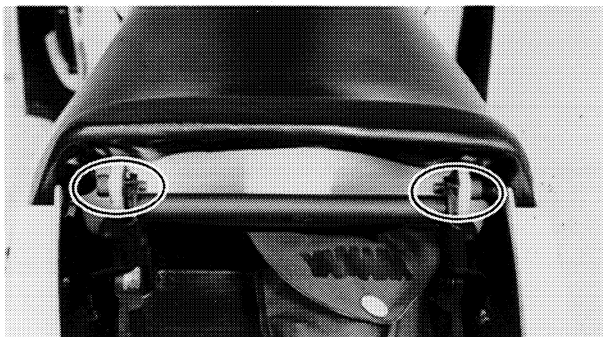
Refer to “FRONT CALIPER INSPECTION” section.

INSTALLATION

Refer to “FRONT CALIPER INSTALLATION” section.



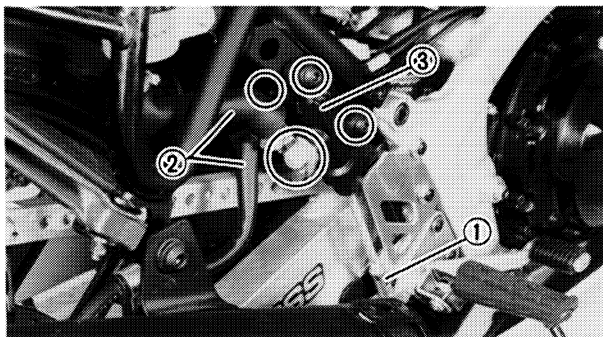
Caliper:
 35 Nm (3.5 m·kg, 25 ft·lb)
Brake Hose:
 25 Nm (2.5 m·kg, 18 ft·lb)



MASTER CYLINDER DISASSEMBLY

1. Remove:

- Seat
- Side cover (Right)

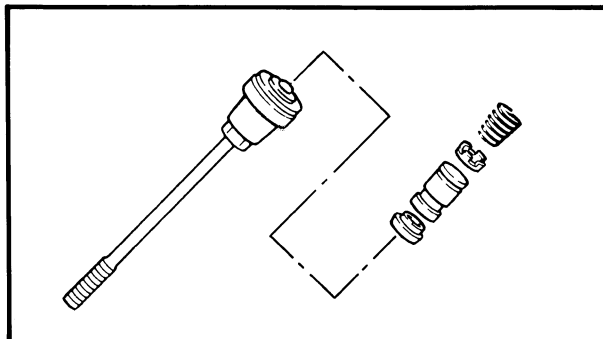


2. Loosen:

- Locknut ①

3. Remove:

- Brake hose ②
- Master cylinder assembly ③



4. Remove:

- Master cylinder kit
(From master cylinder body)

INSPECTION

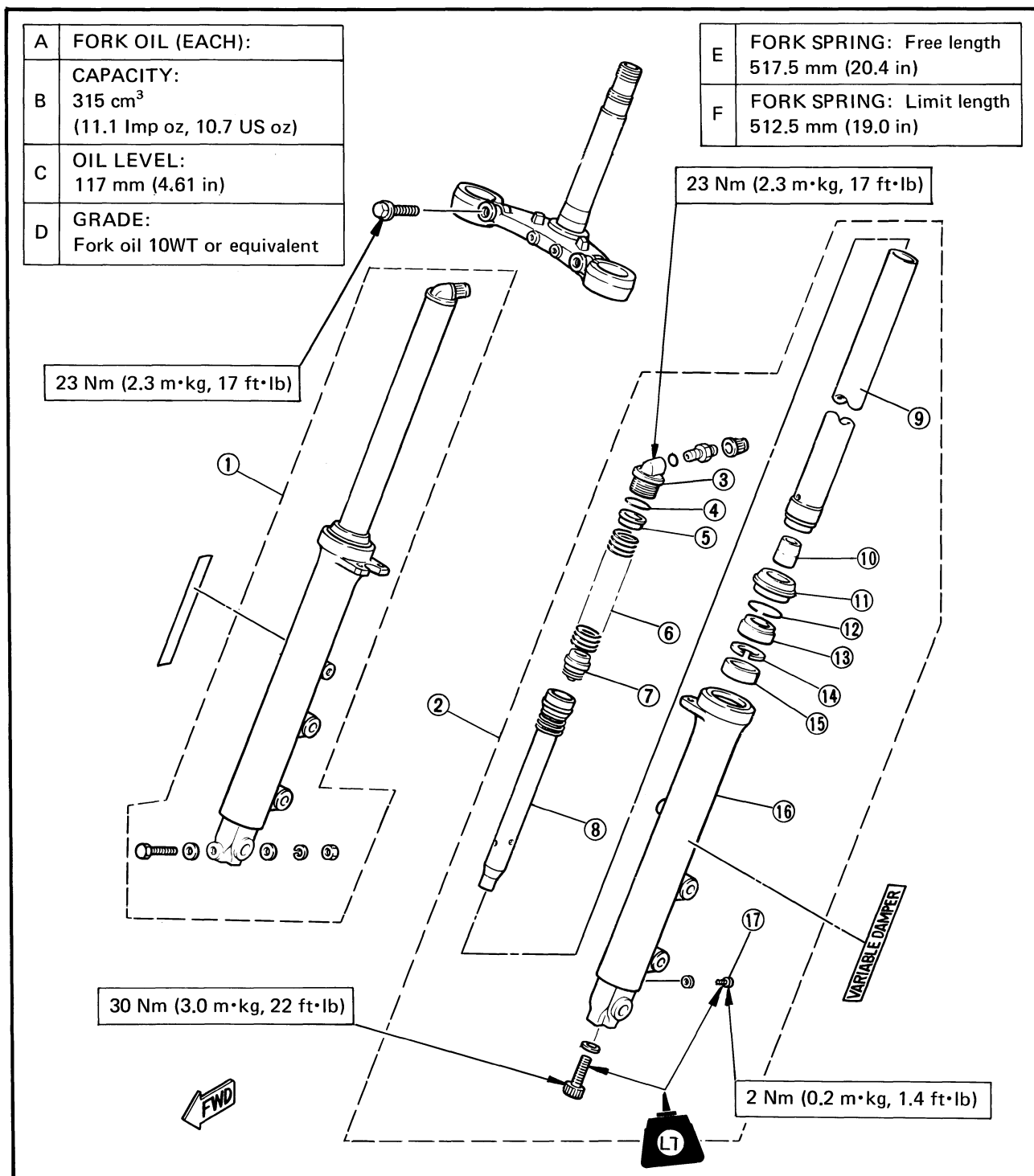
Refer to "FRONT MASTER CYLINDER INSPECTION" section.

INSTALLATION

Refer to "FRONT MASTER CYLINDER INSTALLATION" section.

FRONT FORK

- | | |
|-------------------------------|-------------------|
| ① Front fork assembly (Right) | ⑩ Oil lock piece |
| ② Front fork assembly (Left) | ⑪ Dust seal |
| ③ Cap bolt | ⑫ Retaining clip |
| ④ O-ring | ⑬ Oil seal |
| ⑤ Spring seat | ⑭ Plain washer |
| ⑥ Fork spring | ⑮ Guide bush |
| ⑦ Variable damper | ⑯ Outer fork tube |
| ⑧ Damper rod | ⑰ Drain screw |
| ⑨ Inner fork tube | |



REMOVAL

1. Place the motorcycle on a level place.

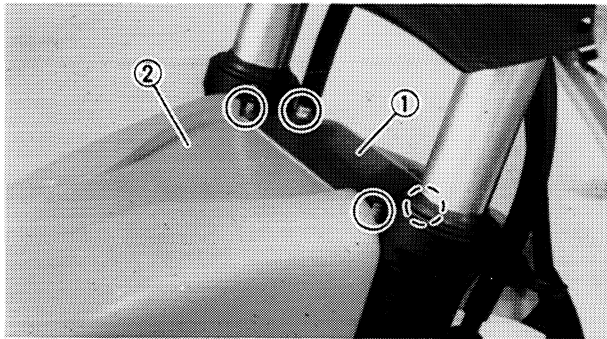
WARNING:

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

2. Remove:

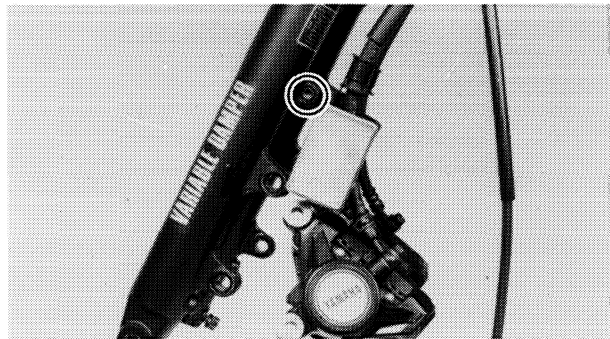
- Front wheel

Refer to "FRONT WHEEL – REMOVAL" section.



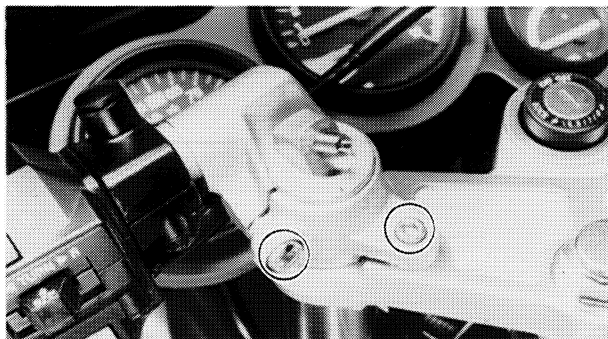
3. Remove:

- Front fork brace ①
- Front fender ②



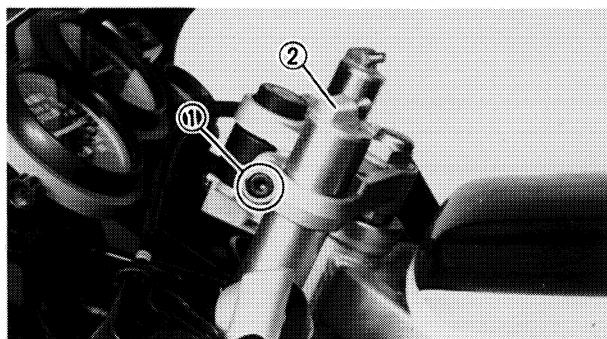
4. Remove:

- Brake hose clamp



5. Remove:

- Master cylinder
- Handlebar



6. Keep the air valve open so that the air can be let out of the inner tube.

7. Loosen:

- Cap bolt ②
- Pinch bolt ①

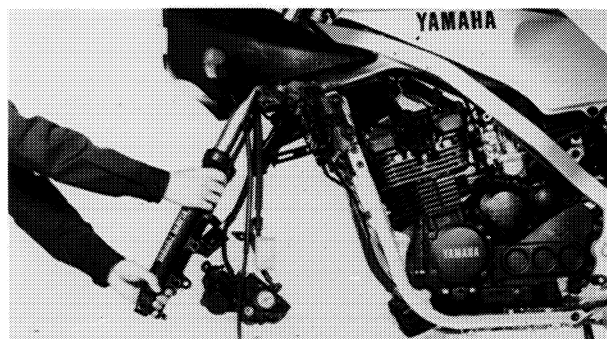


8. Loosen:

- Pinch bolt (Under bracket)

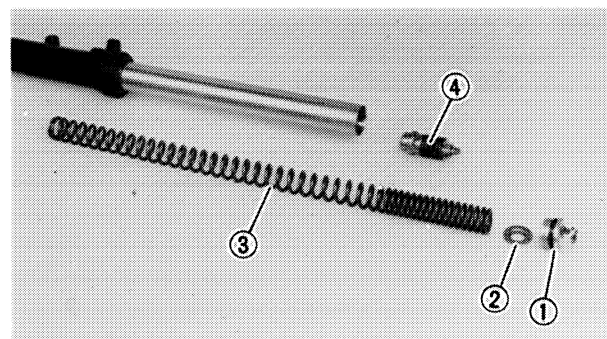
CAUTION:

Support the fork before loosening the pinch bolts.



9. Remove:

- Front fork



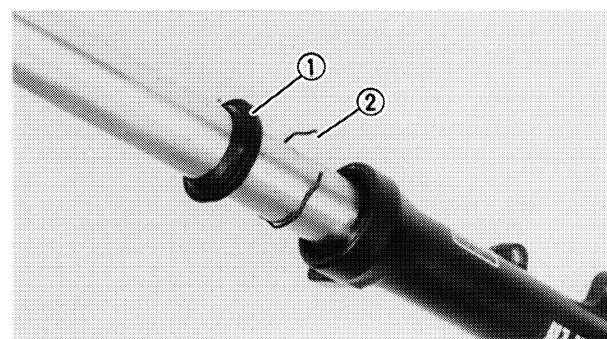
DISASSEMBLY

1. Remove:

- Cap bolt ①
- Spring seat ②
- Fork spring ③
- Variable damper ④

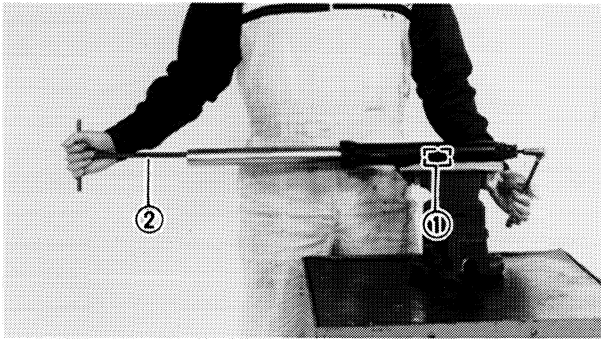
2. Drain:

- Fork oil



3. Remove:

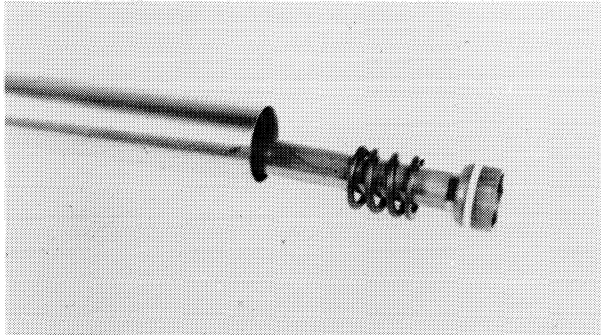
- Dust seal ①
- Retaining clip ②



4. Remove:

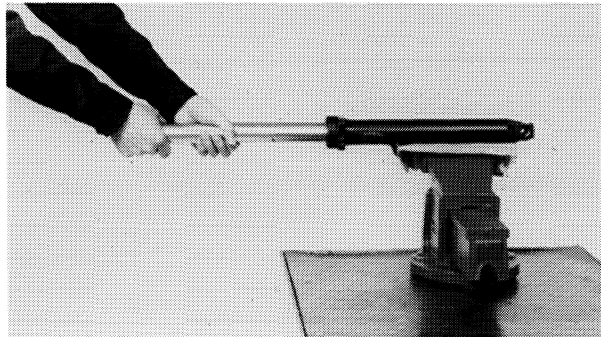
- Cylinder securing bolt

Use the Holder (YM-33298) ① and T-Handle (YM-01326) ② to lock the damper rod.



5. Remove:

- Damper rod



6. Remove:

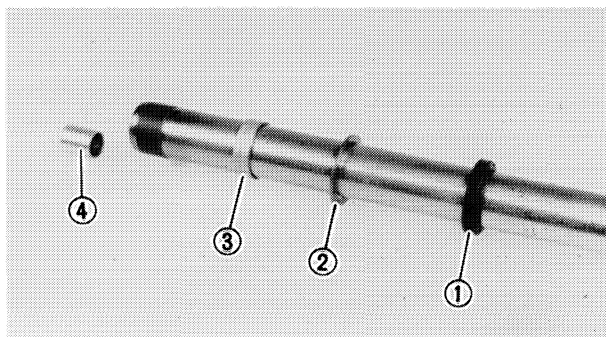
- Inner fork tube

Inner fork tube removal steps:

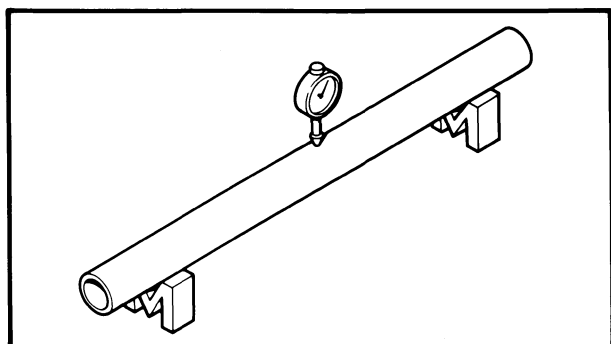
- Hold the fork leg horizontally.
- Pull out the inner fork tube from the outer tube by forcefully, but carefully, with drawing the inner fork tube.

NOTE:

- Excessive force will damage the oil seal, plain washer and/or bushings. The oil seal and bushings must be replaced.
- Avoid bottoming the inner tube in the outer tube during the above procedure, as the oil lock piece will be damaged.


7. Remove:

- Oil seal ①
- Plain washer ②
- Guide bush ③
- Oil lock piece ④


INSPECTION
1. Inspect:

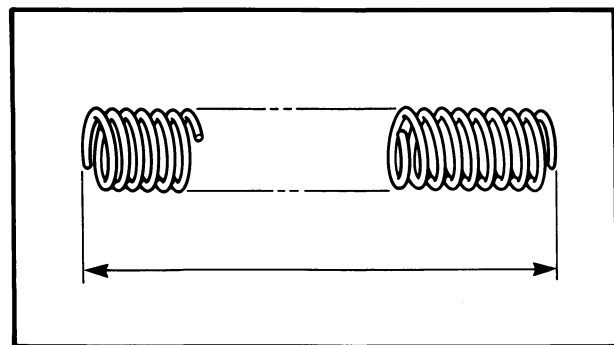
- Inner fork tube
Scratches/Bends → Replace.

WARNING:

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

2. Inspect:

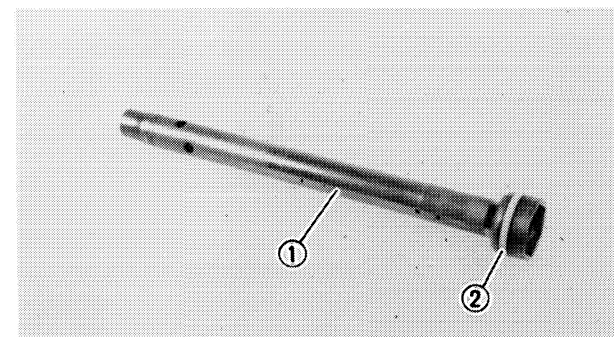
- Outer fork tube
Scratches/Bends/Damage → Replace.


3. Measure:

- Fork spring
Out of specification → Replace.



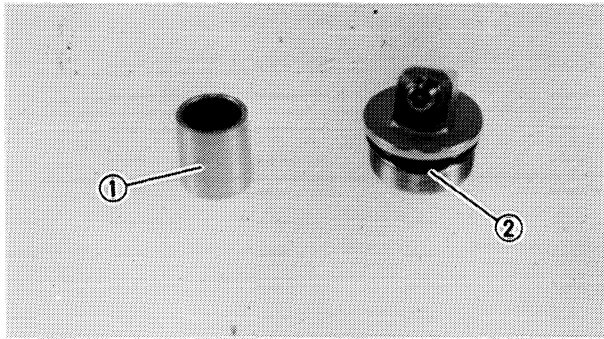
Fork Spring Free Length:
517.5 mm (20.4 in)
Minimum Free Length:
512.5 mm (19.0 in)


4. Inspect:

- Damper rod ①
- Ring ②
Wear/Damage → Replace.

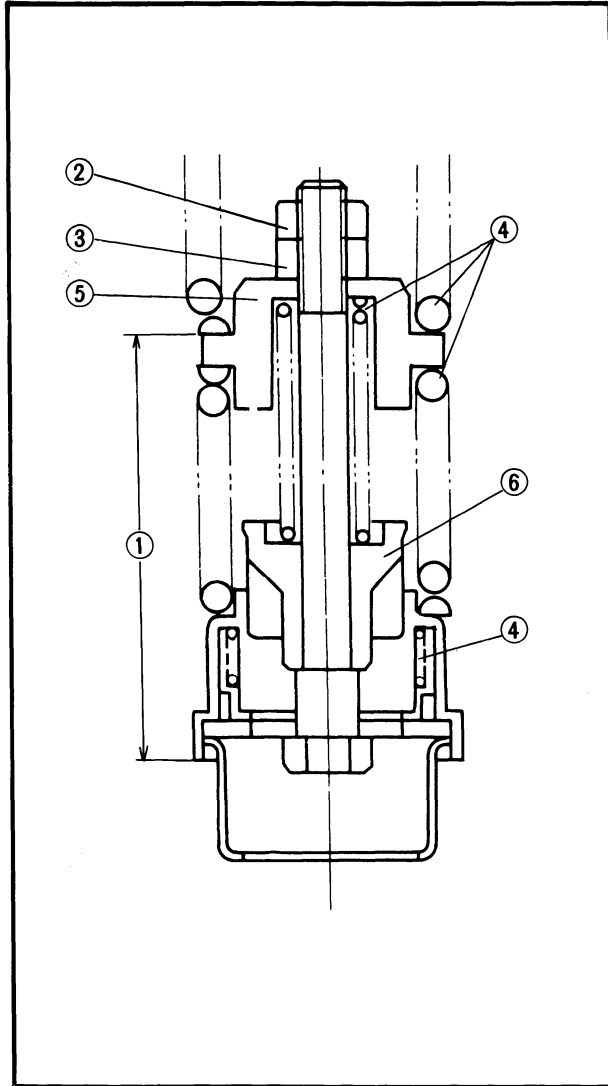
NOTE:

Blow out all oil passages with compressed air.



5. Inspect:

- Oil lock piece ①
 - O-ring ②
- Damage → Replace.



6. Measure:

- Variable damper height ①
- Out of specification → Adjust.



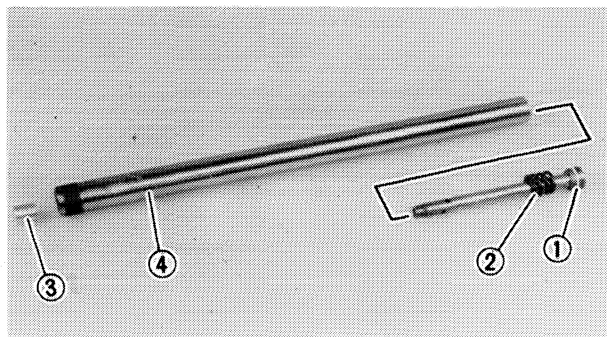
Variable Damper Height:
42 mm (1.65 in)

Adjustment steps:

- Loosen the locknut ②
- Turn adjuster nut ③ in or out until variable damper height is specified value.

7. Inspect:

- Springs ④
 - Spring seat ⑤
 - Spool ⑥
- Damage → Replace.



REASSEMBLY

NOTE:

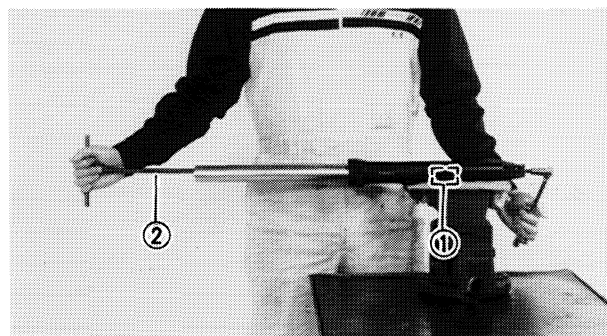
In front fork reassembly, be sure to use following new parts.

- Guide bush
- Slide bush
- Oil seal
- Dust seal

Make sure all components are clean before reassembly.

1. Install:

- Damper rod ①
- Rebound spring ②
- Oil lock piece ③
- Inner fork tube ④

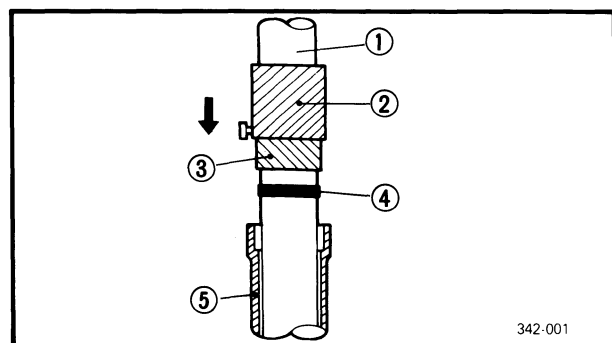


2. Install:

- Cylinder securing bolt
- Use the Holder (YM-33298) ① and T-Handle (YM-01326) ② to lock the damper rod.



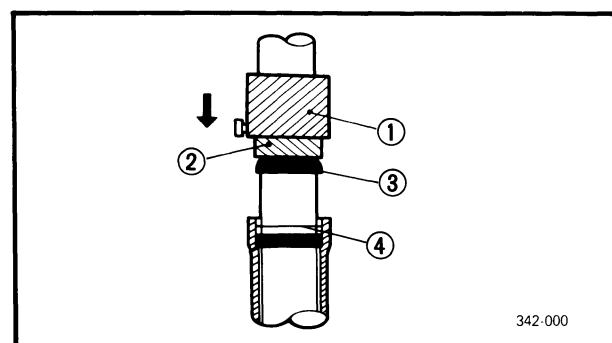
30 Nm (3.0 m·kg, 22 ft·lb)
Apply LOCTITE®



3. Install:

- Guide bush ④
- Use the Fork Seal Driver Weight (YM-33963) ② and Adapter (YM-08010) ③.

- ① Inner tube
- ⑤ Outer tube



4. Install:

- Plain washer ④
 - Oil seal ③ (New)
- Use the Fork Seal Driver Weight (YM-33963) ① and Adapter (YM-08010) ②.
- Retaining clip
 - Dust seal

5. Fill:

- Front fork

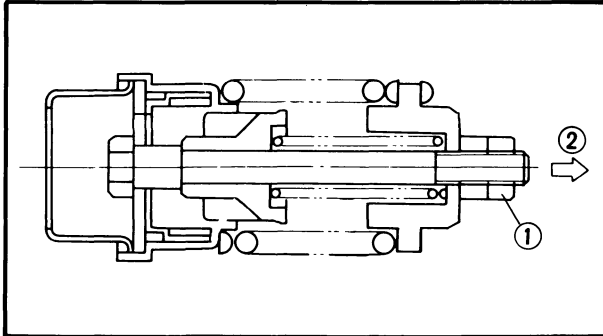


Each Fork:

315 cm³ (11.1 Imp oz, 10.7 US oz)

Fork Oil 10WT or equivalent

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



6. Install:

- Variable damper
(Into the inner tube)

CAUTION:

Be sure the locknut ① side face upward ② .

7. Install:

- Fork spring
(With smaller pitch side up)
- Spring seat
- Cap bolt (Temporarily)

INSTALLATION

When installing the front fork, reverse the removal procedure.

Note the following points.

1. Install:

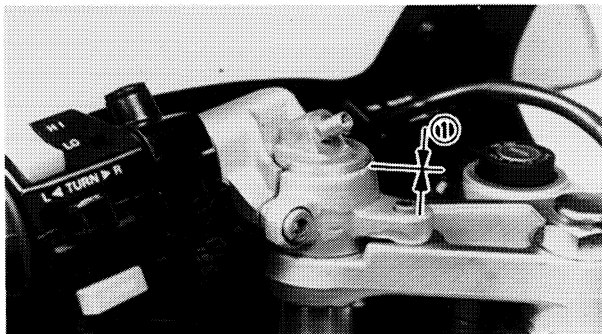
- Front fork(s)
Temporarily tighten the pinch bolts.

2. Install:

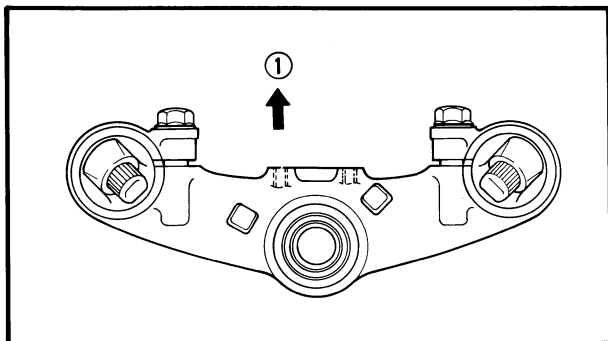
- Handlebar (Temporarily)

NOTE:

Level the top of the cap bolt with the top of the handlebar.



① Flash



3. Loosen:
 - Pinch bolts
4. Face:
 - Air valve as shown
5. Tighten:
 - Cap bolt



Cap Bolt:
23 Nm (2.3 m·kg, 17 ft·lb)

① Forward

6. Tighten:
 - Pinch bolt (Under bracket)



Pinch Bolt (Under Bracket):
23 Nm (2.3 m·kg, 17 ft·lb)

7. Remove:
 - Handlebar
8. Tighten:
 - Pinch bolt (Handle crown)



Pinch Bolt (Handle Crown):
20 Nm (2.0 m·kg, 14 ft·lb)

9. Install:
 - Handlebar



Handlebar and Handle Crown:
10 Nm (1.0 m·kg, 7.2 ft·lb)
Handlebar and Inner Fork Tube:
20 Nm (2.0 m·kg, 14 ft·lb)

10. Install:

- Front fender
- Front fork brace
- Brake hose clamp



Bolts (Front Fender):
8 Nm (0.8 m·kg, 5.8 ft·lb)

11. Install:

- Front wheel
- Brake caliper

Refer to "FRONT WHEEL – INSTALLATION" section.



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

Bolts (Brake Caliper):
35 Nm (3.5 m·kg, 25 ft·lb)

12. Fill:

- Front fork with air

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

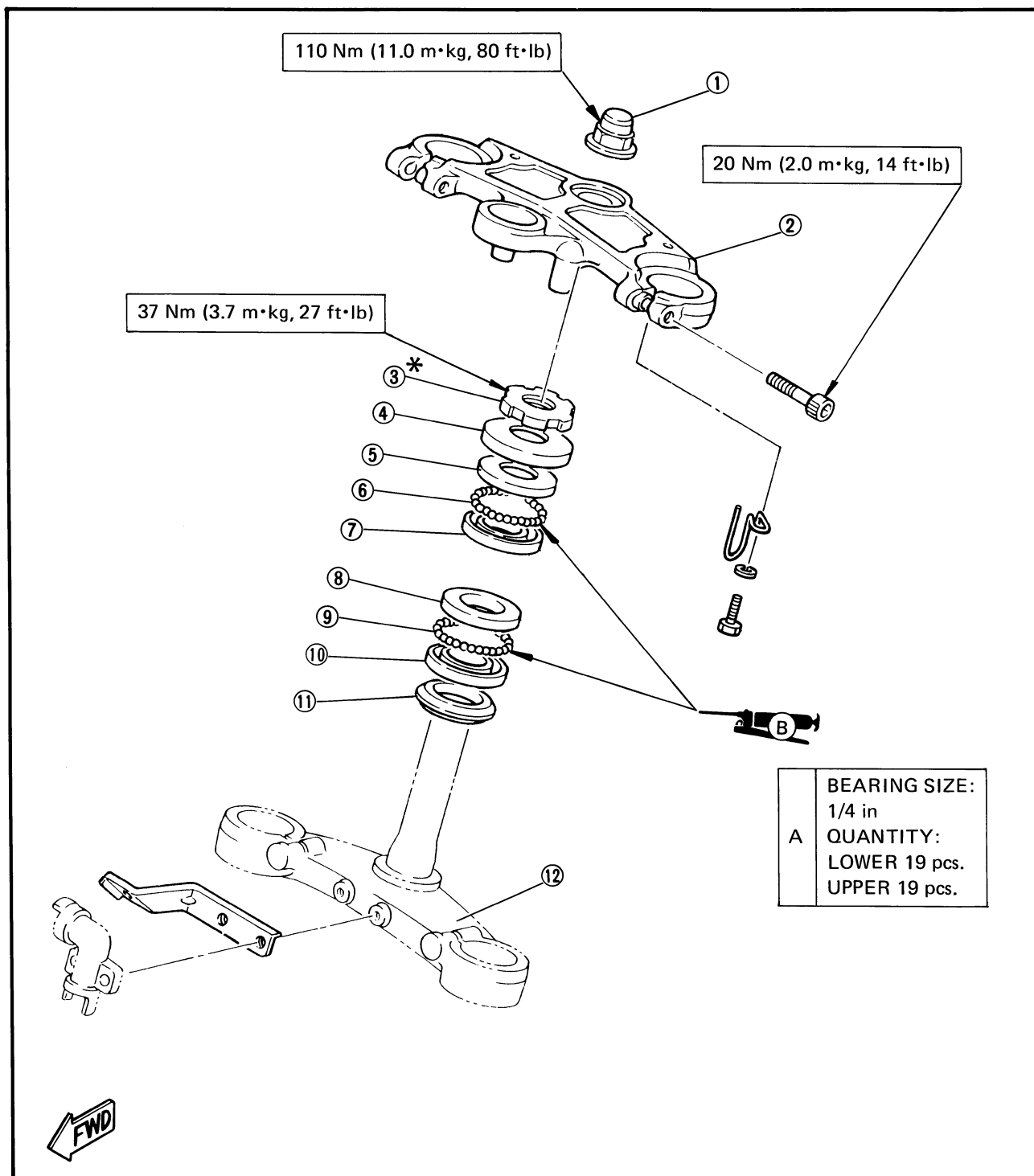
Maximum Air Pressure:
98 kPa (1.0 kg/cm², 14 psi)

STEERING HEAD

- | | |
|----------------------|-----------------|
| ① Steering stem bolt | ⑦ Bearing race |
| ② Handle crown | ⑧ Bearing race |
| ③ Ring nut | ⑨ Bearing |
| ④ Bearing race cover | ⑩ Bearing race |
| ⑤ Bearing race | ⑪ Dust seal |
| ⑥ Bearing | ⑫ Under bracket |

* Tighten to specified torque.

If steering is binded, loosen the ring nut so that there is no free play on bearing.



REMOVAL

1. Place the motorcycle on a level place.

WARNING:

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

2. Remove:

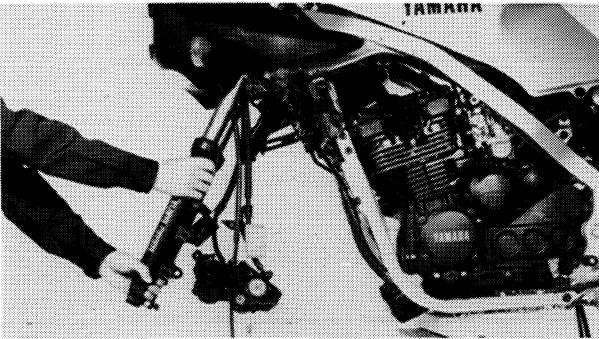
- Cowling

Refer to "CHAPTER 2 – COWLING AND LOWER COWL – REMOVAL" section.

3. Remove:

- Front wheel

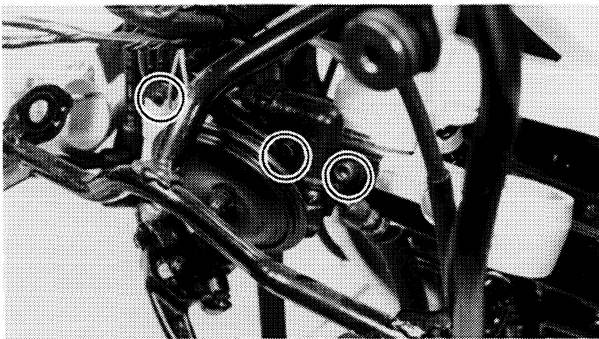
Refer to "FRONT WHEEL – REMOVAL" section.



4. Remove:

- Front forks

Refer to "FRONT FORK – REMOVAL" section.



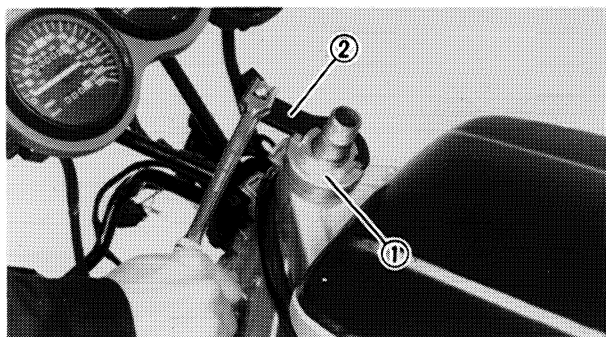
5. Remove:

- Brake hose joint
- Horn



6. Remove:

- Handle crown

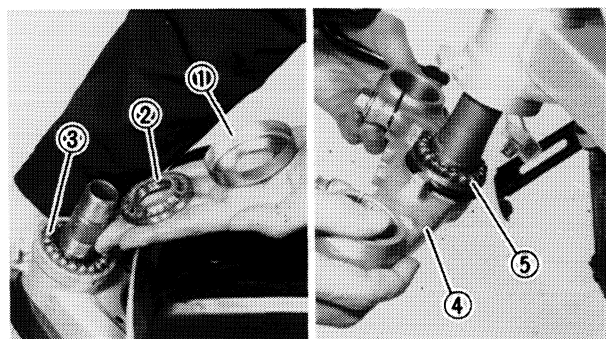


7. Remove:

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

WARNING:

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

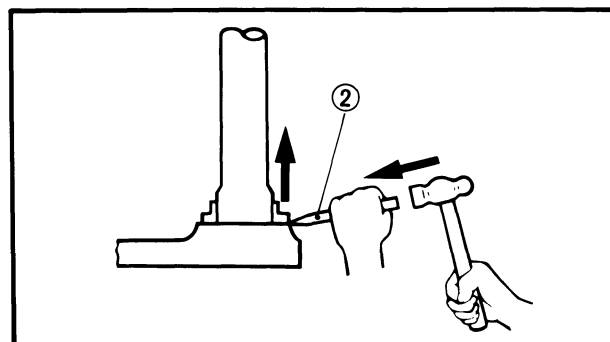
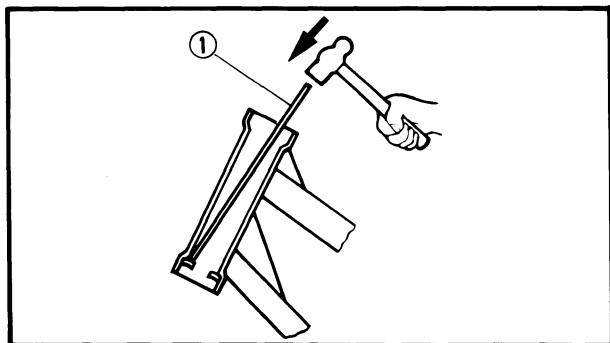


8. Remove:

- Bearing race cover ①
- Bearing race ②
- Bearings ③
- Under bracket ④
- Bearings ⑤

INSPECTION

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



NOTE:

Always replace bearings and races as a set.

Bearing race replacement steps:

- Remove the bearing races using long rod ① and the hammer as shown.
- Remove the bearing race on the under bracket using the floor chisel ② and the hammer as shown.
- Install the new dust seal and races.

INSTALLATION

Reverse the removal procedure.

Note the following points.

1. Apply:

- Grease
To bearing races.



Wheel Bearing Grease

2. Install:

- Bearings
Arrange the bearings around race, and
apply more grease.

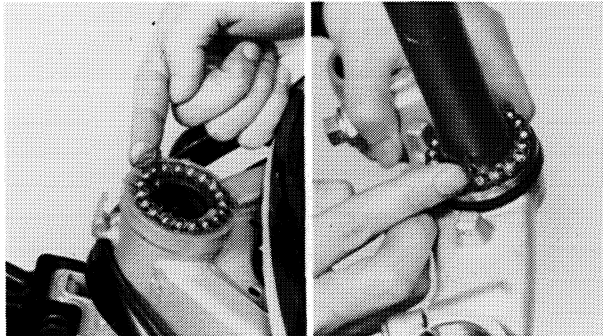
Ball Quantity/Size
Upper 19 pcs./1/4 in
Lower 19 pcs./1/4 in

3. Install:

- Under bracket

CAUTION:

Hold the under bracket until it is secured.



4. Tighten:

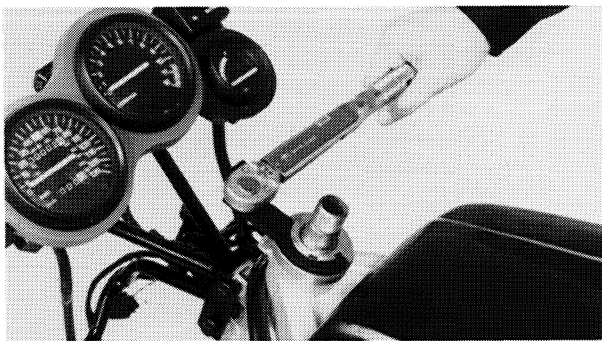
- Ring nut
Use Ring Nut Wrench (YU-33975).



37 Nm (3.7 m·kg, 27 ft·lb)

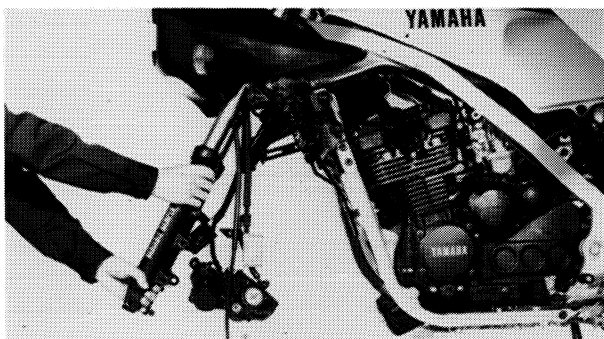
NOTE:

If steering is binded, loosen the ring nut so that there is no free play on bearings.



5. Tighten:

- Steering stem nut (Temporarily)


6. Install:

- Front forks

Refer to "FRONT FORK – INSTALLATION" section.

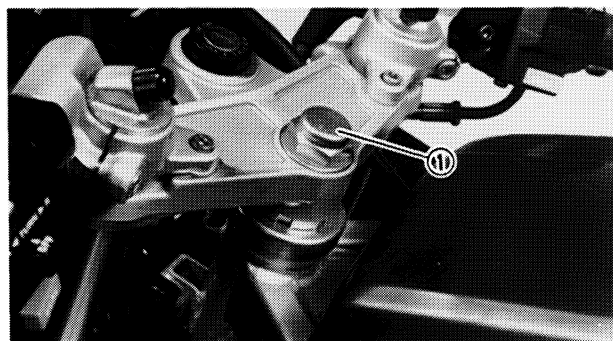


Pinch Bolt (Under Bracket):
23 Nm (2.3 m·kg, 17 ft·lb)

Pinch Bolt (Handle Crown):
20 Nm (2.0 m·kg, 14 ft·lb)

Handlebar and Handle Crown:
10 Nm (1.0 m·kg, 7.2 ft·lb)

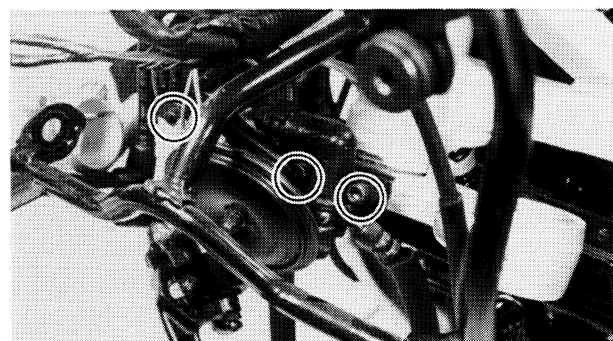
Handlebar and Inner Fork Tube:
20 Nm (2.0 m·kg, 14 ft·lb)


7. Tighten:

- Steering stem nut ①



110 Nm (11.0 m·kg, 80 ft·lb)


8. Install:

- Horn
- Brake hose joint



Bolts (Brake Hose Joint):
10 Nm (1.0 m·kg, 7.2 ft·lb)

9. Install:

- Front fender
- Front fork brace



Bolts (Front Fender):
8 Nm (0.8 m·kg, 5.8 ft·lb)



10. Install:

- Front wheel
- Brake caliper

Refer to "FRONT WHEEL – INSTALLATION" section.



