

E-5-5



**YAMAHA**

**XT600**

**'87**

2KF-ME1

**SERVICE MANUAL**



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## NOTICE

This manual was written by the Yamaha Motor Company primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so it is assumed that persons using this book to perform maintenance and repairs on Yamaha 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.

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

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

## HOW TO USE THIS MANUAL

### PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.

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

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

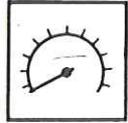
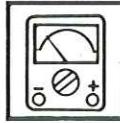
All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspection operations.

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.

① GEN INFO 	② SPEC 	
③ INSP ADJ 	④ ENG 	
⑤ COOL 	⑥ CARB 	
⑦ CHAS 	⑧ ELEC 	
⑨ TRBL SHTG ?	⑩ 	
⑪ 	⑫ 	
⑬ 	⑭ 	
⑮ 	⑯ 	
⑰ 	⑱ 	⑲ 
⑳ 	㉑ 	㉒ 
㉓ 		

## ILLUSTRATED SYMBOLS (Refer to the illustrations)

Illustrated symbols ① to ⑨ are used as thumb tabs to indicate the chapter and page content.

- ① General information
- ② Specifications
- ③ Periodic inspection and adjustment
- ④ Engine
- ⑤ Cooling system
- ⑥ Carburetion
- ⑦ Chassis
- ⑧ Electrical
- ⑨ Troubleshooting

Illustrated symbols ⑩ to ⑯ indicate the specifications appearing in the text.

- ⑩ Filling fluid
- ⑪ Lubricant
- ⑫ Special tool
- ⑬ Tightening
- ⑭ Wear limit, clearance
- ⑮ Engine speed
- ⑯  $\Omega$ , V, A

Illustrated symbols ⑰ to ⑳ indicate the grade of lubricant to be used at the lubrication point.

- ⑰ Apply engine oil
- ⑱ Apply gear oil
- ⑲ Apply molybdenum disulfide
- ⑳ Apply wheel bearing grease
- ㉑ Apply lightweight lithium-soap grease
- ㉒ Apply molybdenum disulfide
- ㉓ Apply locking agent (LOCTITE)

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# CONTENTS

## CHAPTER 1. GENERAL INFORMATION

<b>MOTORCYCLE IDENTIFICATION</b> .....	1-1
FRAME SERIAL NUMBER .....	1-1
ENGINE SERIAL NUMBER .....	1-1
<b>IMPORTANT INFORMATION</b> .....	1-2
PREPARATION FOR REMOVAL AND DISASSEMBLY .....	1-2
ALL REPLACEMENT PARTS .....	1-3
GASKETS, OIL SEALS, AND O-RINGS .....	1-3
LOCK WASHERS/PLATES AND COTTER PINS .....	1-3
BEARINGS AND OIL SEALS .....	1-3
CIRCLIPS .....	1-4
<b>SPECIAL TOOLS</b> .....	1-4
FOR TUNE UP .....	1-4
FOR ENGINE SERVICE .....	1-5
FOR CHASSIS SERVICE .....	1-8
FOR ELECTRICAL COMPONENTS .....	1-9

## CHAPTER 2. SPECIFICATIONS

<b>GENERAL SPECIFICATIONS</b> .....	2-1
<b>MAINTENANCE SPECIFICATIONS</b> .....	2-4
ENGINE .....	2-4
CHASSIS .....	2-12
ELECTRICAL .....	2-16
<b>GENERAL TORQUE SPECIFICATIONS</b> .....	2-18
<b>DEFINITION OF UNITS</b> .....	2-18
<b>LUBRICATION POINTS AND LUBRICANT TYPE</b> .....	2-19
ENGINE .....	2-19
CHASSIS .....	2-20
<b>LUBRICATION DIAGRAM</b> .....	2-21
<b>CABLE ROUTING</b> .....	2-25

# INDEX

<b>GENERAL INFORMATION</b>	 GEN INFO <b>1</b>
<b>SPECIFICATIONS</b>	 SPEC <b>2</b>
<b>PERIODIC INSPECTION AND ADJUSTMENT</b>	 INSP ADJ <b>3</b>
<b>ENGINE OVERHAUL</b>	 ENG <b>4</b>
<b>CARBURETION</b>	 CARB <b>5</b>
<b>CHASSIS</b>	 CHAS <b>6</b>
<b>ELECTRICAL</b>	 ELEC <b>7</b>
<b>TROUBLESHOOTING</b>	 TRBL SHTG <b>8</b>

## CHAPTER 3. PERIODIC INSPECTION AND ADJUSTMENT

INTRODUCTION .....	3-1
PERIODIC MAINTENANCE/LUBRICATION INTERVALS .....	3-1
SEAT, FUEL TANK AND COVER .....	3-3
REMOVAL .....	3-3
INSTALLATION .....	3-4
ENGINE .....	3-4
VALVE CLEARANCE ADJUSTMENT .....	3-4
CAM CHAIN ADJUSTMENT .....	3-7
IDLE SPEED ADJUSTMENT .....	3-7
THROTTLE CABLE FREE PLAY ADJUSTMENT .....	3-8
SPARK PLUG INSPECTION .....	3-9
IGNITION TIMING CHECK .....	3-10
DECOMPRESSION CABLE FREE PLAY ADJUSTMENT .....	3-12
COMPRESSION PRESSURE MEASUREMENT .....	3-13
ENGINE OIL LEVEL INSPECTION .....	3-15
ENGINE OIL REPLACEMENT .....	3-16
OIL PRESSURE INSPECTION .....	3-20
CLUTCH ADJUSTMENT .....	3-20
AIR FILTER CLEANING .....	3-22
CARBURETOR JOINT INSPECTION .....	3-24
FUEL LINE INSPECTION .....	3-25
CRANKCASE VENTILATION HOSE INSPECTION .....	3-25
EXHAUST SYSTEM INSPECTION .....	3-25
CHASSIS .....	3-26
FRONT BRAKE ADJUSTMENT .....	3-26
REAR BRAKE ADJUSTMENT .....	3-26
BRAKE FLUID INSPECTION .....	3-27
BRAKE PAD INSPECTION .....	3-28
BRAKE LIGHT SWITCH ADJUSTMENT .....	3-28
BRAKE HOSE INSPECTION .....	3-29
DRIVE CHAIN SLACK ADJUSTMENT .....	3-29
DRIVE CHAIN LUBRICATION .....	3-31
STEERING HEAD ADJUSTMENT .....	3-31
FRONT FORK OIL REPLACEMENT .....	3-33
FRONT FORK ADJUSTMENT .....	3-35
REAR SHOCK ABSORBER ADJUSTMENT .....	3-37
RECOMMENDED COMBINATIONS OF FRONT FORK AND THE REAR SHOCK ABSORBER SETTINGS .....	3-38
TIRE INSPECTION .....	3-39
WHEEL INSPECTION .....	3-41
CABLE INSPECTION AND LUBRICATION .....	3-41
LEVER AND PEDAL LUBRICATION .....	3-42



SIDESTAND LUBRICATION .....	3-42
SWINGARM AND RELAY ARM LUBRICATION.....	3-42
<b>ELECTRICAL .....</b>	<b>3-43</b>
BATTERY INSPECTION .....	3-43
FUSE INSPECTION .....	3-45
HEADLIGHT BEAM ADJUSTMENT .....	3-47
HEADLIGHT BULB REPLACEMENT .....	3-47

## CHAPTER 4. ENGINE OVERHAUL

<b>ENGINE REMOVAL .....</b>	<b>4-1</b>
ENGINE OIL .....	4-1
SEAT AND FUEL TANK.....	4-1
CARBURETOR .....	4-1
CLUTCH CABLE AND TACHOMETER CABLE .....	4-1
HOSE AND LEAD .....	4-2
DRIVE CHAIN.....	4-3
EXHAUST PIPE .....	4-3
ENGINE PROTECTOR .....	4-4
ENGINE REMOVAL .....	4-4
<b>ENGINE DISASSEMBLY .....</b>	<b>4-5</b>
CYLINDER HEAD, CYLINDER CAMSHAFT AND PISTON.....	4-5
CLUTCH, PRIMARY DRIVE GEAR AND BALANCER GEAR .....	4-9
OIL PUMP, KICK AXLE AND SHIFT LEVER .....	4-11
C.D.I. MAGNETO AND CAM CHAIN .....	4-12
CRANKCASE (RIGHT) .....	4-13
SHIFTER AND TRANSMISSION .....	4-15
BALANCER AND CRANKSHAFT.....	4-15
OIL STRAINER.....	4-16
ROCKER ARM .....	4-16
VALVE .....	4-17
<b>INSPECTION AND REPAIR .....</b>	<b>4-19</b>
CYLINDER HEAD.....	4-19
VALVE AND VALVE GUIDE .....	4-20
VALVE SEAT .....	4-21
VALVE SPRING .....	4-25
CAMSHAFT .....	4-26
ROCKER ARM AND ROCKER ARM SHAFT .....	4-26
CAM CHAIN AND CAM SPROCKET .....	4-27
CAM CHAIN GUIDE .....	4-28
CYLINDER AND PISTON.....	4-28
PISTON RING.....	4-30
PISTON PIN .....	4-31
CLUTCH .....	4-31



OIL PUMP .....	4-33
PRIMARY DRIVE .....	4-33
TRANSMISSION AND SHIFTER .....	4-33
KICK STARTER .....	4-35
CRANKSHAFT .....	4-36
BALANCER DRIVE GEAR AND BALANCER GEAR .....	4-37
CRANKCASE .....	4-37
BEARING AND OIL SEAL .....	4-37



**GEN  
INFO 1**

<b>ENGINE ASSEMBLY AND ADJUSTMENT .....</b>	<b>4-38</b>
VALVE .....	4-38
ROCKER ARM .....	4-39
OIL STRAINER .....	4-39
BALANCER AND CRANKSHAFT .....	4-42
SHIFTER AND TRANSMISSION .....	4-44
CRANKCASE (RIGHT) .....	4-47
CAM CHAIN .....	4-49
OIL PUMP, KICK AXLE AND SHIFT LEVER .....	4-49
CYLINDER HEAD, CYLINDER, CAMSHAFT AND PISTON .....	4-53
C.D.I. MAGNETO .....	4-61
CLUTCH, PRIMARY DRIVE GEAR AND BALANCER GEAR .....	4-63
DECOMPRESSION CABLE .....	4-67
REMOUNTING ENGINE .....	4-67



**SPEC 2**



**INSP  
ADJ 3**



**ENG 4**

## CHAPTER 5. CARBURETION

<b>CARBURETOR .....</b>	<b>5-1</b>
SECTIONAL VIEW .....	5-2
REMOVAL .....	5-3
DISASSEMBLY .....	5-3
INSPECTION .....	5-6
ASSEMBLY .....	5-8
INSTALLATION .....	5-13
FUEL LEVEL ADJUSTMENT .....	5-14



**CARB 5**



**CHAS 6**

## CHAPTER 6. CHASSIS

<b>FRONT WHEEL .....</b>	<b>6-1</b>
REMOVAL .....	6-2
INSPECTION .....	6-3
INSTALLATION .....	6-4



**ELEC 7**

<b>REAR WHEEL .....</b>	<b>6-6</b>
REMOVAL .....	6-7
INSPECTION .....	6-8
INSTALLATION .....	6-8

?

**TRBL  
SHTG 8**

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<b>FRONT AND REAR BRAKE</b> .....	6-10
BRAKE PAD REPLACEMENT .....	6-12
CALIPER DISASSEMBLY .....	6-16
MASTER CYLINDER DISASSEMBLY .....	6-18
INSPECTION AND REPAIR .....	6-19
ASSEMBLY .....	6-21
AIR BLEEDING .....	6-27
<b>FRONT FORK</b> .....	6-28
REMOVAL .....	6-29
DISASSEMBLY .....	6-30
INSPECTION .....	6-31
ASSEMBLY .....	6-32
INSTALLATION .....	6-35
<b>STEERING HEAD AND HANDLEBAR</b> .....	6-36
REMOVAL .....	6-37
INSPECTION .....	6-40
INSTALLATION .....	6-41
<b>REAR SHOCK ABSORBER AND SWINGARM</b> .....	6-45
HANDLING NOTES .....	6-47
NOTES ON DISPOSAL .....	6-47
REMOVAL .....	6-48
INSPECTION .....	6-50
SIDE CLEARANCE ADJUSTMENT .....	6-52
INSTALLATION .....	6-54
<b>DRIVE CHAIN AND SPROCKETS</b> .....	6-57
REMOVAL .....	6-57
INSPECTION .....	6-58
INSTALLATION .....	6-60

## **CHAPTER 7. ELECTRICAL**

<b>XT600 CIRCUIT DIAGRAM</b> .....	7-1
<b>ELECTRICAL COMPONENTS</b> .....	7-3
<b>IGNITION SYSTEM</b> .....	7-5
CIRCUIT DIAGRAM .....	7-5
TROUBLESHOOTING .....	7-7
<b>CHARGING SYSTEM</b> .....	7-15
CIRCUIT DIAGRAM .....	7-15
TROUBLESHOOTING .....	7-17

<b>LIGHTING SYSTEM</b> .....	7-21
CIRCUIT DIAGRAM .....	7-21
TROUBLESHOOTING .....	7-23
LIGHTING SYSTEM CHECK .....	7-26

<b>SIGNAL SYSTEM</b> .....	7-33
CIRCUIT DIAGRAM .....	7-33
TROUBLESHOOTING .....	7-35
SIGNAL SYSTEM CHECK .....	7-37

## CHAPTER 8. TROUBLESHOOTING

<b>STARTING FAILURE/HARD STARTING</b> .....	8-1
FUEL SYSTEM .....	8-1
ELECTRICAL SYSTEM .....	8-2
COMPRESSION SYSTEM .....	8-3

<b>POOR IDLE SPEED PERFORMANCE</b> .....	8-3
POOR IDLE SPEED PERFORMANCE .....	8-3

<b>POOR MEDIUM AND HIGH SPEED PERFORMANCE</b> .....	8-3
FUEL SYSTEM .....	8-3
ELECTRICAL SYSTEM .....	8-4
COMPRESSION SYSTEM .....	8-4

<b>FAULTY GEAR SHIFTING</b> .....	8-5
HARD SHIFTING .....	8-5
CHANGE PEDAL DOES NOT MOVE .....	8-5
JUMP-OUT GEAR .....	8-5

<b>CLUTCH SLIPPING/Dragging</b> .....	8-6
CLUTCH SLIPPING .....	8-6
CLUTCH DRAGGING .....	8-6

<b>IMPROPER KICKING</b> .....	8-7
SLIPPING .....	8-7
HARD KICKING .....	8-7
KICK CRANK NOT RETURNING .....	8-7

<b>FAULTY BRAKE</b> .....	8-8
POOR BRAKING EFFECT .....	8-8

<b>FRONT FORK OIL LEAKAGE AND FRONT FORK MALFUNCTION</b> .....	8-8
OIL LEAKAGE .....	8-8
MALFUNCTION .....	8-8

	
<b>GEN INFO</b>	<b>1</b>

	
<b>SPEC</b>	<b>2</b>

	
<b>INSP ADJ</b>	<b>3</b>

	
<b>ENG</b>	<b>4</b>

	
<b>CARB</b>	<b>5</b>

	
<b>CHAS</b>	<b>6</b>

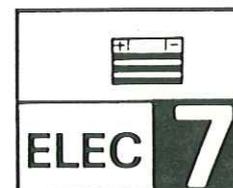
	
<b>ELEC</b>	<b>7</b>

?	
<b>TRBL SHTG</b>	<b>8</b>

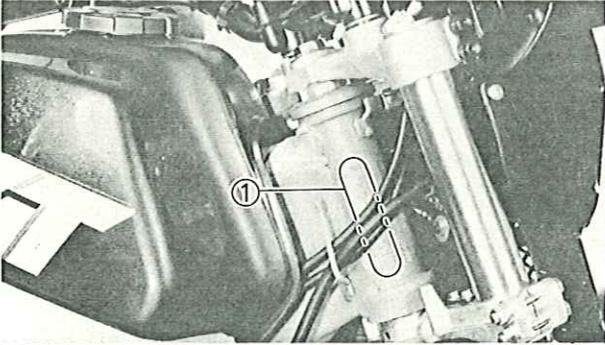
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<b>INSTABLE HANDLING</b> .....	8-9
INSTABLE HANDLING .....	8-9
<b>FAULTY SIGNAL AND LIGHTING SYSTEM</b> .....	8-10
HEADLIGHT DARK .....	8-10
BULB BURNT OUT .....	8-10
FLASHER DOES NOT LIGHT .....	8-10
FLASHER KEEPS ON .....	8-10
FLASHER WINKS SLOWER .....	8-11
FLASHER WINKS QUICKER .....	8-11
HORN IS INOPERATIVE .....	8-11
<b>OVERHEATING</b> .....	8-11
OVERHEATING .....	8-11

**XT600 WIRING DIAGRAM**



**GENERAL INFORMATION**

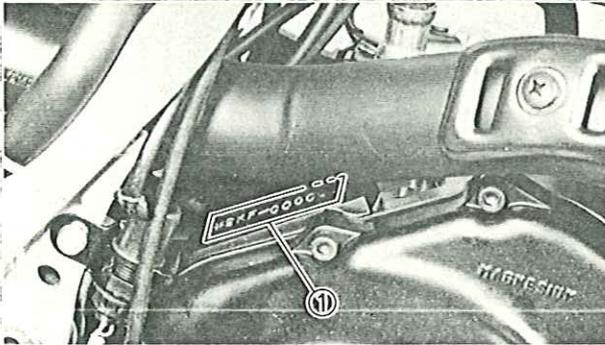


**MOTORCYCLE IDENTIFICATION**

**FRAME SERIAL NUMBER**

The frame serial number ① is stamped into the right side of the steering head pipe.

<b>Starting Serial Number:</b> XT600.....2KF-000101 XT600.....2NF-000101
--



**ENGINE SERIAL NUMBER**

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

<b>Starting Serial Number:</b> XT600.....2KF-000101 XT600.....2NF-000101
--

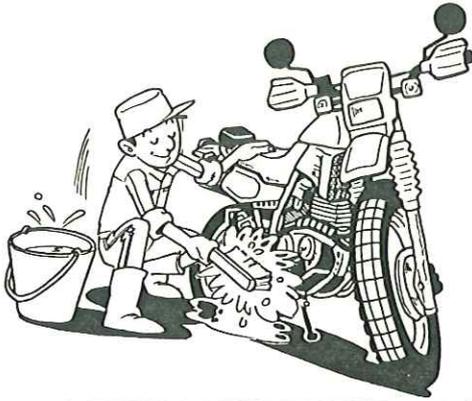
**NOTE:** \_\_\_\_\_

- 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.

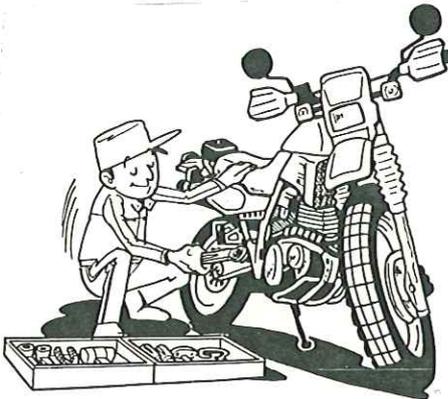


IMPORTANT INFORMATION

PREPARATION FOR REMOVAL AND DISASSEMBLY



1. Remove all dirt, mud, dust, and foreign material before removing and disassembling.



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



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

4. During the motorcycle 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.



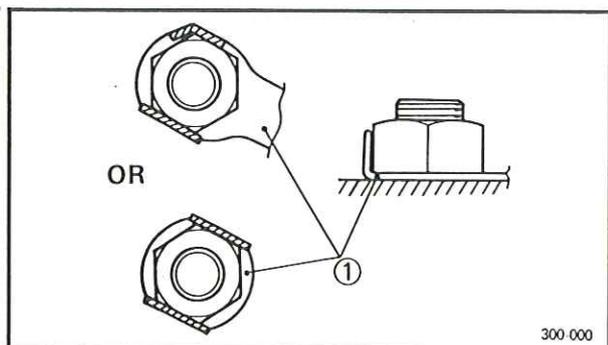
5. Keep away from fire.

## ALL REPLACEMENT PARTS

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

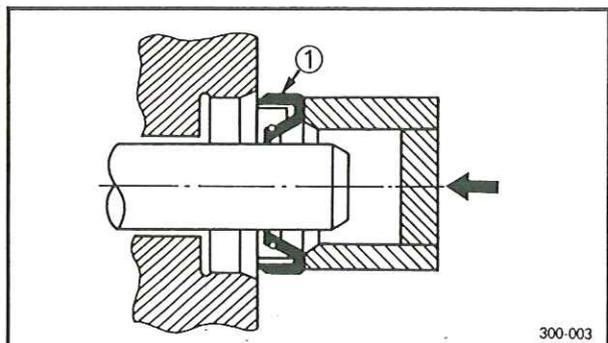
## GASKETS, OIL SEALS, AND O-RINGS

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



## LOCK WASHERS/PLATES AND COTTER PINS

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



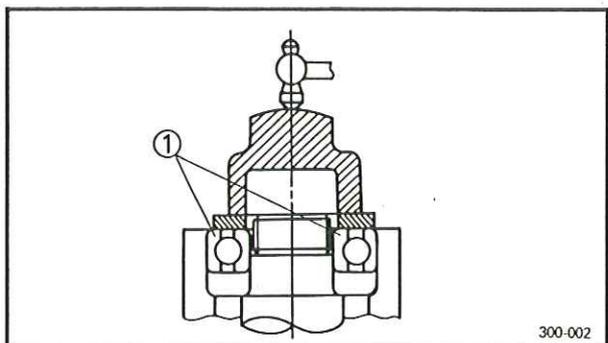
## BEARINGS AND OIL SEALS

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

① Oil seal

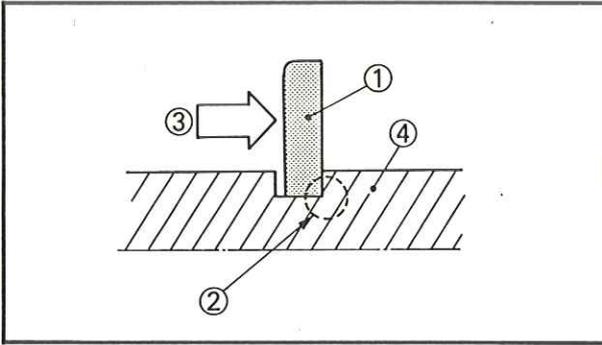
### CAUTION:

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



① Bearing



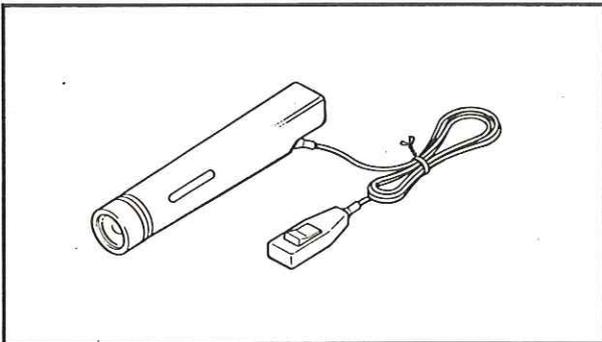
**CIRCLIPS**

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

④ Shaft

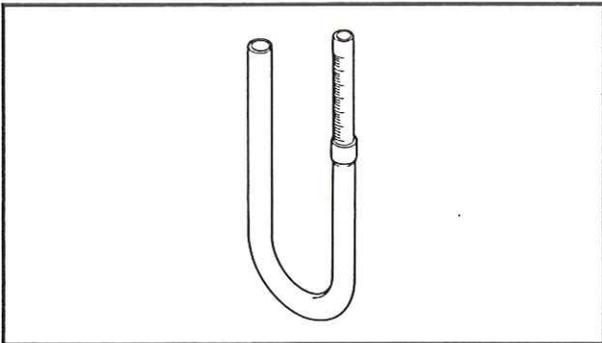
**SPECIAL TOOLS**

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

**FOR TUNE UP**

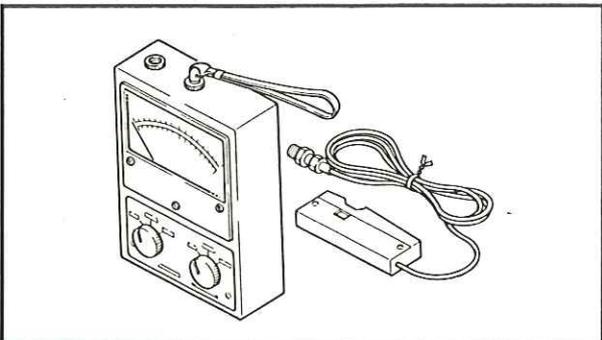
1. Inductive Timing Light  
P/N. 90890-03109

This tool is necessary for adjusting ignition timing.



2. Fuel Level Gauge  
P/N. 90890-01312

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

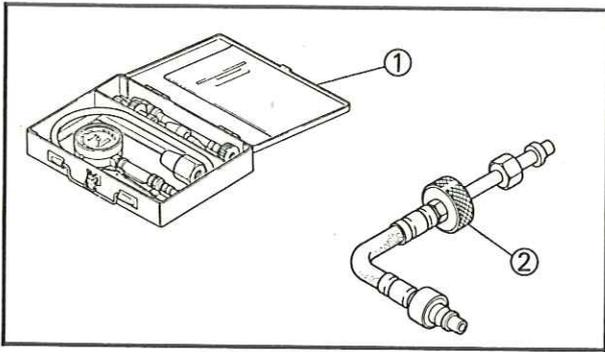


3. Inductive Tachometer  
P/N. 90890-03113

This tool is needed for detecting engine rpm.

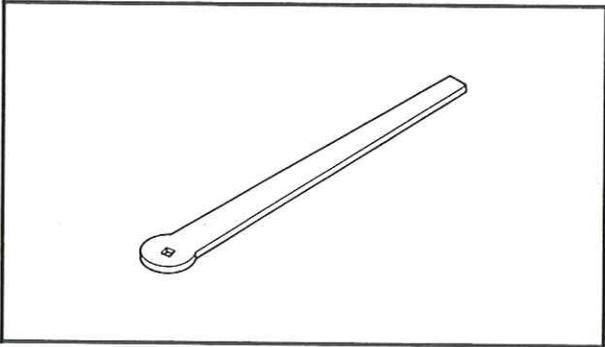
## SPECIAL TOOLS

GEN  
INFO



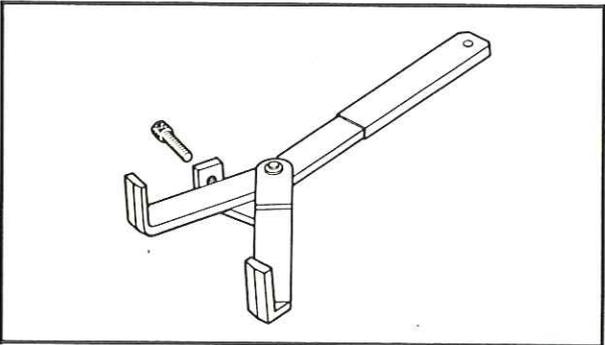
4. Compression Gauge  
P/N. 90890-03081—①  
Adapter (M12)  
P/N. 90890-04082—②

These gauges are used to measure the engine compression.



5. Valve Adjusting Tool  
P/N. 90890-01311

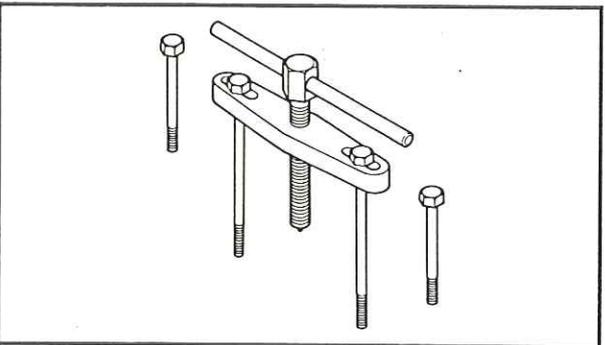
This tool is necessary for adjusting the valve clearance.



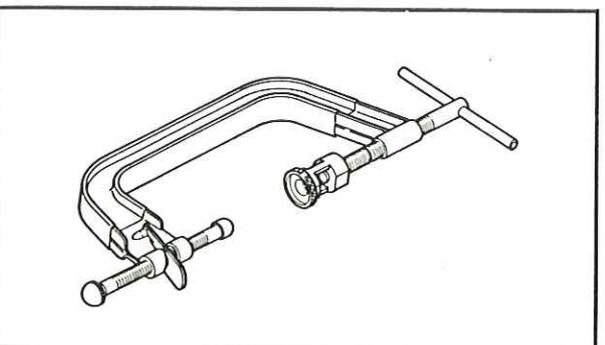
### FOR ENGINE SERVICE

1. Universal Clutch Holder  
P/N. 90890-04086

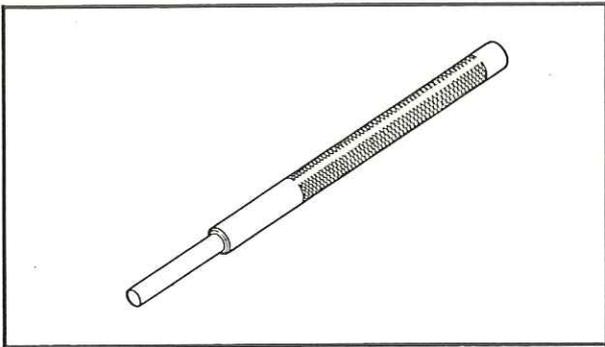
This tool is used to hold the clutch when removing or installing the clutch boss locknut.



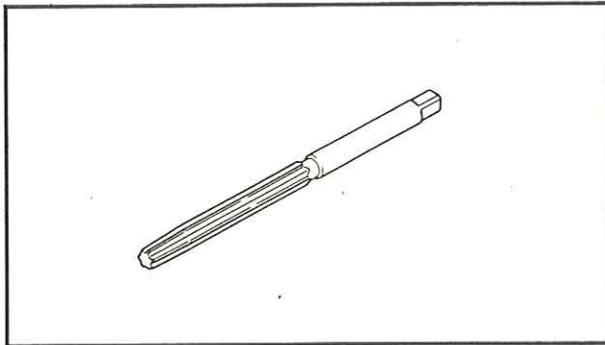
2. Crankcase Separator  
P/N. 90890-01135
- This tool is necessary to separate the crankcase.



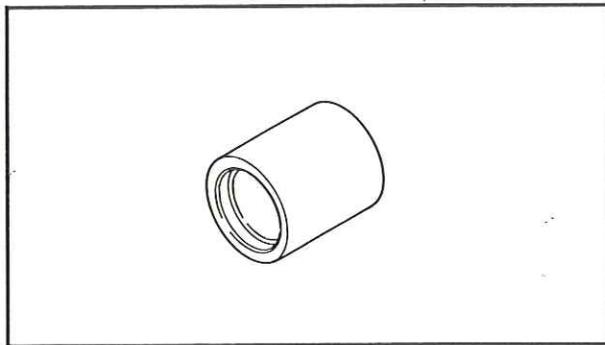
3. Valve Spring Compressor  
P/N. 90890-04019
- This tool is needed to remove and install the valve assemblies.



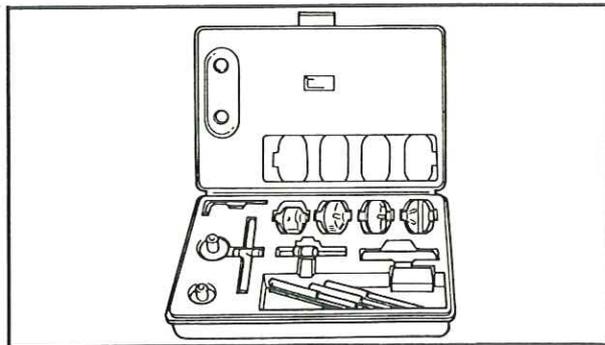
4. Valve Guide Remover (7 mm)  
P/N. 90890-01225  
This tool is used to remove the valve guides.



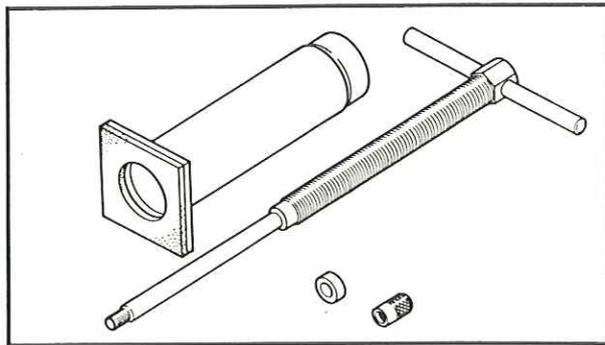
5. Valve Guide Reamer (7 mm)  
P/N. 90890-01227  
This tool is used to re bore the new valve guide.



6. Valve Guide Installer  
P/N. 90890-04017  
This tool is needed to install the valve guides properly.



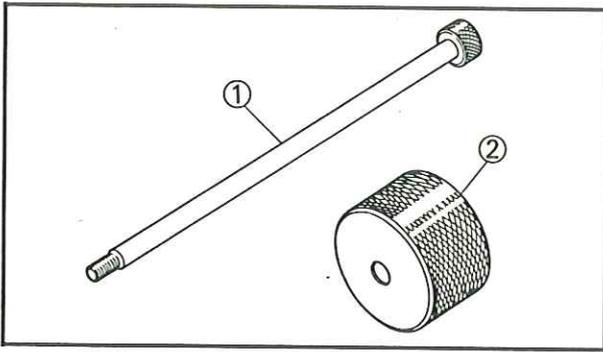
7. Valve Seat Cutter Set  
P/N. YM-91043  
This tool is needed to resurface the valve seat.



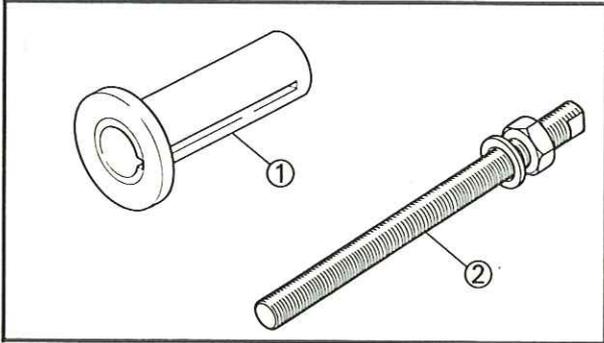
8. Piston Pin Puller  
P/N. 90890-01304  
This tool is used to remove the piston pin.

## SPECIAL TOOLS

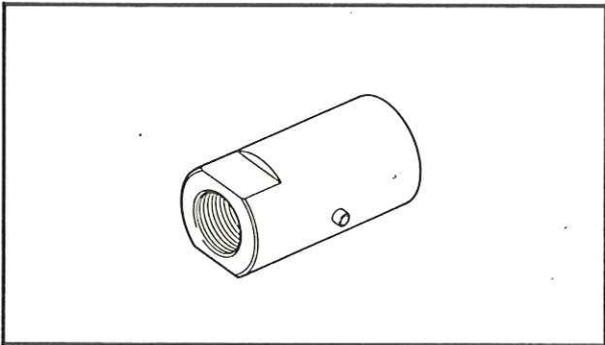
GEN  
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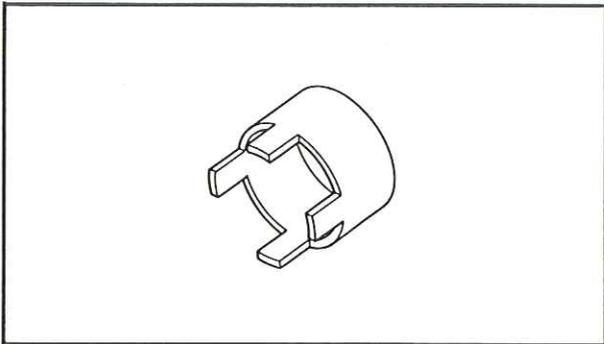
9. Slide Hammer Bolt  
P/N. 90890-01083—①  
Weight  
P/N. 90890-01084—②



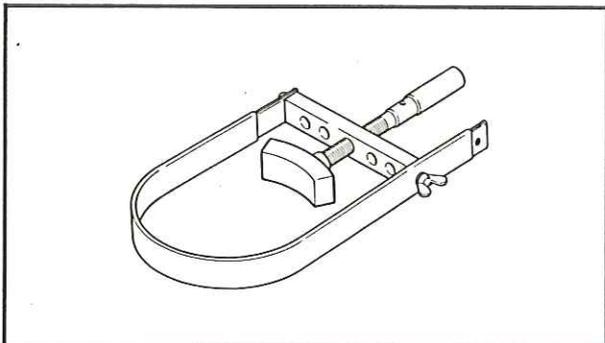
10. Crankshaft Installer Pot  
P/N. 90890-01274—①  
Crankshaft Installer Bolt  
P/N. 90890-01275—②



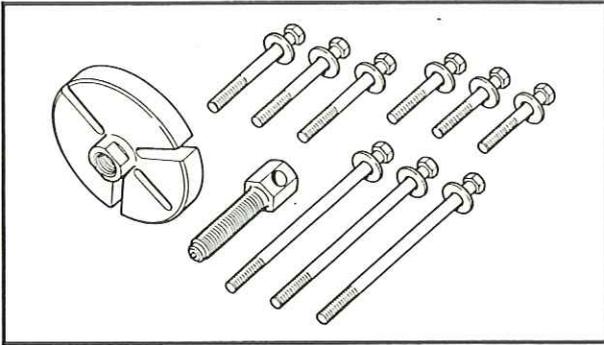
11. Adapter #10 (M14)  
P/N. 90890-04059  
This tool is used to install the crankshaft.



12. Crank Pot Spacer  
P/N. 90890-04081  
This tool is used to install the crankshaft.

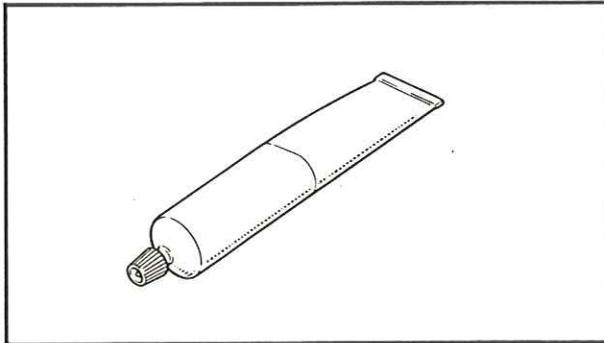


13. Rotor Holder  
P/N. 90890-01701  
This tool is used to hold the rotor when removing or installing the rotor securing nut.



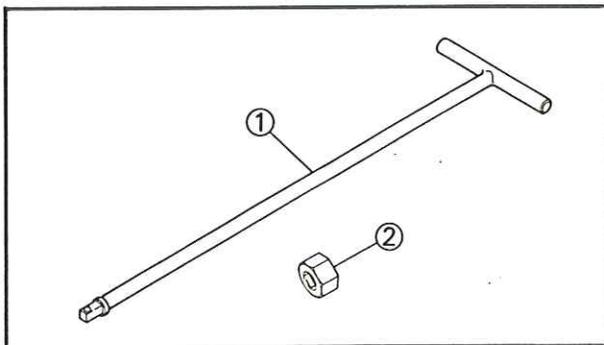
14. Rotor Puller  
P/N. 90890-01362

This tool is used to remove the C.D.I. rotor.



15. Yamaha Bond No. 1215  
P/N. 90890-85505

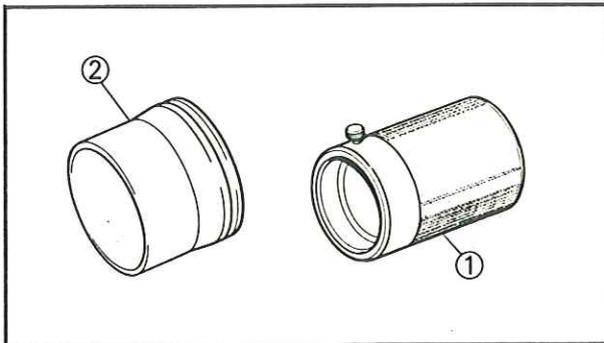
This sealant (bond) is used for crankcase mating surfaces, etc.



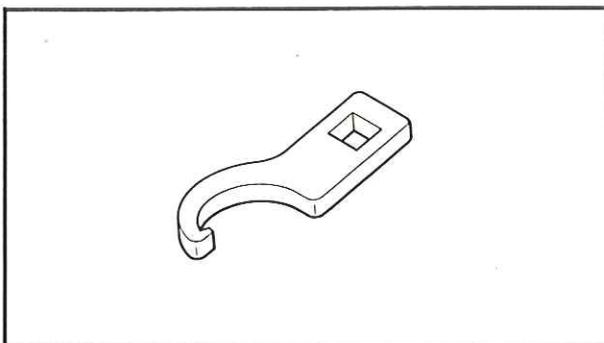
**FOR CHASSIS SERVICE**

- 1. T-Handle  
P/N. 90890-01326 — ①
- Damper Rod Holder 27 mm  
P/N. 90890-01388 — ②

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

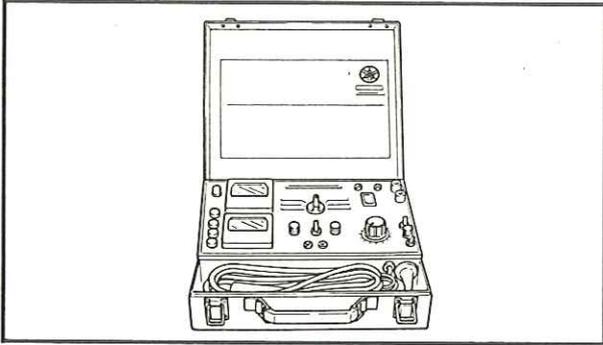


- 2. Front Fork Seal Driver Weight  
P/N. 90890-01367 — ①
- Adapter  
P/N. 90890-01381 — ②



- 3. Ring Nut Wrench  
P/N. 90890-01403

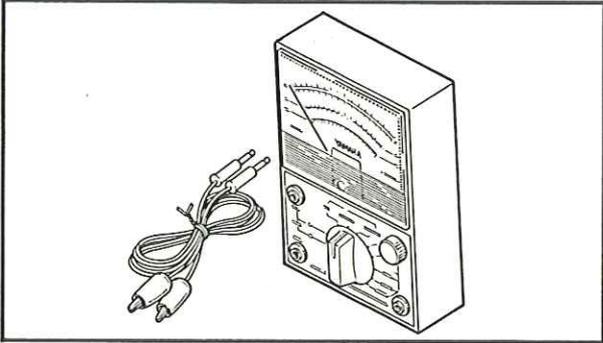
This tool is used to loosen and tighten the steering ring nut.



FOR ELECTRICAL COMPONENTS

1. Electro Tester  
P/N. 90890-03021

This instrument is necessary for checking the ignition system components.



2. Pocket Tester  
P/N. 90890-03112

This instrument is invaluable for checking the electrical system.



# GENERAL SPECIFICATIONS



## SPECIFICATIONS

(G): For Germany  
 (D): For Denmark  
 (N): For Norway  
 (Sw): For Sweden  
 (E): For England

### GENERAL SPECIFICATIONS

Model	XT600	
Model Code Number:	2KF	2NF
Engine Starting Number:	2KF-000101	2NF-000101
Frame Starting Number:	2KF-000101	2NF-000101
Dimensions:		
Overall Length	2,210 mm (87.0 in) 2,290 mm (90.2 in) (G) (D) (N) (Sw)	
Overall Width	885 mm (34.8 in)	
Overall Height	1,230 mm (48.4 in)	
Seat Height	885 mm (34.8 in)	
Wheelbase	1,440 mm (56.7 in)	
Minimum Ground Clearance	265 mm (10.4 in)	
Basic Weight:		
With Oil and Full Fuel Tank	153 kg (337 lb)	
Minimum Turning Radius:	2,200 mm (86.6 in)	
Engine:		
Engine Type	Air cooled 4-stroke, SOHC	
Cylinder Arrangement	Forward inclined single cylinder	
Displacement	595 cm <sup>3</sup>	
Bore x Stroke	95 x 84 mm (3.74 x 3.31 in)	
Compression Ratio	8.5 : 1	
Compression Pressure		
Standard	1,100 kPa (11 kg/cm <sup>2</sup> 156 psi)	
Starting System	Kick starter	
Lubrication System:		
Type	Dry sump	
Engine Oil Type	SAE 20W40 type SE motor oil or SAE 10W30 type SE motor oil	
Oil Capacity:		
Periodic Oil Change	2.0 L (1.8 Imp qt, 2.1 US qt)	
With Oil Filter Replacement	2.1 L (1.9 Imp qt, 2.2 US qt)	
Total Amount	2.4 L (2.1 Imp qt, 2.5 US qt)	
Oil Tank Capacity	1.7 L (1.5 Imp qt, 1.8 US qt)	
Air Filter:		
Type	Wet type element	
Oil Type	Foam-air-filter oil or SAE 10W30 motor oil	



# GENERAL SPECIFICATIONS



Model	XT600	
<b>Fuel:</b> Type Fuel Tank Capacity Fuel Reserve Amount	Regular gasoline 13.0 L (2.9 Imp gal, 3.4 US gal) 2.0 L (0.4 Imp gal, 0.5 US gal)	
<b>Carburetor:</b> Type/Quantity Manufacturer	Y27PV/1 pc. TEIKEI	
<b>Spark Plug:</b> Type/Plug Gap  Manufacturer	DR7ES/0.6~0.7 mm (0.024~0.028 in) DPR7EA-9/0.8~0.9 mm (0.031~0.035 in) DPR8EA-9/0.8~0.9 mm (0.031~0.035 in) N.G.K.	
<b>Clutch:</b> Type	Wet, multiple-disc	
<b>Transmission:</b> Type Operation Primary Reduction System Primary Reduction Ratio Secondary Reduction System Secondary Reduction Ratio  Gear Ratio:	Constant mesh 5-speed Left foot operation Spur gear 74/31 (2.387) Chain drive 39/15 (2.600) .....(2KF) 40/15 (2.677) .....(2NF)  1st 31/12 (2.583) 2nd 27/17 (1.588) 3rd 24/20 (1.200) 4th 21/22 (0.954) 5th 19/24 (0.792)	
<b>Chassis:</b> Frame Type Caster Angle  Trail	Diamond 27.25° 27.12° (This is for "4.00S18-4PR" rear tire used in Germany only.) 109 mm (4.29 in) 107 mm (4.21 in) (This is for "4.00S18-4PR" rear tire used in Germany only.)	
<b>Tire:</b>  Type Size:  Manufacturer:	Except for Germany	For Germany
	With tube	←
Front	3.00S21-4PR	←
Rear	4.60S18-4PR	4.00S18-4PR 4.60S18-4PR
Front	BRIDGESTONE (TW25) DUNLOP (K850A)	← ←
Rear	BRIDGESTONE (TW26) DUNLOP (K850A)	← ←

# GENERAL SPECIFICATIONS

**SPEC**

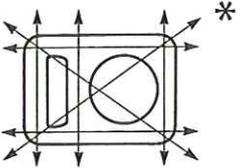
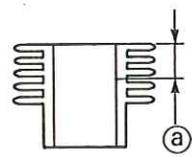
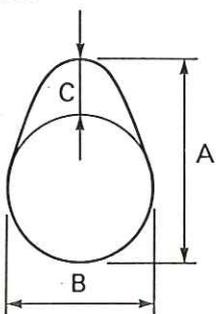


Model	XT600	
Tire Pressure (Cold tire):		
Maximum Load*	202 kg (445 lb)	
Cold Tire Pressure	Front	Rear
Up to 90 kg (198 lb) load*	150 kPa (1.5 kg/cm <sup>2</sup> , 21 psi)	150 kPa (1.5 kg/cm <sup>2</sup> , 21 psi)
90 kg (198 lb) ~ Maximum load*	150 kPa (1.5 kg/cm <sup>2</sup> , 21 psi)	180 kPa (1.8 kg/cm <sup>2</sup> , 26 psi)
Off-road riding	100 kPa (1.0 kg/cm <sup>2</sup> , 14 psi)	100 kPa (1.0 kg/cm <sup>2</sup> , 14 psi)
High speed riding	150 kPa (1.5 kg/cm <sup>2</sup> , 21 psi)	150 kPa (1.5 kg/cm <sup>2</sup> , 21 psi)
*Load is total weight of cargo, rider, passenger, and accessories.		
Brake:		
Front Brake Type	Single disc brake	
Front Brake Operation	Right hand operation	
Rear Brake Type	Single disc brake	
Rear Brake Operation	Right foot operation	
Suspension:		
Front	Telescopic fork	
Rear	Swingarm (New Monocross)	
Shock Absorber:		
Front	Coil—Air spring/Oil damper	
Rear	Coil—Gas spring/Oil damper	
Wheel Travel:		
Front	255 mm (10.0 in)	
Rear	235 mm (9.3 in)	
Electrical:		
Ignition System	C.D.I.	
Generator System	A.C. magneto generator	
Battery Type	GM4A-3B or FB4L-B	
Battery Capacity	12V, 4AH	
Headlight Type	Quartz bulb (Halogen)	
Bulb Wattage (Quantity):		
Headlight	12V 60W/55W (1 pc.)	
Tail/Brake Light	12V 5W/21W (1 pc.)	
Flasher Light	12V 21W (4 pcs.)	
Auxiliary Light	12V 4W (1 pc.)	
Meter Light	12V 3.4W (1 pc.) (E)	
"NEUTRAL" indicator Light	12V 3.4W (2 pcs.)	
"HIGH BEAM" indicator Light	12V 3.4W (1 pc.)	
"TURN" indicator Light	12V 3.4W (1 pc.)	



MAINTENANCE SPECIFICATIONS

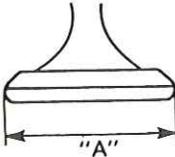
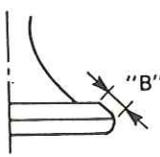
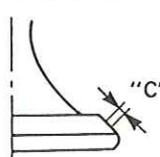
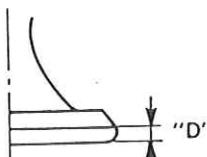
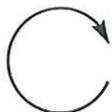
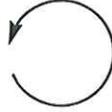
ENGINE

Model	XT600
Cylinder Head: Warp Limit 	0.03 mm (0.0012 in) * Lines indicate straightedge measurement.
Cylinder: Bore Size <Wear Limit> Measuring Point (a) 	94.97 ~ 95.02 mm (3.739 ~ 3.741 in) <95.1 mm (3.744 in)> 40 mm (1.6 in)
Camshaft: Drive Method Camshaft Outside Diameter Shaft-to-cap Clearance Cam Dimensions Intake "A" "B" "C" Exhaust "A" "B" "C" Camshaft Runout Limit 	Chain drive (Left) 22.967 ~ 22.980 mm (0.904 ~ 0.905 in) 0.020 ~ 0.054 mm (0.0008 ~ 0.0021 in) 36.52 ~ 36.62 mm (1.438 ~ 1.442 in) 30.01 ~ 30.11 mm (1.181 ~ 1.185 in) 6.51 mm (0.256 in) 36.70 ~ 36.80 in (1.445 ~ 1.449 in) 30.07 ~ 30.17 mm (1.184 ~ 1.188 in) 6.63 mm (0.261 in) 0.03 mm (0.0012 in)
Cam Chain: Cam Chain Type Number of Links Cam Chain Adjustment Method	75 - 010 126 Links Automatic
Rocker Arm/Rocker Arm Shaft: Rocker Arm Inside Diameter Shaft Outside Diameter Arm-to-shaft Clearance	12.000 ~ 12.018 mm (0.472 ~ 0.473 in) 11.976 ~ 11.991 mm (0.471 ~ 0.472 in) 0.009 ~ 0.042 mm (0.0003 ~ 0.002 in)
Valve, Valve Seat, Valve Guide: Valve Clearance (Cold): Intake Exhaust	0.07 ~ 0.12 mm (0.003 ~ 0.005 in) 0.12 ~ 0.17 mm (0.005 ~ 0.007 in)

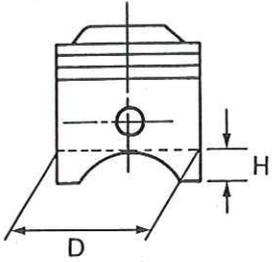
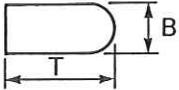
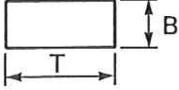
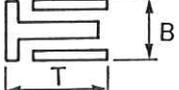
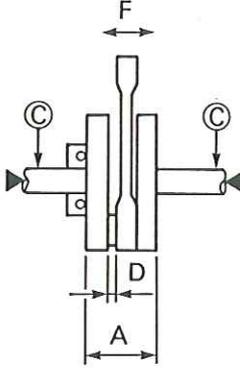
# MAINTENANCE SPECIFICATION

**SPEC**



Model	XT600	
<p>Valve Dimensions:</p> <p>“A” Head Diameter</p> <p>“B” Face Width</p> <p>“C” Seat Width</p> <p>“D” Margin Thickness</p>	<p>Intake</p>	<p>Exhaust</p>
 	<p>36.9 ~ 37.1 mm (1.45 ~ 1.46 in)</p> <p>2.26 mm (0.09 in)</p> <p>1.0 ~ 1.2 mm (0.04 ~ 0.05 in)</p> <p>1.0 ~ 1.4 mm (0.04 ~ 0.06 in)</p>	<p>31.9 ~ 32.1 mm (1.25 ~ 1.26 in)</p> <p>←</p> <p>←</p> <p>0.8 ~ 1.2 mm (0.03 ~ 0.05 in)</p>
<p>Stem Outside Diameter:</p> <p style="padding-left: 20px;">Intake</p> <p style="padding-left: 20px;">Exhaust</p> <p>Guide Inside Diameter:</p> <p style="padding-left: 20px;">Intake</p> <p style="padding-left: 20px;">Exhaust</p> <p>Stem-to-guide Clearance:</p> <p style="padding-left: 20px;">Intake</p> <p style="padding-left: 20px;">Exhaust</p> <p>Stem Runout Limit</p> <p>Valve Seat Width:</p> <p style="padding-left: 20px;">Intake</p> <p style="padding-left: 20px;">Exhaust</p>	 	<p>6.975 ~ 6.990 mm (0.274 ~ 0.275 in)</p> <p>6.955 ~ 6.970 mm (0.273 ~ 0.274 in)</p> <p>7.000 ~ 7.012 mm (0.275 ~ 0.276 in)</p> <p>7.000 ~ 7.012 mm (0.275 ~ 0.276 in)</p> <p>0.010 ~ 0.037 mm (0.0004 ~ 0.001 in)</p> <p>0.030 ~ 0.057 mm (0.001 ~ 0.002 in)</p> <p>0.01 mm (0.0004 in)</p> <p>1.0 ~ 1.2 mm (0.04 ~ 0.05 in)</p> <p>1.0 ~ 1.2 mm (0.04 ~ 0.05 in)</p>
<p>Valve Spring:</p> <p>Free Length:</p> <p style="padding-left: 20px;">Intake</p> <p style="padding-left: 20px;">Exhaust</p> <p>Set Length (Valve Closed):</p> <p style="padding-left: 20px;">Intake</p> <p style="padding-left: 20px;">Exhaust</p> <p>Direction of winding (Top View)</p> <p>Tilt Limit:</p> <p style="padding-left: 20px;">Intake</p> <p style="padding-left: 20px;">Exhaust</p>	<p>Inner Spring</p>	<p>Outer Spring</p>
<p>40.1 mm (1.58 in)</p> <p>40.1 mm (1.58 in)</p> <p>22.7 mm (0.89 in)</p> <p>22.7 mm (0.89 in)</p> <p style="text-align: center;">Clockwise</p>  <p>2.5°/1.7 mm (0.07 in)</p> <p>2.5°/1.7 mm (0.07 in)</p>	<p>43.8 mm (1.72 in)</p> <p>43.8 mm (1.72 in)</p> <p>34.2 mm (1.35 in)</p> <p>34.2 mm (1.35 in)</p> <p style="text-align: center;">Counterclockwise</p>  <p>←</p> <p>←</p>	



Model	XT600
<p>Piston:</p> <p>Piston Size "D"</p> <p>Measuring Point "H"</p> <p>Over Size 2nd</p> <p>Over Size 4th</p>  <p>Piston Off-set</p> <p>Piston Off-set Direction</p> <p>Piston-to-cylinder Clearance</p> <p>&lt; Limit &gt;</p>	<p>94.915 ~ 94.965 mm (3.737 ~ 3.739 in)</p> <p>5.0 mm (0.20 in)</p> <p>95.5 mm (3.760 in)</p> <p>96.0 mm (3.780 in)</p> <p>2.0 mm (0.08 in)</p> <p>Intake side</p> <p>0.045 ~ 0.065 mm (0.002 ~ 0.003 in)</p> <p>&lt; 0.1 mm (0.004 in) &gt;</p>
<p>Piston Ring:</p> <p>Type:</p> <p>Top Ring</p> <p>2nd Ring</p> <p>Dimensions (B x T):</p> <p>Top Ring</p>  <p>2nd Ring</p>  <p>Oil Ring</p>  <p>End Gap (Installed):</p> <p>Top Ring</p> <p>2nd Ring</p> <p>Oil Ring</p> <p>Side Clearance (Installed):</p> <p>Top Ring</p> <p>2nd Ring</p>	<p>Barrel</p> <p>Plain</p> <p>B = 1.2 mm (0.047 in)</p> <p>T = 3.8 mm (0.150 in)</p> <p>B = 1.2 mm (0.047 in)</p> <p>T = 3.8 mm (0.150 in)</p> <p>B = 2.5 mm (0.098 in)</p> <p>T = 3.4 mm (0.134 in)</p> <p>0.30 ~ 0.45 mm (0.012 ~ 0.018 in)</p> <p>0.30 ~ 0.45 mm (0.012 ~ 0.018 in)</p> <p>0.20 ~ 0.70 mm (0.008 ~ 0.028 in)</p> <p>0.04 ~ 0.08 mm (0.002 ~ 0.003 in)</p> <p>0.03 ~ 0.07 mm (0.001 ~ 0.003 in)</p>
<p>Crankshaft:</p> <p>Crank Width "A"</p> <p>Runout Limit "C"</p> <p>Big End Side Clearance "D"</p> <p>Small End Free Play "F"</p> 	<p>74.95 ~ 75.00 mm (2.950 ~ 2.953 in)</p> <p>0.03 mm (0.0012 in)</p> <p>0.25 ~ 0.75 mm (0.010 ~ 0.030 in)</p> <p>0.8 ~ 1.0 mm (0.031 ~ 0.039 in)</p>

# MAINTENANCE SPECIFICATION

**SPEC**



Model	XT600	
Balancer: Drive Method	Spur gear	
Clutch:		
Friction Plate:		
Thickness	2.72~2.88 mm (0.107~0.113 in)	
Quantity	6 pcs.	
Wear Limit	2.6 mm (0.102 in)	
Friction Plate:		
Thickness	2.94~3.06 mm (0.116~0.120 in)	
Quantity	2 pcs.	
Wear Limit	2.8 mm (0.110 in)	
Clutch Plate:		
Thickness	1.2 mm (0.047 in)	
Quantity	7 pcs.	
Warp Limit	0.2 mm (0.008 in)	
Clutch Spring:		
Free Length	34.6 mm (1.362 in)	
Quantity	5 pcs.	
Minimum Free Length	32.6 mm (1.283 in)	
Clutch Housing:		
Thrust Clearance	0.070~0.071 mm (0.003 in)	
Clutch Release Method	Inner push, cam push	
Transmission:		
Main Axle Runout Limit	0.08 mm (0.003 in)	
Drive Axle Runout Limit	0.08 mm (0.003 in)	
Shifter:		
Type	Cam drum and guide bar	
Kick Starter:		
Type	Ratchet type	
Decompression Device:		
Type	Kick synchronous	
Carburetor:	For 2KF	For 2NF
I. D. Mark	2KF 10	2KF 00
Main Jet (M.J.)		
Primary Carburetor	# 125, # 135 (G)	# 138
Secondary Carburetor	# 120	←
Main Air Jet (M.A.J.)		
Primary Carburetor	φ0.9	←
Secondary Carburetor	φ0.9	←

# MAINTENANCE SPECIFICATION

**SPEC**



Model	XT600	
	For 2KF	For 2NF
Jet Needle (J.N.)		
Primary Carburetor	5C41—4/5	5C42—3/5
Secondary Carburetor	5C42—3/5 (G) 5X74—3/5 5X74—4/5 (G)	5X74—4/5
Needle Jet (N.J.)	φ2.6	←
Cutaway (C.A.)	5.5	←
Pilot Outlet (P.O.)	φ0.8	←
Pilot Jet (P.J.)	#46, #48 (G)	#48
Bypass 1 (B.P.1)	φ1.0	←
Pilot Screw (P.S.)	1 and 1/2 turns out 3 turns out (G)	3 turns out
Valve Seat Size (V.S.)	φ2.5	←
Starter Jet (G.S.)	#76	←
Fuel Level (F.L.)	5.0~7.0 mm (0.20~0.28 in)	←
Float Height (F.H.)	25.0~27.0 mm (0.98~1.06 in)	←
Engine Idle Speed	1,250~1,350 r/min	←
Lubrication System:		
Oil Filter:		
Type	Paper type	
Oil Pump:		
Type	Trochoid type	
Tip Clearance	0.12 mm (0.005 in)	
Side Clearance	0.03~0.08 mm (0.001~0.003 in)	
Bypass Valve Setting Pressure	80~120 kPa (0.8~1.2 kg/cm <sup>2</sup> , 11~17 psi)	
Relief Valve Operating Pressure	80~120 kPa (0.8~1.2 kg/cm <sup>2</sup> , 11~17 psi)	
Oil Pressure	13 kPa (0.13 kg/cm <sup>2</sup> , 1.8 psi) at 1,300 r/min	
Pressure Checking Location	Oil cleaner chamber	

# MAINTENANCE SPECIFICATION

**SPEC**



Model	XT600				
Tightening torque:					
Part to be tightened	Thread size	Tightening torque			Remarks
		Nm	m•kg	ft•lb	
Cylinder head					
Flange bolt	M8 × 1.25	29	2.9	21	
Stud bolt	M10 × 1.25	20	2.0	14	
Hexagon socket head bolt	M6 × 1.0	10	1.0	7.2	
Stud bolt	M6 × 1.0	7	0.7	5.1	
Spark plug	M12 × 1.25	18	1.8	13	
Cylinder head cover					
Hexagon socket head bolt	M6 × 1.0	10	1.0	7.2	
Tappet cover (Intake)					
Hexagon socket head bolt	M6 × 1.0	10	1.0	7.2	
Tappet cover (Exhaust)	M32 × 1.5	12	1.2	8.7	
Gear unit (Tachometer)					
Hexagon socket head bolt	M6 × 1.0	10	1.0	7.2	
Flat head screw	M6 × 1.0	7	0.7	5.1	
Cylinder					
Cap nut	M8 × 1.25	22	2.2	16	
Nut	M10 × 1.25	42	4.2	30	
Hexagon nut	M10 × 1.25	42	4.2	30	
Hexagon socket head bolt	M6 × 1.0	10	1.0	7.2	
Balancer gear					
Hexagon nut	M16 × 1.0	60	6.0	43	
Rotor (A.C. magneto)					
Hexagon nut	M14 × 1.5	90	9.0	65	
Locknut (Valve clearance adjuster)					
Hexagon nut	M6 × 1.0	14	1.4	10	
Cam sprocket					
Flange bolt	M7 × 1.0	20	2.0	14	
Cam chain tensioner					
Hexagon socket head bolt	M6 × 1.0	10	1.0	7.2	
Blind plug	M16 × 1.0	20	2.0	14	
Decompression cam					
Flange bolt	M6 × 1.0	8	0.8	5.8	
Rocker arm shaft					
Hexagon socket head bolt	M6 × 1.0	10	1.0	7.2	
Oil pump					
Hexagon socket head bolt	M6 × 1.0	10	1.0	7.2	
Oil strainer					
Panhead screw	M6 × 1.0	7	0.7	5.1	
Drain plug (crankcase)	M14 × 1.5	30	3.0	22	
Oil cleaner cover					
Hexagon socket head bolt	M6 × 1.0	10	1.0	7.2	
Screw	M5 × 0.8	5	0.5	3.6	



# MAINTENANCE SPECIFICATION

**SPEC**



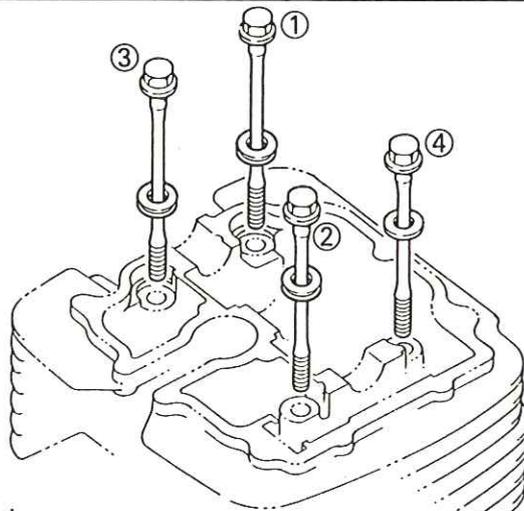
Model	XT600				Remarks
Part to be tightened	Thread size	Tightening torque			
		Nm	m·kg	ft·lb	
Oil hose					
Hexagon socket head bolt	M6 × 1.0	10	1.0	7.2	
Union nut	M16 × 1.5	50	5.0	36	
Carburetor joint					
Bolt	M6 × 1.0	10	1.0	7.2	
Clamp (Carburetor joint)					
Screw	M4 × 0.7	2	0.2	1.4	
Air filter case					
Flange bolt	M6 × 1.0	10	1.0	7.2	
Exhaust pipe					
Flange nut	M6 × 1.0	10	1.0	7.2	
Exhaust pipe protector					
Bind head screw	M6 × 1.0	7	0.7	5.1	
Muffler protector					
Bind head screw	M6 × 1.0	7	0.7	5.1	
Band (Exhaust pipe and muffler)					
Flange bolt	M8 × 1.25	20	2.0	14	
Muffler					
Flange bolt	M8 × 1.25	40	4.0	29	
Crankcase					
Hexagon socket head bolt	M6 × 1.0	10	1.0	7.2	
Stud bolt	M10 × 1.25	20	2.0	14	
Clamp (C.D.I. magneto lead)					
Panhead screw	M6 × 1.0	7	0.7	5.1	
Crankcase cover (Right)					
Hexagon socket head bolt	M6 × 1.0	10	1.0	7.2	
Crankcase cover (Left)					
Hexagon socket head bolt	M6 × 1.0	10	1.0	7.2	
Stopper plate (Bearing)					
Flat head screw	M6 × 1.0	7	0.7	5.1	
Ratchet wheel guide					
Hexagon bolt	M6 × 1.0	10	1.0	7.2	
Decompression lever					
Hexagon nut	M6 × 1.0	8	0.8	5.8	
Kick crank					
Hexagon bolt	M8 × 1.25	20	2.0	14	
Panhead screw	M6 × 1.0	7	0.7	5.1	
Pressure plate					
Flange bolt	M6 × 1.0	8	0.8	5.8	
Clutch boss					
Hexagon nut	M20 × 1.0	90	9.0	65	
Primary drive gear					
Hexagon nut	M20 × 1.0	120	12.0	85	



Model	XT600				Remarks
Part to be tightened	Thread size	Tightening torque			
		Nm	m·kg	ft·lb	
Push lever					
Panhead screw	M8 × 1.0	12	1.2	8.7	
Push rod					
Hexagon nut	M6 × 1.0	8	0.8	5.8	
Drive sprocket					
Hexagon nut	M18 × 1.0	110	11.0	80	
Stopper plate (Oil seal)					
Hexagon bolt	M6 × 1.0	10	1.0	7.2	
Stopper lever					
Bolt	M6 × 1.0	10	1.0	7.2	
Change pedal					
Hexagon bolt	M6 × 1.0	10	1.0	7.2	
Stator coil					
Panhead screw	M6 × 1.0	7	0.7	5.1	
Pickup coil					
Panhead screw	M6 × 1.0	7	0.7	5.1	
Neutral switch	M10 × 1.25	20	2.0	14	

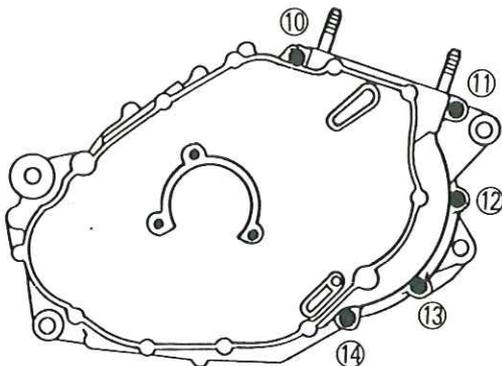
Tightening sequence:

Cylinder head

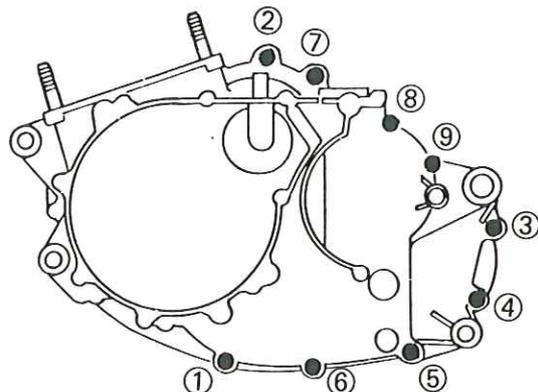


Crankcase

Right-head



Left-hand





CHASSIS

Model	XT600
Steering System: Bearing Type	Taper roller bearing
Front Suspension: Front Fork Travel Fork Spring Free Length <Minimum Free Length> Spring Rate (K1) Stroke (K1) Optional Spring Oil Capacity Oil Level  Oil Grade Enclosed Air Pressure: Standard Minimum ~ Maximum	255 mm (10.0 in) 414.5 mm (16.3 in) <410.0 mm (16.1 in)> 4.6 N/mm (0.46 kg/mm, 25.3 lb/in) 0.0 ~ 255.0 mm (0.0 ~ 10.04 in) No 537 cm <sup>3</sup> (18.9 Imp oz, 18.1 US oz) 140 mm (5.51 in) From top of inner tube fully compressed without spring Fork oil 10W or equivalent  Zero kPa (Zero kg/cm <sup>2</sup> , Zero psi) Zero ~ 100 kPa (Zero ~ 1.0 kg/cm <sup>2</sup> , Zero ~ 14 psi)
Rear Suspension: Shock Absorber Travel Spring Free Length Fitting Length Spring Rate (K1) Stroke (K1) Optional Spring Enclosed Gas Pressure	82 mm (3.2 in) 253.5 mm (10.0 in) 241.5 mm (9.5 in) 100 N/mm (10.0 kg/mm, 551 lb/in) 0.0 ~ 82.0 mm (0.0 ~ 3.2 in) No 1,500 kPa (15 kg/cm <sup>2</sup> , 213 psi)
Swingarm: Free Play Limit  Side Clearance	1.0 mm (0.039 in) at swingarm end Move swingarm end side to side. 0.4 ~ 0.7 mm (0.016 ~ 0.027 in) at swingarm pivot
Front Wheel: Type Rim Size Rim Material Rim Runout Limit: Vertical Lateral	Spoke wheel 1.60 x 21 Aluminum  2.0 mm (0.079 in) 2.0 mm (0.079 in)

# MAINTENANCE SPECIFICATION

**SPEC**



Model	XT600
<b>Rear Wheel:</b> Type Rim Size Rim Material Rim Runout Limit: Vertical Lateral	Spoke wheel MT2.50 × 18 Aluminum  2.0 mm (0.079 in) 2.0 mm (0.079 in)
<b>Drive Chain:</b> Type/Manufacturer Number of Links Chain Slack	520 VC/DAIDO 102 30 ~ 40 mm (1.18 ~ 1.57 in)
<b>Front Disc Brake:</b> Type Disc Outside Diameter Disc Thickness Pad Thickness <Wear Limit> Master Cylinder Inside Diameter Caliper Cylinder Inside Diameter Brake Fluid Type	Single 267 mm (10.5 in) 4.0 mm (0.16 in) 6.8 mm (0.27 in) <0.8 mm (0.03 in)> 12.7 mm (0.5 in) 38.1 mm (1.5 in) DOT No. 3
<b>Rear Disc Brake:</b> Type Disc Outside Diameter Thickness Pad Thickness <Wear Limit> Master Cylinder Inside Diameter Caliper Cylinder Inside Diameter Brake Fluid Type	Single 220 mm (8.66 in) 5.0 mm (0.20 in) 6.0 mm (0.24 in) <0.8 mm (0.03 in)> 12.7 mm (0.5 in) 34.9 mm (1.37 in) DOT No. 4
<b>Brake Lever and Pedal:</b> Brake Lever Free Play  Brake Pedal Position	2.0 ~ 5.0 mm (0.08 ~ 0.20 in) At end of brake lever.  5.0 ~ 10.0 mm (0.20 ~ 0.40 in) Below top of footrest.
<b>Clutch Lever and Throttle Grip:</b> Clutch Lever Free Play  Throttle Cable Free Play	2.0 ~ 3.0 mm (0.08 ~ 0.12 in) At pivot of clutch lever.  2.0 ~ 5.0 mm (0.08 ~ 0.20 in) At grip flange.

# MAINTENANCE SPECIFICATION

**SPEC**



Tightening torque:		Model	XT600			
Part to be tightened	Thread size	Tightening torque			Remarks	
		Nm	m•kg	ft•lb		
Front fork/Handlebar						
Handle crown and inner tube	M8 × 1.25	23	2.3	17		
Handlebar steering shaft	M14 × 1.25	95	9.5	68		
Steering shaft and steering nut	M8 × 1.25	20	2.0	14		
Clamp (Front brake)	M25 × 1.0	6	0.6	4.3	Refer to "NOTE"	
Master cylinder cap (hose)	M8 × 1.25	10	1.0	7.2		
Headlight stay and (Front brake)	M4 × 0.7	2	0.2	1.4		
Headlight stay and lower bracket	M6 × 1.0	7	0.7	5.1		
Lower bracket and headlight	M6 × 1.0	7	0.7	5.1		
Cap bolt (Front fork)	M8 × 1.25	23	2.3	17		
Damper rod and outer tube	M38 × 1.0	23	2.3	17		
Handlebar holder (Lower tube)	M14 × 1.5	62	6.2	45		
Cable holder (Speedometer cable)	M10 × 1.25	30	3.0	22		
Engine mount: (ometer cable)	M5 × 0.8	1	0.1	0.7		
Engine stay (Front) and frame	M10 × 1.25	64	6.4	46		
Engine stay (Upper) and engine	M10 × 1.25	64	6.4	46		
Engine stay (Upper) and frame	M10 × 1.25	64	6.4	46		
Engine (Rear) and frame	M10 × 1.25	64	6.4	46		
Engine protector and frame	M10 × 1.25	64	6.4	46		
Rear shock absorber and frame	M6 × 1.0	10	1.0	7.2		
Pivot shaft /Swingarm						
Swingarm and relay	M14 × 1.5	85	8.5	61		
Relay arm and connecting rod	M12 × 1.25	59	5.9	43		
Connecting rod and frame	M10 × 1.25	32	3.2	23		
Rear shock absorber	M10 × 1.25	32	3.2	23		
Chain tensioner and frame	M12 × 1.25	59	5.9	43		
Chain case and swingarm	M8 × 1.25	23	2.3	17		
Chain protector and swingarm	M6 × 1.0	4	0.4	2.9		
Chain guide and swingarm	M6 × 1.0	7	0.7	5.1		
Bolt (at swingarm)	M6 × 1.0	7	0.7	5.1		
Front wheel/Rear wheel	M6 × 1.0	3	0.3	2.2		
Front wheel axle and nut						
Rear wheel axle and nut	M14 × 1.5	110	11.0	80		
Front axle holder and nut	M16 × 1.5	90	9.0	65		
Brake caliper (Front)	M6 × 1.0	8	0.8	5.8		
Brake caliper (Rear) and front fork	M10 × 1.25	35	3.5	25		
Bracket and swingarm	M10 × 1.25	35	3.5	25		
	M10 × 1.25	45	4.5	32		

# MAINTENANCE SPECIFICATION

**SPEC**



Model	XT600				Remarks
Part to be tightened	Thread size	Tightening torque			
		Nm	m•kg	ft•lb	
<b>Footrest/Pedal/Stand:</b>					
Sidestand and frame	M10 × 1.25	40	4.0	29	
Rear brake switch and frame	M6 × 1.0	4	0.4	2.9	
Footrest (For rider) and frame	M10 × 1.25	45	4.5	32	
Footrest (For passenger) and frame	M8 × 1.25	20	2.0	14	
Master cylinder (Rear brake) and frame	M8 × 1.25	20	2.0	14	
Reservoir tank (Rear brake) and frame	M6 × 1.0	4	0.4	2.9	
<b>Tank/Seat/Cover/Fender:</b>					
License bracket	M6 × 1.0	5	0.5	3.6	
Rear reflector	M5 × 0.8	4	0.4	2.9	
Oil tank and oil hose	M6 × 1.0	10	1.0	7.2	
Drain bolt (Oil tank)	M8 × 1.25	18	1.8	13	
Helmet holder and frame	M6 × 1.0	4	0.4	2.9	
Seat and frame	M6 × 1.0	10	1.0	7.2	
Front fender and lower bracket	M6 × 1.0	7	0.7	5.1	
Rear fender	M6 × 1.0	7	0.7	5.1	
Clamp and battery box	M6 × 1.0	5	0.5	3.6	
Relay stay and battery box	M6 × 1.0	5	0.5	3.6	
Side cover and frame	M6 × 1.0	7	0.7	5.1	
<b>Meter/Horn/Main switch:</b>					
Meter and handle crown	M6 × 1.0	7	0.7	5.1	
Horn and lower bracket	M6 × 1.0	7	0.7	5.1	
Main switch and handle crown	M6 × 1.0	7	0.7	5.1	

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

1. First, tighten the ring nut approximately 38 Nm (3.8 m•kg, 27 ft•lb) by using the torque wrench, then loosen the ring nut one turn.
2. Retighten the ring nut to specification.



ELECTRICAL

Model	XT600
Voltage:	12V
Ignition System: Ignition Timing (B.T.D.C.) Advanced Timing (B.T.D.C.) Advancer Type	12° at 1,200 r/min 36° at 4,500 r/min Electrical Type
C.D.I.: Magneto Model/Manufacturer Pickup Coil Resistance (Color)  Source Coil Resistance (Color) C.D.I. Unit Model/Manufacturer	5Y1-50/NIPPON DENSO 90 ~ 130Ω at 20°C (68°F) (Black/Yellow—Blue/Yellow) 90 ~ 130Ω at 20°C (68°F) (Black/Yellow—Green/White) 160 ~ 240Ω at 20°C (68°F) (Brown—Red) 2KF-50/NIPPON DENSO
Ignition Coil: Model/Manufacturer Minimum Spark Gap Primary Coil Resistance Secondary Coil Resistance	2KF-50/NIPPON DENSO 6.0 mm (0.24 in) 0.23 ~ 0.38Ω at 20°C (68°F) 3.4 ~ 5.2 kΩ at 20°C (68°F)

## MAINTENANCE SPECIFICATION

SPEC



Spark Plug Cap: Type Resistance	Model	XT600
Charging System: Type		Resin type 8~12 k $\Omega$ at 20°C (68°F)
Flywheel Magneto: Model/Manufacturer		A.C. magneto generator
Charging Output: Minimum Maximum		5Y1-50/NIPPON DENSO
Charging Coil Resistance (Color)		7.6A or more at 1,500 r/min 11.3A or less at 5,000 r/min 0.2~0.6 $\Omega$ at 20°C (68°F) (White/Yellow—White/Yellow)
Voltage Regulator/Rectifier: Model/Manufacturer		SH565-12/SHINDENGEN
Voltage Regulator: Type No Load Regulation		Semi conductor—Short circuit type 14.5V
Rectifier: Capacity Withstand Voltage		12A 200V
Battery: Specific Gravity		1.280
Horn: Type Quantity Model/Manufacturer Maximum Amperage		Plane type 1 pc. YF-12/NIKKO 2.5A
Flasher Relay: Type Model/Manufacturer		Condenser type FZ249SD/NIPPON DENSO FJ245ED/NIPPON DENSO.....(G)
Self Cancelling Device Flasher Frequency Wattage		No 75~95 cycles/min 21W $\times$ 2+3.4W
Circuit Breaker: Type Amperage for Individual		Fuse 20A

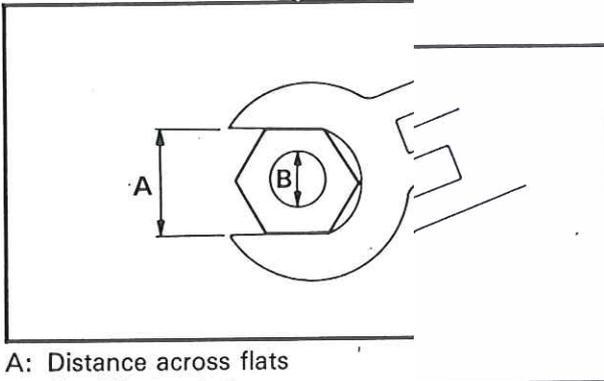




**GENERAL TORQUE SPECIFICATIONS**

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 section of this book. To avoid warpage, tighten multiple fastener assemblies in a crisscross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications apply 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		
cm	centimeter	$10^{-3}$ meter	Length
kg	kilogram	$10^{-3}$ meter	Length
N	Newton	$10^3$ gram	Weight
Nm	Newton meter	$1 \text{ kg} \times \text{m}/\text{sec}^2$	Force
m•kg	Meter kilogram	$\text{N} \times \text{m}$	Torque
Pa	Pascal	$\text{m} \times \text{kg}$	Torque
N/mm	Newton per millimeter	$\text{N}/\text{m}^2$	Pressure
L	Liter	$\text{N}/\text{mm}$	Spring rate
cm <sup>3</sup>	Cubic centimeter		
r/min	Rotation per minute	—	Volume or capacity
	minute	—	Engine speed

# LUBRICATION POINTS AND

## LUBRICATION POINTS AND LUBRICANT TYPE

SPEC



ENGINE

LUBRICANT TYPE

Lubrication Points (Part name)		Lubricant Type
Oil seal lips (All)		
Bearing retainer		
Crank pin		
Connecting rod (Big end)		
Piston and piston ring		
Boss (Balancer drive gear)		
Piston pin		
Valve stem and valve guide		
Oil seal (Valve stem end)		
Rocker arm shaft and rocker arm		
Cam and bearing (Camshaft)		
Decompression camshaft		
Rotor and rotor housing (Oil pump)		
Kick gear, Kick gear axle		
Kick idle gear and shaft (Kick idle gear)		
Kick crank boss		
Bearing (Decompression lever)		
Push rod		
Primary driven gear and main axle		
Sliding gear (Transmission)		
Free movement gear (Transmission)		
Shift fork and guide bar		
Shift cam and bearing (Shift cam)		
Shift shaft		
Crankcase mating surfaces		
Mating surfaces (Cylinder head and cylinder head cover)		Yamaha Bond No. 1215
		Yamaha Bond No. 1215

# LUBRICATION POINTS AND LUBRICANT TYPE

SPEC



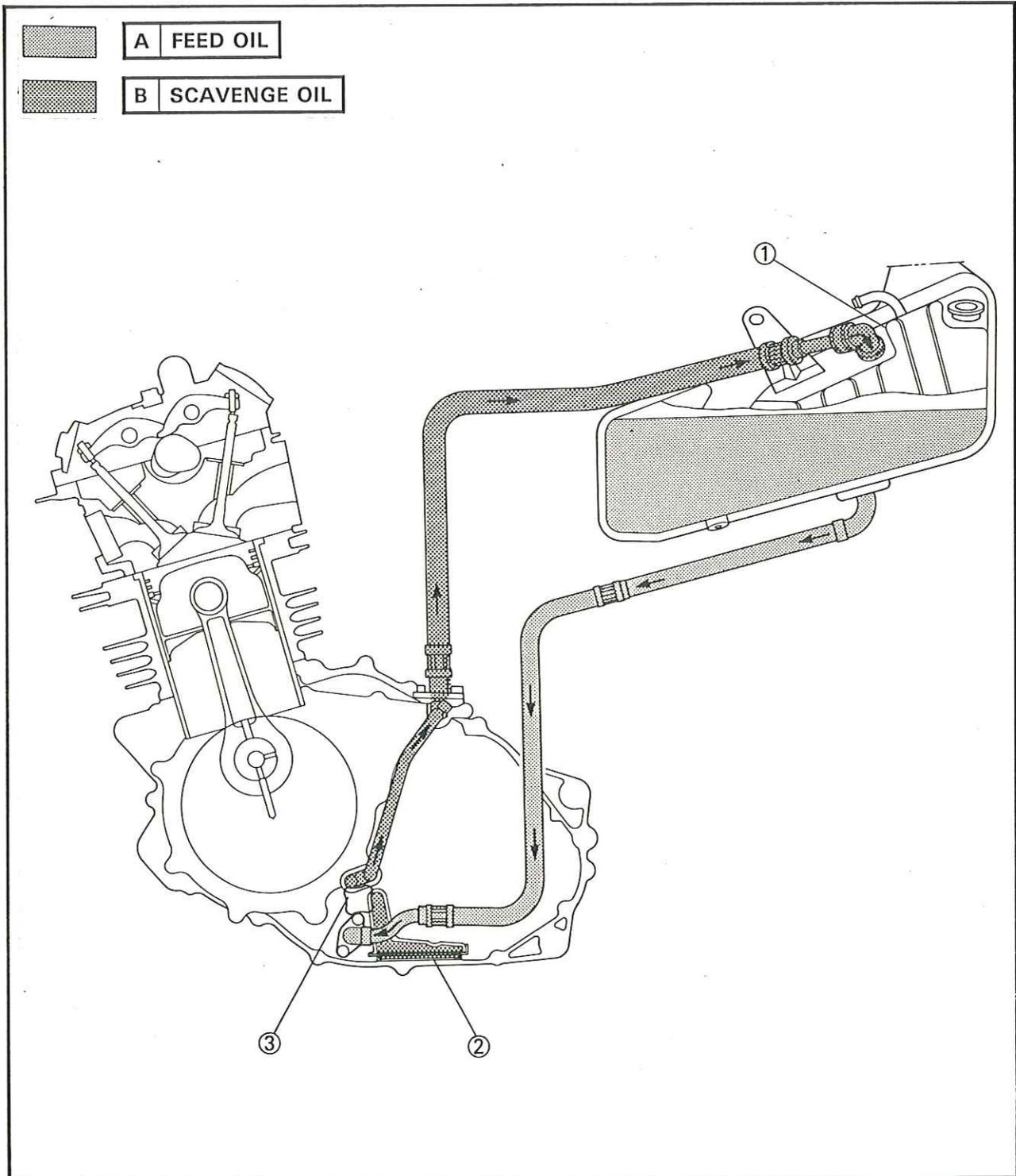
## CHASSIS

Lubrication Points (Part name)	Lubricant Type
Gear unit (Speedometer)	
Oil seal lips (All)	
Wheel axle (Front wheel and rear wheel)	
Rear wheel hub and clutch hub	
Bush (Swingarm) and thrust cover	
Pivot shaft (Swingarm)	
Bushes (Rear shock absorber)	
Bushes (Relay arm and connecting rod)	
Bearings (Relay arm and connecting rod)	
Pivoting points (Brake pedal and change pedal)	
Bearings (Steering head)	
Right handlebar end	
Pivoting points (Brake lever and clutch lever)	
Clutch cable end	
Pivoting point (Sidestand)	
Bushes (Chain tensioner)	
Grease nipple (Swingarm)	
Grease nipple (Relay arm)	
Grease nipple (Connecting arm)	



LUBRICATION DIAGRAM

- ① Oil tank
- ② Oil strainer
- ③ Oil pump

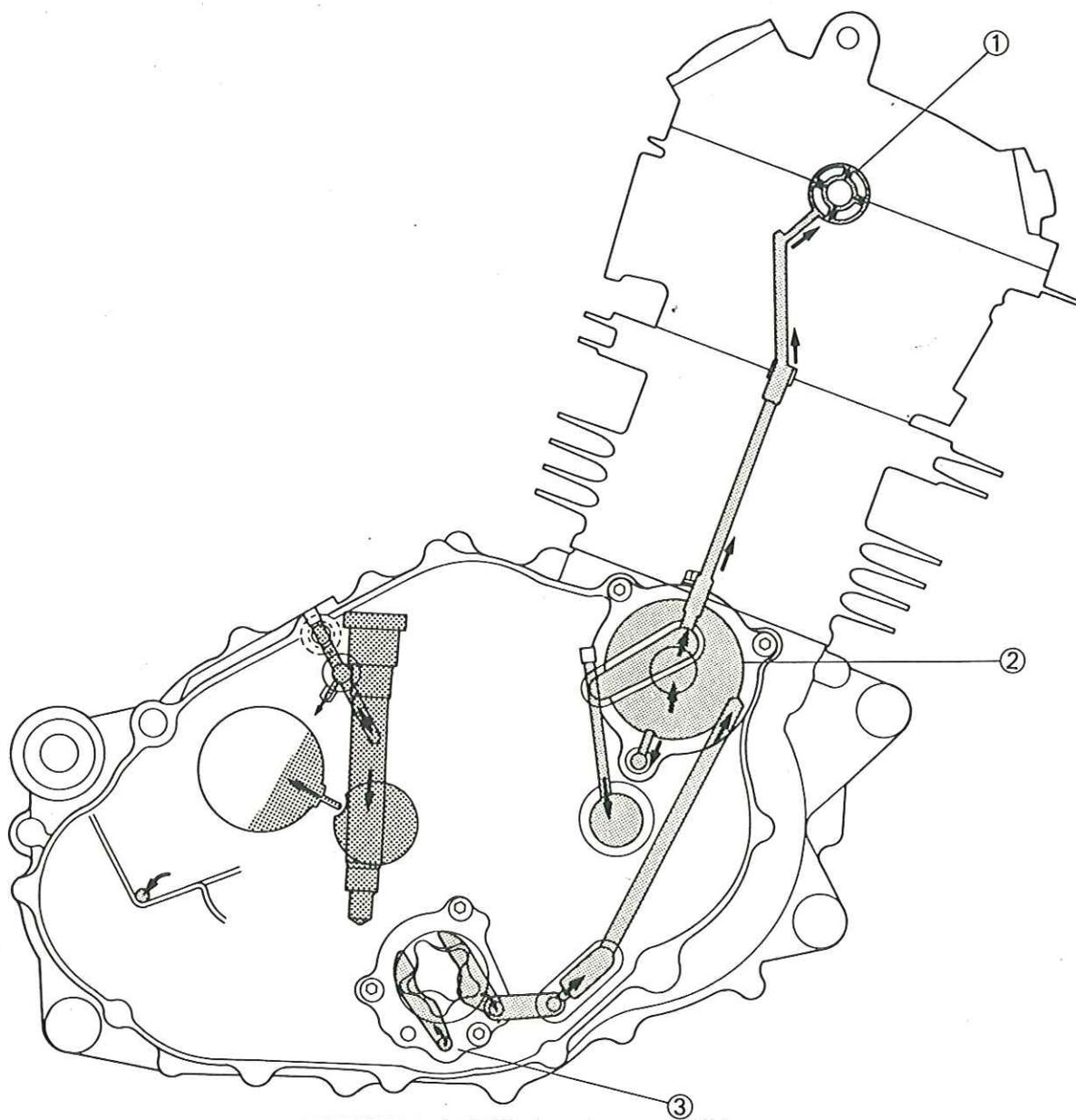
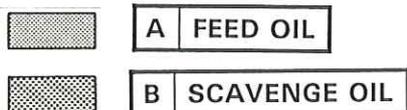


# LUBRICATION DIAGRAM

SPEC



- ① Camshaft
- ② Oil cleaner
- ③ Oil pump

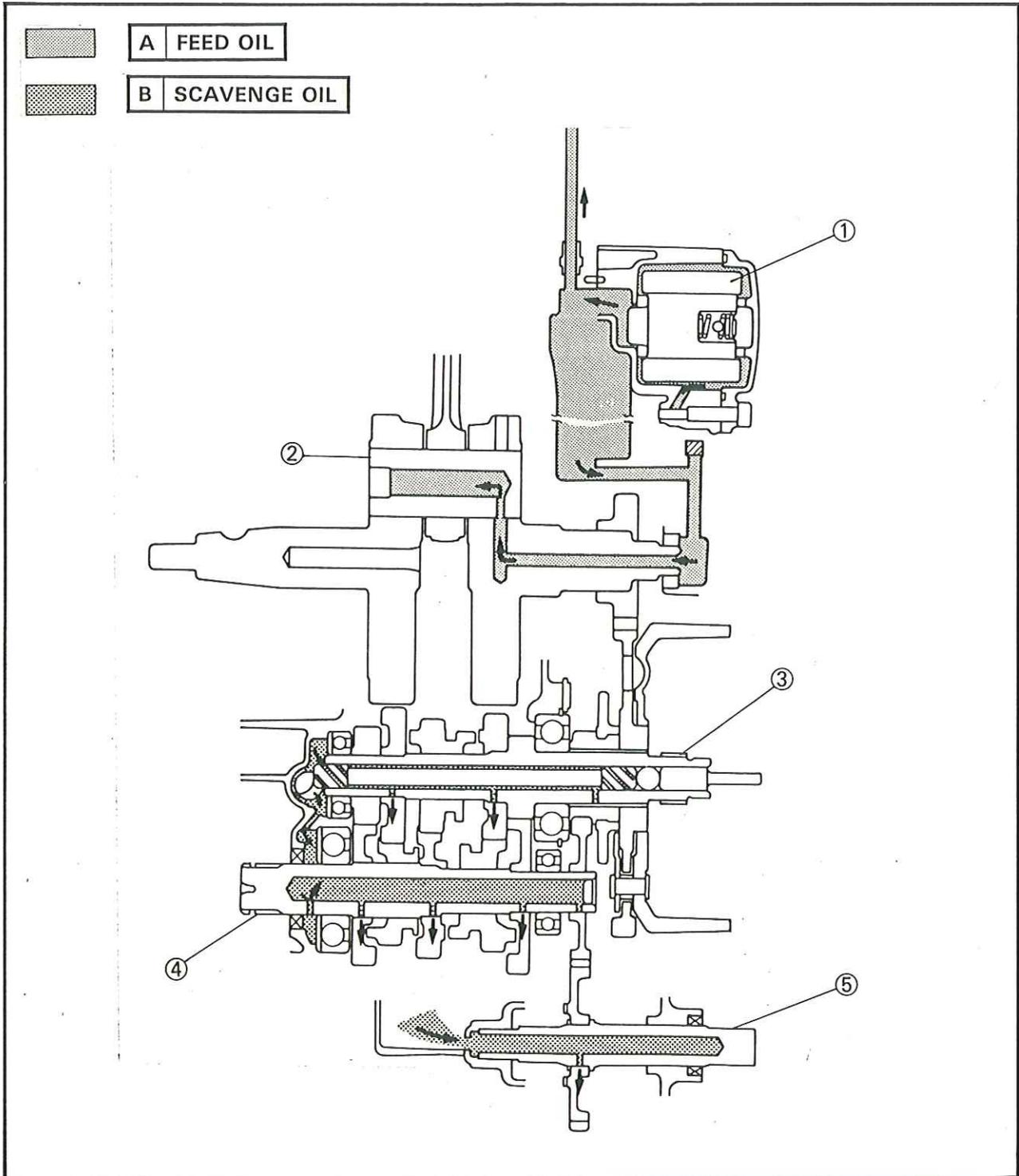


# LUBRICATION DIAGRAM

SPEC



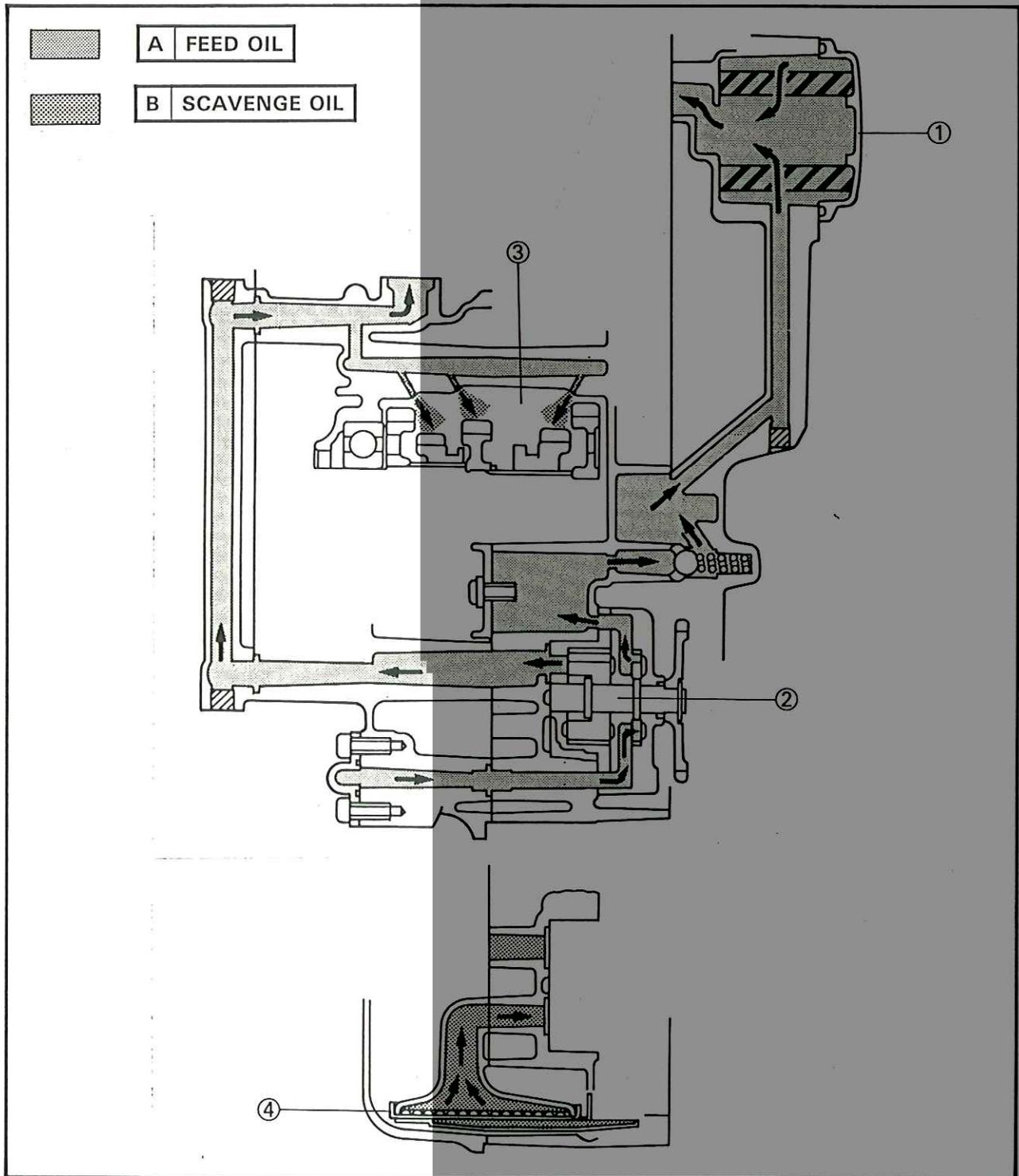
- ① Oil cleaner
- ② Crank pin
- ③ Main axle
- ④ Drive axle
- ⑤ Kick axle



# LUBRICATION DIAGRAM



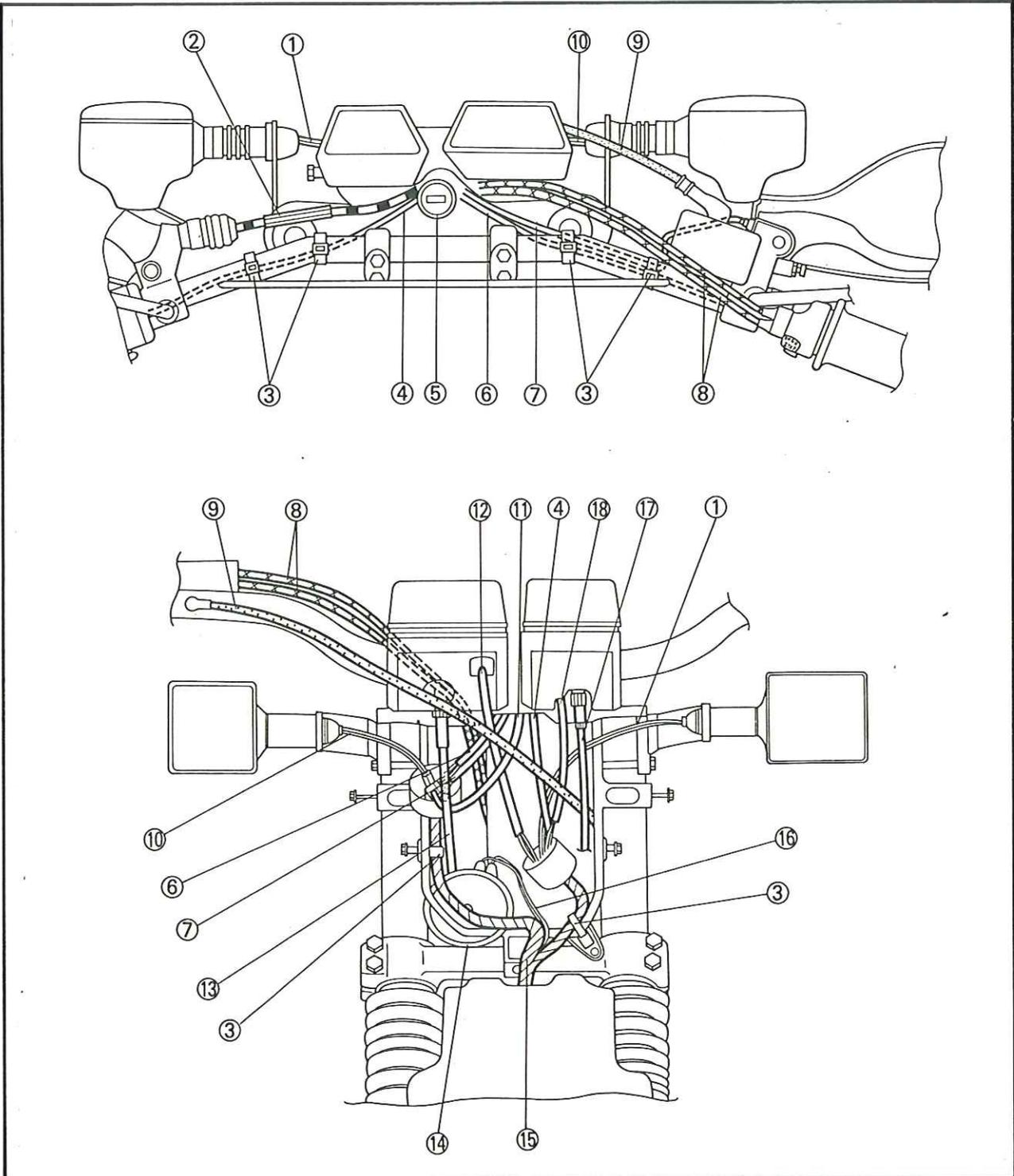
- ① Oil cleaner
- ② Oil pump
- ③ Shift cam
- ④ Oil strainer





CABLE ROUTING

- |                                 |                              |
|---------------------------------|------------------------------|
| ① Flasher light lead (Left)     | ⑩ Flasher light lead (Right) |
| ② Clutch cable                  | ⑪ Main switch lead           |
| ③ Band                          | ⑫ Tachometer lead            |
| ④ Handlebar switch lead (Left)  | ⑬ Tachometer cable           |
| ⑤ Main switch                   | ⑭ Horn                       |
| ⑥ Handlebar switch lead (Right) | ⑮ Wireharness                |
| ⑦ Front brake switch lead       | ⑯ Horn lead                  |
| ⑧ Throttle cable                | ⑰ Speedometer cable          |
| ⑨ Brake hose                    | ⑱ Speedometer lead           |





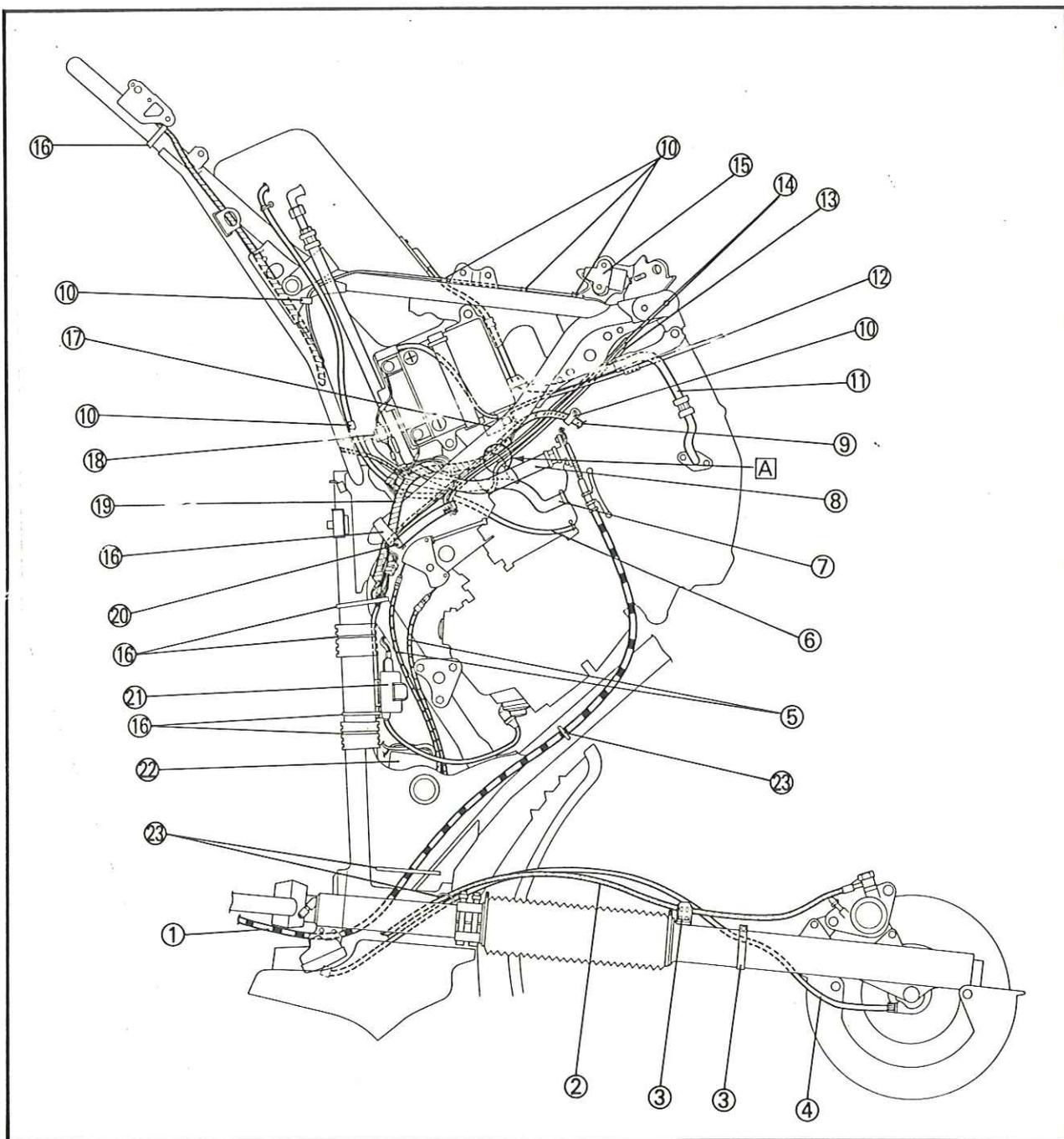
# CABLE ROUTING



- ① Clutch cable
- ② Brake hose
- ③ Holder
- ④ Speedometer cable
- ⑤ Throttle cable
- ⑥ Breather hose (Oil tank)
- ⑦ Breather hose (Crankcase)
- ⑧ Oil hose
- ⑨ C.D.I. magneto lead
- ⑩ Clamp
- ⑪ Oil hose
- ⑫ Breather hose (Battery)
- ⑬ Overflow hose (Carburetor)
- ⑭ Breather hose (Carburetor)
- ⑮ Sidestand switch
- ⑯ Band

- ⑰ Flasher relay
- ⑱ Fuse
- ⑲ Wireharness
- ⑳ Fuel hose
- ㉑ Ignition coil
- ㉒ C.D.I. unit
- ㉓ Cable guide

**A** Overflow hose (carburetor) and breather hose (carburetor):  
Clamp overflow hose and breather hose with band and pass them between relay arm and swingarm.

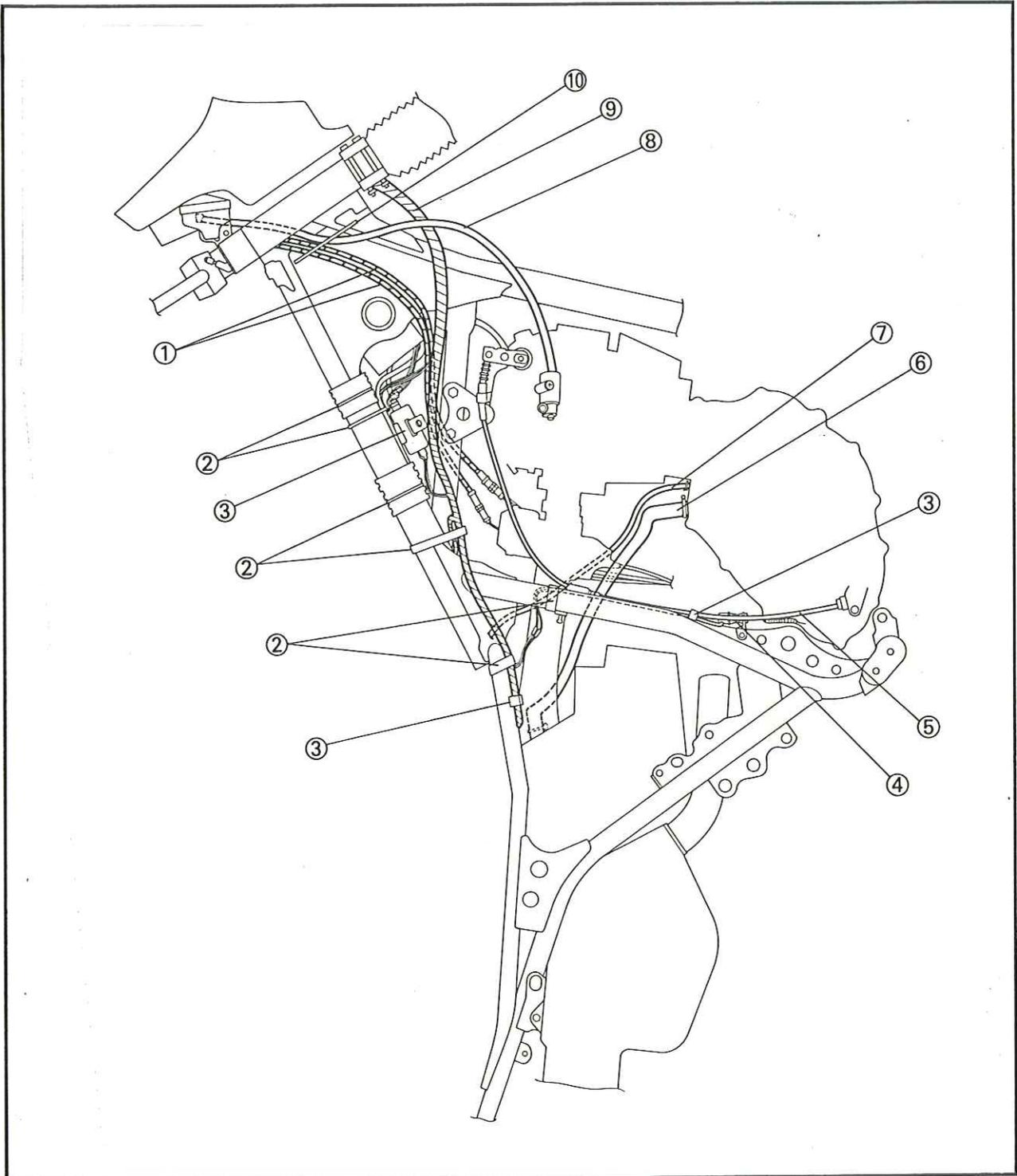


# CABLE ROUTING

SPEC



- ① Throttle cable
- ② Band
- ③ Clamp
- ④ Rear brake switch
- ⑤ Decompression cable
- ⑥ Breather hose (Crankcase)
- ⑦ Breather hose (Oil tank)
- ⑧ Tachometer cable
- ⑨ Wireharness
- ⑩ Cable guide

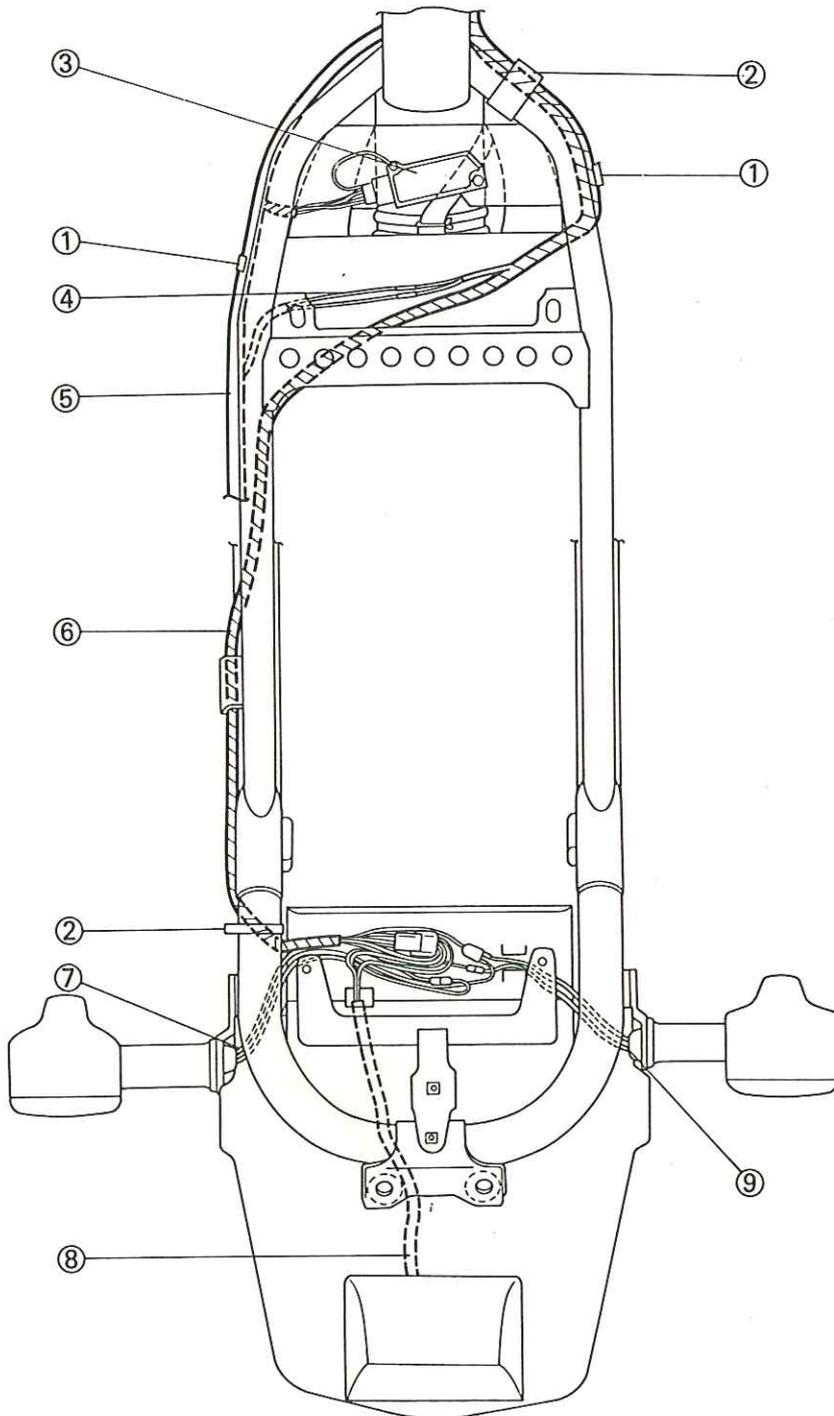


# CABLE ROUTING

SPEC



- ① Clamp
- ② Band
- ③ Rectifier/Regulator
- ④ Sidestand switch lead
- ⑤ Breather hose (Oil tank)
- ⑥ Wireharness
- ⑦ Flasher light lead (Left)
- ⑧ Taillight lead
- ⑨ Flasher light lead (Right)



## PERIODIC INSPECTION AND ADJUSTMENT

### INTRODUCTION

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

### PERIODIC MAINTENANCE/LUBRICATION INTERVALS

Unit: km (mi)

ITEM	REMARKS	BREAK-IN 1,000 (600)	EVERY	
			6,000 (4,000) or 6 months	12,000 (8,000) or 12 months
Valve clearance	Check/Adjust valve clearance.	○	○	○
Spark plug	Check/Clean/Replace if necessary.	○	○	○
Air filter	Clean. Replace if necessary.		○	○
Carburetor	Check/Adjust idle speed, starter operation.	○	○	○
Fuel line	Check fuel hose for cracks or damage.		○	○
Engine oil	Replace (Warm engine before draining).	○	○	○
Engine oil filter/ Oil strainer	Replace filter element and clean oil strainer.	○	○	○
Brake	Check operation/fluid leakage/See NOTE./ Adjust if necessary.		○	○
Clutch	Check operation/Adjust if necessary.		○	○
Decompression system	Check/Adjust if necessary.		○	○
Swingarm pivot/ Swingarm	Check swingarm assembly for looseness. Clean and lube.***	CHECK	○	○
Wheels	Check balance/damage/runout/spoke tightness.		○	○
Wheel bearings	Check bearings assembly for looseness/damage. Replace if damaged.		○	○
Steering bearing	Check bearings assembly for looseness. Moderately repack every 24,000 (16,000) or 24 months.***	CHECK		CHECK
Front forks	Check operation/oil leakage.		○	○
Rear shock absorber	Check operation/oil leakage.		○	○
Drive chain	Check and adjust slack/alignment/clean/lube.	EVERY 500 (300)		
Fittings/Fasteners	Check all chassis fittings and fasteners.	○	○	○
Sidestand switch	Check operation. Clean or replace if necessary.	○	○	○
Battery	Check specific gravity. Check breather pipe for proper operation.		○	○

\*\*\*: Lithium base grease

## PERIODIC MAINTENANCE/ LUBRICATION INTERVALS



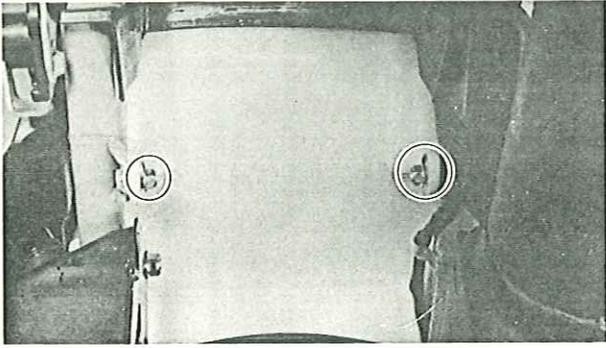
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### NOTE:

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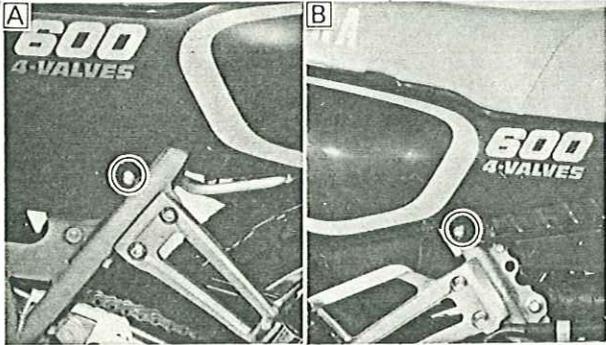
#### Brake system:

1. When disassembling the master cylinder or caliper cylinder, replace the brake fluid. Normally check the brake fluid level and add the fluid as required.
  2. We recommended that, on the inner parts of the master cylinder and caliper cylinder, replace the oil seals every two years.
  3. We recommended that, replace the brake hoses every four years, or if cracked or damaged.
-



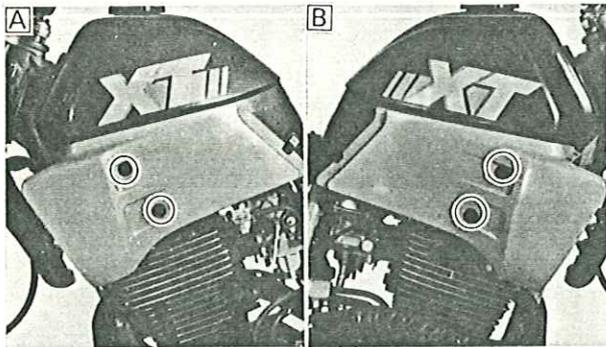
## SEAT, FUEL TANK AND COVER REMOVAL

1. Remove:
  - Seat



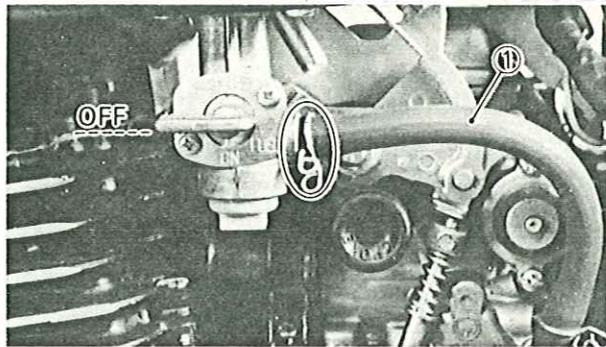
2. Remove:
  - Side cover

- A** Left
- B** Right



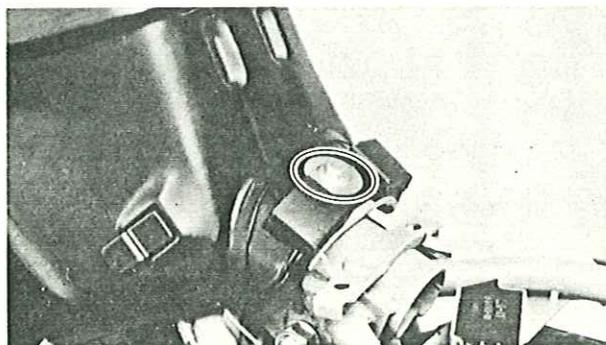
3. Remove:
  - Air scoop

- A** Left
- B** Right



4. Turn the fuel cock to "OFF".

5. Disconnect:
  - Fuel hose ①



6. Remove:
  - Fuel tank

# SEAT, FUEL TANK AND COVER/ VALVE CLEARANCE ADJUSTMENT

INSP  
ADJ



## INSTALLATION

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

1. Install:
  - Side cover
  - Seat



**Bolt (Side Cover):**

7 Nm (0.7 m•kg, 5.1 ft•lb)

**Bolt (Seat):**

10 Nm (1.0 m•kg, 7.2 ft•lb)

## ENGINE

### VALVE CLEARANCE ADJUSTMENT

#### NOTE:

- The valve clearance must be adjusted when the engine is cool to the touch.
- Adjust the valve clearance when the piston is at the Top Dead Center (T.D.C.) on compression stroke.

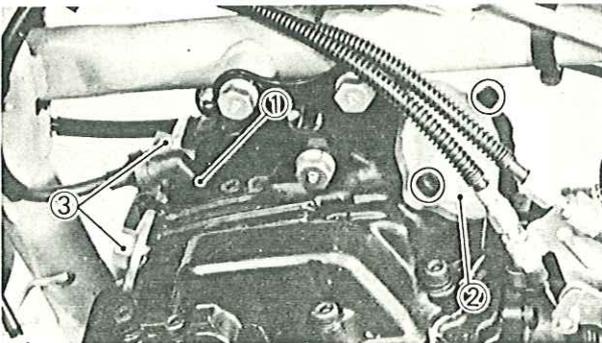
#### 1. Remove:

- Seat
- Air scoop
- Fuel tank

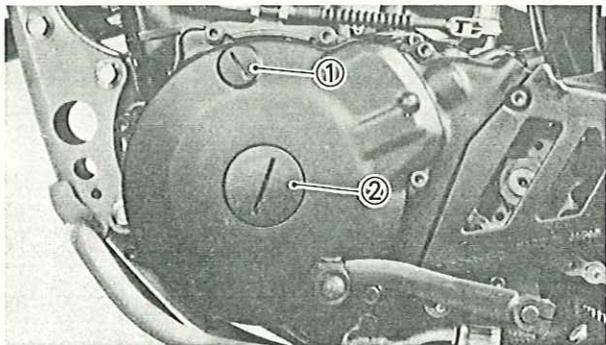
Refer to the "SEAT, FUEL TANK AND COVER" section.

#### 2. Remove:

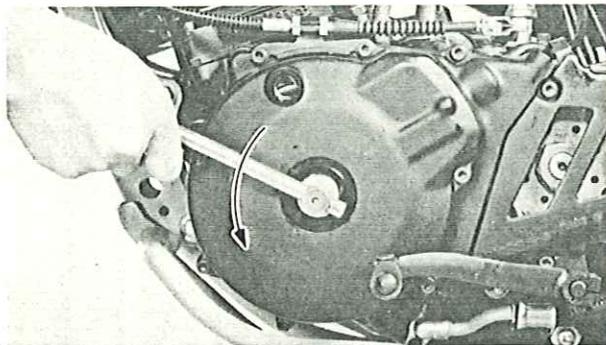
- Spark plug ①
- Tappet cover ② (Intake)
- Tappet cover ③ (Exhaust)



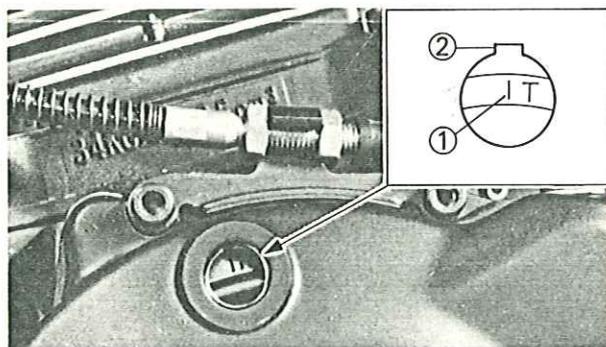
# VALVE CLEARANCE ADJUSTMENT



3. Remove:
- Plug ①
  - Plug ②



4. Turn the crankshaft counterclockwise with a wrench.

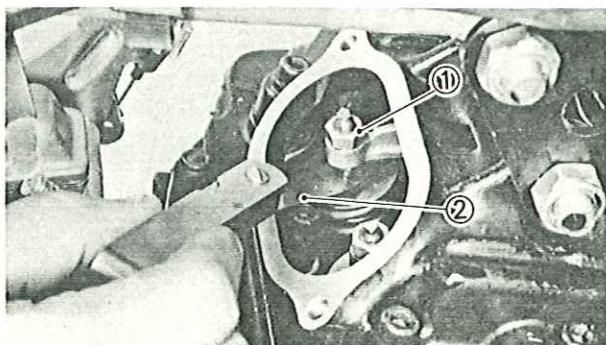


5. Align:
- "T" mark ①
  - With stationary pointer ②.

**NOTE:** \_\_\_\_\_  
 Make sure the piston is at the T.D.C. on compression stroke.  
 \_\_\_\_\_

6. Check:
- Valve clearance
  - Out of specification → Adjust.

	<b>Valve Clearance (Cold):</b>
	Intake: 0.07 ~ 0.12 mm (0.003 ~ 0.005 in)
	Exhaust: 0.12 ~ 0.17 mm (0.005 ~ 0.007 in)



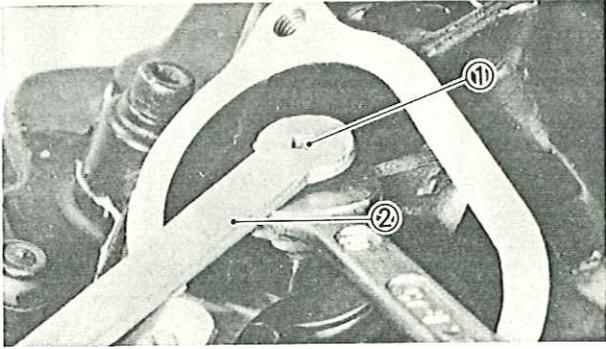
7. Adjust:
- Valve clearance

**Adjustment steps:**

- Loosen the locknut ①.
- Insert a Feeler Gauge ② between the adjuster end and the valve end.