Nut (Front Axle):

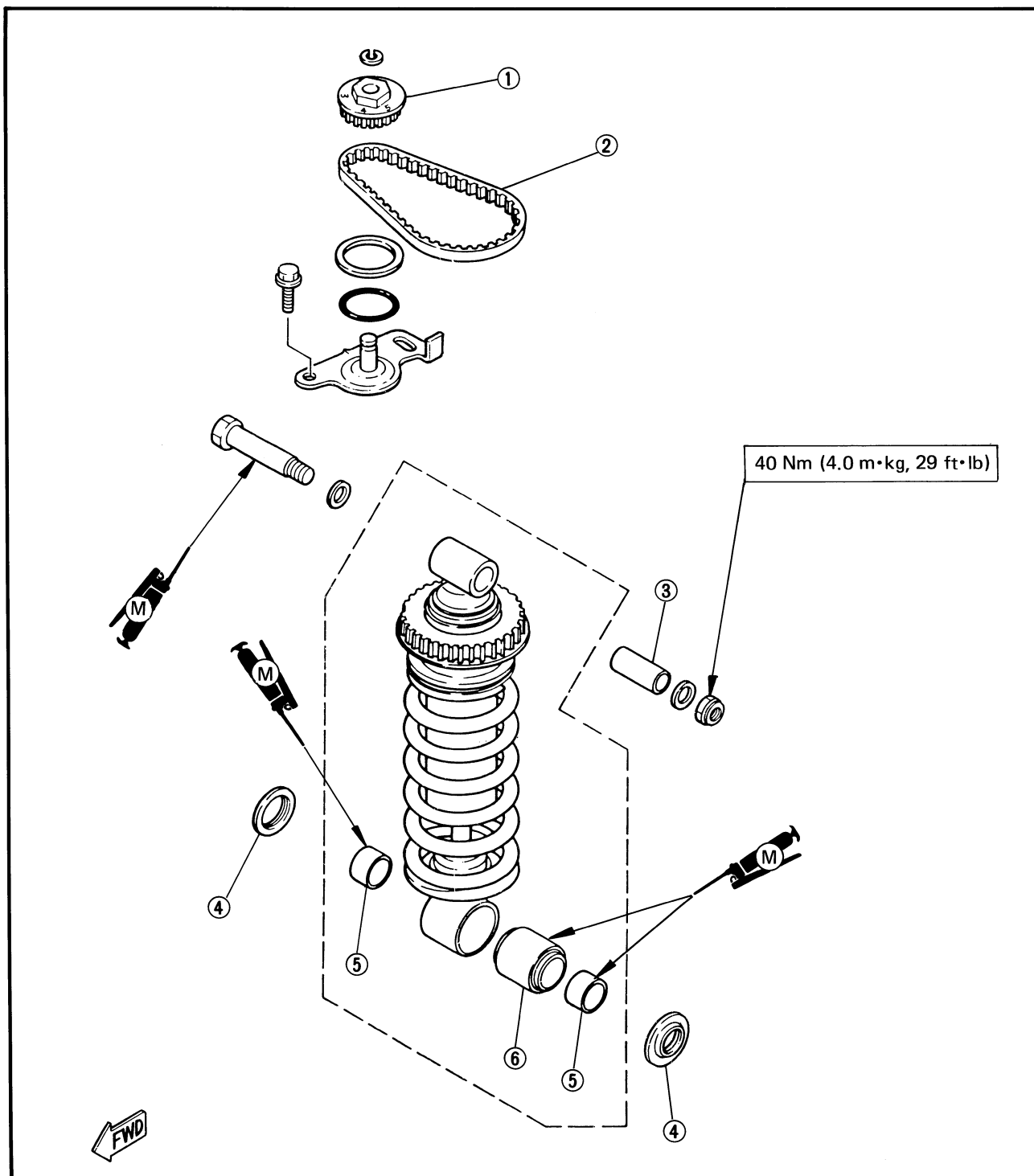
105 Nm (10.5 m·kg, 75 ft·lb)

Bolts (Brake Caliper):

35 Nm (3.5 m·kg, 25 ft·lb)

REAR SHOCK ABSORBER

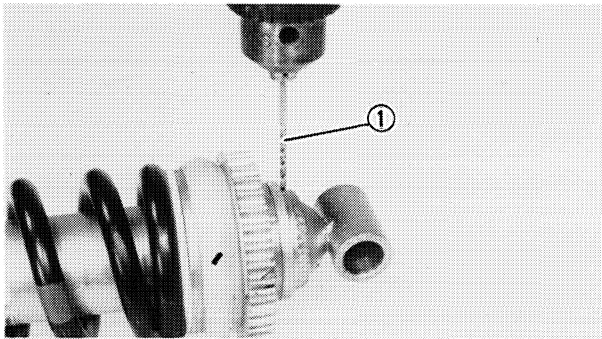
- | | |
|------------------|--------------|
| ① Pulley | ④ Dust cover |
| ② Adjusting belt | ⑤ Collar |
| ③ Collar | ⑥ Bushing |



WARNING:

This shock absorber contains highly compressed 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.

1. Do not tamper or attempt to open the cylinder assembly.
2. Do not subject shock absorber to an open flame or other high heat. This may cause the unit to explode due to excessive gas pressure.
3. Do not deform or damage the cylinder in any way. Cylinder damage will result in poor damping performance.



Shock absorber disposal steps:

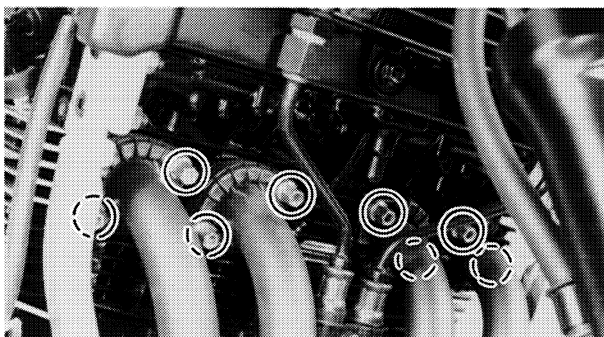
Gas pressure must be released before disposing of the shock absorber. To do so, drill ① a 2 ~ 3 mm (0.08 ~ 0.12 in) hole through the cylinder wall at a point shown in the photo.

CAUTION:

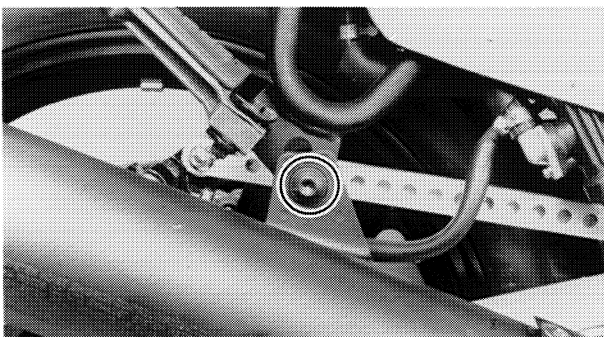
Wear eye protection to prevent eye damage from escaping gas and/or metal chips.

REMOVAL

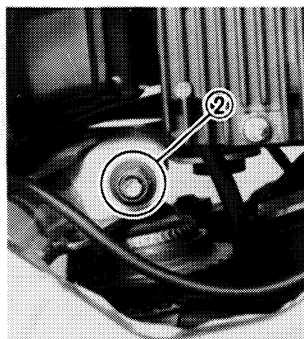
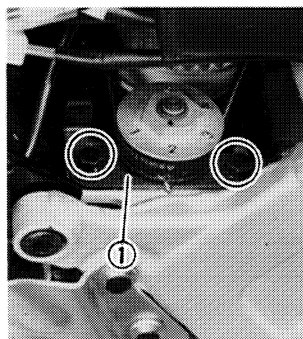
1. Place the motorcycle on a level place.
2. Remove:
 - Center cowls (Right and left)
 - Lower cowls (Right and left)
 - Seats
 - Side covers (Right and left)



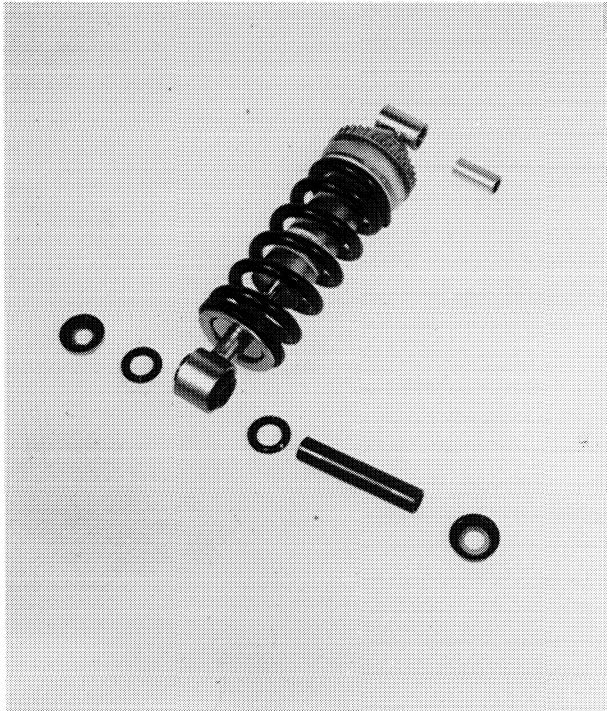
3. Remove:
 - Muffler
 - Lower cowl stays
4. Place a suitable stand under the engine.



5. Remove:
 - Bolt (Rear shock absorber)
 - Dust cover
 - Bushing
 - Collar

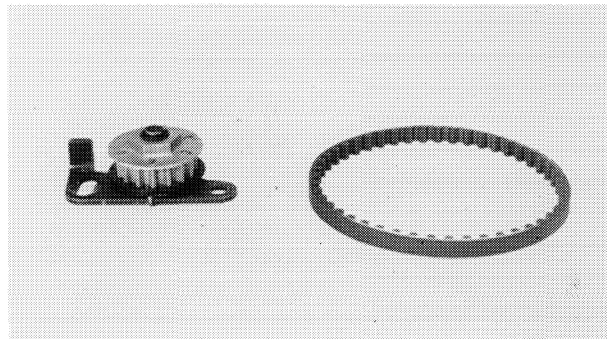


6. Remove:
 - Pulley bracket ①
 - Bolt (Rear shock absorber) ②
 - Adjusting belt
 - Rear shock absorber



INSPECTION

1. Inspect:
 - Rear shock absorber
Oil leaks/Damage → Replace.
2. Inspect:
 - Dust cover
 - Bushing
Damage/Wear → Replace.



3. Inspect:
 - Pulley
 - Adjusting belt
Damage/Wear → Replace.

INSTALLATION

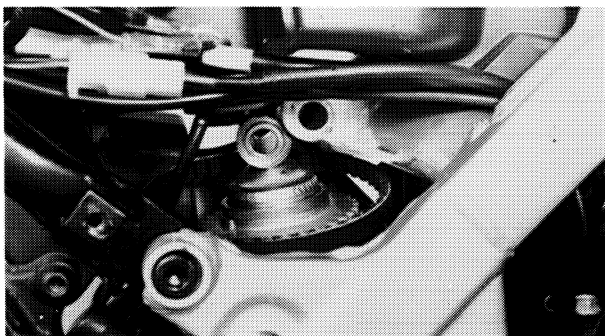
Reverse the removal procedure.

Note the following points.

1. Grease the bushing and dust seals.



Molybdenum Grease

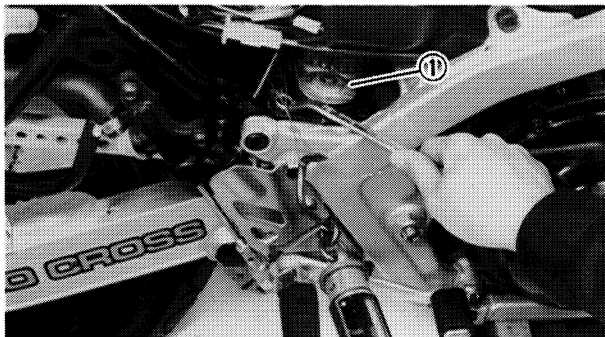


2. Install:
 - Rear shock absorber
 - Adjusting belt



Upper:
40 Nm (4.0 m·kg, 29 ft·lb)

Lower:
70 Nm (7.0 m·kg, 50 ft·lb)

**3. Install:**

- Pulley

Pull the pulley ① by a force of 20 kg (44 lb) using a spring scale.

4. Install:

- Muffler

**Exhaust Pipe Joint:**

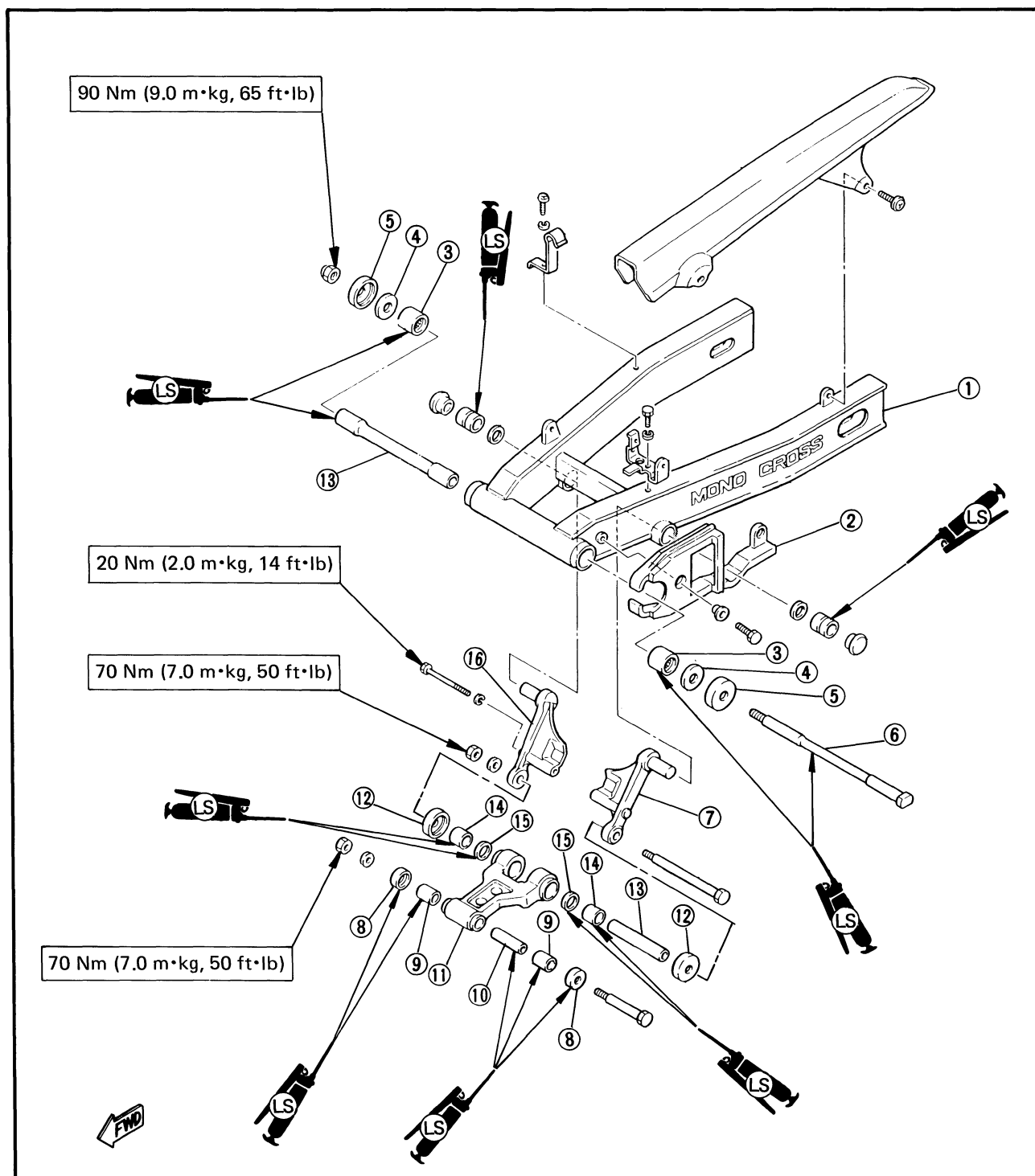
10 Nm (1.0 m·kg, 7.2 ft·lb)

Muffler:

25 Nm (2.5 m·kg, 18 ft·lb)

SWINGARM AND DRIVE CHAIN

- | | |
|----------------|----------------|
| ① Swingarm | ⑨ Collar |
| ② Chain guide | ⑩ Bush |
| ③ Bearing | ⑪ Relay arm |
| ④ Plate washer | ⑫ Thrust cover |
| ⑤ Thrust cover | ⑬ Collar |
| ⑥ Pivot shaft | ⑭ Bush |
| ⑦ Arm 1 | ⑮ Oil seal |
| ⑧ Thrust cover | ⑯ Arm 2 |



REMOVAL

1. Place the motorcycle on a level place.

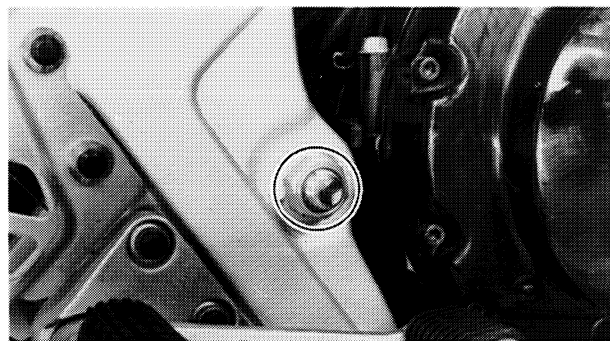
WARNING:

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

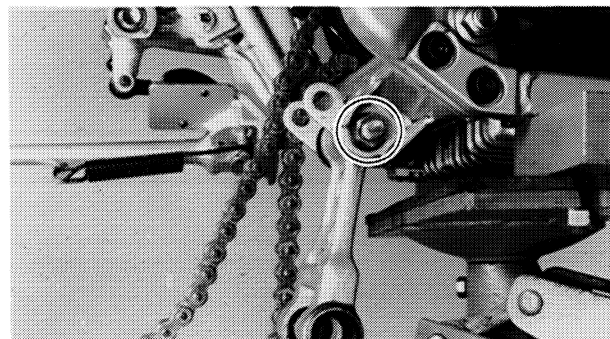
2. Remove:
 - Rear wheel
Refer to "REAR WHEEL – REMOVAL" section.
3. Remove:
 - Rear shock absorber
Refer to "REAR SHOCK ABSORBER – REMOVAL" section.



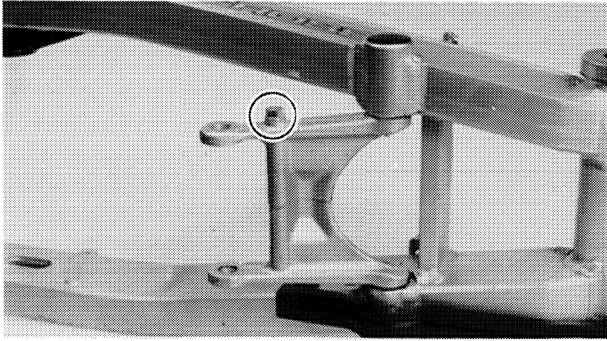
4. Remove:
 - Chain case



5. Remove:
 - Nut (Pivot shaft)
 - Pivot shaft
 - Swingarm



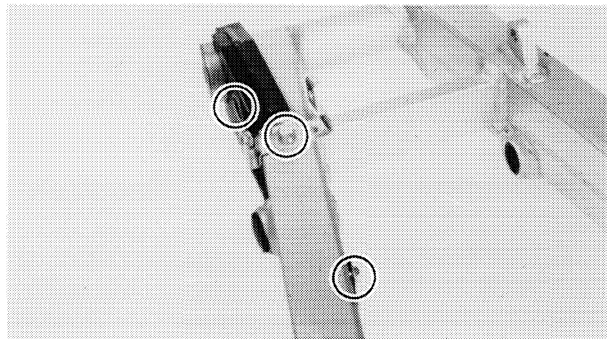
6. Remove:
 - Relay arm



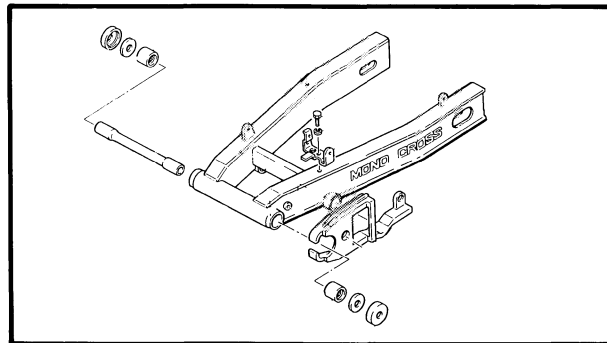
7. Remove:
- Bolt (Arm 1 and arm 2)
 - Arm 1
 - Arm 2



8. Remove:
- Tension bar
 - Brake hose holder

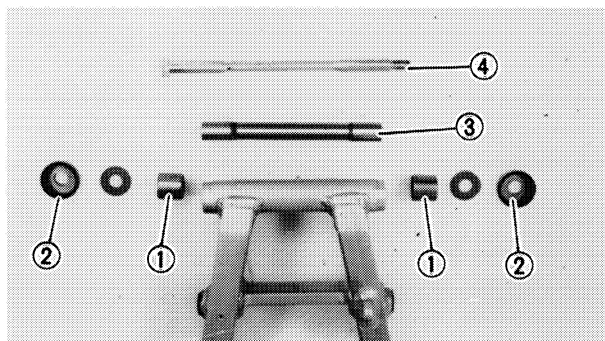


9. Remove:
- Chain guide
 - Stay (Chain case)



10. Remove:
- Oil seal
 - Bearing
 - Plate washer
 - Bush

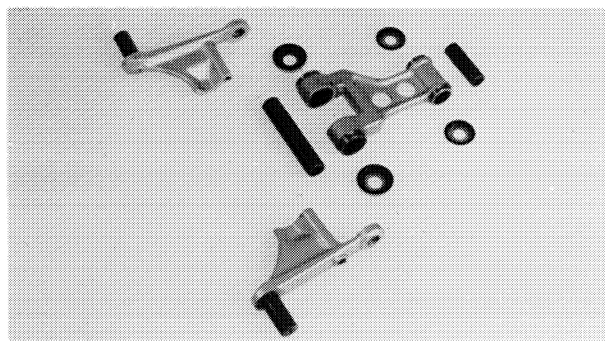
11. Remove:
- Change pedal link
 - Crankcase cover
 - Drive chain


INSPECTION

1. Wash the bearings in a solvent.

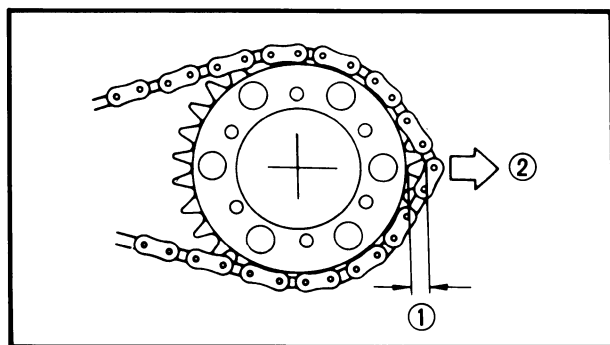
2. Inspect:

- Bearings ① (Race/Balls)
Pitting/Damage → Replace.
- Oil seals ②
Damage → Replace.
- Collar ③
- Pivot shaft ④
Damage → Replace.



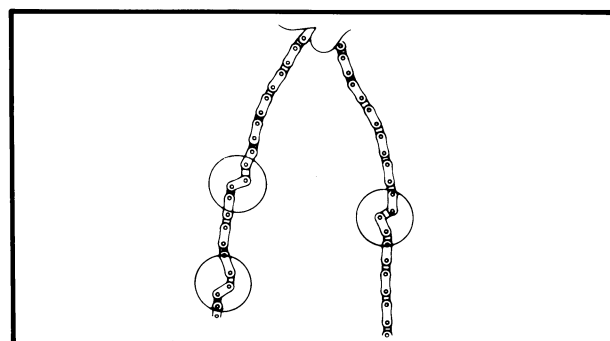
3. Inspect:

- Arm 1
- Arm 2
- Relay arm
Wear/Damage → Replace.



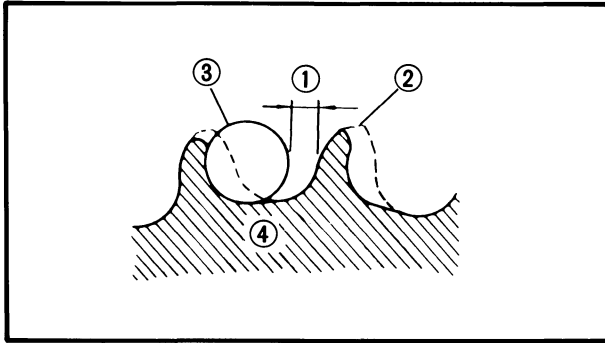
4. Check:

- Drive chain wear
Pull ② the chain away from the driven sprocket.
Distance chain/Sprocket higher than 1/2 tooth ① → Replace drive chain.



5. Check:

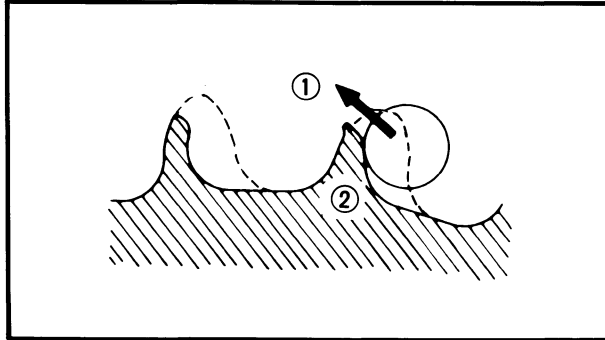
- Drive chain stiffness
Clean and oil the chain and hold as illustrated.
Stiff → Replace drive chain.



6. Inspect:

- Drive sprocket
- More than 1/4 teeth ① wear → Replace sprocket.

- ② Correct
- ③ Roller
- ④ Sprocket



7. Inspect:

- Drive Sprocket
- Bent teeth ② → Replace sprocket.

- ① Slip off

INSTALLATION

Reverse the removal procedure.

Note the following points.

1. Grease the bearings, oil seals and collars.



**Lithium Base Waterproof wheel
Bearing Grease**



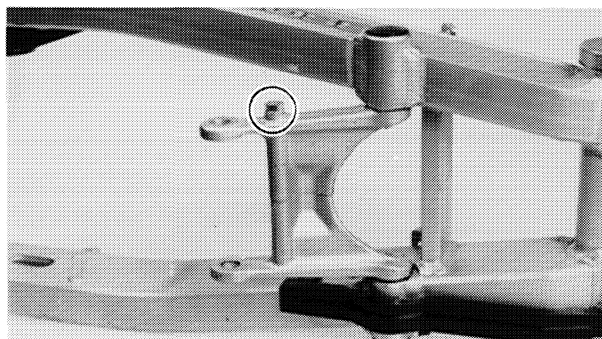
2. Install:

- Tension bar



26 Nm (2.6 m·kg, 19 ft·lb)

- Cotter pin (New)

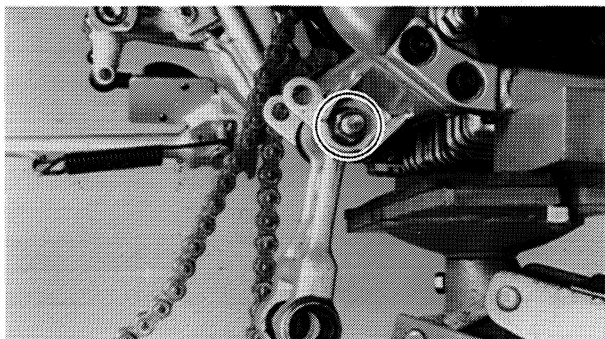


3. Install:

- Arm 1
- Arm 2



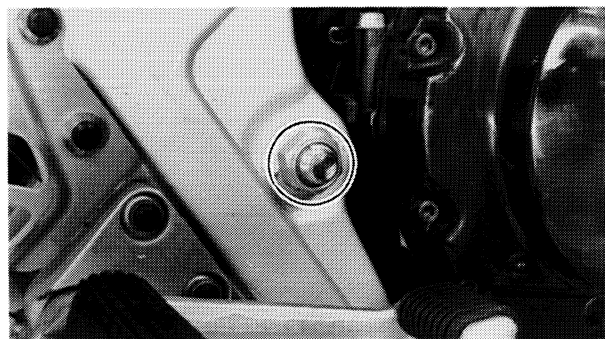
20 Nm (2.0 m·kg, 14 ft·lb)



4. Install:
- Relay arm



70 Nm (7.0 m·kg, 50 ft·lb)



5. Install:
- Drive chain
 - Swingarm



90 Nm (9.0 m·kg, 65 ft·lb)

6. Install:
- Rear shock absorber
- Refer to "REAR SHOCK ABSORBER — INSTALLATION" section.



Upper: 40 Nm (4.0 m·kg, 29 ft·lb)
Lower: 70 Nm (7.0 m·kg, 50 ft·lb)

7. Install:
- Rear wheel
- Refer to "REAR WHEEL — INSTALLATION" section.



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

8. Install:
- Brake caliper



35 Nm (3.5 m·kg, 25 ft·lb)

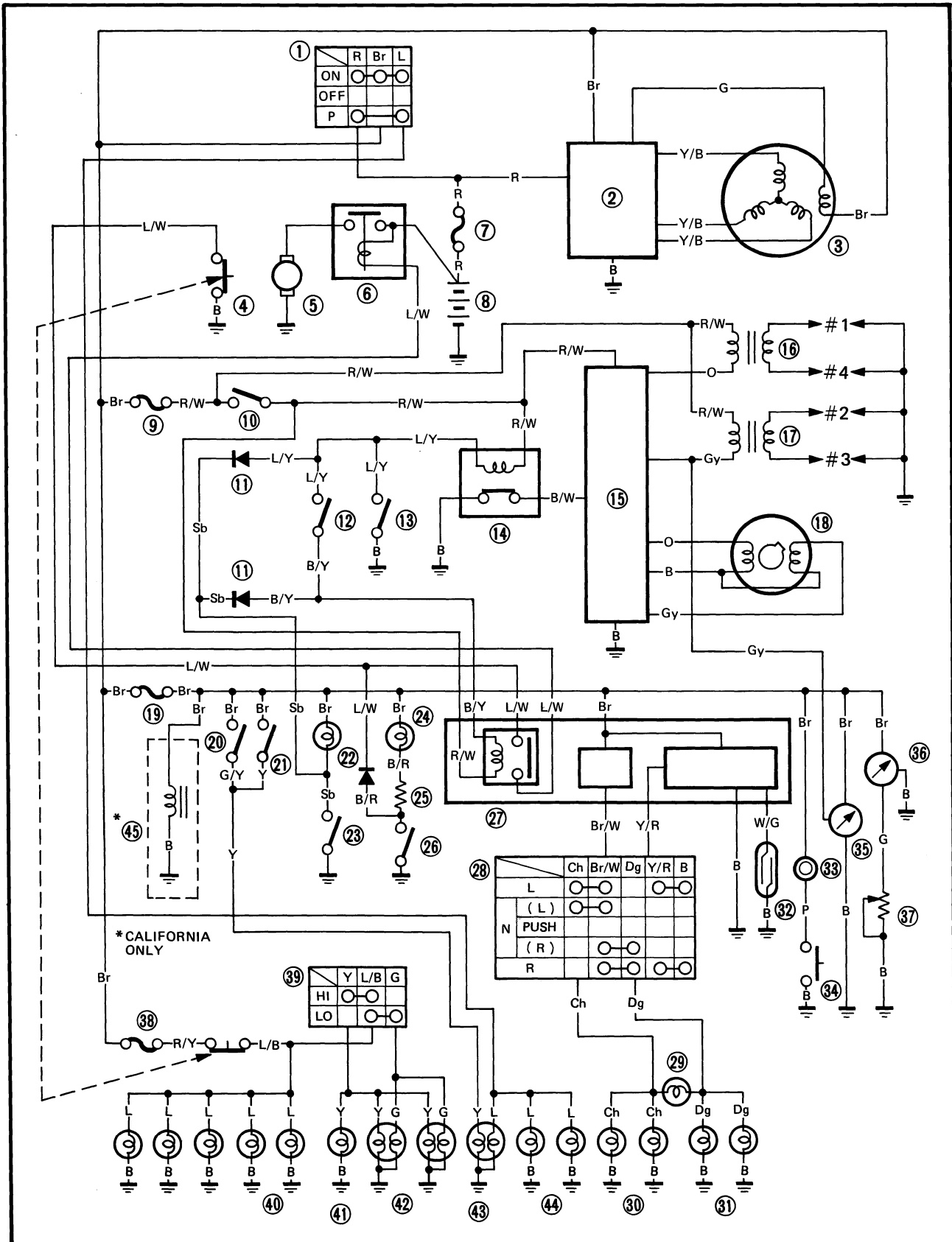
CHAPTER 6. ELECTRICAL

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ELECTRICAL

FZ600S/SC CIRCUIT DIAGRAM





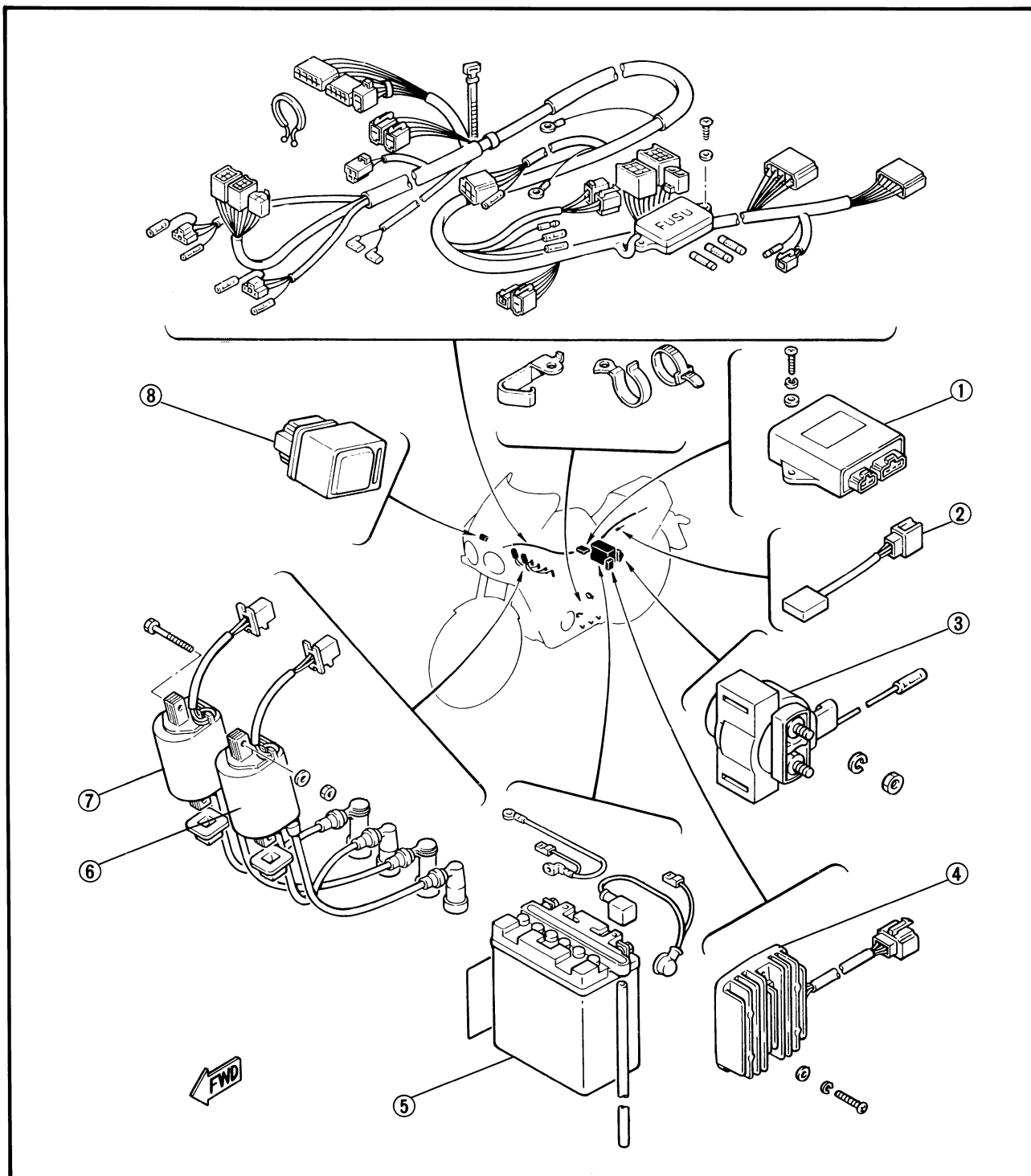
- | | |
|------------------------------------|--------------------------------|
| ① Main switch | ②⑥ Oil level switch |
| ② Rectifier/Regulator | ②⑦ Relay assembly |
| ③ AC Generator | ②⑧ "TURN" switch |
| ④ "START" switch | ②⑨ "TURN" indicator light |
| ⑤ Starter motor | ③⑩ Flasher light (Left) |
| ⑥ Starter relay | ③⑪ Flasher light (Right) |
| ⑦ Fuse (MAIN) | ③⑫ Reed switch |
| ⑧ Battery | ③⑬ Horn |
| ⑨ Fuse (IGNITION) | ③⑭ "HORN" switch |
| ⑩ "ENGINE STOP" switch | ③⑮ Tachometer |
| ⑪ Diode | ③⑯ Fuel meter |
| ⑫ Clutch switch | ③⑰ Fuel gauge |
| ⑬ Sidestand switch | ③⑱ Fuse (HEAD) |
| ⑭ Sidestand relay | ③⑲ "LIGHTS" (Dimmer) switch |
| ⑮ Ignitor unit | ④⑰ Meter light |
| ⑯ Ignition coil (# 1, 4 cylinders) | ④⑱ "HIGH BEAM" indicator light |
| ⑰ Ignition coil (# 2, 3 cylinders) | ④⑲ Headlight |
| ⑱ Pickup coil | ④⑳ Tail/Brake light |
| ⑲ Fuse (SIGNAL) | ④㉑ License light |
| ⑳ Front brake switch | ④㉒ Air vent control valve |
| ㉑ Rear brake switch | (California only) |
| ㉒ "NEUTRAL" indicator light | |
| ㉓ Neutral switch | |
| ㉔ "OIL" indicator light | |
| ㉕ Resistor | |

COLOR CODE

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

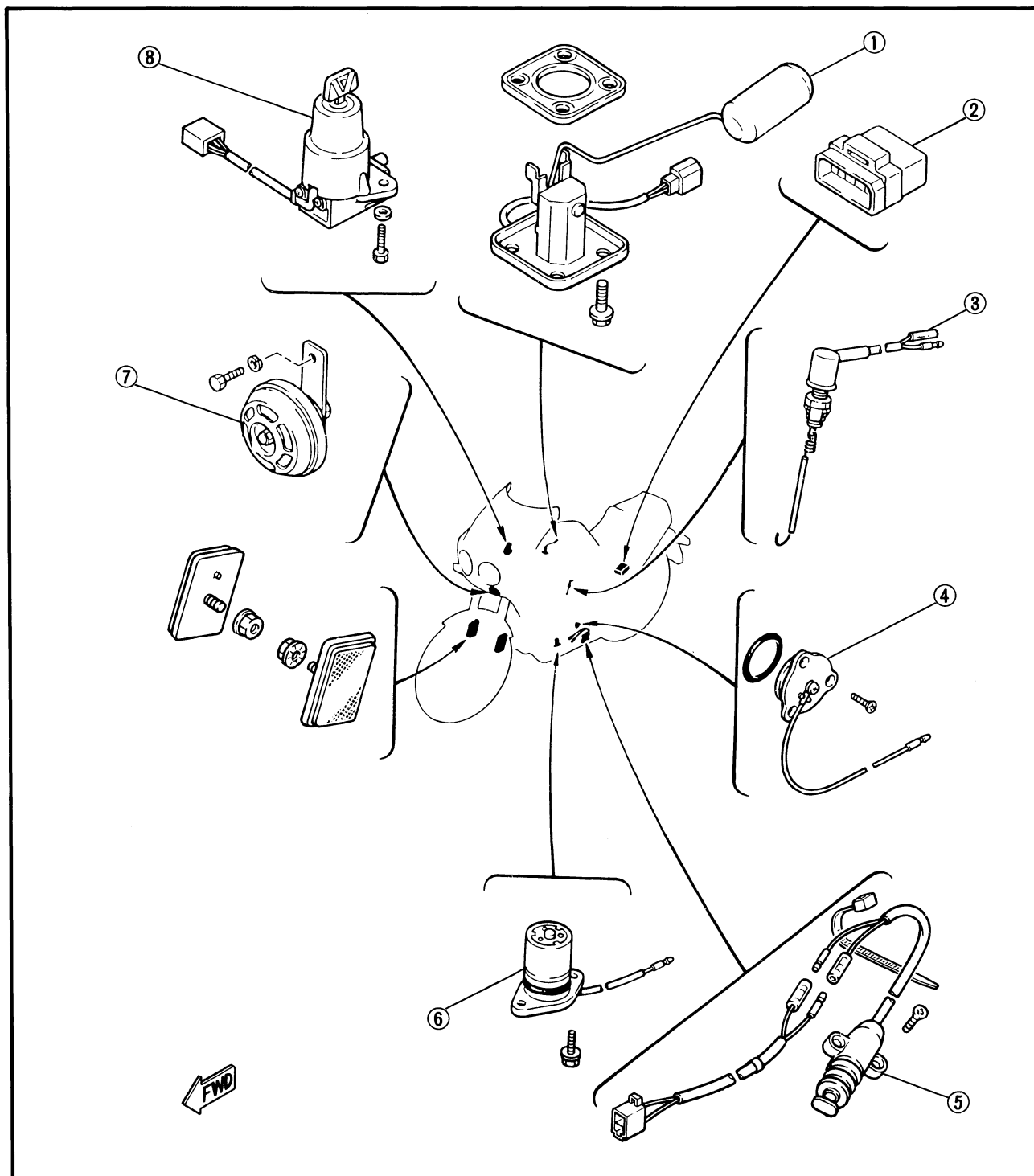

ELECTRICAL COMPONENTS

- | | |
|-----------------------|----------------------------------|
| ① Ignitor unit | ⑤ Battery |
| ② Diode assembly | ⑥ Ignition coil (#1, 4 cylinder) |
| ③ Starter relay | ⑦ Ignition coil (#2, 3 cylinder) |
| ④ Rectifier/Regulator | ⑧ Sidestand relay |





- ① Fuel gauge
- ② Relay assembly
- ③ Rear brake switch
- ④ Neutral switch
- ⑤ Sidestand switch
- ⑥ Oil level switch
- ⑦ Horn
- ⑧ Main switch

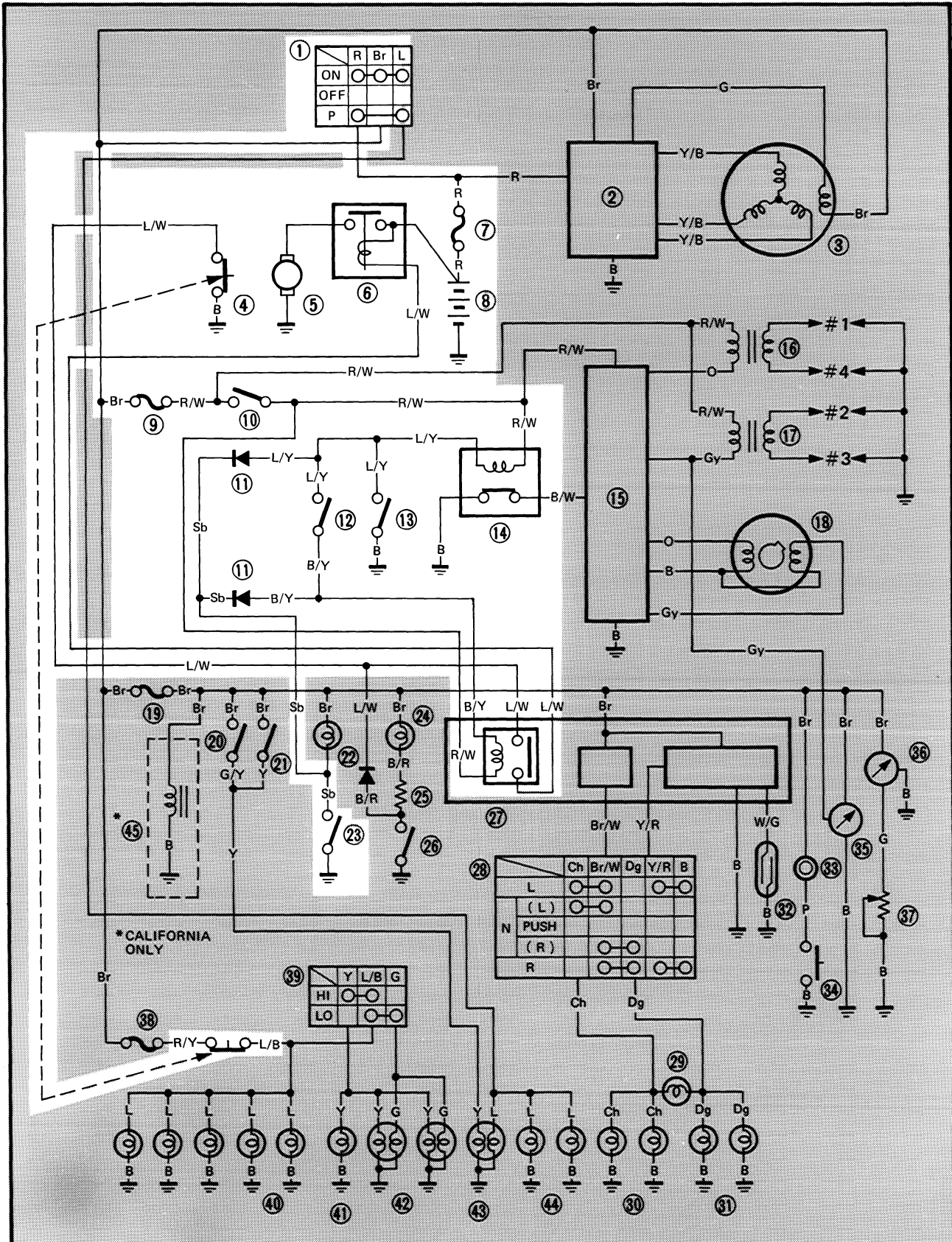




ELECTRICAL STARTING SYSTEM

CIRCUIT DIAGRAM

Below circuit diagram shows starter circuit

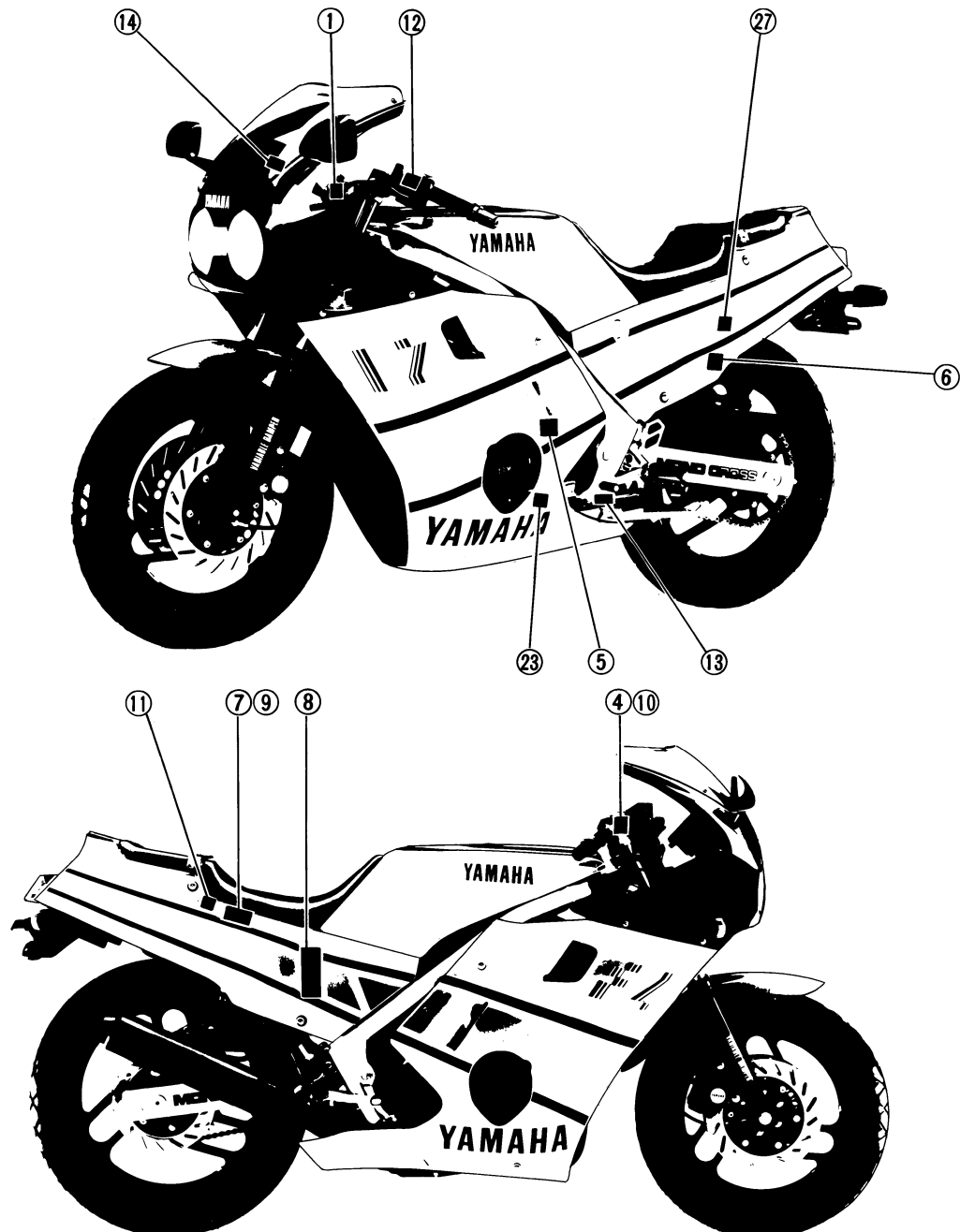




NOTE: _____

For the color codes, see page 6-2.

- | | |
|------------------------|--------------------|
| ① Main switch | ⑬ Sidestand switch |
| ④ "START" switch | ⑭ Sidestand relay |
| ⑤ Starter motor | ⑳ Neutral switch |
| ⑥ Starter relay | ㉑ Relay assembly |
| ⑦ Fuse (MAIN) | |
| ⑧ Battery | |
| ⑨ Fuse (IGNITION) | |
| ⑩ "ENGINE STOP" switch | |
| ⑪ Diode | |
| ⑫ Clutch switch | |



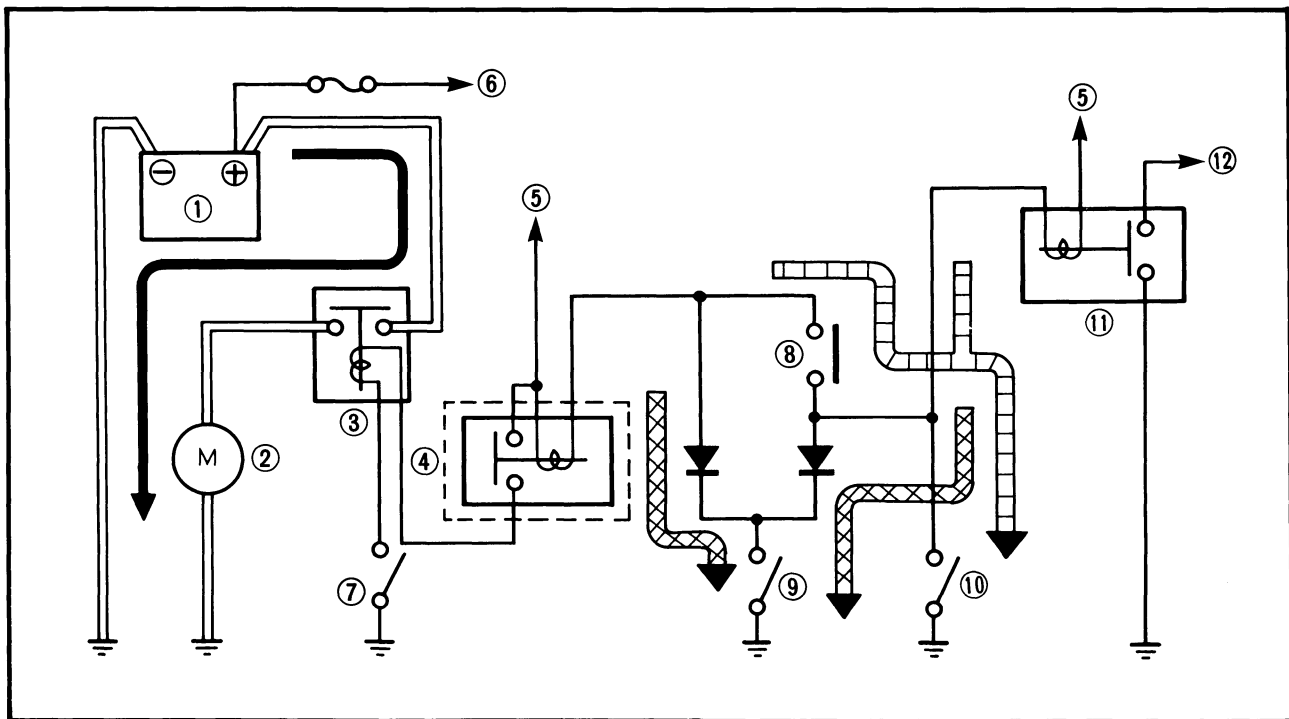
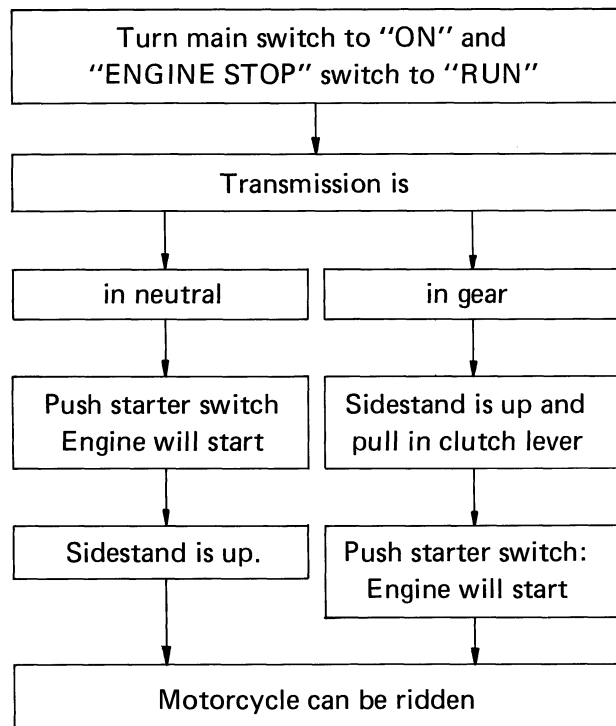


STARTING CIRCUIT OPERATION

The starting circuit on this model consists of the starter motor, starter relay, starting circuit cut-off relay, and sidestand relay.

If the engine stop switch and the main switch are both on, the starter motor can operate only if:

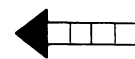
- The transmission is in neutral (the neutral switch is on).
- The sidestand is up (the sidestand switch is on) and clutch lever is pulled in (clutch switch is on).



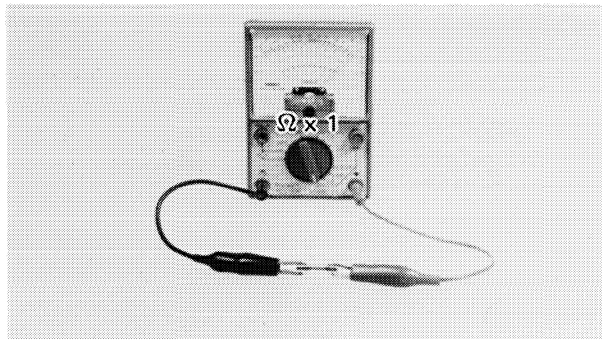
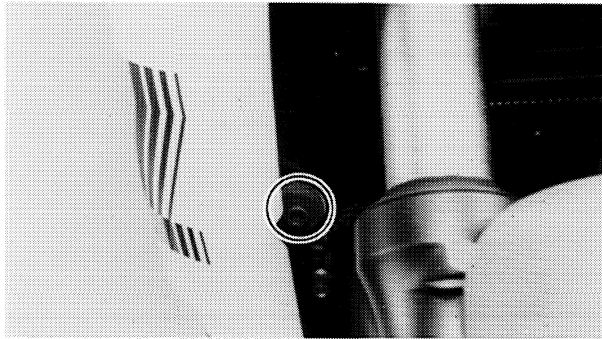
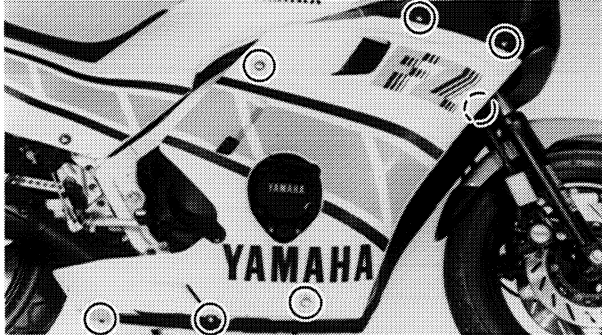
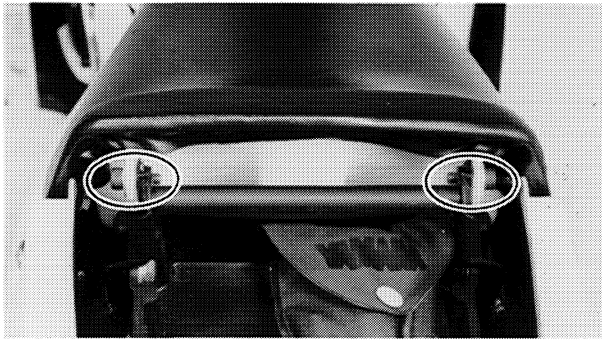
- | | |
|--|--------------------|
| ① Battery | ⑩ Sidestand switch |
| ② Starter motor | ⑪ Sidestand relay |
| ③ Starter relay | ⑫ To ignitor unit |
| ④ Starting circuit cut-off relay
(Included in relay assembly) | |
| ⑤ To "ENGINE STOP" switch | |
| ⑥ To main switch | |
| ⑦ "START" switch | |
| ⑧ Clutch switch | |
| ⑨ Neutral switch | |



WHEN THE TRANSMISSION IS IN NEUTRAL.



WHEN THE SIDESTAND IS UP AND CLUTCH LEVER IS PULLED IN.



TROUBLESHOOTING

STARTER MOTOR DOES NOT OPERATE.

Before this troubleshooting, remove following parts.

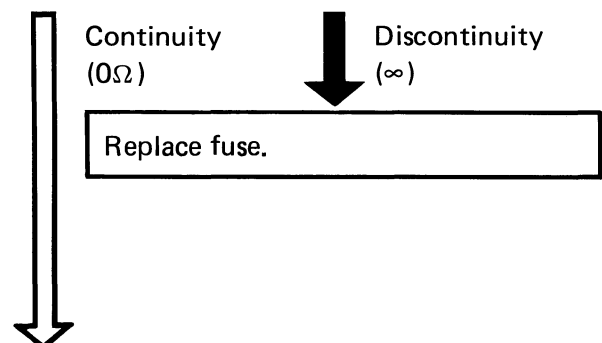
- Seat
- Side covers (Right and left)
- Center cowls (Right and left)
- Lower cowls (Right and left)
- Fuel tank

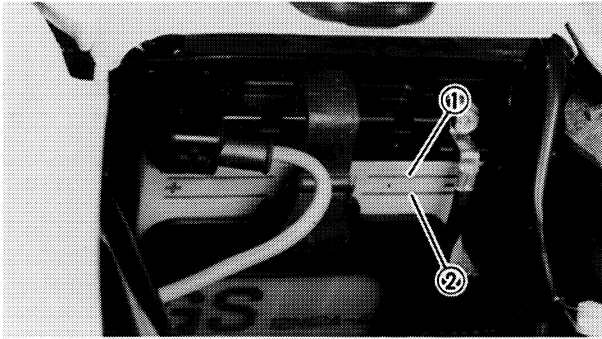
1. Fuse inspection

- Remove fuse (MAIN) and fuse (IGNITION).
- Connect Pocket Tester (YU-03112) to fuse and check if for continuity.

NOTE:

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





2. Battery fluid level inspection

- Fluid level should be between upper ① and lower ② level mark.

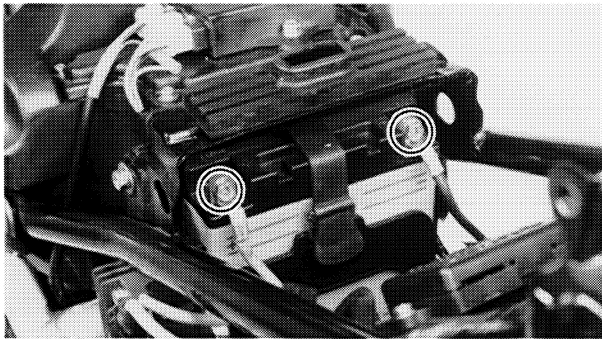
Correct

Incorrect

- Refill battery fluid.

CAUTION:

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



3. Battery terminal inspection

- Inspection battery terminal and connections.

OK

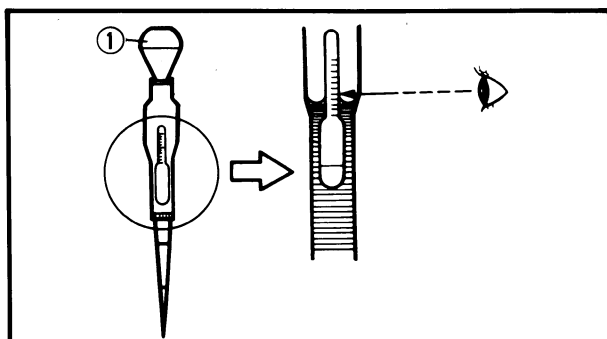
Dirty or poor connection

- Clean battery terminals using wire brush.

NOTE:

After cleaning terminals, apply grease lightly to both terminals.

- Connect battery leads correctly.



4. Battery fluid specific gravity inspection

- Remove caps.
- Inspect specific gravity of all cell using Battery Hydrometer ①.

Specific Gravity:
 1.280 ± 0.01 at 20°C (68°F)

**WARNING:**

Battery electrolyte is poisonous and dangerous, causing severe burns, etc. It contains sulfuric acid. Avoid contact with skin, eyes or clothing. Antidote: **EXTERNAL** — Flush with water. **INTERNAL** — Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call a physician immediately.

Eyes: Flush with water for 15 minutes and get prompt medical attention. Batteries produce explosive gases. Keep sparks, flame, cigarettes etc., away. Ventilate when charging or using in an enclosed space. Always shield your eyes when working near batteries.

KEEP OUT OF REACH OF CHILDREN.

OK

Low specific gravity

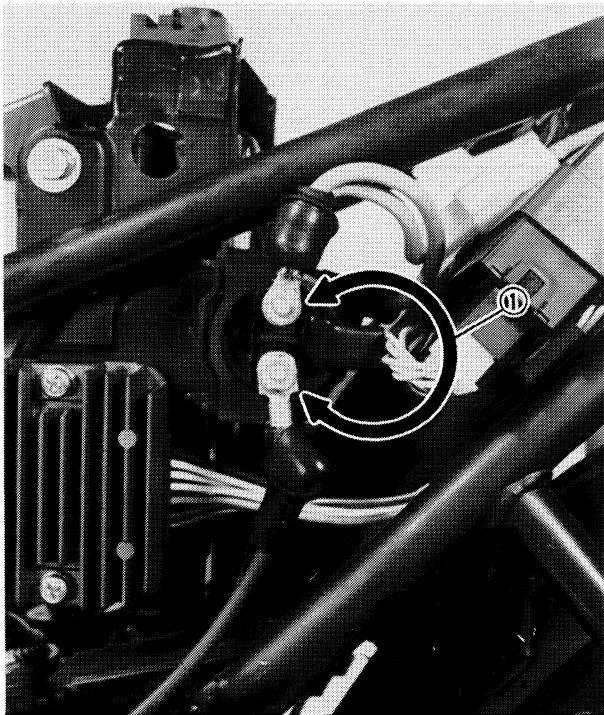
- Recharge battery

Charging Current:
1.2 amps/10 hrs

NOTE:

Replace the battery if:

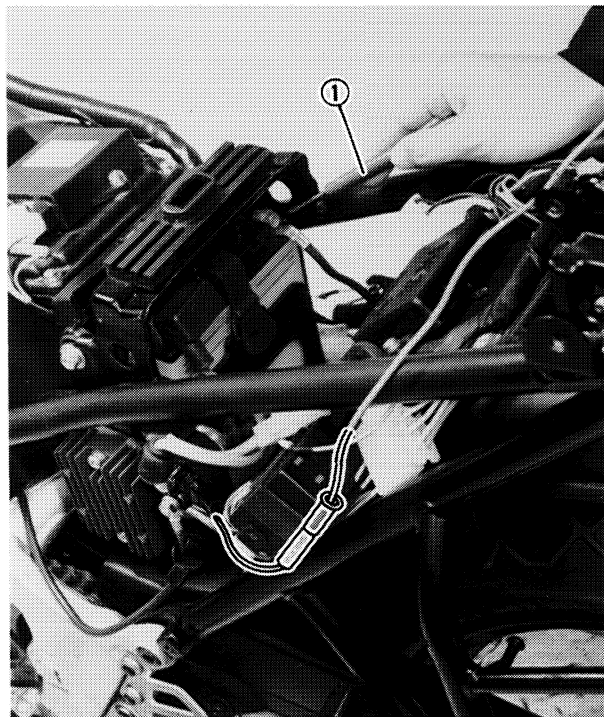
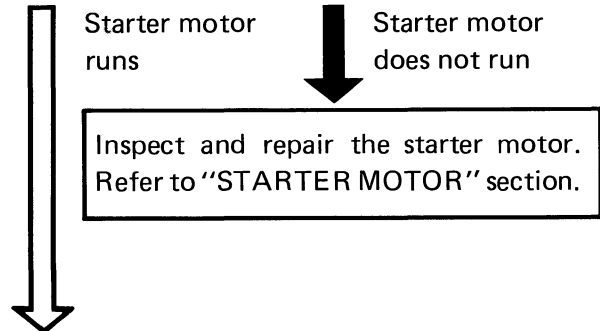
- Battery voltage will not rise to a specific value or bubbles fail to rise even after many hours of charging.
- Sulfation of one or more cells occurs, as indicated by the plates turning white, or an accumulation of material exists in the bottom of the cell.
- Specific gravity readings after a long,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



5. Connect battery positive (+) lead and starter motor lead; use heavy duty jumper lead ①.

WARNING:

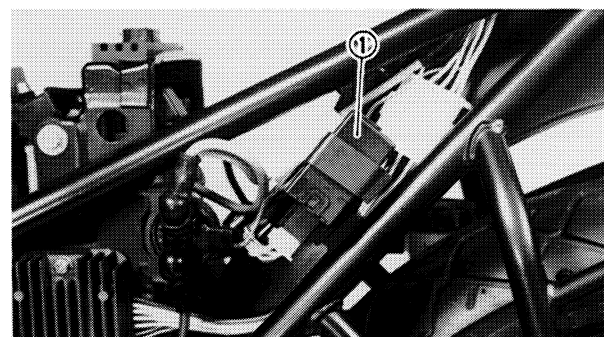
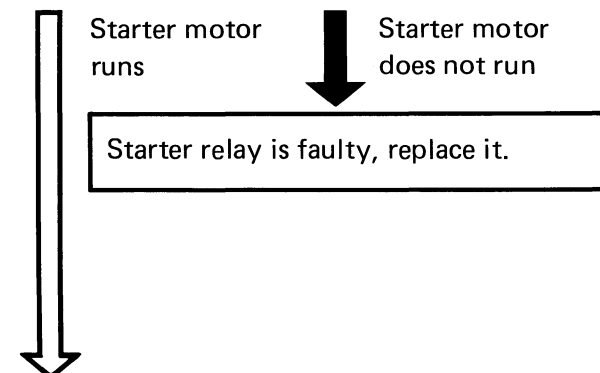
This test should be performed within a few seconds to prevent further damage. Also, there should be no flammables close to the starter relay.



6. Starter relay conduct check

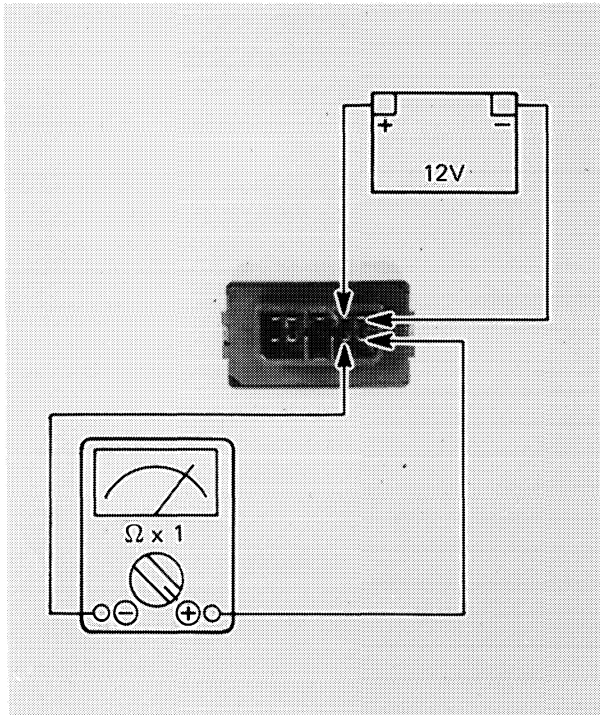
- Disconnect starter relay leads (Blue/White) and connect them to battery negative lead use a jumper leads.

① Negative lead



7. Starting circuit cut-off relay conduct check

- Remove relay assembly ①.



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

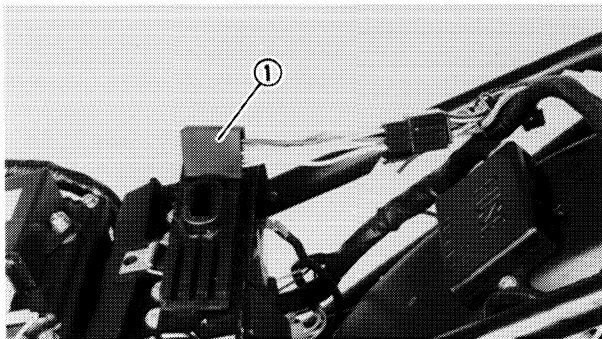
NOTE:

- Use full charge battery.
- Set tester selector to " $\Omega \times 1$ " position.

Continuity
(0 Ω)

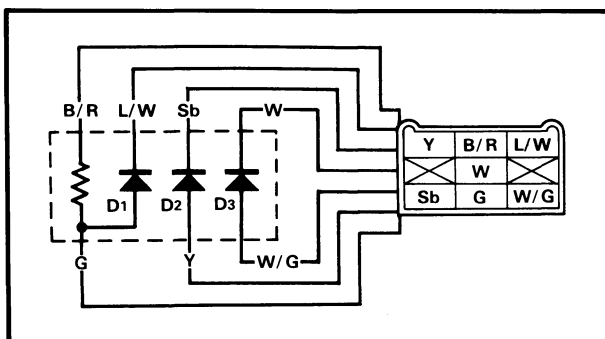
Discontinuity
(∞)

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



8. Diode assembly condition check

- Remove diode assembly ①.



- Connect Pocket Tester (YU-03112) to diode assembly terminals and check diode D_2 and D_3 condition.

Refer to following table.

NOTE:

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



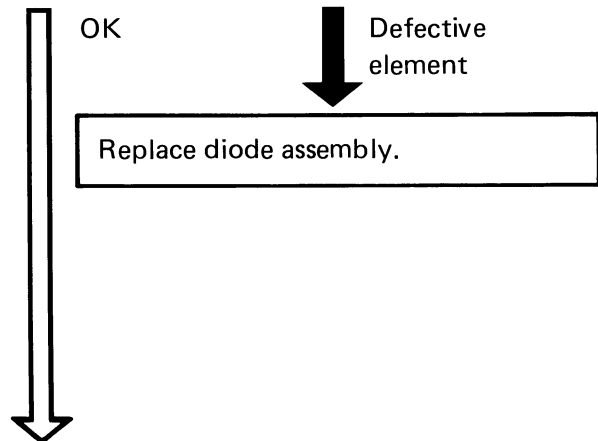
Element	Pocket tester		Good
	(+)	(-)	
D ₂	Y	Sb	○
	Sb	Y	x
D ₃	W/G	W	○
	W	W/G	x

○: Continuity (0Ω)

x: Discontinuity (∞)

NOTE:

The results "○" or "x" should be reversed according to the pocket tester polarity.



9. Main switch conduct check

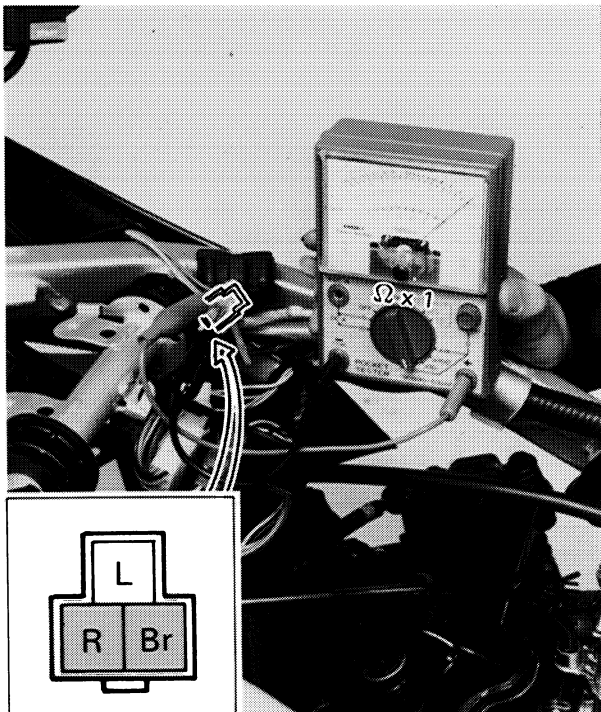
- Disconnect main switch coupler (Brown, Red, Blue).
- Connect Pocket Tester (YU-03112) to main switch leads (Brown, Red).

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

NOTE:

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

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

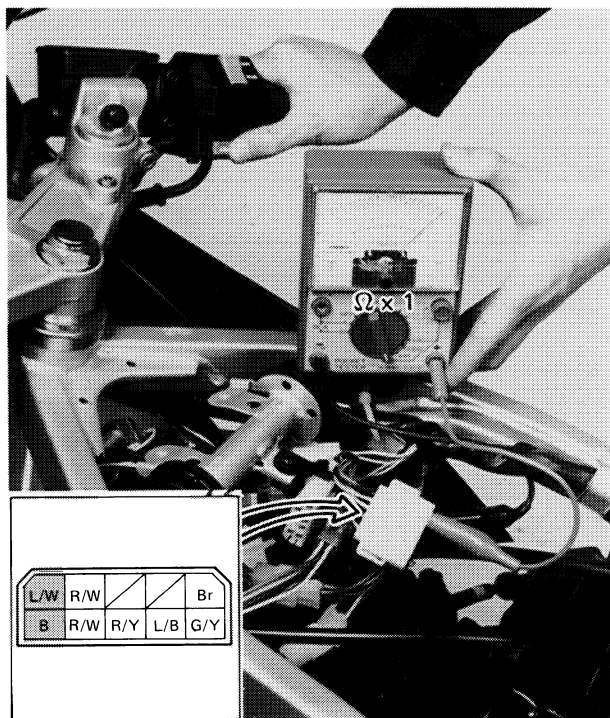




Continuity
(0Ω)

Discontinuity
(∞)

Main switch is faulty, replace it.



10. "START" switch conduct check

- Disconnect handlebar switch (Right) leads (Blue/White, Black, Red/White, Red/White, Red/Yellow, Blue/Black, Brown, Green/Yellow).
- Connect Pocket Tester (YU-03112) to handlebar switch leads (Blue/White, Black).

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

NOTE:

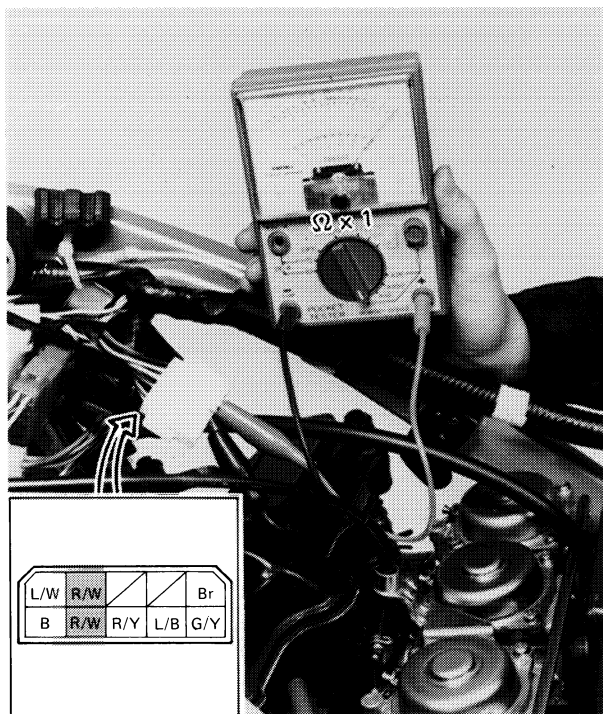
Set tester selector to "Ω x 1" position.

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

Continuity
(0Ω)

Discontinuity
(∞)

"START" switch is faulty, replace handlebar switch.



11. "ENGINE STOP" switch conduct check

- Disconnect handlebar switch (Right) leads (Blue/White, Black, Red/White, Red/White, Red/Yellow, Blue/Black, Brown, Green/Yellow).
- Connect Pocket Tester (YU-03112) to handlebar switch leads (Red/White, Red/White).



Tester (+) lead → Red/White lead
Tester (–) lead → Red/White lead

NOTE:

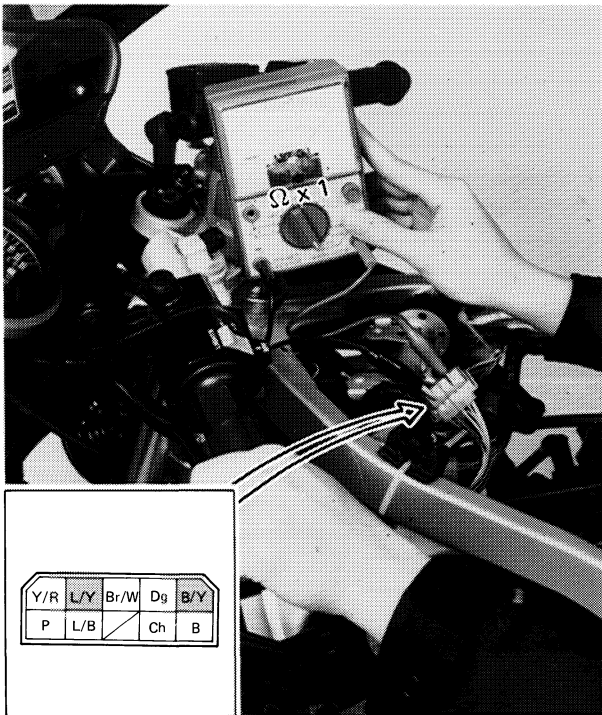
Set tester selector to " $\Omega \times 1$ " position.

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

Continuity
(0 Ω)

Discontinuity
(∞)

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



Y/R	L/Y	Br/W	Dg	B/Y
P	L/B	Ch	B	

12. Clutch switch conduct check

- Disconnect handlebar switch (Left) leads (Yellow/Red, Blue/Yellow, Brown/White, Dark Green, Black/Yellow, Pink, Blue/Black, Chocolate, Black).
- Connect Pocket Tester (YU-03112) to clutch switch leads (Black/Yellow, Blue/Yellow).

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

NOTE:

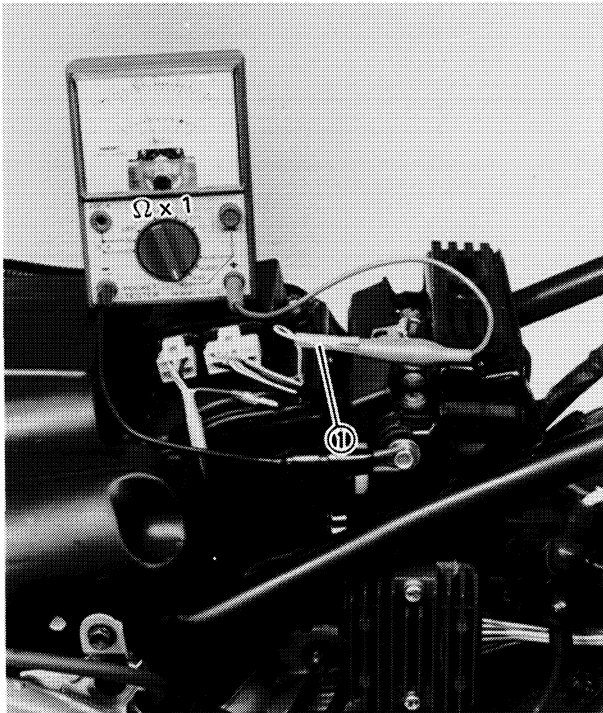
Set tester selector to " $\Omega \times 1$ " position.

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

Continuity
(0 Ω)

Discontinuity
(∞)

Clutch switch is faulty; replace it.



13. Neutral switch conduct check

- Disconnect neutral switch lead (Sky blue) ① .
- Connect Pocket Tester (YU-03112) to neutral switch lead and frame earth lead.

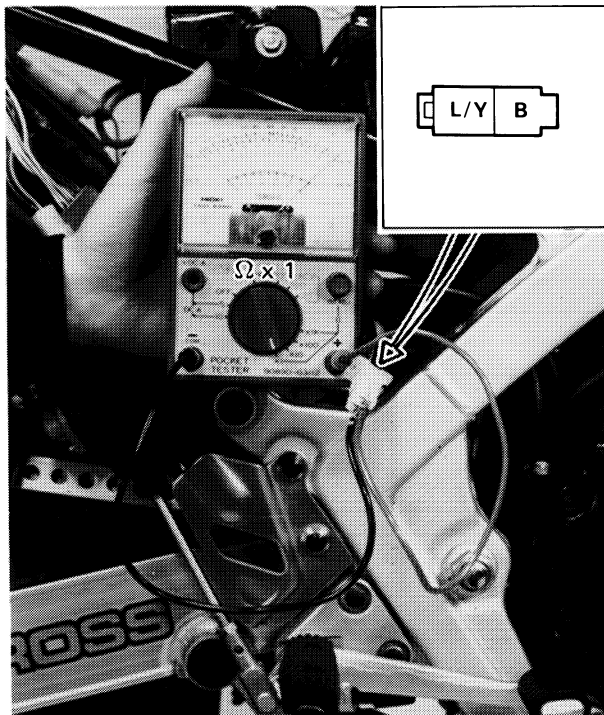
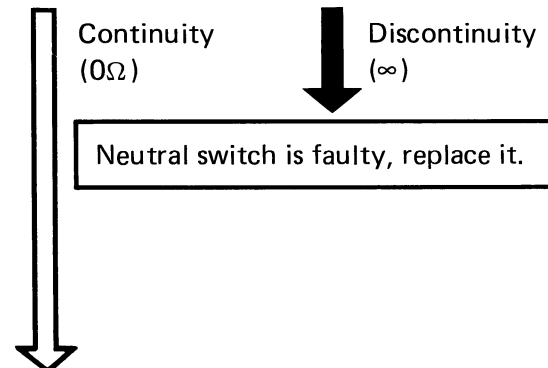
Tester (+) lead → Sky blue lead

Tester (–) lead → Frame earth

NOTE:

Set tester selector to “Ω x 1” position.

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



14. Sidestand switch conduct check

- Disconnect sidestand leads (Blue/Yellow, Black).
- Connect Pocket Tester (YU-03112) to sidestand switch leads.

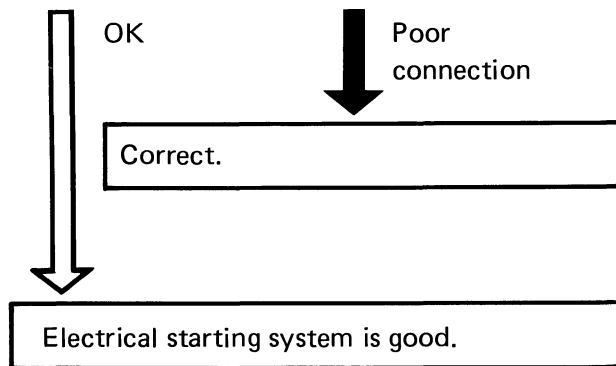
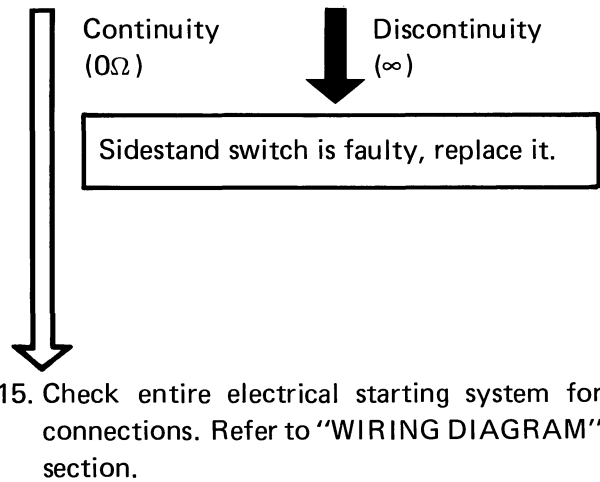
Tester (+) lead → Blue/Yellow lead

Tester (–) lead → Black lead

NOTE:

Set tester selector to “Ω x 1” position.

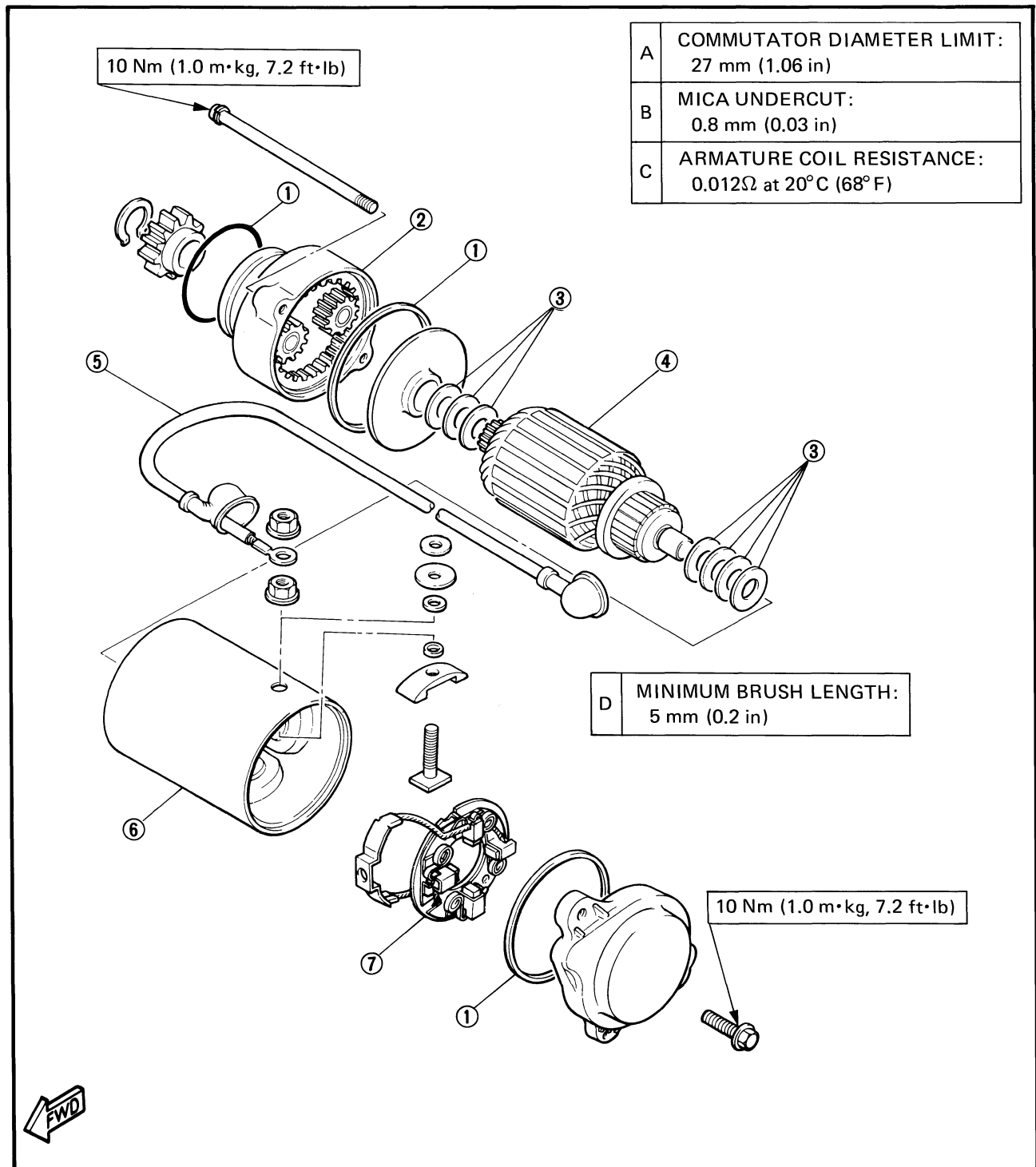
- Place motorcycle on a level place.
- Sidestand is up and check sidestand switch for continuity.