# VALVE CLEARANCE AD



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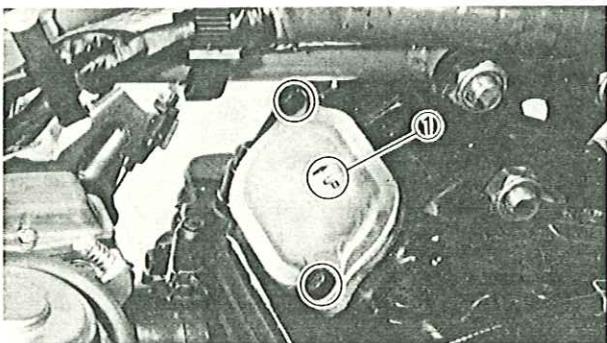


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# CAM CHAIN ADJUSTMENT/ IDLE SPEED ADJUSTMENT

INSP  
ADJ



9. Install:
- Fuel tank
  - Air scoop
  - Seat



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

## CAM CHAIN ADJUSTMENT

Adjustment free.

## IDLE SPEED ADJUSTMENT

1. Start the engine and let it warm up.
2. Attach:
  - Engine Tachometer  
To spark plug lead.

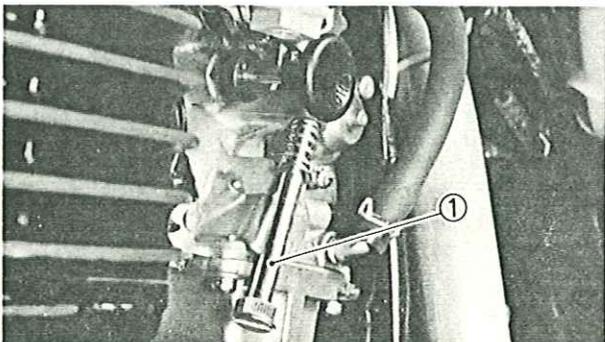


**Engine Tachometer:**  
P/N. 90890-03113

3. Check:
  - Engine idle speed  
Out of specification → Adjust.



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



4. Adjust:
  - Engine idle speed

### Adjustment steps:

- Turn the throttle stop screw ① in or out until specified idle speed is obtained.

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

## THROTTLE CABLE FREE PLAY ADJUSTMENT



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

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

### THROTTLE CABLE FREE PLAY ADJUSTMENT

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

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

1. Remove:

- Seat
- Air scoop
- Fuel tank

Refer to the "SEAT, FUEL TANK AND COVER" section.

2. Check:

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



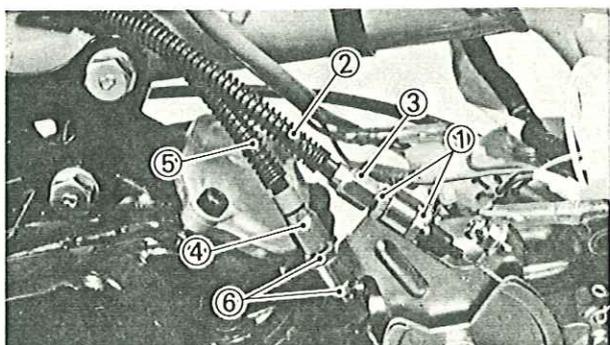
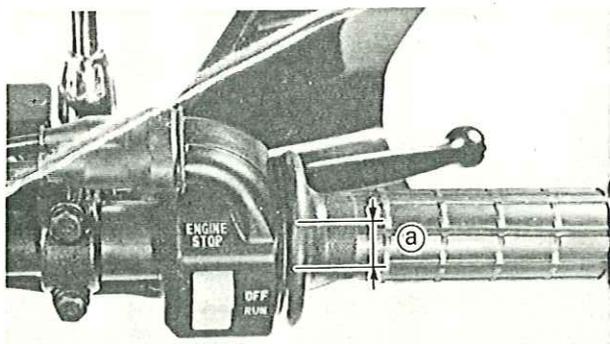
**Throttle Cable Free Play:**  
2~5 mm (0.08~0.20 in)

3. Adjust:

- Throttle cable free play

**Adjustment steps:**

- Loosen the locknuts (1) on the throttle cable (2).
- Turn the adjuster (3) clockwise or counter-clockwise until proper free play is obtained.



# THROTTLE CABLE FREE PLAY ADJUSTMENT/ SPARK PLUG INSPECTION



- If the play is still incorrect after the adjuster is loosened 5 mm (0.2 in), make an adjustment with the adjuster ④ on the throttle cable 2 ⑤.

⑥ Locknuts

- Tighten the locknuts.

## 4. Install:

- Fuel tank
- Air scoop
- Seat



**Bolt (Seat):**

**10 Nm (1.0 m•kg, 7.2 ft•lb)**

## SPARK PLUG INSPECTION

### 1. Remove:

- Seat
- Air scoop
- Fuel tank

Refer to the "SEAT, FUEL TANK AND COVER" section.

### 2. Remove:

- Spark plug

### 3. Inspect:

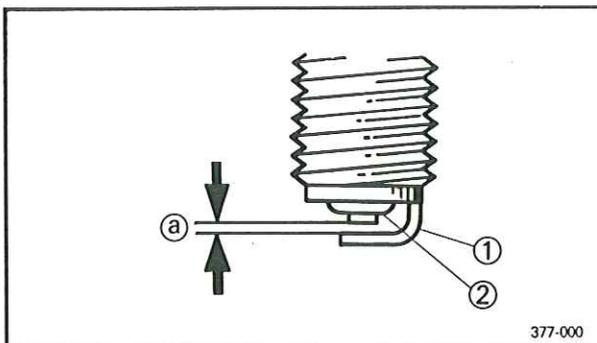
- Spark plug type  
Incorrect → Replace.

**Standard Spark Plug:**

**DR7ES (N.G.K.), DPR7EA-9 (N.G.K.)  
DPR8EA-9 (N.G.K.)**

### 4. Inspect:

- Electrode ①  
Wear/Damage → Replace.
- Insulator ②  
Abnormal color → Replace.  
Normal color is a medium-to-light tan color.



## SPARK PLUG INSPECTION/ IGNITION TIMING CHECK

INSP  
ADJ



5. Clean the spark plug with a spark plug cleaner or wire brush.
6. Measure:
  - Plug gap (a)  
Use a Wire Gauge or Feeler Gauge.  
Out of specification → Regap.



### Spark Plug Gap:

DR7ES

0.6 ~ 0.7 mm (0.024 ~ 0.028 in)

DPR7EA-9, DPR8EA-9

0.8 ~ 0.9 mm (0.031 ~ 0.035 in)

7. Tighten:
  - Spark plug  
Before installing a spark plug, clean the gasket and plug surfaces.



### Spark Plug:

18 Nm (1.8 m•kg, 13 ft•lb)

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

Finger-tighten the spark plug before torquing to specification.

\_\_\_\_\_

8. Install:
  - Fuel tank
  - Air scoop
  - Seat



### Bolt (Seat):

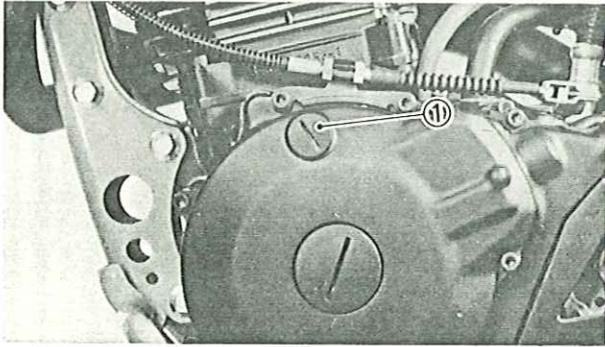
10 Nm (1.0 m•kg, 7.2 ft•lb)

## IGNITION TIMING CHECK

1. Start the engine and let it warm up.

# IGNITION TIMING CHECK

INSP  
ADJ

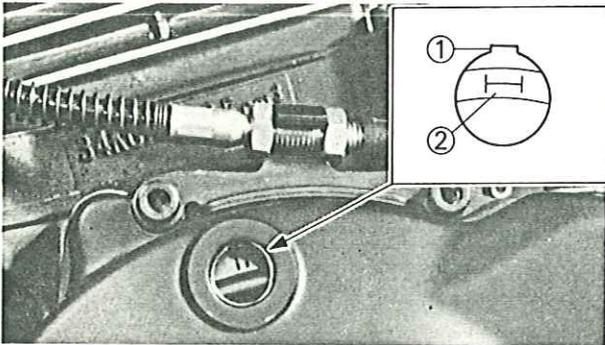


2. Remove:
- Plug ①

3. Attach:
- Engine Tachometer
  - Timing Light
- To spark plug lead.



**Engine Tachometer:**  
P/N. 90890-03113  
**Timing Light:**  
P/N. 90890-03109



4. Check:
- Ignition timing

### Checking steps:

- Warm up the engine and let it at the specified speed.



**Engine Speed:**  
1,200 r/min

- Visually check the stationary pointer ① to verify it is within the required firing range ② indicated on the flywheel.  
Incorrect firing range → Check timing plate and/or pickup assembly (tightness damage).

5. Install:
- Plug
  - Fuel tank
  - Air scoop
  - Seat



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

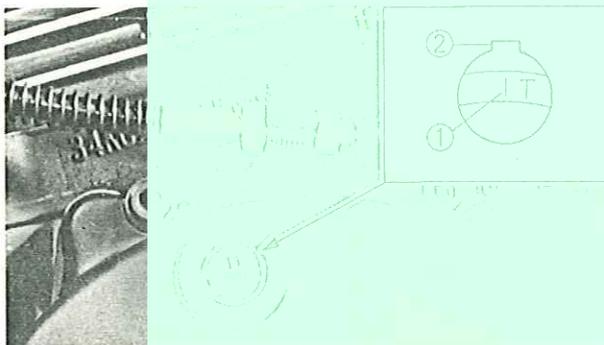
## DECOMPRESSION CABLE FREE PLAY ADJUSTMENT

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

Before adjusting the decompression cable free play, the valve clearance should be adjusted.



1. Remove:
  - Plug ①
  - Plug ②



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

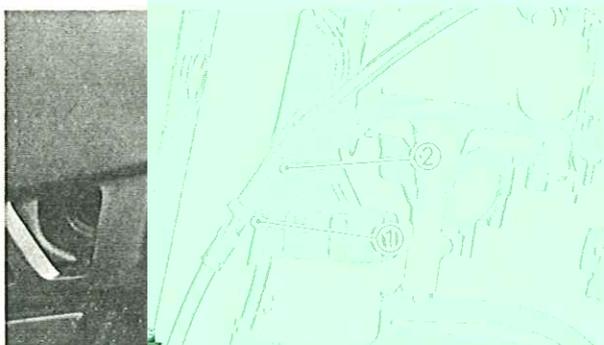
NOTE: \_\_\_\_\_

Be sure piston is at Top Dead Center (T.D.C.) on compression stroke when checking and adjusting free play.



3. Check:
  - Decompression cable free play ①
  - Out of specification → Adjust.

	<b>Decompression Cable Free Play:</b> 0.5 mm (0.02 in)
---	---



4. Adjust:
  - Decompression cable free play

### Adjustment steps:

- Loosen the locknut ①.
- Turn the adjuster ② in or out until the specified free play is obtained.

# COMPRESSION PRESSURE MEAS

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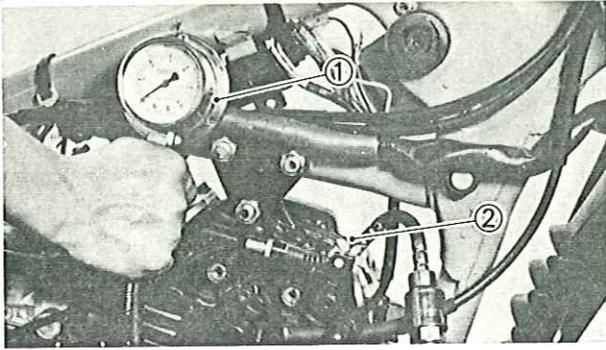
3. Star

4. Rem

•Sp



# COMPRESSION PRESSURE MEASUREMENT



5. Attach:
- Compression Gauge ①
  - Adapter ②



• Compression Gauge:  
P/N. 90890-03081  
Adapter:  
P/N. 90890-04082

6. Check:
- Compression pressure

**Checking steps:**

- Crank over the engine with the kick crank with the throttle wide-open until the compression reading on the gauge stabilizes.

**WARNING:**

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

- Check readings with specified levels (See chart).

**Compression Pressure (at Sea Level):**

**Standard:**  
1,100 kPa (11 kg/cm<sup>2</sup>, 156 psi)  
**Minimum:**  
900 kPa (9 kg/cm<sup>2</sup>, 128 psi)  
**Maximum:**  
1,200 kPa (12 kg/cm<sup>2</sup>, 171 psi)

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

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

## ENGINE OIL LEVEL INSPECTION

INSP  
ADJ



7. Install:
- Spark plug
  - Fuel tank
  - Air scoop
  - Seat



**Spark Plug:**  
18 Nm (1.8 m•kg, 13 ft•lb)  
**Bolt (Seat):**  
10 Nm (1.0 m•kg, 7.2 ft•lb)

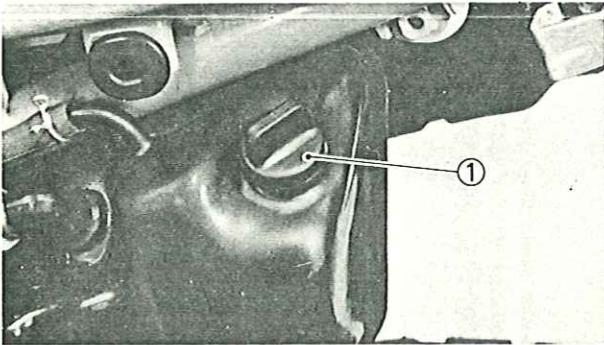
### ENGINE OIL LEVEL INSPECTION

1. Place the motorcycle on a level place.

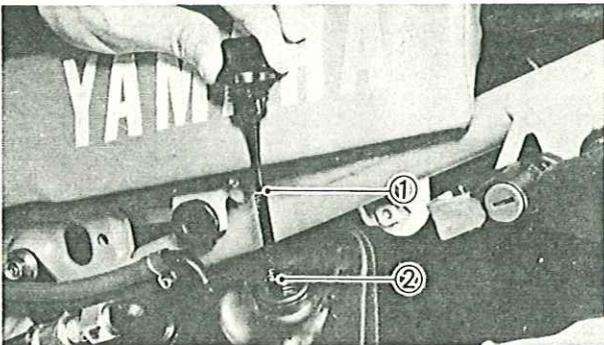
**NOTE:** \_\_\_\_\_

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

---



2. Remove:
- Side cover (Left)
  - Oil tank cap ①



3. Inspect:
- Oil level
- Oil level should be between the maximum ① and minimum ② marks.

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

When inspecting the oil level, do not screw the oil level gauge into the oil tank. Insert the gauge lightly.

---

Oil level is incorrect → Add the oil up to the minimum level.

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

When the oil tank is empty, never start the engine.

---



**Recommended Oil:**  
SAE 20W40 Type SE Motor Oil  
or SAE 10W30 Type SE Motor Oil

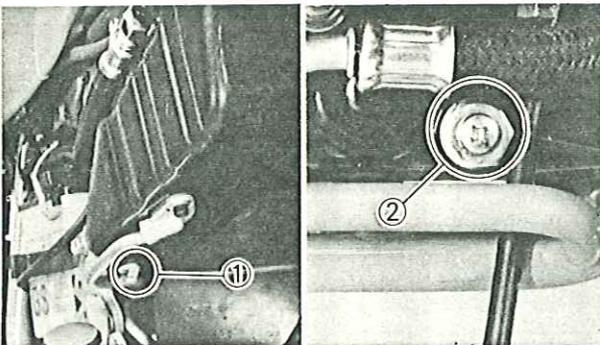


4. Start the engine and warm up until the oil temperature rises to approximately 60°C (140°F).
5. Idle the engine more than 10 seconds while keeping the motorcycle upright. Then stop the engine and add the oil to the maximum level.

## WARNING:

Never attempt to remove the oil tank cap just after high speed operation. The heated oil could spout out, causing danger. Wait until the oil cools down to approximately 60°C (140°F).

6. Install:
  - Oil tank cap
  - Side cover (Left)



## ENGINE OIL REPLACEMENT

### Engine Oil Replacement (Without Oil Filter)

1. Warm up the engine for several minutes, then place a receptacle under the drain bolts.
2. Remove:
  - Oil tank cap
  - Drain bolt ① (Oil tank)
  - Drain bolt ② (Crankcase)
3. Drain:
  - Engine oil



## ENGINE OIL

• Engine oil

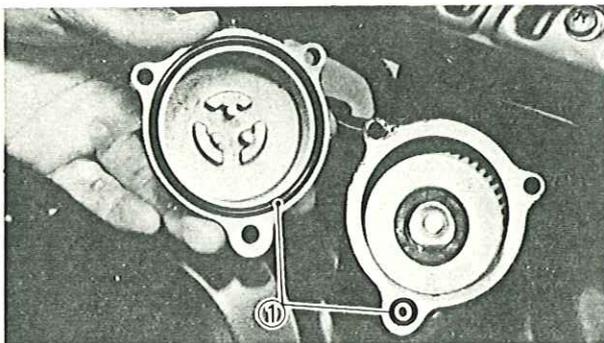
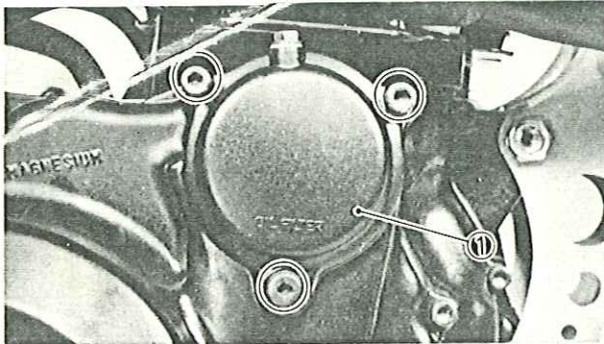
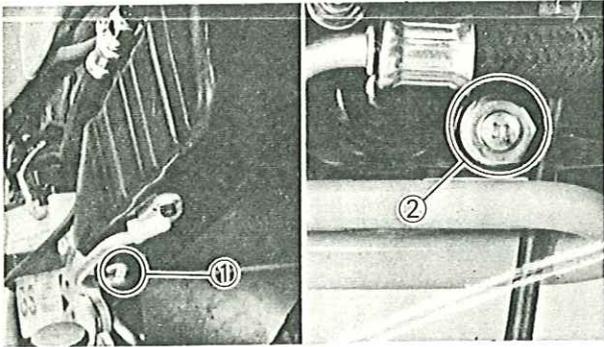
4. Remove:

- Oil filter cover ①
- Oil filter

5. Inspect:

- Gasket (Each)
  - O-ring ①
- Damage → Replace.

3-18



## OIL REPLACEMENT



8. Install:

- Oil tank cap
- Side cover (Left)

9. Inspect:

- Oil level  
Refer to the "ENGINE OIL LEVEL INSPECTION" section.
- Oil pressure  
Refer to the "OIL PRESSURE INSPECTION" section.
- Oil leaks

### Engine Oil Replacement (with Oil Filter)

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

2. Remove:

- Oil tank cap
- Drain bolt ① (Oil tank)
- Drain bolt ② (Crankcase)

3. Drain:



6. Install:
- Oil filter
  - Oil filter cover
  - Drain bolt (Crankcase)
  - Drain bolt (Oil tank)



**Bolt (Oil Filter Cover):**  
10 Nm (1.0 m•kg, 7.2 ft•lb)  
**Drain Bolt (Oil Tank):**  
18 Nm (1.8 m•kg, 13 ft•lb)  
**Drain Bolt (Crankcase):**  
30 Nm (3.0 m•kg, 22 ft•lb)

7. Fill:
- Oil tank
  - Crankcase



**Recommended Oil:**  
SAE 20W40 Type SE Motor Oil  
or SAE 10W30 Type SE Motor Oil  
**Oil Quantity:**  
2.1 L (1.9 Imp qt, 2.2 US qt)

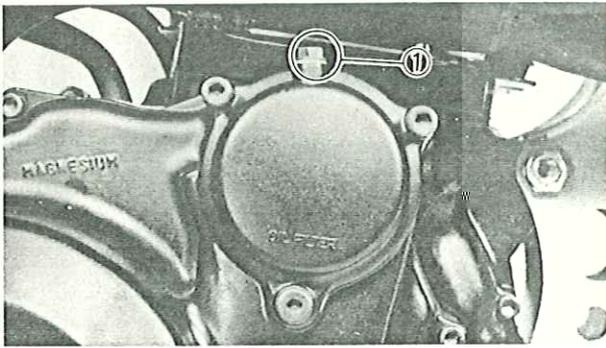
**CAUTION:**

- Do not allow foreign material to enter the crankcase.
- Do not add any chemical additives. Engine oil also lubricates the clutch and additives could cause clutch slippage.

8. Install:
- Oil tank cap
  - Side cover (Left)

9. Inspect:
- Oil level  
Refer to the "ENGINE OIL LEVEL INSPECTION" section.
  - Oil pressure  
Refer to the "OIL PRESSURE INSPECTION" section.
  - Oil leaks

# OIL PRESSURE INSPECTION/ CLUTCH ADJUSTMENT



## OIL PRESSURE INSPECTION

1. Remove:
  - Air bleed screw ①
2. Start the engine and keep it idling for several minutes.
3. Inspect:
  - Oil condition of the bleed hole
  - Oil flows out → Oil pressure is good.
  - No oil comes out → Oil pressure is bad.

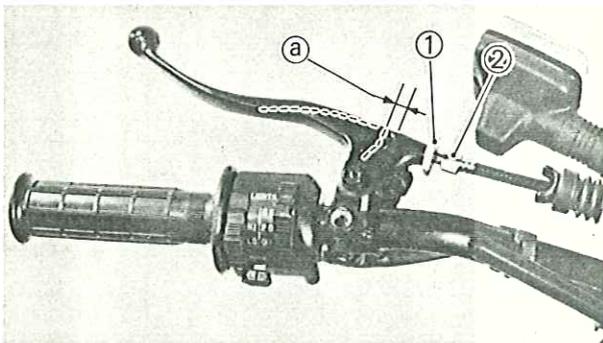
### CAUTION:

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

4. Tighten:
  - Air bleed screw



**Air Bleed Screw:**  
5 Nm (0.5 m•kg, 3.6 ft•lb)



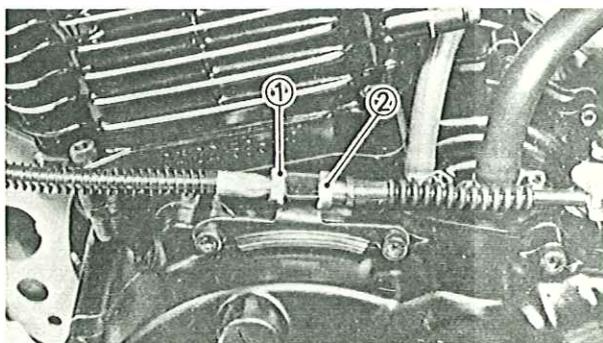
## CLUTCH ADJUSTMENT

### Cable Free Play Adjustment

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



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



2. Adjust:
  - Clutch cable free play

### Adjustment steps:

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

# CLUTCH ADJUSTMENT

INSP  
ADJ



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

- Tighten the locknuts.

## NOTE:

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

## Mechanism Adjustment

### 1. Loosen:

- Locknut ①

### 2. Tighten:

- Adjuster ②

### 3. Drain:

- Engine oil

Refer to the "ENGINE OIL REPLACEMENT" section.

### 4. Remove:

- Kick crank ①
- Crankcase cover ② (Right)
- Footrest ③ (Right)

### 5. Loosen:

- Locknut ①

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

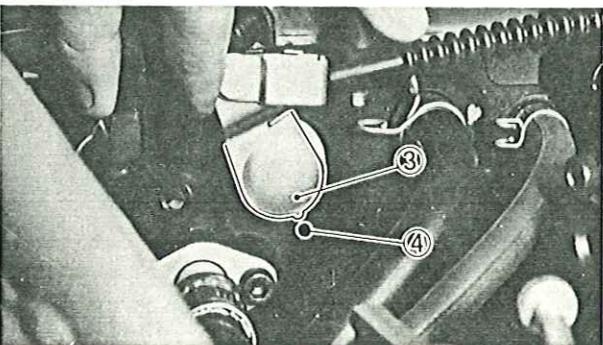
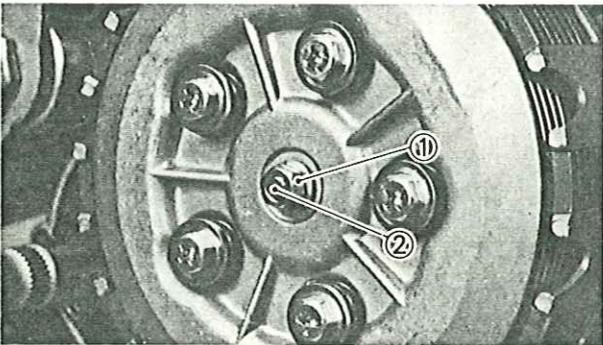
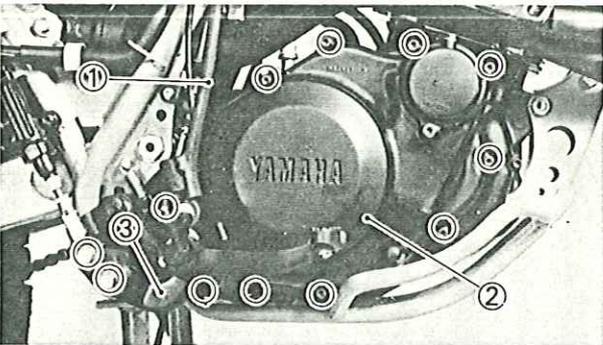
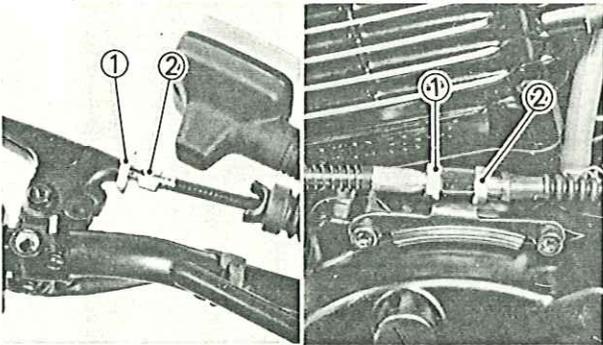
### 7. Adjust:

- Free play

With the push lever in this position, turn the adjuster ② either in or out until the push lever mark ③ and crankcase match mark ④ are aligned.

### 8. Tighten:

- Locknut



Locknut:

8 Nm (0.8 m•kg, 5.8 ft•lb)

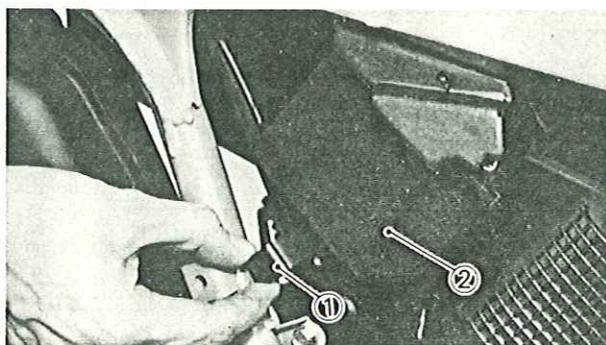
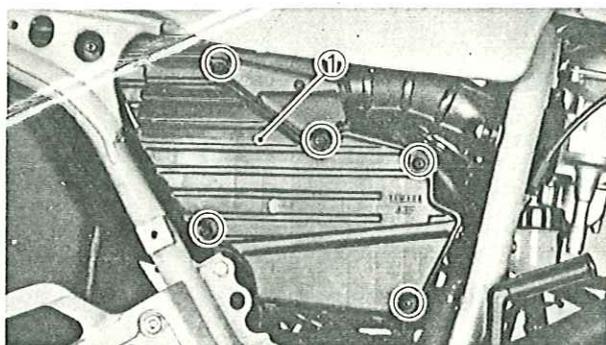


9. Install:
- Crankcase cover (Right)
  - Kick crank

	• Screw (Crankcase Cover): 10 Nm (1.0 m•kg, 7.2 ft•lb)
	• Bolt (Kick Crank): 20 Nm (2.0 m•kg, 14 ft•lb)

10. Fill:
- Oil tank
  - Crankcase
- Refer to the "ENGINE OIL REPLACEMENT" section.

11. Adjust:
- Clutch cable free play
- Refer to the "Cable Free Play Adjustment" section.



## AIR FILTER CLEANING

1. Remove:
- Side cover (Right)
  - Filter case cover ①
2. Remove:
- Set plate ①
  - Air filter element ②



**CAUTION:**

Never operate the engine with the air filter element removed. This will allow unfiltered air to enter, causing rapid wear and possible engine damage. Additionally, operation without the filter element will affect carburetor tuning with subsequent poor performance and possible engine overheating.

3. Clean:

- Air filter element

**Cleaning steps:**

- Wash the element gently, but thoroughly in solvent.

**WARNING:**

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

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

**CAUTION:**

Do not twist the element when squeezing the element.

4. Inspect:

- Element  
Damage → Replace.

5. Apply:

- Foam-air-filter oil or SAE 10W30 motor oil  
Onto the element.

# AIR FILTER CLEANING/ CARBURETOR JOINT INSPECTION



6. Squeeze out the excess oil.

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

The element should be wet but not dripping.

7. Install:

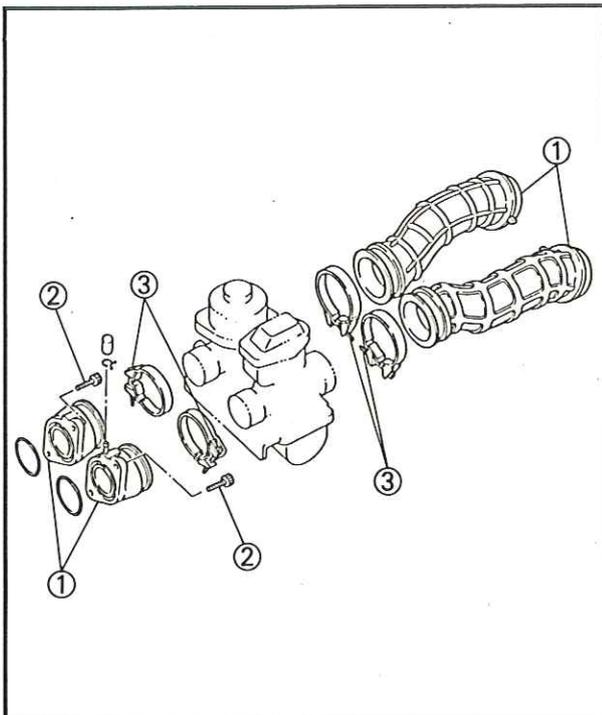
- Air filter element
- Set plate

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

When installing the element in its case, be sure its sealing surface matches the sealing surface of the case so there is no air leak.

8. Install:

- Filter case cover
- Side cover (Right)



## CARBURETOR JOINT INSPECTION

1. Remove:

- Side cover (Right)

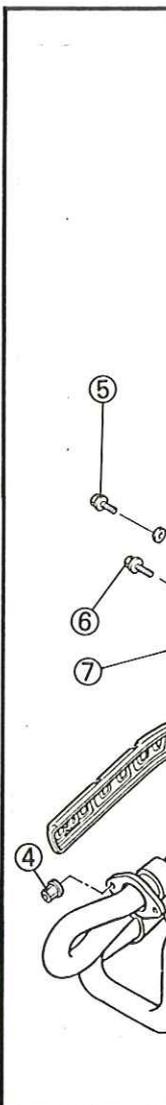
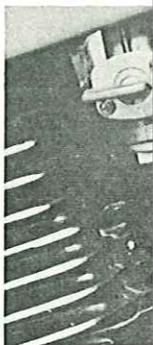
2. Inspect:

- Carburetor joint ①  
Crack/Damage → Replace.



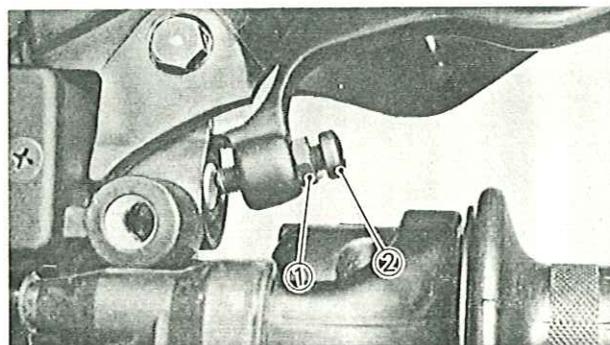
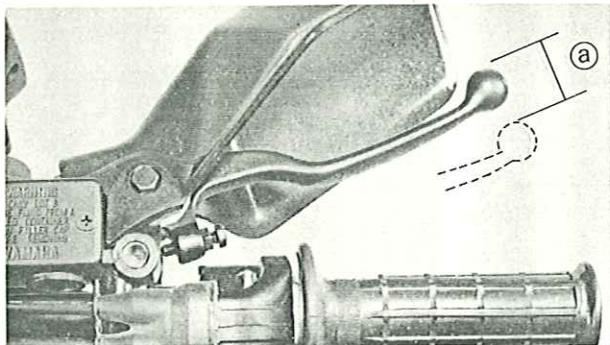
Bolt ② (Carburetor Joint):  
10 Nm (1.0 m•kg, 7.2 ft•lb)

Screw ③ (Clamp):  
2 Nm (0.2 m•kg, 1.4 ft•lb)



# FRONT BRAKE ADJUSTMENT/ REAR BRAKE ADJUSTMENT

**INSP  
ADJ**



## CHASSIS

### FRONT BRAKE ADJUSTMENT

1. Check:
  - Brake lever free play (a)
  - Out of specification → Adjust.



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

2. Adjust:
  - Brake lever free play

#### Adjustment steps:

- Loosen the locknut (1).
- Turn the adjuster (2) in or out until the specified free play is obtained.

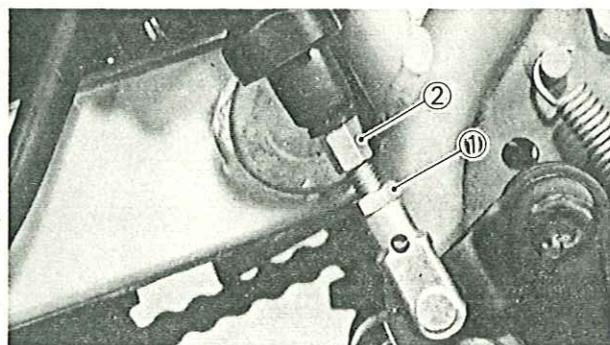
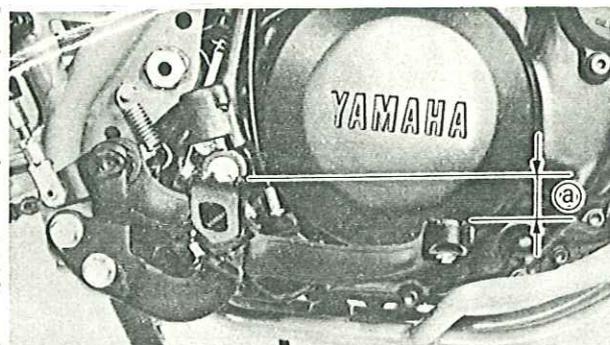
Turn in	Free play is decreased.
---------	-------------------------

Turn out	Free play is increased.
----------	-------------------------

- Tighten the locknut.

#### CAUTION:

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



### REAR BRAKE ADJUSTMENT

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



**Brake Pedal Height:**  
5 ~ 10 mm (0.2 ~ 0.4 in)  
Below Top of Footrest.

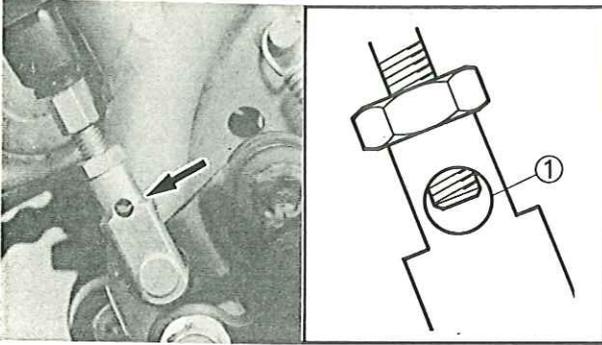
2. Adjust:
  - Brake pedal height

#### Adjustment steps:

- Loosen the locknut (1)
- Turn the adjuster (2) in or out until the specified pedal height is obtained.

# REAR BRAKE ADJUSTMENT/ BRAKE FLUID INSPECTION

**INSP**  
**ADJ**



Turn in	Pedal height is increased.
Turn out	Pedal height is decreased.

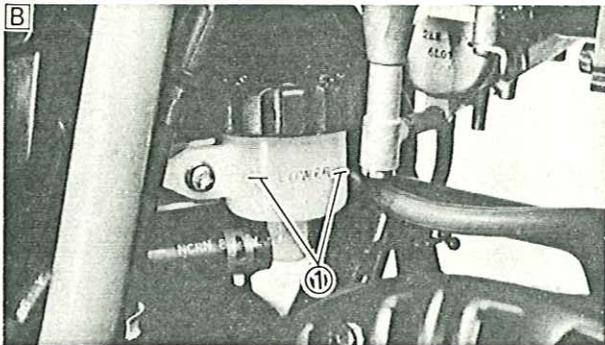
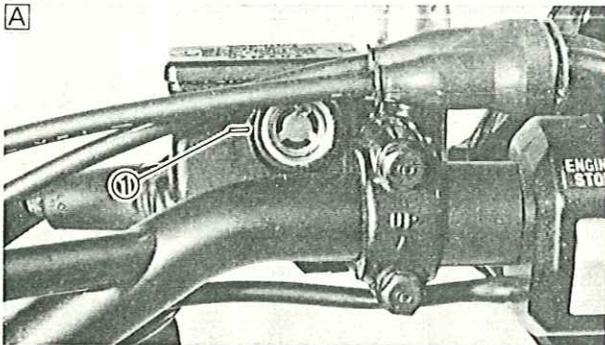
**WARNING:**

After adjusting the brake pedal height, visually check the adjuster end through the hole ① of the joint holder. The adjuster end must appear within this hole.

- Tighten the locknut.



**Locknut:**  
26 Nm (2.6 m•kg, 19 ft•lb)



## BRAKE FLUID INSPECTION

1. Place the motorcycle on a level surface.
2. Inspect:
  - Brake fluid level
  - Fluid level is under "LOWER" level line
  - ① → Replenish.



**Recommended Brake Fluid:**  
Front: DOT No. 3  
Rear: DOT No. 4

- Ⓐ For front brake
- Ⓑ For rear brake

**NOTE:**

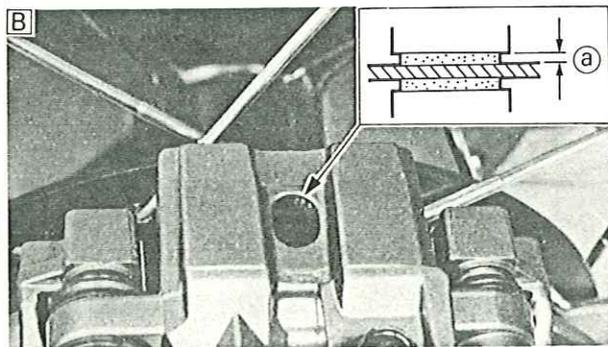
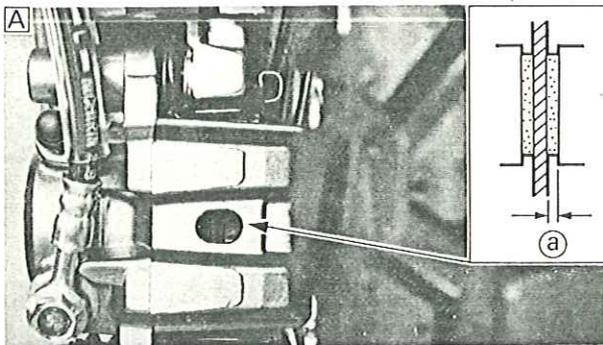
- Position the motorcycle straight up when inspecting the brake fluid level.
- When inspecting the front brake fluid level, make sure the master cylinder top is horizontal by turning the handlebars.

**CAUTION:**

Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

**WARNING:**

- Use only the designated quality brake fluid: otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.
- Refill with the same type of brake fluid; mixing fluids may result in a harmful chemical reaction and lead to poor performance.
- Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.



**BRAKE PAD INSPECTION**

1. Activate the brake lever or brake pedal.
2. Check:
  - Pad thickness (a)  
Out of specification → Replace.

	<b>Wear Limit:</b> 0.8 mm (0.031 in)
---	---

Refer to the "BRAKE PAD REPLACEMENT" section in the CHAPTER 6 for replacement.

- A** Front brake
- B** Rear brake

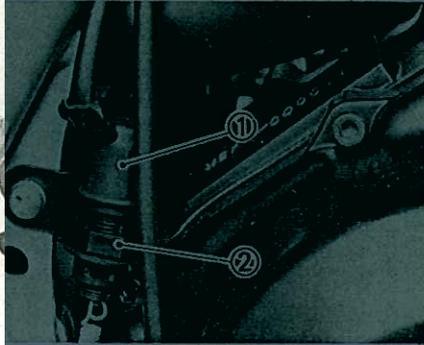
**BRAKE LIGHT SWITCH ADJUSTMENT**

**NOTE:**

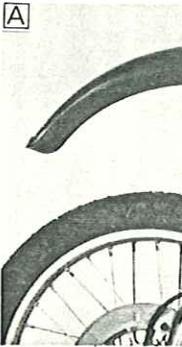
The brake light switch is operated by movement of the brake pedal.  
Proper adjustment is achieved when the brake light comes on just before the brake begins to take effect.

## BRAKE HOSE INSPECTION/ DRIVE CHAIN SLACK ADJUSTMENT

INSP  
ADJ



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



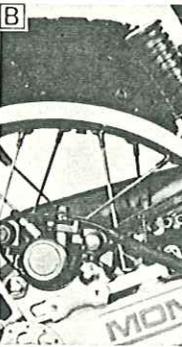
### BRAKE HOSE INSPECTION

#### 1. Inspect:

- Brake hose

Crack/Damage → Replace.

Refer to the "FRONT AND REAR BRAKE" section in the CHAPTER 6 for replacement.



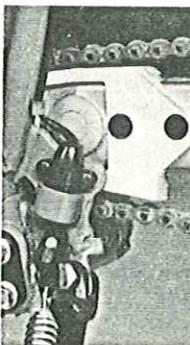
### DRIVE CHAIN SLACK ADJUSTMENT

#### NOTE:

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

#### 1. Check:

- Drive chain slack ①  
Out of specification → Adjust.



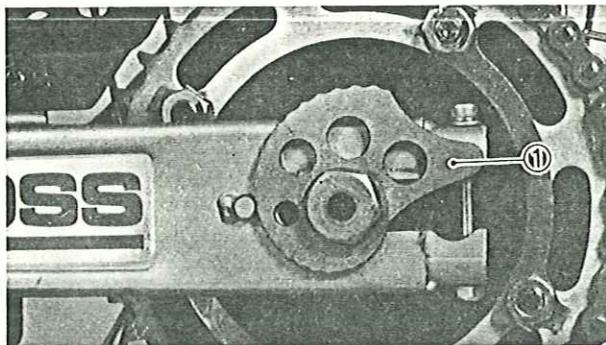
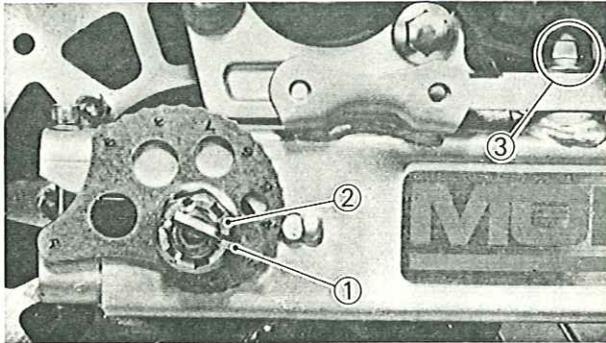
Drive Chain Slack:  
30~40 mm (1.18~1.57 in)

#### NOTE:

To check the chain slack, the motorcycle must stand vertically with its both wheels on the ground and without a rider.



2. Adjust:
- Drive chain slack



**Adjustment steps:**

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

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

- Remove the cotter pin (1) and loosen the axle nut (2).
- Loosen the bolt (3) (Caliper bracket).

- Turn the chain puller (1) clockwise or counterclockwise until the specified slack is obtained.

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

Turn each chain puller exactly the same amount to maintain correct axle alignment. (There are marks on each side of swingarm and on each chain puller; use them to check for proper alignment).

- Tighten the axle nut and bolt (Caliper bracket).



**Axle Nut:**  
90 Nm (9.0 m•kg, 65 ft•lb)  
**Bolt (Caliper Bracket):**  
45 Nm (4.5 m•kg, 32 ft•lb)

- Install the cotter pin

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

Always use a new cotter pin 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.

## STEERING HEAD ADJUSTMENT

### **WARNING:**

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

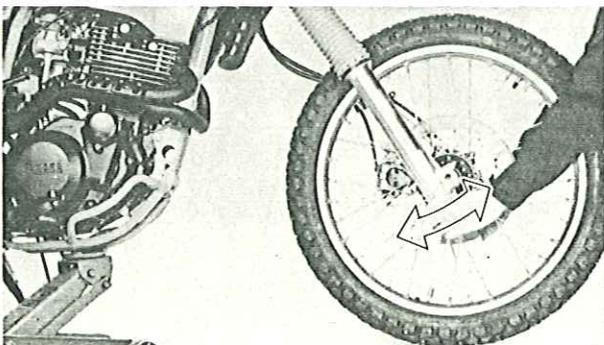
1. Elevate the front wheel by placing a suitable stand under the engine.

2. Check:

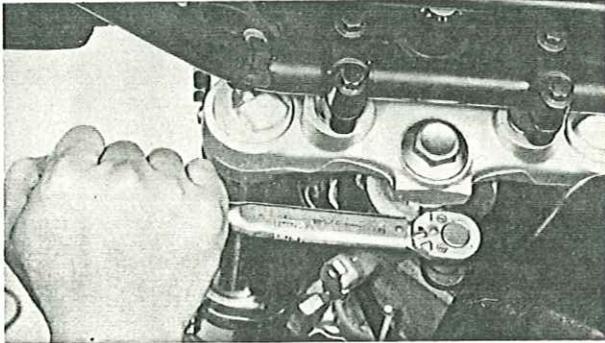
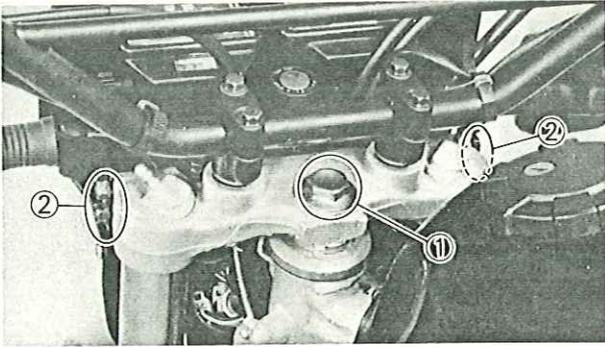
•Steering assembly bearings

Grasp the bottom of the forks and gently rock the fork assembly back and forth.

Looseness→Adjust steering head.



# STEERING HEAD ADJUSTMENT



3. Adjust:
- Steering head

**Adjustment steps:**

- Loosen the bolt ① (Steering shaft) and bolt ② (Handle crown).
- Tighten the ring nut using the Ring Nut Wrench.



**Ring Nut Wrench:**  
90890-01403

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

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

\_\_\_\_\_



**Ring Nut (Initial Tightening):**  
38 Nm (3.8 m•kg, 27 ft•lb)

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

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

Avoid over-tightening.

\_\_\_\_\_



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

- Tighten the bolt (Steering shaft) and bolt (Handle crown).



**Bolt (Steering Shaft):**  
95 Nm (9.5 m•kg, 68 ft•lb)

**Bolt (Handle Crown):**  
23 Nm (2.3 m•kg, 17 ft•lb)

## FRONT FORK OIL REPLACEMENT

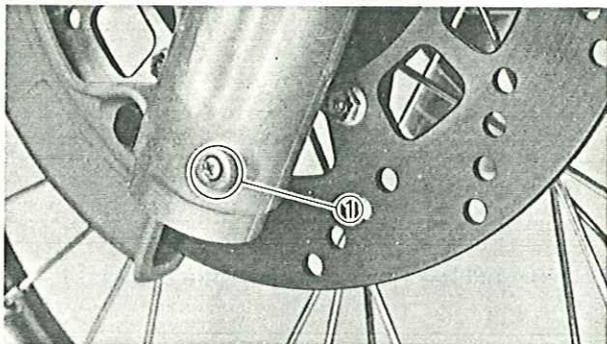
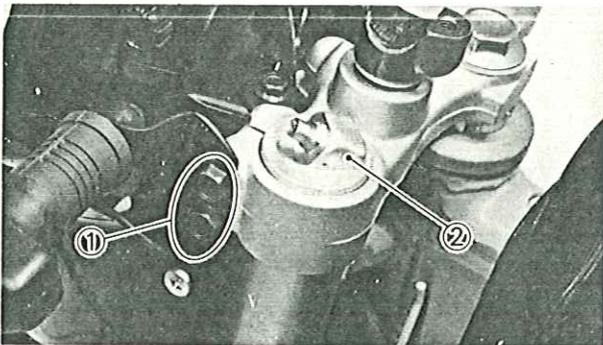
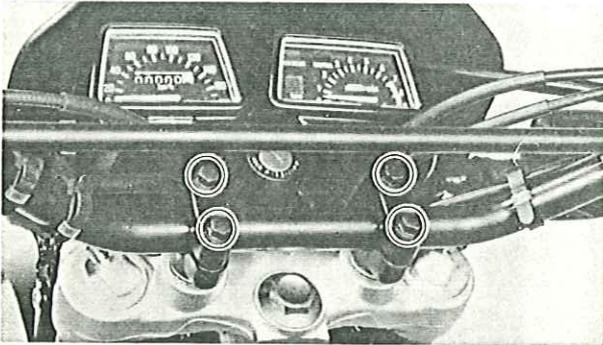
INSP  
ADJ



### FRONT FORK OIL REPLACEMENT

#### WARNING:

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



1. Elevate the front wheel by placing a suitable stand under the engine.
2. Remove:
  - Handlebar
3. Keep the valve open by pressing it for several seconds so that the air can be let out of the inner tube.
4. Loosen:
  - Bolt ① (Handle crown)
5. Remove:
  - Cap bolt ②
6. Place an open container under the drain hole.
7. Remove:
  - Drain screw ①

#### WARNING:

Do not let oil contact the disc brake components. If any oil should contact the brake components, it must be removed before the motorcycle is operated. Oil will cause diminished braking capacity and will damage the rubber components of the brake assembly.

# FRONT FORK OIL REPLACEMENT



8. After most of the oil has been drained, slowly pump the forks up and down to remove any remaining oil.

9. Inspect:

- O-ring (Cap bolt)
- Gasket (Drain screw)

Damage → Replace.

10. Install:

- Drain screw
- Gasket (Drain screw)

11. Fill:

- Fork oil

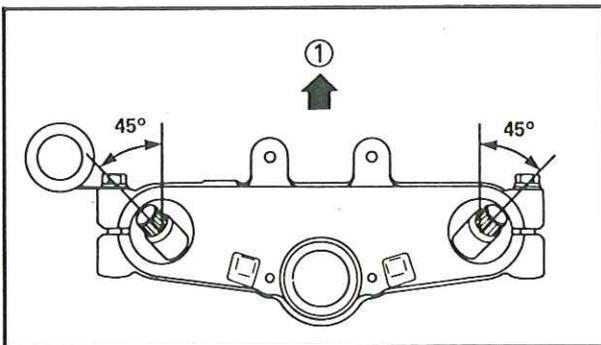
	<b>Front Fork Oil Capacity (Each Fork):</b> <b>537 cm<sup>3</sup> (18.9 Imp oz, 18.2 US oz)</b> <b>Recommended Oil:</b> <b>Fork Oil 10W or Equivalent</b>
---	--

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

13. Install:

- Cap bolt

	<b>Cap Bolt:</b> <b>23 Nm (2.3 m•kg, 17 ft•lb)</b>
---	---



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

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

- Level the top of the inner fork tube with the top of the steering crown.
- Face the air valve as shown.

① Forward

FRONT FORK OIL  
FRONT FORK

REPLACEMENT/  
ADJUSTMENT

INSP  
ADJ



14. Tighten:

- Bolt (Handle crown)



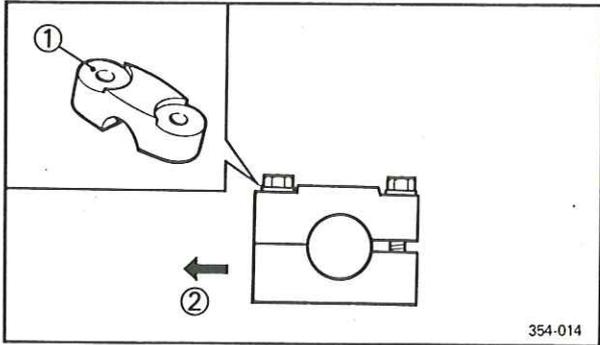
Bolt (Handle Crown):  
23 Nm (2.3 m•kg, 17 ft•lb)

15. Install:

- Handlebar



Bolt (Handlebar):  
20 Nm (2.0 m•kg, 14 ft•lb)



NOTE:

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

② Forward

CAUTION:

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

6. Adjust:

- Air pressure

Refer to the "FRONT FORK ADJUSTMENT" section.

FRONT FORK ADJUSTMENT

NOTE:

The air pressure of the front forks can be adjusted to suit rider's preference, weight, and the course conditions.

WARNING:

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

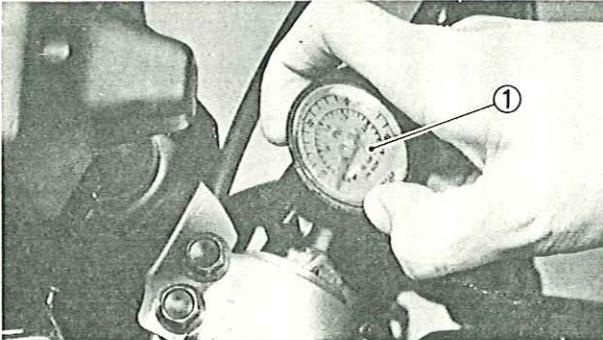
# FRONT FORK ADJUSTMENT



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

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

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



2. Check:
  - Air pressure
  - Out of specification → Adjust.
  - Use air check gauge ①.

**Standard Air Pressure:**  
 Zero kPa (Zero kg/cm<sup>2</sup>, Zero psi)  
**Maximum Air Pressure:**  
 100 kPa (1.0 kg/cm<sup>2</sup>, 14 psi)

3. Adjust:
  - Air pressure

**Adjustment steps:**

- Remove the valve cap.

Use an air pump or pressurized air supply.	Increase the air pressure.
Release the air by pushing the valve.	Decrease the air pressure.

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

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

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

The difference between both the left and right tubes should be 10 kPa (0.1 kg/cm<sup>2</sup>, 1.4 psi) or less.

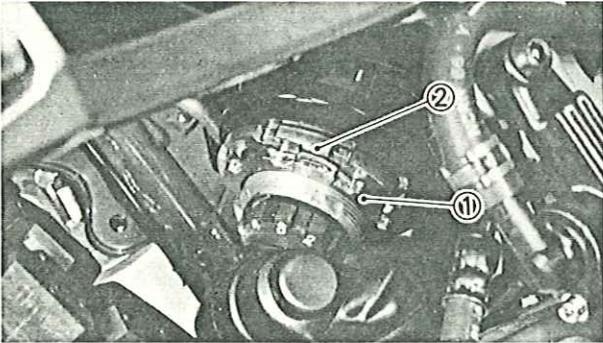
- Install the valve cap securely.

# REAR SHOCK ABSORBER ADJUSTMENT



## REAR SHOCK ABSORBER ADJUSTMENT NOTE:

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



1. Adjust:
  - Spring preload
  - Damping

### Adjustment steps:

Spring preload

- Loosen the locknut ①.
- Adjust the spring preload with the adjuster ② (spring preload).

Turn the adjuster clockwise.	Increase the spring preload.
Turn the adjuster counterclockwise.	Decreased the spring preload.

	<b>Standard Length:</b> 239 mm (9.4 in)
	<b>Minimum Length:</b> 228.5 mm (9.0 in)
	<b>Maximum Length:</b> 248.5 mm (9.8 in)

### NOTE:

- When adjusting, use the special wrench which is included in the owner's tool kit.
- The length of the spring (installed) changes 1 mm (0.04 in) per turn of the adjuster.

### CAUTION:

Never attempt to turn the adjuster beyond the maximum or minimum setting.

- Tighten the locknut.

	<b>Locknut:</b>
	70 Nm (7.0 m•kg, 50 ft•lb)

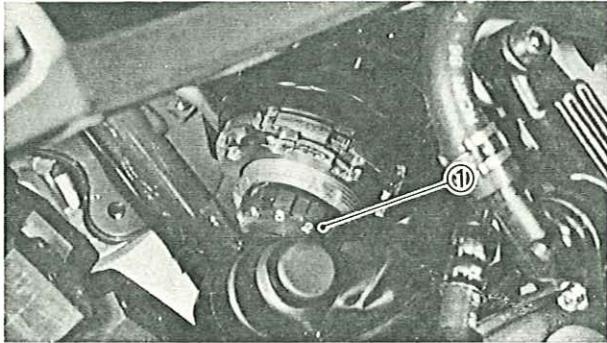


**REAR SHOCK ABSORBER ADJUSTMENT/  
RECOMMENDED COMBINATIONS OF THE FRONT FORK AND  
THE REAR SHOCK ABSORBER SETTINGS**



**CAUTION:**

Always tighten the locknut against the spring adjuster and torque the locknut to specification.



**Adjustment steps:**

Damping

- Adjust the damping with the damping adjuster ①.

	Hard		S.T.D.	Soft	
Adjuster position	5	4	3	2	1

**CAUTION:**

Never attempt to turn the adjuster beyond the maximum or minimum setting.

**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	Rear shock absorber		Loading condition	
	Air pressure	Spring length	Damping adjuster	Solo rider	With passenger
1.	0~40 kPa (0~0.4 kg/cm <sup>2</sup> , 0~5.7 psi)	239 mm (9.4 in)	1~3	○	
2.	0~40 kPa (0~0.4 kg/cm <sup>2</sup> , 0~5.7 psi)	234 mm (9.2 in)	4~5		○

## TIRE INSPECTION

### WARNING:

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

1. Check:
  - Tire pressure
  - Out of specification → Adjust.

Basic weight: With oil and full fuel tank	153 kg (337 lb)	
Maximum load*	202 kg (445 lb)	
Cold tire pressure	Front	Rear
Up to 90 kg (198 lb) load*	150 kPa (1.5 kg/cm <sup>2</sup> , 21 psi)	150 kPa (1.5 kg/cm <sup>2</sup> , 21 psi)
90 kg (198 lb) ~ Maximum load*	150 kPa (1.5 kg/cm <sup>2</sup> , 21 psi)	180 kPa (1.8 kg/cm <sup>2</sup> , 26 psi)
High speed riding	150 kPa (1.5 kg/cm <sup>2</sup> , 21 psi)	150 kPa (1.5 kg/cm <sup>2</sup> , 21 psi)
Off-road riding	100 kPa (1.0 kg/cm <sup>2</sup> , 14 psi)	100 kPa (1.0 kg/cm <sup>2</sup> , 14 psi)

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

2. Adjust:
- Air pressure

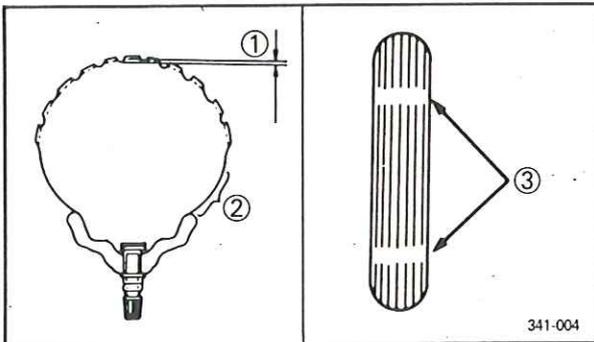
**Adjustment steps:**

- Remove the valve cap.

Use an air pump or pressurized air supply.	Increase pressure
--	-------------------

Release the air by pushing the valve.	Decrease pressure
---------------------------------------	-------------------

- Install the valve cap securely.



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

	<b>Minimum Tire Tread</b> (Front and Rear) 1.0 mm (0.04 in)
---	---

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

**WARNING:**

- It is dangerous to ride with a tire that has a tread depth of less than 1.0 mm (0.04 in). When a tire tread begins to wear, replace the tire immediately.
- Patching a punctured tube is not recommended. If it is absolutely necessary, use great care and replace the tube as soon as possible with a good replacement.

# WHEEL INSPECTION/ CABLE INSPECTION AND LUBRICATION



## WHEEL INSPECTION

1. Inspect:

- Wheels

Damage/Bends→Replace.

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

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

\_\_\_\_\_

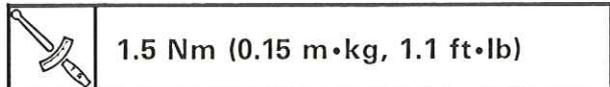
**WARNING:** \_\_\_\_\_

Never attempt even small repairs to the wheel.

\_\_\_\_\_

2. Tighten:

- Valve stem locknut



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

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

\_\_\_\_\_

## CABLE INSPECTION AND LUBRICATION

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

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

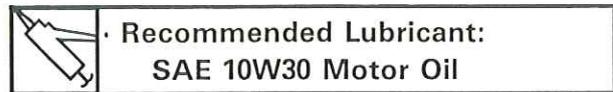
\_\_\_\_\_

1. Inspect:

- Cable sheath

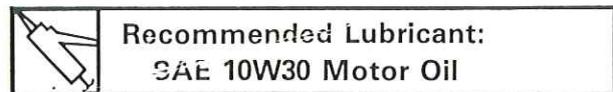
Damage→Replace.

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

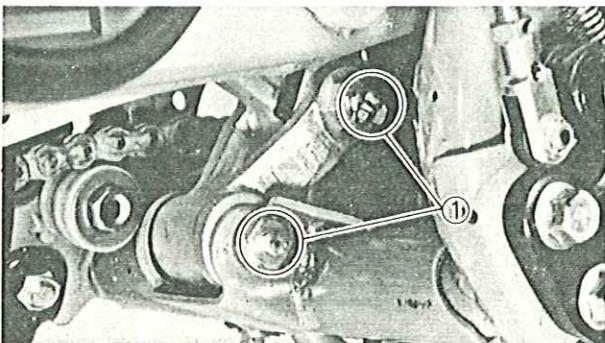
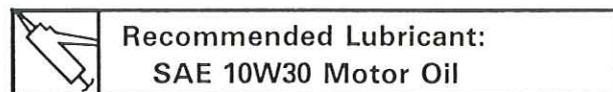


**NOTE:** \_\_\_\_\_  
Hold cable end high and apply several drops of lubricant to cable.  
\_\_\_\_\_

**LEVER AND PEDAL LUBRICATION**  
Lubricate pivoting parts of each lever and pedal.



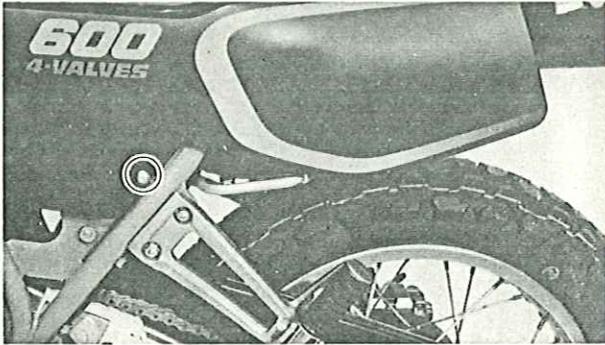
**SIDESTAND LUBRICATION**  
Lubricate the sidestand at pivot points.