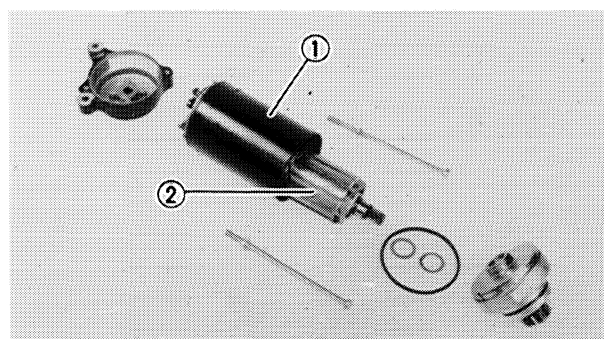
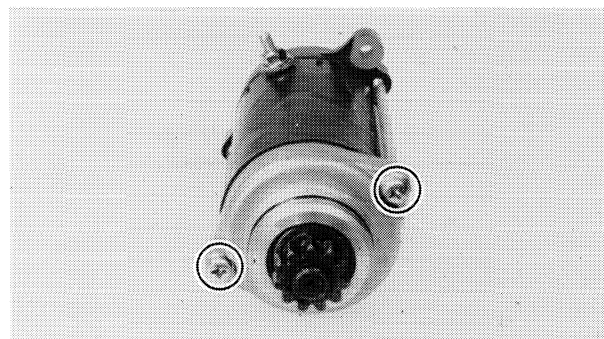
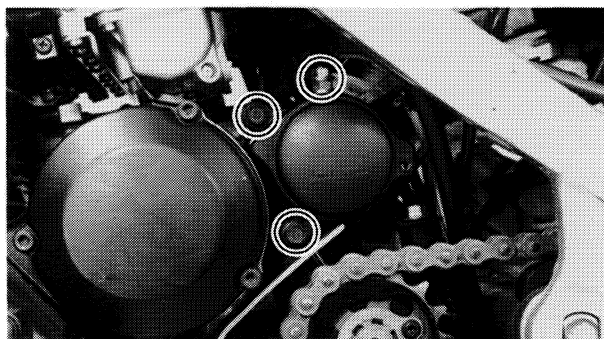
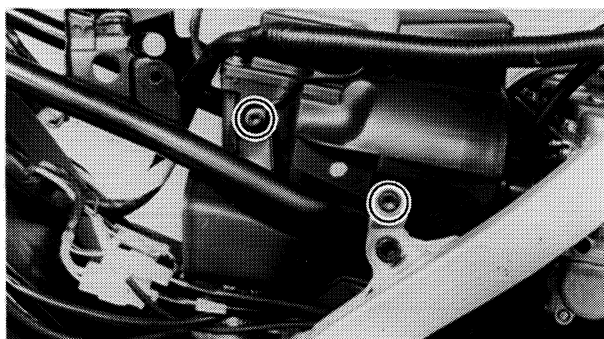
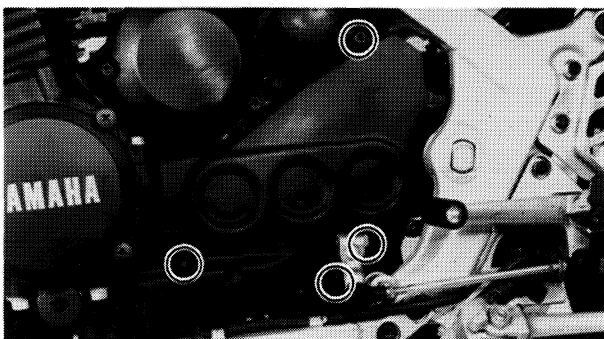




STARTER MOTOR

- ① O-ring
- ② Gear assembly
- ③ Shims
- ④ Armature coil assembly
- ⑤ Starter motor lead
- ⑥ Yoke assembly
- ⑦ Brush assembly





Removal

1. Remove:

- Center cowls (Right and left)
- Lower cowls (Right and left)
- Change pedal link
- Cover (Drive sprocket)
- Seats
- Side covers

2. Loosen:

- Screws (Carburetor joint)

3. Remove:

- Bolts (Air cleaner case)

4. Slide the air cleaner case backward.

5. Remove:

- Starter motor lead
- Starter motor

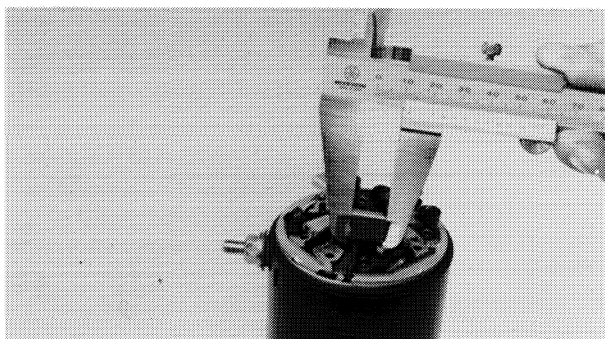
Disassembly

1. Remove:

- Screws

2. Remove:

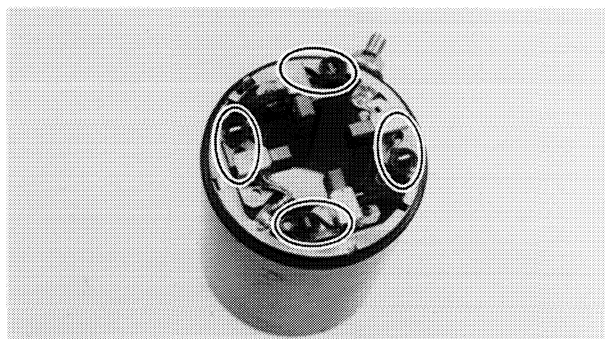
- Yoke assembly ①
- Armature coil assembly ②

**Inspection and Repair****1. Measure:**

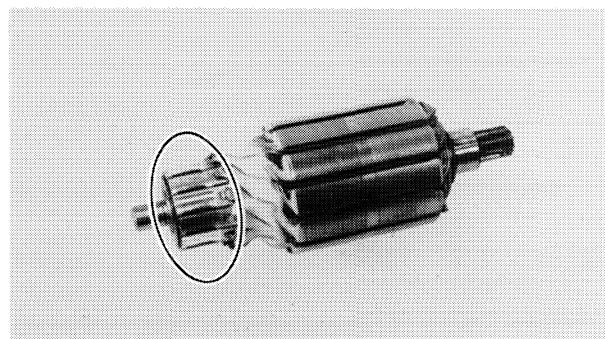
- Brush length (each)
Out of specification → Replace brush.



Minimum Brush Length:
5 mm (0.2 in)

**2. Inspect:**

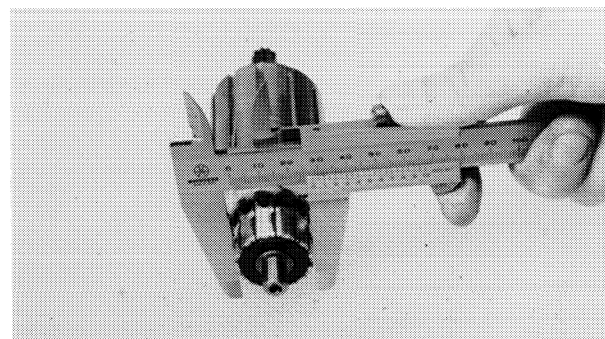
- Brush spring
Damage → Replace.

**3. Inspect:**

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

NOTE:

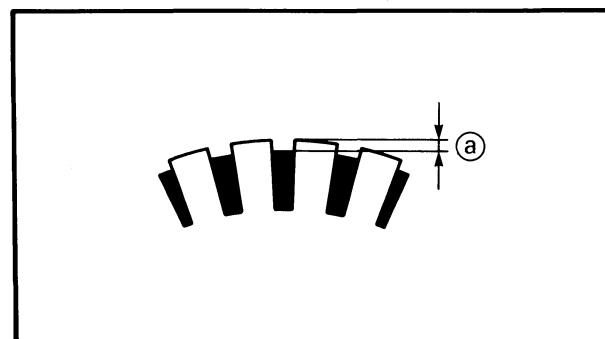
Sand the commutator outer surface lightly and evenly.

**4. Measure:**

- Commutator diameter
Out of specification → Replace.



Outside Diameter Limit:
27 mm (1.06 in)

**5. Measure:**

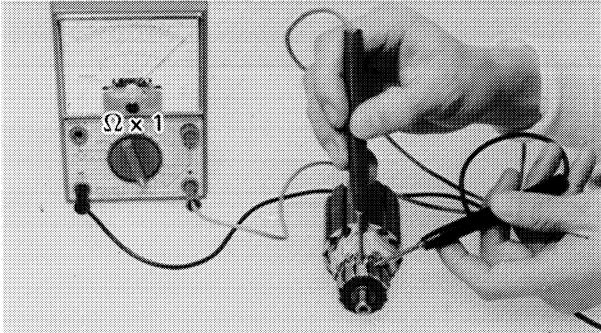
- Mica undercut (a)
Out of specification → Scrape mica using a hacksaw blade.



Mica Undercut (a) :
0.8 mm (0.03 in)

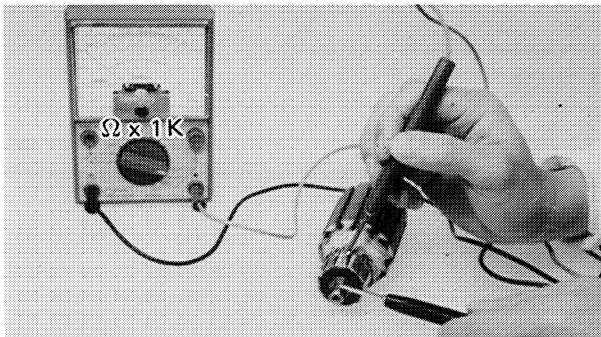
**NOTE:**

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

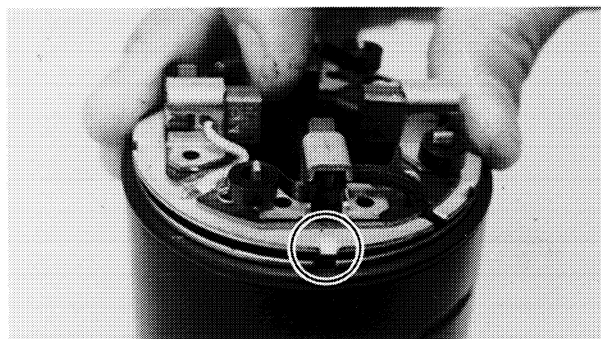
**6. Measure:**

- Armature coil resistance
- Out of specification → Replace.

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

**7. Check:**

- Armature coil insulation
- Set the pocket tester selector to “Ω x 1K” position.
Continuity → Replace.

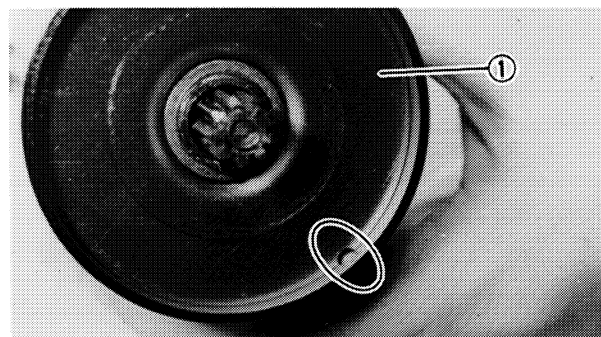
**Assembly**

Reverse the “Disassembly” procedure. Note the following points.

1. Install:
 - Brush assembly

NOTE:

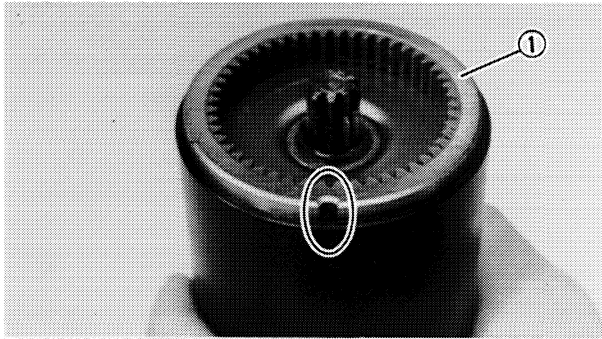
Fit the projection onto the recess.

**2. Install:**

- Bracket ①

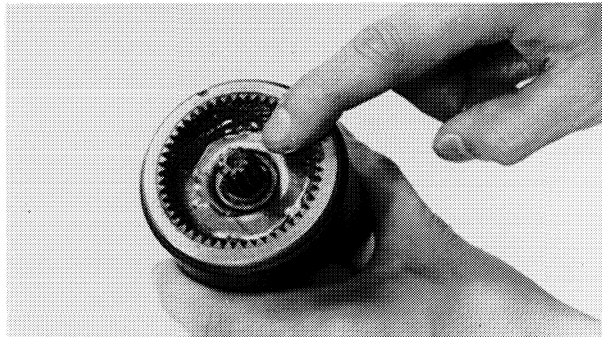
NOTE:

Fit the recess to the projection.

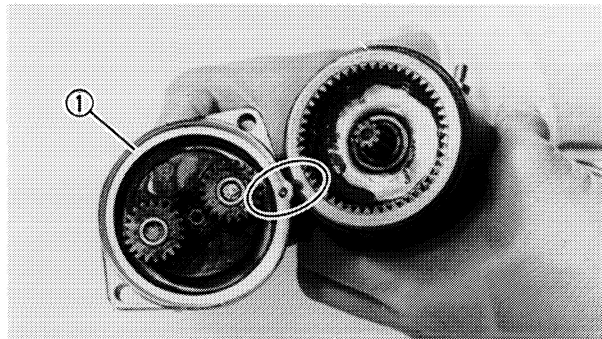


3. Install:
- Ring gear ①

NOTE: _____
Fit the recess to the projection.

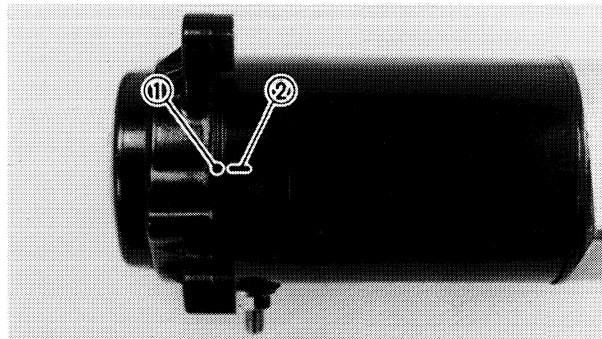


4. Apply:
- Lithium soap base grease



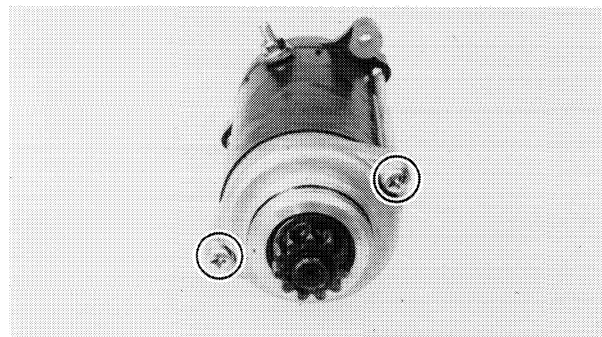
5. Install:
- Gear assembly ①

NOTE: _____
Fit the pin into the ring gear recess.



6. Install:
- Brush cap

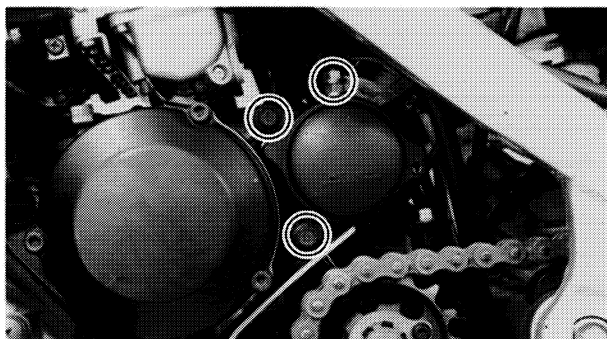
NOTE: _____
Align the match mark ① on the brush cap with
the match mark ② on the yoke assembly.



7. Install:
- Screws



10 Nm (1.0 m·kg, 7.2 ft·lb)

**Installation**

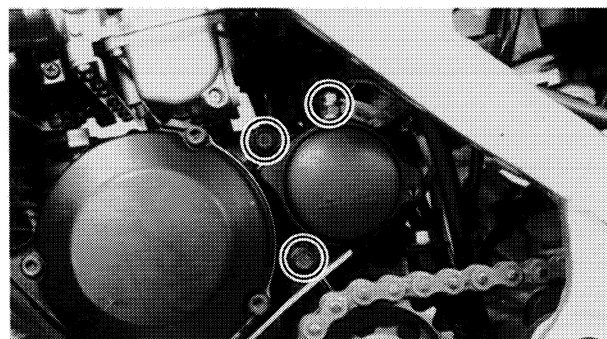
Reverse the "Removal" procedure. Note the following points.

1. Apply:
 - Lithium soap base grease

2. Install:
 - Starter motor



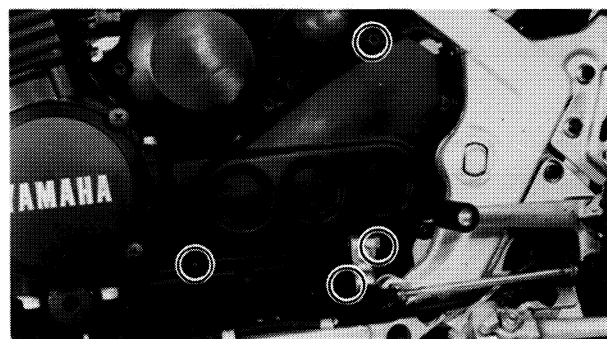
10 Nm (1.0 m·kg, 7.2 ft·lb)



3. Install:
 - Cover (Drive sprocket)
 - Change pedal link
 - Lower cowls
 - Center cowls



Bolt (Change pedal link):
10 Nm (1.0 m·kg, 7.2 ft·lb)



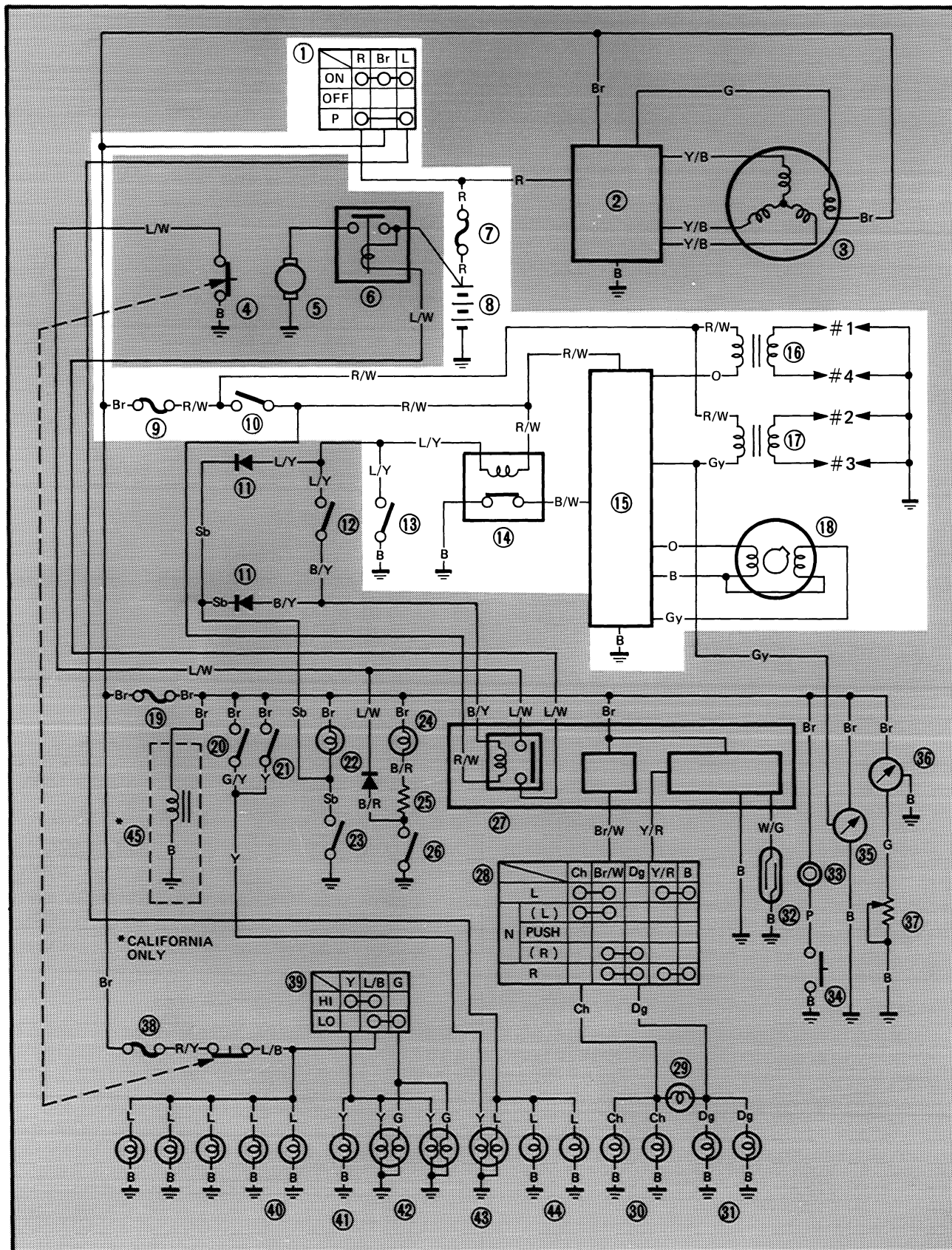
This image shows a full page of a document template. It consists of approximately 20 horizontal dashed lines spaced evenly down the page, providing a guide for handwriting practice or as a simple writing template. The lines are light gray and extend across the entire width of the page. There is no text, imagery, or other markings present.



IGNITION SYSTEM

CIRCUIT DIAGRAM

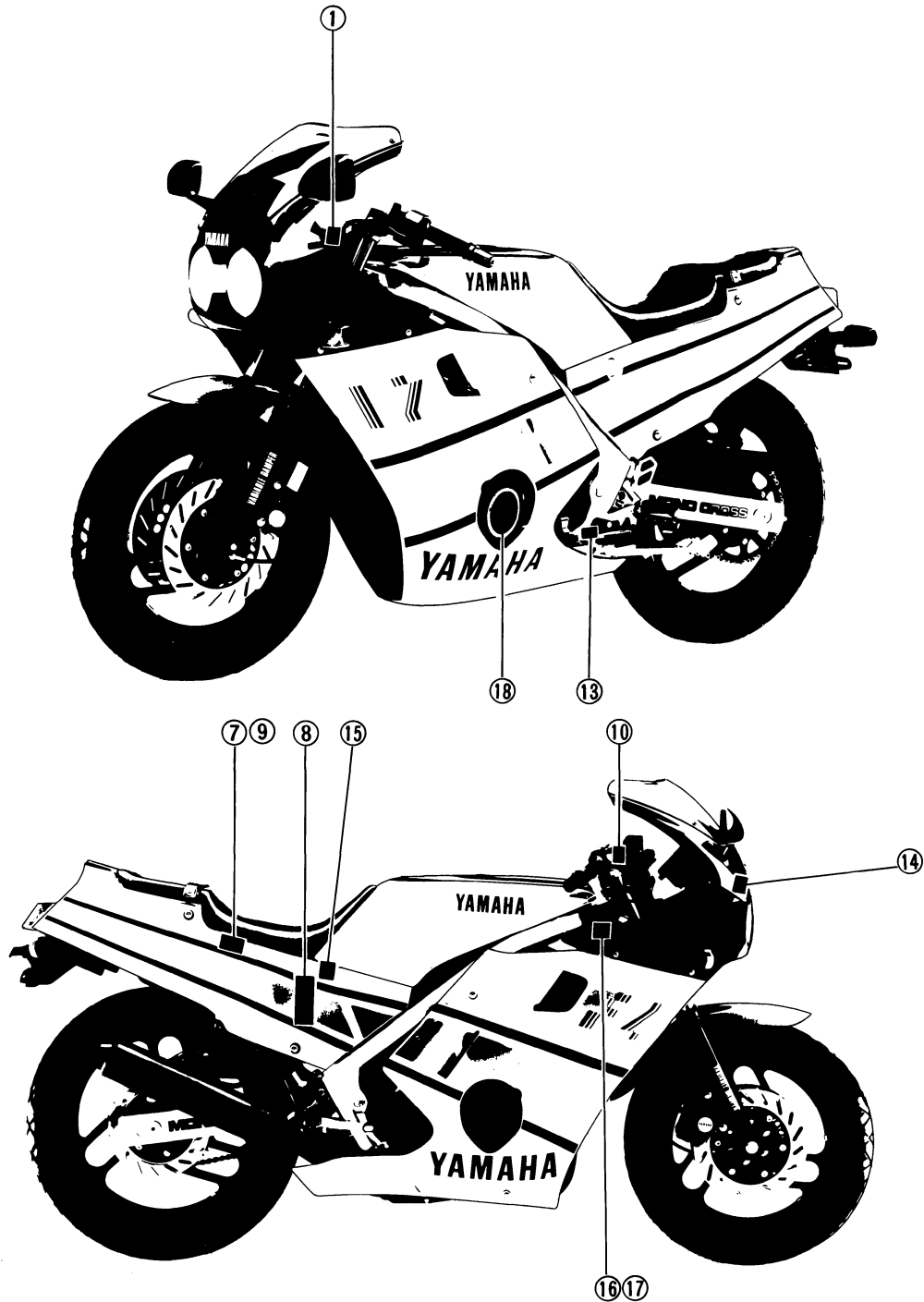
Below circuit diagram shows ignition circuit.





NOTE: _____
For the color codes, see page 6-2.

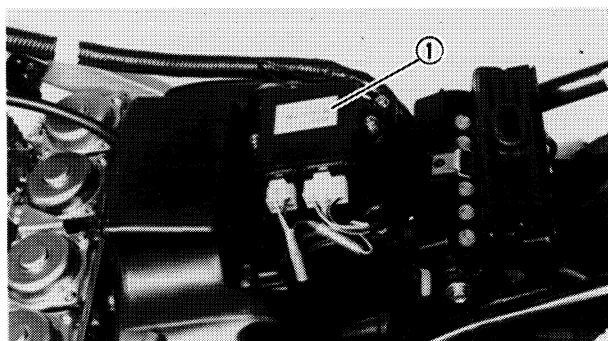
- | | |
|------------------------|----------------------------------|
| ① Main switch | ⑭ Sidestand relay |
| ⑦ Fuse (MAIN) | ⑮ Ignitor unit |
| ⑧ Battery | ⑯ Ignition coil (#1, 4 cylinder) |
| ⑨ Fuse (IGNITION) | ⑰ Ignition coil (#2, 3 cylinder) |
| ⑩ "ENGINE STOP" switch | ⑱ Pickup coil |
| ⑬ Sidestand switch | |





DESCRIPTION

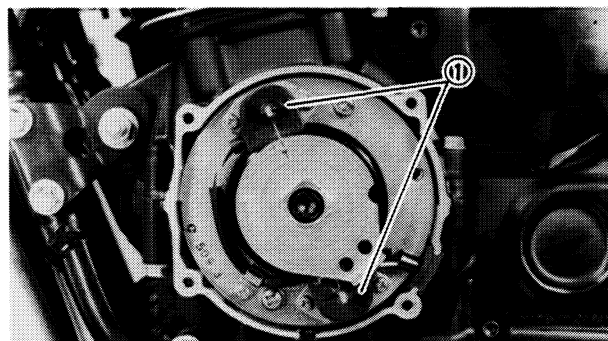
This model is equipped with a battery operated, fully transistorized, breakerless ignition system. By using magnetic pickup coils, the need for contact breaker points is eliminated. This adds to the dependability of the system by eliminating frequent cleaning and adjustment of points and ignition timing. The TCI (Transistor Control Ignition) unit incorporates an automatic advance circuit controlled by signals generated by the pickup coil. This adds to the dependability of the system by eliminating the mechanical advancer. This TCI system consists of two units; a pickup unit and an ignitor unit.



OPERATION

The TCI functions on the same principle as a conventional DC ignition system with the exception of using magnetic pickup coils and a transistor control box (TCI) in place of contact breaker points.

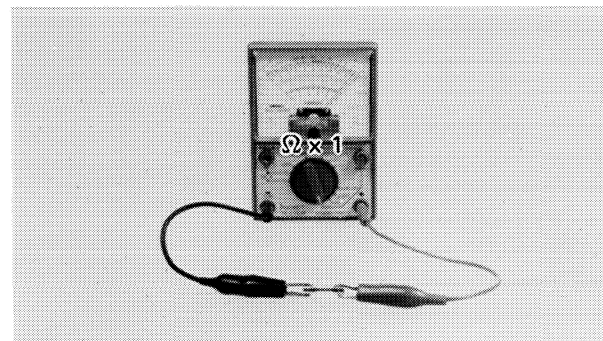
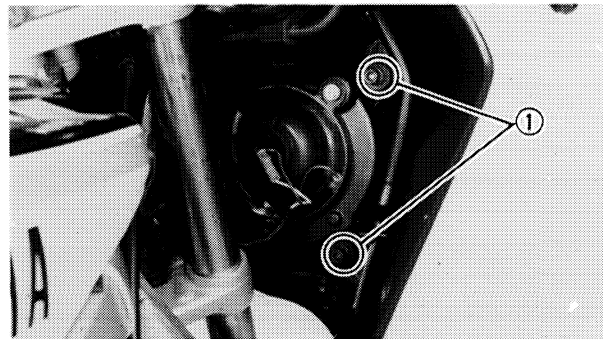
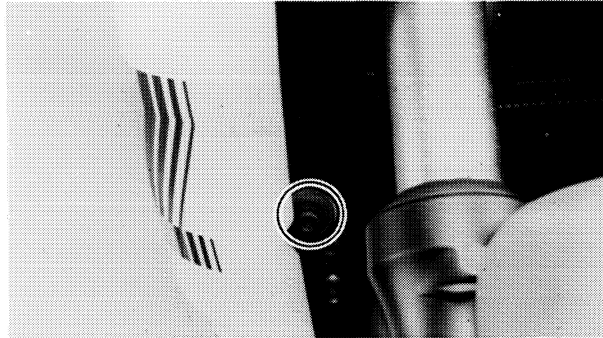
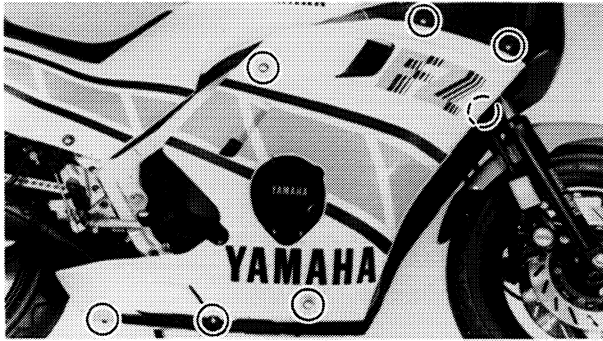
① TCI unit



PICKUP UNIT

The pickup unit consists of two pickup coils ① and a timing plate mounted onto the crankshaft. When the projection on the timing plate passes a pickup coil, a signal is generated and transmitted to the ignitor unit. The width of the projection on the timing plate determines the ignition advance.

The pickup coils are located in the left crankcase cover.



TROUBLESHOOTING

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

Before this troubleshooting, remove following parts.

- Center cowls (Right and left)
- Lower cowls (Right and left)
- Cowling
- Seat
- Side covers (Right and left)
- Fuel tank

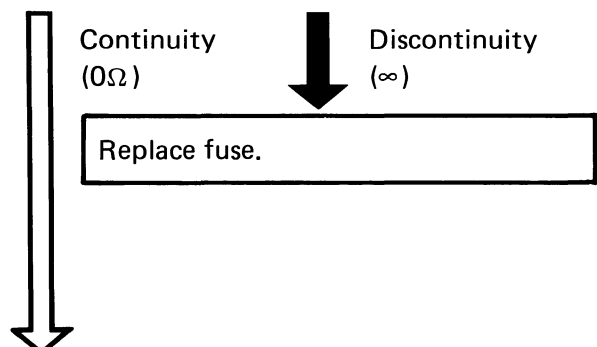
Refer to "CHAPTER 2 – COWLING AND LOWER COWL REMOVAL" section.

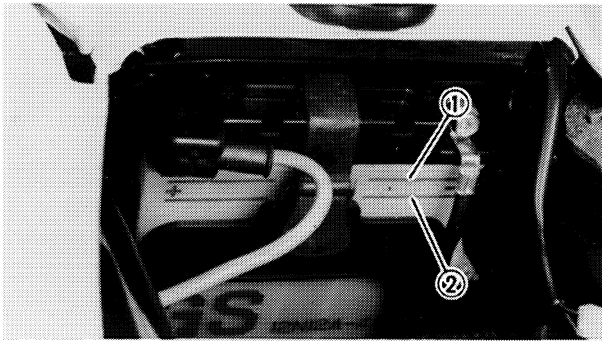
1. Fuse inspection

- Remove fuse (MAIN) and fuse (IGNITION).
- Connect Pocket Tester (YU-03112) to fuse and check it for continuity.

NOTE:

Set tester selector to "Ω x 1" position.





2. Battery fluid level inspection

- Fluid level should be between upper ① and lower ② level mark.

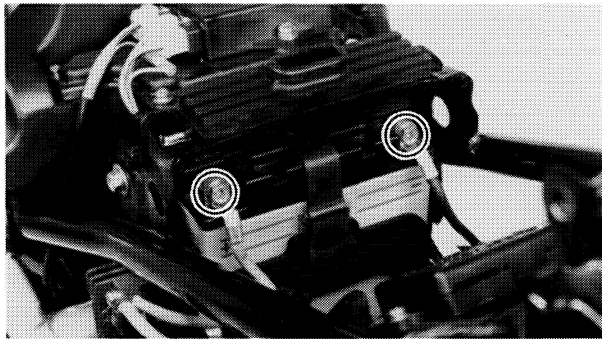
Correct

Incorrect

- Refill battery fluid.

CAUTION:

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



3. Battery terminal inspection

- Inspection battery terminal and connections.

OK

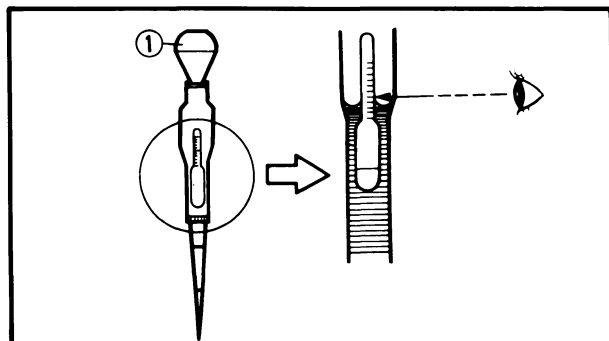
Dirty or poor connection

- Clean battery terminals using wire brush.

NOTE:

After cleaning terminals, apply grease lightly to both terminals.

- Connect battery leads correctly.



4. Battery fluid specific gravity inspection

- Remove caps.
- Inspect specific gravity of all cell using Battery Hydrometer ①.

Specific Gravity:

1.280 ± 0.01 at 20°C (68°F)

**WARNING:**

Battery electrolyte is poisonous and dangerous, causing severe burns, etc. It contains sulfuric acid. Avoid contact with skin, eyes or clothing. Antidote: **EXTERNAL** – Flush with water. **INTERNAL** – Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call a physician immediately.

Eyes: Flush with water for 15 minutes and get prompt medical attention. Batteries produce explosive gases. Keep sparks, flame, cigarettes etc., away. Ventilate when charging or using in an enclosed space. Always shield your eyes when working near batteries.

KEEP OUT OF REACH OF CHILDREN.

OK



Low specific gravity

- Recharge battery

Charging Current:
1.2 amps/10 hrs

NOTE:

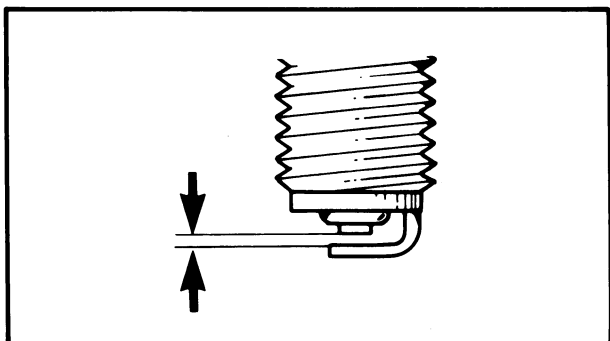
Replace the battery if:

- 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 on cell to be lower than the rest.
- Warpage or buckling of plates or insulators is evident.



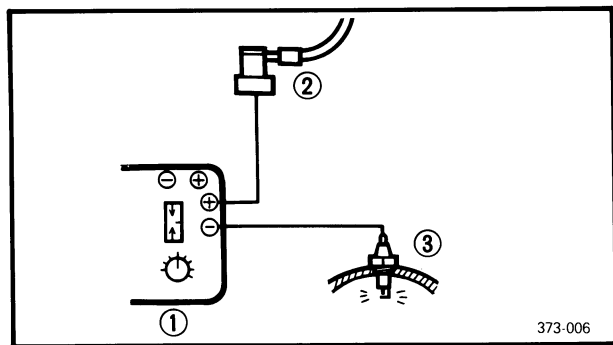
5. Spark plug inspection

- 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)



6. Ignition spark gap test

- Connect Electro Tester (YU-33260) ① as shown.

② Spark plug lead

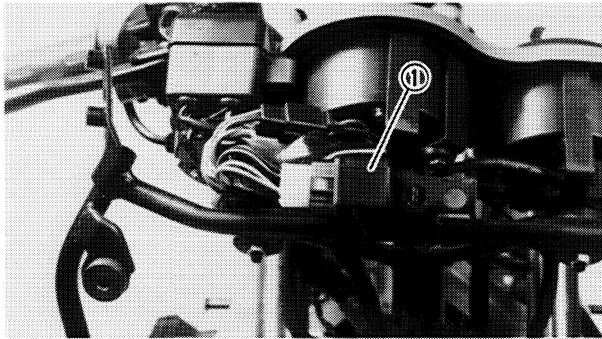
③ Spark plug

- Start the engine, and increase the spark gap until misfire occurs. (Test at various r/min between idle and red line.)

CAUTION:

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

Minimum Spark Gap: 6 mm (0.24 in)

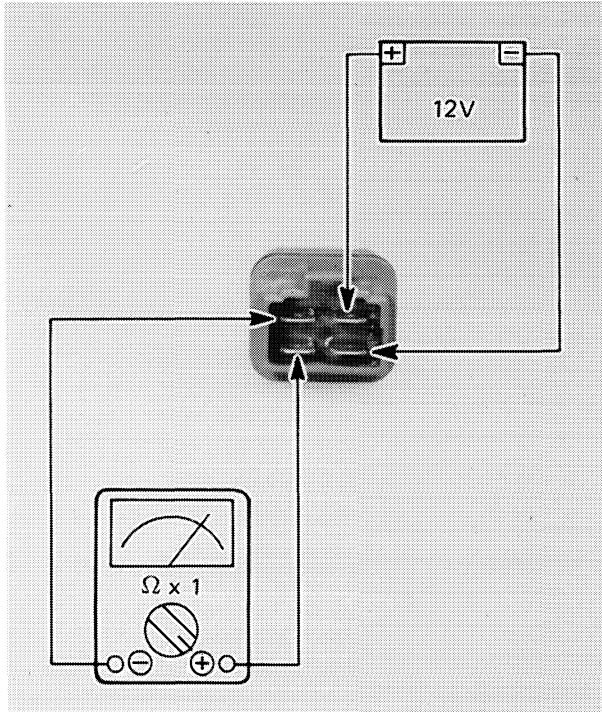


7. Sidestand relay conduct check

- Remove sidestand relay ①
- Connect 12V battery and Pocket Tester (YU-03112) to sidestand relay terminals as shown.

NOTE:

- Use full charge battery.
- Set tester selector to " $\Omega \times 1$ " position.



Discontinuity
(∞)

Continuity
(0Ω)

Sidestand relay is faulty, replace it.

8. Main switch conduct check

- Disconnect main switch coupler (Brown, Red, Blue).
- Connect Pocket Tester (YU-03112) to main switch leads (Brown, Red).

Tester (+) lead → Red lead

Tester (−) lead → Brown lead

NOTE:

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

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

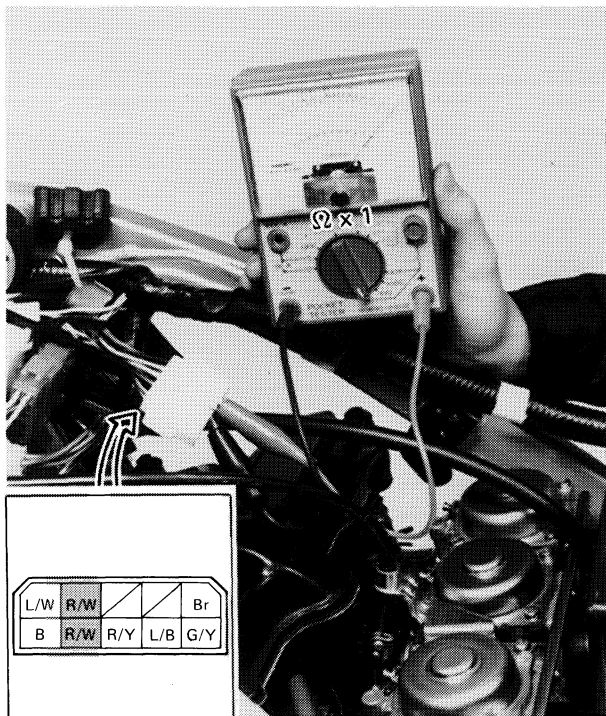




Continuity
(0Ω)

Discontinuity
(∞)

Main switch is faulty, replace it.



9. "ENGINE STOP" switch conduct check

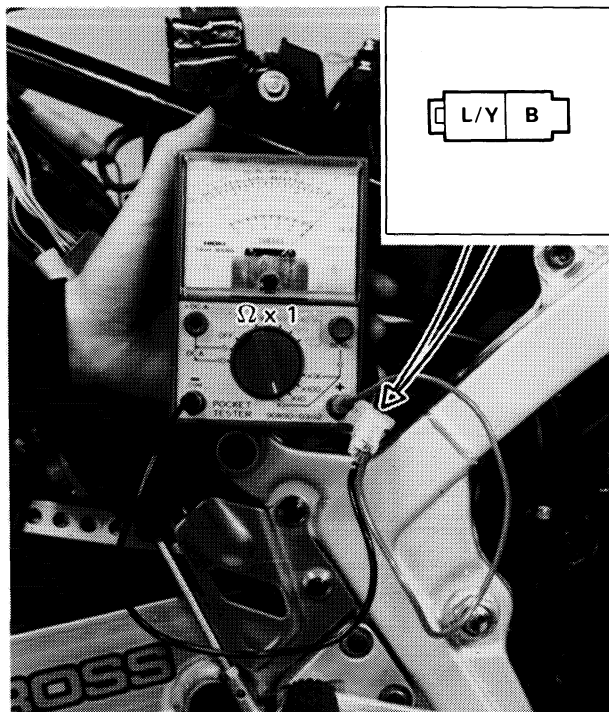
- Disconnect handlebar switch (Right) leads (Blue/White, Black, Red/White, Red/White, Red/Yellow, Blue/Black, Brown, Green/Yellow).
- Connect Pocket Tester (YU-03112) to handlebar switch lead (Red/White, Red/White).

Tester (+) lead → Red/White lead
Tester (–) lead → Red/White lead

NOTE:

Set tester selector to "Ω x 1" position.

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



Continuity
(0Ω)

Discontinuity
(∞)

"ENGINE STOP" switch is faulty
replace handlebar switch.

10. Sidestand switch conduct check

- Disconnect sidestand leads (Blue/Yellow, Black).
- Connect Pocket Tester (YU-03112) to sidestand switch leads.

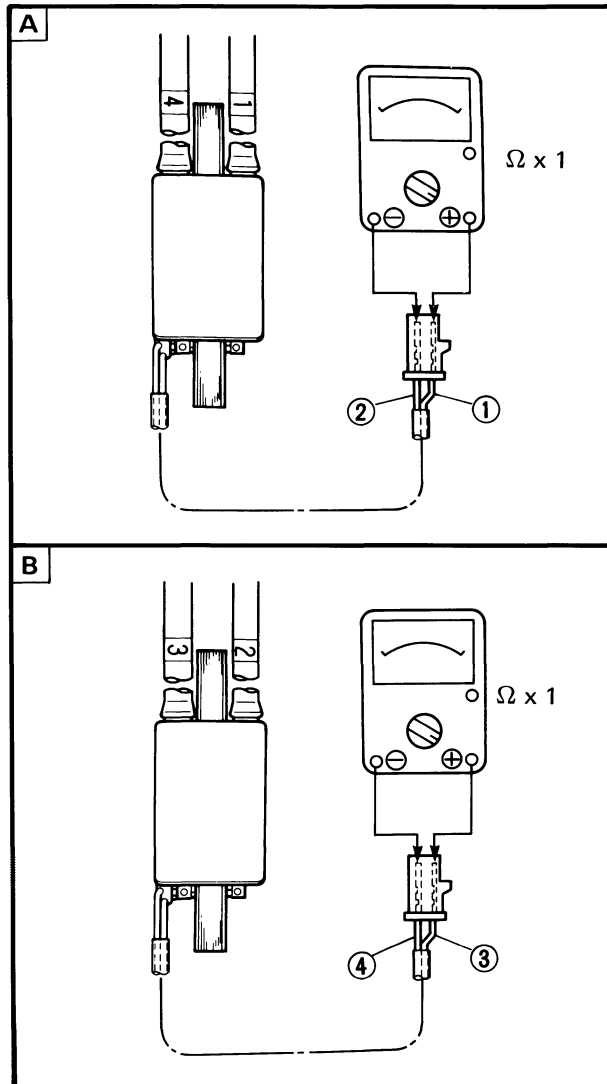
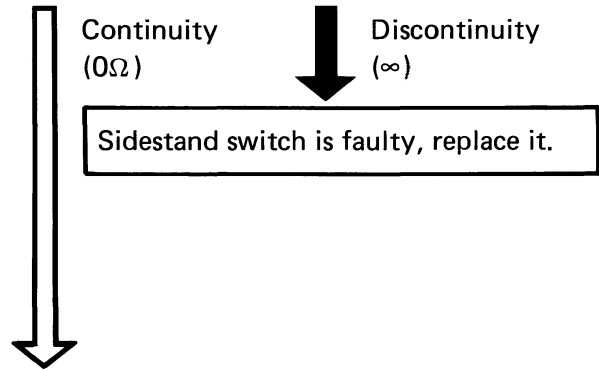
Tester (+) lead → Blue/Yellow lead
Tester (–) lead → Black lead



NOTE:

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

- Place motorcycle on a level place.
- Sidestand is up and check sidestand switch for continuity.



11. Ignition coil resistance test

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

A Ignition coil for #1, #4 cylinder
 Tester (+) lead → Orange lead ①
 Tester (−) lead → Red/White lead ②

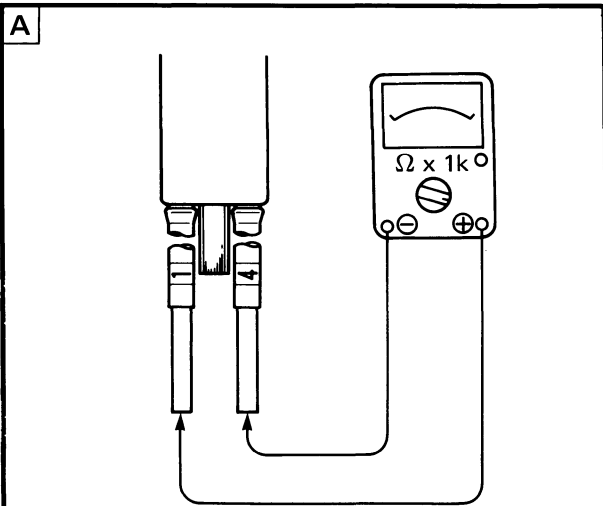
B Ignition coil for #2, #3 cylinder
 Tester (+) lead → Gray lead ③
 Tester (−) lead → Red/White lead ④

- Measure primary coil resistance

Primary Coil Resistance:
 $2.43 \sim 2.97\Omega$ at 20°C (68°F)

NOTE:

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



- Connect Pocket Tester (YU-03112) to spark plug leads.

A Ignition coil for #1, #4 cylinder
 Tester (+) lead → #1 spark plug lead
 Tester (–) lead → #4 spark plug lead

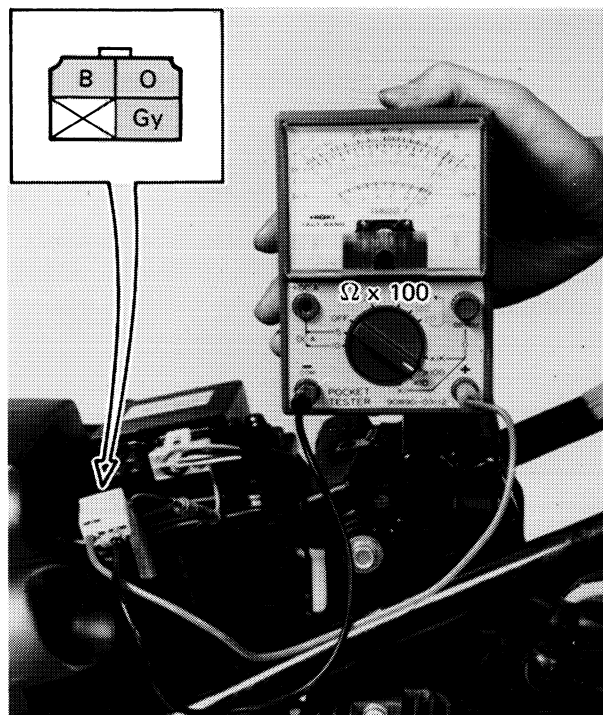
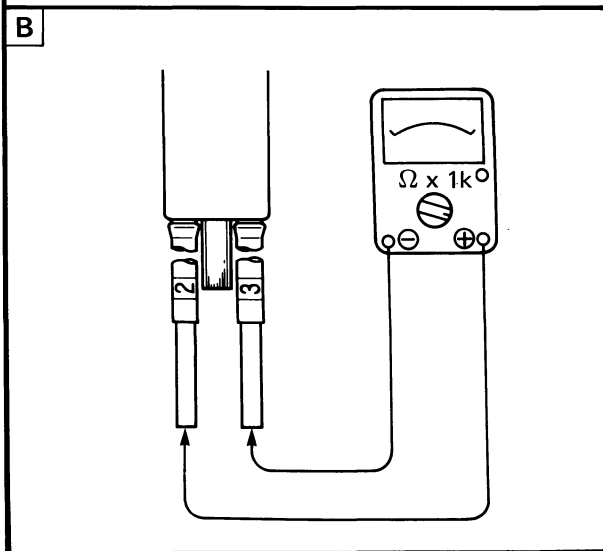
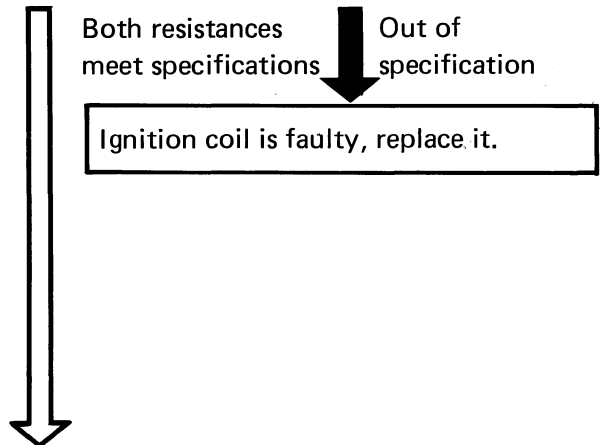
B Ignition coil for #2, #3 cylinder
 Tester (+) lead → #2 spark plug lead
 Tester (–) lead → #3 spark plug lead

- Measure secondary coil resistance.



Secondary Coil Resistance:
 10.56 ~ 15.84 kΩ at 20°C (68°F)

NOTE: _____
 Set tester selector to “Ω x 1K” position.



12. Pickup coil resistance test.

- Disconnect pickup coil leads (Orange, Gray, Black) at ignitor unit.
- Connect Pocket Tester (YU-03112) to pickup coil leads.

Tester (+) lead → Orange lead
 Tester (–) lead → Black lead

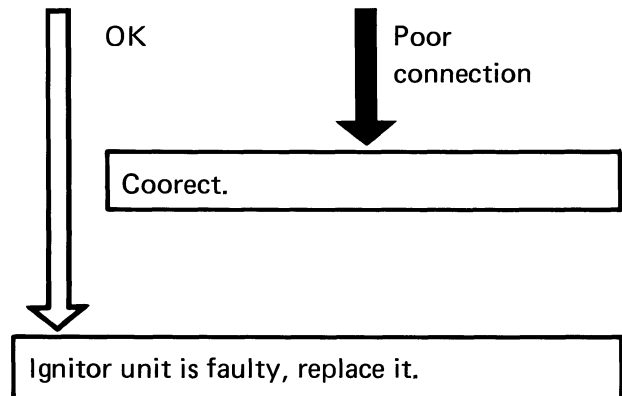
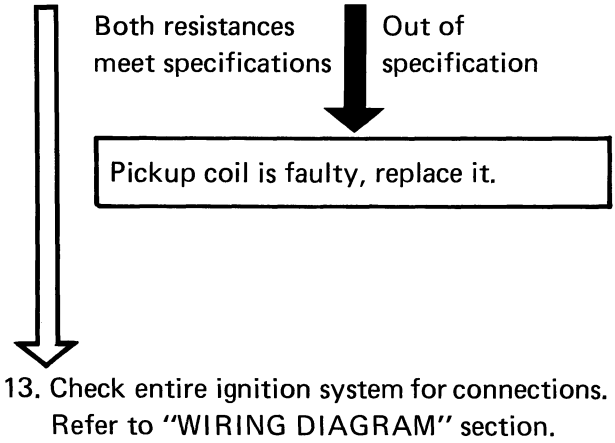
Tester (+) lead → Gray lead
 Tester (–) lead → Black lead

- Measure pickup coil resistance.



Pickup Coil Resistance:
 108 ~ 132Ω at 20°C (68°F)

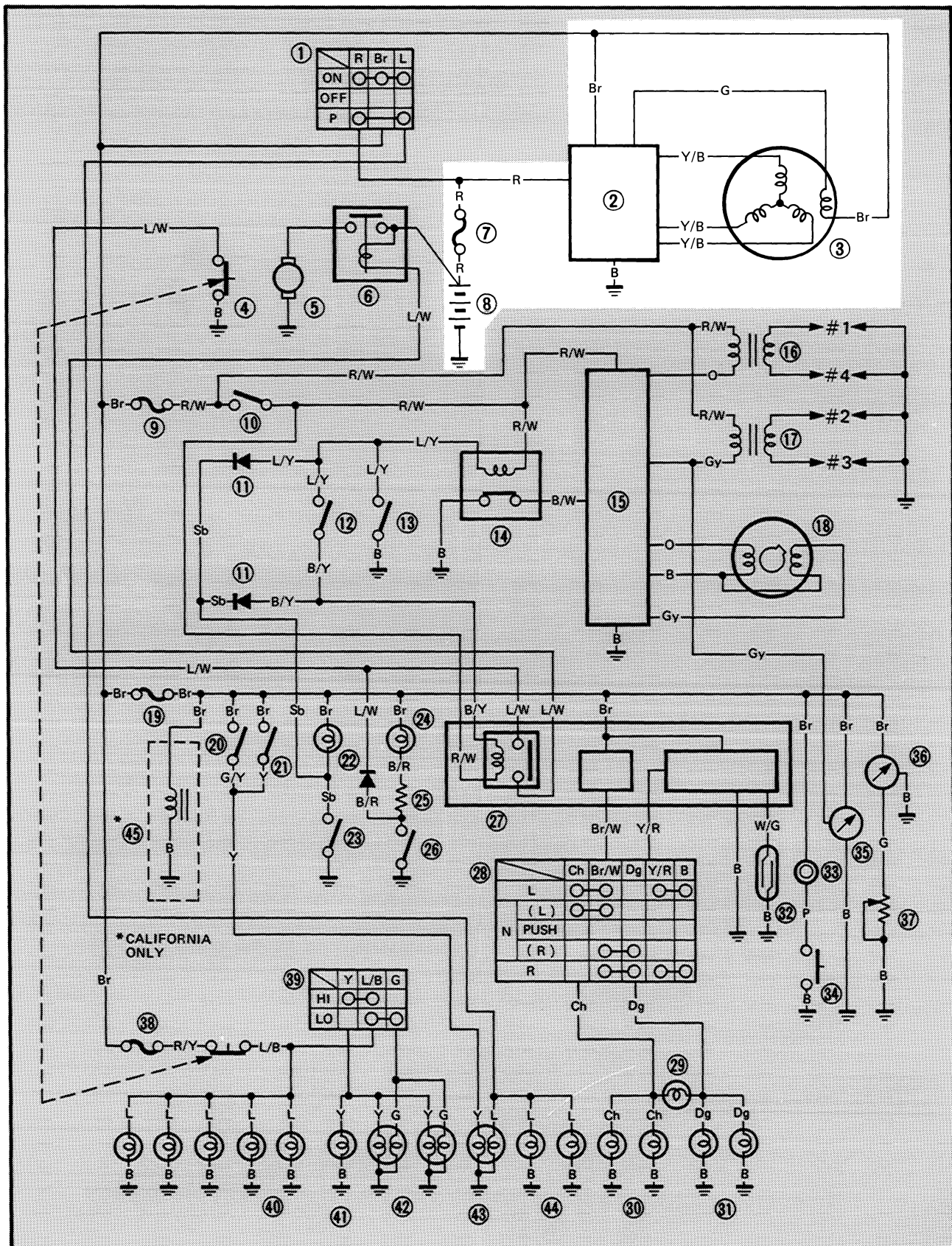
NOTE: _____
 Set tester selector to “Ω x 100” position.



CHARGING SYSTEM

CIRCUIT DIAGRAM

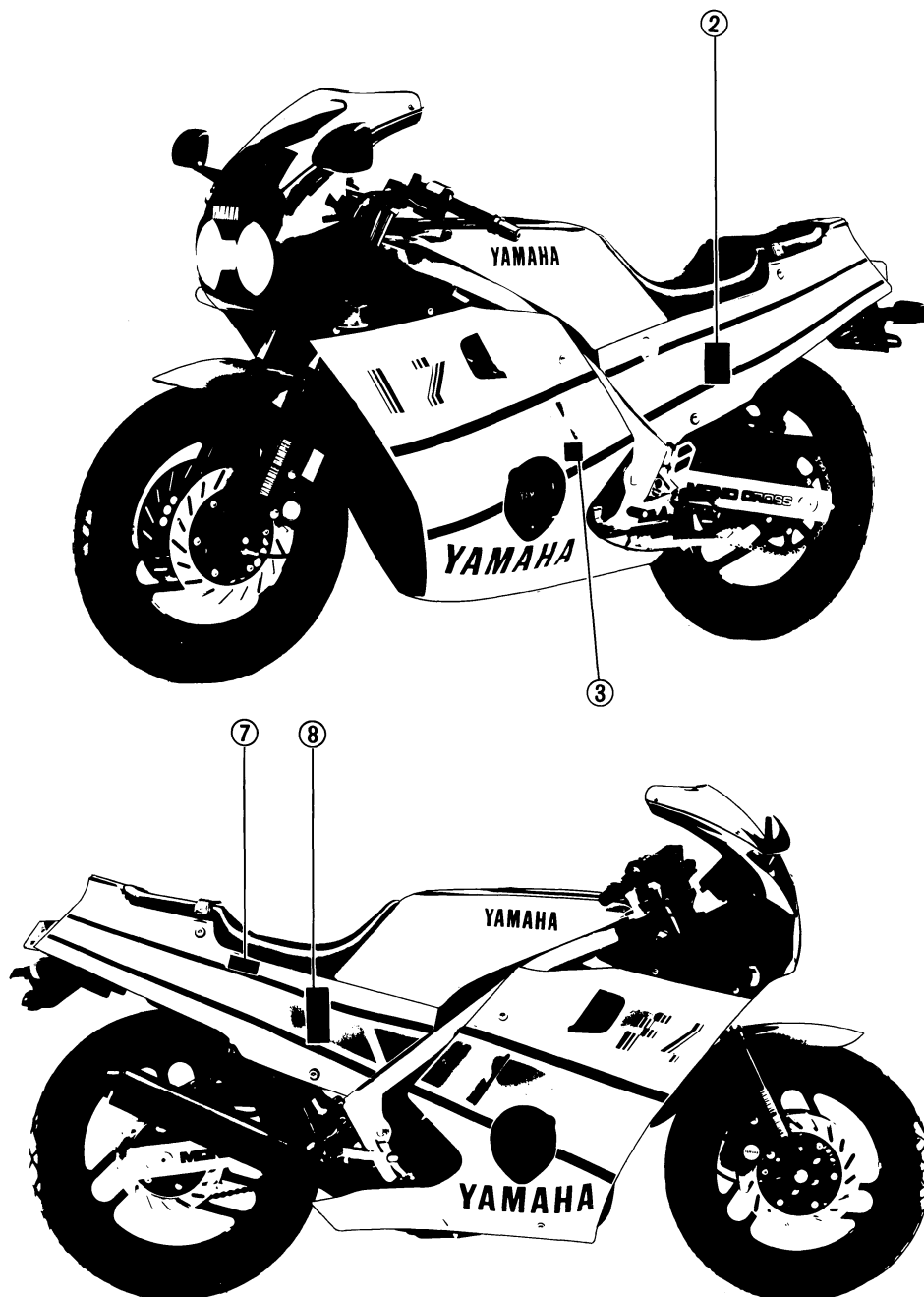
Below circuit diagram shows charging circuit.



**NOTE:**

For the color codes, see page 6-2.

- ② Rectifier/Regulator
- ③ AC Generator
- ⑦ Fuse (MAIN)
- ⑧ Battery



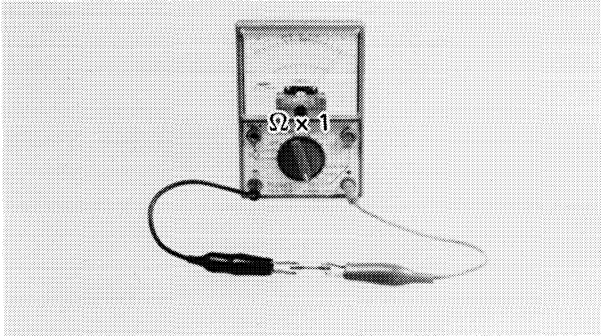


TROUBLESHOOTING

THE BATTERY IS NOT CHARGED.

Before this troubleshooting, remove following parts.

- Seat
- Side cover (Right)

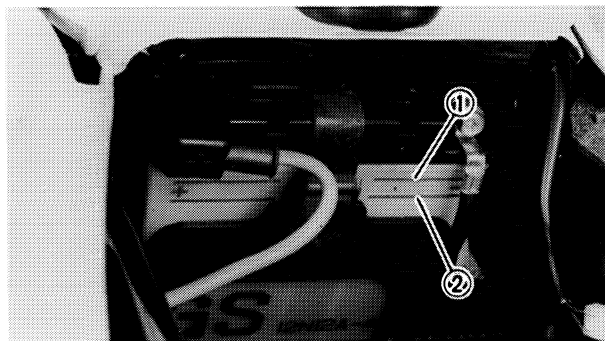
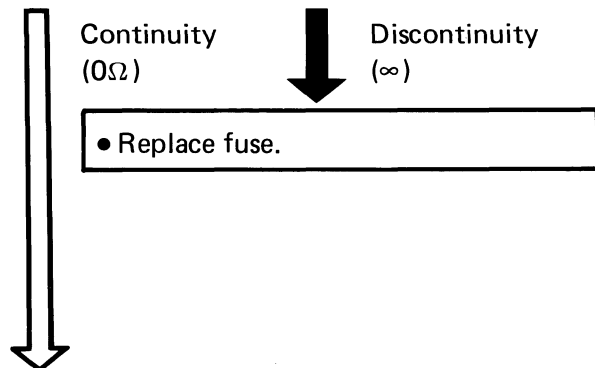


1. Fuse inspection

- Remove fuse (MAIN).
- Connect Pocket Tester (YU-03112) to fuse and check if for continuity.

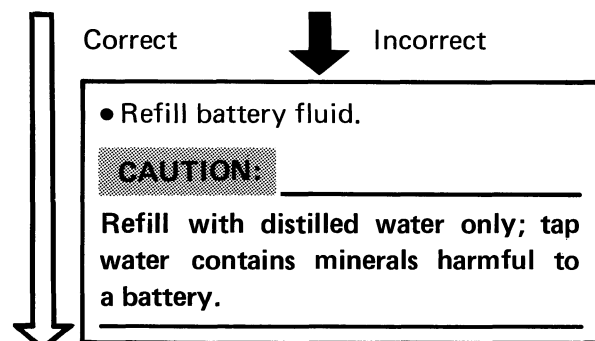
NOTE:

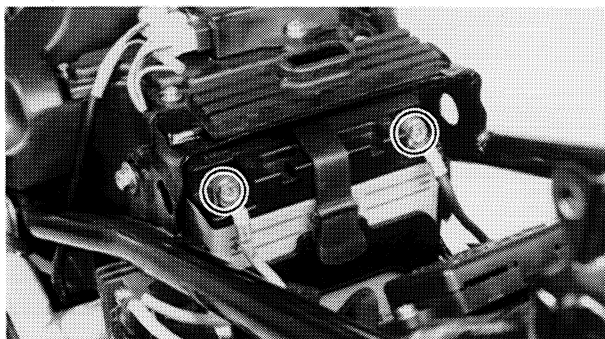
Set tester selector to " $\Omega \times 1$ " position.



2. Battery fluid level inspection

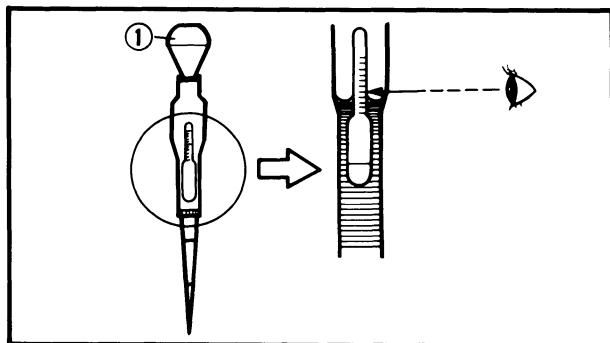
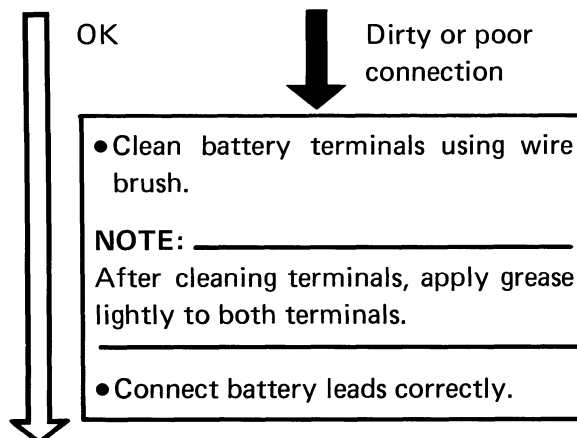
- Fluid level should be between upper ① and lower ② level mark.





3. Battery terminal inspection

- Inspection battery terminal and connections.



4. Battery fluid specific gravity inspection

- Remove caps.
- Inspect specific gravity of all cell using Battery Hydrometer ①.

Specific Gravity:
 1.280 ± 0.01 at 20°C (68°F)



WARNING:

Battery electrolyte is poisonous and dangerous, causing severe burns, etc. It contains sulfuric acid. Avoid contact with skin, eyes or clothing. Antidote: EXTERNAL — Flush with water. INTERNAL — Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call a physician immediately.

Eyes: Flush with water for 15 minutes and get prompt medical attention. Batteries produce explosive gases. Keep sparks, flame, cigarettes etc., away. Ventilate when charging or using in an enclosed space. Always shield your eyes when working near batteries.

KEEP OUT OF REACH OF CHILDREN.



OK

Low specific gravity

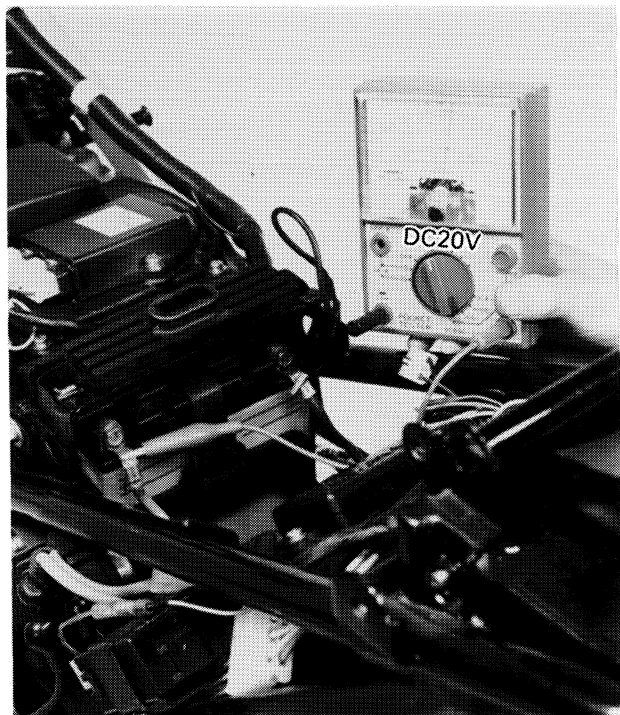
- Recharge battery

Charging Current:
1.2 amps/10 hrs

NOTE:

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 on cell to be lower than the rest.
- Warpage or buckling of plates or insulators is evident.

**5. Charging voltage test**

- 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 5,000 r/min.
- Measure charging voltage.



Charging Voltage:
14 ~ 15V at 5,000 r/min



Out of
specification

Charging voltage
meets specification

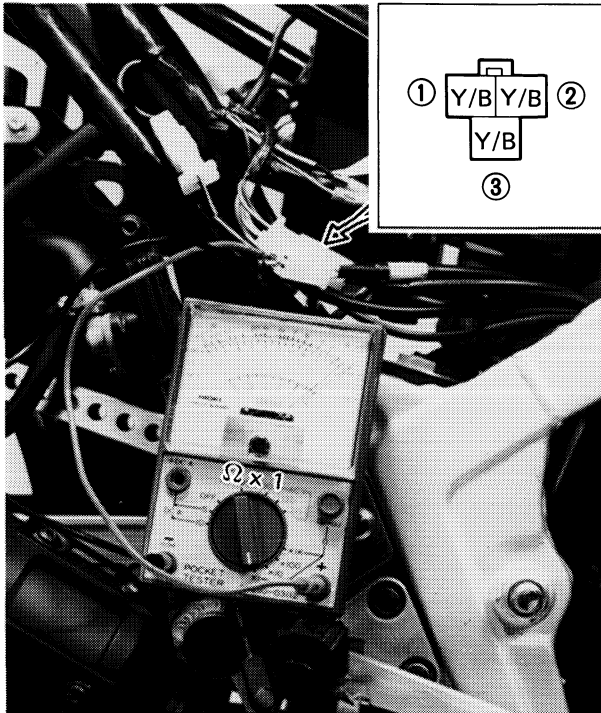
Battery is faulty, replace it.

6. Stator coil resistance test

- Disconnect AC magneto leads (Yellow/Black, Yellow/Black, Yellow/Black).
- Connect Pocket Tester (YU-03112) to AC magneto leads.

NOTE:

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



Stator Coil (1)

Tester (+) lead → Yellow/Black lead ①

Tester (−) lead → Yellow/Black lead ③

Stator Coil (2)

Tester (+) lead → Yellow/Black lead ②

Tester (−) lead → Yellow/Black lead ③

- Measure stator coil resistance.



Stator Coil Resistance:

Yellow/Black ① – Yellow/Black ②

0.5 ~ 0.6 Ω at 20°C (68°F)

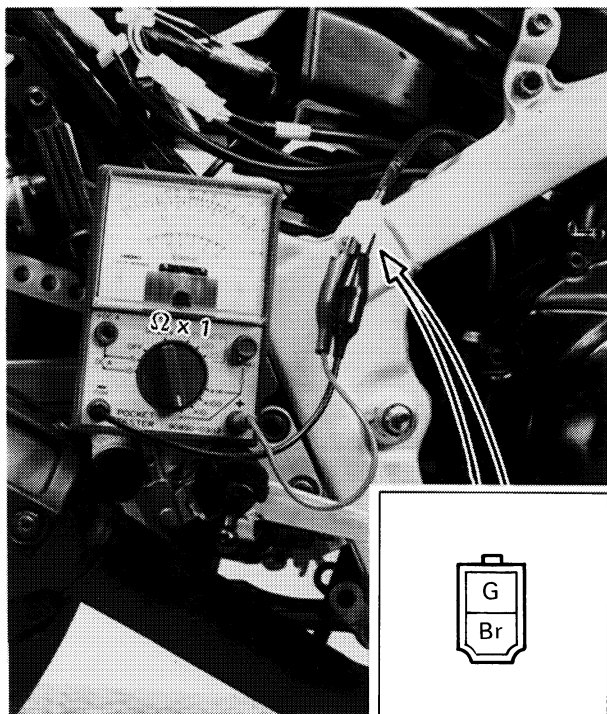
Yellow/Black ② – Yellow/Black ③

0.5 ~ 0.6 Ω at 20°C (68°F)

Both resistances
meet specifications

Out of
specification

Stator coil is faulty, replace it.



7. Field coil resistance test.

- Disconnect AC magneto leads (Green, Brown).
- Connect Pocket Tester (YU-03112) to AC magneto leads.

NOTE:

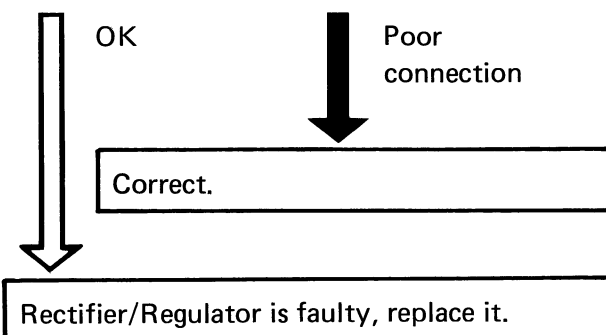
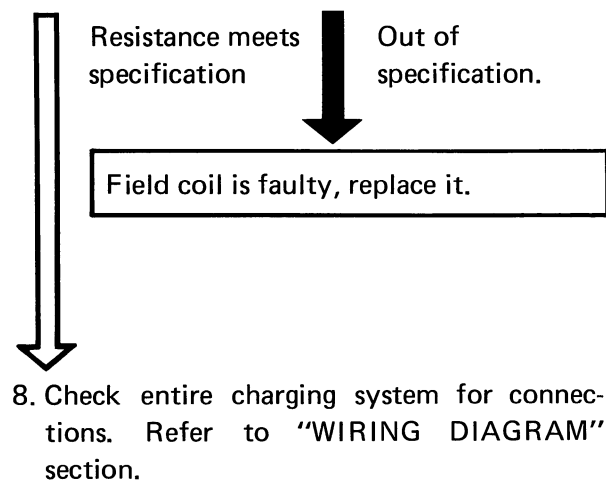
Set tester selector " $\Omega \times 1$ " position.

Tester (+) lead → Green lead
Tester (−) lead → Brown lead

- Measure field coil resistance.



Field Coil Resistance:
 $2.7 \sim 3.3\Omega$ at 20°C (68°F)



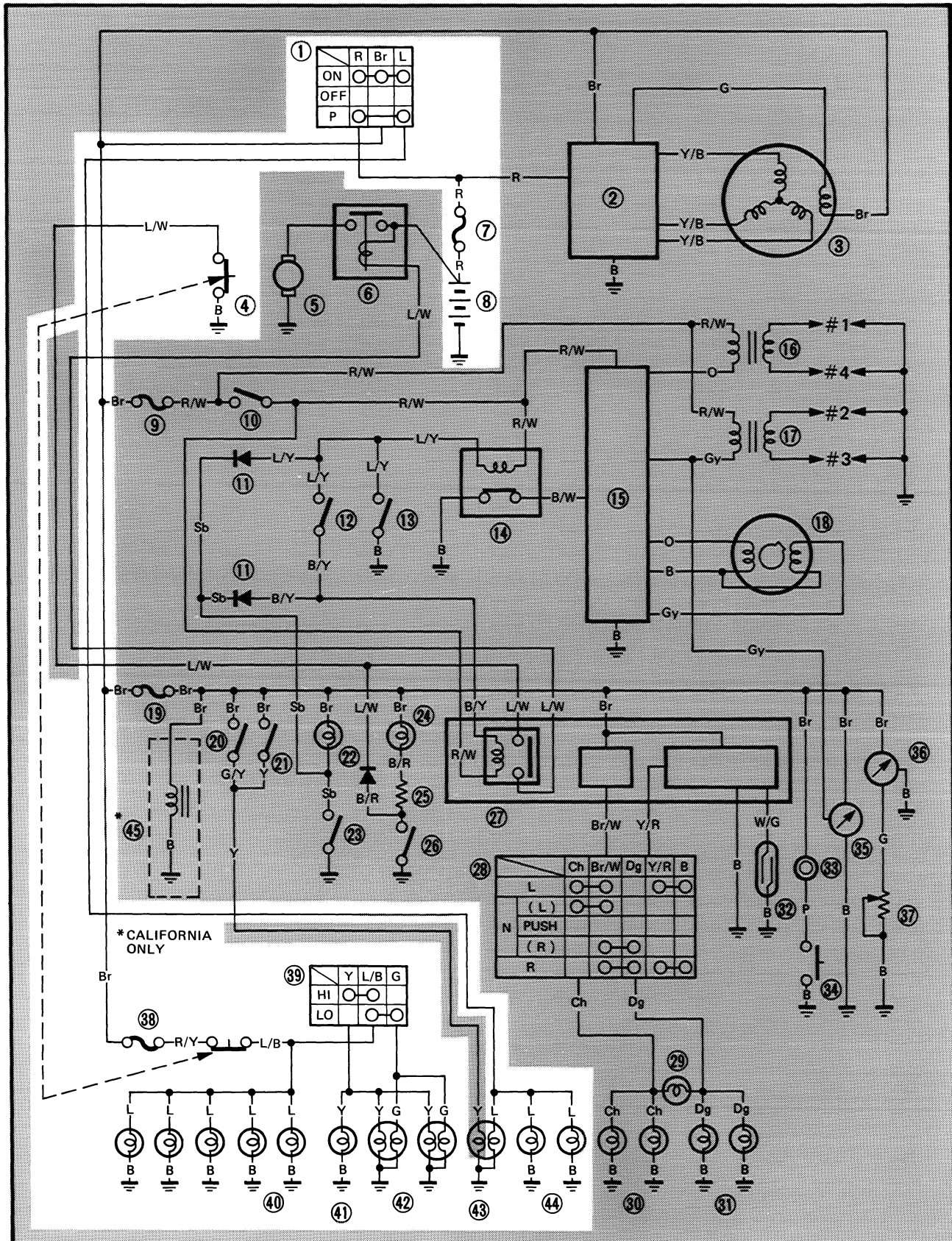


A series of horizontal dotted lines spanning the width of the page, intended as a guide for handwriting practice.

LIGHTING SYSTEM

CIRCUIT DIAGRAM

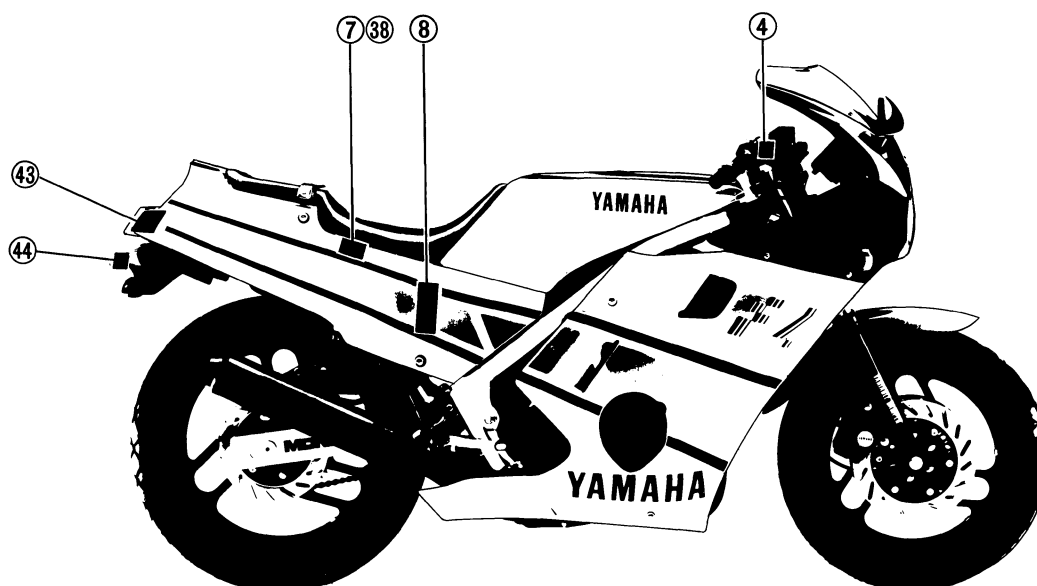
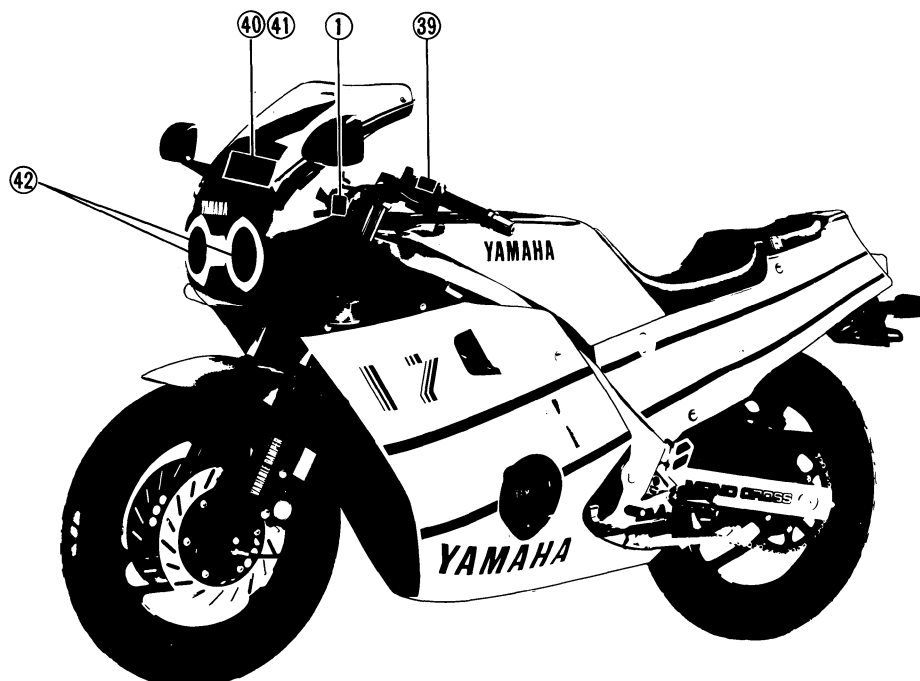
Below circuit diagram shows lighting circuit.





NOTE: _____
For the color codes, see page 6-2.

- | | |
|------------------|-----------------------------|
| ① Main switch | ③⑨ "LIGHTS" (Dimmer) switch |
| ④ "START" switch | ④⑩ Meter light |
| ⑦ Fuse (MAIN) | ④① "HIGH BEAM" indicator |
| ⑧ Battery | ④② Headlight |
| ③⑧ Fuse (HEAD) | ④③ Tail/Brake light |
| | ④④ License light |

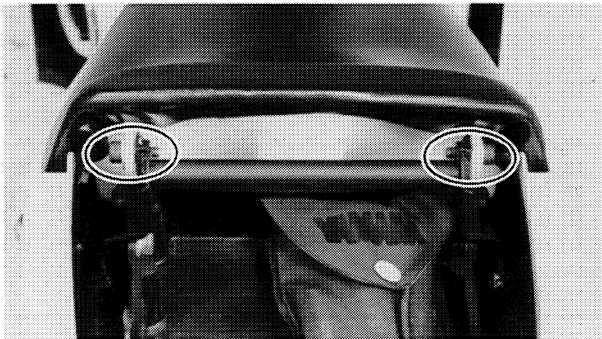




TROUBLESHOOTING

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

Also check fuse condition. Replace any "Open" fuses.

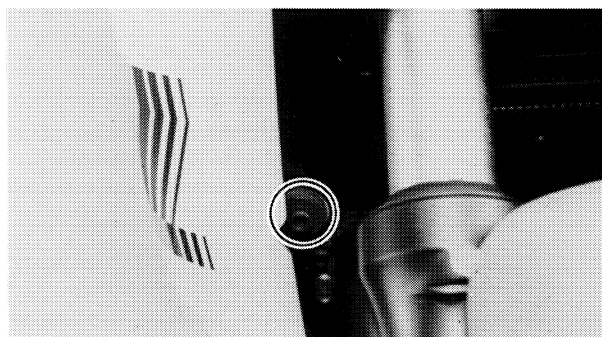


HEADLIGHT, TAILLIGHT, LICENSE LIGHT AND METER LIGHT DO NOT COME ON.

Before this troubleshooting, remove following parts.

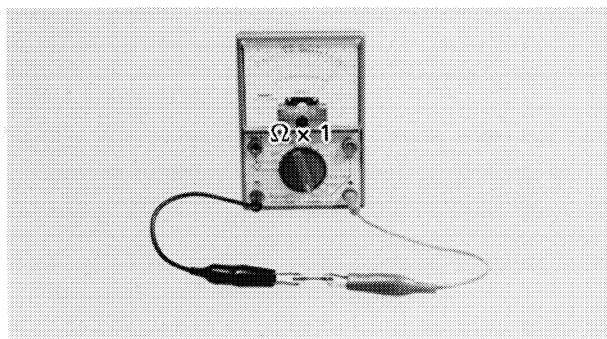


- Seats
- Side covers (Right and left)
- Center cowl (Right and left)
- Lower cowl (Right and left)
- Fuel tank



**NOTE:**

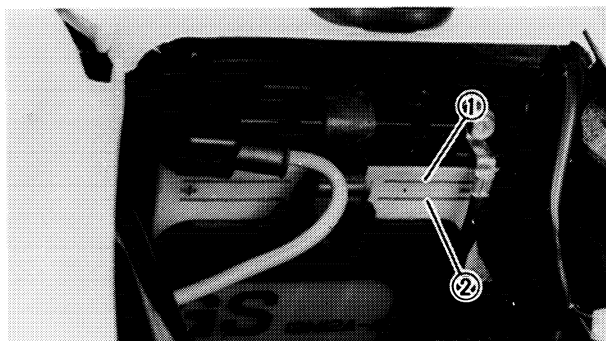
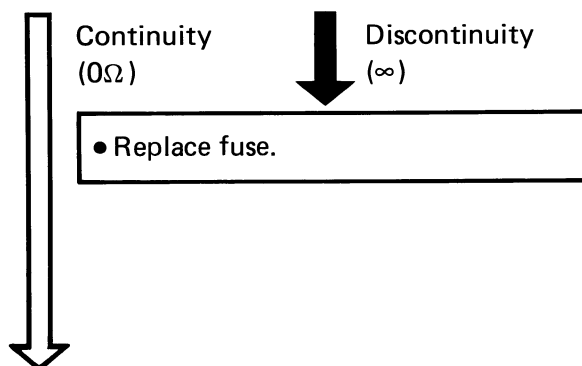
Check each bulb first before performing the following check.

**1. Fuse inspection**

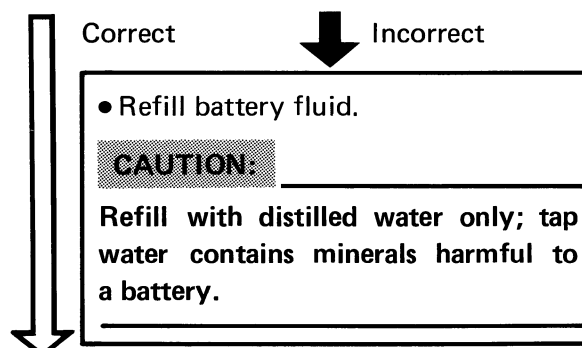
- Remove fuse (MAIN) and fuse (HEAD).
- Connect Pocket Tester (YU-03112) to fuse and check if for continuity.

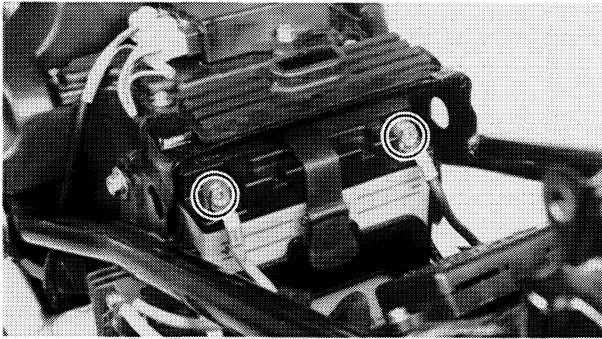
NOTE:

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

**2. Battery fluid level inspection**

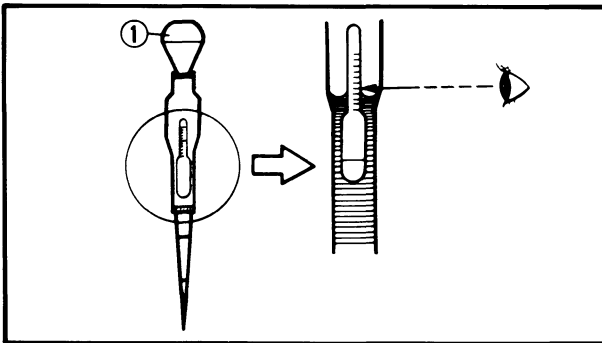
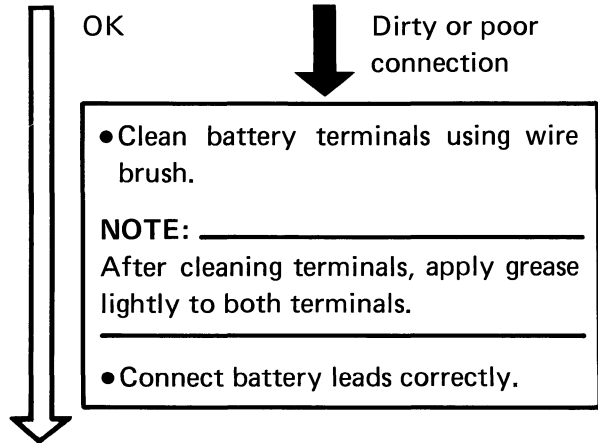
- Fluid level should be between upper ① and lower ② level mark.