**SWINGARM AND RELAY ARM LUBRICATION**  
Lubricate the swingarm and relay arms at their pivoting points.

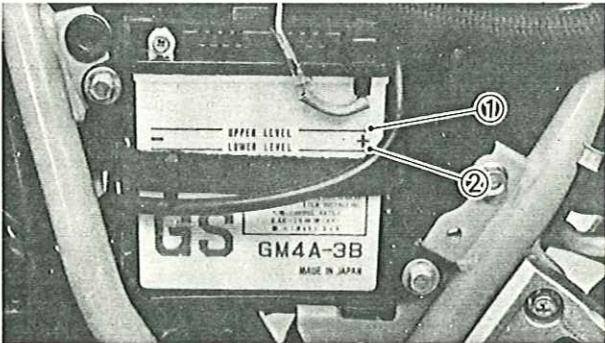


① Grease nipple



## ELECTRICAL BATTERY INSPECTION

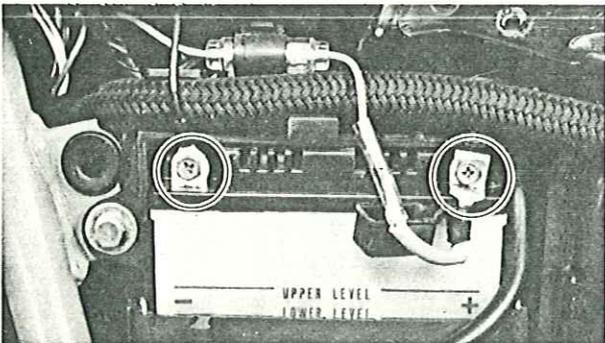
1. Remove:
  - Side cover (Left)



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

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

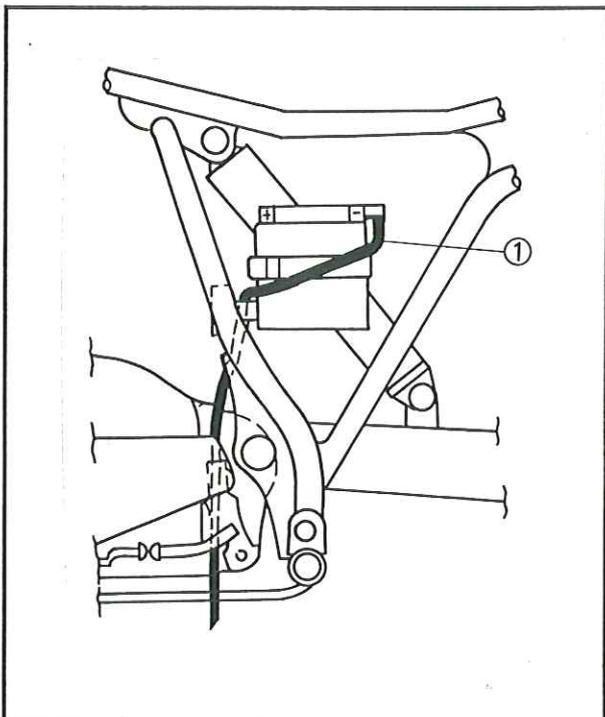
Refill with distilled water only; tap water contains minerals harmful to a battery.



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

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

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

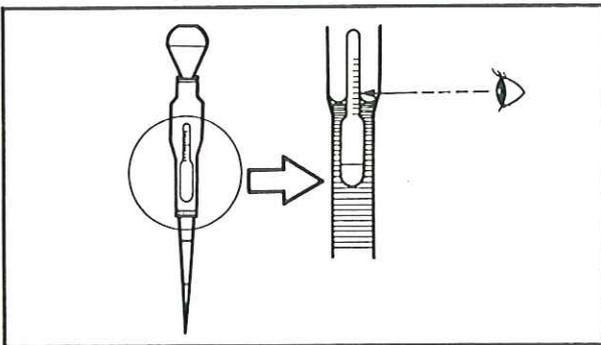


4. Connect:
  - Breather pipe ①
  - Be sure the hose is properly attached and routed.

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

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

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



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

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

**Replace the battery if:**

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

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

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



**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 followed with milk of magnesia, beaten egg, or vegetable oil. Get immediate medical attention.

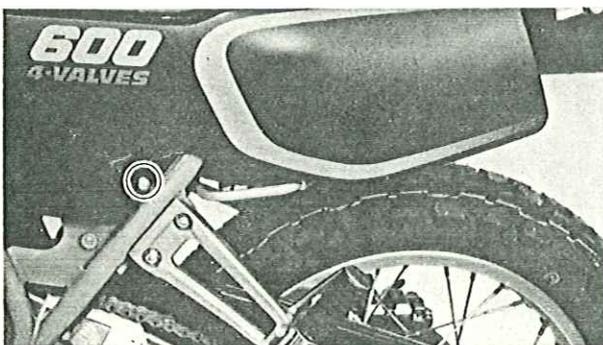
Batteries also generate explosive hydrogen gas, therefore you should always follow these preventive measures:

- Charge batteries in a well-ventilated area.

- Keep batteries away from fire, sparks, or open flames (e.g., welding equipment, lighted cigarettes, etc.)

- DO NOT SMOKE When charging or handling batteries.

KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.

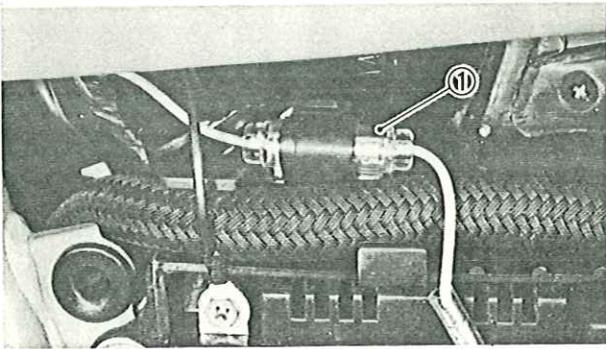


**FUSE INSPECTION**

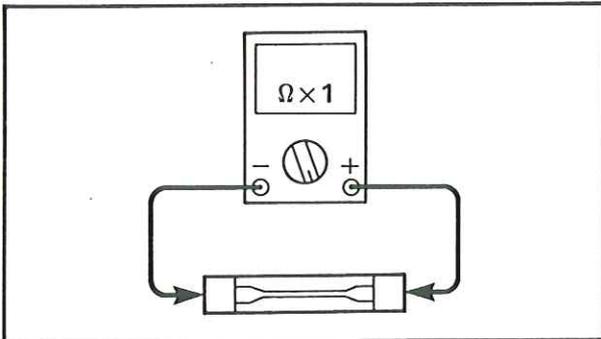
1. Remove:

- Side cover (Left)





2. Remove:
  - Fuse ①



3. Inspect:
  - Fuse

**Inspection steps:**

- Connect the Pocket Tester to the fuse and check it for continuity.

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

Set the tester selector to "Ω x 1" position.

\_\_\_\_\_



**Pocket Tester:**  
90890-03112

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

4. Replace:
  - Blown fuse

**Blown fuse replacement steps:**

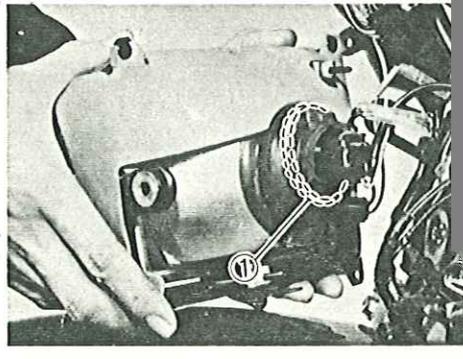
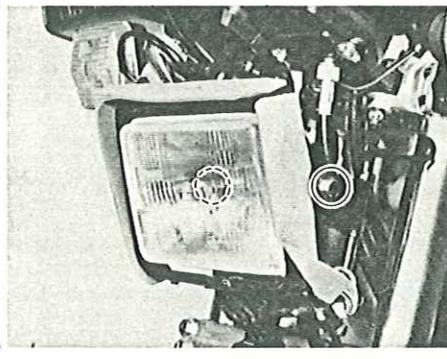
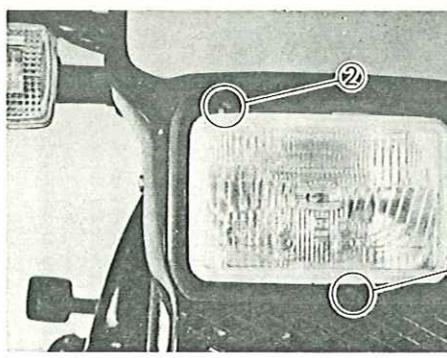
- Turn off ignition and the circuit.
- Install a new fuse of proper amperage.
- Turn on switches to verify operation of electrical device.
- If fuse blows immediately again, check circuit in question.

**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.

\_\_\_\_\_

HEADLI  
HEADL



**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.

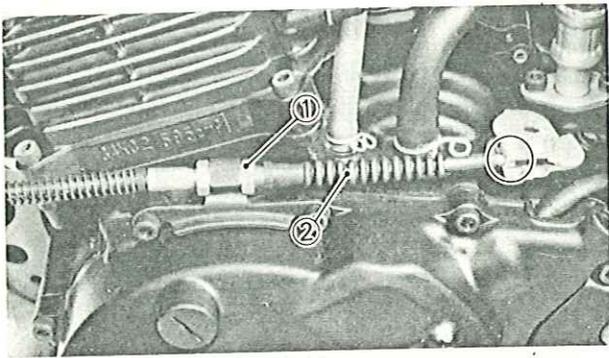
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## 5. Install:

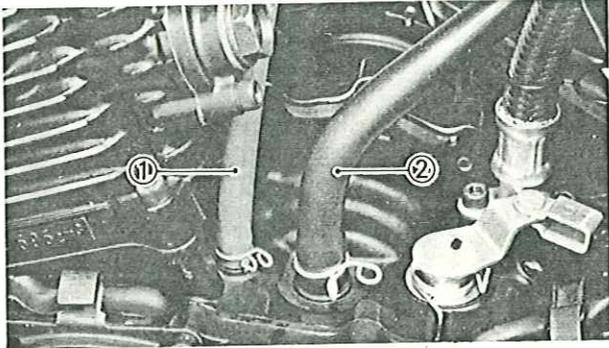
- Headlight lens unit
- Cowling (Headlight)



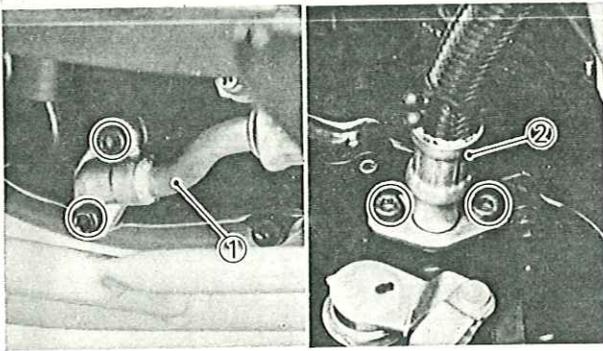
## ENGINE RE



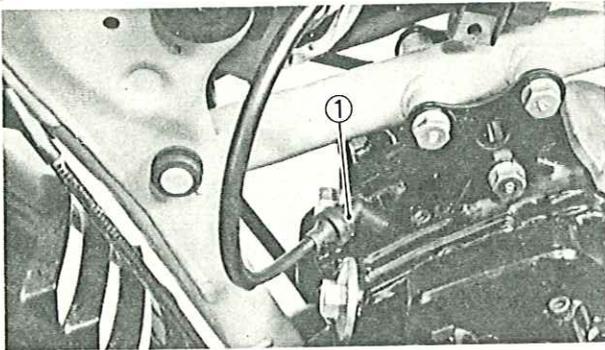
2. Loosen:
  - Cable a
3. Remove:
  - Clutch



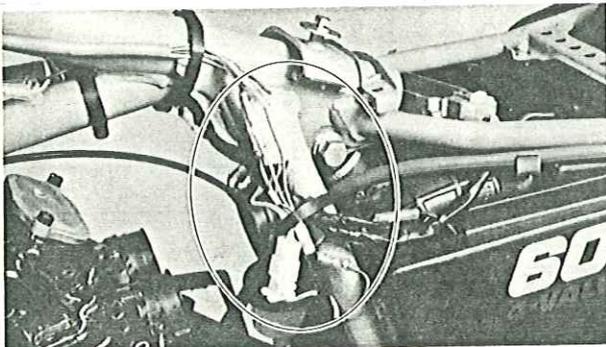
- ### HOSE AND
1. Remove:
    - Breath
    - Breath



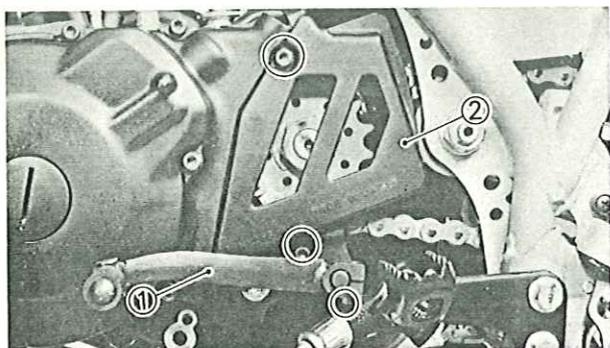
2. Remove:
  - Oil hos
  - Oil hos



3. Remove:
  - Spark



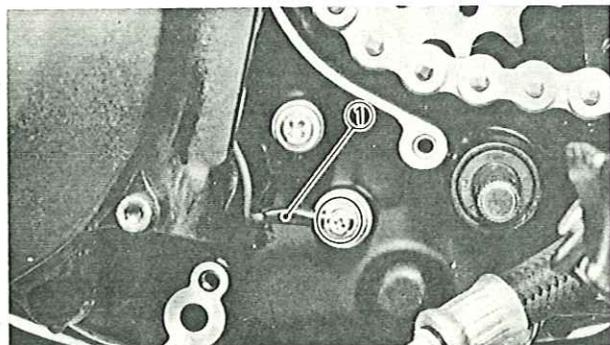
4. Discon:
  - Magn



### DRIVE CHAIN

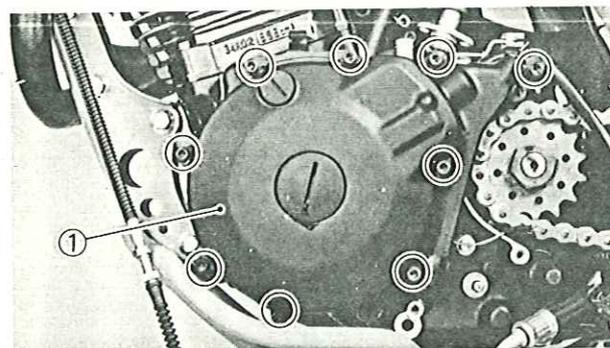
1. Remove:

- Change pedal ①
- Cover ② (Drive sprocket)



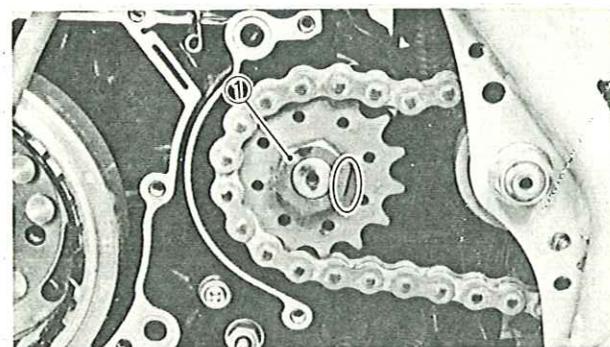
2. Remove:

- Neutral switch lead ①



3. Remove:

- Crankcase cover ① (Left)

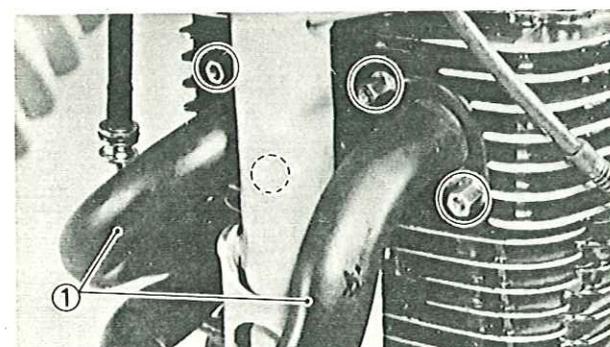


4. Remove:

- Drive sprocket ①

### NOTE:

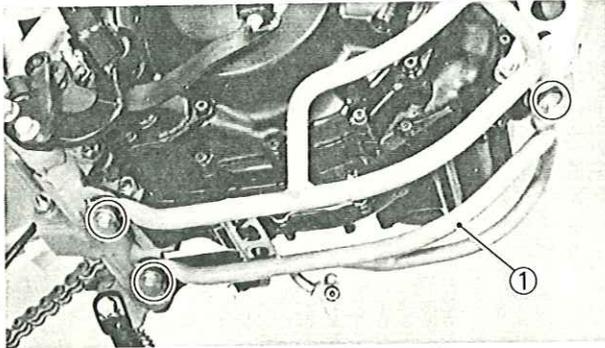
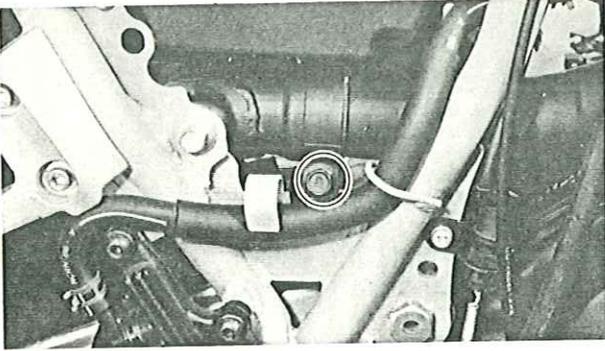
Before removing the nut (Drive sprocket),  
straighten the lock washer tab.



### EXHAUST PIPE

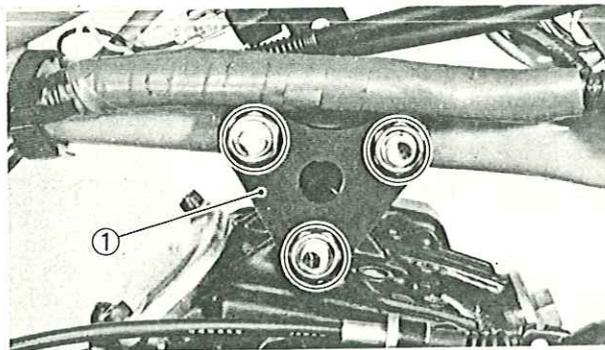
1. Remove:

- Exhaust pipe ①



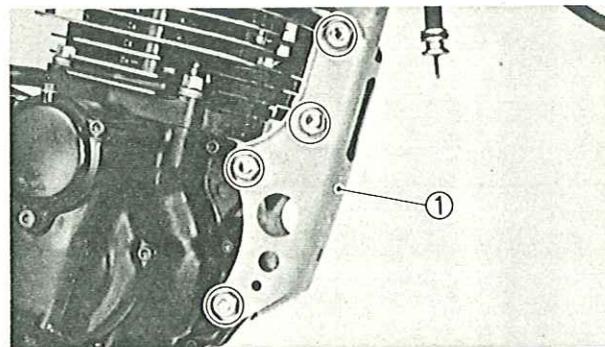
## ENGINE PROTECTOR

1. Remove:
  - Engine protector ①

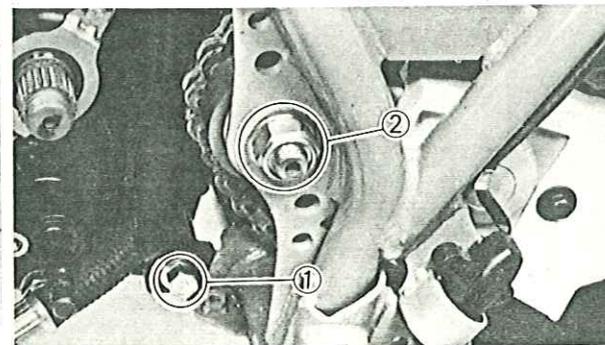


## ENGINE REMOVAL

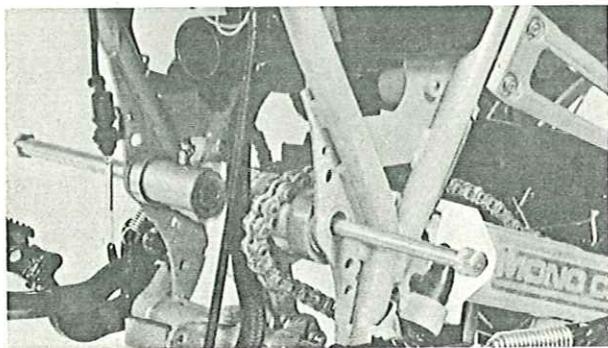
1. Place a suitable stand under the engine.
2. Remove:
  - Engine stay ① (Upper)



3. Remove:
  - Engine stay ① (Front)



4. Remove:
  - Bolt ①
  - Pivot shaft ②
  - Engine assembly



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

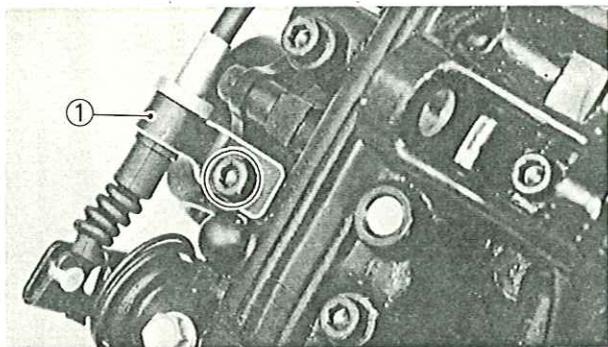
The engine and swingarm are installed using the same pivot shaft. Therefore, take care so that the pivot shaft is pulled, not entirely out, but for enough to set the engine free.

## ENGINE DISASSEMBLY CYLINDER HEAD, CYLINDER, CAMSHAFT AND PISTON

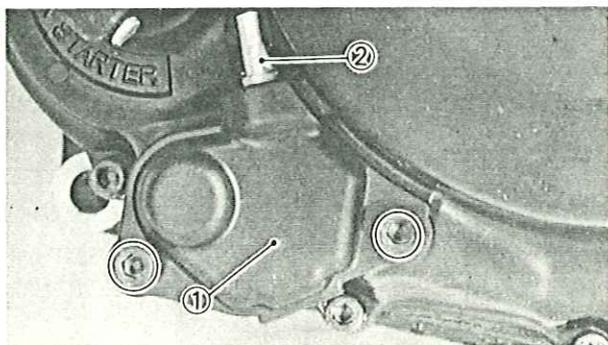
**NOTE:** \_\_\_\_\_

With the engine mounted, the cylinder head, cylinder, camshaft and piston can be maintained by removing the following parts.

- Seat
- Fuel tank
- Exhaust pipe

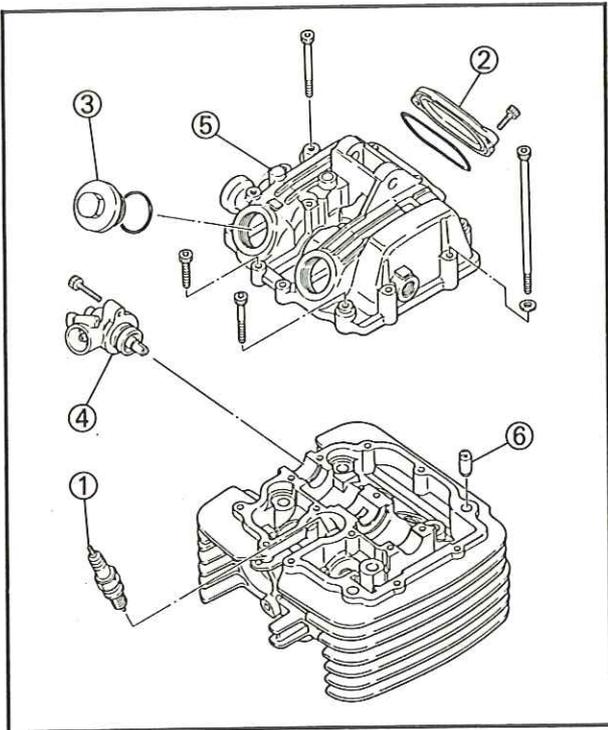


1. Remove:
  - Cable holder ① (Decompression cable)



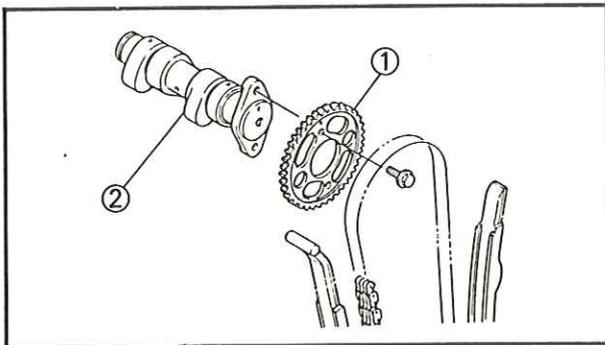
2. Remove:
  - Cover ①
  - Decompression cable ②





### 3. Remove:

- Spark plug ①
- Tappet cover ② (Intake)
- Tappet cover ③ (Exhaust)
- Tachometer gear unit ④
- Cylinder head cover ⑤
- Dowel pin ⑥

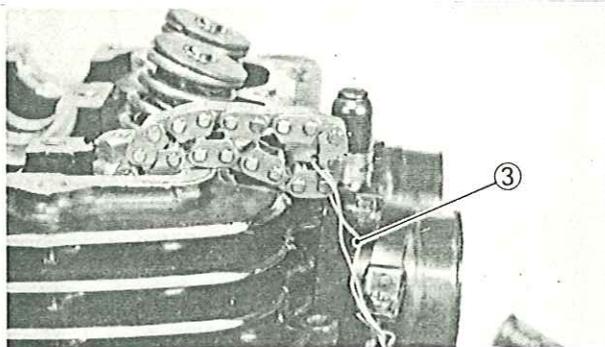


### 4. Remove:

- Cam sprocket ①
- Camshaft ②

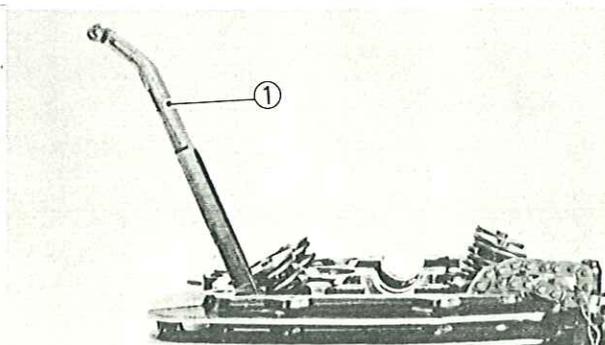
### NOTE:

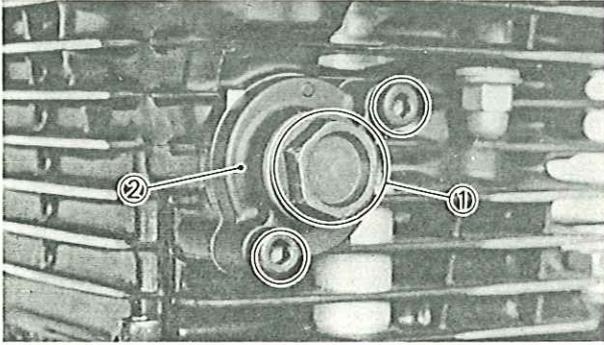
Fasten safety wire ③ to the cam chain to prevent it from falling into the crankcase.



### 5. Remove:

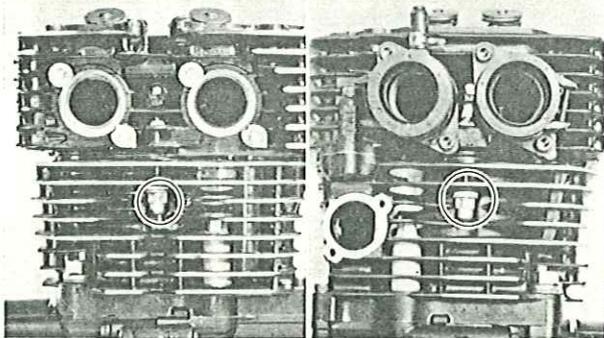
- Chain guide ①



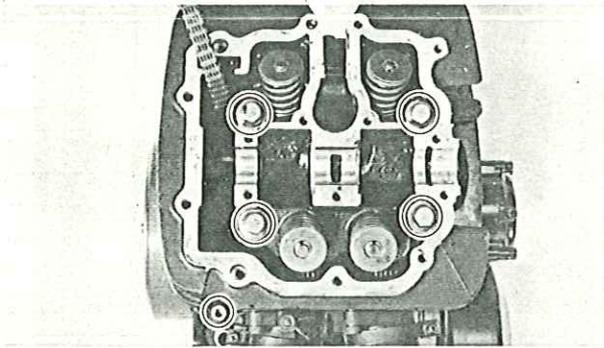


6. Loosen:  
 • Bolt ① (Chain tensioner)

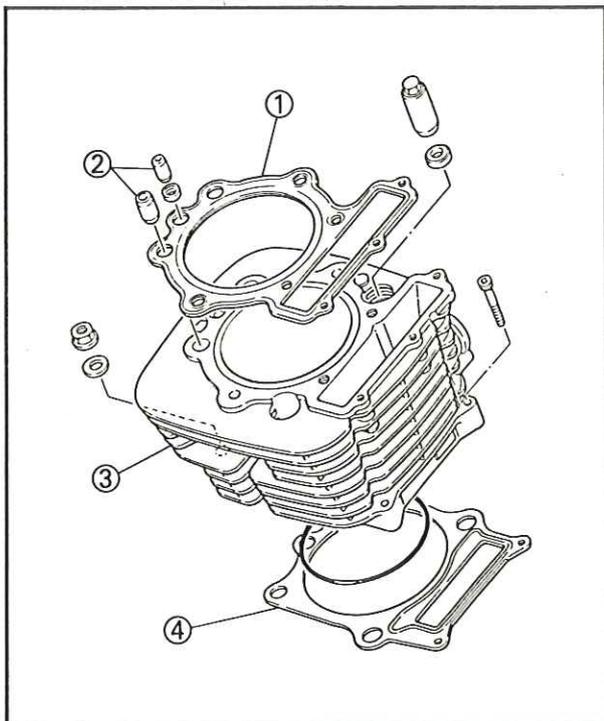
7. Remove:  
 • Chain tensioner ②



8. Remove:  
 • Cylinder head

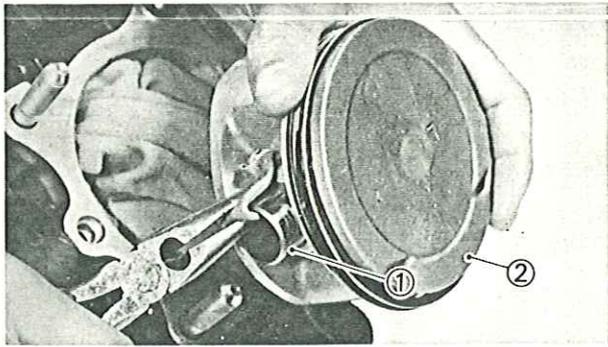
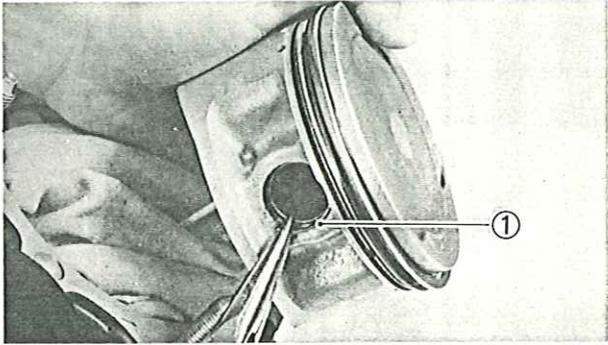
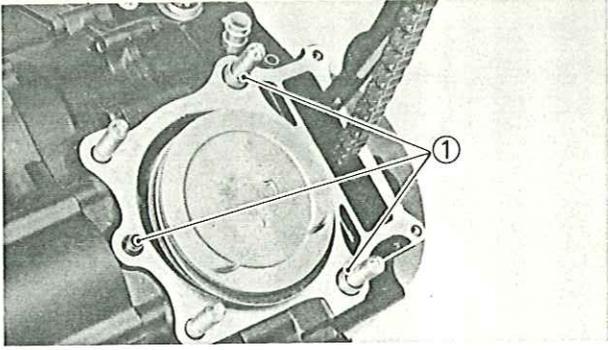


**NOTE:** \_\_\_\_\_  
 Loosen each bolt 1/4 turn, and remove them after all bolts are loosened.  
 \_\_\_\_\_



9. Remove:  
 • Gasket ① (Cylinder head)  
 • Dowel pin ②  
 • Cylinder ③  
 • Gasket ④ (Cylinder)

# ENGINE



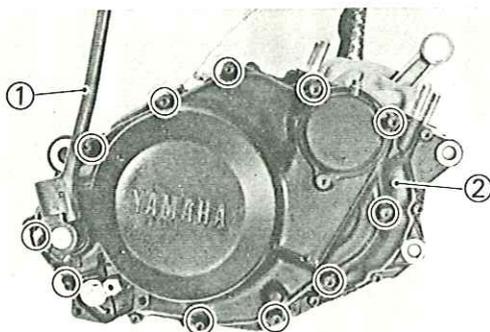


### CLUTCH, PRIMARY DRIVE GEAR AND BALANCER GEAR

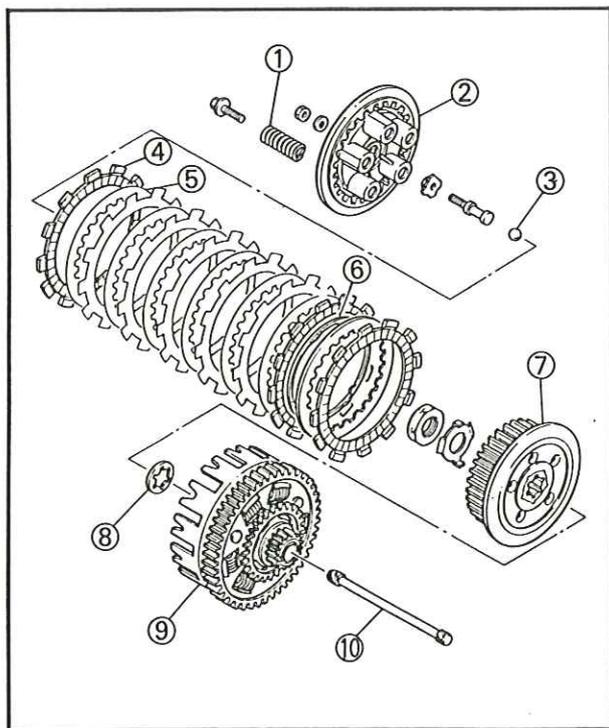
#### NOTE:

With the engine mounted, the clutch, primary drive gear and balancer gear can be maintained by removing the following parts.

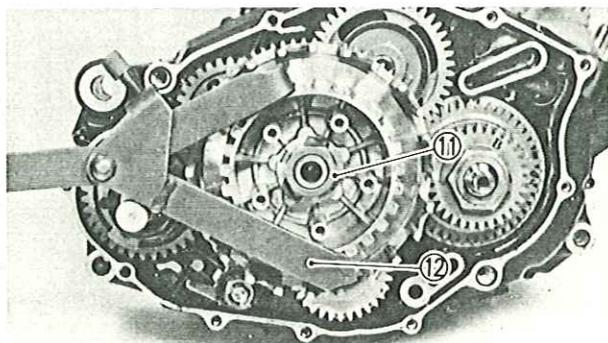
- Brake pedal
- Footrest (Right)



1. Remove:
  - Kick crank ①
  - Crankcase cover ② (Right)



2. Remove:
  - Clutch spring ①
  - Pressure plate ②
  - Ball ③
  - Friction plate ④
  - Clutch plate ⑤
  - Wave plate ⑥
  - Clutch boss ⑦
  - Thrust washer ⑧
  - Clutch housing ⑨
  - Push rod ⑩

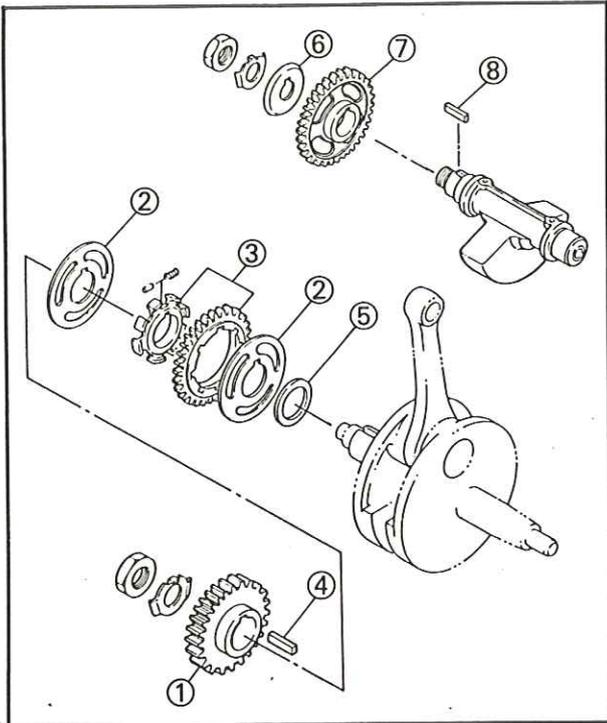


#### NOTE:

- Before loosening the nut ⑪ (Clutch boss), straighten the lock washer tab.
- Hold the clutch boss to loosen the nut (Clutch boss) by the Universal Clutch Holder ⑫.

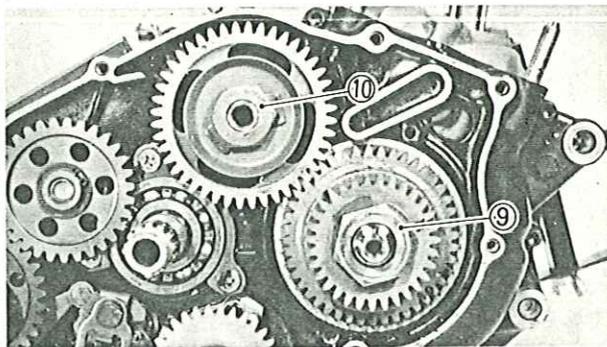


**Universal Clutch Holder:**  
P/N. 90890-04086



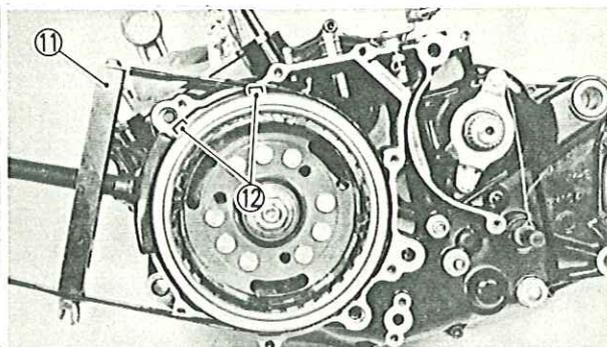
3. Remove:

- Primary drive gear ①
- Plate ②
- Balancer drive gear ③
- Key ④
- Plate washer ⑤
- Plate ⑥
- Balancer gear ⑦
- Key ⑧



**NOTE:**

Before loosening the nut ⑨ (Primary drive gear) and nut ⑩ (Balancer gear), straighten the lock washer tab.



**NOTE:**

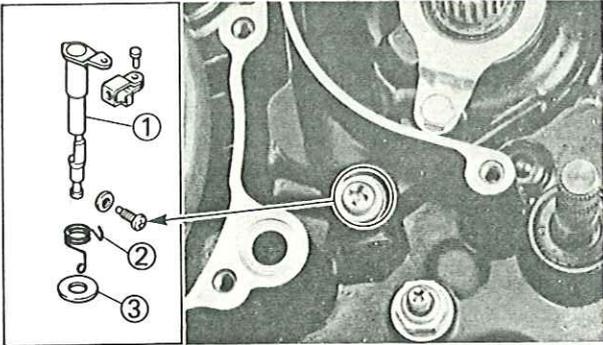
Hold the rotor (C.D.I. magneto) to loosen the nut ⑨ and ⑩ by the Rotor Holder ⑪.



**Rotor Holder:**  
P/N. 90890-01701

**CAUTION:**

Do not allow the Rotor Holder to touch the projections ⑫ on the rotor.

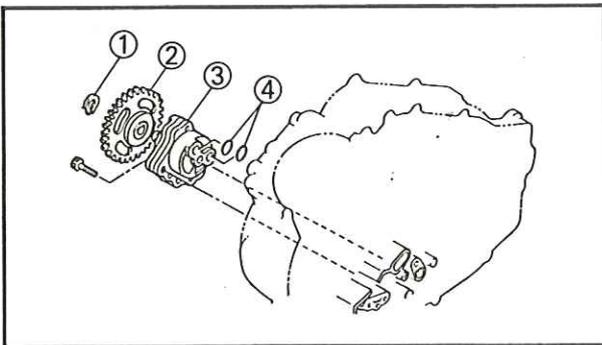


4. Remove:
- Push lever ①
  - Spring ②
  - Plain washer ③

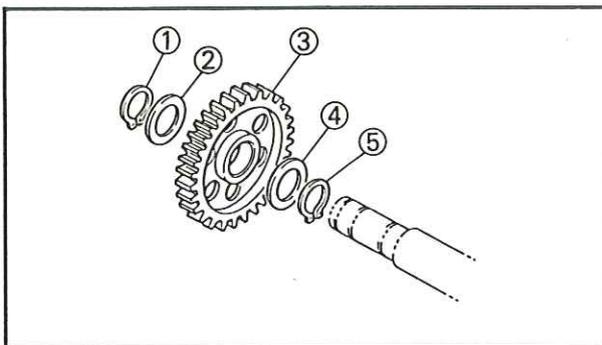
## OIL PUMP, KICK AXLE AND SHIFT LEVER NOTE: \_\_\_\_\_

With the engine mounted, the oil pump, kick axle and shift lever can be maintained by removing the following parts:

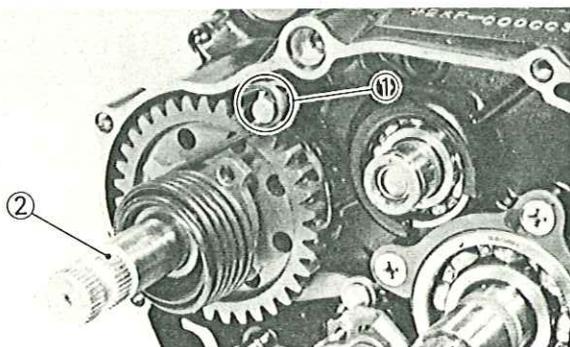
- Brake pedal
- Footrest (Right)
- Crankcase cover (Right)
- Clutch



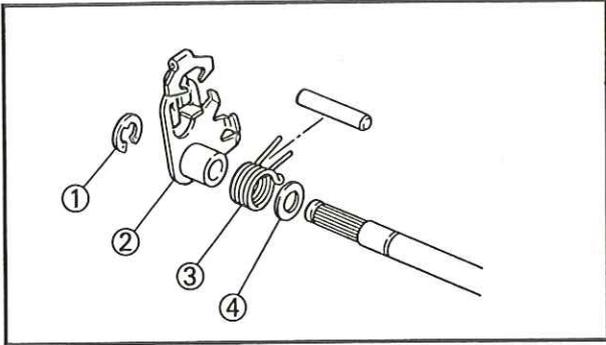
1. Remove:
- Circlip ①
  - Oil pump gear ②
  - Oil pump ③
  - O-ring ④



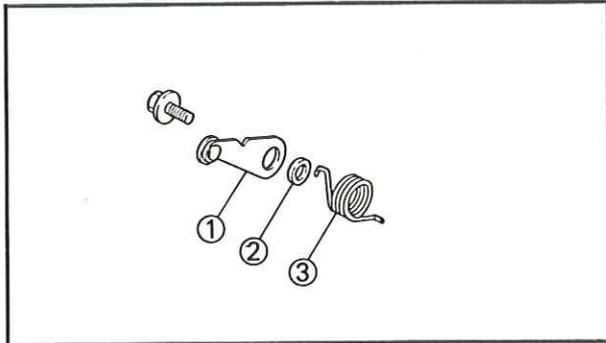
2. Remove:
- Circlip ①
  - Plain washer ②
  - Kick idle gear ③
  - Plain washer ④
  - Circlip ⑤



3. Unhook:
- Kick spring ①
4. Remove:
- Kick axle ②
  - Plain washer



5. Remove:
- Circlip ①
  - Shift lever ②
  - Spring ③
  - Plain washer ④



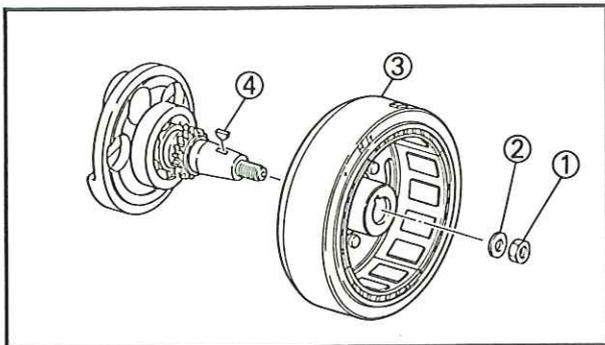
6. Remove:
- Stopper lever ①
  - Collar ②
  - Spring ③

**C.D.I. MAGNETO AND CAM CHAIN**

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

With the engine mounted, the C.D.I. magneto can be maintained by removing the following parts.

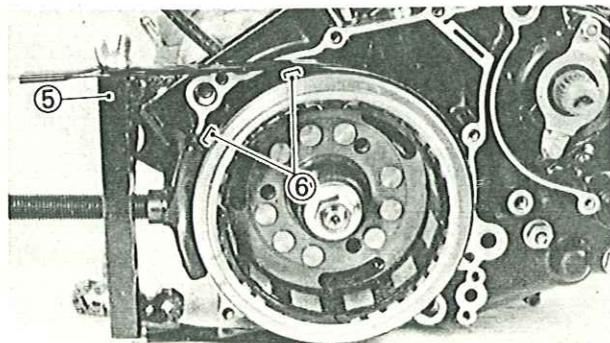
- Seat
- Crankcase cover (Left)



1. Remove:
- Nut ①
  - Washer ②
  - Rotor ③
  - Key ④

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

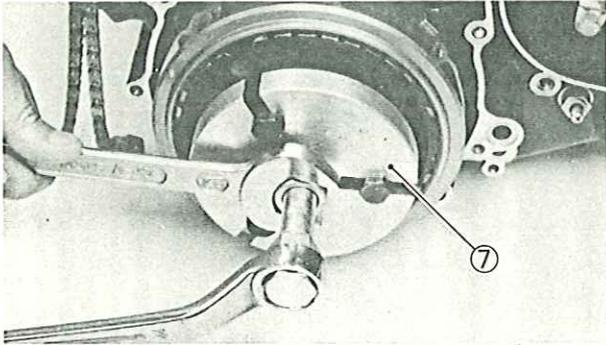
Hold the rotor to loosen the nut (Rotor) by the Rotor Holder ⑤.



	<p><b>Rotor Holder:</b> P/N. 90890-01701</p>
--	--

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

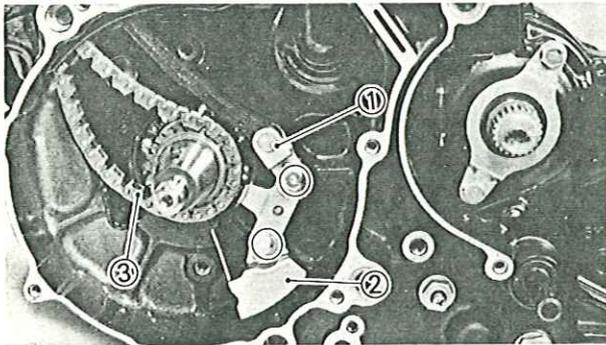
Do not allow the special tool to touch the projections ⑥ on the rotor.



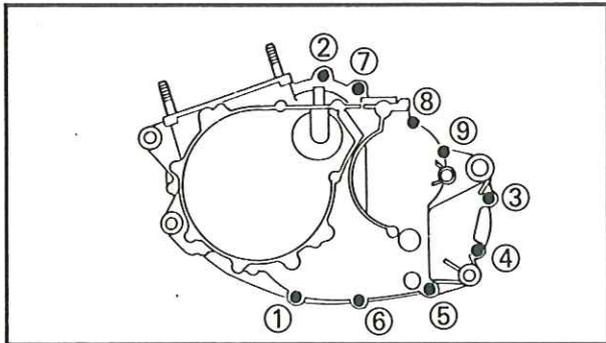
**NOTE:** \_\_\_\_\_  
Remove the rotor by the Rotor Puller ⑦.



**Rotor Puller:**  
P/N. 90890-01362



2. Remove:
- Chain guide ①
  - Oil baffle plate ②
  - Cam chain ③

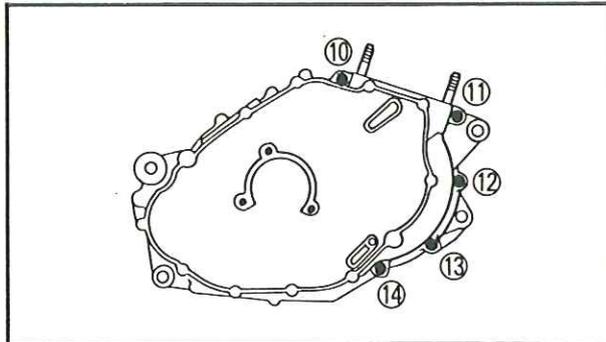


### CRANKCASE (RIGHT)

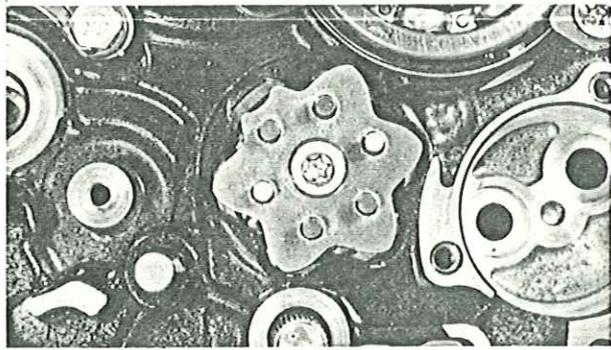
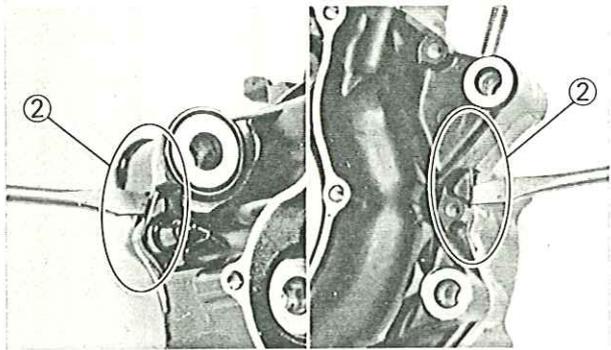
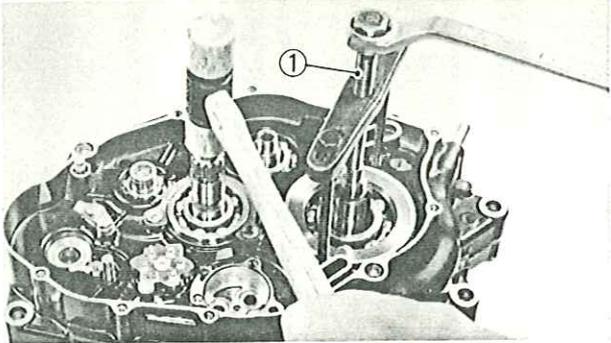
1. Remove:
- Crankcase (right)

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

- Loosen the bolts starting with the highest numbered one.
- Loosen each bolt 1/4 turn, and remove them after all bolts are loosened.







**Removal steps:**

- Attach the Crankcase Separating Tool ①.



**Crankcase Separating Tool:**  
P/N. 90890-01135

**NOTE:**

Fully tighten the tool holding bolts, but make sure the tool body is parallel with the case. If necessary, one screw may be backed out slightly to level tool body.

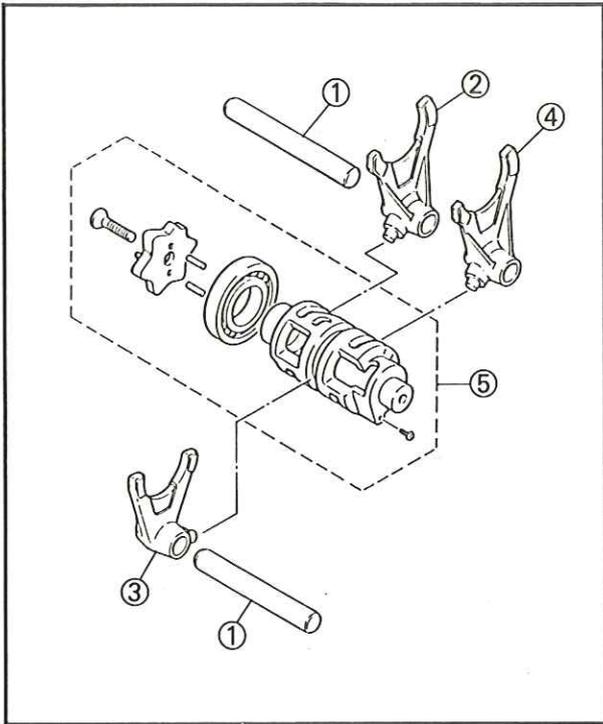
- As pressure is applied, alternately tap on the front engine mounting boss, transmission shafts, and shift cam. Then, remove the crankcase.

**NOTE:**

- If the crankcase will not come off, use the lever guides ② for removal.
- Turn the shift cam to the position shown in the figure so that it does not contact the crankcase.

**CAUTION:**

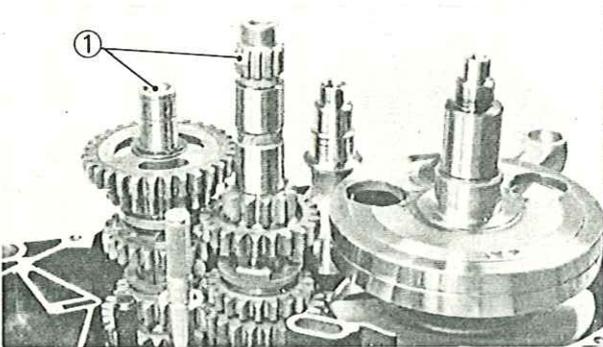
- Be sure not to give damages to the mating surface.
- Use soft hammer to tap on the case half. Tap only on reinforced portions of case. Do not tap on gasket mating surface. Work slowly and carefully. Make sure the case halves separate evenly. If one end "hangs", take pressure off the push screw, realign, and start over. If the cases do not separate, check for a remaining case screw or fitting. Do not force.



### SHIFTER AND TRANSMISSION

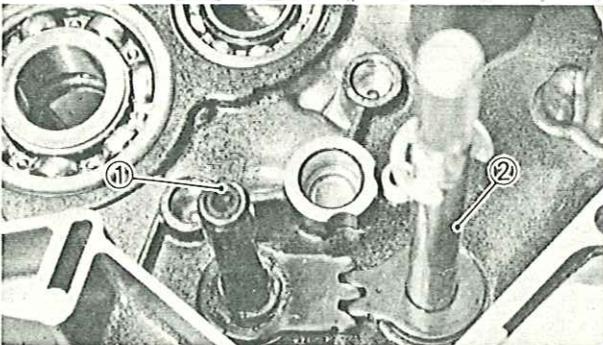
1. Remove:

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



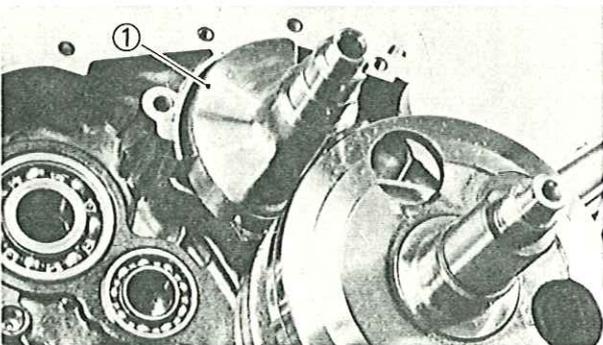
2. Remove:

- Transmission assembly ①



3. Remove:

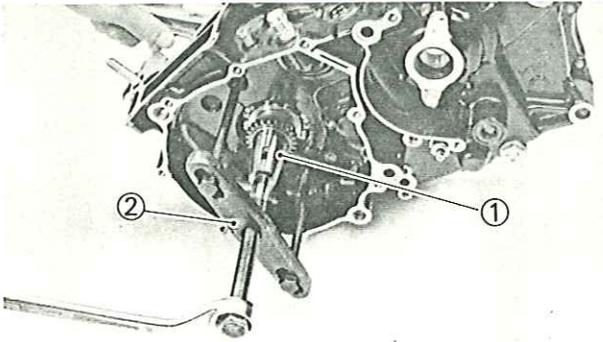
- Shift shaft #1 ①
- Shift shaft #2 ②



### BALANCER AND CRANKSHAFT

1. Remove:

- Balancer ①



2. Remove:
  - Crankshaft ①

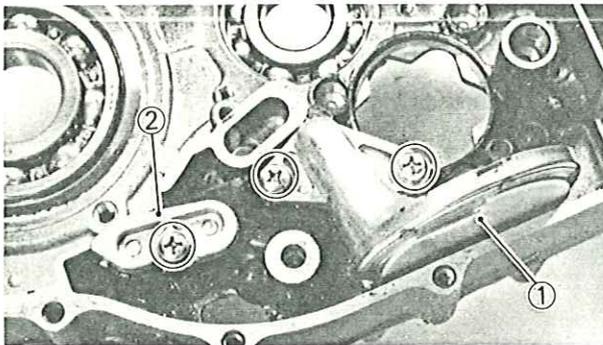
**NOTE:** \_\_\_\_\_

- Remove the crankshaft by the Crankcase Separating Tool ②.



**Crankcase Separating Tool:**  
P/N. 90890-01135

- Fully tighten the tool holding bolts, but make sure the tool body is parallel with the case. If necessary, one screw may be backed out slightly to level tool body.

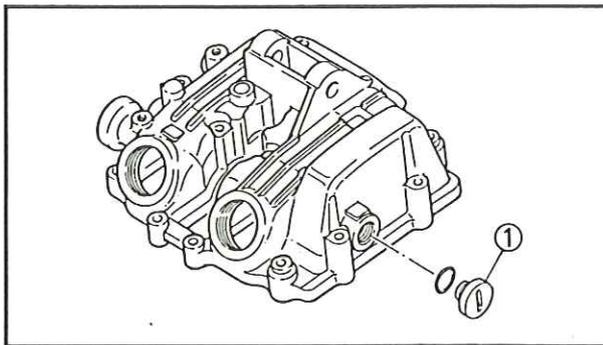


### OIL STRAINER

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

It is recommended that the oil strainer be replaced whenever the engine is disassembled.

1. Remove:
  - Oil strainer ①
  - Oil passage cover ②



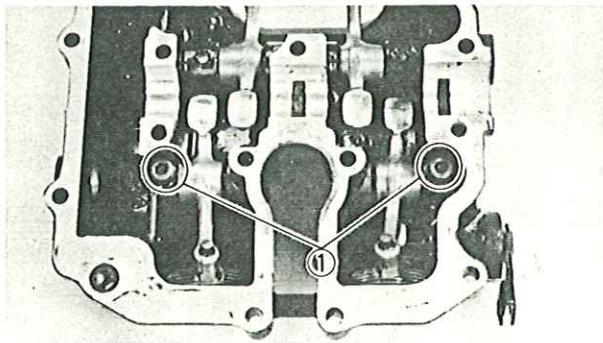
### ROCKER ARM

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

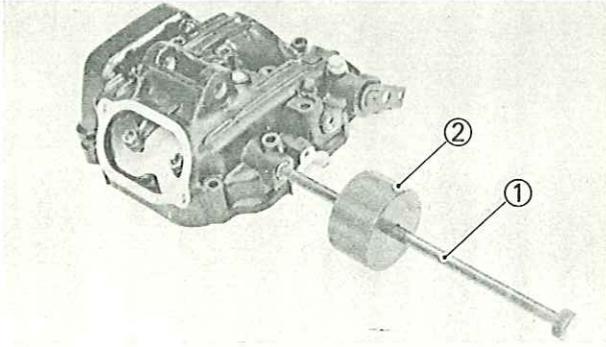
With the engine mounted, the rocker arm can be maintained by removing the following parts.

- Seat
- Fuel tank
- Cylinder head cover.

1. Remove:
  - Plug ①



2. Remove:
  - Bolt ① (Rocker arm shaft)



3. Remove:
  - Rocker arm shaft
  - Rocker arm

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

Remove the rocker arm shaft by the slide Hammer Bolt ① and Weight ②.



**Slide Hammer Bolt:**

P/N. 90890-01083

**Weight:**

P/N. 90890-01084

## VALVE

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

With the engine mounted, the valve can be maintained by removing the following parts.

- Seat
- Fuel tank
- Exhaust pipe
- Cylinder head cover
- Cylinder head

1. Check:

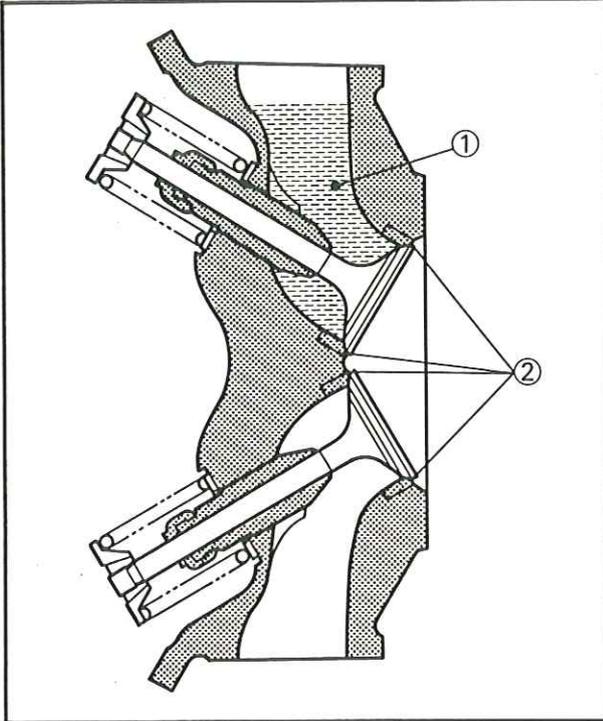
- Valve sealing

Leakage at valve seat→Inspect the valve face, valve seat and valve seat width.

Refer to the "INSPECTION AND REPAIR—VALVE SEAT" section.

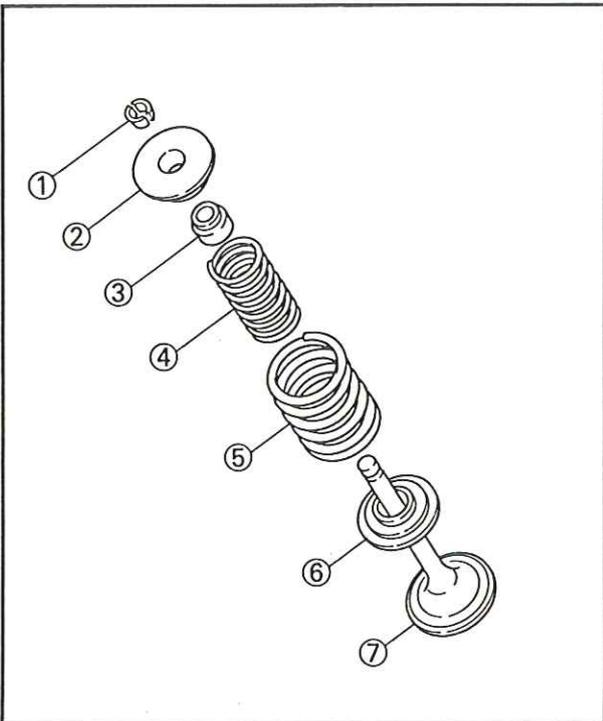
**NOTE:** \_\_\_\_\_

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



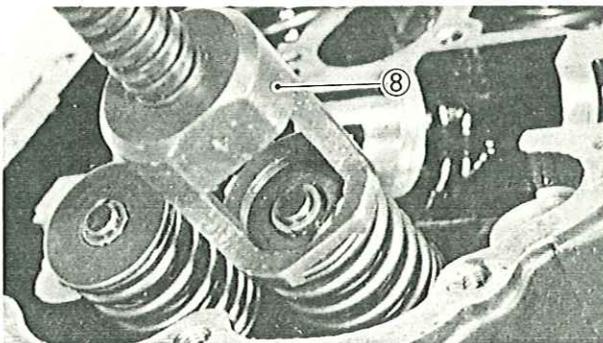
**Valve seal checking steps:**

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



**2. Remove:**

- Valve retainer ①
- Spring seat ② (Upper)
- Oil seal ③
- Inner spring ④
- Outer spring ⑤
- Spring seat ⑥ (Lower)
- Valve ⑦

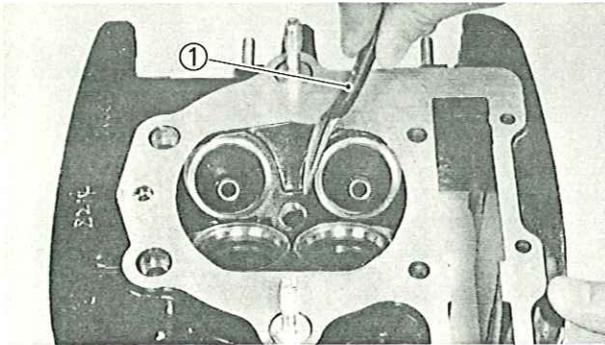


**NOTE:**

Compress the valve spring to remove the valve retainer by the Valve Spring Compressor ⑧.