3. Battery terminal inspection

- Inspect battery terminal and connections.



4. Battery fluid specific gravity inspection

- Remove caps.
- Inspect specific gravity of all cell using Battery Hydrometer ①.

Specific Gravity:
 1.280 ± 0.01 at 20°C (68°F)



WARNING: _____

Battery electrolyte is poisonous and dangerous, causing severe burns, etc. It contains sulfuric acid. Avoid contact with skin, eyes or clothing. Antidote: **EXTERNAL** — Flush with water. **INTERNAL** — Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call a physician immediately.

Eyes: Flush with water for 15 minutes and get prompt medical attention. Batteries produce explosive gases. Keep sparks, flame, cigarettes etc., away. Ventilate when charging or using in an enclosed space. Always shield your eyes when working near batteries.

KEEP OUT OF REACH OF CHILDREN.



OK

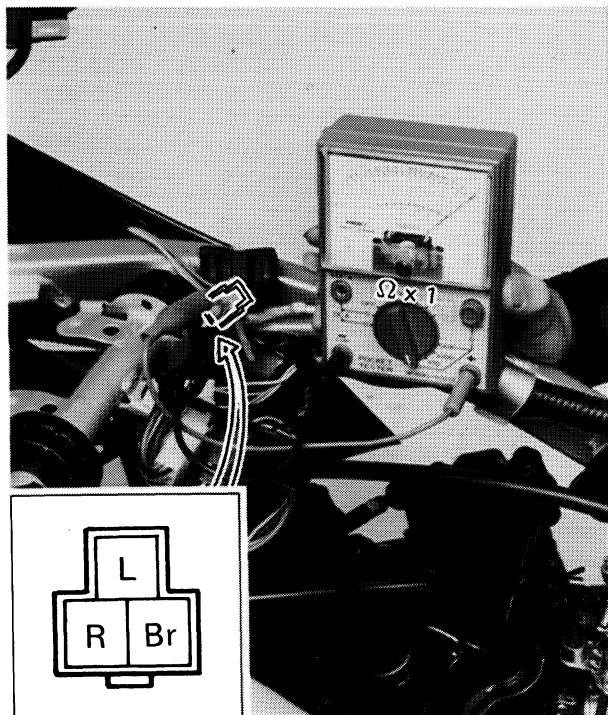
Low specific gravity
↓

- Recharge battery

Charging Current:
1.2 amps/10 hrs**NOTE:** _____

Replace the battery if:

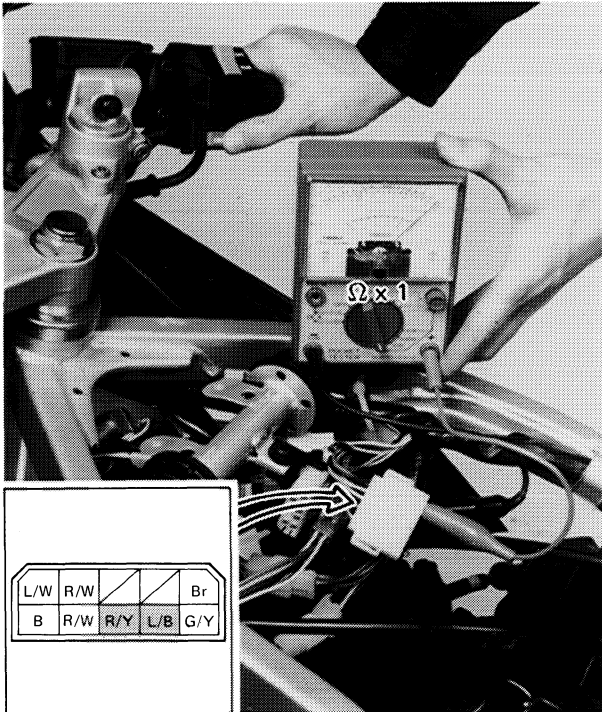
- Battery voltage will not rise to a specific value or bubbles fail to rise even after many hours of charging.
- Sulfation of one or more cells occurs, as indicated by the plates turning white, or an accumulation of material exists in the bottom of the cell.
- Specific gravity readings after a long,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

**5. Main switch conduct check**

- Disconnect main switch coupler (Brown, Red, Blue).
- Connect Pocket Tester (YU-03112) to main switch leads (Brown, Red).

Tester (+) lead → Red lead
Tester (–) lead → Brown lead**Tester (+) lead → Red lead**
Tester (–) lead → Blue lead**NOTE:** _____
Set tester selector to " $\Omega \times 1$ " position.

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



Continuity exists
on both circuits

Continuity does not
exist on one circuit

Main switch is faulty, replace it.

6. "START" switch conduct check

- Disconnect handlebar switch (Right) leads (Blue/White, Black, Red/White, Red/White, Red/Yellow, Blue/Black, Brown, Green/Yellow).
- Connect Pocket Tester (YU-03112) to handlebar switch leads (Blue/Black, Red/Yellow).

Tester (+) lead → Blue/Black lead
Tester (–) lead → Red/Yellow lead

NOTE:

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

Continuity
(0 Ω)

Discontinuity
(∞)

"START" switch is faulty, replace
handlebar switch.

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



OK

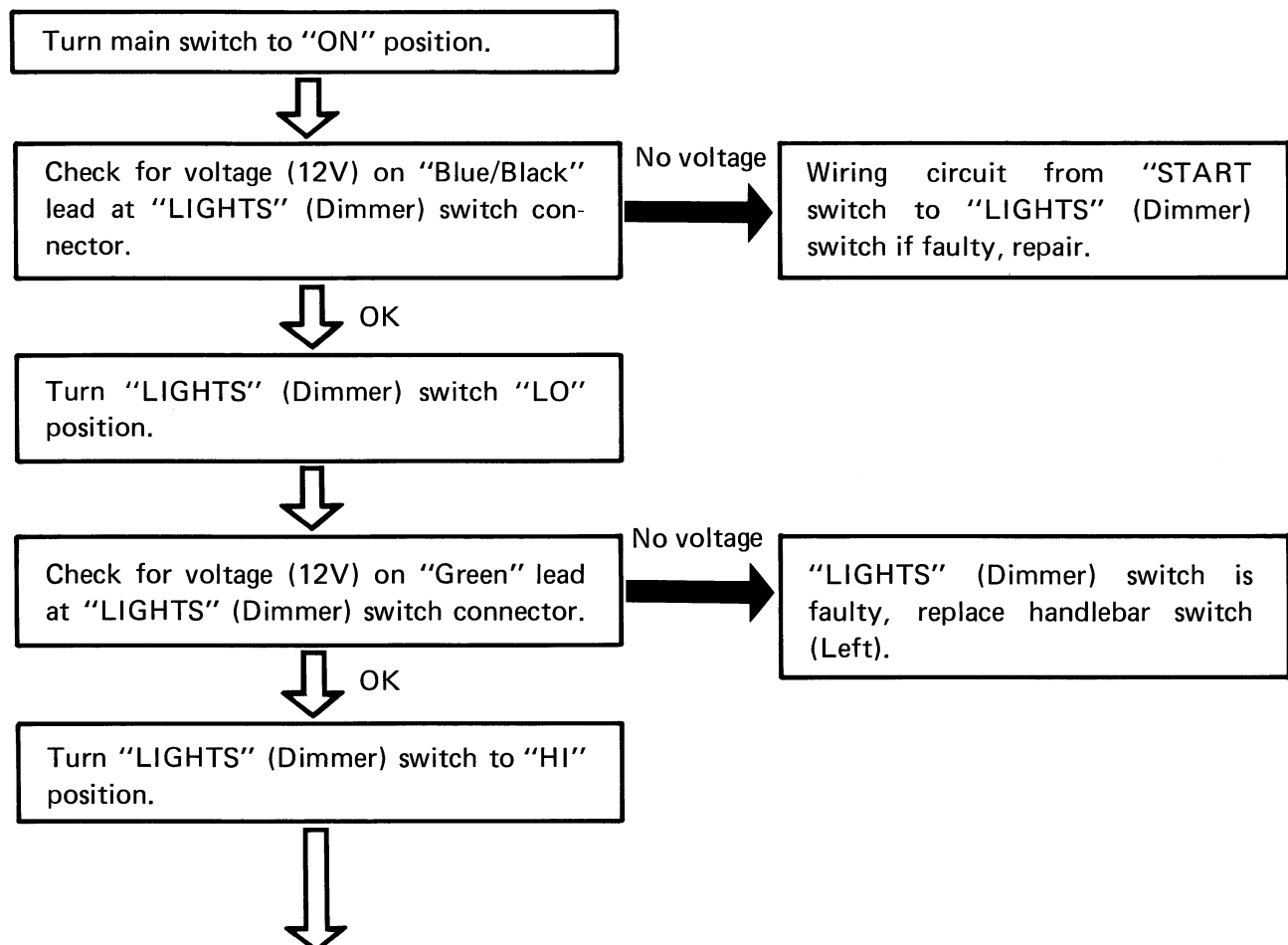
Poor connection

Correct.

8. Check condition of each circuit for lighting system.
Refer to "LIGHTING SYSTEM TEST AND CHECKS" section.

LIGHTING SYSTEM TEST AND CHECKS

Headlight and/or "HIGH BEAM" indicator light do not come on.





Check for voltage (12V) on "Yellow" lead at "LIGHTS" (Dimmer) switch connector.

No voltage

"LIGHTS" (Dimmer) switch is faulty, replace handlebar switch (Left).



"HIGH BEAM" indicator light bulb socket and headlight bulb socket(s) are faulty, replace them.

Meter lights do not come on.

Turn main switch to "ON" position.



Check for voltage (12V) on "Blue" lead at speedometer lead connector.

No voltage

Wiring circuit from "START" switch to speedometer lead connector is faulty, repair.

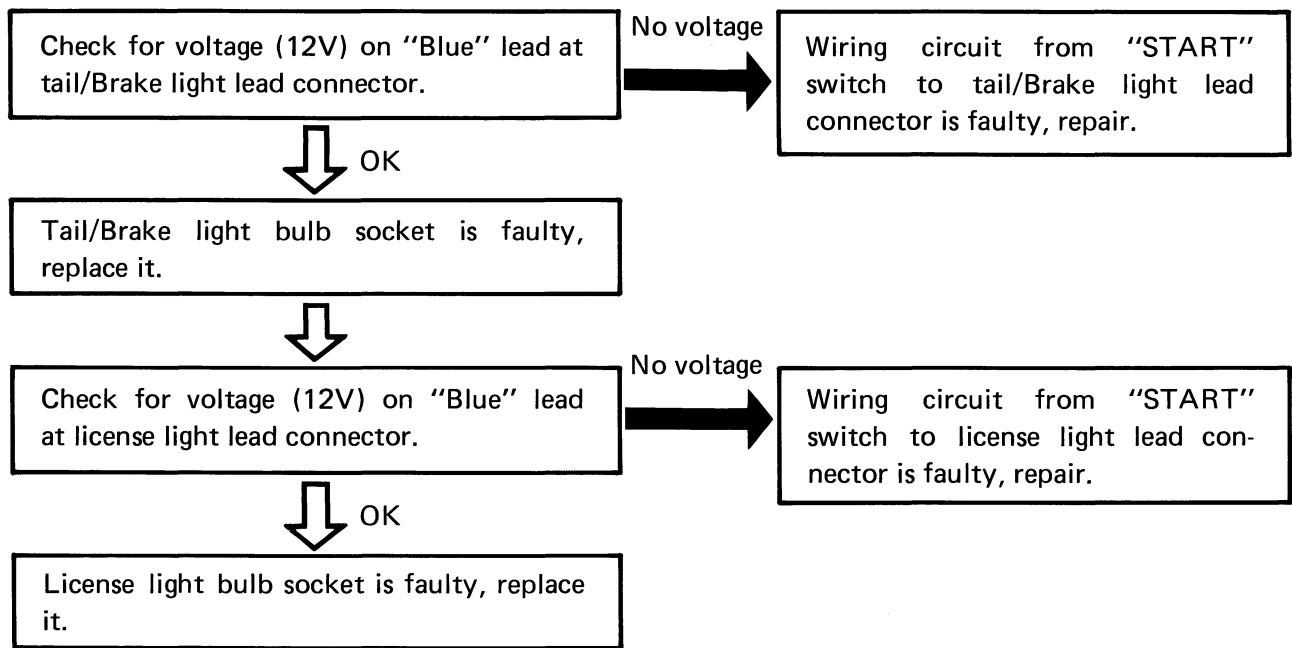


Meter light bulb socket is faulty, replace it.

Taillight and/or license light do not come on.

Turn main switch to "ON" position.

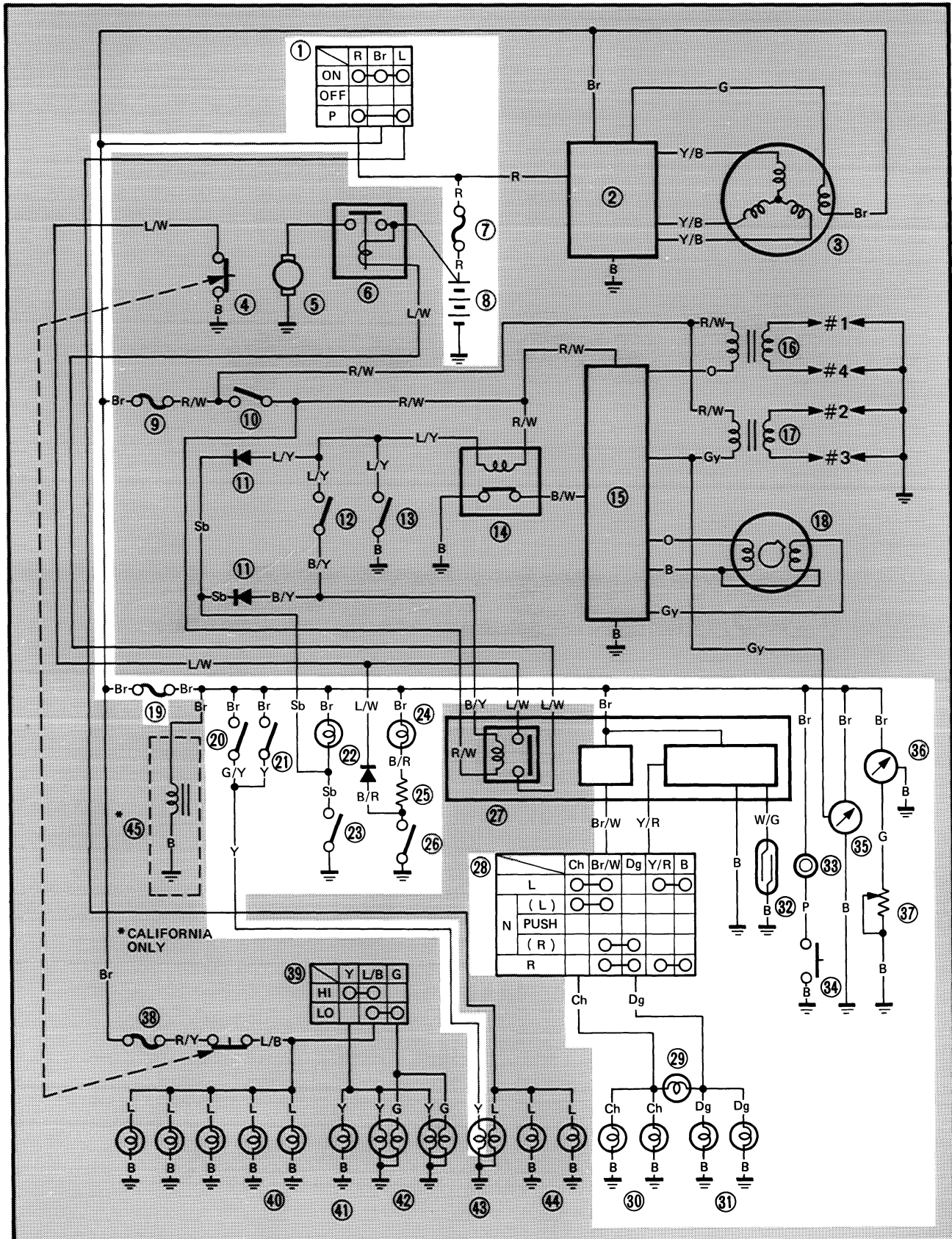




SIGNAL SYSTEM

CIRCUIT DIAGRAM

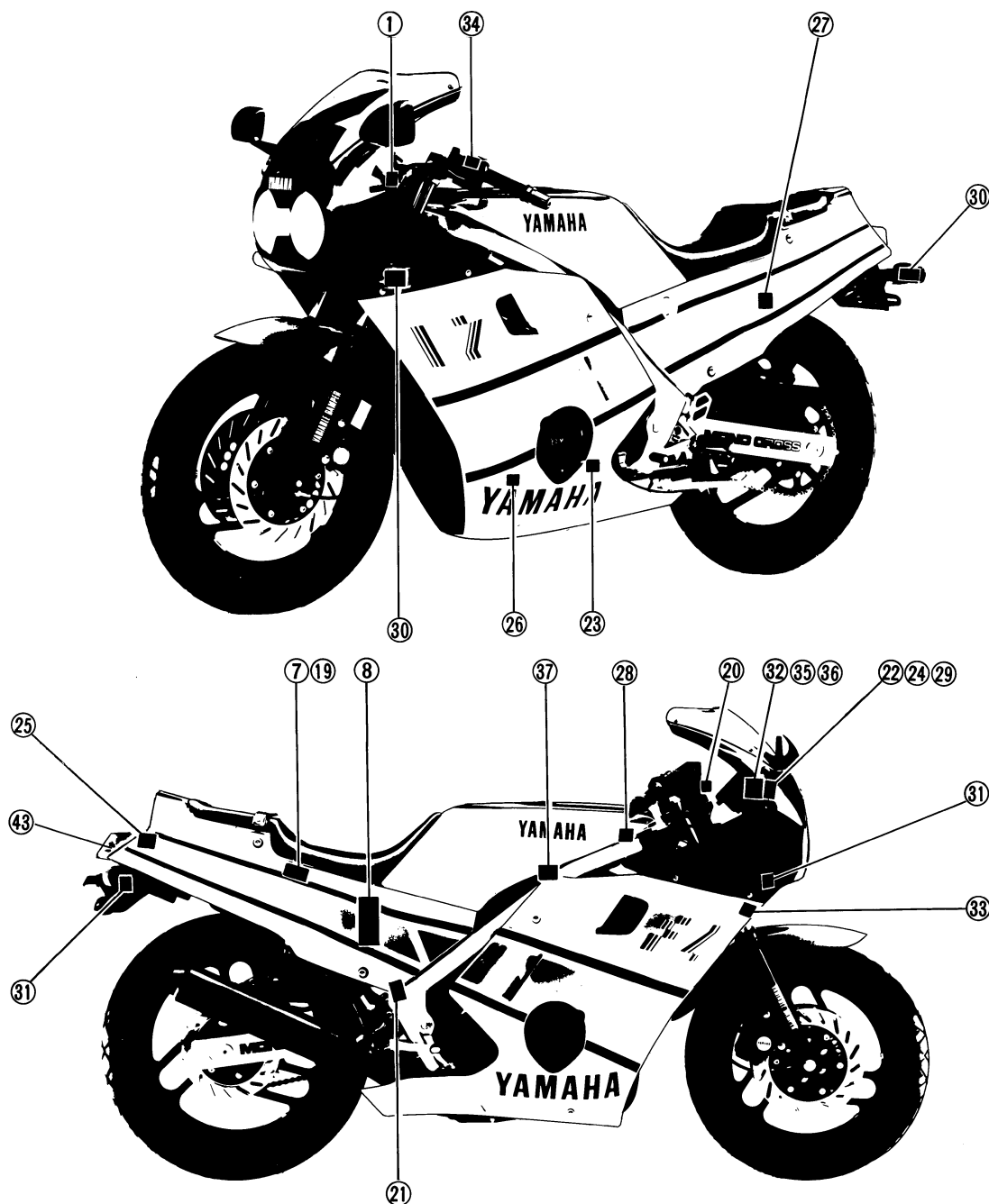
Below circuit diagram shows signal circuit.



**NOTE:**

For the color codes, see page 6-2.

- | | |
|------------------------------|---------------------------|
| ① Main switch | ②⑦ Relay assembly |
| ⑦ Fuse (MAIN) | ②⑧ "TURN" switch |
| ⑧ Battery | ②⑨ "TURN" indicator light |
| ①⑨ Fuse (SIGNAL) | ③⑩ Flasher light (Left) |
| ②⑩ Front brake switch | ③① Flasher light (Right) |
| ②① Rear brake switch | ③② Reed switch |
| ②② "NEUTRAL" indicator light | ③③ Horn |
| ②③ Neutral switch | ③④ "HORN" switch |
| ②④ "OIL" indicator light | ③⑤ Tachometer |
| ②⑤ Resister | ③⑥ Fuel meter |
| ②⑥ Oil level switch | ③⑦ Fuel gauge |
| | ④③ Tail brake light |



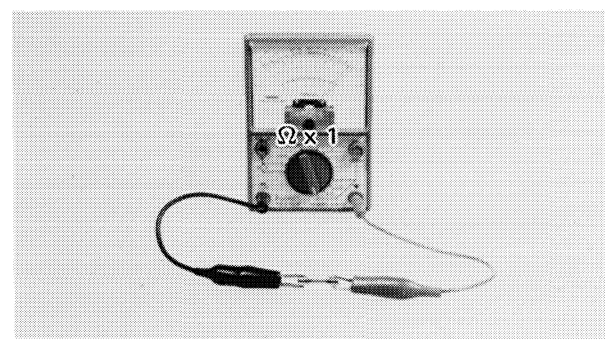
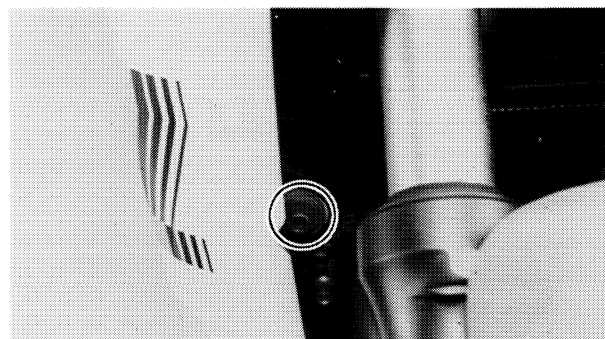
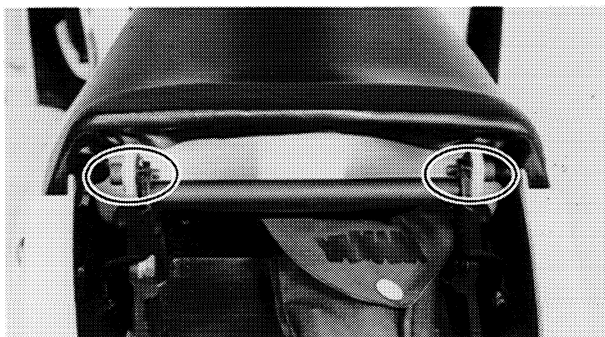


TROUBLESHOOTING

The battery provides power for operation of the signal system. If none of the above fail to operate proceed further. Low battery voltage indicates either a faulty battery, low battery fluid level, or a defective charging system. Also check fuse condition. Replace any "Open" fuses.

Before this troubleshooting, remove following parts.

- Seats
- Side covers (Right and left)
- Center cowls (Right and left)
- Lower cowls (Right and left)
- Fuel tank



1. Fuse inspection

- Remove fuse (MAIN), fuse (SIGNAL).
- Connect Pocket Tester (YU-03112) to fuse and check if for continuity.

NOTE: _____

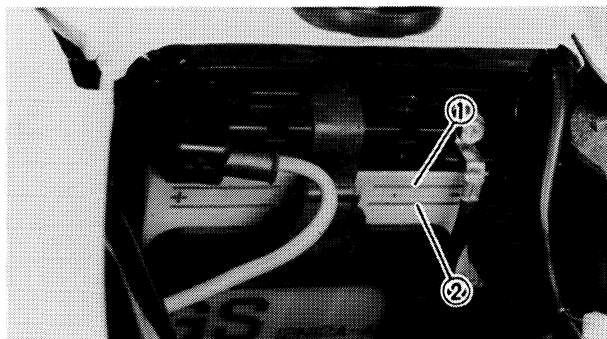
Set tester selector to " $\Omega \times 1$ " position.



Continuity
(0Ω)

Discontinuity
(∞)

Replace fuse.



2. Battery fluid level inspection

- Fluid level should be between upper ① and lower ② level mark.

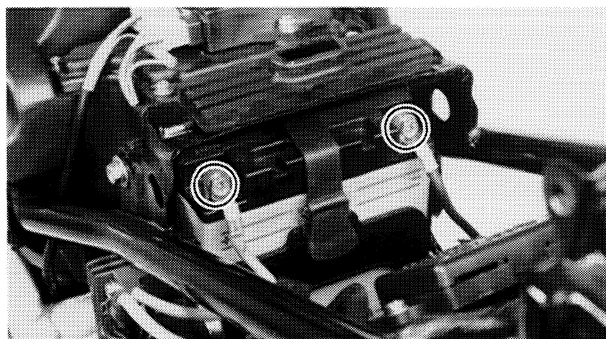
Correct

Incorrect

- Refill battery fluid.

CAUTION:

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



3. Battery terminal inspection

- Inspect battery terminal and connections.

OK

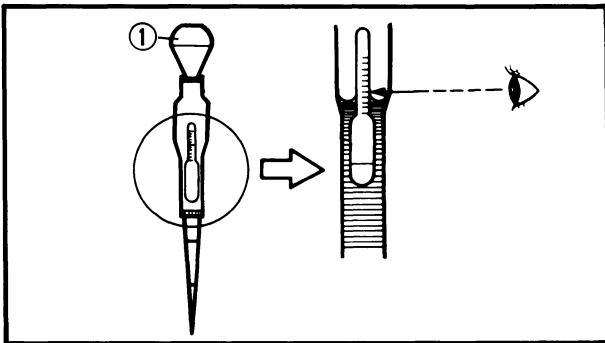
Dirty or poor connection

- Clean battery terminals using wire brush.

NOTE:

After cleaning terminals, apply grease lightly to both terminals.

- Connect battery leads correctly.



4. Battery fluid specific gravity inspection

- Remove caps.
- Inspect specific gravity of all cell using Battery Hydrometer ① .

Specific Gravity:
 1.280 ± 0.01 at 20°C (68°F)

WARNING:

Battery electrolyte is poisonous and dangerous, causing severe burns, etc. It contains sulfuric acid. Avoid contact with skin, eyes or clothing. Antidote: EXTERNAL — Flush with water. INTERNAL — Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call a physician immediately.

Eyes: Flush with water for 15 minutes and get prompt medical attention. Batteries produce explosive gases. Keep sparks, flame, cigarettes etc., away. Ventilate when charging or using in an enclosed space. Always shield your eyes when working near batteries.

KEEP OUT OF REACH OF CHILDREN.

OK

Low specific gravity

- Recharge battery.

Charging Current:
 1.2 amps/10 hrs

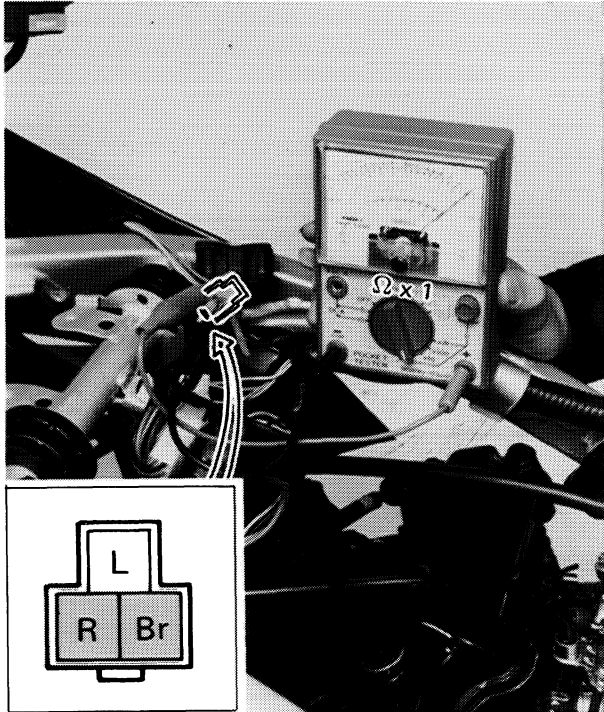
NOTE: _____

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 on cell to be lower than the rest.
- Warpage or buckling of plates or insulators is evident.



5. Main switch conduct check

- Disconnect main switch coupler (Brown, Red, Blue).
- Connect Pocket Tester (YU-03112) to main switch leads.

Tester (+) lead → Red lead
Tester (–) lead → Brown lead

NOTE:

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

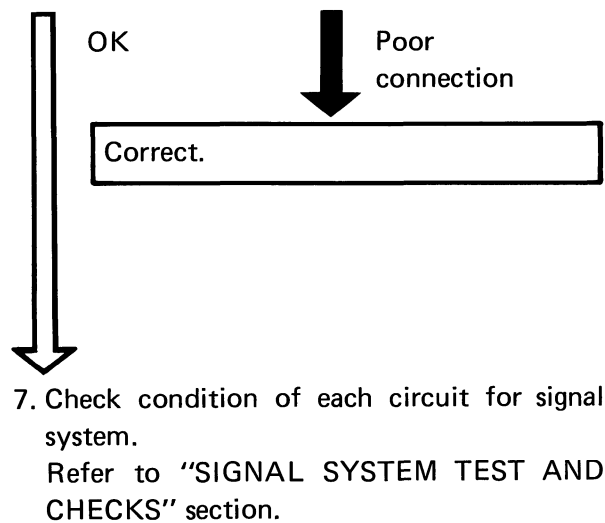
- Turn main switch to "ON" position and check it for continuity.

Continuity
(0Ω)

Discontinuity
(∞)

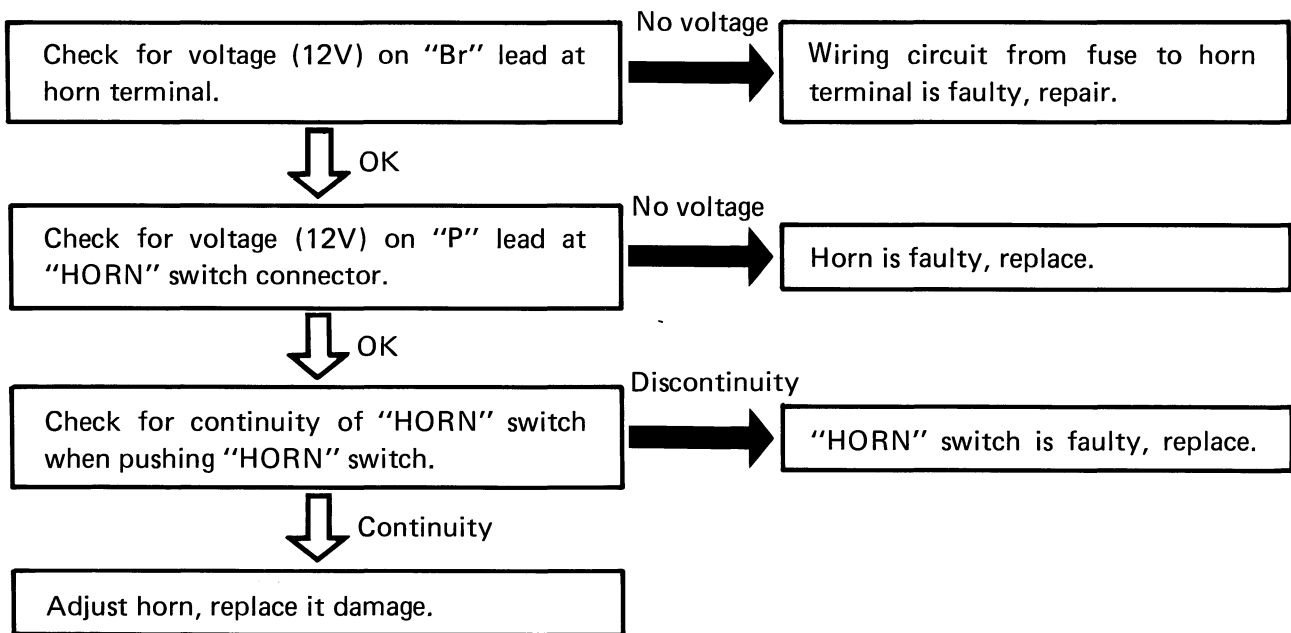
Main switch is faulty, replace it.

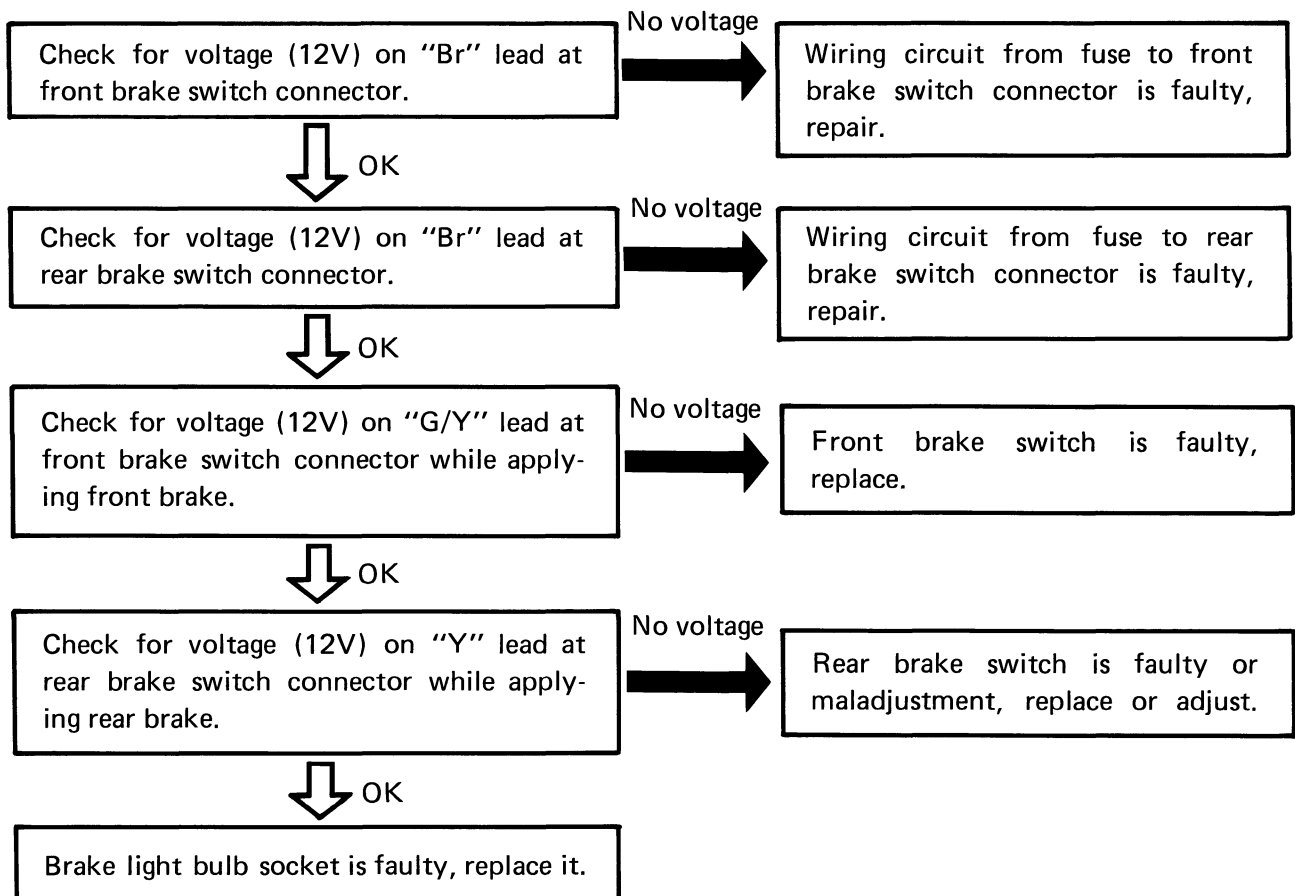
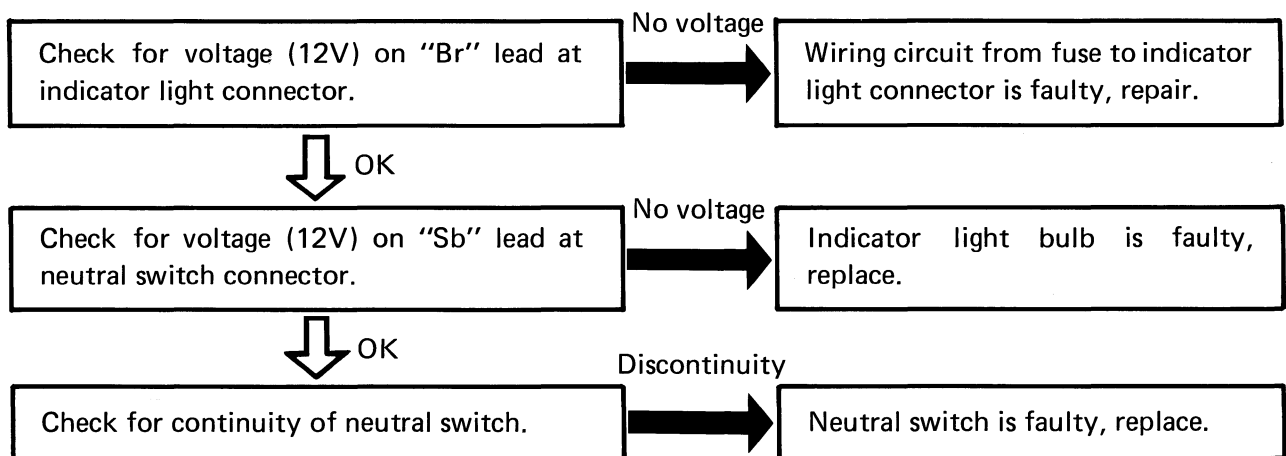
- #### 6. Check entire signal system for connections.
- Refer to "WIRING DIAGRAM" section.



SIGNAL SYSTEM TEST AND CHECKS

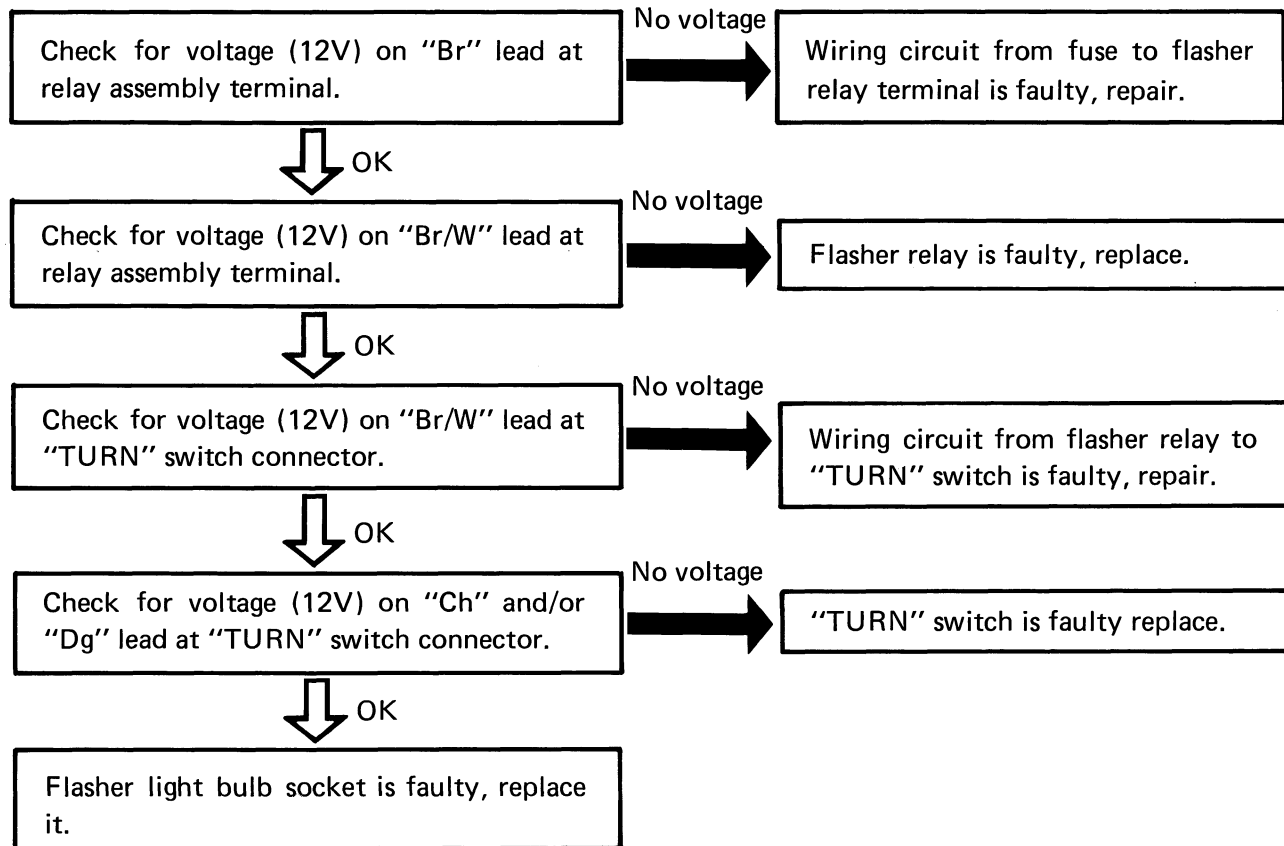
Horn does not work.



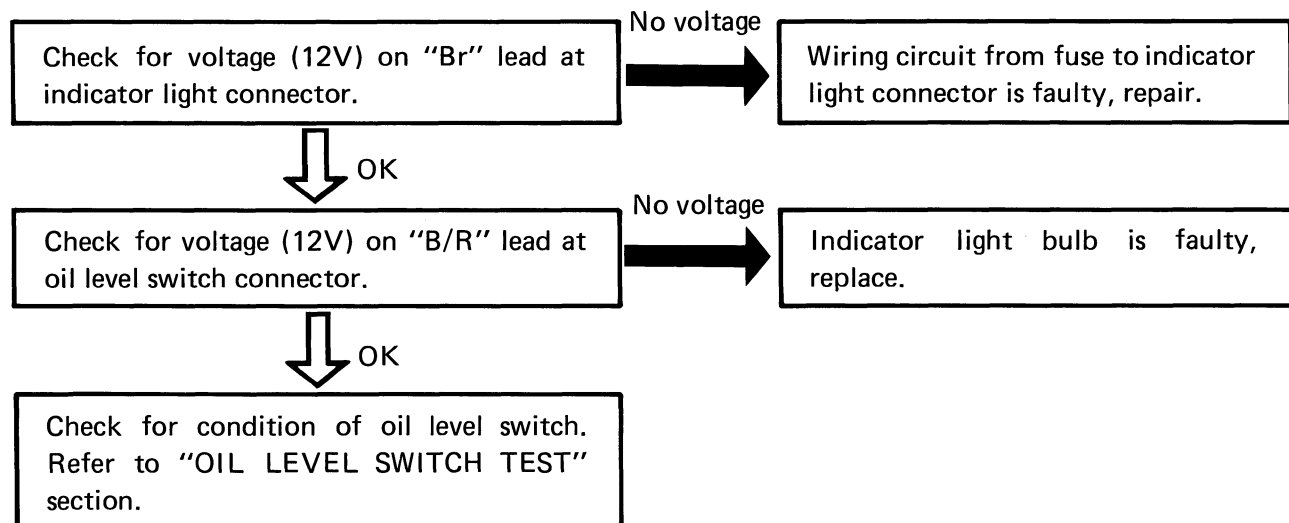
**Brake light does not work.****"NEUTRAL" indicator light does not come on .**



Flasher lights (Left and/or right) do not come on.

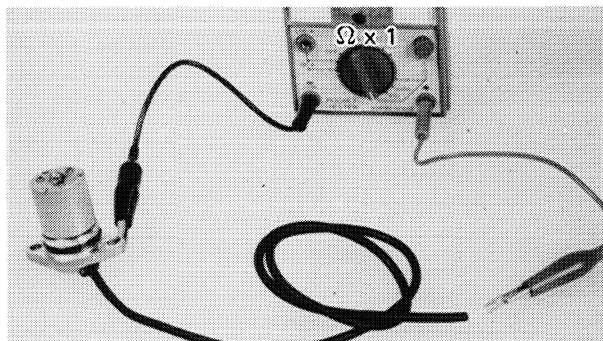
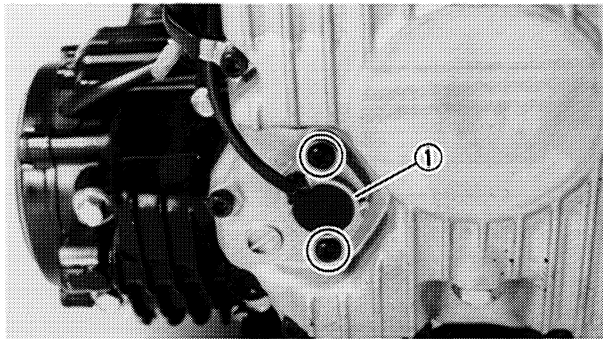
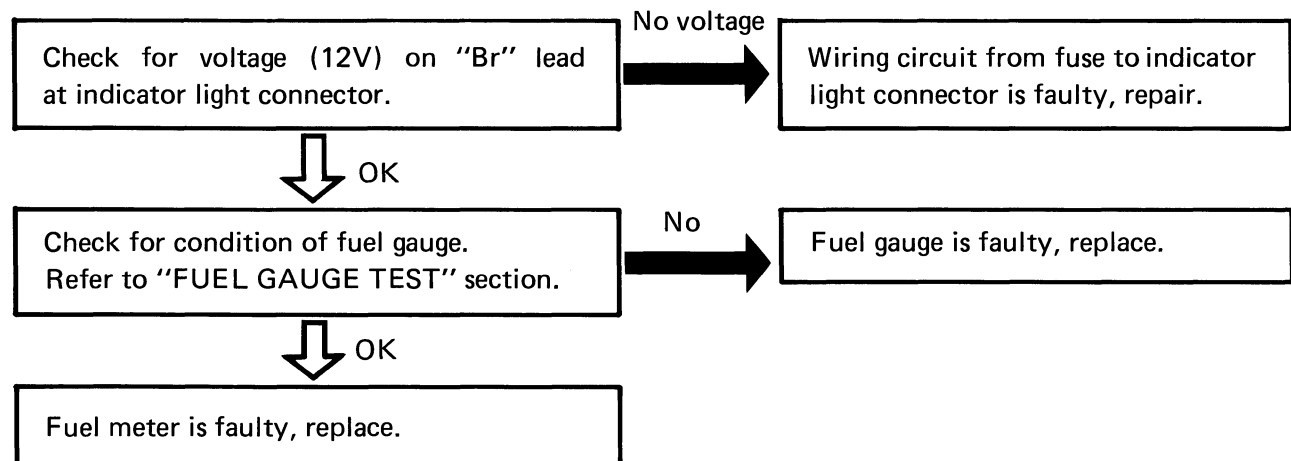


"OIL" indicator light does not come on.





Fuel meter does not work.



OIL LEVEL SWITCH TEST

1. Remove:

- Center cowls (Right and left)
- Lower cowls (Right and left)
- Muffler
- Oil level switch ①

2. Connect the Pocket Tester (YU-03112).

Tester (+) lead → Oil level switch lead
Tester (—) lead → Oil level switch base

NOTE:

Set the tester selector to "Ω x 1" position.

3. Check:

- Oil level switch
 - Upside-down position.
 - Continuity → Replace.
 - Upright position.
 - Discontinuity → Replace.

**FUEL GAUGE TEST**

1. Remove:
 - Seats
 - Side covers (Right and left)
 - Fuel tank
2. Connect the Pocket Tester (YU-03112).

Tester (+) lead → Green lead
Tester (—) lead → Black lead

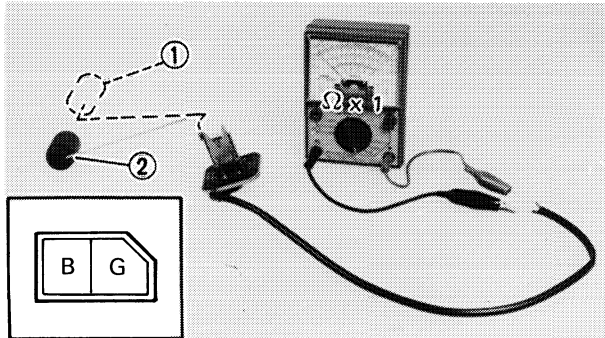
NOTE:

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

3. Measure:
 - Fuel gauge resistance.
Out of specification → Replace.

Fuel Sender Unit Resistance:

"Full" position ① :
8.7 ~ 14.7 Ω at 20°C (68°F)
"Empty" position ② :
125 ~ 145 Ω at 20°C (68°F)



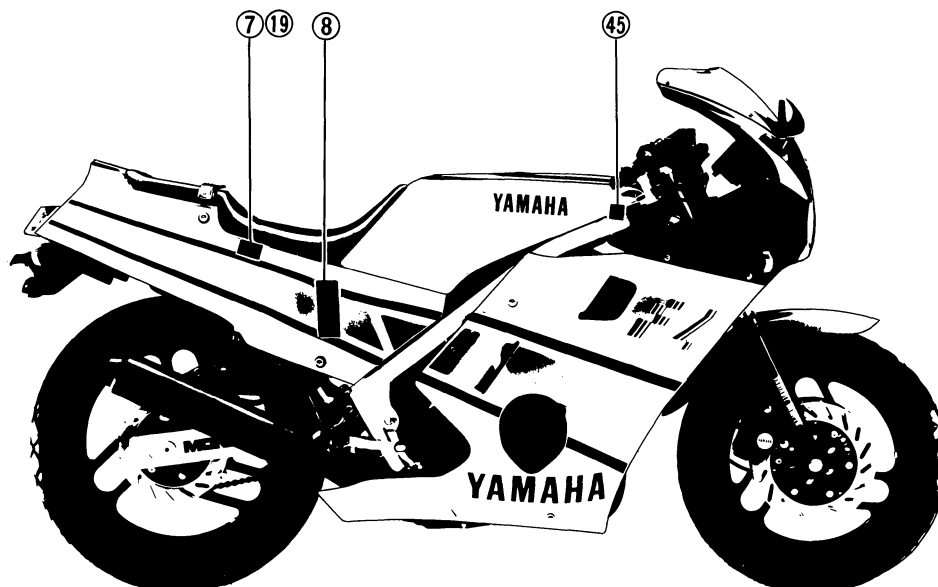
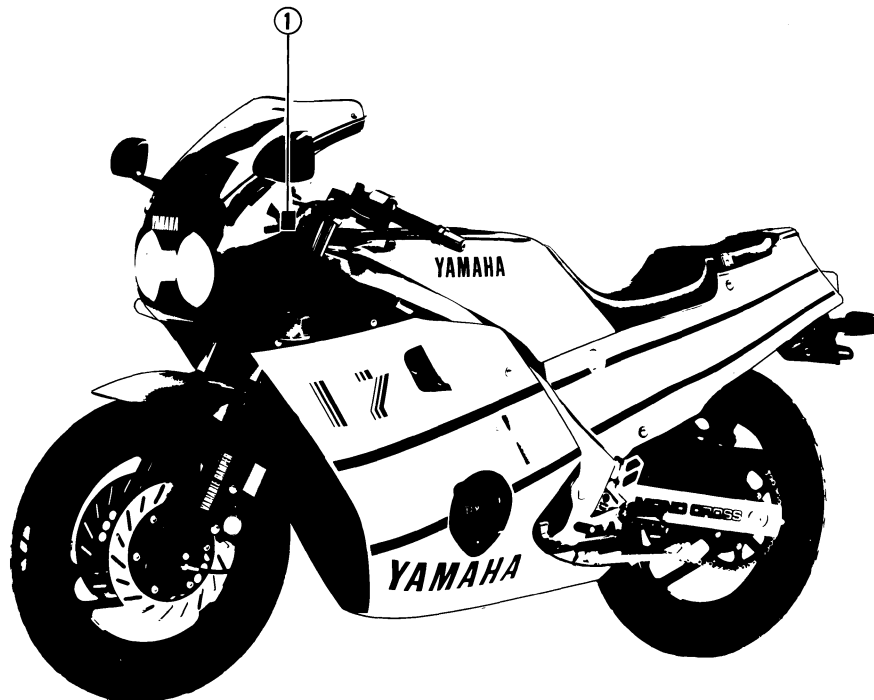
This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



NOTE: _____

For the color codes, see page 6-2.

- ① Main switch
- ⑦ Fuse (MAIN)
- ⑧ Battery
- ①⑨ Fuse (SIGNAL)
- ④⑤ Air vent control valve



**DESCRIPTION**

This model is equipped with a canister to prevent the discharging of fuel vapor and carburetor air vent into the atmosphere.

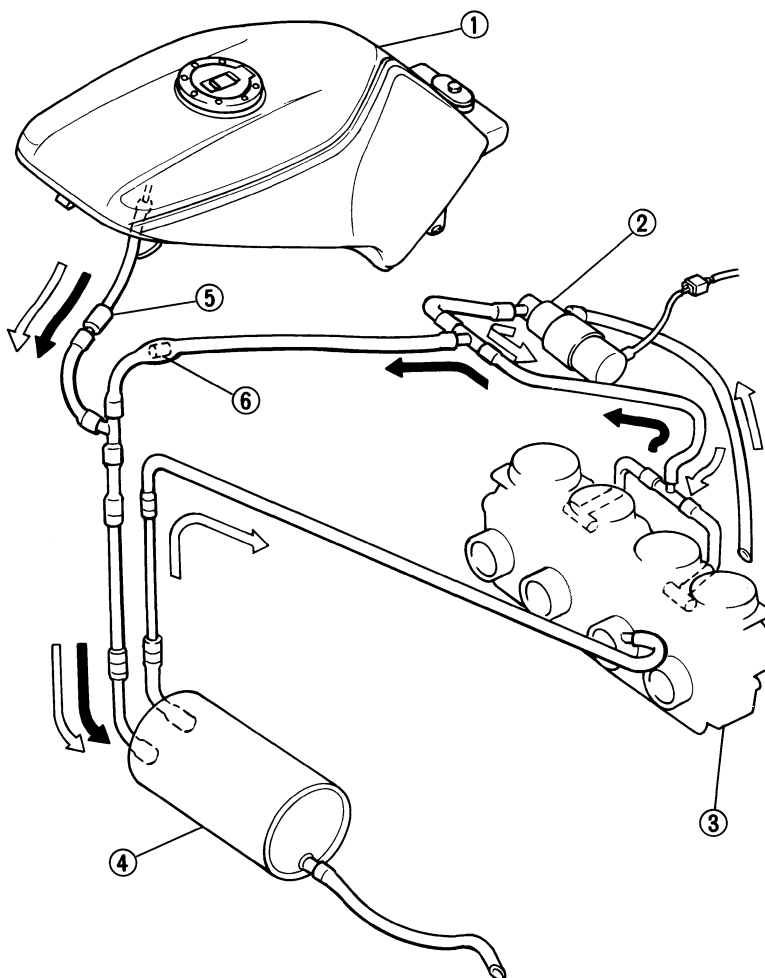
OPERATION

The carburetor air vent is controlled by the air vent control valve when the main switch is turned to "ON" position.

- ① Fuel tank
- ② Air vent control valve
- ③ Carburetor
- ④ Canister
- ⑤ Roll over valve
- ⑥ Nozzle

Main switch is turned to "OFF"

Main switch is turned to "ON"





TROUBLESHOOTING

The battery provides power for operation of the air vent control valve. If none of the above fail to operate proceed further. Low battery voltage indicates either a faulty battery, low battery fluid level, or a defective charging system.

Also check fuse condition. Replace any "Open" fuses.



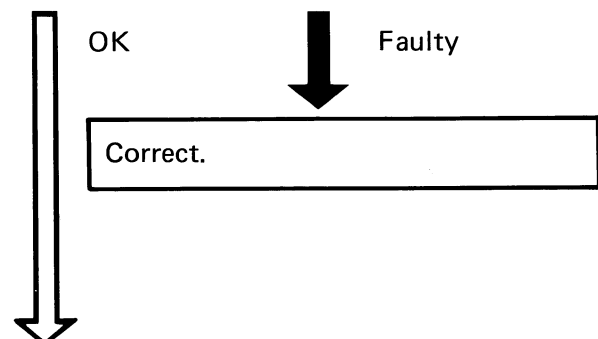
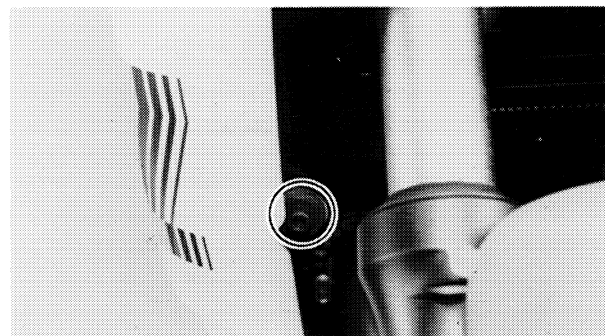
Before this troubleshooting, remove the following parts.

- Seat
- Side covers (Right and left)
- Center cowls (Right and left)
- Lower cowls (Right and left)
- Fuel tank



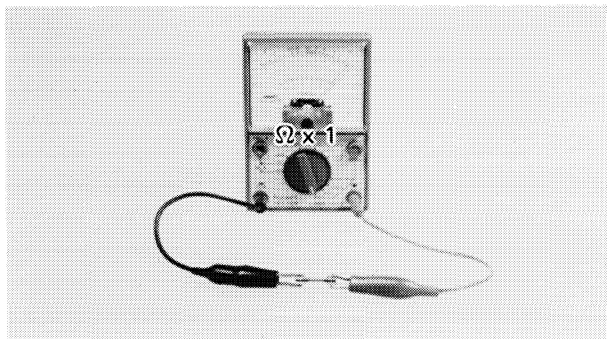
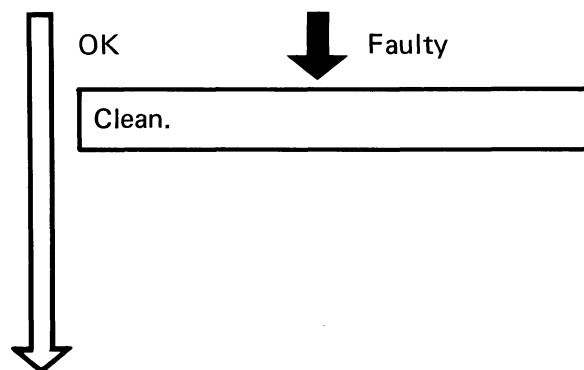
THE AIR VENT CONTROL VALVE DOES NOT OPERATE (THE ENGINE LOSES POWER).

1. Check hose connection.





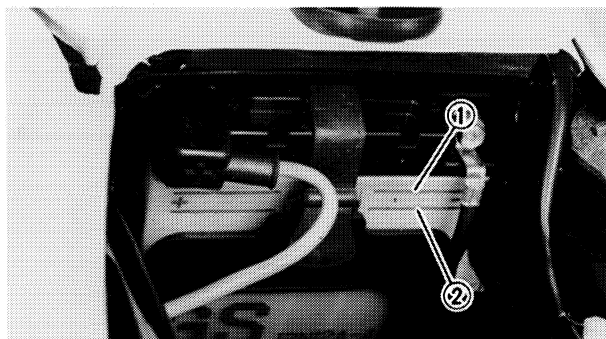
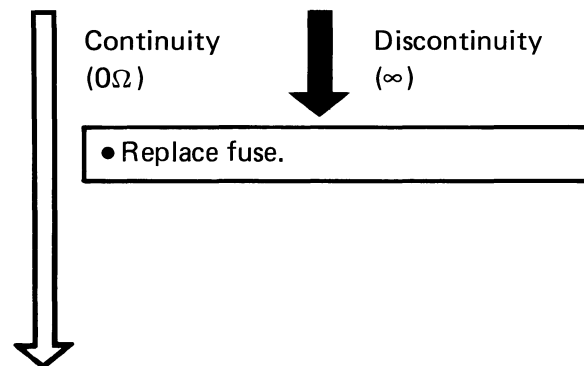
2. Check hose for clogging.



3. Fuse inspection

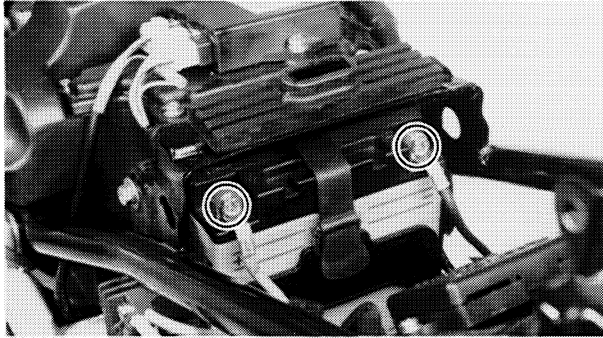
- Remove fuse (MAIN) and fuse (SIGNAL).
- Connect Pocket Tester (YU-03112) to fuse and check if for continuity.

NOTE: _____
Set tester selector to " $\Omega \times 1$ " position.



4. Battery fluid level inspection

- Fluid level should be between upper ① and lower ② level mark.



Correct

Incorrect

- Refill battery fluid.

CAUTION:

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

5. Battery terminal inspection

- Inspect battery terminal and connections.

OK

Dirty or poor connection

- Clean battery terminals using wire brush.

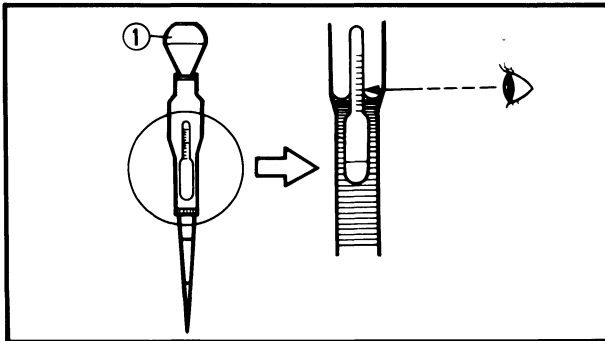
NOTE:

After cleaning terminals, apply grease lightly to both terminals.

- Connect battery leads correctly.

6. Battery fluid specific gravity inspection

- Remove caps.
- Inspect specific gravity of all cell using Battery Hydrometer ①.

**Specific Gravity:**

1.280 ± 0.01 at 20°C (68°F)

WARNING:

Battery electrolyte is poisonous and dangerous, causing severe burns, etc. It contains sulfuric acid. Avoid contact with skin, eyes or clothing. Antidote: EXTERNAL — Flush with water. INTERNAL — Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call a physician immediately.





Eyes: Flush with water for 15 minutes and get prompt medical attention. Batteries produce explosive gases. Keep sparks, flame, cigarettes etc., away. Ventilate when charging or using in an enclosed space. Always shield your eyes when working near batteries.

KEEP OUT OF REACH OF CHILDREN.

OK



Low specific gravity

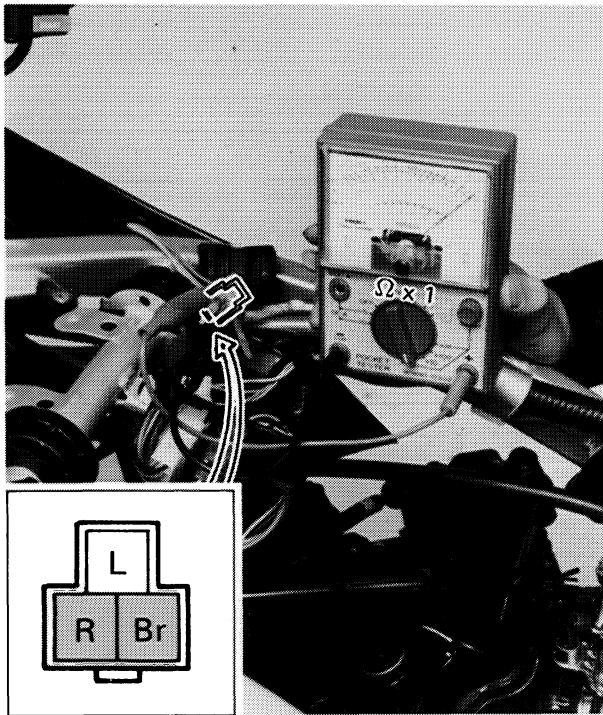
- Recharge battery

Charging Current:
1.2 amps/10 hrs

NOTE:

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 on cell to be lower than the rest.
- Warpage or buckling of plates or insulators is evident.



9. Main switch conduct check

- Disconnect main switch coupler (Brown, Red, Blue lead).
- Connect Pocket Tester (YU-03112) to main switch leads (Brown, Red).

Tester (+) lead → Red lead
Tester (–) lead → Brown lead

NOTE:

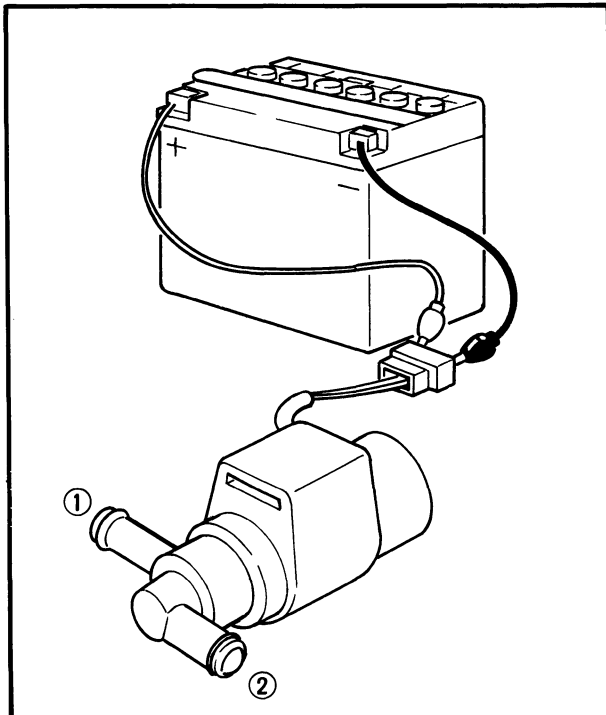
Set tester selector to “ $\Omega \times 1$ ” position.

- Turn main switch to “ON” position and check it for continuity.

Continuity
(0 Ω)

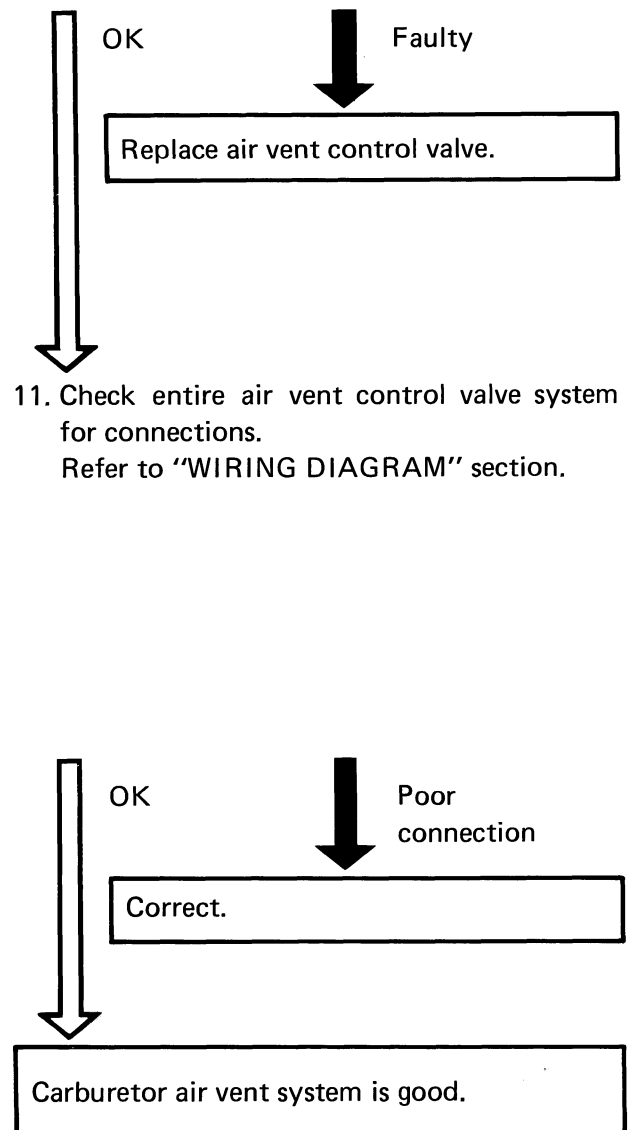
No continuity
(∞)

Main switch is faulty, replace it.



10. Air vent control valve test

- Remove air vent control valve.
- Connect 12V battery to air vent control valve as shown.
- Blow air inside at nozzle ① which is open to atmosphere.
- Check for air escape at nozzle ② on canister side.
No air escape → Valve is faulty.
Air escape → Valve is good.
- Disconnect battery and blow air inside at nozzle ① which is open to atmosphere.
- Check for air escape at nozzle ② on canister side.
Air escape → Valve is faulty.
No air escape → Valve is good.



CHAPTER 7.

APPENDICES

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FZ600S/FZ600SC WIRING DIAGRAM	



APPENDICES

SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	FZ600S/FZ600SC
Model Code Number:	2AX (For FZ600S) 2AY (For FZ600SC)
Vehicle Identification Number:	JYA2AX00 * GA000101 (For FZ600S) JYA2AY00 * GA000101 (For FZ600SC)
Engine Starting Number:	2AX-000101 (For FZ600S) 2AY-000101 (For FZ600SC)
Dimensions:	
Overall Length	2,040 mm (80.3 in)
Overall Width	690 mm (27.2 in)
Overall Height	1,145 mm (45.1 in)
Seat Height	785 mm (30.9 in)
Wheelbase	1,385 mm (54.5 in)
Minimum Ground Clearance	135 mm (5.31 in)
Basic Weight:	
With Oil and Full Fuel Tank	202 kg (445 lb)
Minimum Turning Radius:	3,700 mm (146 in)
Engine:	
Engine Type	Air cooled 4-stroke, gasoline, DOHC
Cylinder Arrangement	4-cylinder parallel
Displacement	599 cm ³
Bore x Stroke	58.5 x 55.7 mm (2.30 x 2.19 in)
Compression Ratio	10.0 : 1
Compression Pressure	1,078.8 kPa (11 kg/cm ² , 156.4 psi)
Starting System	Electric starter
Lubrication System:	Pressure lubricated, wet sump
Engine Oil Type or Grade:	
	Yamalube 4-cycle oil or SAE 20W40 type SE motor oil SAE 10W30 type SE motor oil
Engine Oil Capacity:	
Engine Oil:	
Periodic Oil Change:	2.3 L (2.02 Imp qt, 2.43 US qt)
With Oil Filter Replacement	2.6 L (2.29 Imp qt, 2.75 US qt)
Total Amount	3.0 L (2.64 Imp qt, 3.17 US qt)
Air Filter:	Dry type element
Fuel:	
Type	Regular gasoline
Tank Capacity	16.0 L (3.5 Imp gal, 4.2 US gal)
Reserve Amount	3.0 L (0.66 Imp gal, 0.79 US gal)
Carburetor:	
Type (Quantity)	BS30 (4 pcs.)
Manufacturer	MIKUNI



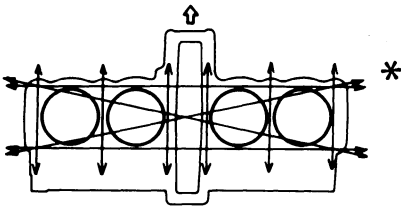
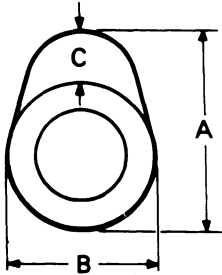
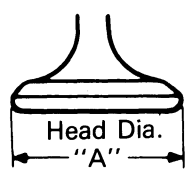
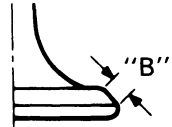
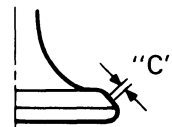
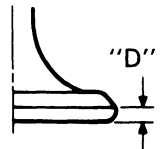
Model	FZ600S/FZ600SC	
Spark Plug: Type (Manufacture) Gap	D8EA (N.G.K.), X24ES-U (N.D.) 0.6 ~ 0.7 mm (0.024 ~ 0.028 in)	
Clutch Type:	Wet, multiple-disc	
Transmission: Primary Reduction System Primary Reduction Ratio Secondary Reduction System Secondary Reduction Ratio Transmission Type Operation Gear Ratio 1st 2nd 3rd 4th 5th 6th	Spur gear, HY-VO chain 22/21 x 65/28 (2.431) Chain drive 46/16 (2.875) Constant-mesh, 6-speed Left foot operation 41/15 (2.733) 37/19 (1.947) 34/22 (1.545) 31/25 (1.240) 29/28 (1.036) 27/30 (0.900)	
Chassis: Frame Type Caster Angle Trail	Double cradle 26° 101 mm (3.98 in)	
Tire: Type Size Manufacture (Type)	Front	Rear
	Tubeless 100/90-16 54H DUNLOP (K125) 110/90-16 54H YOKOHAMA (F202A)	Tubeless 120/80-18 62H DUNLOP (K225) YOKOHAMA (R202)
Tire Pressure (Cold tire): Up to 90 kg (198 lb) load* 90 kg (198 lb) ~ Maximum load* High speed riding * Load is total weight of cargo, rider, passenger, and accessories.	Front	Rear
	177 kPa (1.8 kg/cm ² , 26 psi)	196 kPa (2.0 kg/cm ² , 28 psi)
	196 kPa (2.0 kg/cm ² , 28 psi)	245 kPa (2.5 kg/cm ² , 36 psi)
	196 kPa (2.0 kg/cm ² , 28 psi)	226 kPa (2.3 kg/cm ² , 32 psi)
Brake: Front Brake Type Operation Rear Brake Type Operation	Dual disc brake Right hand operation Single disc brake Right foot operation	
Suspension: Front Suspension Rear Suspension	Telescopic fork Swingarm (New Monocross)	
Shock Absorber: Front Shock Absorber Rear Shock Absorber	Coil-air spring/Oil damper Coil-gas spring/Oil damper	

Model	FZ600S/FZ600SC
Wheel Travel: Front Wheel Travel Rear Wheel Travel	140 mm (5.5 in) 100 mm (3.9 in)
Electrical: Ignition System Generator System Battery Type or Model Battery Capacity	T.C.I. (Full Transistor ignition) A.C. generator 12N12A 12V 12AH
Headlight Type:	Quartz bulb (Halogen)
Bulb Wattage (Quantity): Headlight Tail/Brake Light Flasher Light License Light Meter Light	35W/35W (2 pcs.) 8W/27W (1 pcs.) 27W (4 pcs.) 3.8W (2 pcs.) 3.4W (5 pcs.)
Indicator Light: Wattage (Quantity) "NEUTRAL" "HIGH BEAM" "TURN" "OIL LEVEL"	3.4W (1 pcs.) 3.4W (1 pcs.) 3.4W (1 pcs.) 3.4W (1 pcs.)

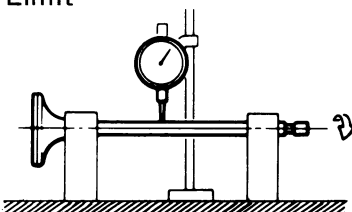
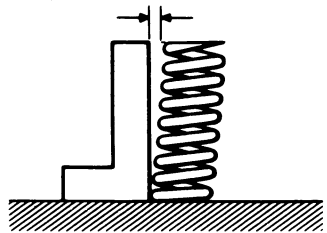


MAINTENANCE SPECIFICATIONS

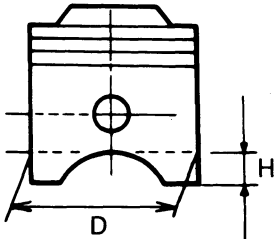


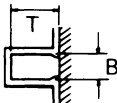
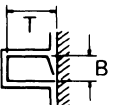
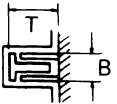
Engine

Model	FZ600S/FZ600SC
Cylinder Head: Warp Limit 	0.03 mm (0.001 in) *Lines indicate straightedge measurement.
Cylinder: Bore Size Taper Limit Out-of-round Limit	58.505 ~ 58.545 mm (2.3033 ~ 2.3049 in) 0.05 mm (0.002 in) 0.01 mm (0.0004 in)
Camshaft: Drive Method Cam Cap Inside Diameter (Cylinder head direct support) Camshaft Outside Diameter Shaft-to-cap Clearance Cam Dimensions:  <div style="display: flex; flex-direction: column; align-items: flex-start;"> <div>Intake "A"</div> <div>< Limit ></div> <div>Intake "B"</div> <div>< Limit ></div> <div>Intake "C"</div> <div>< Limit ></div> <div>Exhaust "A"</div> <div>< Limit ></div> <div>Exhaust "B"</div> <div>< Limit ></div> <div>Exhaust "C"</div> <div>< Limit ></div> </div>	Chain drive (Center) $25^{+0.021}_0$ mm ($0.9449^{+0.0008}_0$ in) $25_{-0.033}^{-0.020}$ mm ($0.9448_{-0.0013}^{-0.0008}$ in) 0.020 ~ 0.054 mm (0.0008 ~ 0.0021 in) 36.25 ~ 36.35 mm (1.427 ~ 1.431 in) 36.2 mm (1.43 in) 28.1 ~ 28.2 mm (1.106 ~ 1.11 in) 28.05 mm (1.1 in) 8.3 mm (0.327 in) 8.1 mm (0.319 in) 35.75 ~ 35.85 mm (1.408 ~ 1.411 in) 35.7 mm (1.41 in) 28.05 ~ 28.15 mm (1.104 ~ 1.108 in) 28 mm (1.1 in) 7.8 mm (0.307 in) 7.6 mm (0.299 in) 0.05 mm (0.002 in)
Camshaft Runout Limit Cam Chain Type/Number of Links Cam Chain Adjustment Method	Bush-chain/114 Manual
Valve, Valve Seat, Valve Guide: Valve Clearance (Cold) <div style="display: flex; justify-content: space-around; width: 100%;"> <div>IN.</div> <div>EX.</div> </div>	0.11 ~ 0.15 mm (0.004 ~ 0.006 in) 0.16 ~ 0.20 mm (0.006 ~ 0.008 in)
 <div style="display: flex; justify-content: space-around; width: 100%;"> <div>Head Dia. "A"</div> <div>  <div>Face Width "B"</div> </div> <div>  <div>Seat Width "C"</div> </div> <div>  <div>Margin Thickness "D"</div> </div> </div>	

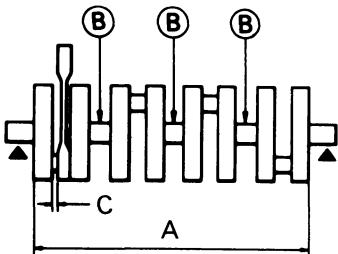


Model		FZ600S/FZ600SC
"A" Head Dia.	IN.	31 $^{+0.6}_{-0.4}$ mm (1.220 $^{+0.0236}_{+0.0157}$ in)
	EX.	27 \pm 0.1 mm (1.063 \pm 0.004 in)
"B" Face Width	IN.	2.26 mm (0.0889 in)
	EX.	2.26 mm (0.0889 in)
"C" Seat Width	IN.	1.0 \pm 0.1 mm (0.0394 \pm 0.004 in)
	EX.	1.0 \pm 0.1 mm (0.0394 \pm 0.004 in)
< Limit >	IN.	2 mm (0.08 in)
	EX.	2 mm (0.08 in)
"D" Margin Thickness Limit	IN.	1.0 \pm 0.2 mm (0.0394 \pm 0.008 in)
	EX.	1.0 \pm 0.2 mm (0.0394 \pm 0.008 in)
Stem Outside Diameter	IN.	5.975 ~ 5.990 mm (2.2352 ~ 0.2358 in)
	EX.	5.960 ~ 5.975 mm (0.2346 ~ 0.2352 in)
< Limit >	IN.	5.945 mm (0.234 in)
	EX.	5.920 mm (0.233 in)
Guide Inside Diameter	IN.	6.0 ~ 6.012 mm (0.2362 ~ 0.2367 in)
	EX.	6.0 ~ 6.012 mm (0.2362 ~ 0.2367 in)
< Limit >	IN.	6.045 mm (0.238 in)
	EX.	6.020 mm (0.237 in)
Stem-to-guide Clearance	IN.	0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in)
	EX.	0.025 ~ 0.052 mm (0.0010 ~ 0.0020 in)
< Limit >	IN.	0.1 mm (0.004 in)
	EX.	0.1 mm (0.004 in)
Stem Runout Limit		0.03 mm (0.001 in)
		
Valve Seat Width	IN.	0.9 ~ 1.1 mm (0.0390 ~ 0.0398 in)
	EX.	0.9 ~ 1.1 mm (0.0390 ~ 0.0398 in)
< Limit >	IN.	2.0 mm (0.08 in)
	EX.	2.0 mm (0.08 in)
Valve Spring:		
Free Length		
Inner Spring	IN.	35.5 mm (1.398 in)
	EX.	35.5 mm (1.398 in)
Outer Spring	IN.	37.2 mm (1.465 in)
	EX.	37.2 mm (1.465 in)
Installed Length (Valve Closed)		
Inner Spring	IN.	30.5 mm (1.201 in)
	EX.	30.5 mm (1.201 in)
Outer Spring	IN.	32.0 mm (1.260 in)
	EX.	32.0 mm (1.260 in)
Tilt Limit		
Inner Spring	IN. & EX.	2.5°/1.5 mm (0.063 in)
Outer Spring	IN. & EX.	2.5°/1.5 mm (0.063 in)
		



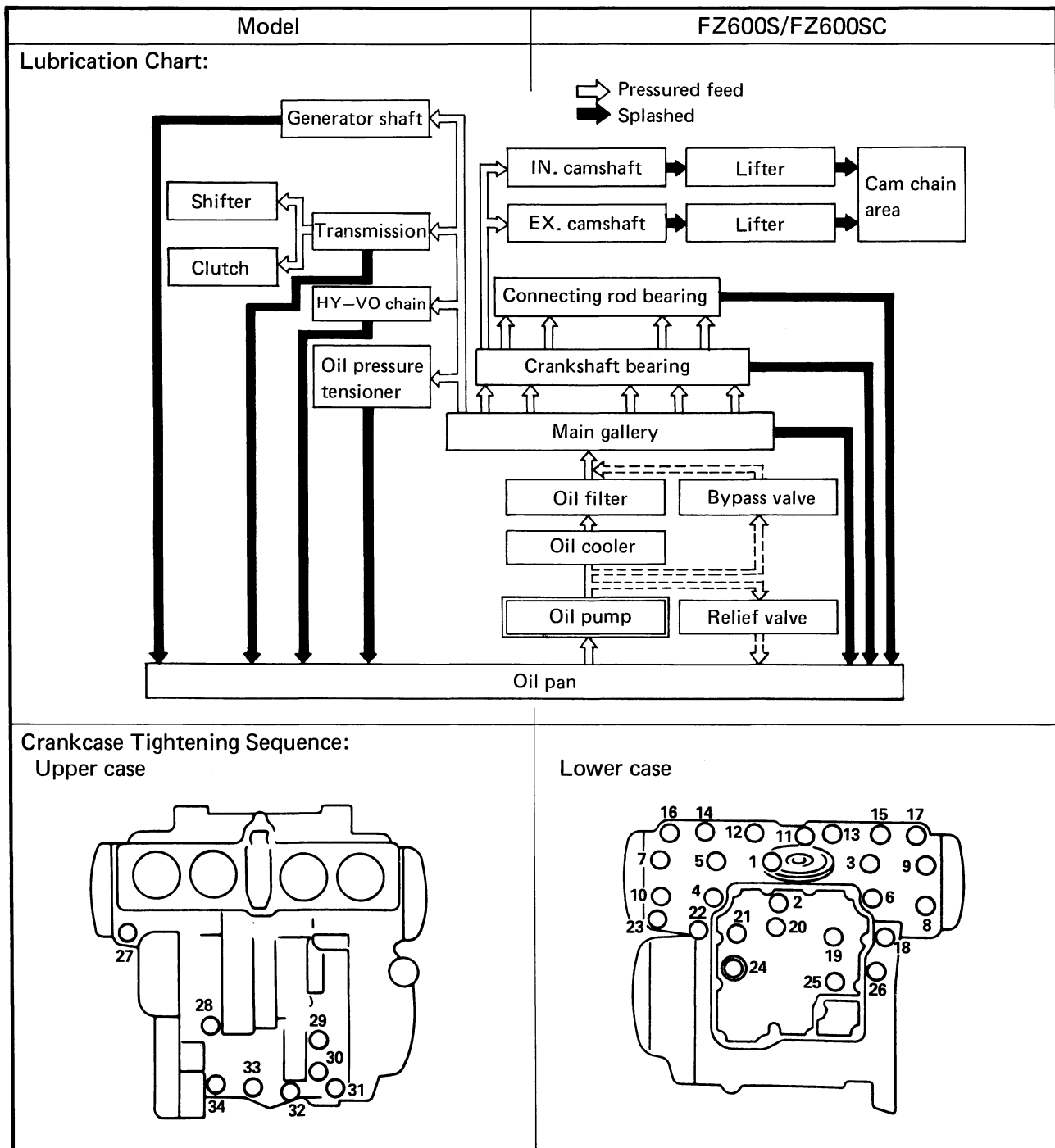
Model		FZ600S/FZ600SC	
Direction of Winding (Top View)		Inner spring	Outer spring
		IN. and EX.	IN. and EX.
		Clockwise	Counterclockwise
			
Piston: Piston Size "D" Measuring Point "H"		58.47 ~ 58.51 mm (2.3020 ~ 2.3035 in) 7.0 mm (0.276 in) (From bottom line of piston skirt)	
Clearance between Piston & Cylinder Oversize: 1st 2nd 3rd 4th		0.025 ~ 0.045 mm (0.0010 ~ 0.0018 in) — 59.00 mm (2.32 in) — 60.00 mm (2.36 in)	
Piston Ring: Sectional Sketch Top Ring  2nd Ring  Oil Ring 		Barrel B = 1.0 mm (0.039 in) T = 2.3 mm (0.090 in) Taper B = 1.2 mm (0.047 in) T = 2.3 mm (0.090 in) Expander B = 2.5 mm (0.10 in) T = 2.8 mm (0.11 in)	
End Gap (Installed): Top Ring < Limit > 2nd Ring < Limit > Oil Ring		0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in) 0.7 mm (0.0276 in) 0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in) 0.7 mm (0.0276 in) 0.2 ~ 0.7 mm (0.0079 ~ 0.0276 in)	
Side Clearance: Top Ring < Limit > 2nd Ring < Limit >		0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in) 0.15 mm (0.0059 in) 0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in) 0.15 mm (0.0059 in)	



Model	FZ600S/FZ600SC
Connecting Rod: Oil Clearance Color Code (Bearing size No.)	0.016 ~ 0.040 mm (0.0006 ~ 0.0016 in) Blue (No. 1) Black (No. 2) Brown (No. 3) Green (No. 4)
Crankshaft:  Crank Width "A" Runout Limit "B" Big End Side Clearance "C" < Limit > Crank Journal Oil Clearance Color Code (Bearing size No.)	312.4 ± 0.6 mm (12.30 ± 0.024 in) 0.03 mm (0.0012 in) 0.16 ~ 0.262 mm (0.006 ~ 0.010 in) 0.5 mm (0.020 in) 0.021 ~ 0.044 mm (0.0008 ~ 0.0017 in) Blue (No. 1) Black (No. 2) Brown (No. 3) Green (No. 4) Yellow (No. 5)
Clutch: Friction Plate Thickness/Quantity Wear Limit Clutch Plate Thickness/Quantity Warp Limit Clutch Spring Free Length/Quantity Clutch Spring Minimum Length Clutch Release Method	3.0 ± 0.1 mm (0.12 ± 0.0039 in)/8 pcs. 2.7 mm (0.106 in) 1.6 ± 0.1 mm (0.063 ± 0.0039 in)/7 pcs. 0.15 mm (0.0059 in) 42.8 mm (1.690 in)/5 pcs. 41.8 mm (1.646 in) Outer Pull, Rack & Pinion Pull
Transmission: Main Axle Deflection Limit Drive Axle Deflection Limit	0.08 mm (0.0031 in) 0.08 mm (0.0031 in)
Shifter: Shifter Type	Guide bar
Carburetor: Type/Manufacture/Quantity I.D. Mark Main Jet (M.J.) Main Air Jet (M.A.J.) Jet Needle (J.N.) Needle Jet (N.J.) Pilot Jet (P.J.) Pilot Outlet Size (P.O.) Pilot Air Jet (P.A.J.) Pilot Screw (P.S.) Valve Seat Size (V.S.)	BS30/MIKUNI/4 pcs. 2AX00 (For FZ600S), 2AY00 (For FZ600SC) #107.5 #140 4CHP2 O-6 #30 φ0.8 #135 Preset φ2.3