**Valve Spring Compressor:**  
P/N. 90890-04019



## INSPECTION AND REPAIR CYLINDER HEAD

### 1. Eliminate:

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

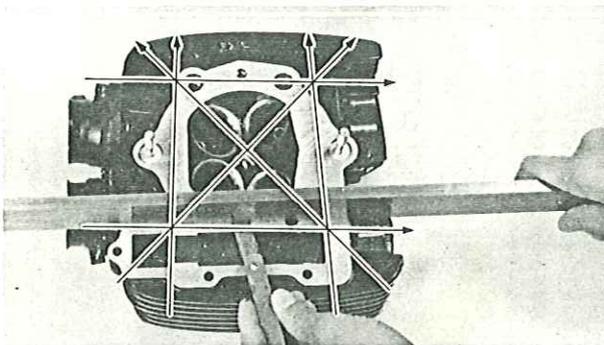
### NOTE:

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

- Spark plug threads
- Valve seat

### 2. Inspect:

- Cylinder head  
Scratches/Damage → Replace.

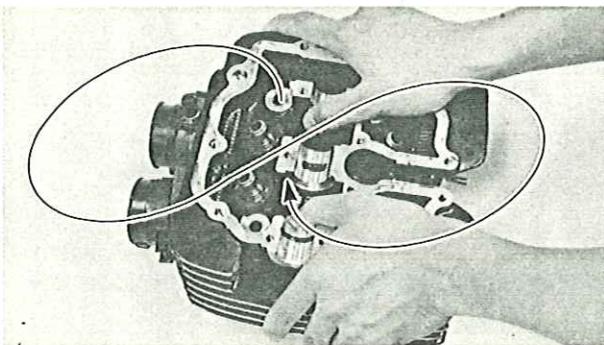


### 3. Measure:

- Warpage  
Out of specification → Resurface.



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



### 4. Resurface:

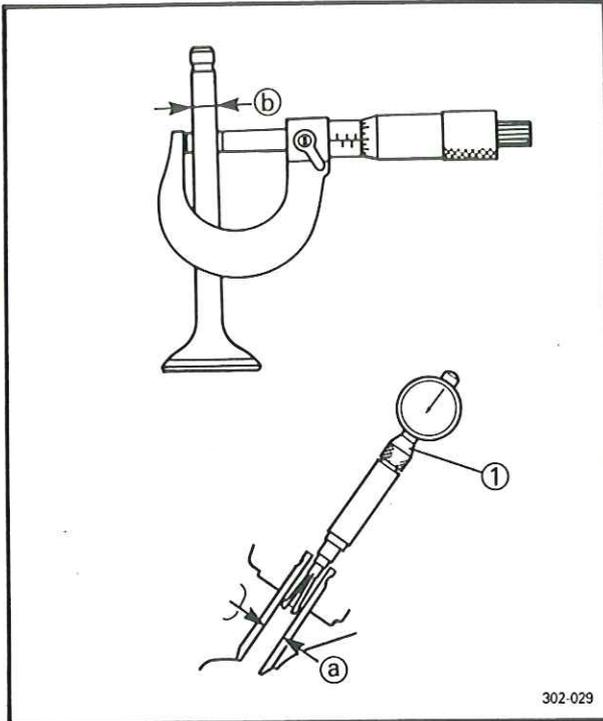
- Cylinder head

### Resurfacement steps:

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

### NOTE:

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



302-029

### VALVE AND VALVE GUIDE

#### 1. Measure:

- Stem-to-guide clearance

Stem-to-guide clearance =

Valve guide inside diameter (a) –  
Valve stem diameter (b)

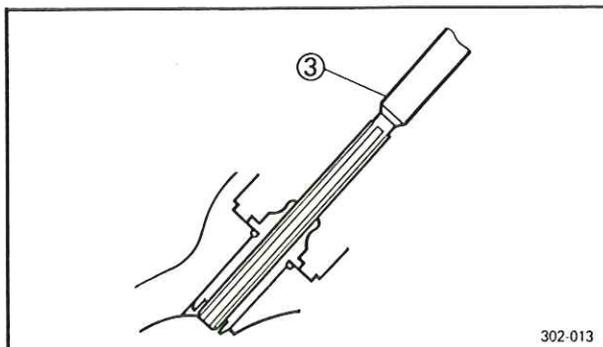
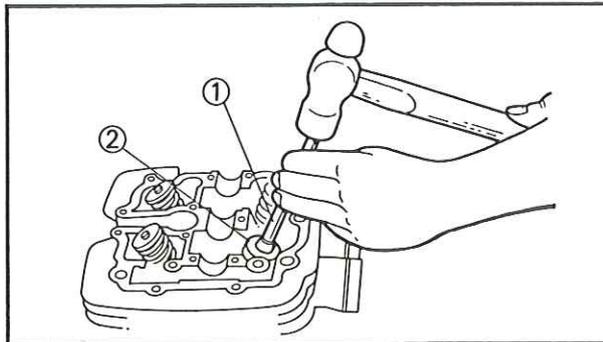
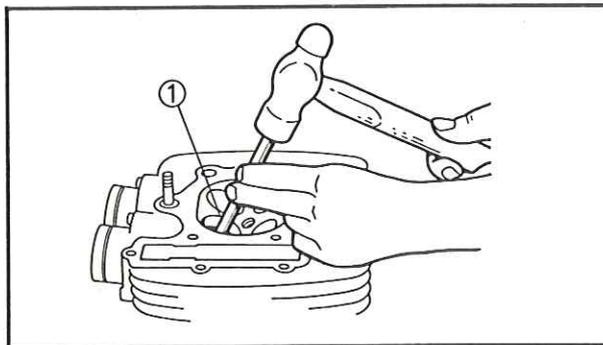
Out of specification → Replace valve guide.



#### Stem-to-guide Clearance:

Intake	0.010 ~ 0.037 mm (0.0004 ~ 0.0014 in)
Exhaust	0.030 ~ 0.057 mm (0.0012 ~ 0.0022 in)

① Bore gauge



302-013

#### Valve guide replacement steps:

#### NOTE:

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

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



#### Valve Guide Remover:

P/N. 90890-01225

#### Valve Guide Installer:

P/N. 90890-04017

#### Valve Guide Reamer:

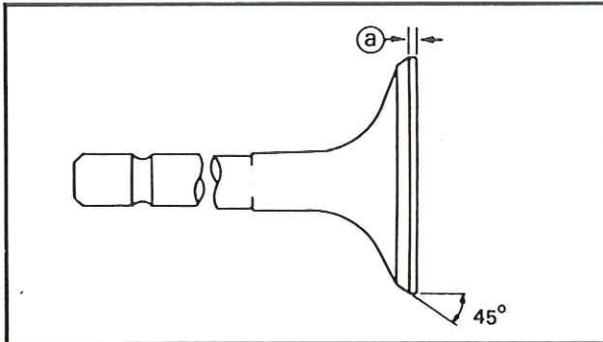
P/N. 90890-01227



2. Clean the valve face to remove carbon deposits.

3. Inspect:

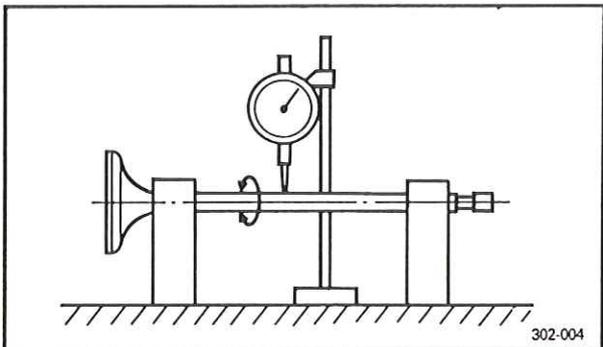
- Valve face
- Pitting/Wear → Grind the face.



4. Measure:

- Margin thickness (a)
- Out of specification → Replace.

 **Margin Thickness Limit:**  
0.7 mm (0.028 in)



5. Check:

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

 **Maximum Valve Stem Runout:**  
0.01 mm (0.0004 in)

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

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

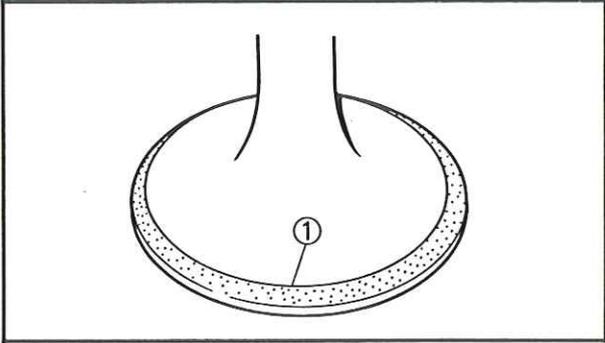
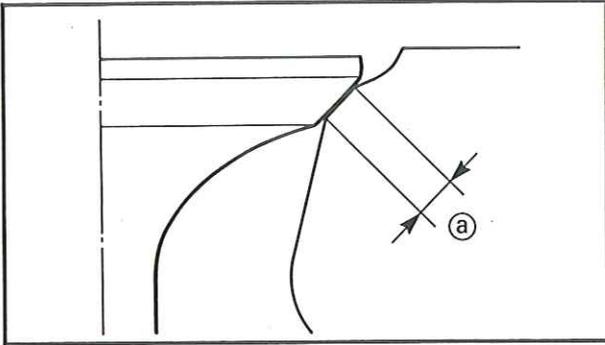
**VALVE SEAT**

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

2. Inspect:

- Valve seat
- Pitting/Wear → Reface the valve seat.





## 3. Measure:

- Valve seat width (a)

Out of specification → Reface valve seat.



## Valve Seat Width:

Intake	1.0~1.2 mm (0.039~0.047 in)
Exhaust	1.0~1.2 mm (0.039~0.047 in)

## Measurement steps:

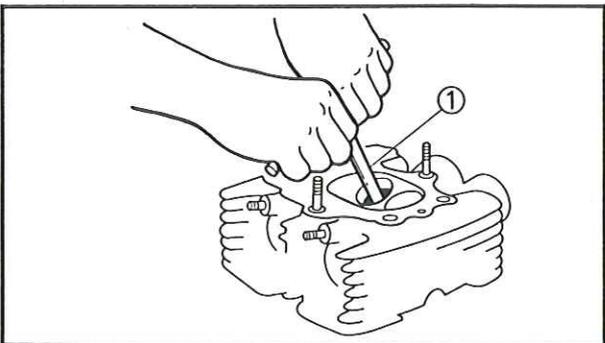
- Apply the Mechanic's bluing dye (Dykem) ① to the valve face.
- Install the valve into the cylinder head.
- Press the valve through the valve guide and onto the valve seat to make a clear pattern.
- Measure the valve seat width. Wherever the valve seat and valve face made contact, bluing will have been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

## 4. Reface:

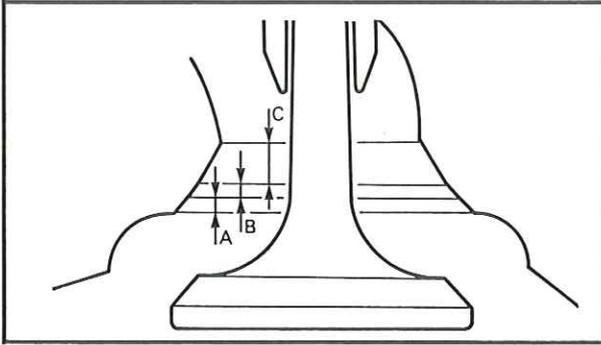
- Valve seat

Use a 30°, 45° and 60° Valve Seat Cutter

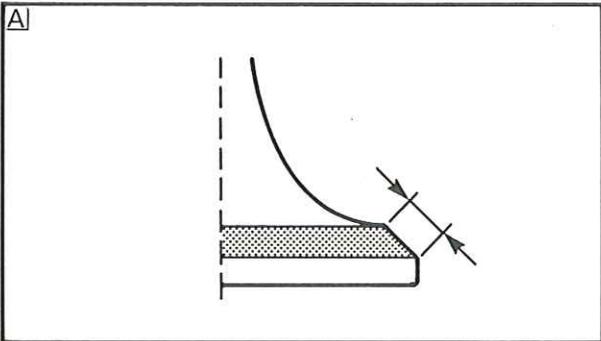
①.

Valve Seat Cutter:  
P/N. YM-91043**CAUTION:**

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



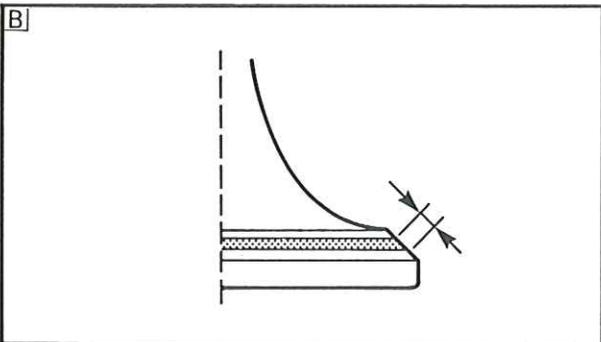
Cut sections as follows	
Section	Cutter
A	30°
B	45°
C	60°



**Valve seat refacing steps:**

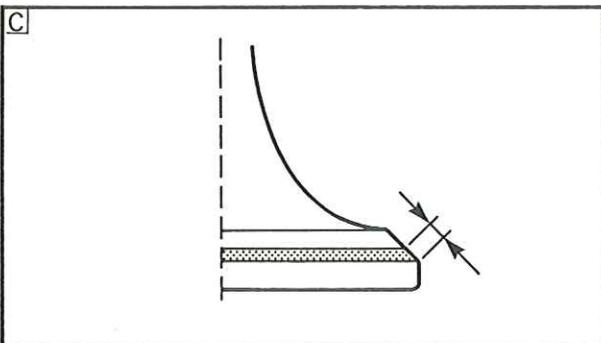
**A** Valve face indicates that valve seat is centered on valve face but is too wide.

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



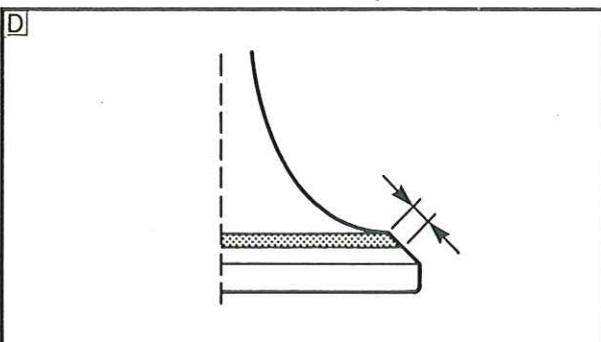
**B** Valve seat is in the middle of the valve face but too narrow.

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



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

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



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

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

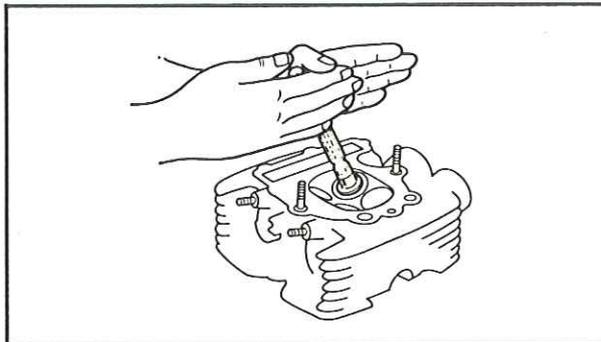
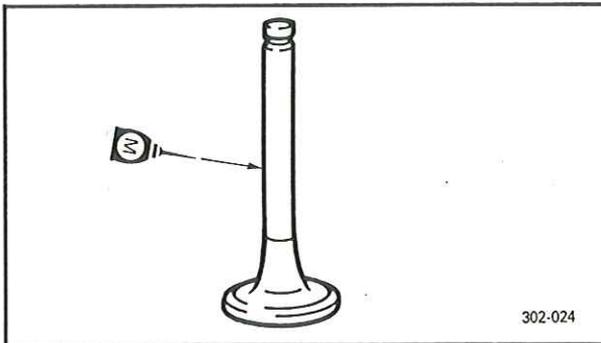
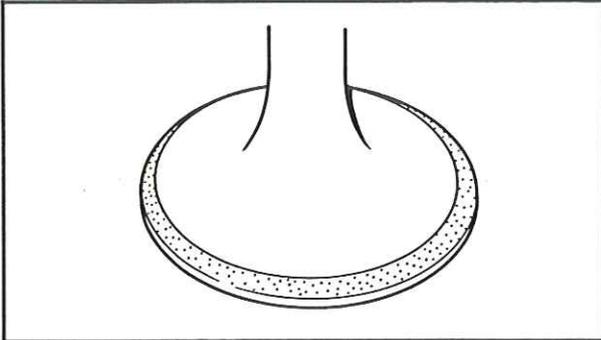


## 5. Lap:

- Valve face
- Valve seat

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

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

**Lapping steps:**

- Apply a coarse lapping compound to the valve face.

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

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

- Apply a molybdenum disulfide oil to the valve stem.

- Install the valve into the cylinder head.

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

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

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

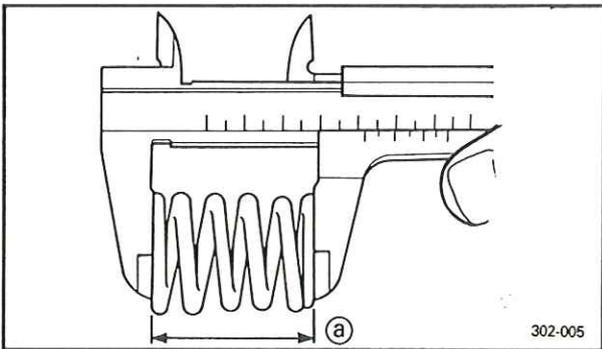
- Apply a fine lapping compound to the valve face and repeat the above steps.

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

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



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

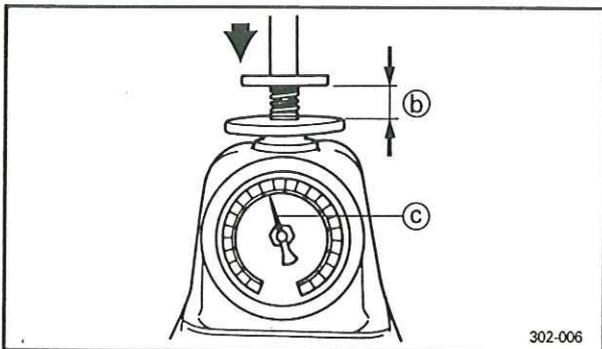


**VALVE SPRING**

1. Measure:

- Valve spring free length (a)  
Out of specification → Replace.

Valve Spring Free Length:	
Inner spring	Outer spring
40.1 mm (1.58 in)	43.8 mm (1.72 in)

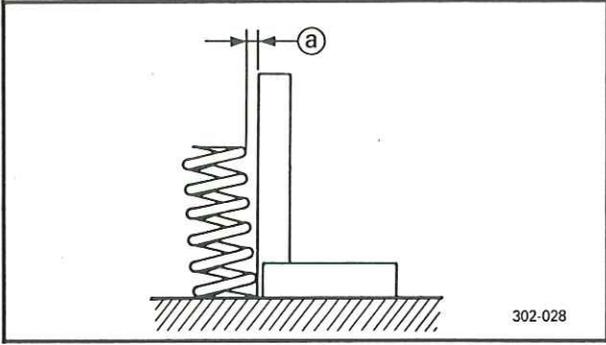


2. Measure:

- Valve spring installed force (c)  
Out of specification → Replace.

(b) Installed length

Valve Spring Installed Force:			
Inner spring		Outer spring	
(b)	(c)	(b)	(c)
22.7 mm (0.89 in)	18.1 kg (40.0 lb)	34.2 mm (1.35 in)	16.9 kg (37.3 lb)



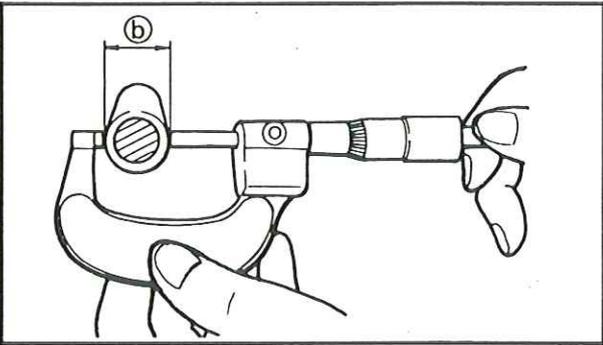
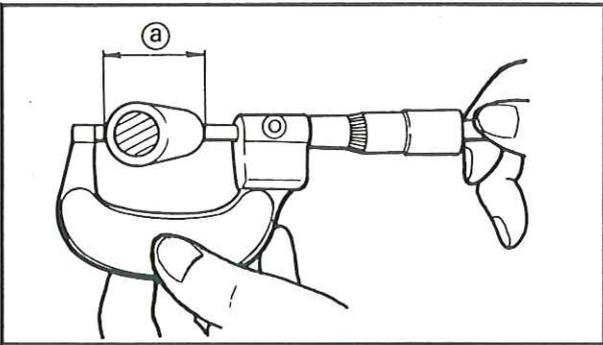
302-028

3. Measure:
- Spring Tilt (a)
- Out of specification → Replace.

Spring tilt:	
Inner spring	Outer spring
Less than 1.7 mm (0.067 in)	Less than 1.7 mm (0.067 in)

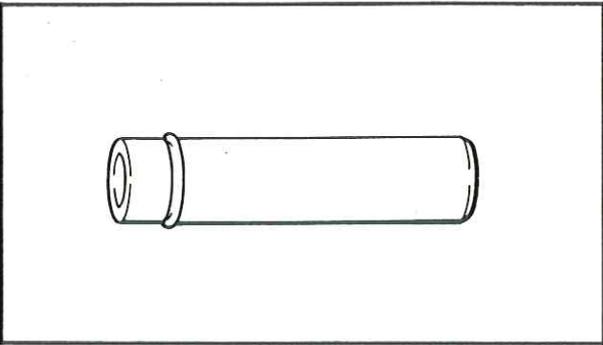
**CAMSHAFT**

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



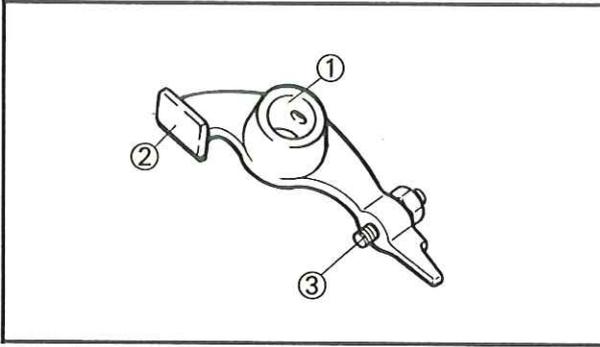
2. Measure:
- Cam lobes
- Out of specification → Replace.

	a	b
Intake	36.52 ~ 36.62 mm (1.438 ~ 1.442 in)	30.01 ~ 30.11 mm (1.181 ~ 1.185 in)
Exhaust	36.70 ~ 36.80 mm (1.445 ~ 1.449 in)	30.07 ~ 30.17 mm (1.184 ~ 1.188 in)



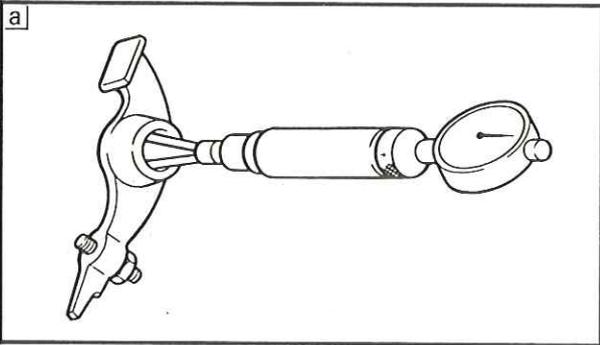
**ROCKER ARM AND ROCKER ARM SHAFT**

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



### 2. Inspect:

- Rocker arm shaft hole ①
  - Cam lobe contact surface ②
  - Adjuster surface ③
- Wear/Pitting/Scratches/Blue discoloration  
→ Replace, then inspect lubrication system.



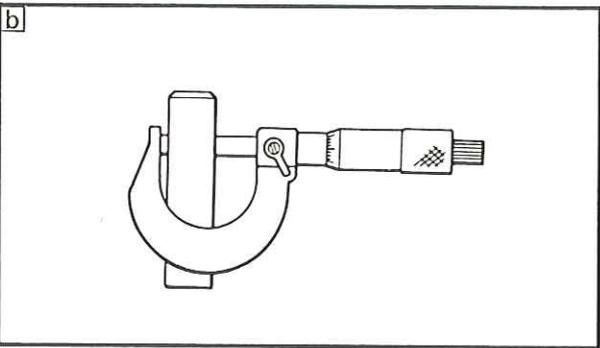
### 3. Measure:

- Arm-to-shaft clearance

Arm-to-shaft clearance =

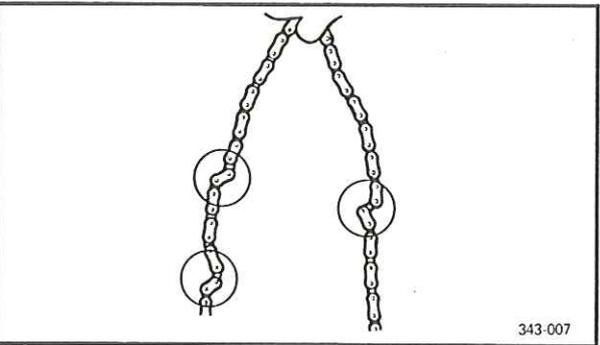
Rocker arm inside diameter (a) —  
Rocker arm shaft outside diameter (b)

Out of specification → Replace as a set.



**Arm-to-shaft Clearance:**

0.009 ~ 0.042 mm  
(0.0003 ~ 0.0020 in)

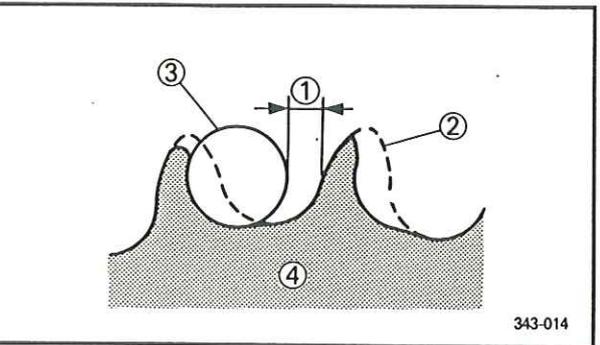


343-007

## CAM CHAIN AND CAM SPROCKET

### 1. Inspect:

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

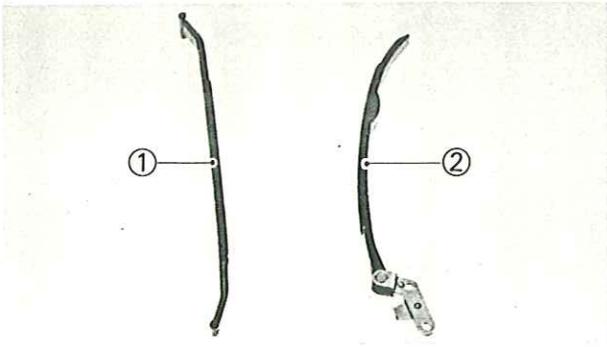


343-014

### 2. Inspect:

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

- ① 1/4 tooth
- ② Correct
- ③ Roller
- ④ Sprocket



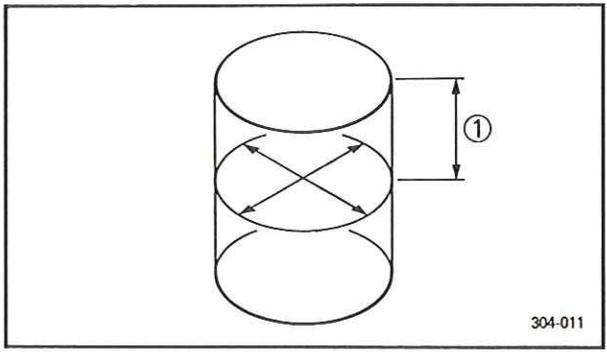
**CAM CHAIN GUIDE**

1. Inspect:
    - Exhaust side chain guide ①
    - Intake side chain guide ②
- Wear/Damage → Replace.

**CYLINDER AND PISTON**

1. Inspect:
  - Cylinder and piston walls

Vertical scratches → Rebore or replace cylinder and piston.



2. Measure:
  - Piston-to-cylinder clearance

**Piston-to-cylinder clearance measurement steps:**

**First steps**

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

① 40 mm (1.57 in) from the cylinder top

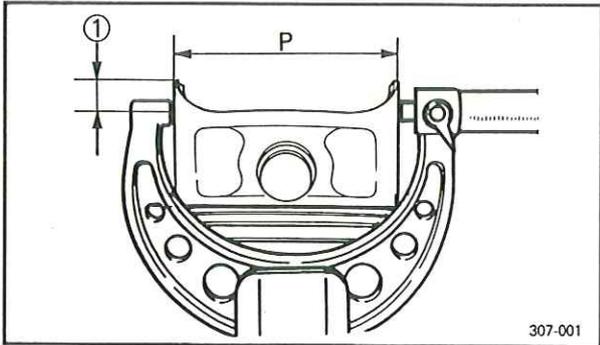
**NOTE:** \_\_\_\_\_

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

	Standard	Wear Limit
Cylinder Bore "C":	94.97 ~ 95.02 mm (3.739 ~ 3.741 in)	95.1 mm (3.744 in)

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

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



**2nd steps**

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

① 5.0 mm (0.20 in) from the piston bottom edge

 **Piston Size P:**

Standard	94.915 ~ 94.965 mm (3.737 ~ 3.739 in)
Oversize 2	95.5 mm (3.760 in)
Oversize 4	96.0 mm (3.780 in)

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

**3rd steps**

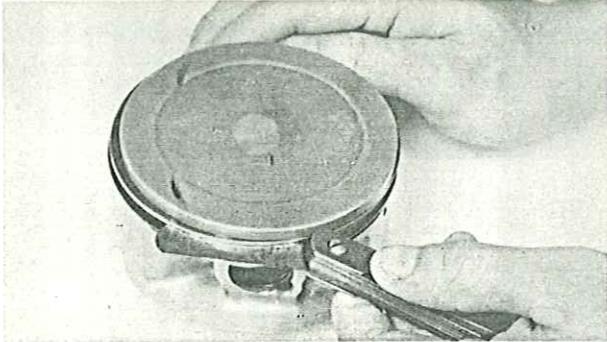
- Find the piston-to-cylinder clearance with following formula.

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

 **Piston-to-cylinder Clearance:**  
 0.045 ~ 0.065 mm (0.002 ~ 0.003 in)  
**Limit:**  
 0.1 mm (0.004 in)

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





### PISTON RING

#### 1. Measure:

- Ring side clearance

Use a feeler gauge.

Out of specification → Replace piston.

#### NOTE:

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

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

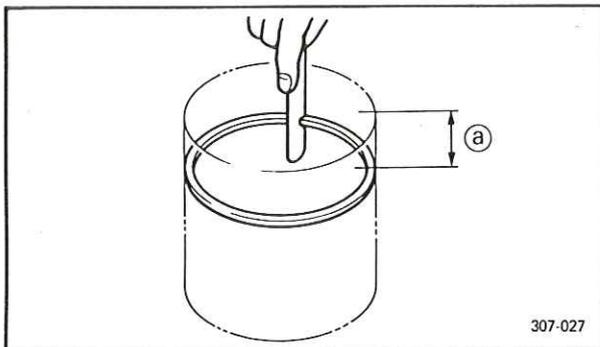
#### 2. Position:

- Piston ring  
(in cylinder)

#### NOTE:

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

① 20 mm (0.8 in)



#### 3. Measure:

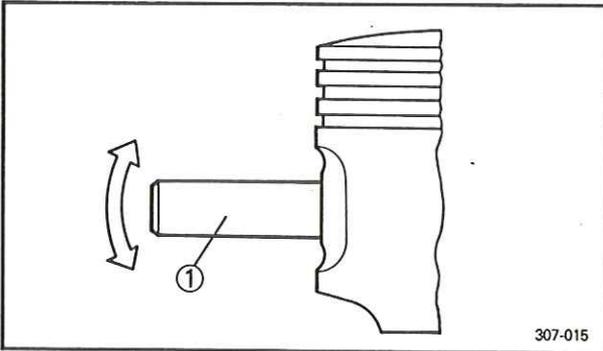
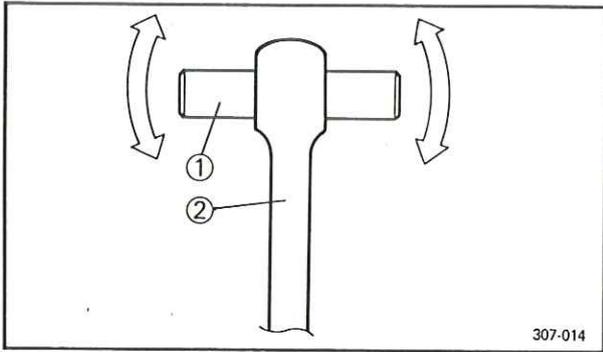
- Ring end gap

Out of specification → Replace.

#### NOTE:

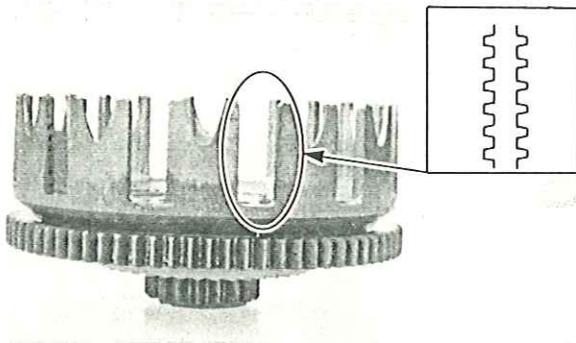
You cannot measure end gap on expander spacer of oil control ring. If oil control ring rails show excessive gap, replace all three rings.

Piston Ring End Gap (Installed):	
Top ring	0.30 ~ 0.45 mm (0.012 ~ 0.018 in)
2nd ring	0.30 ~ 0.45 mm (0.012 ~ 0.018 in)
Oil ring	0.20 ~ 0.70 mm (0.008 ~ 0.028 in)



**PISTON PIN**

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



**CLUTCH**

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

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

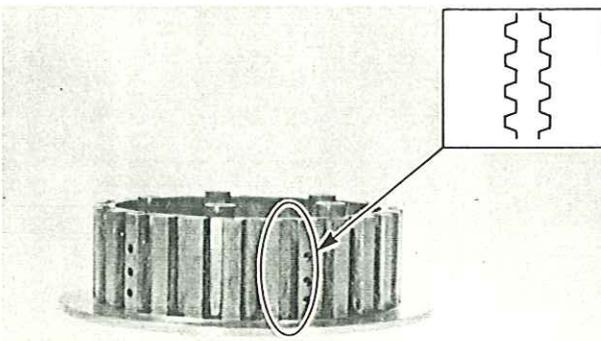
Pitting on friction plate dogs of clutch housing will cause erratic operation.

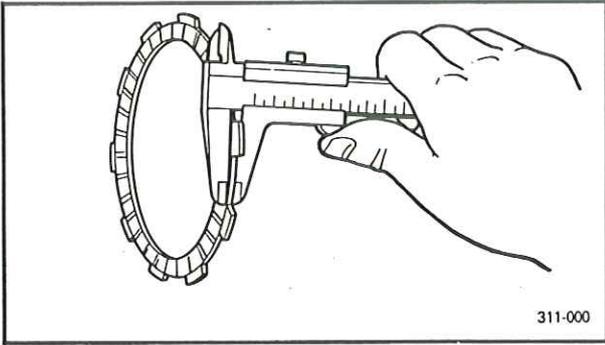
2. Inspect:
  - Clutch housing bearing  
Damage → Replace.

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

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

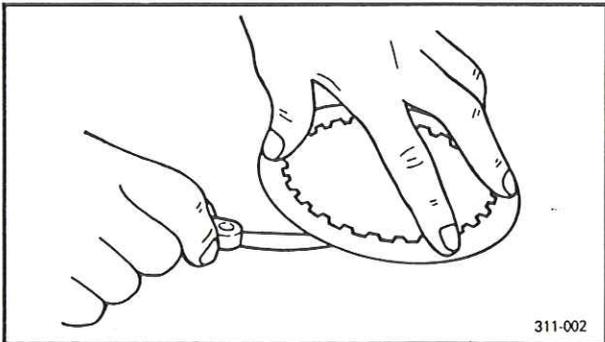
Pitting on clutch plate splines of clutch boss will cause erratic operation.





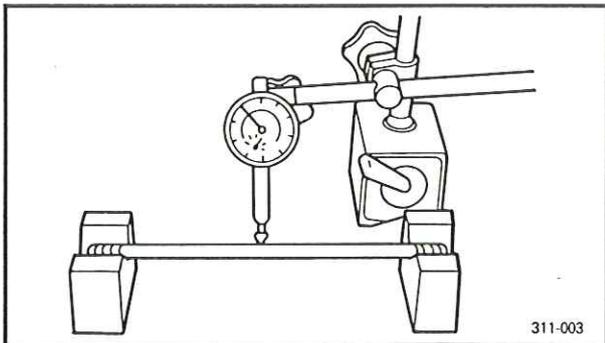
4. Measure:
- Friction plate thickness
- Out of specification → Replace as a set.

	Inside Diameter	Wear Limit
Type "A" (2 pcs.)	116 mm (4.57 in)	2.8 mm (0.11 in)
Type "B" (6 pcs.)	113 mm (4.45 in)	2.6 mm (0.10 in)



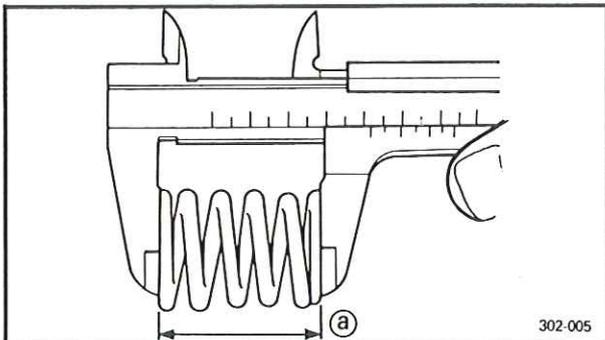
5. Measure:
- Clutch plate warpage
- Out of specification → Replace as a set.

 **Clutch Plate Warpage Limit:**  
0.2 mm (0.008 in)



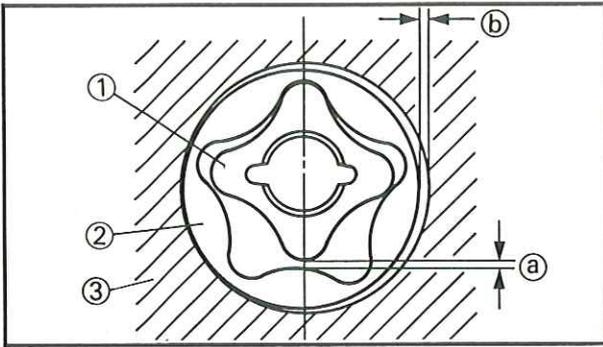
6. Measure:
- Push rod runout
- Roll the push rod on a V-block.
- Out of specification → Replace.

 **Runout Limit:**  
0.2 mm (0.008 in)



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

 **Clutch Spring Minimum Free Length (a):**  
32.6 mm (1.283 in)



**OIL PUMP**

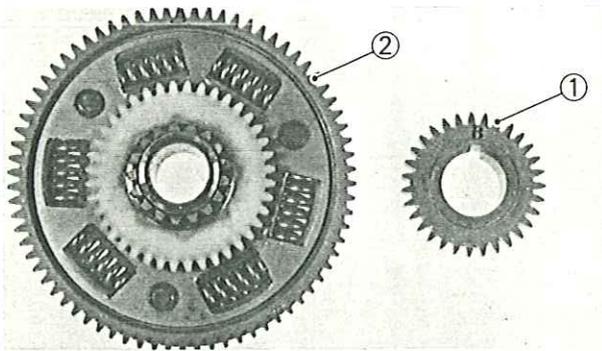
1. Measure:

- Tip clearance (a)  
(between inner rotor ① and outer rotor ②)
  - Side clearance (b)  
(between outer rotor ② and pump housing ③)
- Out of specifications → Replace oil pump.



**Oil Pump Clearance:**

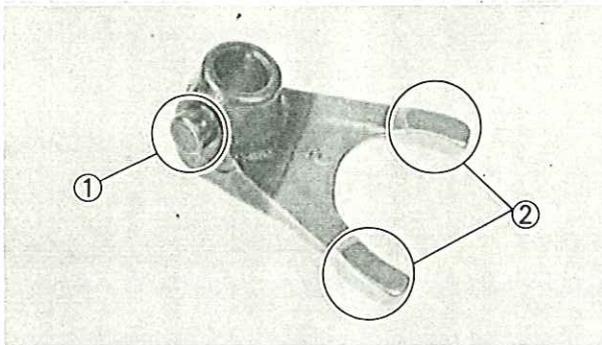
Tip clearance	0.12 mm (0.005 in)
Side clearance	0.03 ~ 0.08 mm (0.001 ~ 0.003 in)



**PRIMARY DRIVE**

1. Inspect:

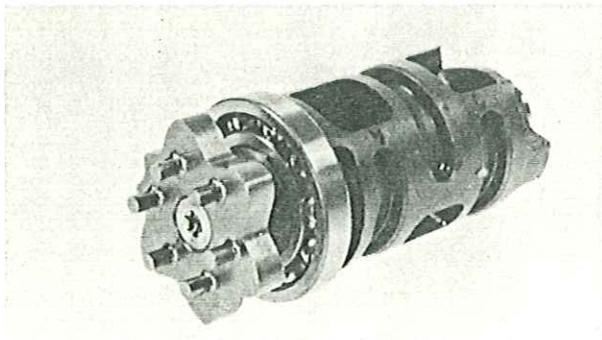
- Primary drive gear teeth ①
  - Primary driven gear teeth ②
- Wear/Damage → Replace both gears.  
Excessive noises during operation → Replace both gears.



**TRANSMISSION AND SHIFTER**

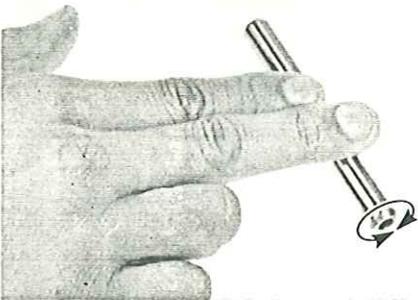
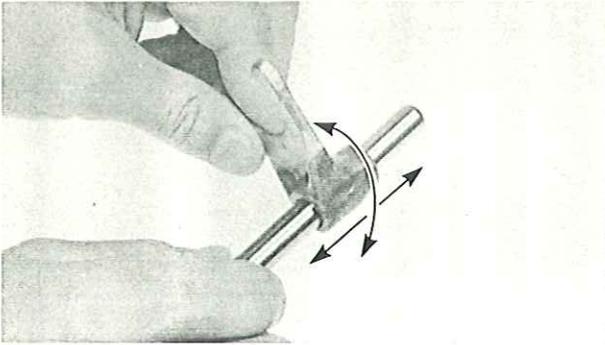
1. Inspect:

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



2. Inspect:

- Shift cam groove
  - Shift cam segment
- Wear/Damage → Replace.



3. Check:

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

4. Inspect:

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

**WARNING:**

Do not attempt to straighten a bent guide bar.

5. Measure:

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



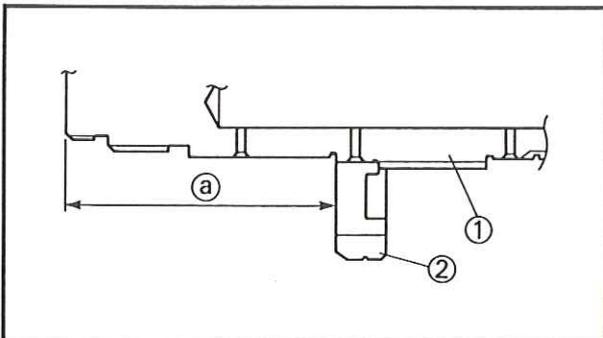
**Maximum Runout:**  
0.08 mm (0.003 in)

6. Inspect:

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

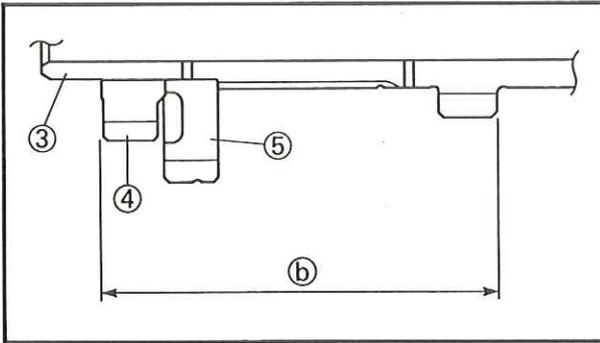
7. Check:

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

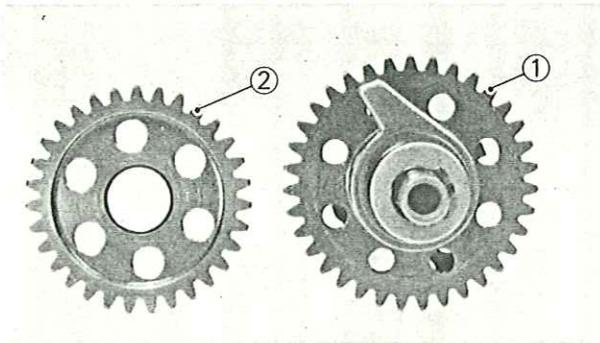


**Transmission gear reassembling points:**

- Press the 2nd wheel gear ② in the drive axle ① as shown.  
① : 60.0 mm (2.36 in)

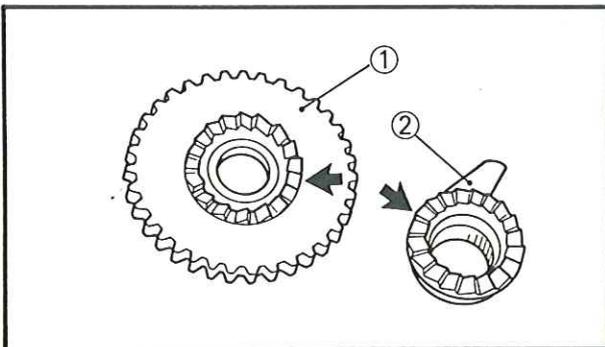


- Press the 2nd pinion gear ④ and 5th pinion gear ⑤ in the main axle ③.
- ⑥ 90.5 mm (3.56 in)

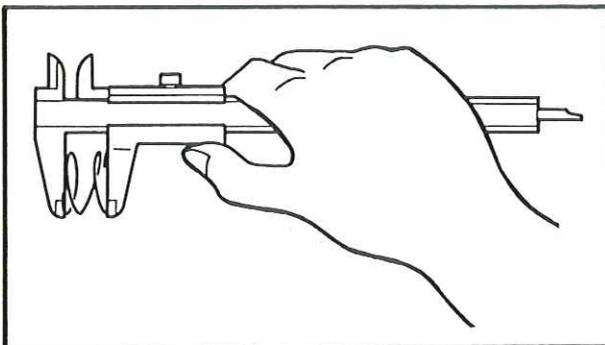


**KICK STARTER**

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

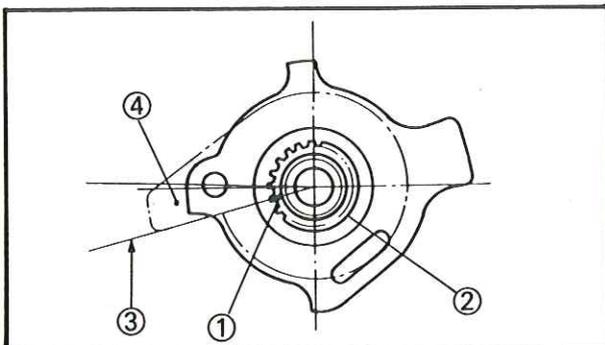


2. Inspect:
  - Kick gear ①
  - Ratchet wheel ②
 Pitting/Wear/Damage → Replace as a set.
3. Check:
  - Kick axle operation
 Unsmooth operation → Replace.

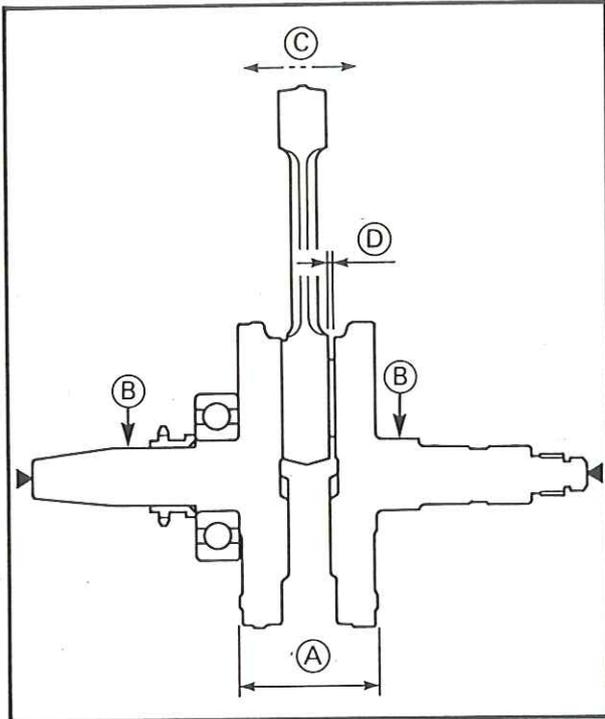


4. Inspect:
  - Ratchet wheel spring
 Out of specification → Replace.

 **Spring Free Length Limit:**  
15.0 mm (0.60 in)



**Kick axle reassembling point:**  
Align the punched mark ① on the kick axle ② with this line ③ on the ratchet wheel ④.



**CRANKSHAFT**

1. Measure:

- Crank width (A)  
Out of specification → Replace crankshaft.



**Crank Width:**  
74.95 ~ 75.00 mm  
(2.950 ~ 2.953 in)

- Runout (B)  
Out of specification → Replace crankshaft and/or bearing.



**Runout Limit:**  
0.03 mm (0.001 in)

- Small end free play (C)  
Out of specification → Replace big end bearing, crank pin and/or connecting rod.

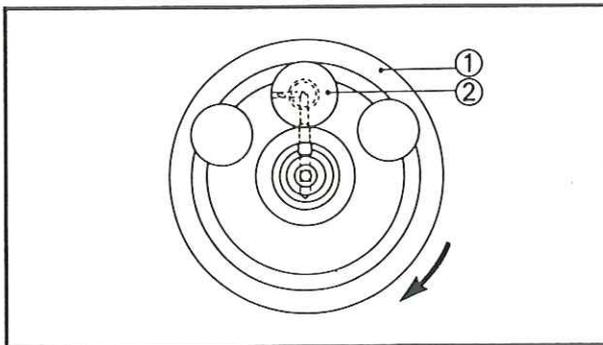


**Small End Free Play:**  
0.8 ~ 1.0 mm (0.031 ~ 0.039 in)

- Side clearance (D)  
Out of specification → Replace connecting rod.

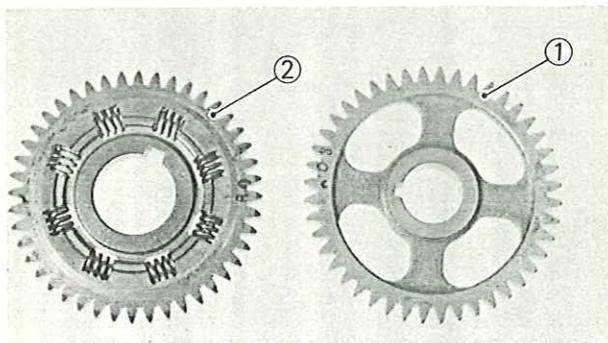


**Big End Side Clearance:**  
0.25 ~ 0.75 mm (0.010 ~ 0.030 in)



**Crankshaft reassembling point:**

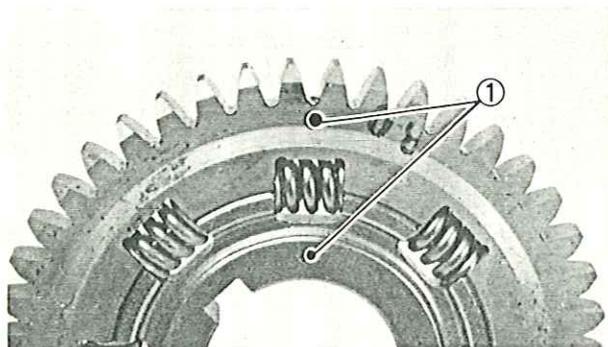
The crankshaft ① and the crank pin ② oil passages must be properly interconnected with a tolerance of less than 1 mm (0.04 in).



### BALANCER DRIVE GEAR AND BALANCER GEAR

#### 1. Inspect:

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



#### 2. Check:

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

### CRANKCASE

#### 1. Inspect:

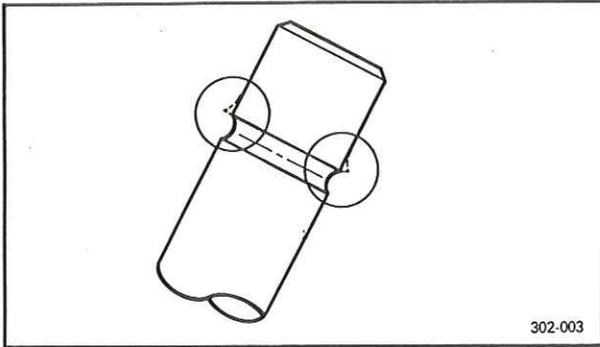
- Crank halves
  - Bearing seat
- Damage → Replace.

### BEARING AND OIL SEAL

#### 1. Inspect:

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





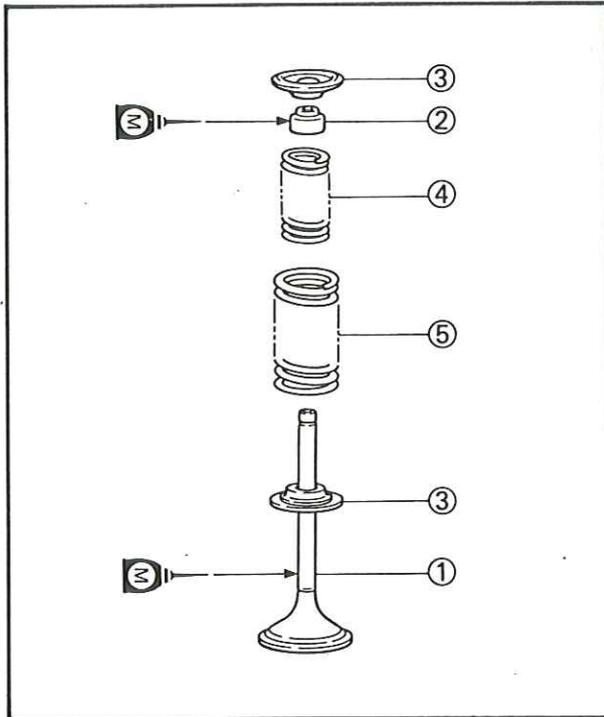
302-003

## ENGINE ASSEMBLY AND ADJUSTMENT

### VALVE

1. Deburr:

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

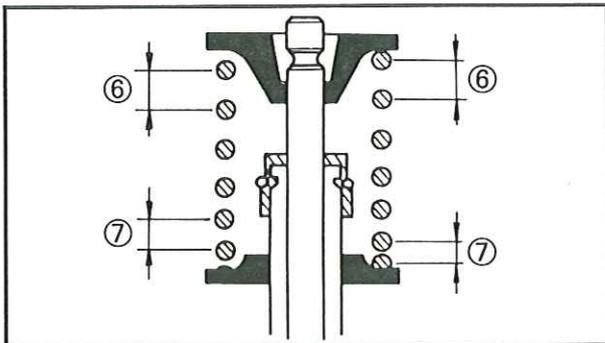


2. Lubricate:

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

3. Install:

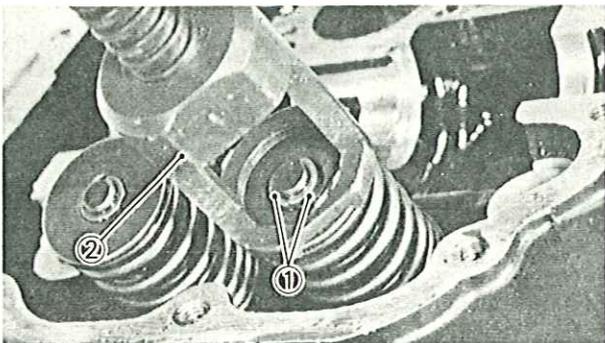
- Valve ①
- Oil seal ②
- Valve spring seats ③
- Valve spring ④ (Inner)
- Valve spring ⑤ (Outer)



NOTE:

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

- ⑥ Larger pitch
- ⑦ Smaller pitch



4. Install:

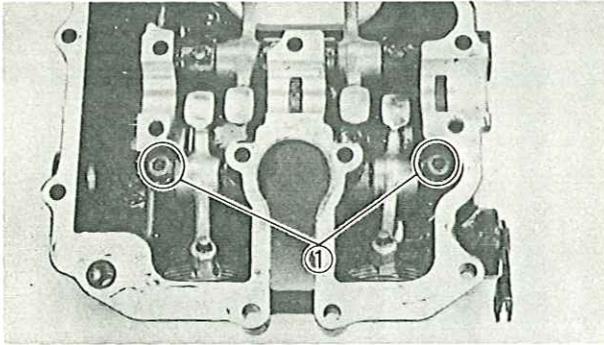
- Valve retainer ①

NOTE:

Compress the valve spring to install the valve retainer by the Valve Spring Compressor ②.



Valve Spring Compressor:  
P/N. 90890-04019



### ROCKER ARM

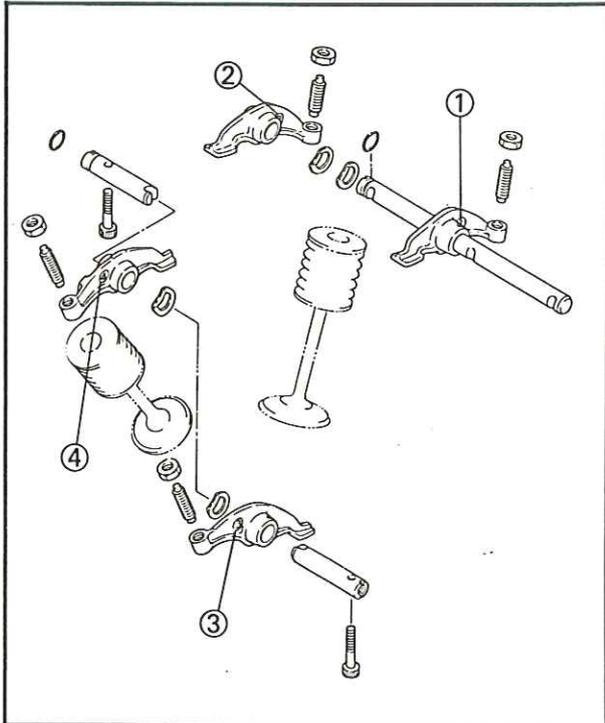
1. Lubricate:
  - Engine oil
  - To the rocker arm shaft.
2. Install:
  - Rocker arm
  - Rocker arm shaft



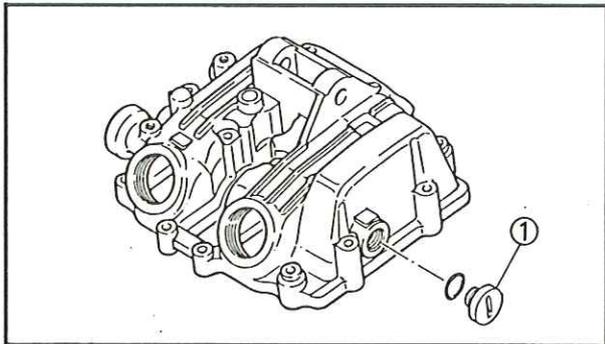
**Bolt ① (Rocker Arm Shaft):**  
 10 Nm (1.0 m•kg, 7.2 ft•lb)

### NOTE:

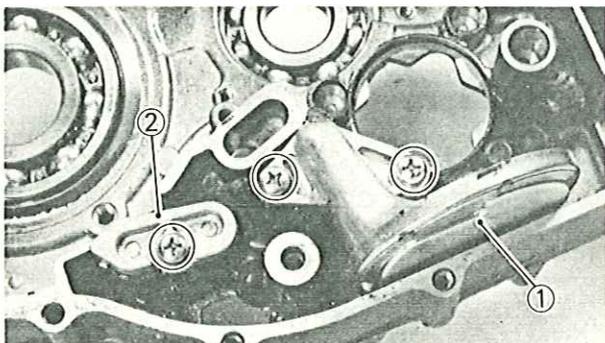
Numeral is stamped on the rocker arm.



- ① #1
- ② #2
- ③ #3
- ④ #4



3. Install:
  - Plug ①



### OIL STRAINER

1. Install:
  - Oil strainer ①
  - Oil passage cover ②

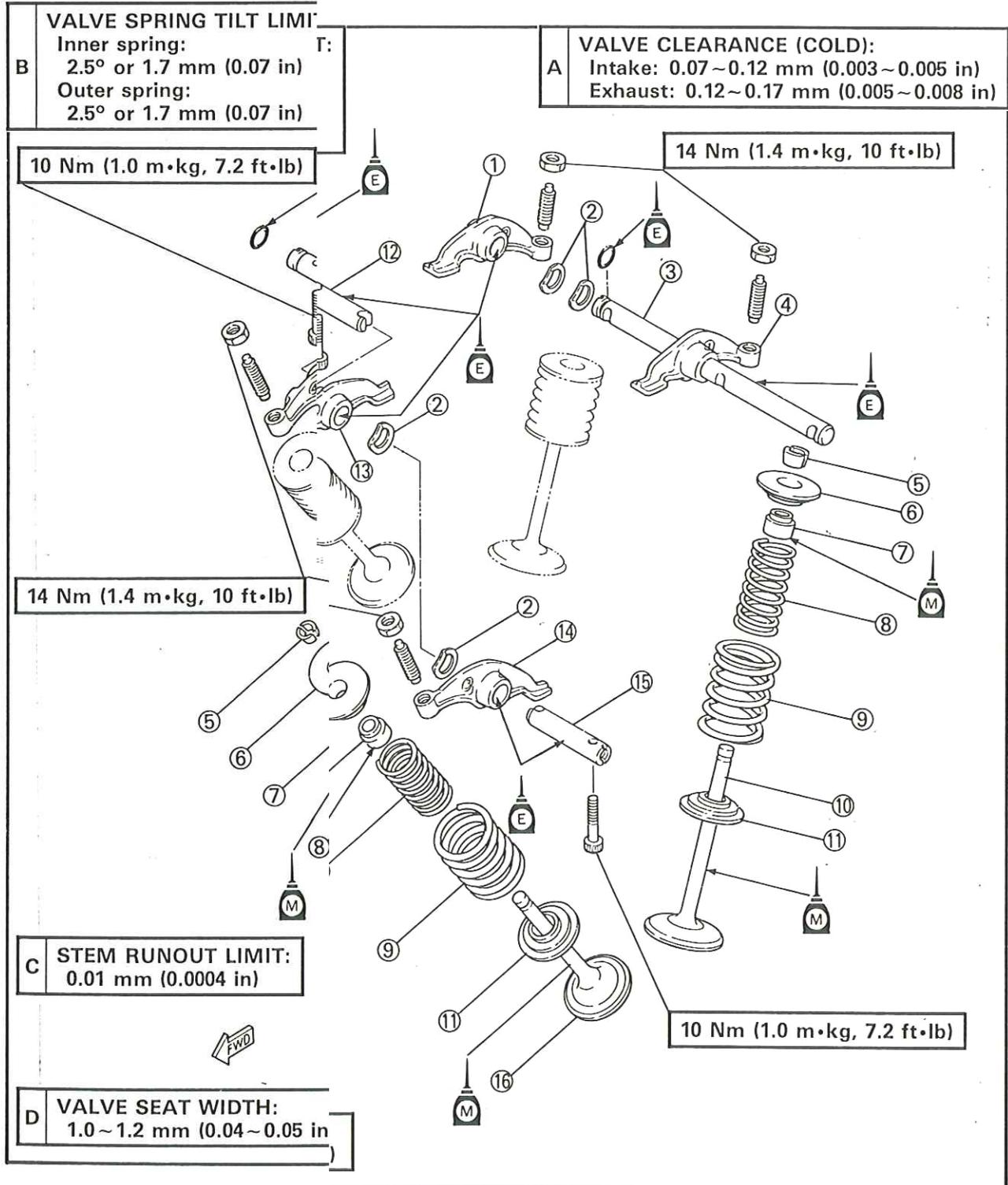


**Bolt (Oil Strainer):**  
 7 Nm (0.7 m•kg, 5.1 ft•lb)  
**Bolt (Oil Passage Cover):**  
 7 Nm (0.7 m•kg, 5.1 ft•lb)



VALVE AND ROCKER ARM

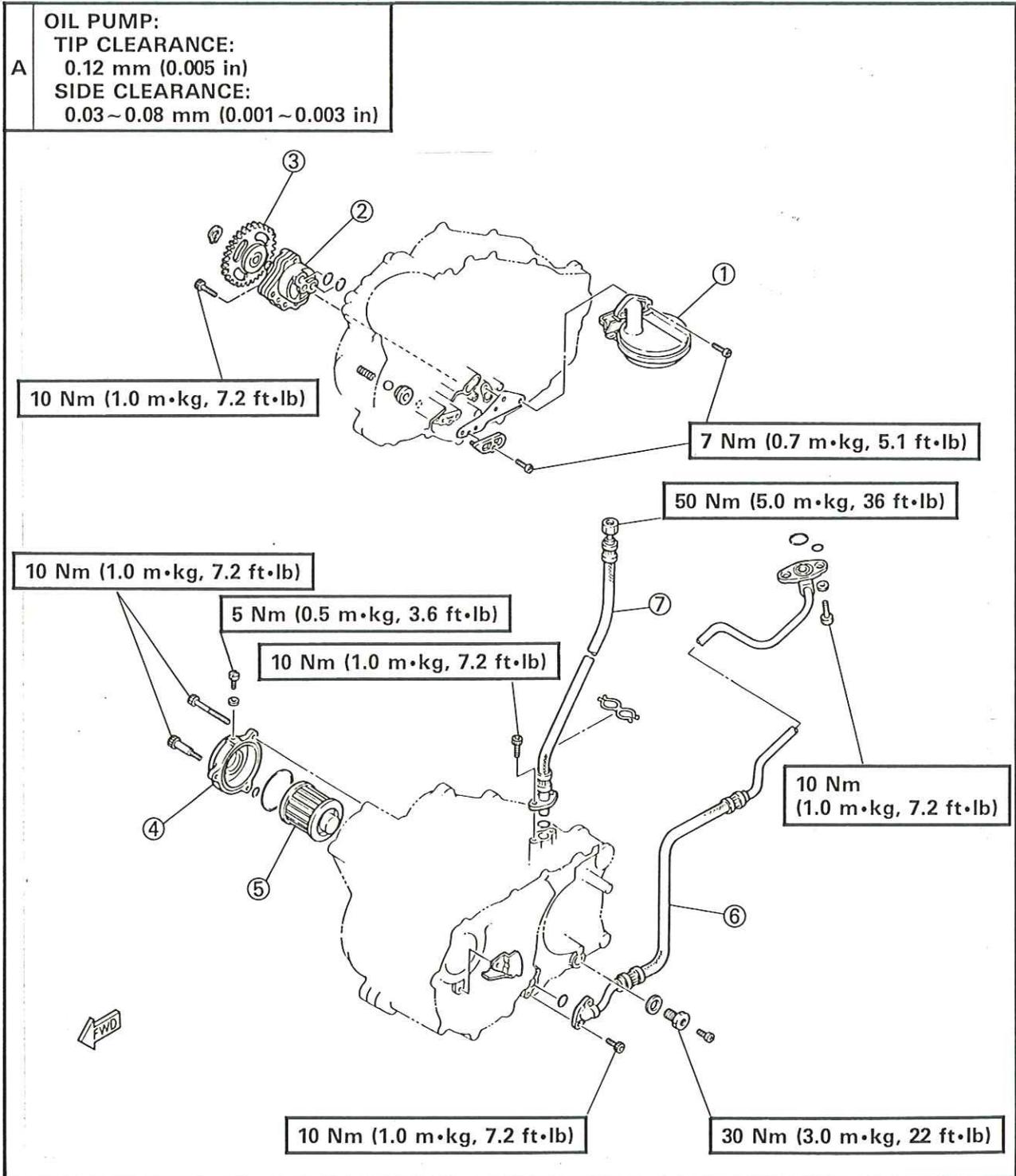
- ① Rocker arm #2
- ② Wave washer
- ③ Rocker arm shaft (Intake)
- ④ Rocker arm #1
- ⑤ Valve retainer
- ⑥ Spring seat
- ⑦ Oil seal
- ⑧ Inner spring
- ⑨ Outer spring
- ⑩ Valve (Intake)
- ⑪ Spring seat
- ⑫ Rocker arm shaft (Exhaust)
- ⑬ Rocker arm #4
- ⑭ Rocker arm #3
- ⑮ Rocker arm shaft (Exhaust)
- ⑯ Valve (Exhaust)

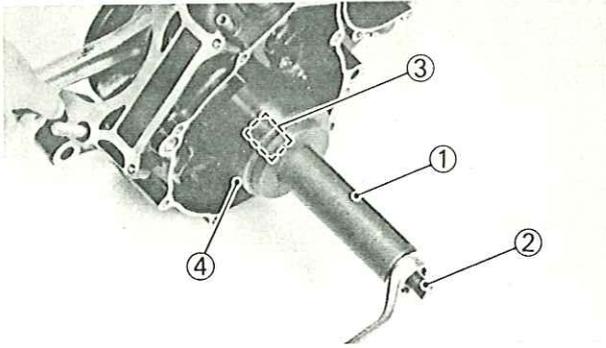




## OIL PUMP AND OIL DELIVERY LINE

- ① Oil strainer
- ② Oil pump
- ③ Oil pump gear
- ④ Oil cleaner cover
- ⑤ Oil cleaner
- ⑥ Oil hose
- ⑦ Oil hose





### BALANCER AND CRANKSHAFT

1. Install:
  - Crankshaft



- Crankshaft Installer Pot ①:  
P/N. 90890-01274
- Crankshaft Installer Bolt ②:  
P/N. 90890-01275
- Adapter # 10 ③:  
P/N. 90890-04059
- Crank Pot Spacer ④:  
P/N. 90890-04081

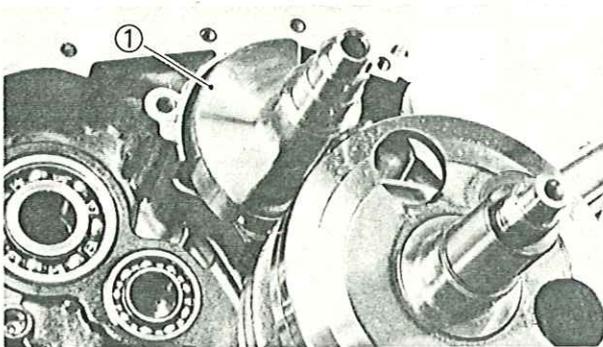
**NOTE:** \_\_\_\_\_

Hold the connecting rod at top dead center with one hand while turning the nut of the Installing Tool with the other. Operate the Installing Tool until the crankshaft bottoms against the bearing.

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

To protect the crankshaft against scratches or to facilitate the operation of the installation.

Apply the grease to the oil seal lips, and apply the engine oil to each bearing.



2. Install:
  - Balancer ①

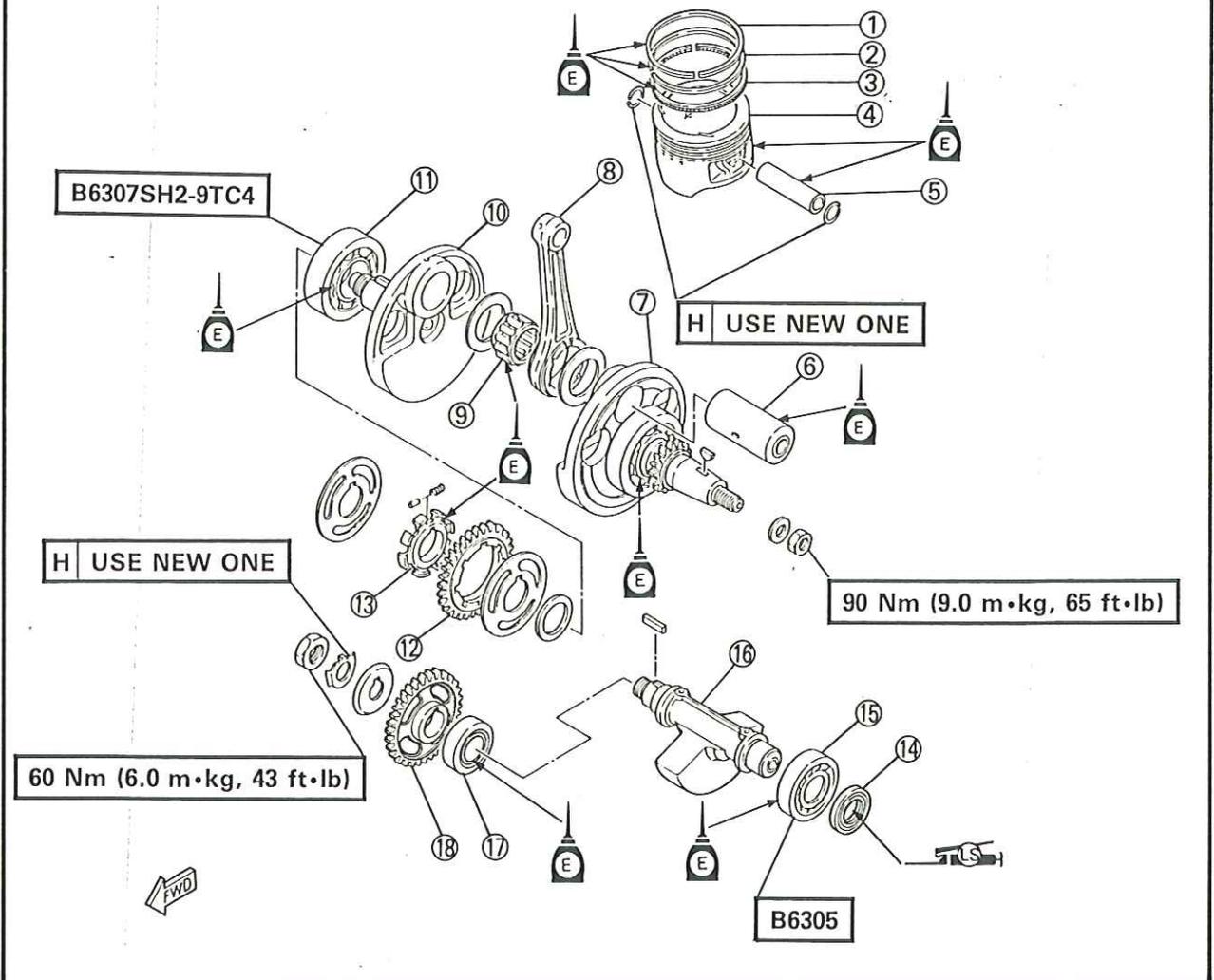


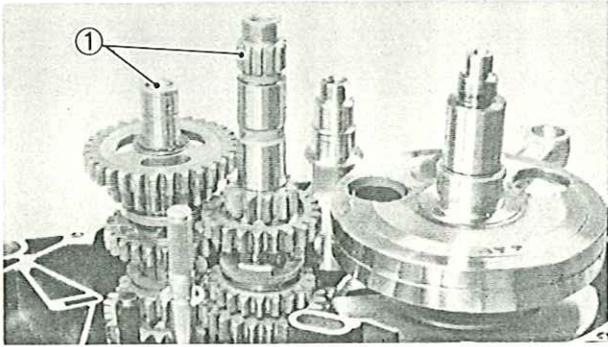
### CRANKSHAFT, PISTON AND BALANCER

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

A	<b>CRANK WIDTH:</b> 74.95 ~ 75.00 mm (2.950 ~ 2.953 in)	F	<b>PISTON RING END GAP:</b> Top: 0.30 ~ 0.45 mm (0.012 ~ 0.018 in) 2nd: 0.30 ~ 0.45 mm (0.012 ~ 0.018 in) Oil: 0.20 ~ 0.70 mm (0.008 ~ 0.028 in)
B	<b>RUNOUT LIMIT:</b> 0.03 mm (0.0012 in)	G	<b>PISTON RING SIDE CLEARANCE:</b> Top: 0.04 ~ 0.08 mm (0.002 ~ 0.003 in) 2nd: 0.03 ~ 0.07 mm (0.001 ~ 0.003 in)
C	<b>SMALL END FREE PLAY:</b> 0.8 ~ 1.0 mm (0.031 ~ 0.039 in)		
D	<b>BIG END SIDE CLEARANCE:</b> 0.25 ~ 0.75 mm (0.010 ~ 0.030 in)		

E	<b>PISTON SIZE:</b> 94.915 ~ 94.965 mm (3.737 ~ 3.739 in)
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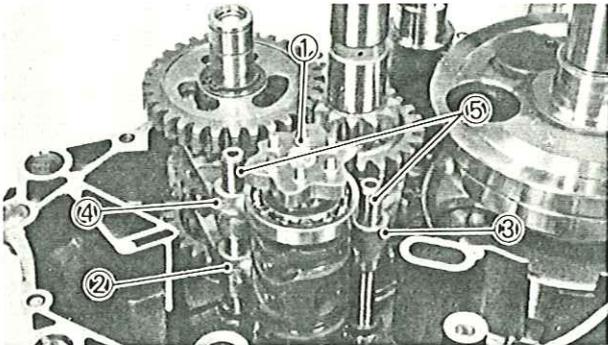




## SHIFTER AND TRANSMISSION

### 1. Install:

- Transmission assembly ①

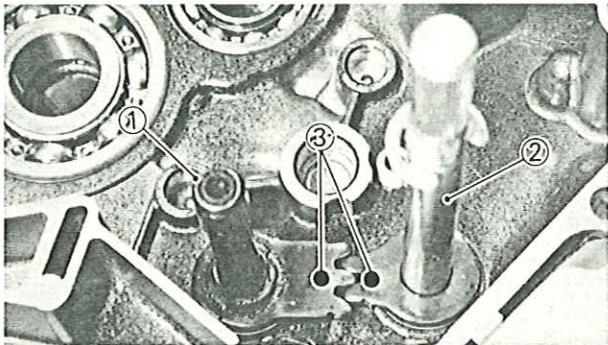


### 2. Install:

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

### NOTE:

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

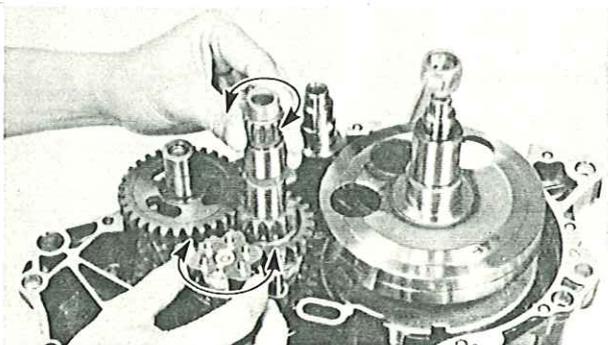


### 3. Install:

- Shift shaft #1 ①
- Shift shaft #2 ②

### NOTE:

Align the punch mark ③ on the change shaft with the punch mark on the shift shaft.

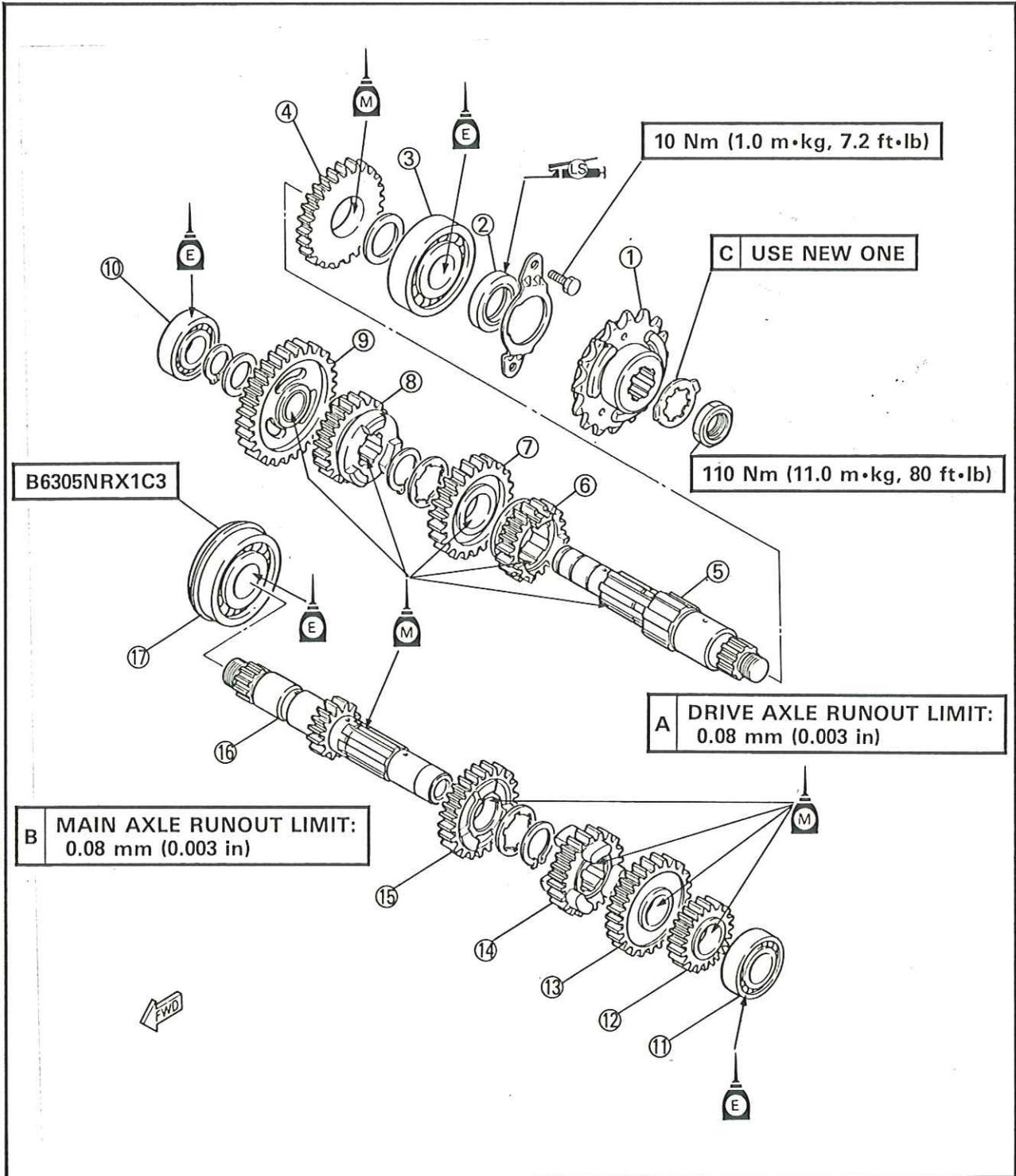


### 4. Check:

- Transmission operation
- Unsmooth operation → Repair.

## TRANSMISSION

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

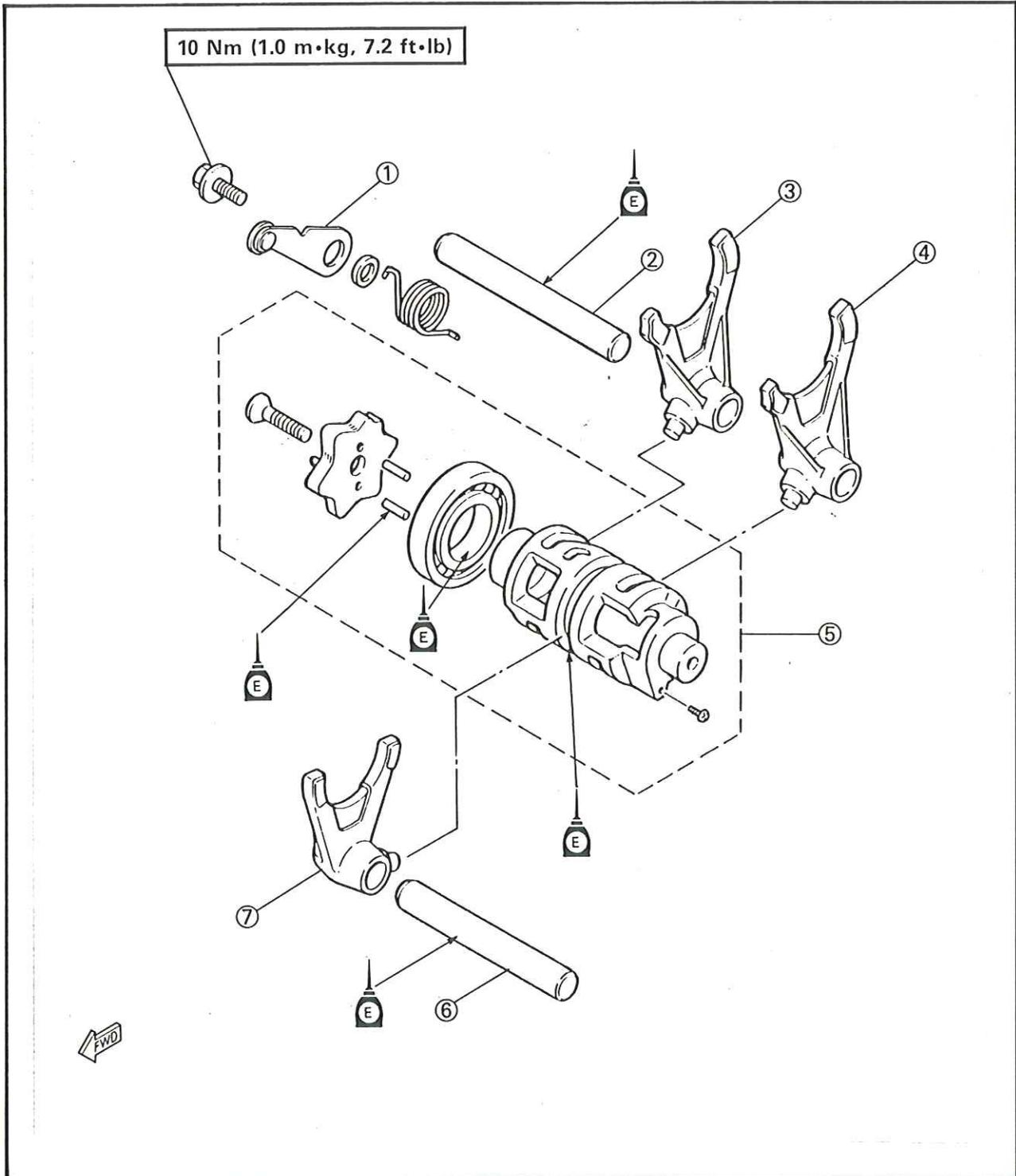


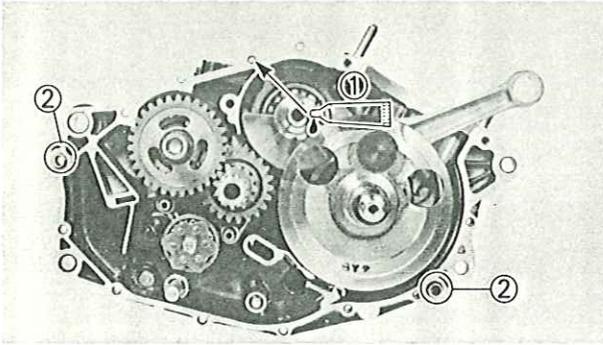




SHIFT CAM AND FORK

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





### CRANKCASE (RIGHT)

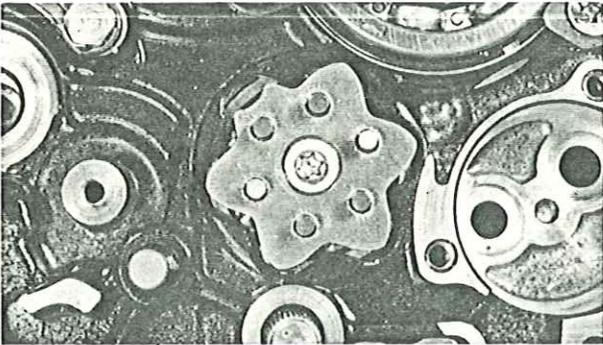
1. Apply:
  - Yamaha Bond No. 1215 ①
 To the mating surfaces of both case halves.



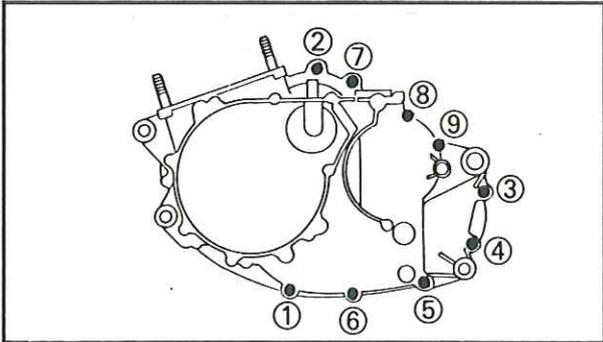
**Yamaha Bond No. 1215:**  
P/N. 90890-85505

2. Install:
  - Dowel pin ②
3. Fit the left crankcase onto the right case. Tap lightly on the case with a soft hammer.

**NOTE:** \_\_\_\_\_  
Turn the shift cam to the position shown in the figure so that it does not contact the crankcase when installing the crankcase.



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

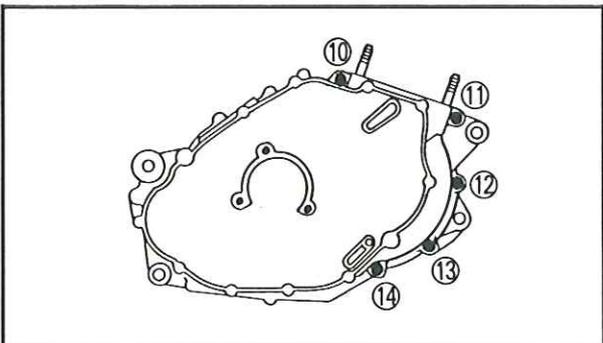


4. Tighten:
  - Bolts (Crankcase) ①~⑭

**NOTE:** \_\_\_\_\_  
Tighten the bolts starting with the lowest numbered one.



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



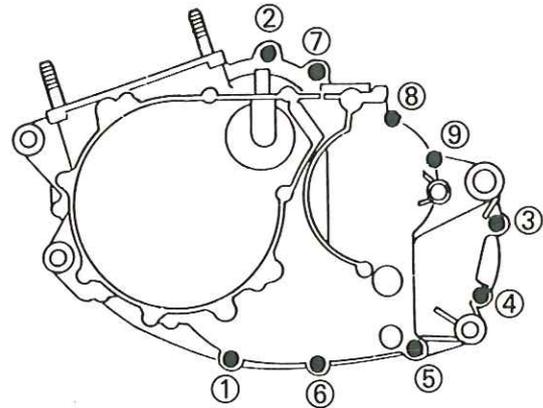
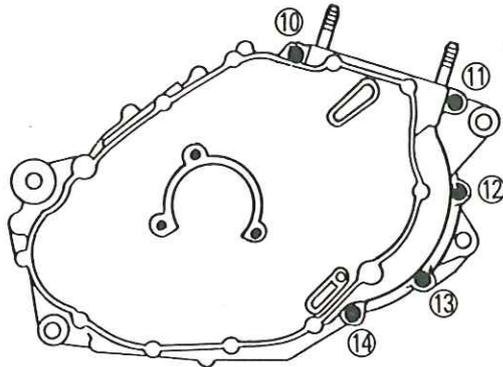
5. Apply:
  - 4-stroke engine oil
 To the crank pin, bearing and oil delivery hole.
6. Check:
  - Crankshaft and transmission operation
 Unsmooth operation → Repair.



### CRANKCASE

- ① Crankcase (Right)
- ② Crankcase (Left)
- ③ Crankcase ventilation hose
- ④ Dowel pin
- ⑤ Dowel pin
- ⑥ Dowel pin
- ⑦ Stopper plate
- ⑧ Collar

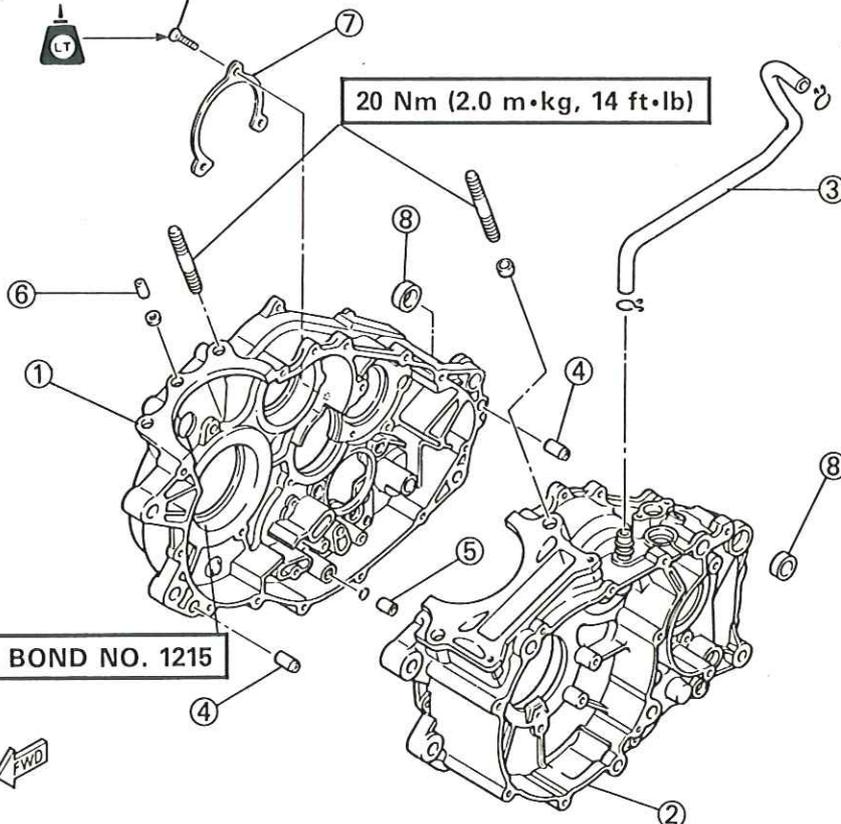
#### A TIGHTENING SEQUENCE:



7 Nm  
(0.7 m·kg, 5.1 ft·lb)

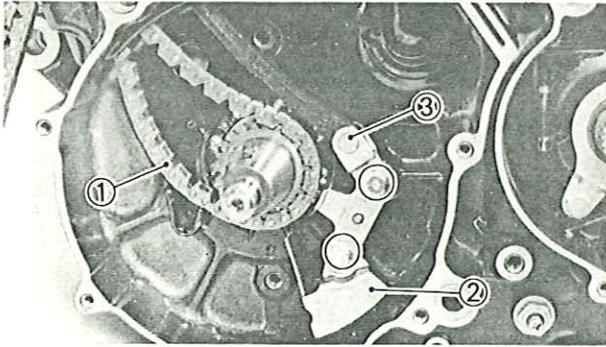


20 Nm (2.0 m·kg, 14 ft·lb)



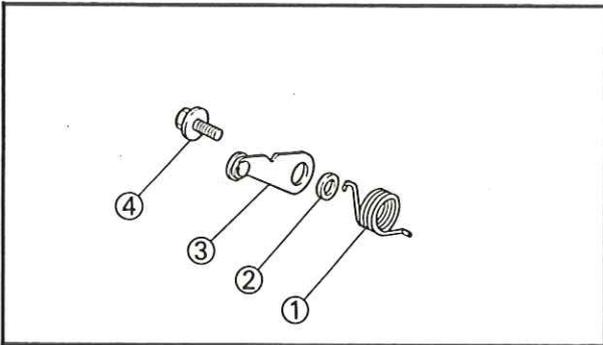
B YAMAHA BOND NO. 1215





### CAM CHAIN

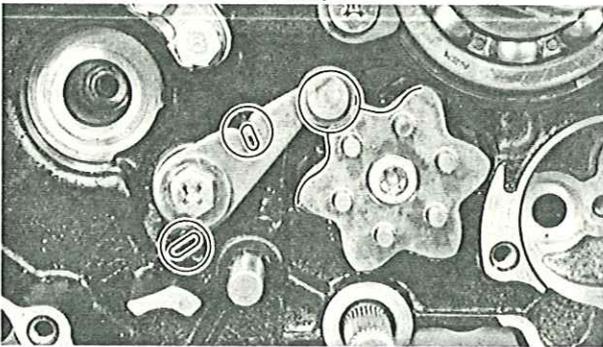
1. Install:
  - Cam chain ①
  - Oil baffle plate ②
  - Chain guide ③



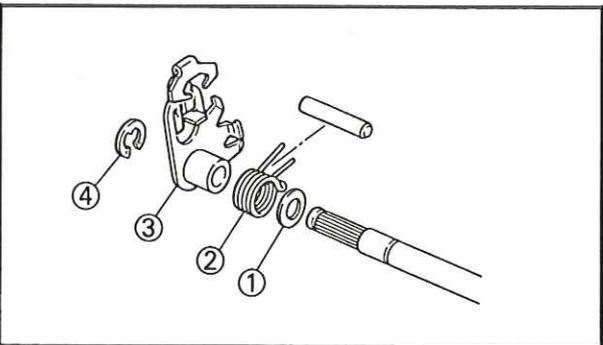
### OIL PUMP, KICK AXLE AND SHIFT LEVER

1. Install:
  - Spring ①
  - Collar ②
  - Stopper lever ③

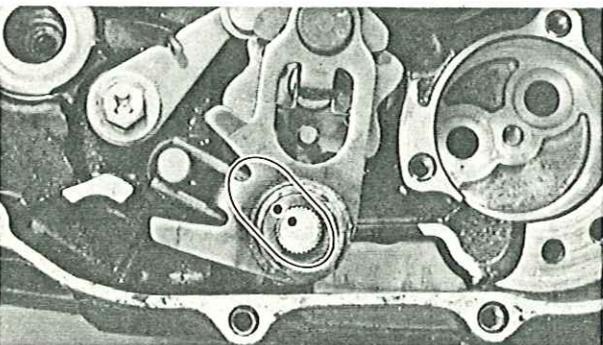
	<b>Bolt ④ (Stopper Lever):</b> 10 Nm (1.0 m•kg, 7.2 ft•lb)
---	---



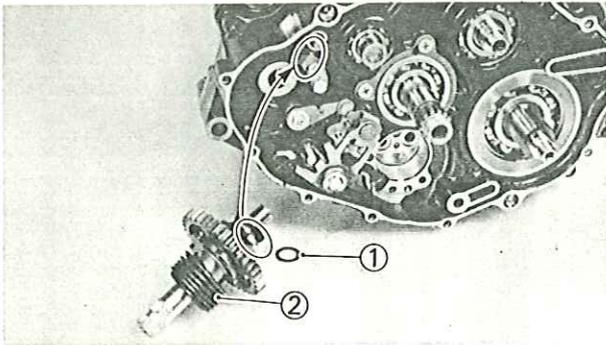
**NOTE:** \_\_\_\_\_  
 Set the spring and stopper lever at proper position.  
 \_\_\_\_\_



2. Install:
  - Plain washer ①
  - Spring ②
  - Shift lever ③
  - Circlip ④



**NOTE:** \_\_\_\_\_  
 When installing the shift lever, align the punched mark on the shift lever with the punched mark on the shift shaft.  
 \_\_\_\_\_

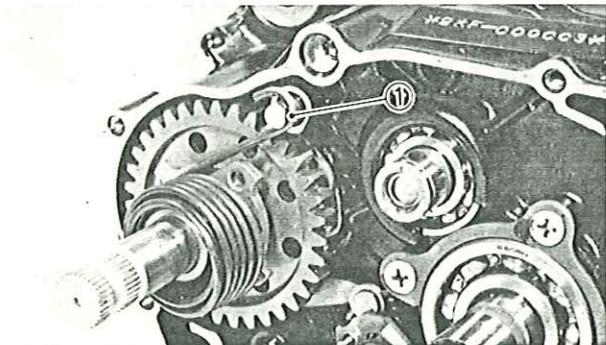


3. Install:
- Plain washer ①
  - Kick axle ②

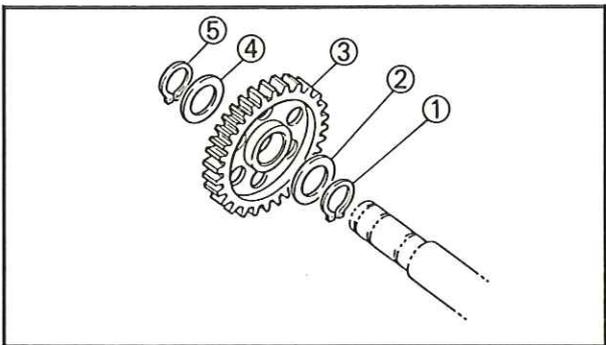
**NOTE:** \_\_\_\_\_

Make sure that the ratchet wheel guide is stopped at the stopper of the crankcase.

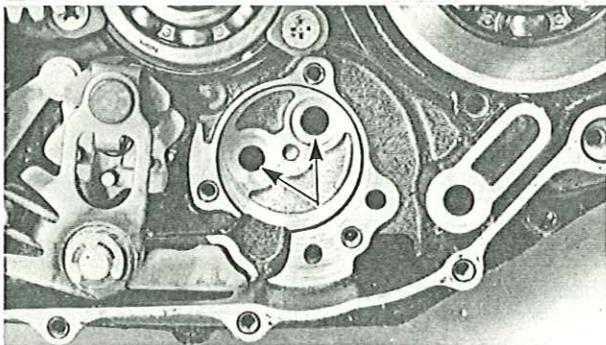
---



4. Hook:
- Kick spring ①



5. Install:
- Circlip ①
  - Plain washer ②
  - Kick idle gear ③
  - Plain washer ④
  - Circlip ⑤

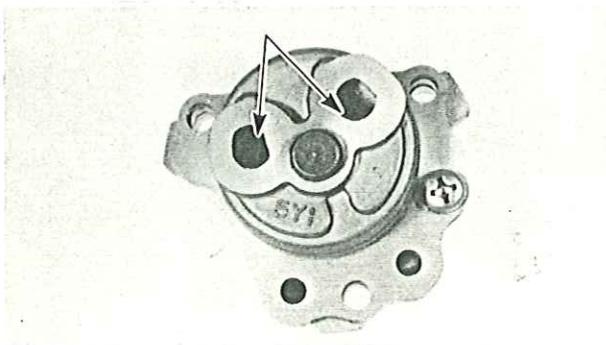


6. Apply:
- 4 stroke engine oil
- To the oil passages in the crankcase.

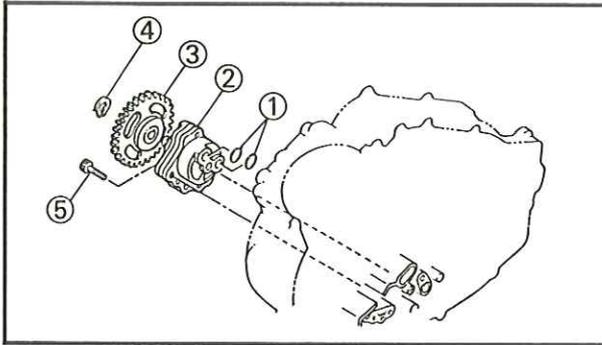
**CAUTION:** \_\_\_\_\_

Apply a liberal amount of 4-stroke engine oil to the oil pump passages in the crankcase, or the engine may be damaged.

---



7. Apply:
- 4 stroke engine oil
- To the oil passages in the oil pump.



8. Install:

- O-ring ①
- Oil pump ②
- Oil pump gear ③
- Circlip ④

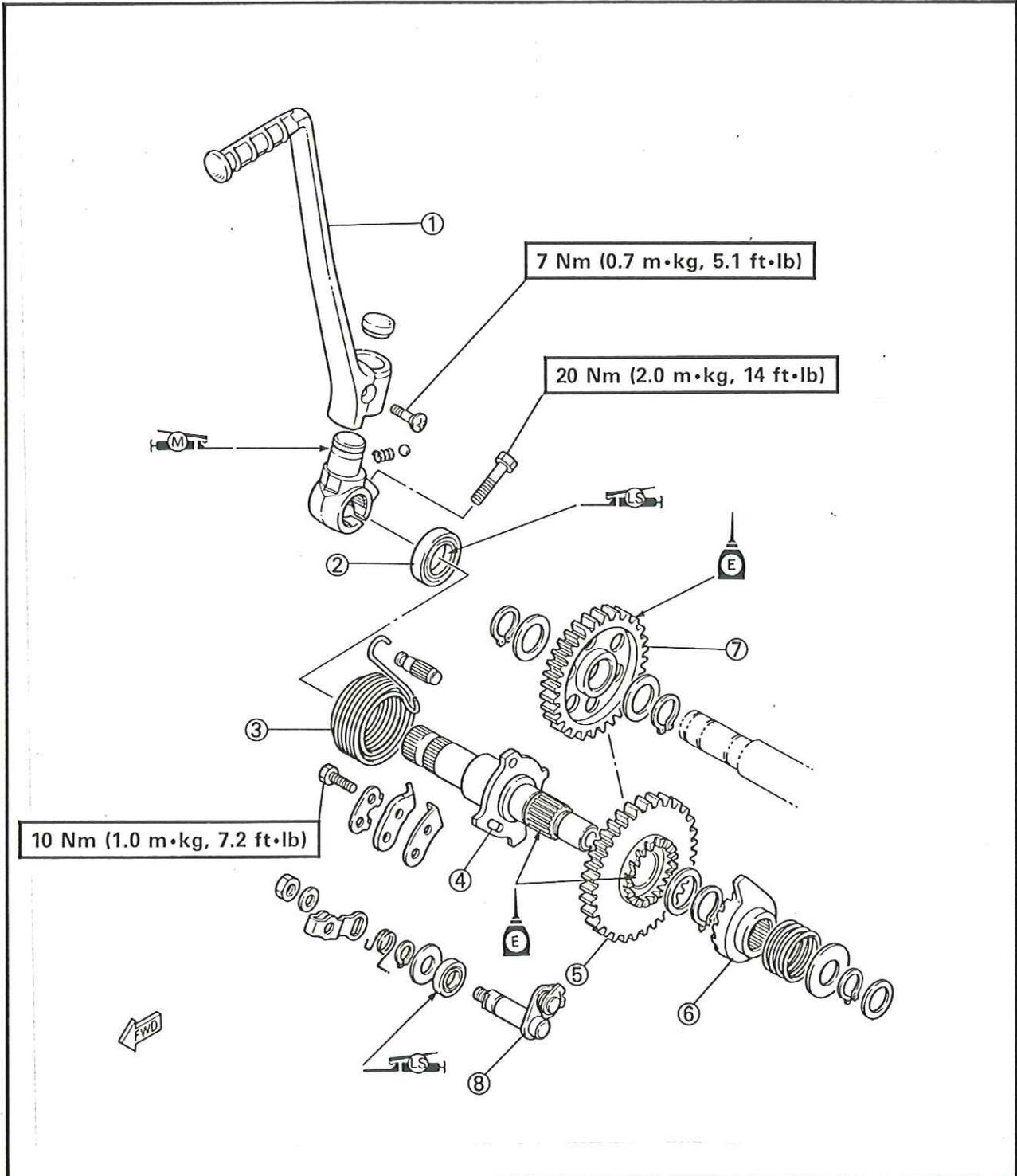


**Bolt ⑤ (Oil Pump):**  
10 Nm (1.0 m•kg, 7.2 ft•lb)



## STARTER

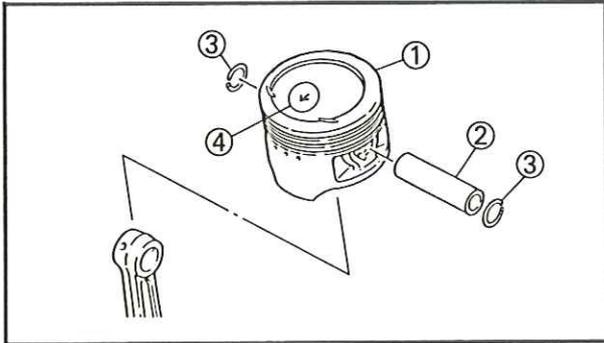
- ① Kick crank
- ② Oil seal
- ③ Return spring
- ④ Kick axle
- ⑤ Kick gear
- ⑥ Ratchet wheel
- ⑦ Kick idle gear
- ⑧ Decompression lever





## CYLINDER HEAD, CYLINDER, CAMSHAFT AND PISTON

1. Apply:
  - 4 stroke engine oil
  - To the piston pin.



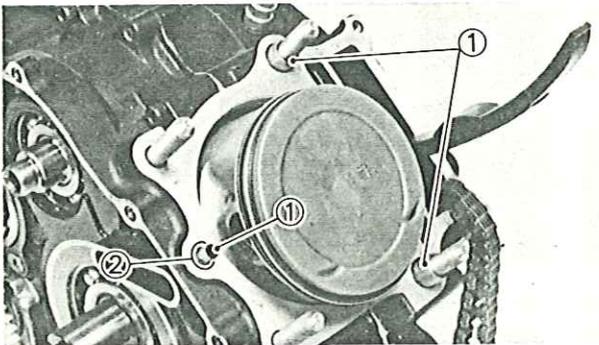
2. Install:
  - Piston ①
  - Piston pin ②
  - Circlip ③

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

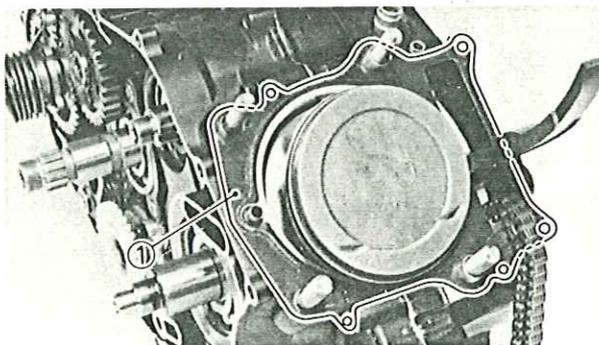
- The arrow ④ on the piston must point to the front of the engine.
- Before installing the piston pin clip, cover the crankcase with a clean towel or rag so you will not accidentally drop the pin clip and material into the crankcase.

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

Always use a new piston pin clip.



3. Install:
  - Dowel pin ①
  - O-ring ②

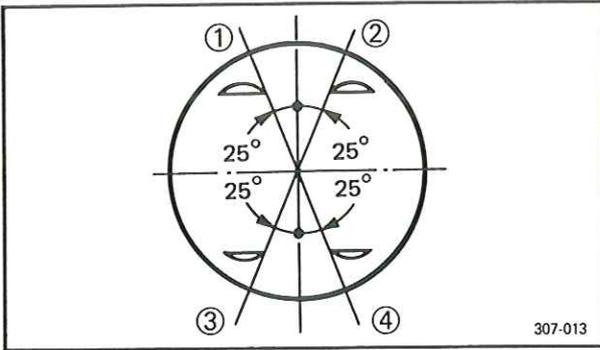


4. Install:
  - Gasket ① (Cylinder)

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

Install the gasket (cylinder) as shown.



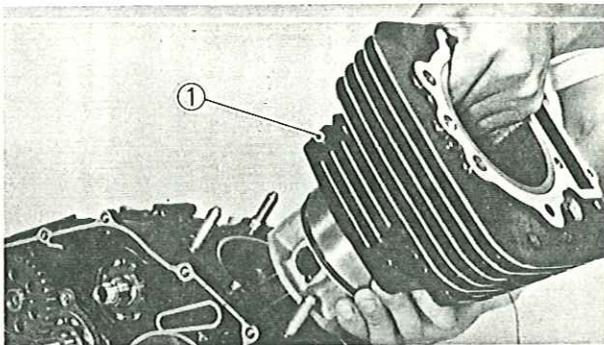


5. Offset the piston ring end gaps as shown.

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

- Be sure to check the manufacturer's marks or numbers stamped on the rings are on the top side of the rings.
- Before installing the cylinder, apply a liberal coating of 4-stroke engine oil to the piston rings.

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

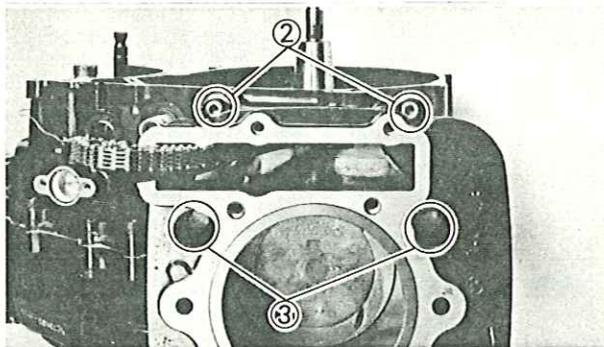


6. Install:

- Cylinder ①

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

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



**Bolts ②:**

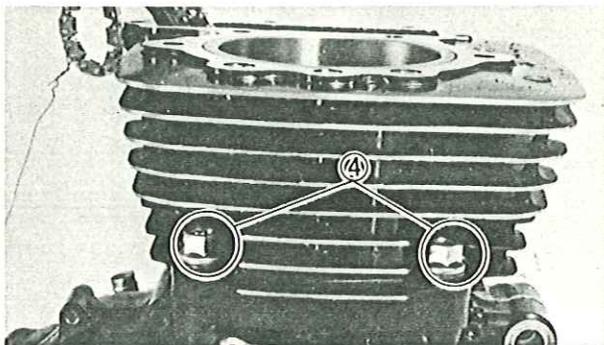
10 Nm (1.0 m•kg, 7.2 ft•lb)

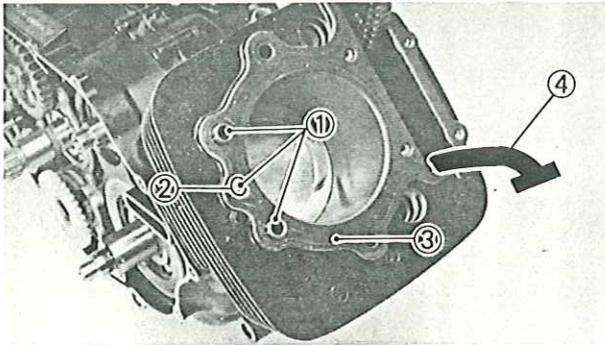
**Cap Nut ③:**

42 Nm (4.2 m•kg, 30 ft•lb)

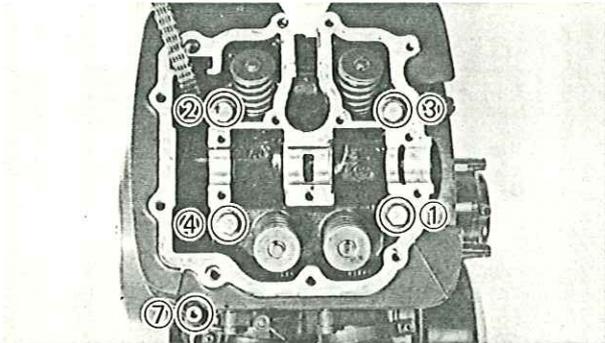
**Nut ④:**

42 Nm (4.2 m•kg, 30 ft•lb)



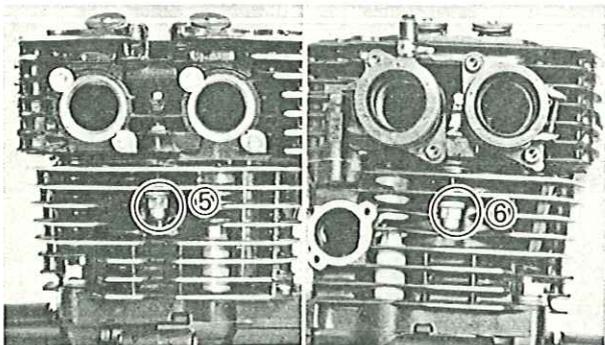


7. Install:
- Dowel pin ①
  - O-ring ②
  - Gasket ③ (Cylinder head)
  - Chain guide ④

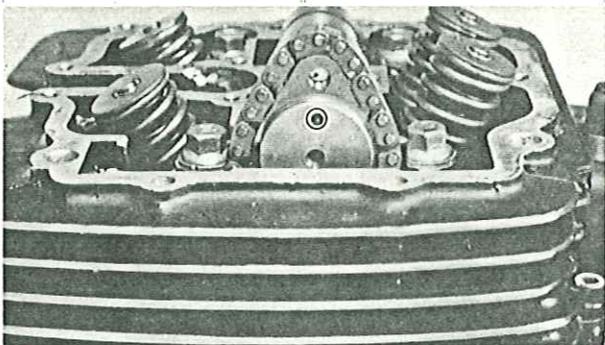


8. Install:
- Cylinder head

**NOTE:** \_\_\_\_\_  
Tighten the bolts starting with the lowest numbered one.

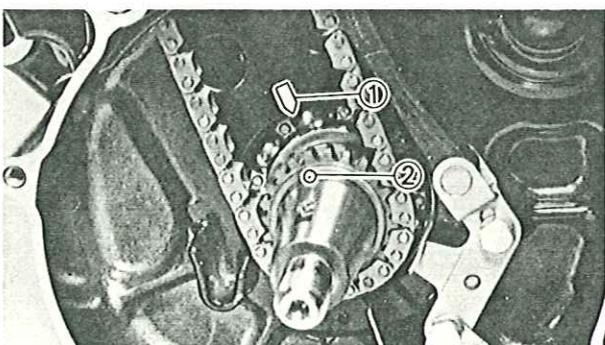


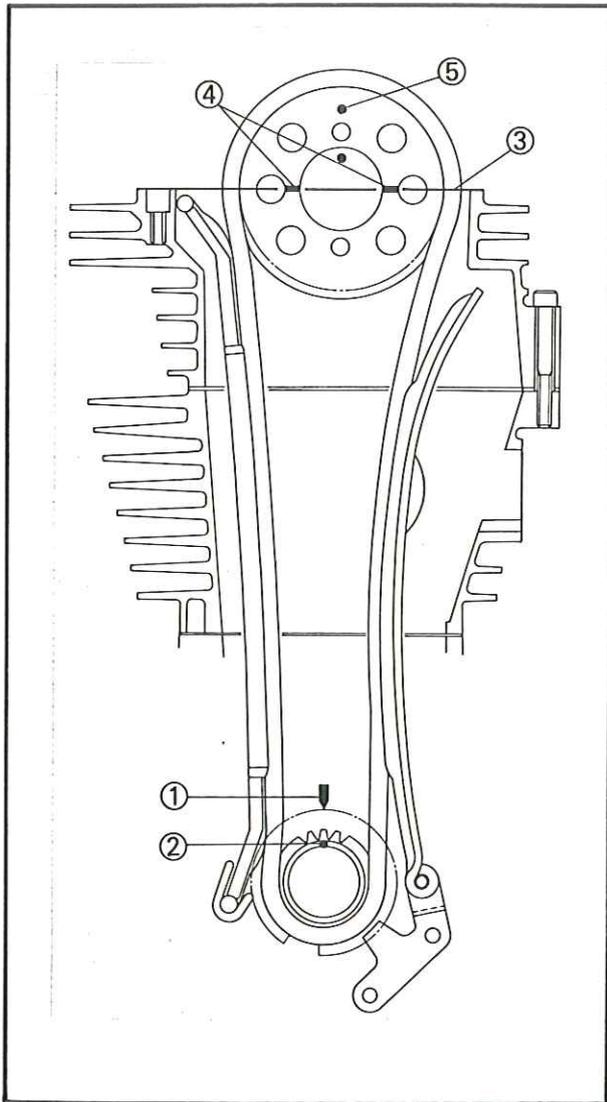
	<b>Bolt (①, ②, ③ and ④):</b> 29 Nm (2.9 m•kg, 21 ft•lb)
	<b>Nut (⑤ and ⑥):</b> 22 Nm (2.2 m•kg, 16 ft•lb)
	<b>Bolt ⑦:</b> 10 Nm (1.0 m•kg, 7.2 ft•lb)



9. Install:
- Cam sprocket
  - Camshaft

<p><b>Installing steps:</b></p> <ul style="list-style-type: none"> <li>• Install the camshaft onto the cylinder head as shown (compression stroke).</li> <li>• Rotate the crankshaft counterclockwise direction until the crankcase pointer ① and a dot ② on the cam chain drive sprocket are aligned.</li> </ul>
---





- Place the cam chain onto the cam sprocket.
- Install the sprocket with timing marks as shown, and finger tighten the sprocket bolts.

- ③ Cylinder head upper surface
- ④ Timing marks
- ⑤ Upper position mark

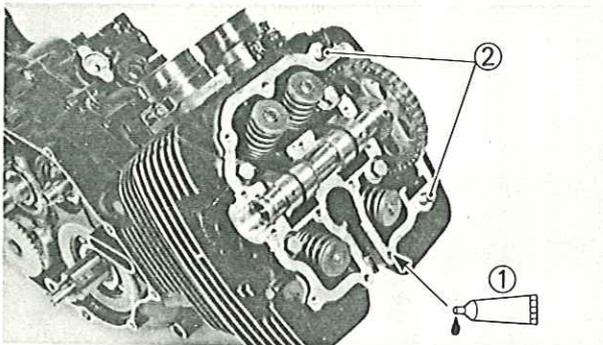
- Force the camshaft clockwise and counter-clockwise to remove the cam chain slack.
- Insert your finger into the cam chain tensioner hole, and push the cam chain damper inward.
- While pushing the cam chain damper, be sure cam sprocket timing marks align with the cylinder head upper surface.
- If marks are aligned, tighten the cam sprocket bolts.



### Bolt (Cam Sprocket):

20 Nm (2.0 m•kg, 14 ft•lb)

- If marks do not align, change the meshing piston of sprocket and cam chain.



### 10. Apply:

- Yamaha bond No. 1215 ①
- To the mating surfaces.



### Yamaha Bond No. 1215:

P/N. 90890-85505

### 11. Install:

- Dowel pin ②

### 12. Install:

- Cylinder head cover

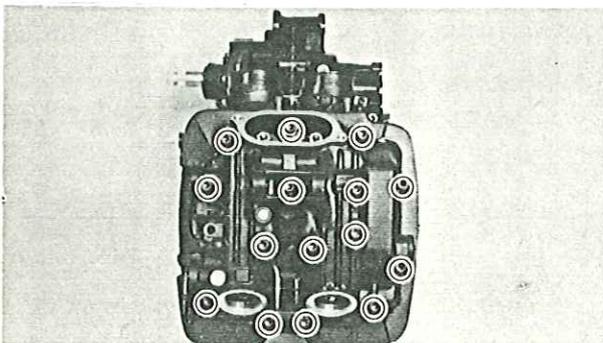
### NOTE:

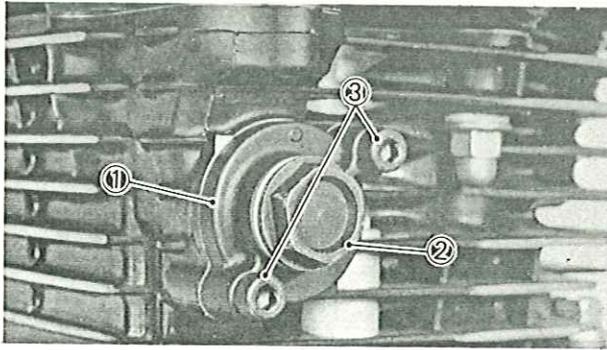
Tighten the bolts in stage, using a crisscross pattern.



### Bolt (Cylinder Head Cover):

10 Nm (1.0 m•kg, 7.2 ft•lb)





### 13. Install:

- Chain tensioner ①



**Bolt ②:**

20 Nm (2.0 m•kg, 14 ft•lb)

**Bolt ③:**

10 Nm (1.0 m•kg, 7.2 ft•lb)

### 14. Adjust:

- Valve clearance



**Valve Clearance (Cold):**

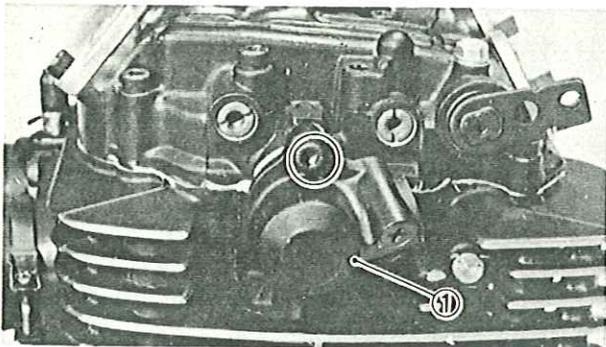
**Intake:**

0.07 ~ 0.12 mm (0.003 ~ 0.005 in)

**Exhaust:**

0.12 ~ 0.17 mm (0.005 ~ 0.007 in)

Refer to the "VALVE CLEARANCE ADJUSTMENT" section in the CHAPTER 3.



### 15. Install:

- Tachometer gear unit ①
- Tappet cover ② (Exhaust)
- Tappet cover ③ (Intake)
- Spark plug ④



**Bolt (Tachometer Gear Unit):**

10 Nm (1.0 m•kg, 7.2 ft•lb)

**Tappet Cover (Exhaust):**

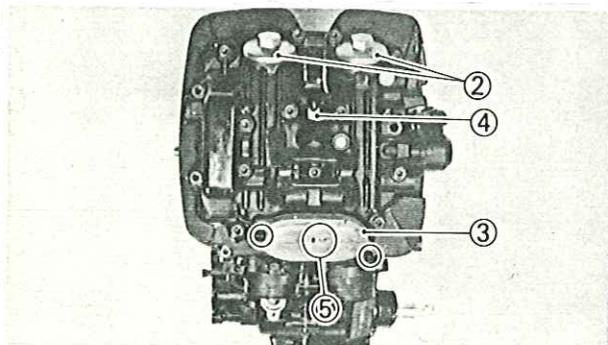
12 Nm (1.2 m•kg, 8.7 ft•lb)

**Bolt (Tapper Cover—Intake):**

10 Nm (1.0 m•kg, 7.2 ft•lb)

**Spark Plug:**

18 Nm (1.8 m•kg, 13 ft•lb)



### NOTE:

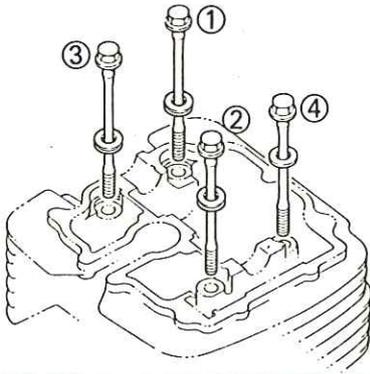
The intake tappet cover should be installed with the arrow mark ⑤ upward.