Model	FZ600S/FZ600SC
Starter Jet (G.S ₁)	#22.5
(G.S ₂)	φ0.6
Bypass Size (B.P ₁)	φ0.8
(B.P ₂)	φ0.8
(B.P ₃)	φ0.8
Fuel Level (F.L.)	2.0 ± 0.5 mm (0.08 ± 0.02 in) Below from the carburetor mixing chamber body edge
Float Height	20 ± 1.0 mm (0.8 ± 0.04 in)
Engine Idling Speed	1,200 ± 50 r/min
Vacuum Pressure at Idling Speed	23.3 ± 0.667 kPa (175 ± 5 mmHg, 6.890 ± 0.1969 inHg)
Vacuum Synchronous Difference	Below 1.33 kPa (10 mmHg, 0.4 inHg)
Lubrication System:	
Oil Filter Type	Paper
Oil Pump Type	Trochoid pump
Tip Clearance	0.09 ~ 0.15 mm (0.0035 ~ 0.0060 in)
< Limit >	< 0.2 mm (0.008 in) >
Side Clearance	0.03 ~ 0.08 mm (0.0012 ~ 0.0031 in)
< Limit >	< 0.15 mm (0.006 in) >
Bypass Valve Setting Pressure	98.0 ± 20 kPa (1.0 ± 0.2 kg/cm ² , 14.2 ± 2.8 psi)
Relief Valve Operating Pressure	490 ± 49 kPa (5.0 ± 0.5 kg/cm ² , 71.1 ± 7.1 psi)



SPECIFICATIONS

APPX

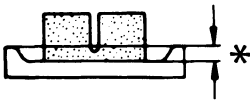


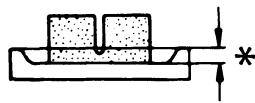
Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m·kg	ft·lb	
Cam Shaft Cap	Bolt	M6 P1.0	24	10	1.0	7.2	Tighten in 3-stages
Cylinder (Cam chain)	Stud bolt	M6 P1.0	4	5	0.5	3.6	Apply oil
Cylinder Head (Exhaust pipe)	Stud bolt	M6 P1.0	8	10	1.0	7.2	Apply oil
Cylinder Head	Stud bolt	M6 P1.0	4	5	0.5	3.6	Apply oil
Cylinder	Nut	M8 P1.25	1	20	2.0	14	
Cylinder	Nut	M6 P1.0	1	10	1.0	7.2	
Cylinder Head	Cap nut	M8 P1.25	12	22	2.2	16	Apply oil
Spark Plug		M12 P1.25	4	17.5	1.75	13	
Cylinder Head Cover	Bolt	M6 P1.0	12	10	1.0	7.2	
Cylinder	Stud bolt	M8 P1.25	1	15	1.5	11	Apply oil
Cylinder and Crankcase	Nut	M8 P1.25	1	20	2.0	14	
Connecting Rod and Rod Cap	Nut	M7 P0.75	8	25	2.5	18	
Camshaft and Sprocket	Bolt	M7 P1.0	4	24	2.4	17	
Cam Chain Tensioner							
Stopper Bolt	Bolt	M8 P1.0	1	8	0.8	5.7	
Cam Chain Tensioner Case and Cylinder	Bolt	M6 P1.0	1	10	1.0	7.2	
Cam Chain Tensioner Case and Cylinder	Nut	M6 P1.0	1	10	1.0	7.2	
Cam Chain Tensioner Lock Nut	Nut	M8 P1.25	1	9	0.9	6.5	
Crankcase	Plug	M10 P1.25	1	10	1.0	7.2	
Rotor Housing and Pump Cover	Screw	M6 P1.0	1	7	0.7	5.1	
Oil Pump Ass'y and Crankcase	Screw	M6 P1.0	3	7	0.7	5.1	
Strainer Housing and Crankcase	Bolt	M6 P1.0	2	10	1.0	7.2	
Strainer Cover and Crankcase	Bolt	M6 P1.0	12	10	1.0	7.2	
Filter Cover and Crankcase	Union bolt	M20 P1.5	1	15	1.5	11	
Drain Bolt	Plug	M14 P1.5	1	43	4.3	31	
Carburetor Joint and Cylinder Head	Bolt	M6 P1.0	8	10	1.0	7.2	
Air Filter Cover	Screw	M5 P0.8	4	5	0.5	3.6	
Air Filter Case	Bolt	M6 P1.0	3	7	0.7	5.1	
Exhaust Pipe and Cylinder Head	Nut	M6 P1.0	8	10	1.0	7.2	
Muffler	Bolt	M10 P1.25	1	25	2.5	18	
Adaptor Plate and Crankcase	Union bolt	M20 P1.5	1	50	5.0	36	
Oil Cooler and Hose	Nut	M18 P	2	32	3.2	23	
Adaptor Plate and Hose	Bolt	M6 P1.0	4	12	1.2	8.6	
Oil Cooler and Frame	Bolt	M6 P1.0	2	10	1.0	7.2	
Hose Clamp	Bolt	M6 P1.0	1	12	1.2	8.6	
Hose Clamp and Engine	Nut	M6 P1.0	2	10	1.0	7.2	
Crankcase	Stud bolt	M8 P1.25	12	13	1.3	9.4	Apply oil
Crankcase (Upper and lower)	Bolt	M8 P1.25	11	24	2.4	17	Apply oil
Crankcase (Upper and lower)	Bolt	M6 P1.0	23	12	1.2	8.7	Apply oil



Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Generator cover and crankcase	Bolt	M6 P1.0	3	10	1.0	7.2	Use LOCTITE®
Bearing Cover Plate (Crankcase right)	Screw	M6 P1.0	4	8	0.8	5.7	
Bearing Cover Plate (Crankcase left)	Screw	M6 P1.0	4	8	0.8	5.7	
Clutch Cable Holder	Screw	M6 P1.0	1	10	1.0	7.2	
Crankcase Cover	Bolt	M6 P1.0	13	10	1.0	7.2	
Crankcase (Main gallery blind plug)	Plug	M20 P1.5	2	12	1.2	8.7	Apply oil
Clutch Pressure Plate	Bolt	M6 P1.0	5	8	0.8	5.8	Use LOCTITE®
Clutch Boss	Nut	M20 P1.0	1	70	7.0	50	
Drive Sprocket	Bolt	M6 P1.0	2	10	1.0	7.2	
Stopper Plate	Screw	M5 P0.8	1	7	0.7	5.1	
Cam Segment	Bolt	M6 P1.0	1	10	1.0	7.2	
Change Pedal	Bolt	M6 P1.0	1	10	1.0	7.2	Use LOCTITE®
A.C. Generator	Bolt	M10 P1.25	1	35	3.5	25	
A.C. Generator (Brush)	Screw	M6 P1.0	2	8	0.8	5.8	
Pickup Coil Base	Screw	M6 P1.0	2	8	0.8	5.8	
Timing Plate	Bolt	M8 P1.25	1	24	2.4	17	
Starter Motor	Bolt	M6 P1.0	2	10	1.0	7.2	Use LOCTITE®
Neutral Switch	Screw	M5 P0.8	3	3.5	0.35	2.5	
Oil Level Gauge Switch	Bolt	M6 P1.0	2	7	0.7	5.1	
Relief Valve and Crankcase	—		1	20	2.0	14	
HY-VO Chain Tensioner	Bolt	M6 P1.0	2	10	1.0	7.2	
Primary Drive Gear	Nut	M16 P1.5	1	50	5.0	36	Use LOCTITE®
Bearing Cover Plate	Screw	M6 P1.0	2	10	1.0	7.2	
Starter Clutch	Bolt	M8 P1.25	3	25	2.5	18	
Shift Shaft Stopper	Screw	M8 P1.25	1	22	2.2	16	
Shift Cam Bearing Plate	Screw	M6 P1.0	1	10	1.0	7.2	

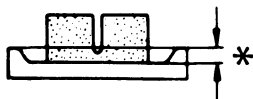
Chassis

Model	FZ600S/FZ600SC				
Steering System: Steering Bearing Type No./Size of Steel Balls: Upper Lower	Ball Bearing 19 pcs./1/4 in 19 pcs./1/4 in				
Front Suspension: Front Fork Travel Fork Spring Free Length Spring Rate/Stroke Optional Spring Oil Capacity Oil Level Oil Grade Enclosed Gas Pressure (STD) (Min. ~ Max.)	140 mm (5.5 in) 517.5 mm (20.4 in) $K_1 = 3.5 \text{ N/mm}$ (0.36 kg/mm, 20.2 lb/in) 0.0 ~ 95 mm (0.0 ~ 3.47 in) $K_2 = 5.1 \text{ N/mm}$ (0.52 kg/mm, 29.1 lb/in) 95 ~ 140 mm (3.74 ~ 5.51 in) No 315 cm ³ (11.1 Imp oz, 10.7 US oz) 117 mm (4.61 in) Yamaha Fork Oil 10WT or equivalent 39 kPa (0.4 kg/cm ² , 5.7 psi) Zero ~ 98 kPa (Zero ~ 1.0 kg/cm ² , Zero ~ 14 psi)				
Rear Suspension: Shock Absorber Travel Spring Free Length Spring Rate/Stroke Optional Spring Adjustment Spring Position	40 mm (1.6 in) 186 mm (7.32 in) 108 N/mm (11 kg/mm, 616 lb/in) 0.0 ~ 40 mm (0.0 ~ 1.6 in) No				
	← Stiffer			Std.	Softer
	5	4	3	2	1
Rear Arm: Swingarm Free Play Limit (End)	1.0 mm (0.039 in)				
Wheel: Front Wheel Type Rear Wheel Type Front Rim Size/Material Rear Rim Size/Material Rim Runout Limit Vertical Lateral	Cast Wheel Cast Wheel MT2.50 x 16/Aluminum MT2.75 x 18/Aluminum 1.0 mm (0.039 in) 0.5 mm (0.020 in)				
Drive Chain: Type/Manufacturer No. of Links Chain Free Play	520V-SR/DAIDO 104 20 ~ 30 mm (0.78 ~ 1.18 in)				
Front Disc Brake: Type Outside Dia. x Thickness Pad Thickness: Inner < Limit > * Outer < Limit > * Master Cylinder Inside Dia. Caliper Cylinder Inside Dia. Brake Fluid Type	 Dual disc 267 x 5 mm (10.5 x 0.2 in) 5.5 mm (0.21 in) 0.5 mm (0.019 in) 5.5 mm (0.21 in) 0.5 mm (0.019 in) 15.87 mm (0.62 in) 42.8 mm (1.69 in) DOT #3				





Model	FZ600S/FZ600SC
Rear Disc Brake: Type Outside Dia. x Thickness Pad Thickness: Inner < Limit > * Outer < Limit > * Master Cylinder Inside Dia. Caliper Cylinder Inside Dia. Brake Fluid Type	Single disc 245 x 5 mm (9.6 x 0.2 in) 5.5 mm (0.21 in) 0.5 mm (0.019 in) 5.5 mm (0.21 in) 0.5 mm (0.019 in) 12.7 mm (0.50 in) 38.1 mm (1.50 in) DOT #3
Brake Lever & Brake Pedal: Brake Lever Free Play (at lever end) Brake Pedal Free Play Brake Pedal Position	0 ~ 1 mm (0 ~ 0.04 in) 13 ~ 15 mm (0.51 ~ 0.59 in) 40 mm (1.6 in) (Vertical height below footrest top)
Clutch Lever Free Play (at lever end):	8 ~ 12 mm (0.3 ~ 0.5 in)





Part to be tightened	Thread size	Tightening torque		
		Nm	m•kg	ft•lb
Front Wheel Axle	M14 x 1.5	105	10.5	75
Front Wheel Axle Holder	M8 x 1.25	20	2.0	14
Rear Wheel Axle	M14 x 1.5	105	10.5	75
Front Fender and Front Fork	M6 x 1.0	10	1.0	7.2
Handle Crown and Inner Tube	M8 x 1.25	20	2.0	14
Handle Crown and Steering Shaft	M22 x 1.0	110	11.0	80
Handlebar and Inner Tube	M8 x 1.25	20	2.0	14
Handlebar and Handle Crown	M6 x 1.0	10	1.0	7.2
Steering Shaft and Ring Nut (Refer to note)	M25 x 1.0	37	3.7	27
Front Master Cylinder and Master Cylinder Bracket	M6 x 1.0	8	0.8	5.8
Front Master Cylinder and Master Cylinder Cap	M5 x 0.5	2	0.2	1.4
Rear Master Cylinder and Rear Frame	M8 x 1.25	20	2.0	14
Brake Hose	M10 x 1.25	25	2.5	18
Caliper and Bleed Screw	M8 x 1.25	6	0.6	4.3
Front Caliper and Front Fork	M10 x 1.25	35	3.5	25
Rear Caliper and Bracket	M10 x 1.25	35	3.5	25
Tension Bar	M8 x 1.25	26	2.6	19
Footrest	M10 x 1.25	60	6.0	43
Footrest Bracket and Frame	M8 x 1.25	26	2.6	19
Engine Mounting — Front upper	M10 x 1.25	42	4.2	30
— Front under	M10 x 1.25	42	4.2	30
— Rear under	M12 x 1.25	90	9.0	65
Frame and Downtube — Upper	M8 x 1.25	26	2.6	19
— Under	M8 x 1.25	40	4.0	29
Frame and Rear Frame	M10 x 1.25	42	4.2	30
Pivot Shaft and Locknut	M14 x 1.5	90	9.0	65
Rear Shock Absorber and Frame	M10 x 1.25	40	4.0	29
Relay Arm and Frame	M12 x 1.25	70	7.0	50
Relay Arm and Arm 1, 2	M14 x 1.5	70	7.0	50
Arm 1 and Arm 2	M8 x 1.25	20	2.0	14
Fuel Gauge and Fuel Tank	M5 x 0.8	4	0.4	2.9
Brake Disc and Wheel	M8 x 1.25	20	2.0	14
Driven Sprocket and Clutch Hub	M8 x 1.25	32	3.2	23
Cowling	M6 x 1.0	4	0.4	2.9

NOTE:

After torquing the steering shaft and ring nut, adjust them for smooth movement of the handlebar.



Electrical

Model	FZ600S/FZ600SC
Voltage:	12V
Ignition System:	
Ignition Timing (B.T.D.C.)	$10^{\circ} \pm 1^{\circ}$ at 1,200 r/min
Advancer Type	Electrical
<p>Ignition Timing (B.T.D.C.)</p> <p>Engine Speed ($\times 10^3$ r/min)</p>	
T.C.I.:	
Pickup Coil Resistance	108 ~ 132 Ω at 20°C (68°F)
(Color)	(Black – Gray) (Black – Orange)
T.C.I. Unit – Manufacturer	TID14-31 HITACHI
Ignition Coil:	
Model/Manufacturer	CM12-10/HITACHI
Minimum Spark Gap	6 mm (0.24 in) or more at 500 r/min
Primary Winding Resistance	2.43 ~ 2.97 Ω at 20°C (68°F)
Secondary Winding Resistance	10.56 ~ 15.84 k Ω at 20°C (68°F)
Spark Plug Cap Resistance	10 k Ω
Charging System:	
Type	A.C. Generator
A.C. Generator:	
Model/Manufacturer	LD117-13/HITACHI
Nominal Output	14V, 17A at 5,000 r/min
Field Coil Resistance	2.7 ~ 3.3 Ω at 20°C (68°F) (Brown – Green)
Starter Coil Resistance	0.5 ~ 0.6 Ω at 20°C (68°F)
Brush – Overall Length	17 mm (0.669 in)
< Limit >	10 mm (0.394 in)
– Spring Force	190 ~ 360 g (6.7 ~ 12.7 oz)
Voltage Regulator:	
Type	Field control
Model/Manufacturer	SH233-12/SHINDENGEN
No Load Regulated Voltage	14.2 ~ 14.8V
Rectifier:	
Model/Manufacturer	SH233-12/SHINDENGEN
Capacity	15A
Withstand Voltage	300V
Battery:	
Capacity	12V 12AH
Specific Gravity	1.280

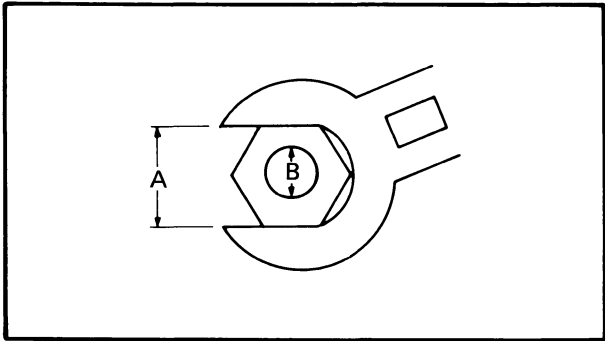


Model	FZ600S/FZ600SC
Electrical Starter System: Type Starter Motor: Model/Manufacturer Output Armature Coil Resistance Brush — Overall Length < Limit > — Spring Force Commutator Dia. Wear Limit Mica Undercut Starter Relay: Model/Manufacturer Amperage Rating Coil Resistance	Constant mesh type SM8204/MITSUBA 0.5 kW $0.012\Omega \pm 10\%$ at 20°C (68°F) 12 mm (0.47 in) 5 mm (0.20 in) 340 ~ 460 g (12.0 ~ 16.2 oz) 28 mm (1.10 in) 27 mm (1.06 in) 0.8 mm (0.03 in) A104-128/HITACHI 100A 4.3Ω at 20°C (68°F)
Horn: Type/Quantity Model/Manufacturer Maximum Amperage	Plane Type/1 pc. YF-12./NIKKO 2.5A
Flasher Relay (Relay Assembly): Type Model/Manufacturer Self Cancelling Device Flasher Frequency Wattage	Semi transistor type FX257N/NIPPON DENSO Yes 85 ± 10 cycle/min $27W \times 2$ pcs + 3.4W
Sidestand Relay: Model/Manufacturer Coil Winding Resistance Diode	4U8-01/OMRON $75\Omega \pm 10\%$ at 20°C (68°F) No
Safety Relay (Relay Assembly): Model/Manufacturer Diode	FX257N/NIPPON DENSO No
Oil Level Switch: Model/Manufacturer	4U8-00/NIPPON DENSO
Fuel Gauge: Model/Manufacturer Sender Unit Resistance — Full — Empty	46X/NIPPON SEIKI $8.7 \sim 14.7\Omega$ $125 \sim 145\Omega$
Circuit Breaker: Type Amperage for Individual Circuit x Quantity: MAIN HEADLIGHT SIGNAL IGNITION RESERVE	Fuse 30A x 1 pc. 20A x 1 pc. 10A x 1 pc. 10A x 1 pc. 30A x 1 pc., 20A x 1 pc., 10A x 1 pc.

GENERAL TORQUE SPECIFICATIONS

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

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



A: Distance across flats
 B: Outside thread diameter



DEFINITION OF UNITS

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

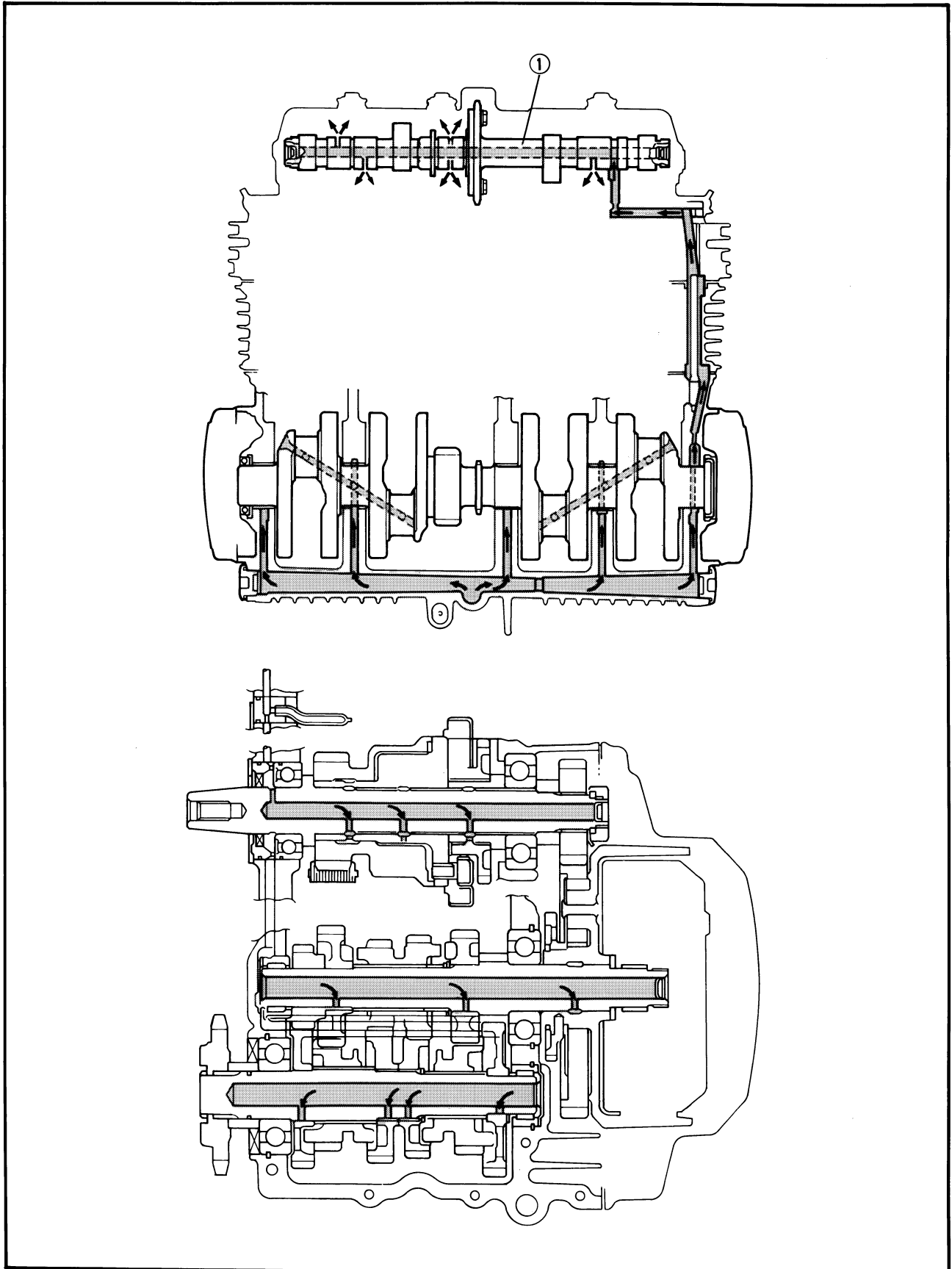
CONVERSION TABLES

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 ²	14.2234	psi (lb/in ²)
Centigrade (°C)	$9/5 (°C) + 32$	Fahrenheit (°F)

Inch to metric system		
Known	Multiplier	Result
ft·lb	0.13826	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 ²)	0.07031	kg/cm ²
Fahrenheit (°F)	$5/9 (°F - 32)$	Centigrade (°C)

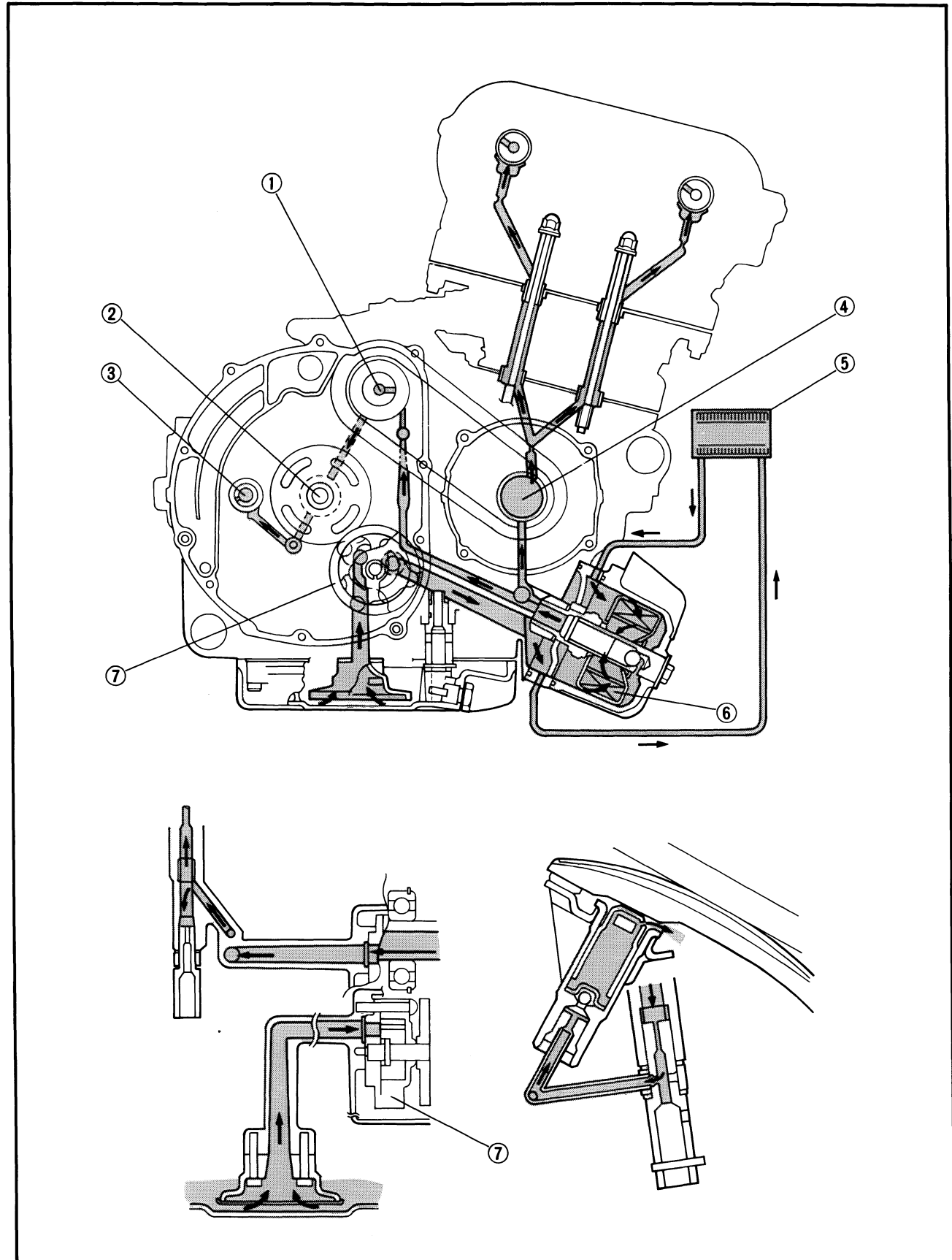
LUBRICATION DIAGRAM

① Camshaft



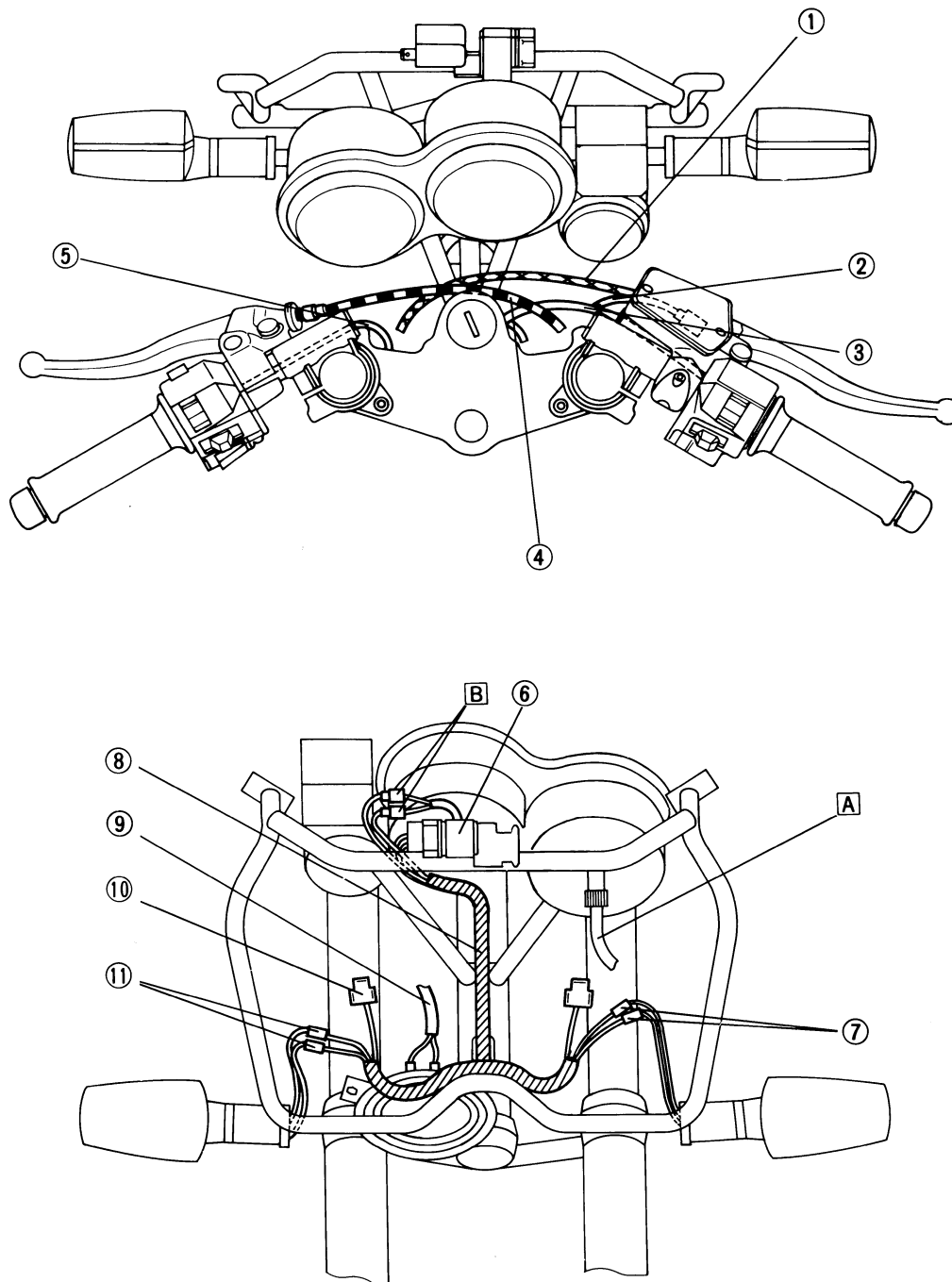


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|-------------------|--------------|------------|
| ① Generator shaft | ④ Crankshaft | ⑦ Oil pump |
| ② Main axle | ⑤ Oil cooler | |
| ③ Drive axle | ⑥ Oil filter | |



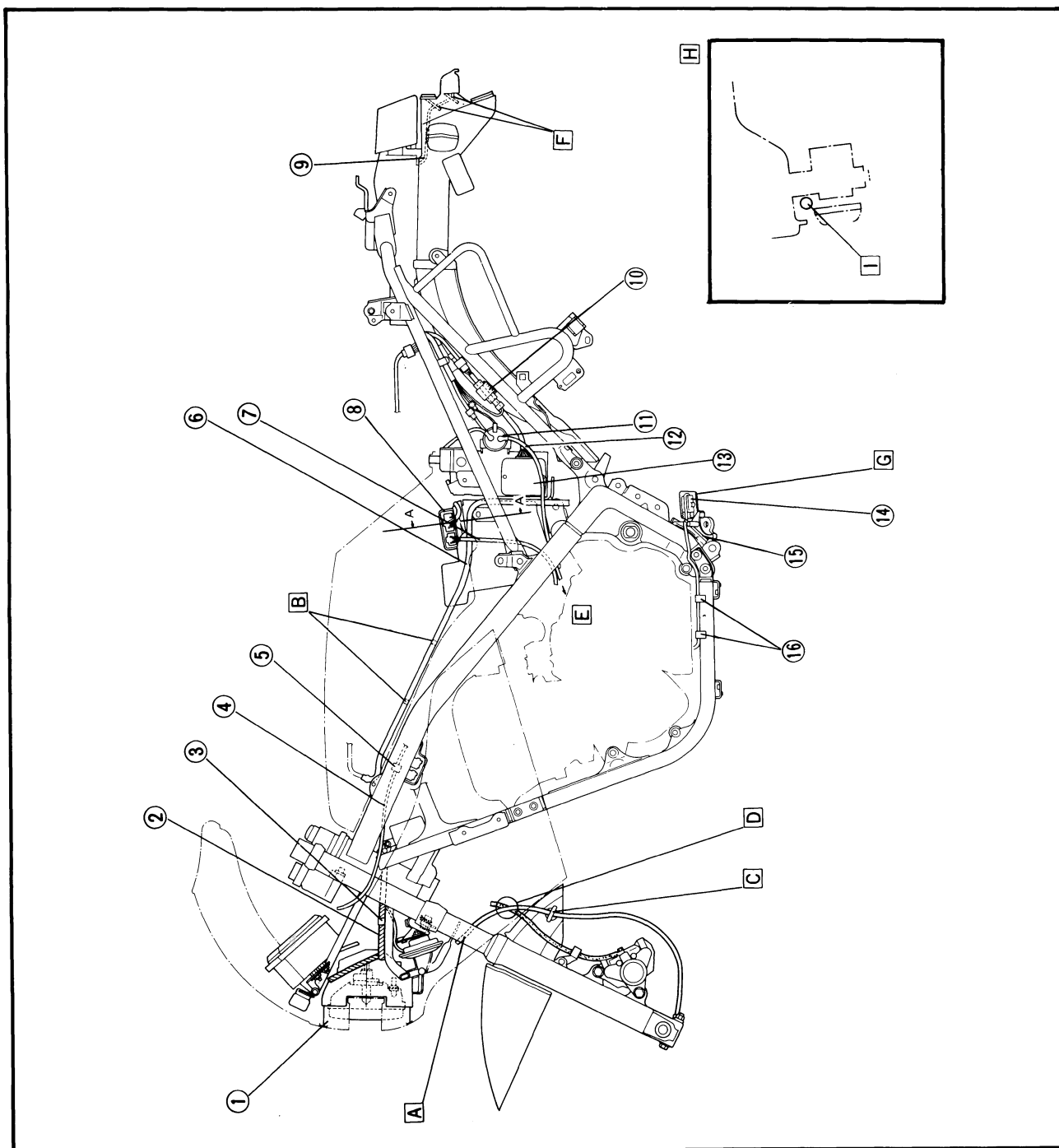
CABLE ROUTING

- | | | |
|---------------------------------|------------------------------------|--|
| ① Throttle cable | ⑦ Front flasher light lead (Left) | A Speedometer cable: |
| ② Front brake switch lead | ⑧ Wire harness | Pass the cable outside the inner tube. |
| ③ Handlebar switch lead (Right) | ⑨ Horn lead | B Meter lead: |
| ④ Clutch cable | ⑩ Headlight coupler | Push the leads between the meter and |
| ⑤ Handlebar switch lead (Left) | ⑪ Front flasher light lead (Right) | stay after connecting. |
| ⑥ Relay | | |



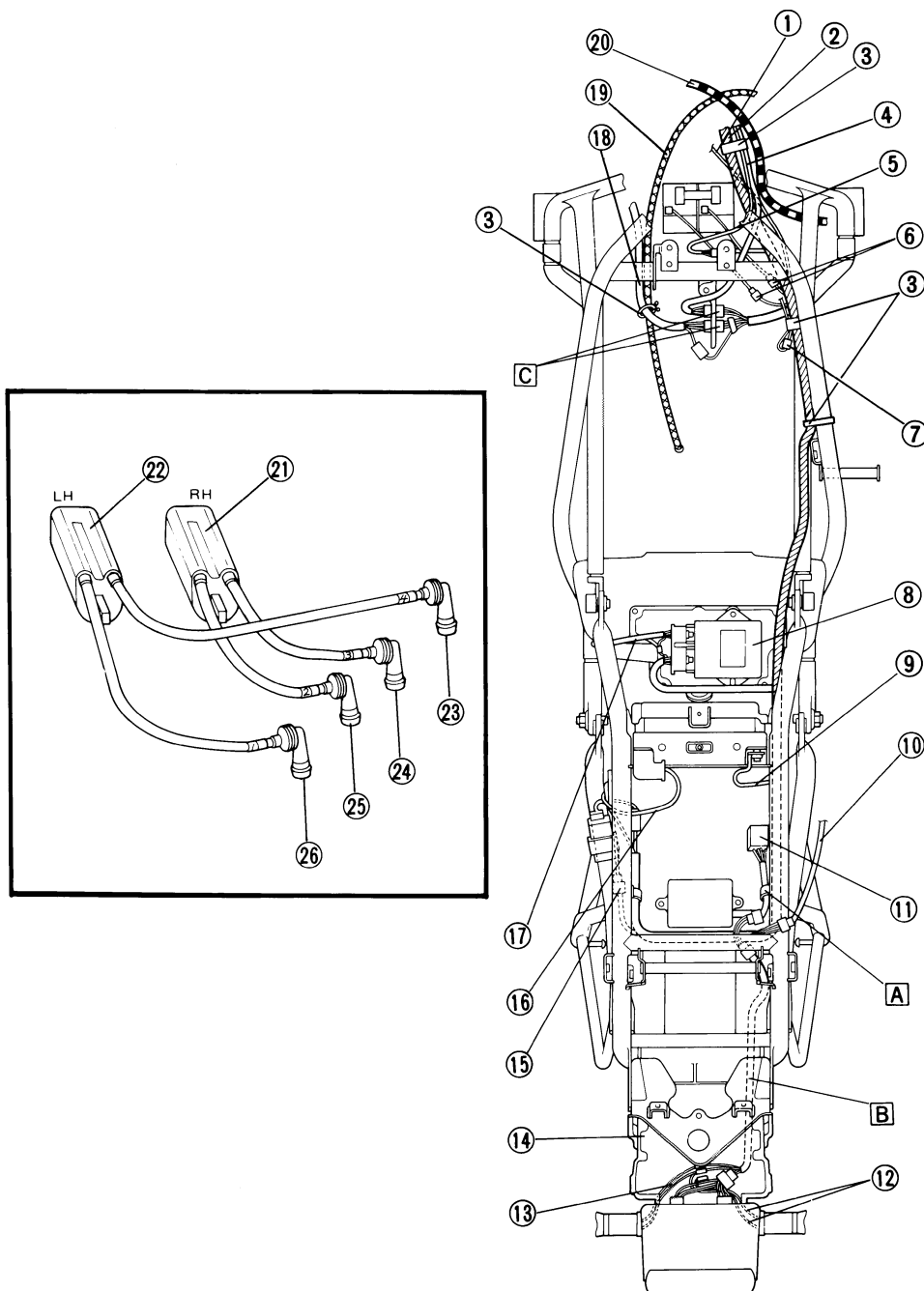


- ① Headlight housing
- ② Wire harness
- ③ Clamp
- ④ Handlebar switch lead
- ⑤ Clamp
- ⑥ Fuel tank overflow hose
- ⑦ Pick up coil lead
- ⑧ Ignitor unit
- ⑨ License light lead
- ⑩ Flasher relay
- ⑪ Starter relay
- ⑫ Starter motor lead
- ⑬ Rectifier/Regulator
- ⑭ Sidestand switch
- ⑮ Band
- ⑯ Clamp
- A Pass the speedometer cable inside the inner tube.
- B Clamp: Clamp the hose.
- C Pass the speedometer cable through the guide.
- D Pass the speedometer cable outside the brake hose.
- E To engine
- F Pass the lead through the hole
- G Turn the wire harness back at the switch and route it over the switch to the down-tube. The cord should be tight so that it does not contact the chain or side-stand.
- H "A" view
- I Fuel tank over flow hose: Pass the hose between the fuel cock and fuel tank.





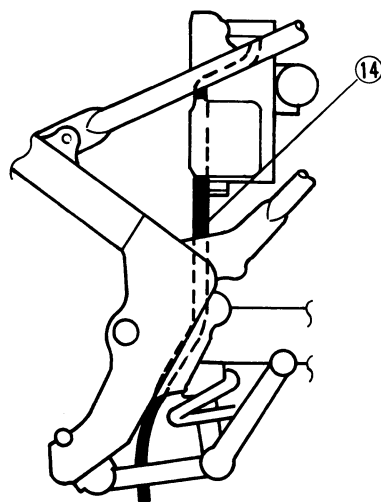
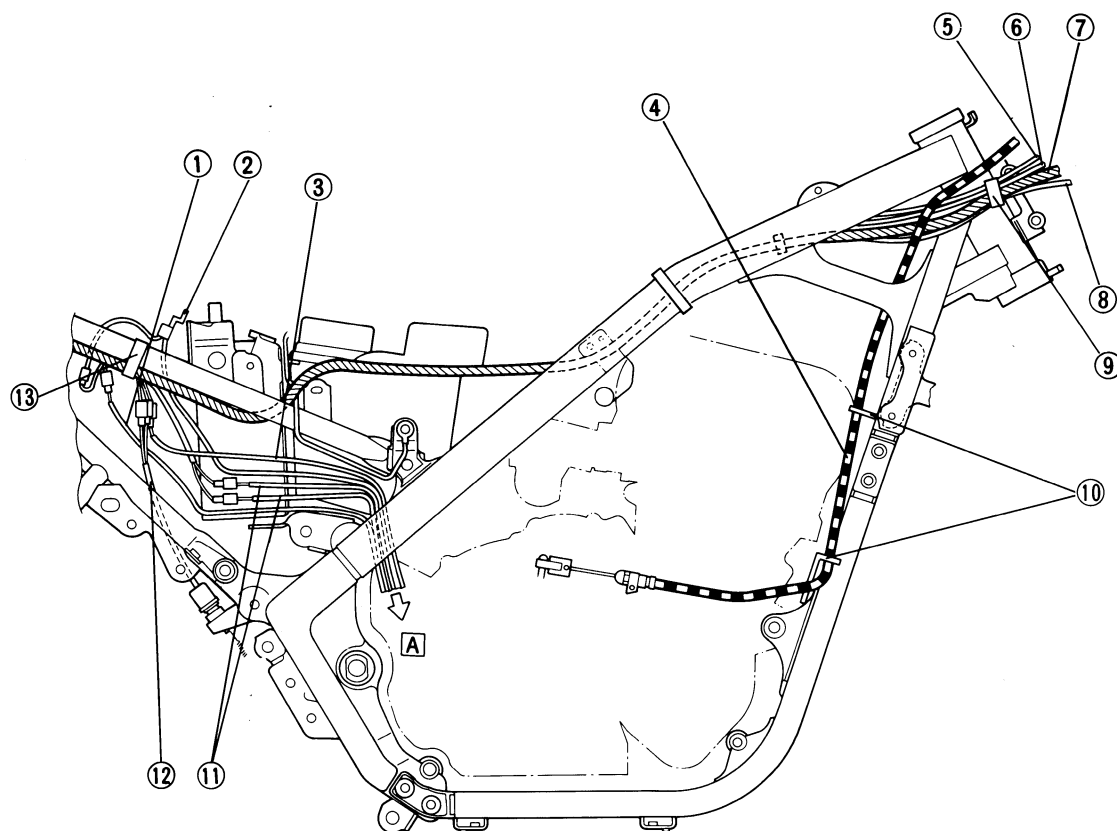
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|-----------------------------------|--------------------------------|---|
| ① Horn lead | ⑭ Tool box | A Clamp: |
| ② Wire harness | ⑮ Regulator lead | Clamp the diode only. |
| ③ Clamp | ⑯ Battery positive (+) lead | B Pass the lead between tool box and |
| ④ Handlebar switch lead | ⑰ Pickup coil lead | rear fender. |
| ⑤ Main switch lead | ⑱ Handlebar switch lead (Left) | C Handlebar switch lead coupler: |
| ⑥ Ignition coil lead | ⑲ Throttle cable | Right → White coupler |
| ⑦ Electric valve lead | ⑳ Clutch cable | Left → Blue coupler |
| (FZ600SC only) | ㉑ Ignition coil (Right) | |
| ⑧ Ignitor unit | ㉒ Ignition coil (Left) | |
| ⑨ Battery negative (–) lead | ㉓ "4" mark → #4 cylinder | |
| ⑩ Fuel sender lead | ㉔ "3" mark → #3 cylinder | |
| ⑪ Diode | ㉕ "2" mark → #2 cylinder | |
| ⑫ Rear flasher light lead (Right) | ㉖ "1" mark → #1 cylinder | |
| ⑬ Rear flasher light lead (Left) | | |





- | | |
|---------------------------------|--------------------------|
| ① Sidestand switch lead | ⑧ Horn lead |
| ② Battery negative (—) lead | ⑨ Clamp |
| ③ Oil level switch lead | ⑩ Guide |
| ④ Clutch cable | ⑪ A.C. generator lead |
| ⑤ Handlebar switch lead (Right) | ⑫ Rear brake switch lead |
| ⑥ Main switch lead | ⑬ Band |
| ⑦ Wire harness | ⑭ Battery breather hose |

[A] To engine



CALIFORNIA ONLY

- | | |
|--------------------------|--|
| ① Frame | ⑦ Nozzle |
| ② Air vent control valve | ⑧ Roll over valve |
| ③ Clamp | A Clamp three hoses with the throttle cable. |
| ④ Canister | B Pass the hose under the frame down tube. |
| ⑤ #2 Carburetor | |
| ⑥ #3 Carburetor | |