## CYLINDER

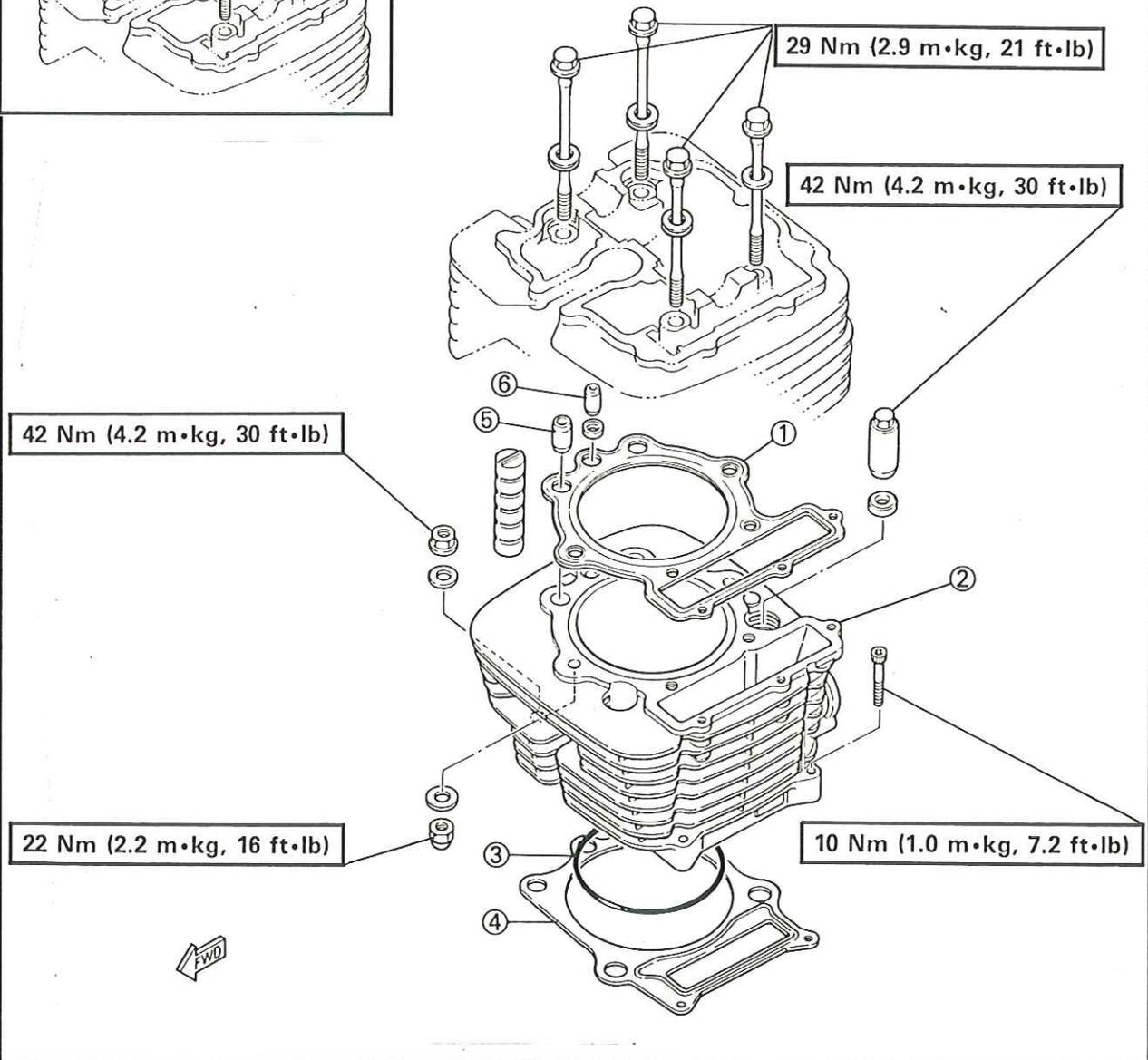
- ① Gasket
- ② Cylinder
- ③ O-ring
- ④ Gasket
- ⑤ Dowel pin
- ⑥ Dowel pin

### A TIGHTENING SEQUENCE:



**B** BORE SIZE:  
94.97 ~ 95.02 mm (3.739 ~ 3.741 in)  
< LIMIT > :  
< 95.1 mm (3.744 in) >

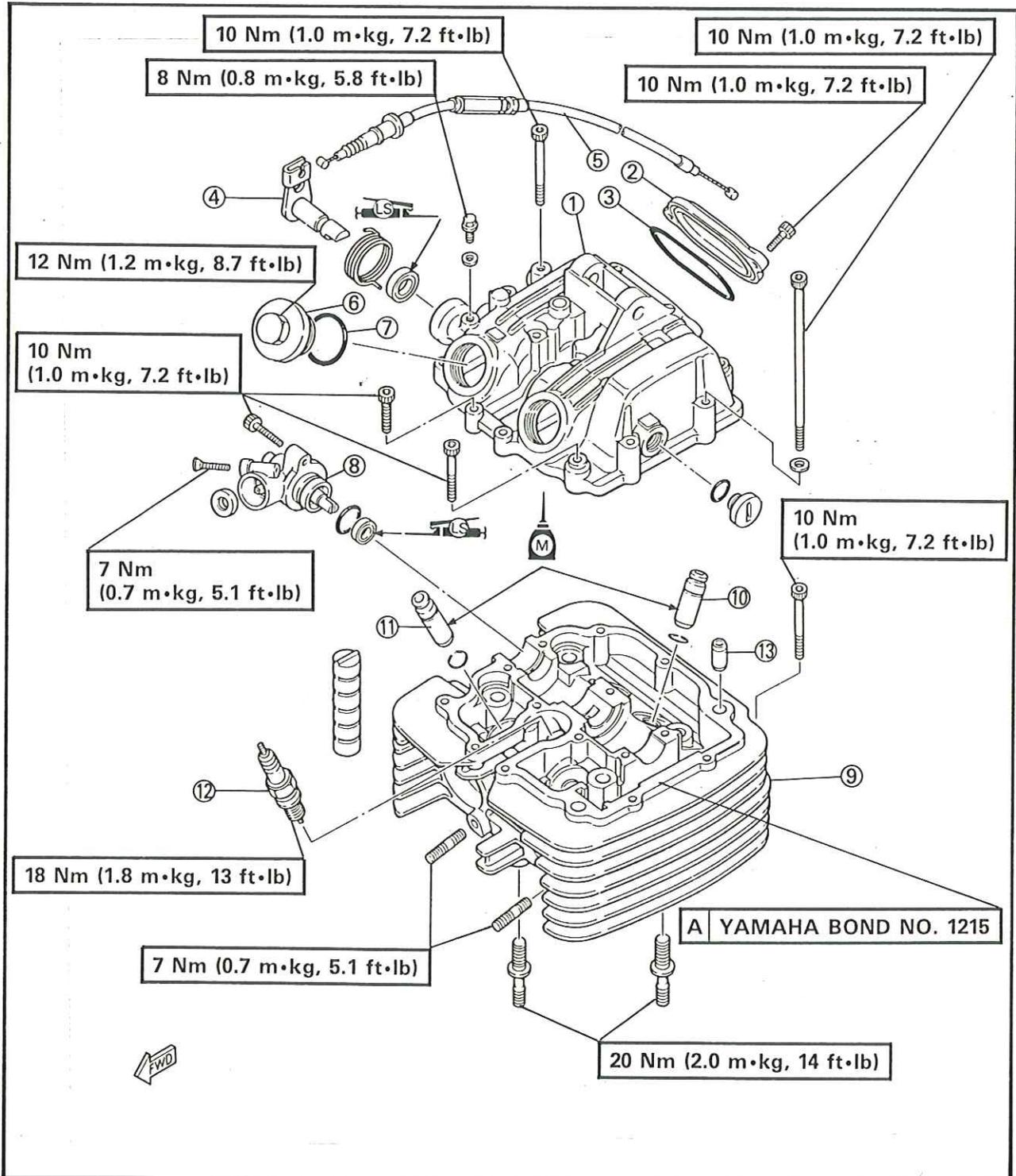
**C** PISTON-TO-CYLINDER CLEARANCE:  
0.045 ~ 0.065 mm (0.002 ~ 0.003 in)  
< LIMIT > :  
< 0.1 mm (0.004 in) >





### CYLINDER HEAD

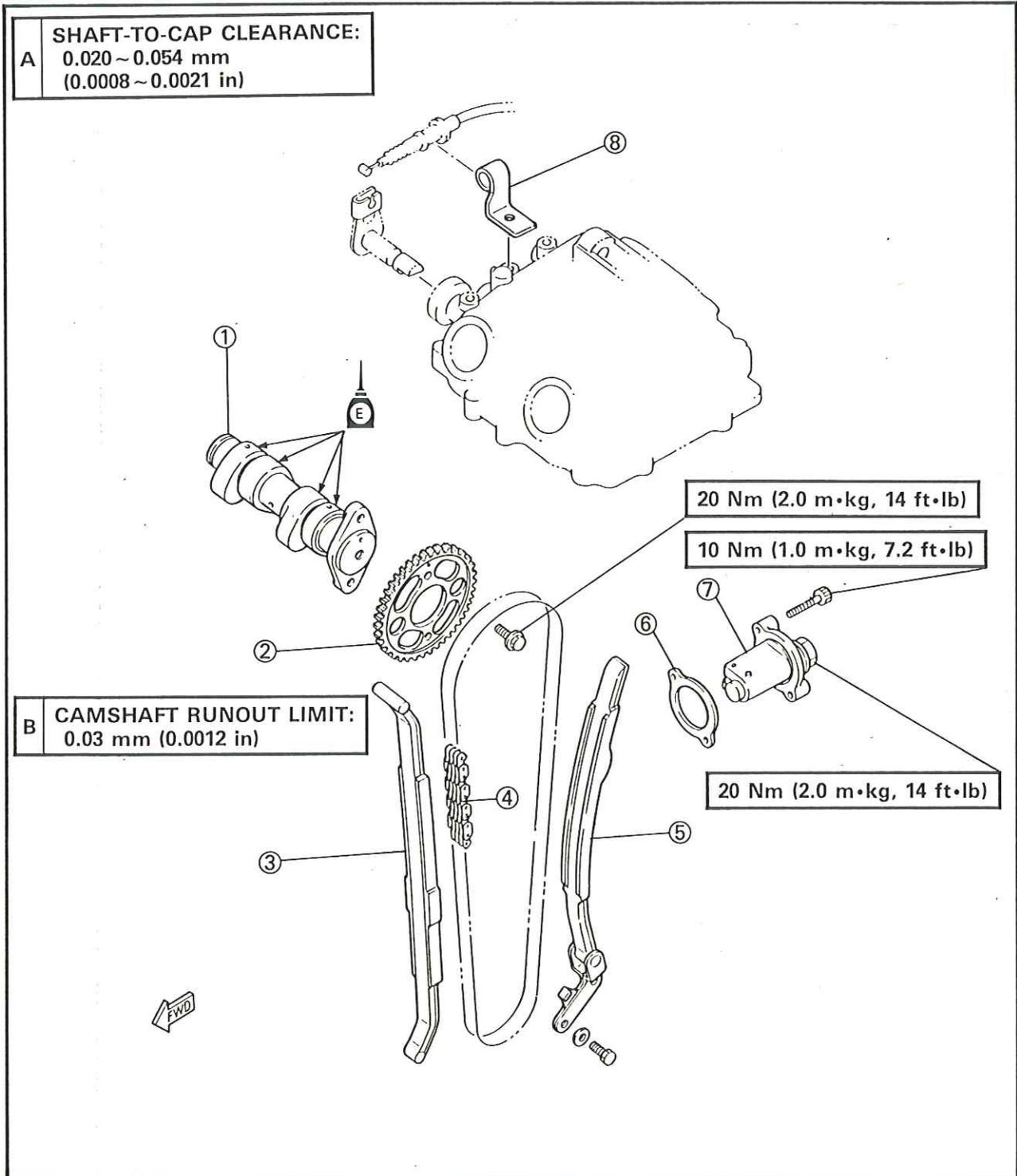
- |                          |                               |
|--------------------------|-------------------------------|
| ① Cylinder head cover    | ⑧ Gear unit (Tachometer)      |
| ② Tappet cover (Intake)  | ⑨ Cylinder head               |
| ③ O-ring                 | ⑩ Valve guide (Intake valve)  |
| ④ Decompression cam      | ⑪ Valve guide (Exhaust valve) |
| ⑤ Decompression cable    | ⑫ Spark plug                  |
| ⑥ Tappet cover (Exhaust) | ⑬ Dowel pin                   |
| ⑦ O-ring                 |                               |

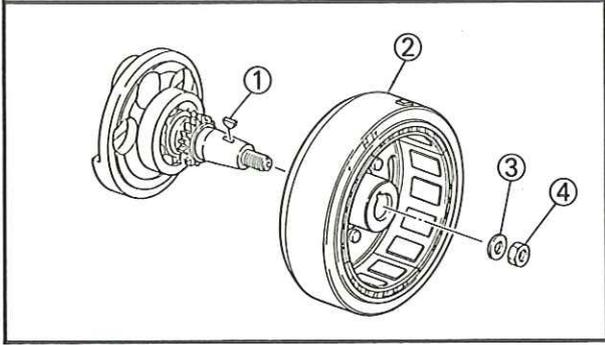




## CAMSHAFT AND CAM CHAIN

- ① Camshaft
- ② Cam sprocket
- ③ Chain guide
- ④ Cam chain
- ⑤ Chain guide
- ⑥ Gasket
- ⑦ Chain tensioner
- ⑧ Clamp (Decompression cable)



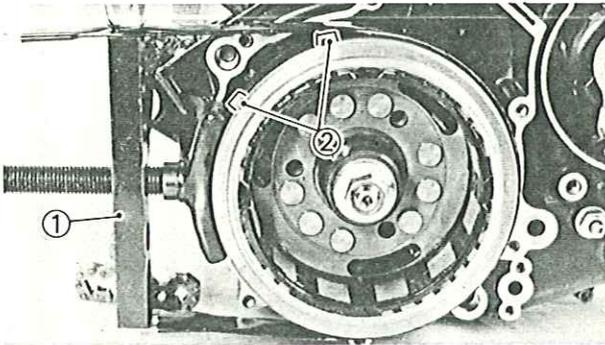


## C.D.I. MAGNETO

1. Install:
  - Key ①
  - Rotor ②
  - Washer ③
  - Nut ④

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

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



2. Tighten:
  - Nut (Rotor)



**Nut (Rotor):**  
90 Nm (9.0 m•kg, 65 ft•lb)

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

Hold the rotor to tighten the nut (Rotor) by the Rotor Holder ①.



**Rotor Holder:**  
P/N. 90890-01701

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

Do not allow the Rotor Holder to touch the projections ② on the rotor.



# ENGINE ASSEMBLY

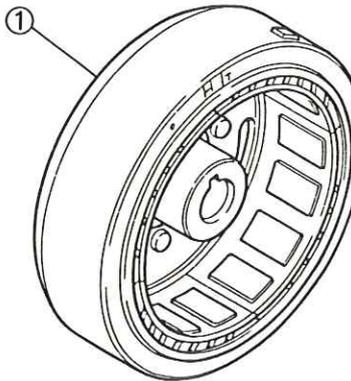
## C.D.I. MAGNETO

- ① Rotor
- ② Pickup coil
- ③ Source coil/Charging coil

**PICKUP COIL RESISTANCE:**  
90 ~ 130Ω at 20°C (68°F)  
(Black/Yellow—Blue/Yellow)  
90 ~ 130Ω at 20°C (68°F)  
(Black/Yellow—Green/White)

A

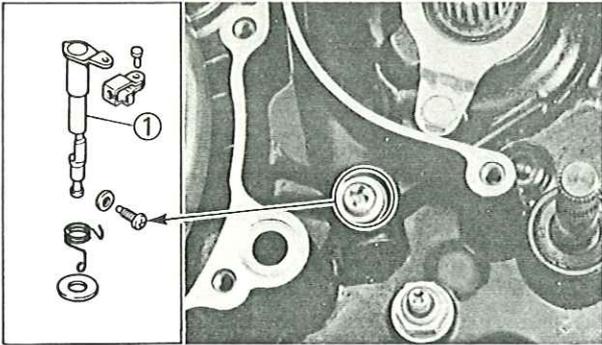
7 Nm



7 Nm (0.7 m·kg, 5.1 ft·lb)



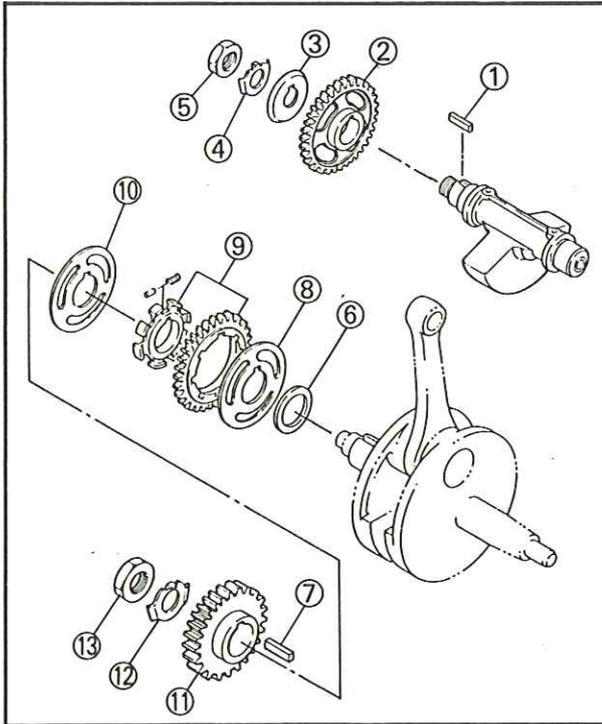
**B** CHARGING  
0.2 ~ 0.6Ω a  
(White/Yel



**CLUTCH, PRIMARY DRIVE GEAR AND BALANCER GEAR**

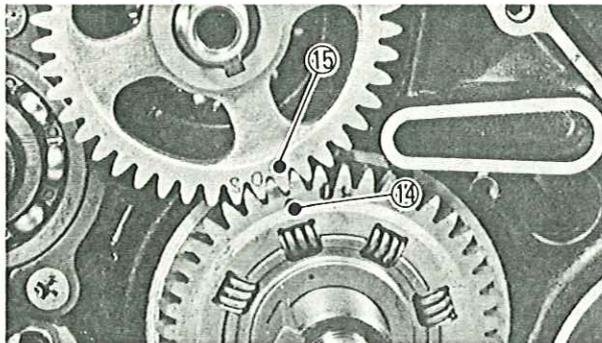
1. Install:
- Plain washer
  - Spring
  - Push lever ①

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



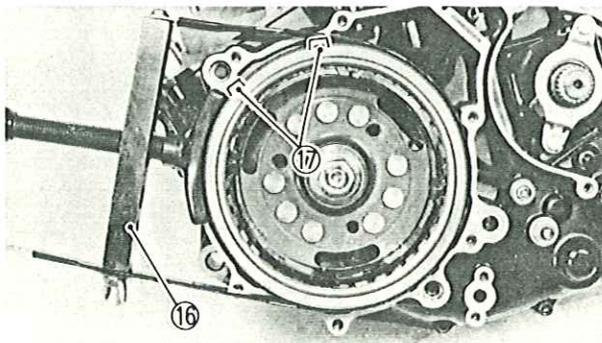
2. Install:
- Key ①
  - Balancer gear ②
  - Plate ③
  - Lock washer ④
  - Nut ⑤ (Balancer gear)
  - Plate washer ⑥
  - Key ⑦
  - Plate ⑧
  - Balancer drive gear ⑨
  - Plate ⑩
  - Primary drive gear ⑪
  - Lock washer ⑫
  - Nut ⑬ (Primary drive gear)

 **Nut (Balancer Gear):**  
60 Nm (6.0 m•kg, 43 ft•lb)  
**Nut (Primary Drive Gear):**  
120 Nm (12.0 m•kg, 85 ft•lb)



**NOTE:** \_\_\_\_\_  
When installing the drive gear, align the punched mark ⑭ on the drive gear with the punched mark ⑮ on the balancer gear.

**WARNING:** \_\_\_\_\_  
Always use a new lock washer.



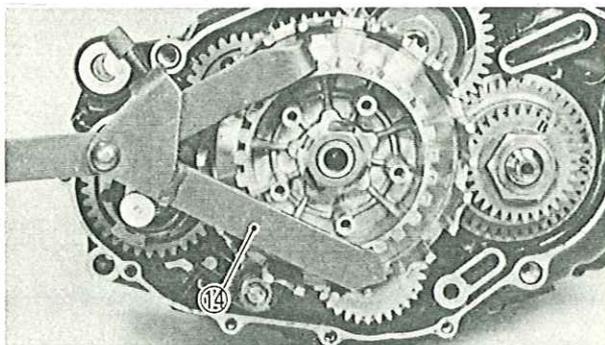
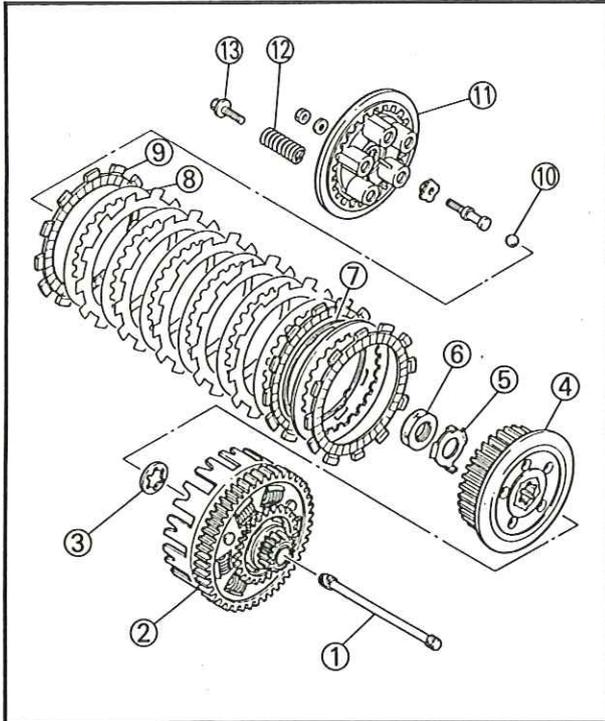
**NOTE:** \_\_\_\_\_  
Hold the rotor (C.D.I. magneto) to tighten the nut ⑤ and ⑬ by the Rotor Holder ⑯

 **Rotor Holder:**  
P/N. 90890-01701



### CAUTION:

Do not allow the Rotor Holder to touch the projections ⑰ on the rotor.



3. Bend the lock washer tab along the nut flats.

4. Install:

- Push rod ①
- Clutch housing ②
- Thrust washer ③
- Clutch boss ④
- Lock washer ⑤
- Nut ⑥ (Clutch boss)
- Wave plate ⑦
- Clutch plate ⑧
- Friction plate ⑨
- Ball ⑩
- Pressure plate ⑪
- Clutch spring ⑫
- Bolt (Pressure plate) ⑬



**Nut (Clutch Boss):**  
90 Nm (9.0 m•kg, 65 ft•lb)  
**Bolt (Pressure Plate):**  
8 Nm (0.8 m•kg, 5.8 ft•lb)

### NOTE:

- Hold the clutch boss to tighten the nut (Clutch boss) by the Universal Clutch Holder ⑭.

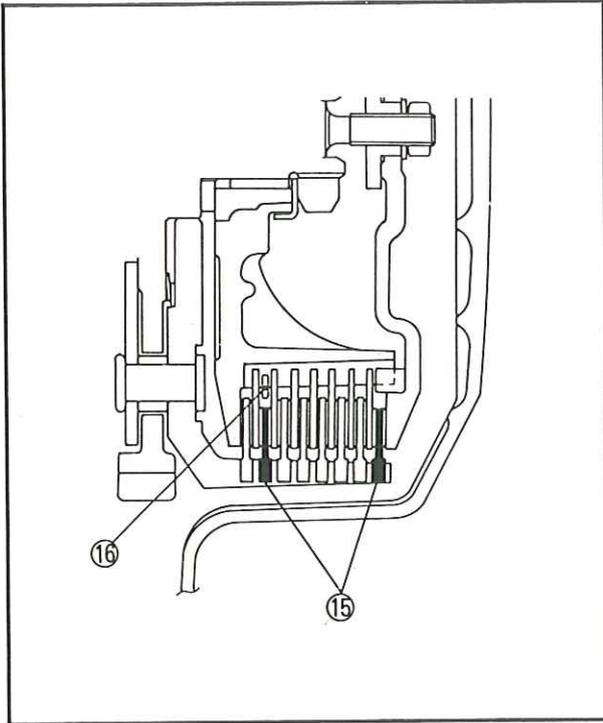


**Universal Clutch Holder:**  
P/N. 90890-04086

- Bend the lock washer tab along the nut flats.

### WARNING:

Always use a new lock washer.

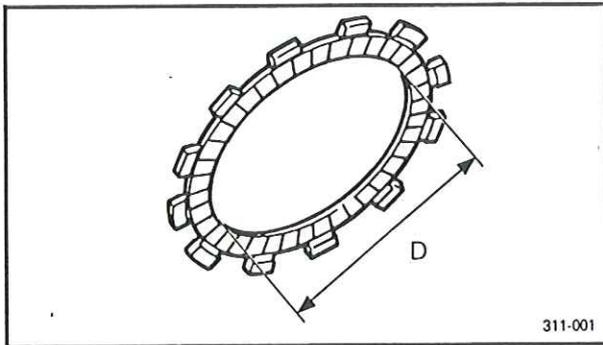


**NOTE:** \_\_\_\_\_

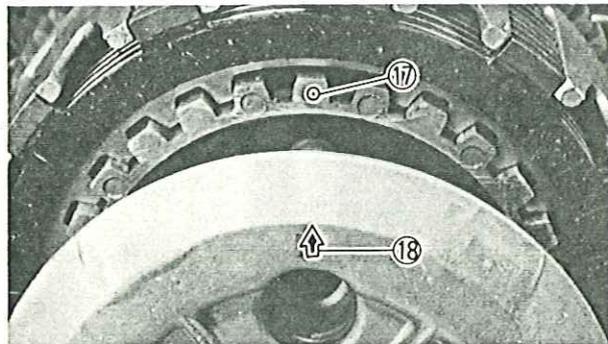
Install the clutch plates and friction plates alternately on the clutch boss, starting with a friction plate and ending with a friction plate.

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

- The friction plates (type A) ⑮ with the larger of the inside diameter must be installed in the second and last places.
- The wave plate ⑯ must be placed on the inside of the second friction plate.



	Friction Plate	
	Type "A"	Type "B"
Quantity	2 pcs.	6 pcs.
Inside Diameter "D"	116 mm (4.57 in)	113 mm (4.45 in)

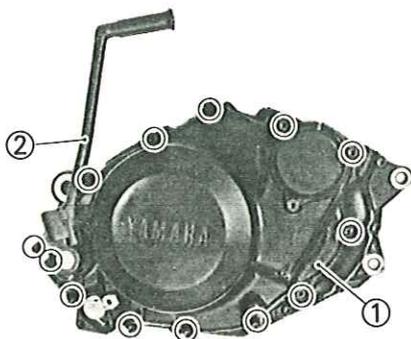


**NOTE:** \_\_\_\_\_

Align the punched mark ⑰ on the clutch boss with the arrow mark on the clutch pressure plate ⑱.

- Adjust:
  - Clutch (Mechanism free play)  
Refer to the "CLUTCH ADJUSTMENT" section in the CHAPTER 3.

- Install:
  - Dowel pin
  - Gasket
  - Crankcase cover (Right) ①
  - Kick crank ②



	<b>Bolt (Crankcase Cover):</b> 10 Nm (1.0 m•kg, 7.2 ft•lb)
	<b>Bolt (Kick Crank):</b> 20 Nm (2.0 m•kg, 14 ft•lb)

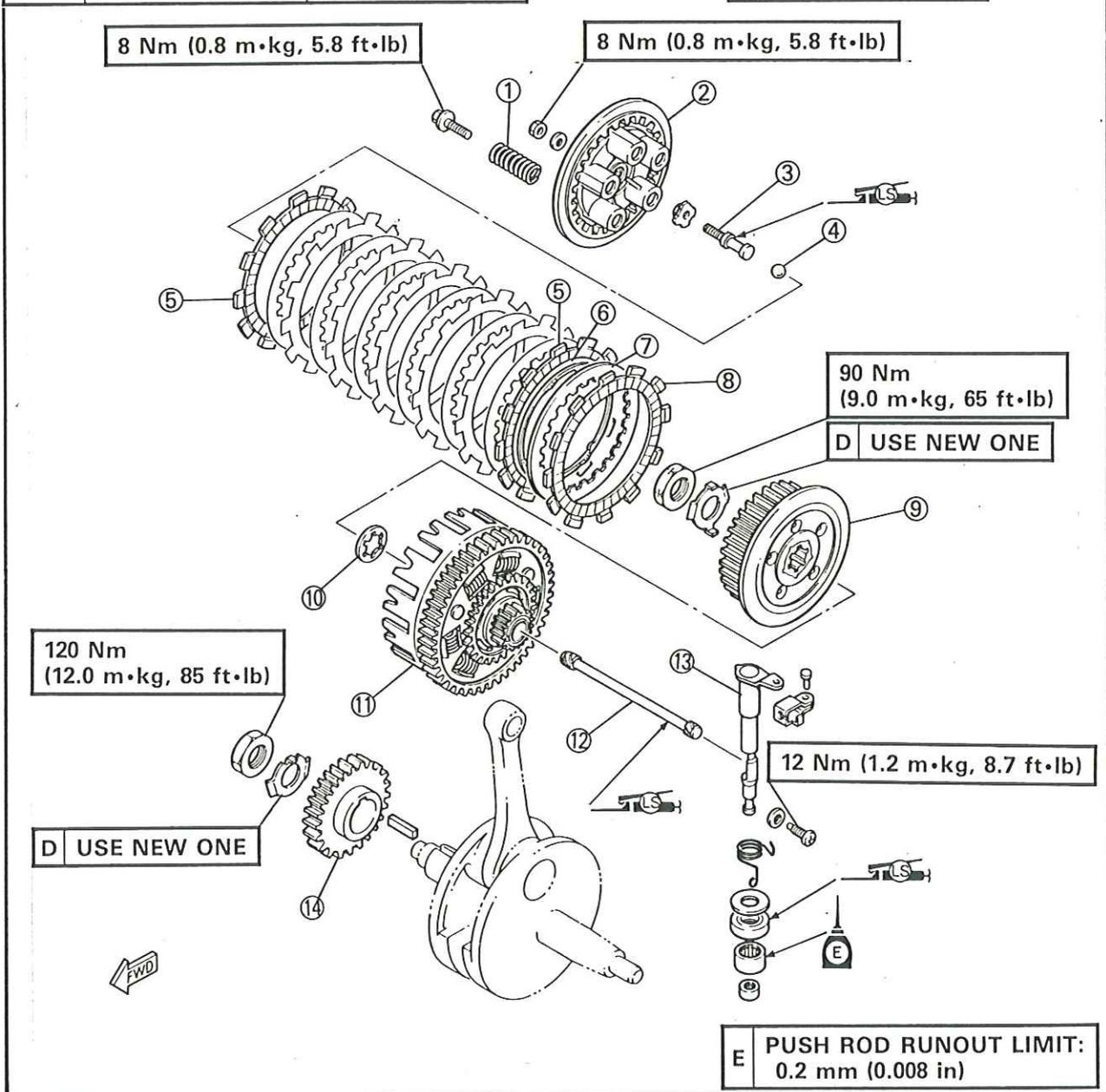


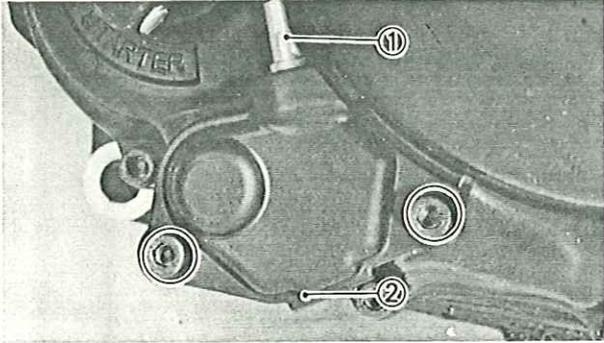
## CLUTCH

- ① Clutch spring
- ② Pressure plate
- ③ Push rod
- ④ Ball
- ⑤ Friction plate (Type A)
- ⑥ Wave plate
- ⑦ Clutch plate
- ⑧ Friction plate (Type B)
- ⑨ Clutch boss
- ⑩ Thrust washer
- ⑪ Clutch housing
- ⑫ Push rod
- ⑬ Push lever
- ⑭ Primary drive gear

A FRICTION PLATE:		
Type	Thickness	Wear Limit
A	2.94 ~ 3.06 mm (0.116 ~ 0.120 in)	2.8 mm (0.110 in)
B	2.72 ~ 2.88 mm (0.107 ~ 0.113 in)	2.6 mm (0.102 in)

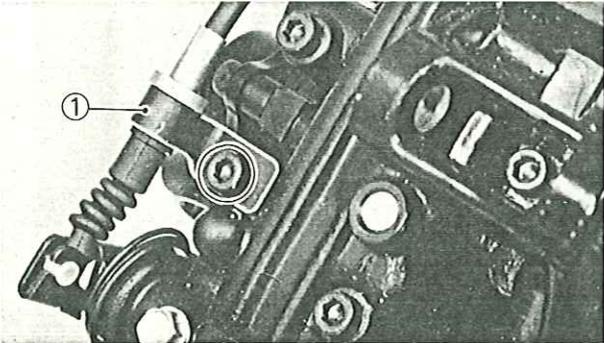
B	CLUTCH SPRING MINIMUM FREE LENGTH: 32.6 mm (1.283 in)
C	CLUTCH PLATE WARPAGE LIMIT: 0.2 mm (0.008 in)





## DECOMPRESSION CABLE

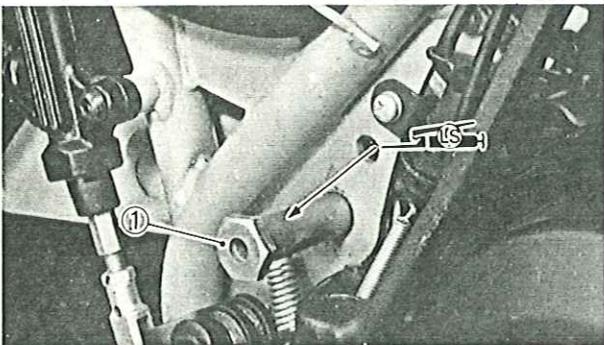
1. Install:
  - Decompression cable ①
  - Cover ②



2. Install:
  - Cable holder ① (Decompression cable)

	<b>Bolt (Cable Holder):</b> 10 Nm (1.0 m•kg, 7.2 ft•lb)
--	--

3. Adjust:
  - Decompression cable free play
 Refer to the "DECOMPRESSION CABLE FREE PLAY ADJUSTMENT" section in the CHAPTER 3.

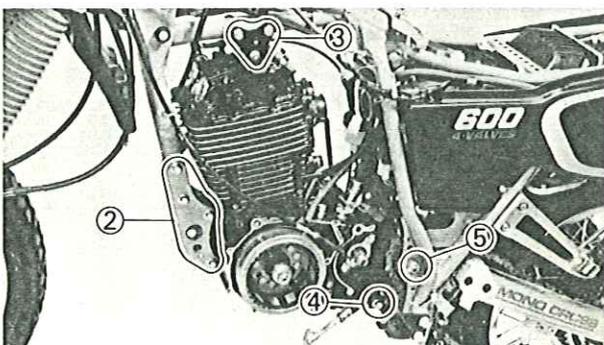


## REMOUNTING ENGINE

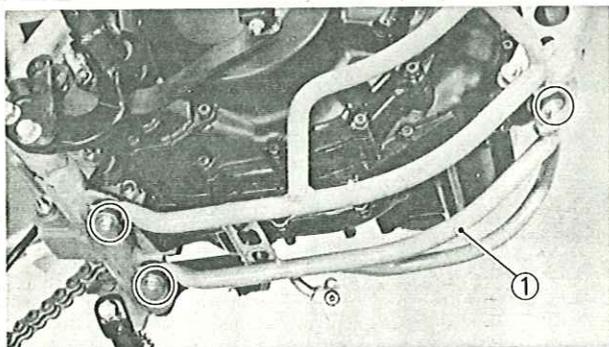
When remounting the engine, reverse the "ENGINE REMOVAL" procedure. Note the following points.

1. Install:
  - Engine
  - Pivot shaft ①

**NOTE:** \_\_\_\_\_  
 Apply the grease to the pivot shaft.



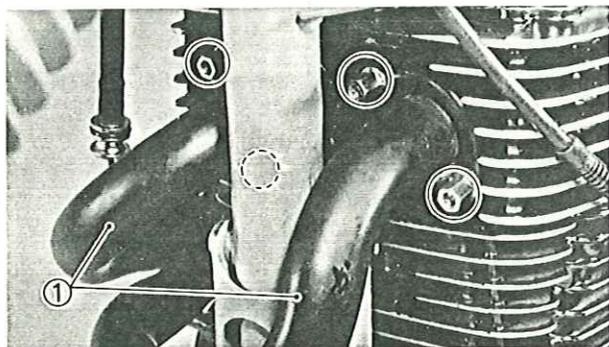
	<b>Nut ② (Front):</b> 64 Nm (6.4 m•kg, 46 ft•lb)
	<b>Nut ③ (Upper):</b> 64 Nm (6.4 m•kg, 46 ft•lb)
	<b>Nut ④ (Lower):</b> 64 Nm (6.4 m•kg, 46 ft•lb)
	<b>Nut ⑤ (Pivot Shaft):</b> 85 Nm (8.5 m•kg, 61 ft•lb)



2. Install:
- Engine protector ①



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

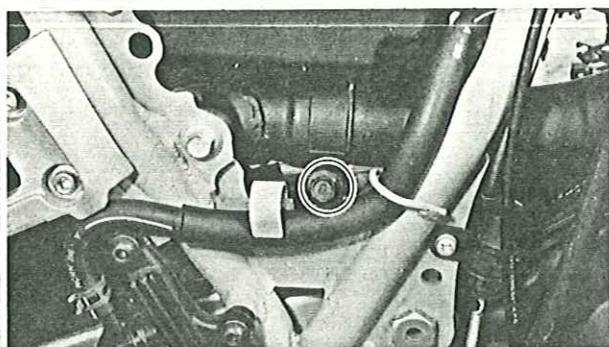


3. Install:
- Exhaust pipe ①



**Nut (Exhaust Pipe):**  
10 Nm (1.0 m•kg, 7.2 ft•lb)

**Bolt (Exhaust Pipe):**  
20 Nm (2.0 m•kg, 14 ft•lb)



4. Install:
- Drive sprocket ①
  - Drive chain



**Nut (Drive Sprocket):**  
110 Nm (11.0 m•kg, 80 ft•lb)

**NOTE:** \_\_\_\_\_  
Bend the lock washer tab along the nut flats.

**WARNING:** \_\_\_\_\_  
Always use a new lock washer.

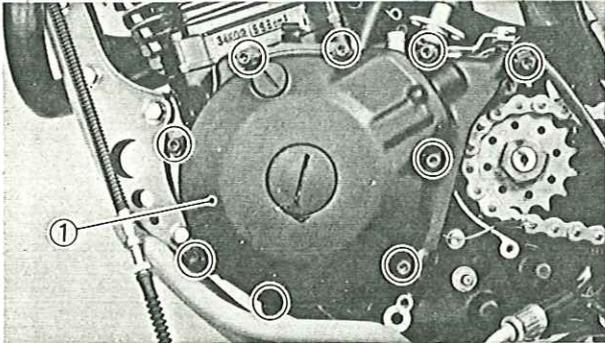


5. Adjust:
- Drive chain slack



**Drive Chain Slack:**  
30~40 mm (1.18~1.57 in)

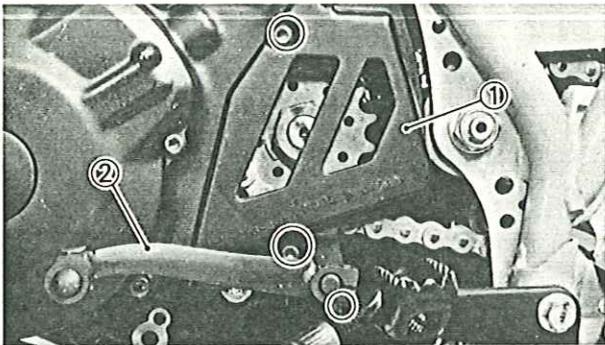
Refer to the "DRIVE CHAIN SLACK ADJUSTMENT" section in the CHAPTER 3.



6. Install:
- Crankcase cover ① (Left)



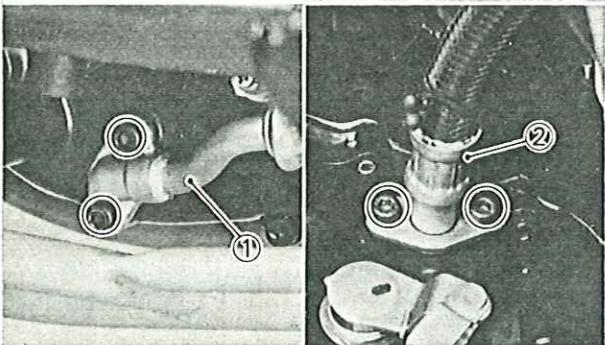
**Bolt (Crankcase Cover):**  
10 Nm (1.0 m•kg, 7.2 ft•lb)



7. Install:
- Cover ① (Drive sprocket)
  - Change pedal ②



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



8. Install:
- Oil hose ① (Inlet)
  - Oil hose ② (Outlet)



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

9. Apply:
- Engine oil
- Refer to the "ENGINE OIL REPLACEMENT" section in the CHAPTER 3.



**Oil Quantity:**  
2.4 L (2.1 Imp qt, 2.5 US qt)





10. Install:

- Carburetor



**Screw (Clamp):**

**2 Nm (0.2 m•kg, 1.4 ft•lb)**

11. Adjust:

- Throttle cable free play



**Free Play:**

**2~5 mm (0.08~0.20 in)**

Refer to the "THROTTLE CABLE FREE PLAY ADJUSTMENT" section in the CHAPTER 3.

12. Install:

- Seat



**Bolt (Seat):**

**10 Nm (1.0 m•kg, 7.2 ft•lb)**



CARBURETION

CARBURETOR

- ① Connecting arm
- ② Jet needle set
- ③ Throttle valve
- ④ Coasting enricher assembly
- ⑤ Needle valve set
- ⑥ Main nozzle
- ⑦ O-ring
- ⑧ Main jet
- ⑨ Pilot jet
- ⑩ Pilot screw set
- ⑪ Throttle stop screw set
- ⑫ Float
- ⑬ Starter plunger set
- ⑭ Drain screw
- ⑮ Main jet
- ⑯ Main nozzle
- ⑰ Throttle valve
- ⑱ Jet needle set

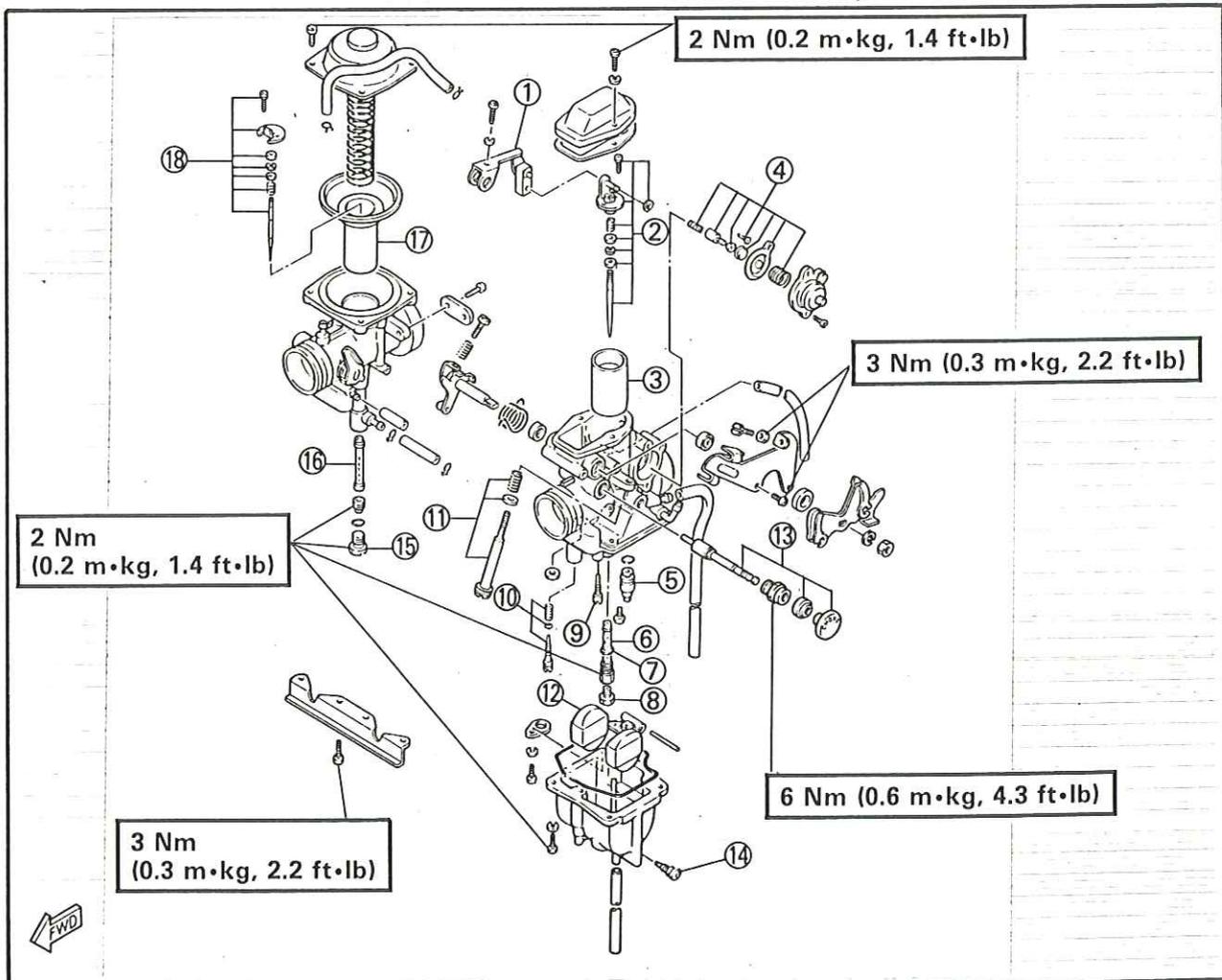
SPECIFICATIONS (FOR 2KF)

	PRIMARY	SECONDARY
MAIN JET	# 125 # 135 (G)	# 120
PILOT JET	# 46 # 48 (G)	—
JET NEEDLE	5C41—4/5 5C42—3/5 (G)	5X74—3/5 5X74—4/5 (G)
PILOT SCREW	1 and 1/2 turns out 3 turns out (G)	
FLOAT HEIGHT	25.0~27.0 mm (0.98~1.06 in)	
FUEL LEVEL	5.0~7.0 mm (0.20~0.28 in)	

SPECIFICATIONS (FOR 2NF)

	PRIMARY	SECONDARY
MAIN JET	# 138	# 120
PILOT JET	# 48	—
JET NEEDLE	5C42—3/5	5X74—4/5
PILOT SCREW	3 turns out	
FLOAT HEIGHT	25.0~27.0 mm (0.98~1.06 in)	
FUEL LEVEL	5.0~7.0 mm (0.20~0.28 in)	

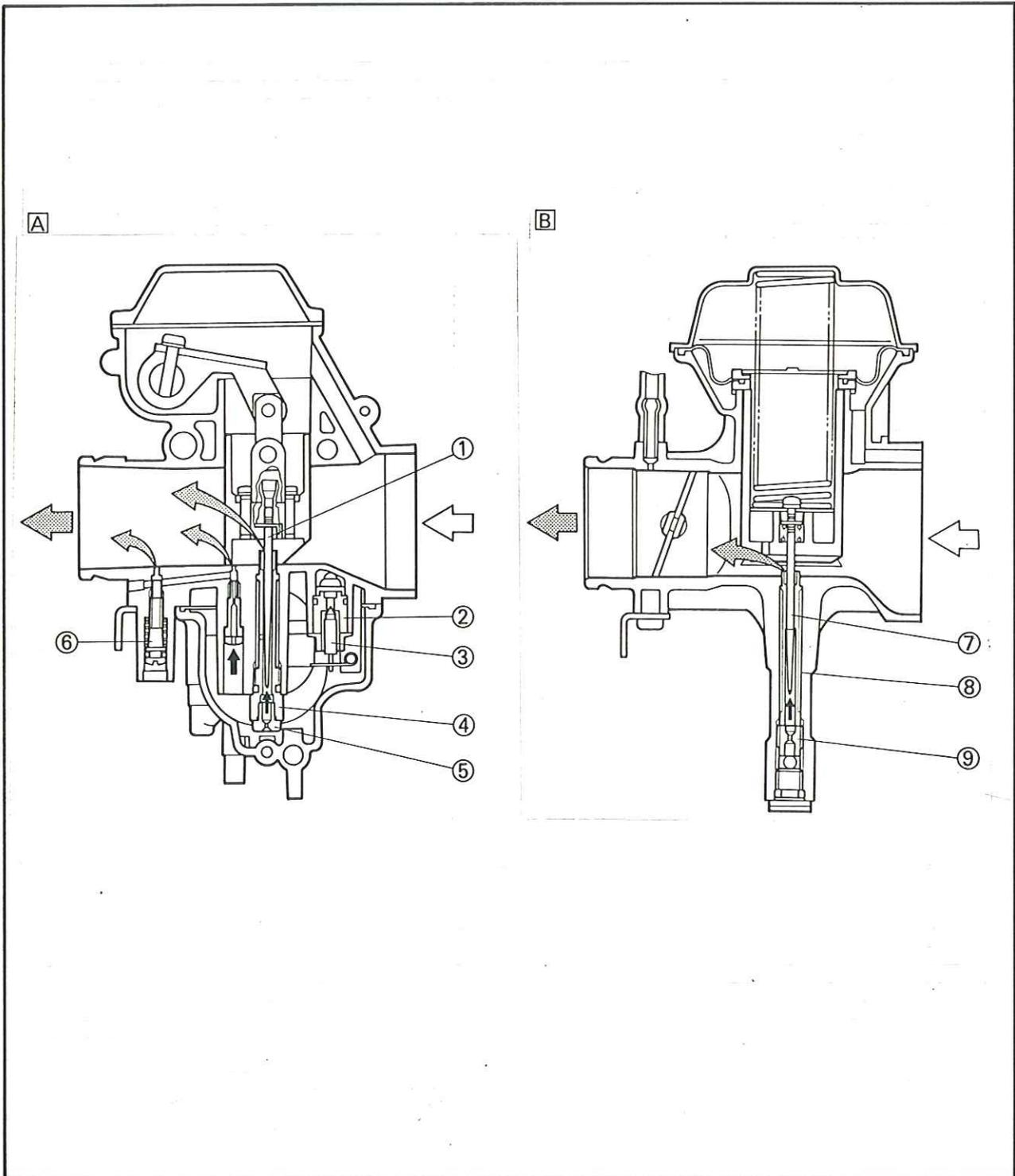
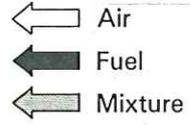
(G): For Germany



SECTIONAL VIEW

- ① Jet needle (Primary)
- ② Valve seat
- ③ Needle valve
- ④ Main nozzle (Primary)
- ⑤ Main jet (Primary)
- ⑥ Pilot screw
- ⑦ Jet needle (Secondary)
- ⑧ Main nozzle (Secondary)
- ⑨ Main jet (Secondary)

- A Primary carburetor
- B Secondary carburetor





## REMOVAL

### NOTE:

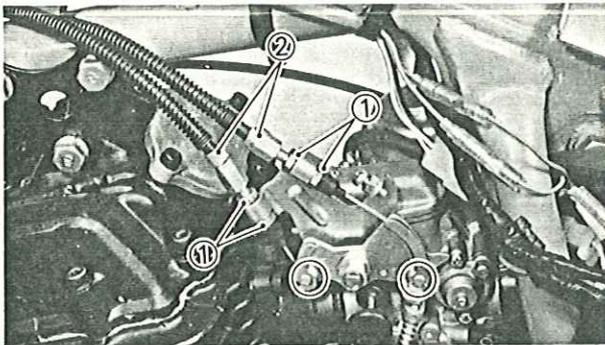
The following parts can be cleaned and inspected without disassembly.

- Diaphragm (Coasting enricher)
- Starter plunger
- Throttle stop screw
- Pilot screw

### 1. Remove:

- Seat
- Air scoop
- Fuel tank

Refer to the "SEAT, FUEL TANK AND COVER" section in the CHAPTER 3.

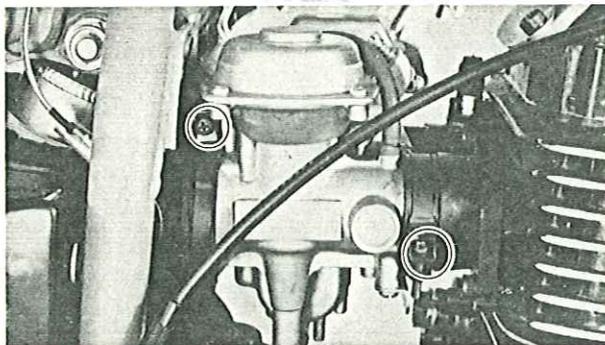


### 2. Loosen:

- Locknut ①

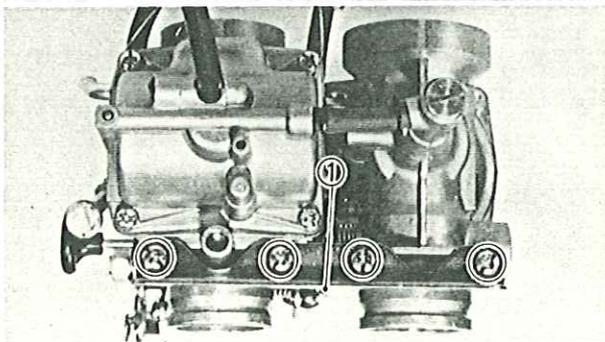
### 3. Remove:

- Throttle cable ②



### 4. Remove:

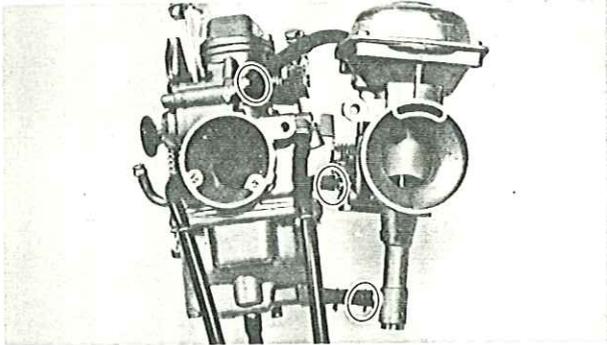
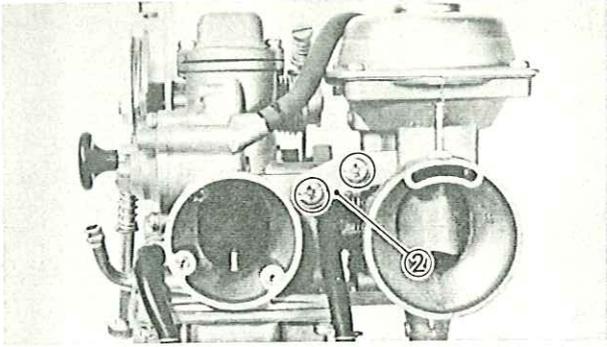
- Carburetor



## DISASSEMBLY

### 1. Remove:

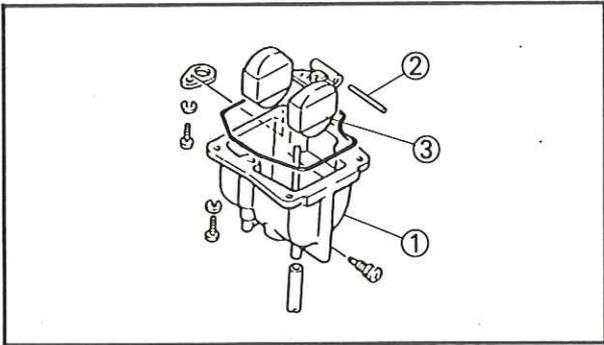
- Stay plate ① (Front)
- Stay plate ② (Rear)



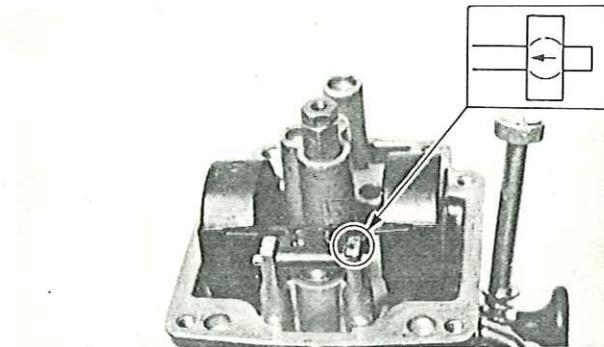
2. Separate:
- Primary carburetor
  - Secondary carburetor

**Primary Carburetor**

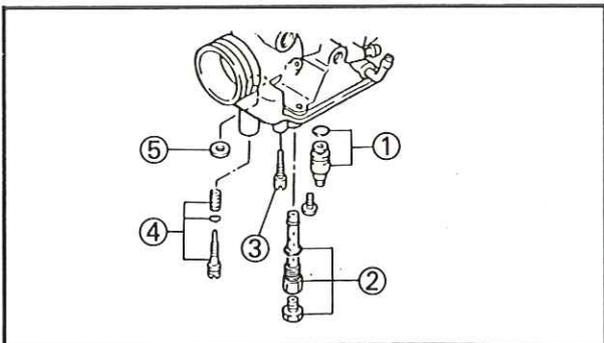
1. Remove:
- Float chamber ①
  - Float pin ②
  - Float ③

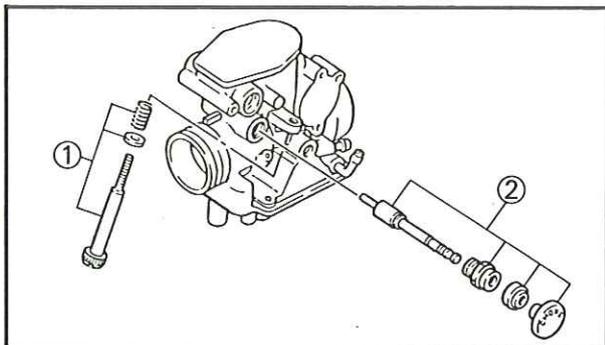


**NOTE:** \_\_\_\_\_  
 Remove the float pin in the arrow direction.  
 \_\_\_\_\_

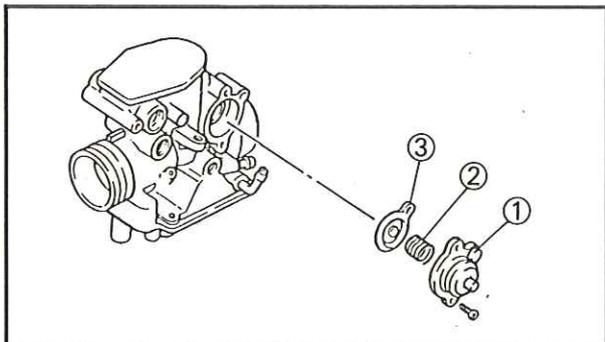


2. Remove:
- Needle valve/Valve seat ①
  - Main jet/Main nozzle ②
  - Pilot jet ③
  - Pilot screw ④
  - O-ring ⑤

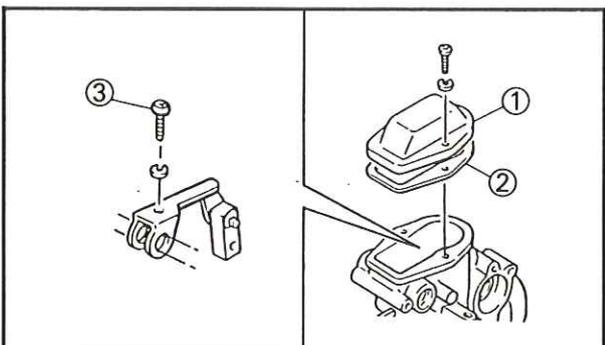




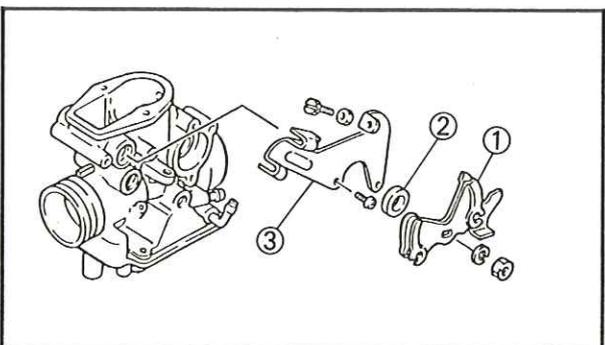
3. Remove:
- Throttle stop screw ①
  - Starter plunger ②



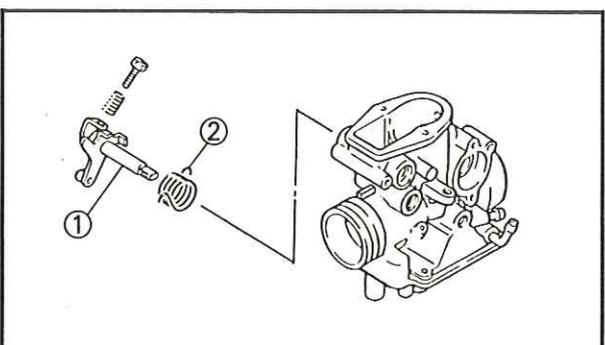
4. Remove:
- Cover ① (Coasting enricher)
  - Spring ②
  - Diaphragm ③



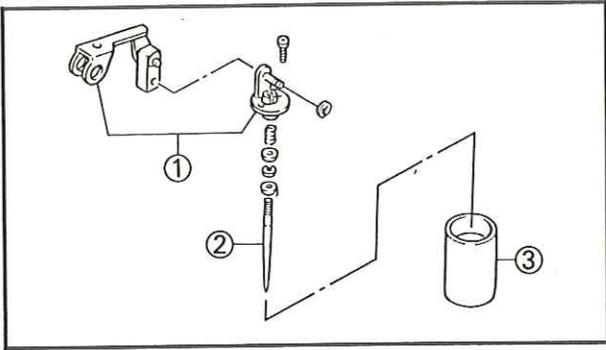
5. Remove:
- Top cover ①
  - Gasket ②
  - Screw ③ (Connecting arm)



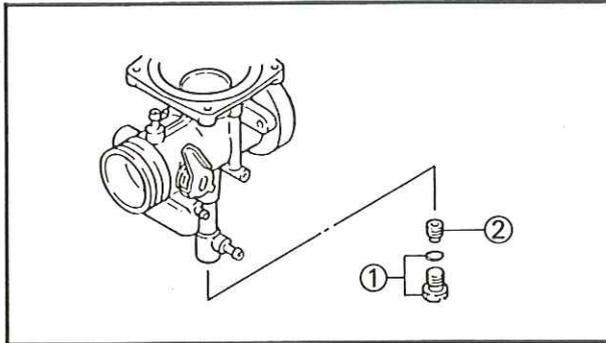
6. Remove:
- Throttle lever ①
  - Collar ②
  - Cable holder ③



7. Remove:
- Throttle shaft ①
  - Spring ②

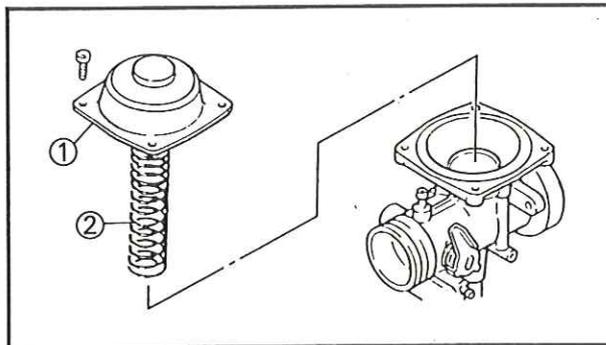


8. Remove:
- Connecting arm ①
  - Jet needle ②
  - Throttle valve ③

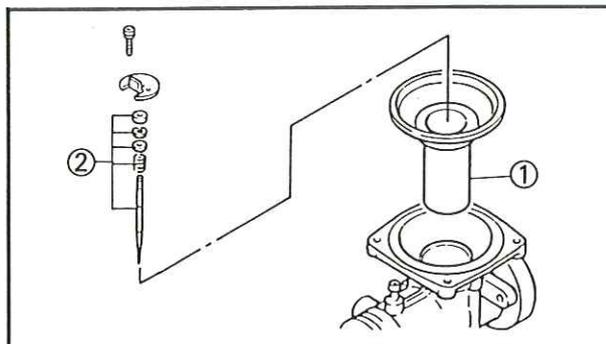


## Secondary Carburetor

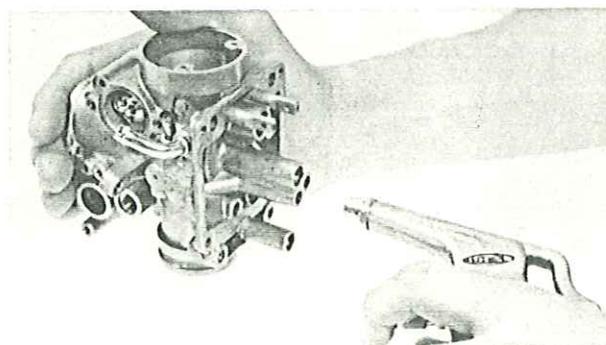
1. Remove:
- Plug ①
  - Main jet ②



2. Remove:
- Top cover ①
  - Spring ②



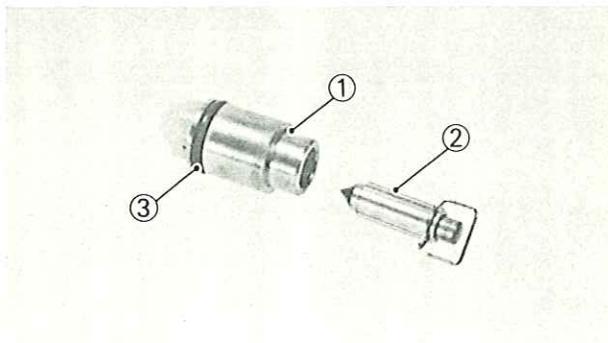
3. Remove:
- Piston valve ①
  - Jet needle ②



## INSPECTION

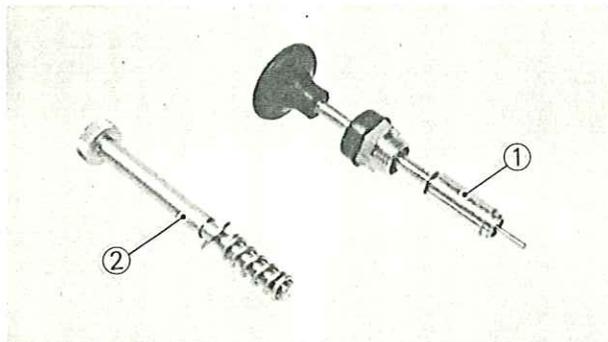
1. Inspect:
- Carburetor body  
Contamination → Clean.

**NOTE:** \_\_\_\_\_  
Use a petroleum based solvent for cleaning. Blow out all passages and jets with compressed air.  
\_\_\_\_\_

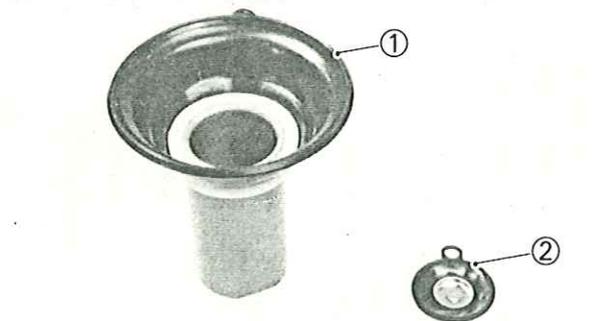


2. Inspect:
- Valve seat ①
  - Needle valve ②  
Wear/Contamination → Replace.
  - O-ring ③  
Damage → Replace.

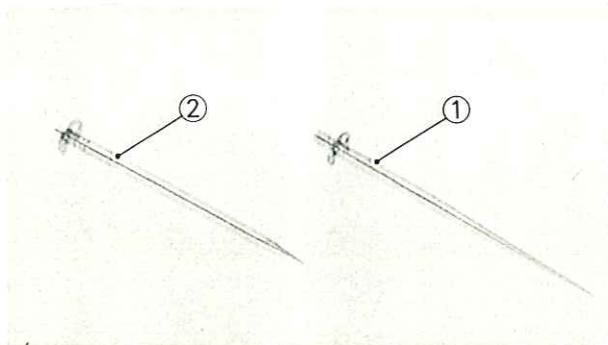
**NOTE:** \_\_\_\_\_  
Always replace the needle valve and valve seat as a set.



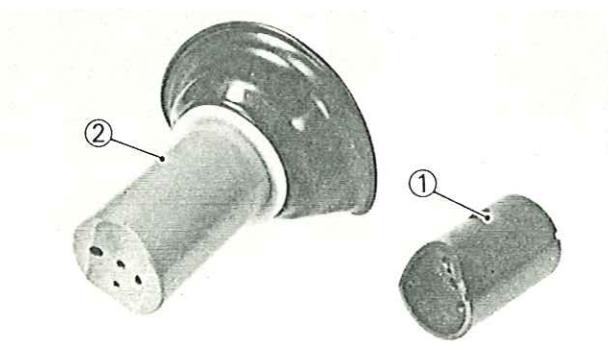
3. Inspect:
- Starter plunger ①  
Wear/Damage → Replace.
  - Throttle stop screw ②  
Damage → Replace.



4. Inspect:
- Diaphragm ① (Piston valve)
  - Diaphragm ② (Coasting enricher)  
Damage → Replace.

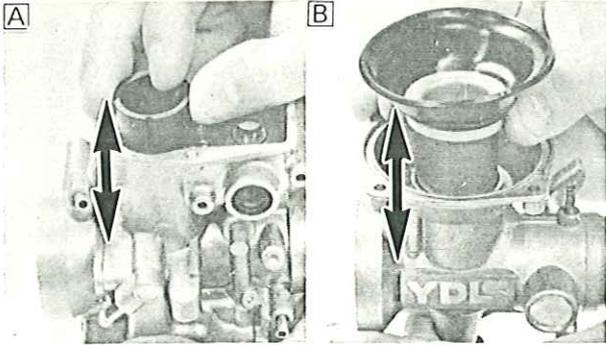


5. Inspect:
- Jet needle ① (Primary)
  - Jet needle ② (Secondary)  
Bends/Wear → Replace.



6. Inspect:
- Throttle valve ① (Primary)
  - Piston valve ② (Secondary)  
Wear/Damage → Replace.



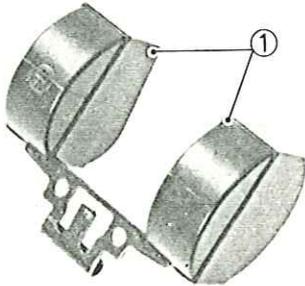


7. Check:

- Free movement  
Stick→Replace.

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

- A Primary carburetor
- B Secondary carburetor



8. Inspect:

- Float ①  
Damage→Replace.



9. Inspect:

- Main jet ① (Primary)
- Main jet ② (Secondary)
- Main nozzle ③ (Primary)
- Main nozzle ④ (Secondary)
- Pilot jet ⑤

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

Blow out the jets with compressed air.

ASSEMBLY

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

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

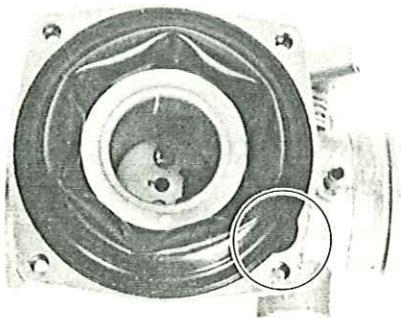
Before reassembling, wash the all parts with a clean gasoline.

Secondary Carburetor

1. Install:
  - Piston valve

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

Match the tab on the diaphragm to the matching recess in the secondary carburetor.





2. Install:
- Top cover

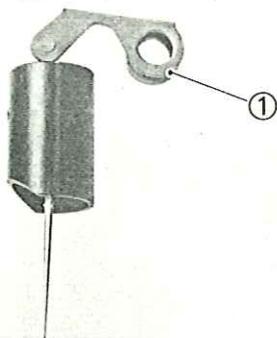


**Screw (Top Cover):**  
2 Nm (0.2 m•kg, 1.4 ft•lb)

3. Install:
- Main jet
  - Plug



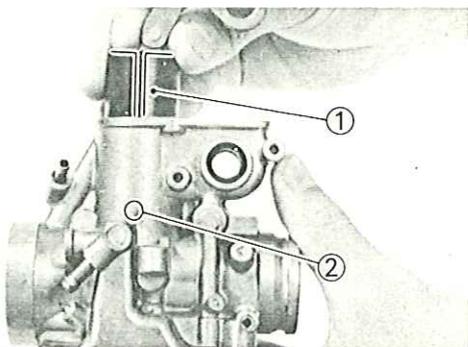
**Main Jet:**  
2 Nm (0.2 m•kg, 1.4 ft•lb)  
**Plug:**  
2 Nm (0.2 m•kg, 1.4 ft•lb)



**Primary Carburetor**

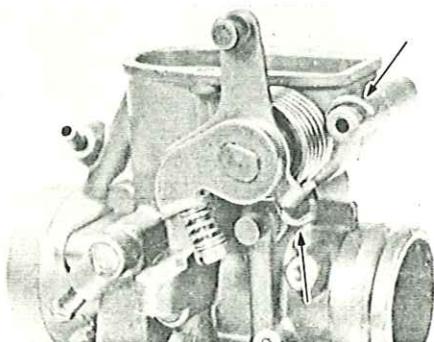
1. Install:
- Connecting arm

**NOTE:** \_\_\_\_\_  
Make sure that the connecting arm assembly ① is at the illustrated position.



2. Install:
- Throttle valve

**NOTE:** \_\_\_\_\_  
Align the groove ① of the throttle valve with the projection ② of the carburetor body.



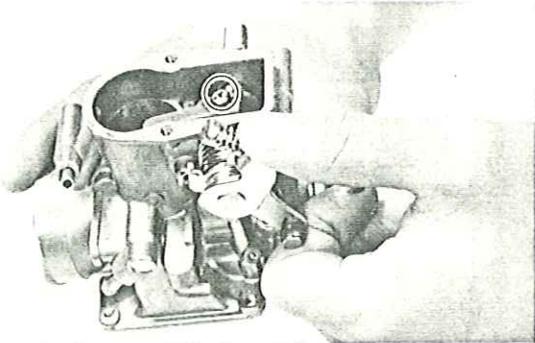
3. Install:
- Spring
  - Throttle shaft

**NOTE:** \_\_\_\_\_  
Set the spring as shown.



4. Install:
- Cable holder

	<b>Screw (Cable Holder):</b> 3 Nm (0.3 m•kg, 2.2 ft•lb)
--	--



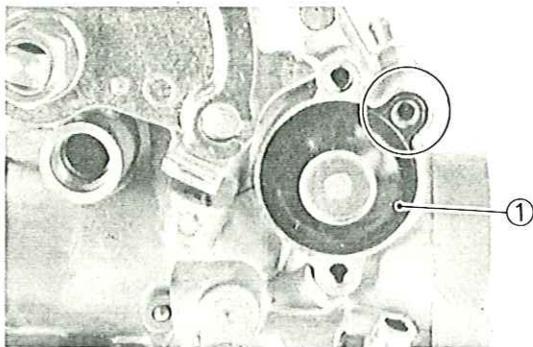
5. Install:
- Screw (Connecting arm)

**NOTE:** \_\_\_\_\_  
 Turn the throttle shaft 1/2-turn clockwise to give preload to the spring and hold it.  
 Then, install the screw (connecting arm).

	<b>Screw (Connecting Arm):</b> 2 Nm (0.2 m•kg, 1.4 ft•lb)
--	--

6. Install:
- Top cover

	<b>Screw (Top Cover):</b> 2 Nm (0.2 m•kg, 1.4 ft•lb)
--	---



7. Install:
- Diaphragm ① (Coasting enricher)

**NOTE:** \_\_\_\_\_  
 Match the tab on the diaphragm to the matching recess in the coasting enricher.

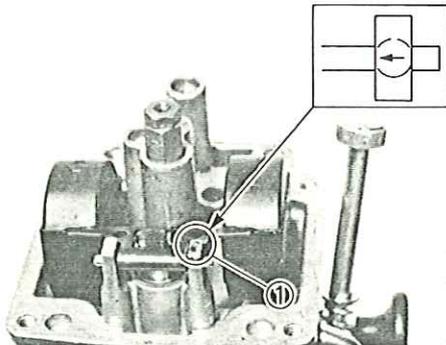
8. Install:
- Starter plunger

	<b>Starter Plunger:</b> 6 Nm (0.6 m•kg, 4.3 ft•lb)
--	---



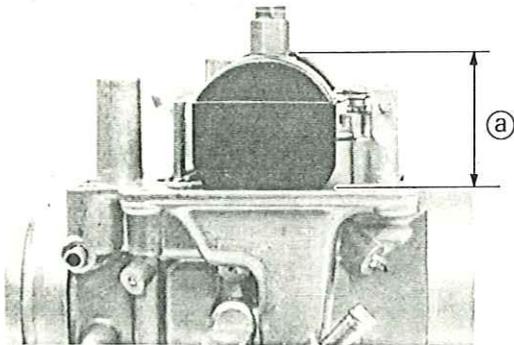
9. Install:
- Main nozzle
  - Valve seat

	<b>Main Nozzle:</b> 2 Nm (0.2 m•kg, 1.4 ft•lb)
	<b>Screw (Valve Seat):</b> 2 Nm (0.2 m•kg, 1.4 ft•lb)



10. Install:
- Float pin ①

**NOTE:** \_\_\_\_\_  
Install the float pin reverse to the arrow.



11. Measure:
- Float height ②
- Out of specification → Adjust.

	<b>Float Height (F.H.):</b> 25.0 ~ 27.0 mm (0.98 ~ 1.06 in)
---	--

**Measurement and adjustment steps:**

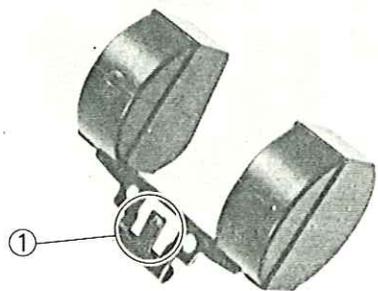
- Hold the carburetor in an upside down position.
- Measure the distance from the mating surface of the float chamber (gasket removed) to the top of the float.

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

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

---

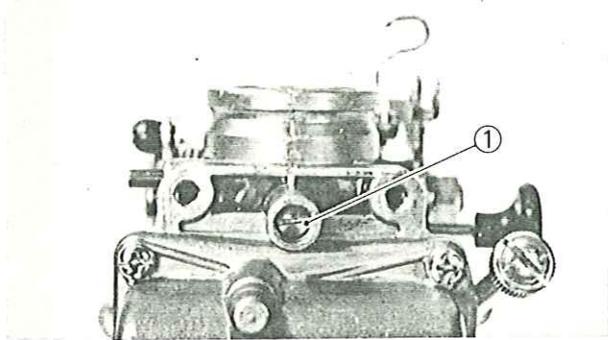
- If the float height is not within specification, inspect the valve seat and needle valve.
- If either is worn, replace them both.
- If both are fine, adjust the float height by bending the float tang ① on the float.
- Recheck the float height.





12. Install:
- Float chamber

	<p><b>Screw (Float Chamber):</b>                  2 Nm (0.2 m•kg, 1.4 ft•lb)</p>
---	--



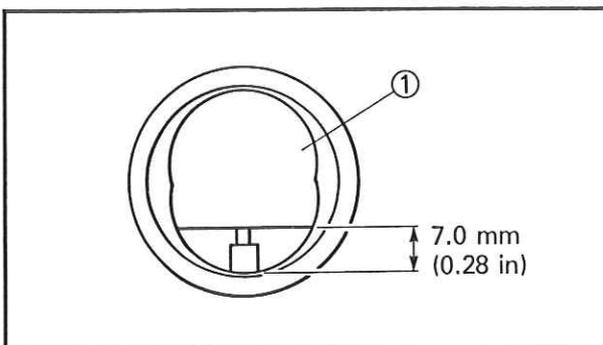
13. Adjust:
- Pilot screw ①

<p><b>Adjustment steps:</b></p> <ul style="list-style-type: none"> <li>• Turn in the pilot screw until it is lightly seated.</li> <li>• Back out by the specified number of turns.</li> </ul>
---

<p><b>For Germany:</b>                  3 Turns Out</p> <p><b>Except for Germany:</b>                  1 and 1/2 Turns Out</p>
--

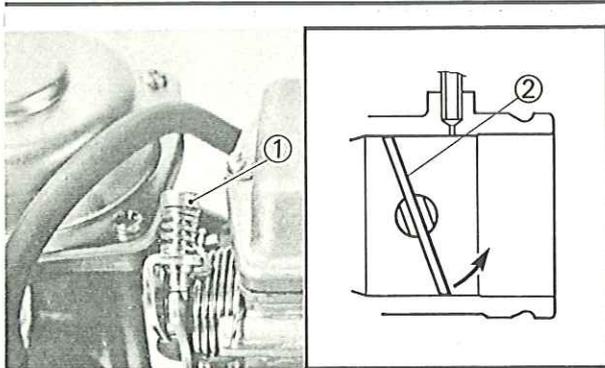
14. Install:
- Stay plate (Front)
  - Stay plate (Rear)

	<p><b>Screw (Stay Plate):</b>                  3 Nm (0.3 m•kg, 2.2 ft•lb)</p>
---	---

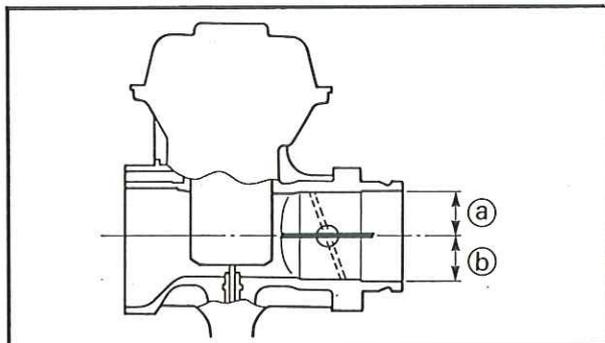


15. Adjust:
- Secondary carburetor synchronization

<p><b>Adjustment steps:</b></p> <ul style="list-style-type: none"> <li>• Raise the primary throttle valve ① to a height of 7.0 mm (0.28 in) as indicated.</li> </ul>
--



- Turn the synchronizing screw ① in or out so that secondary throttle valve ② is begun to open.
- Make sure that the secondary valve is opened horizontally (a) = (b) when the primary carburetor valve is fully opened.



**INSTALLATION**

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

1. Install:
  - Carburetor assembly

	<p><b>Screw (Clamp):</b> 2 Nm (0.2 m·kg, 1.4 ft·lb)</p>
--	---

2. Adjust:
  - Idle speed  
Refer to the "IDLE SPEED ADJUSTMENT" section in the CHAPTER 3.

	<p><b>Engine Idle Speed:</b> 1,250 ~ 1,350 r/min</p>
--	--

3. Adjust:
  - Throttle cable free play  
Refer to the "THROTTLE CABLE FREE PLAY ADJUSTMENT" section in the CHAPTER 3.

	<p><b>Throttle Cable Free Play:</b> 2 ~ 5 mm (0.08 ~ 0.20 in)</p>
--	---



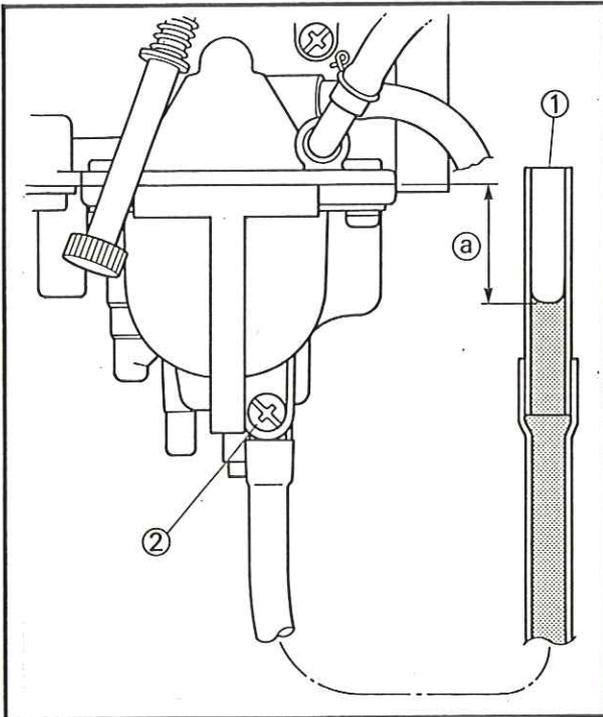
4. Install:

- Seat



**Bolt (Seat):**

10 Nm (1.0 m•kg, 7.2 ft•lb)



**FUEL LEVEL ADJUSTMENT**

1. Place the motorcycle on a level place.
2. Use a garage jack under the engine to ensure that the carburetor is positioned vertically.
3. Attach the Fuel Level Gauge (1) to the float chamber nozzle.



**Fuel Level Gauge:**

P/N. 90890-01312

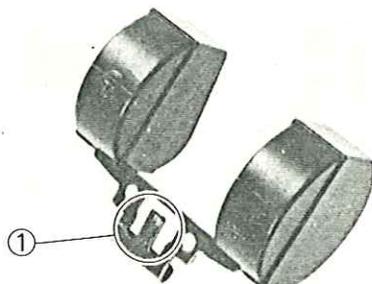
4. Loosen the drain screw (2), and warm up the engine for several minutes.
5. Measure:
  - Fuel level (a)
 Out of specification → Adjust.



**Fuel Level:**

5.0~7.0 mm (0.20~0.28 in)

Below the Carburetor Body Edge.



6. Adjust:

- Fuel level

**Adjustment steps:**

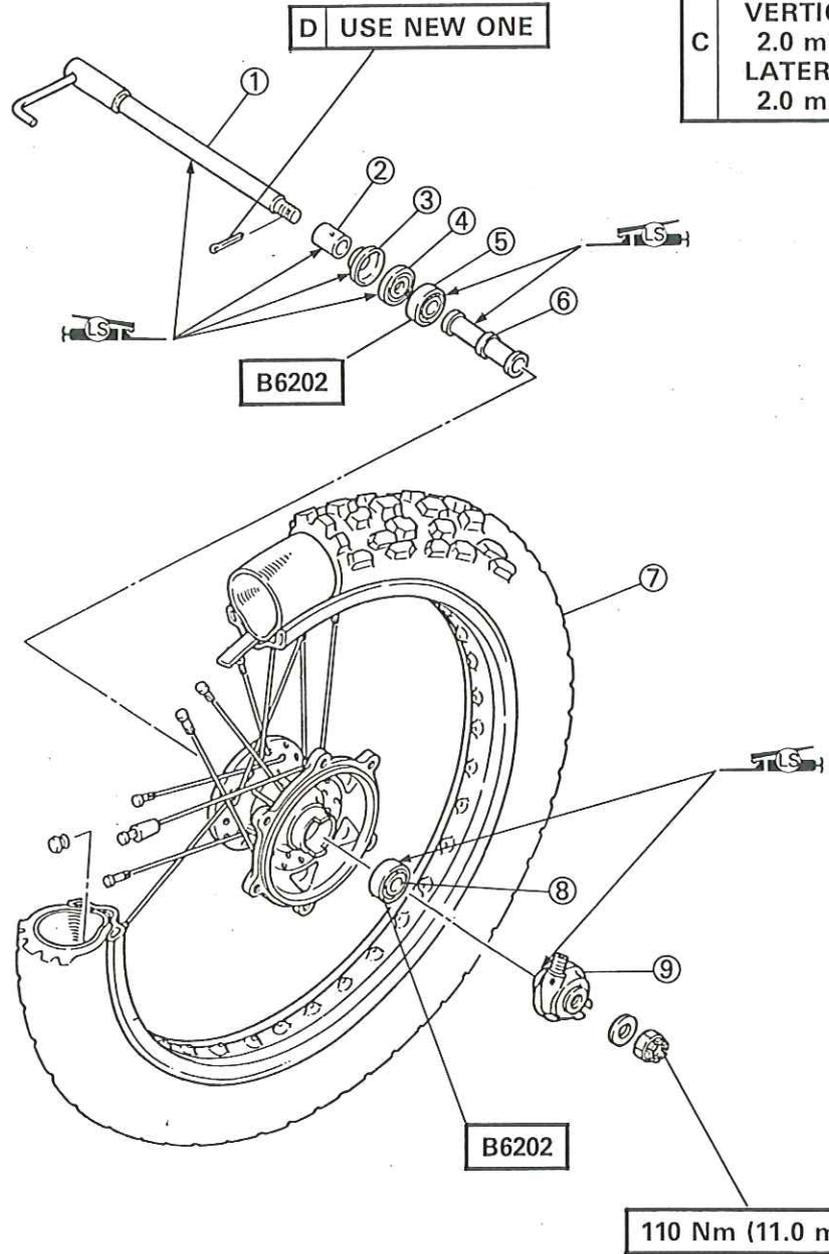
- Remove the carburetor.
- Inspect the valve seat and needle valve.
- If either is worn, replace them both.
- If both are fine, adjust the float height by bending the float tang (1) on the float.
- Recheck the fuel level.

CHASSIS

FRONT WHEEL

- ① Wheel axle
- ② Collar
- ③ Dust cover
- ④ Oil seal
- ⑤ Bearing
- ⑥ Collar
- ⑦ Front wheel
- ⑧ Bearing
- ⑨ Gear unit (Speedometer)

A	TIRE SIZE: 3.00S21-4PR
B	RIM SIZE: 1.60×21
C	RIM RUNOUT LIMIT: VERTICAL: 2.0 mm (0.08 in) LATERAL: 2.0 mm (0.08 in)





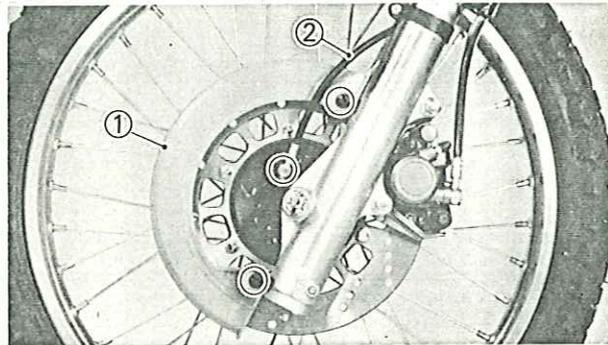


## REMOVAL

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

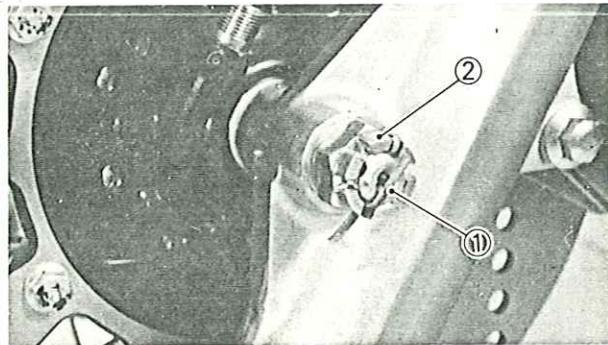
**WARNING:**

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



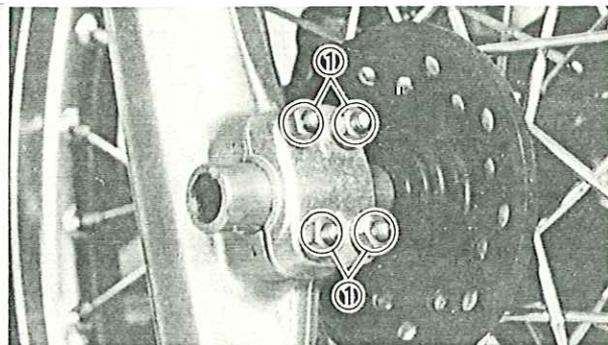
2. Remove:

- Disc cover (1)
- Speedometer cable (2)



3. Remove:

- Cotter pin (1)
- Axle nut (2)
- Plain washer



4. Loosen:

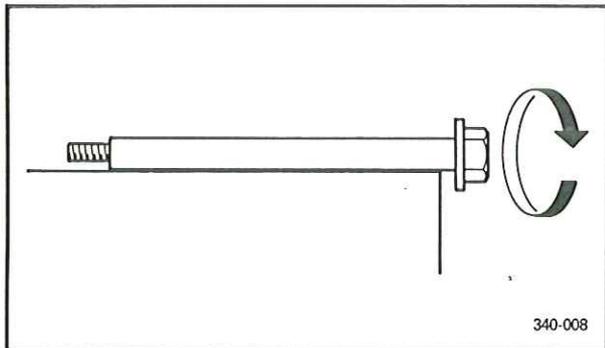
- Nut (1) (Axle holder)

5. Remove:

- Wheel axle
- Front wheel
- Gear unit (Speedometer)
- Collar

**NOTE:**

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



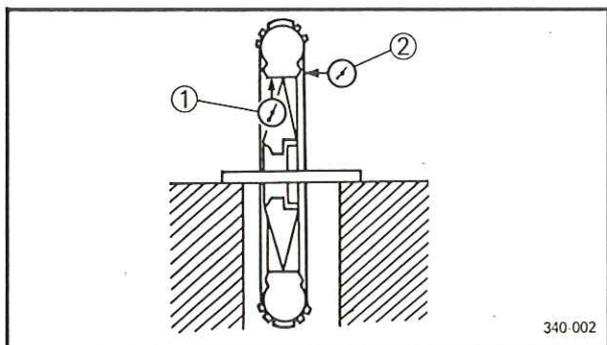
**INSPECTION**

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

**WARNING:**

Do not attempt to straighten a bent axle.

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



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



**Rim Runout Limits:**

- Vertical ①: 2.0 mm (0.08 in)
- Lateral ②: 2.0 mm (0.08 in)

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

**Wheel bearing replacement steps:**

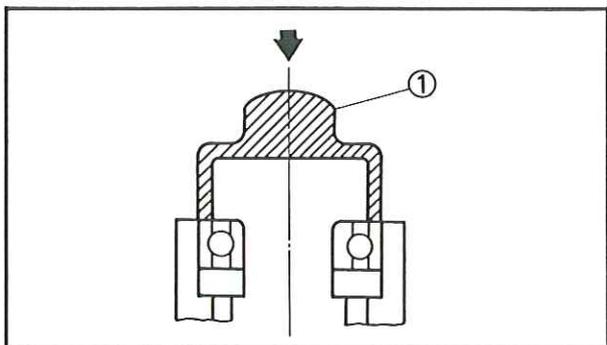
- Clean the outside of the wheel hub.
- Remove the bearing using a general bearing puller.
- Install the new bearing.

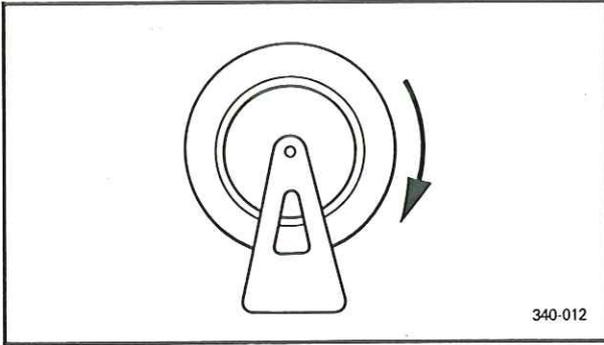
**NOTE:**

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

**CAUTION:**

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





340-012

## 6. Check:

- Wheel balance

Wheel is not statically balanced if it comes to rest at the same point after several light rotations.

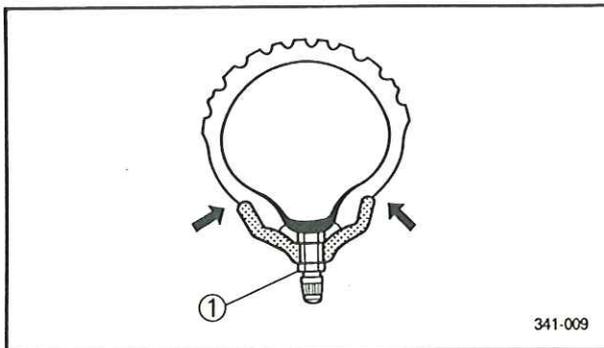
Out of balance → Install appropriate balance weight at lightest point (on top).

**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.



341-009



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

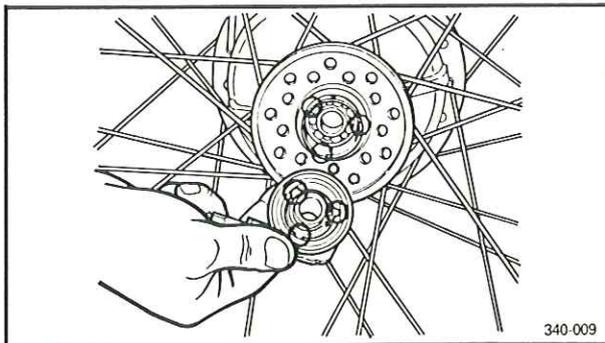
Lightly grease to the oil seal and gear unit.

## 2. Install:

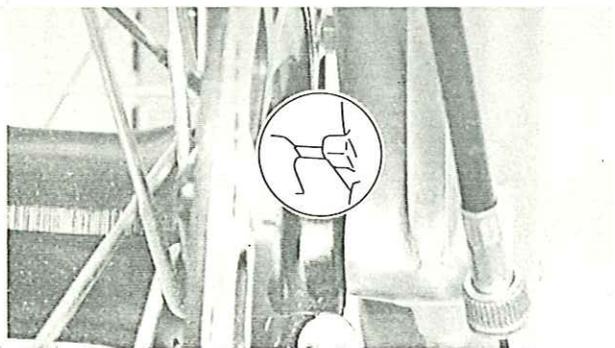
- Gear unit assembly

**NOTE:**

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



340-009



## 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:

- Nut (Axle holder)
- Axle nut



**Nut (Axle Holder):**

8 Nm (0.8 m•kg, 5.8 ft•lb)

**Axle Nut:**

110 Nm (11.0 m•kg, 80 ft•lb)

## 5. Install:

- Cotter pin

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

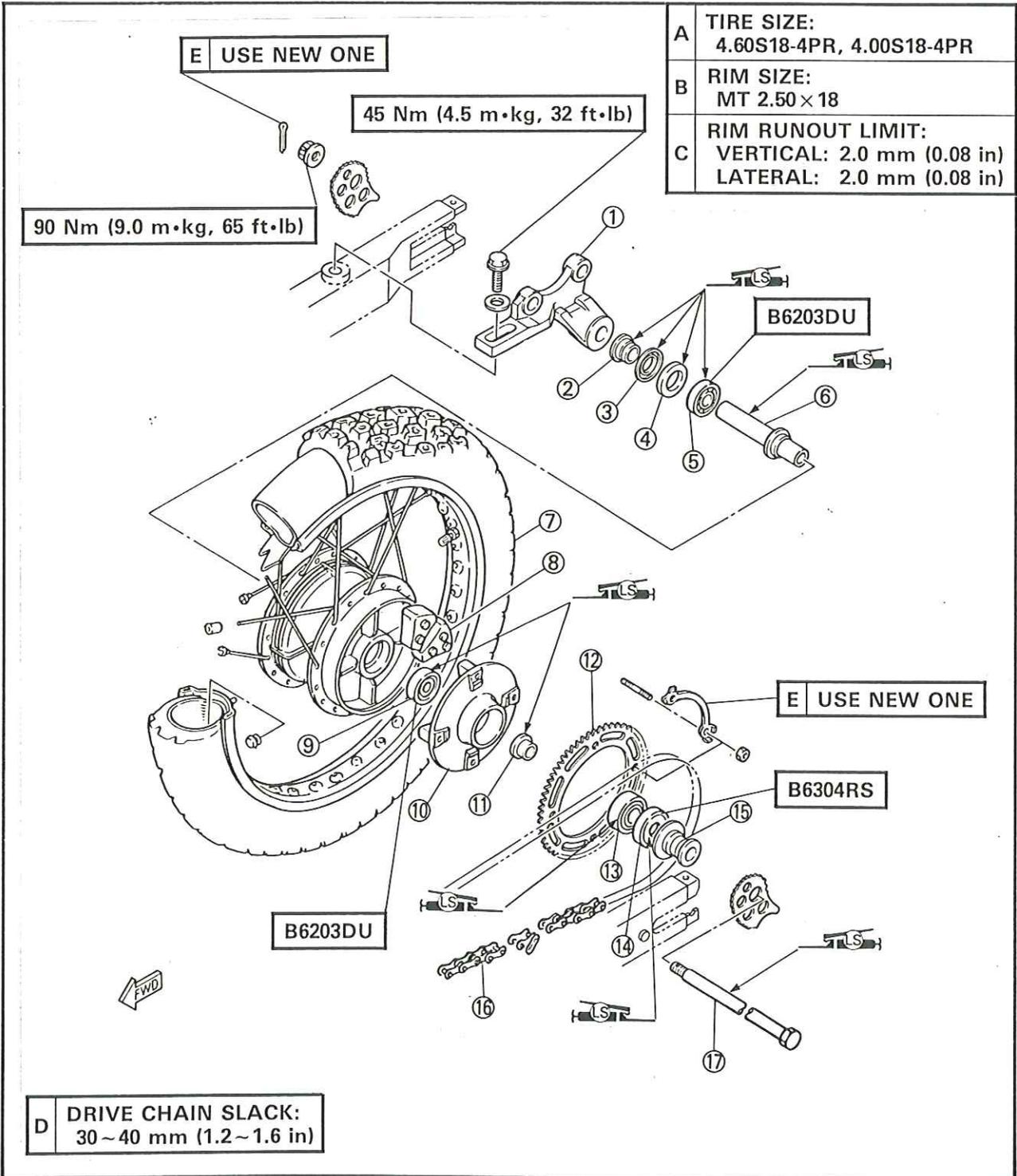
Bend the ends of the cotter pin.

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

Always use a new cotter pin.

REAR WHEEL

- ① Caliper bracket
- ② Collar
- ③ Dust cover
- ④ Oil seal
- ⑤ Bearing
- ⑥ Collar
- ⑦ Rear wheel
- ⑧ Damper
- ⑨ Bearing
- ⑩ Clutch hub
- ⑪ Collar
- ⑫ Driven sprocket
- ⑬ Bearing
- ⑭ Oil seal
- ⑮ Collar
- ⑯ Drive chain
- ⑰ Wheel axle



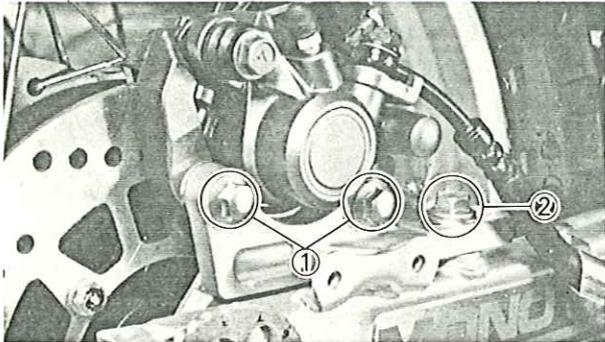
## REMOVAL

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

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

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

\_\_\_\_\_

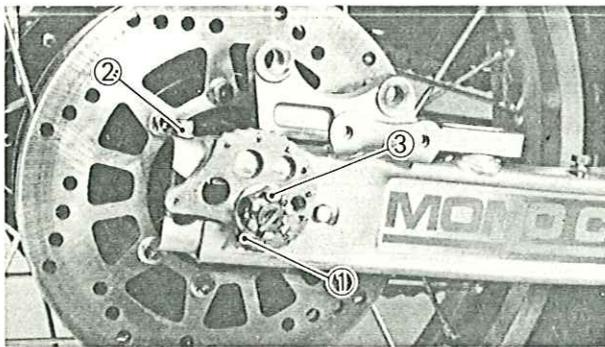


2. Remove:
  - Bolt ① (Brake caliper)
  - Bolt ② (Caliper bracket)

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

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

\_\_\_\_\_



3. Remove:
  - Cotter pin ①
  - Bolt ②
  - Axle nut ③

4. Remove:
  - Rear wheel
  - Caliper bracket
  - Wheel axle

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

Before removing the rear wheel, push the wheel forward and remove the drive chain.

\_\_\_\_\_

**INSPECTION**

1. Inspect:
  - Rear wheel axle  
Refer to the "FRONT WHEEL—INSPECTION" section.
2. Inspect:
  - Wheel  
Refer to the the "FRONT WHEEL—INSPECTION" section.
3. Measure:
  - Wheel runout  
Refer to the "FRONT WHEEL—INSPECTION" section.
4. Check:
  - Wheel bearings  
Refer to the "FRONT WHEEL—INSPECTION" section.
5. Check:
  - Wheel balance  
Refer to the "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:****30~40 mm (1.18~1.57 in)**

Refer to the "DRIVE CHAIN SLACK ADJUSTMENT" section in the CHAPTER 3.



3. Tighten:

- Axle nut
- Bolt (Swingarm end)
- Bolt (Caliper bracket)
- Bolt (Brake caliper)



**Axle Nut:**

90 Nm (9.0 m•kg, 65 ft•lb)

**Bolt (Swingarm End):**

3 Nm (0.3 m•kg, 2.2 ft•lb)

**Bolt (Caliper Bracket):**

45 Nm (4.5 m•kg, 32 ft•lb)

**Bolt (Brake Caliper):**

35 Nm (3.5 m•kg, 25 ft•lb)

4. Install:

- Cotter pin

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

Bend the ends of the cotter pin.

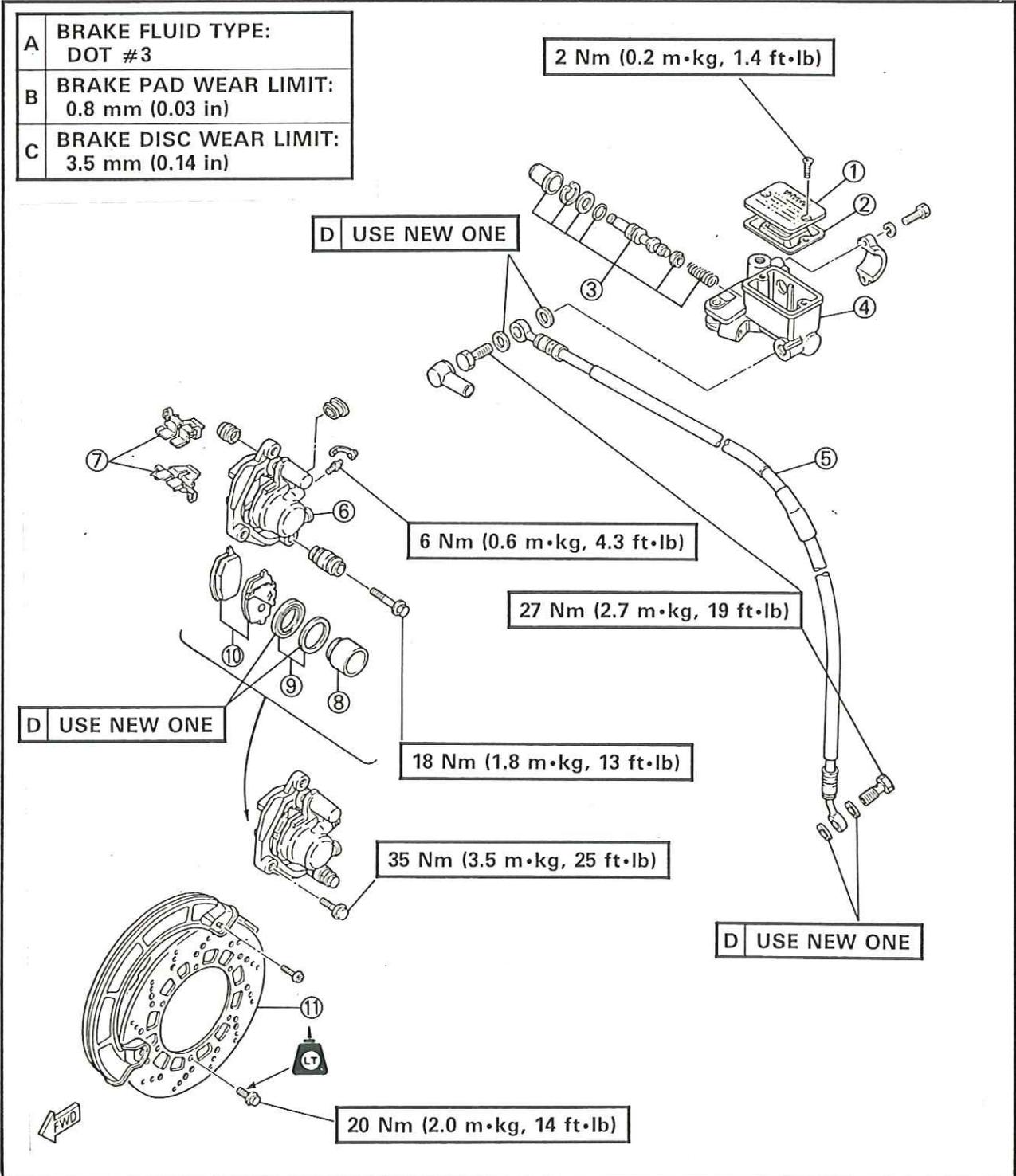
**WARNING:** \_\_\_\_\_

Always use a new cotter pin.



FRONT AND REAR BRAKE

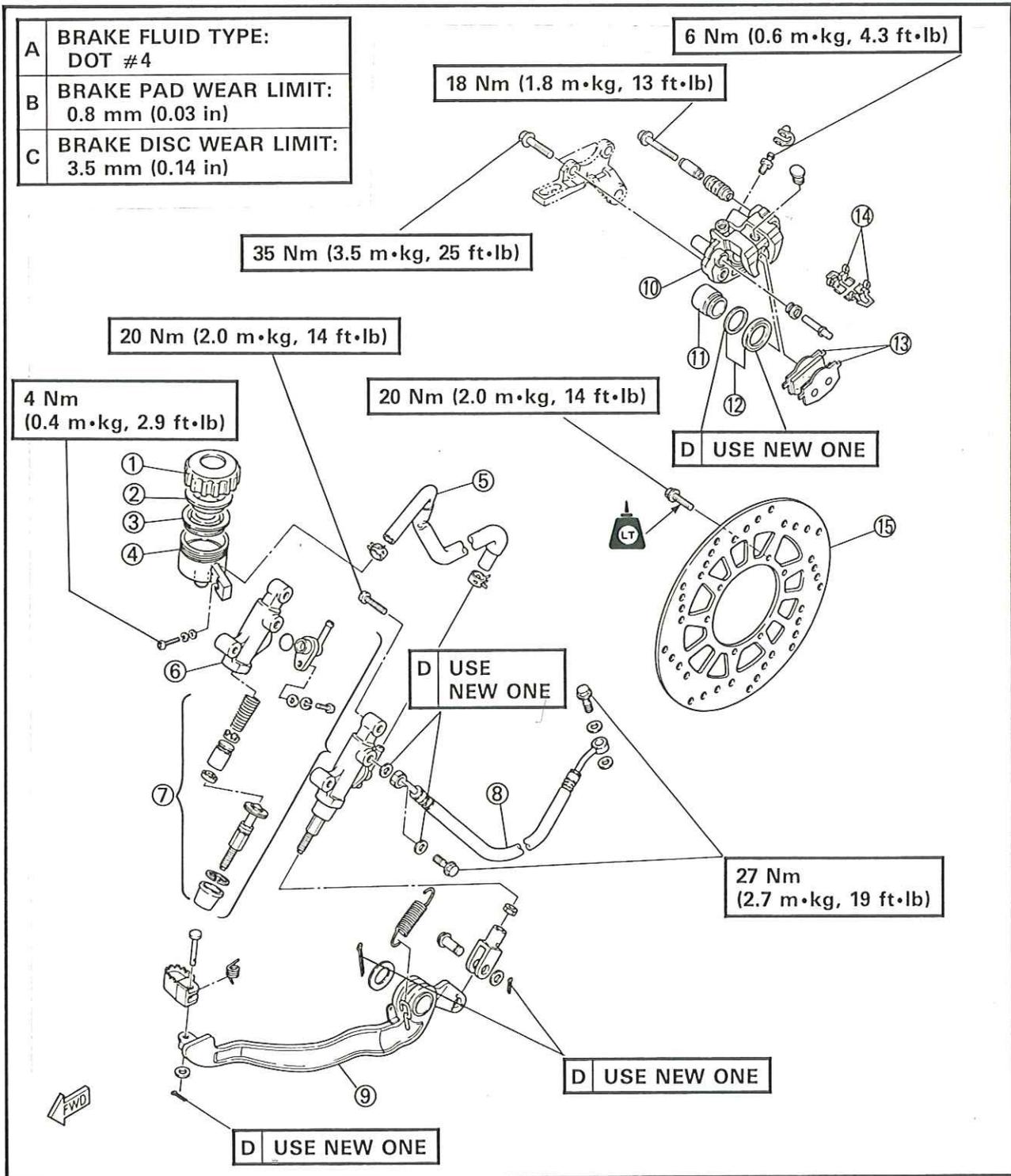
- ① Master cylinder cap
- ② Rubber seal
- ③ Master cylinder kit
- ④ Master cylinder
- ⑤ Brake hose
- ⑥ Brake caliper
- ⑦ Pad spring
- ⑧ Piston
- ⑨ Piston seal
- ⑩ Brake pad
- ⑪ Brake disc



# FRONT AND REAR BRAKE



- ① Reservoir tank cap
- ② Bush
- ③ Diaphragm
- ④ Reservoir tank
- ⑤ Reservoir hose
- ⑥ Master cylinder
- ⑦ Master cylinder kit
- ⑧ Brake hose
- ⑨ Brake pedal
- ⑩ Brake caliper
- ⑪ Piston
- ⑫ Piston seal
- ⑬ Brake pad
- ⑭ Pad spring
- ⑮ Brake disc



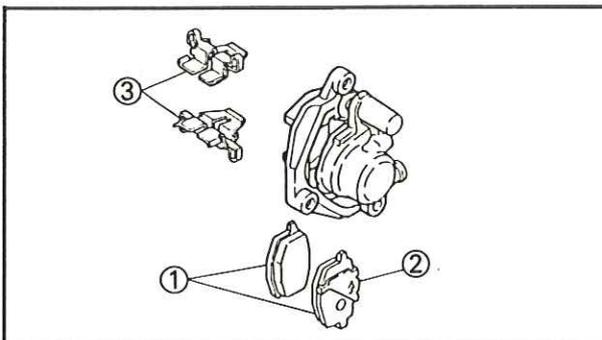
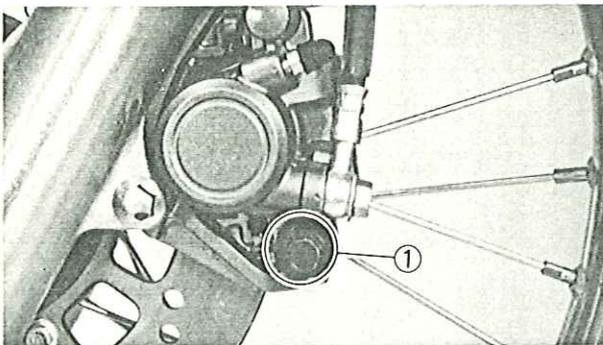
**CAUTION:**

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.

**Front Brake**

## 1. Remove:

- Retaining bolt ①

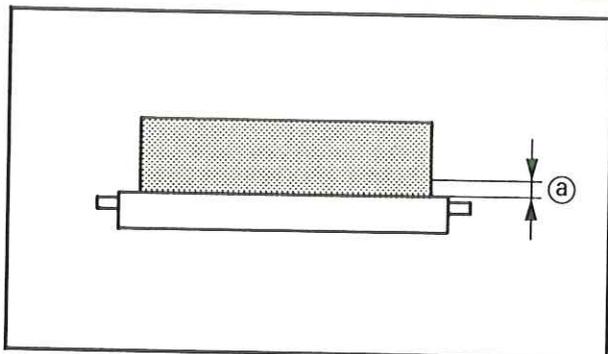
## 2. Turn the caliper body counterclockwise.

## 3. Remove:

- Brake pad ①
- Shim ②
- Pad spring ③

**NOTE:**

Replace the pad springs as a set if pad replacement is required.

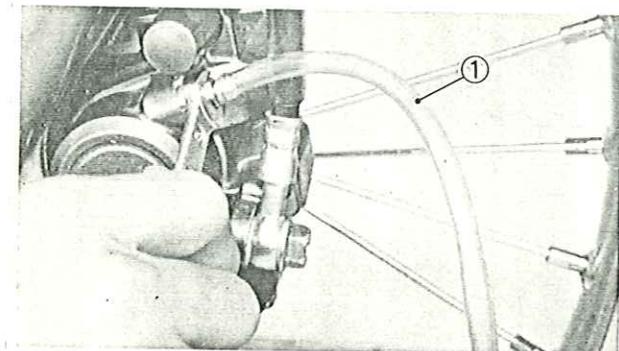


**NOTE:** \_\_\_\_\_

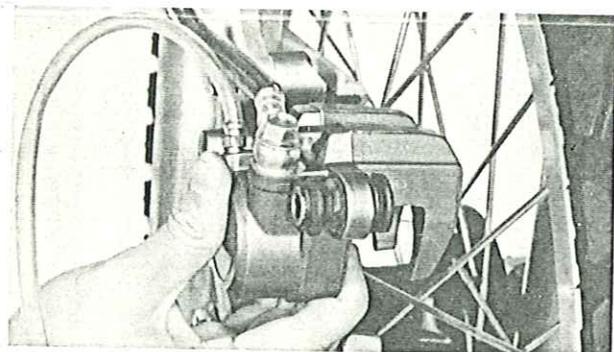
Replace the pads as a set if either is found to be worn to the wear limit. (a)



**Wear Limit:**  
0.8 mm (0.031 in)



4. Connect a suitable hose ① tightly to the caliper bleed screw. Then, place other end of this hose into an open container.

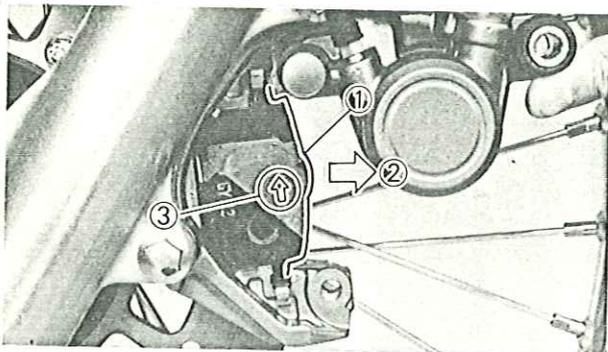


5. Loosen the caliper bleed screw and push the piston into the caliper by your finger.

6. Tighten:
  - Caliper bleed screw



**Caliper Bleed Screw:**  
6 Nm (0.6 m•kg, 4.3 ft•lb)



7. Install:
  - Brake pad (New)
  - Shim
  - Pad spring (New)

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

- Be sure to position the pad so that its round side ① is backward ②.
- Be sure to position the shim so that it is piston side and its arrow mark ③ is upward.

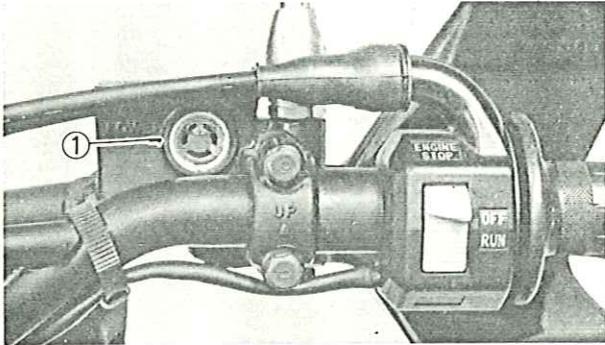
8. Apply:
  - Lithium soap base grease  
To the retaining bolt.



9. Install:
  - Retaining bolt



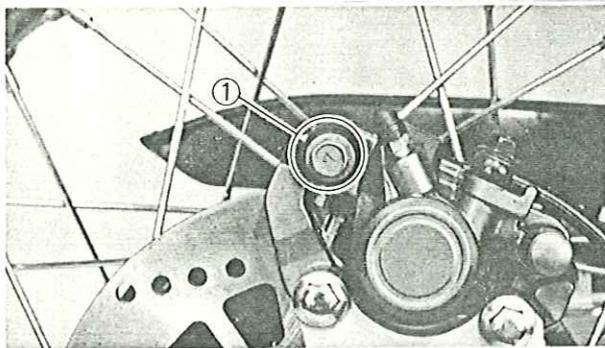
Retaining Bolt:  
18 Nm (1.8 m•kg, 13 ft•lb)



10. Inspect:
  - Brake fluid level  
Refer to the "BRAKE FLUID INSPECTION" section in the CHAPTER 3.

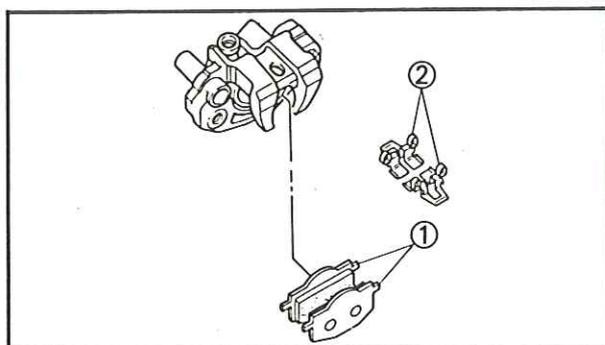
① "LOWER" level line

11. Check:
  - Brake lever operation  
A softy or spongy filling → Bleed brake system.  
Refer to the "AIR BLEEDING" section in the CHAPTER 6.



**Rear Brake**

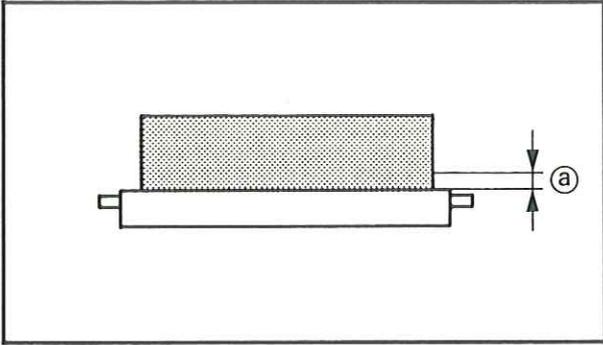
1. Remove:
  - Retaining bolt ①
2. Turn the caliper body clockwise.



3. Remove:
  - Brake pad ①
  - Pad spring ②

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

Replace the pad springs as a set if pad replacement is required.

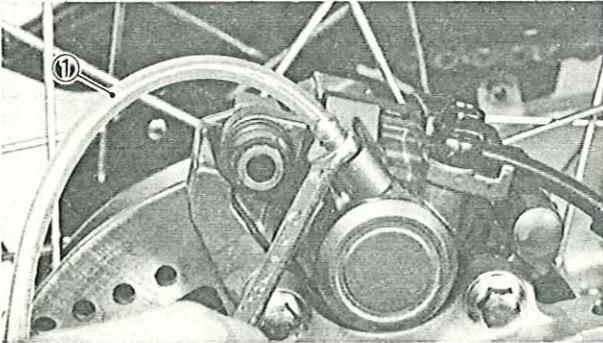


**NOTE:**

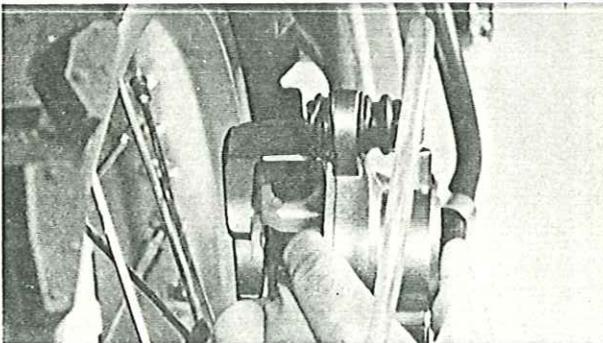
Replace the pads as a set if either is found to be worn to the wear limit (a).



**Wear Limit:**  
0.8 mm (0.031 in)



4. Connect a suitable hose (1) tightly to the caliper bleed screw. Then, place other end of this hose into an open container.



5. Loosen the caliper bleed screw and push the pistons into the caliper by your finger.

6. Tighten:  
• Caliper bleed screw



**Caliper Bleed Screw:**  
6 Nm (0.6 m•kg, 4.3 ft•lb)

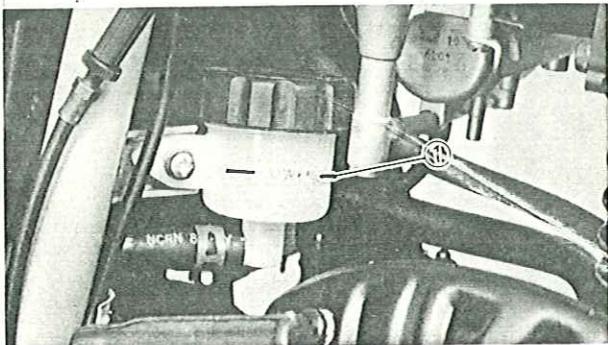
7. Install:  
• Brake pad (New)  
• Pad spring (New)

8. Apply:  
• Lithium sope base grease  
To the retaining bolt.

9. Install:  
• Retaining bolt



**Retaining Bolts:**  
18 Nm (1.8 m•kg, 13 ft•lb)



10. Inspect:
- Brake fluid level  
Refer to the "BRAKE FLUID INSPECTION" section in the CHAPTER 3.

① "LOWER" level line

11. Check:
- Brake pedal operation  
A softy or spongy filling → Bleed brake system.  
Refer to "AIR BLEEDING" section in CHAPTER 6.

### CALIPER DISASSEMBLY

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

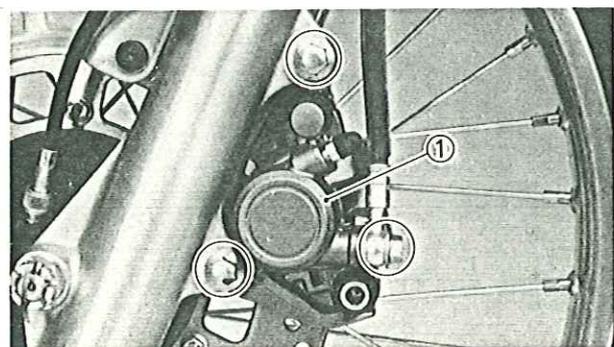
Before disassembling the front brake caliper or rear brake caliper, drain the brake system of its brake fluid.

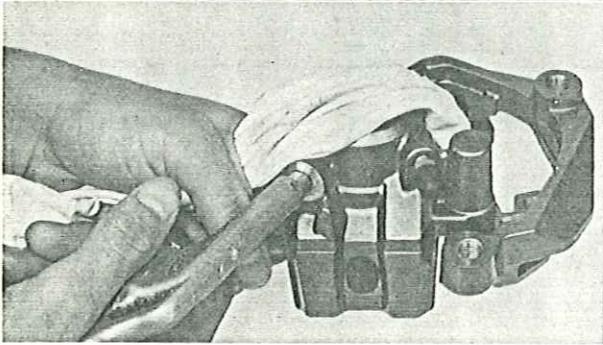
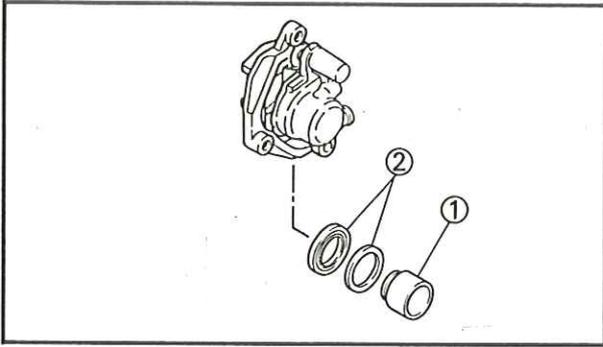
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### Front Brake

1. Remove:
- Brake pad
  - Shim
  - Pad spring  
Refer to the "BRAKE PAD REPLACEMENT" section in the CHAPTER 6.

2. Remove:
- Caliper body ①





3. Remove:
- Piston ①
  - Piston seal ②

**Remove steps:**

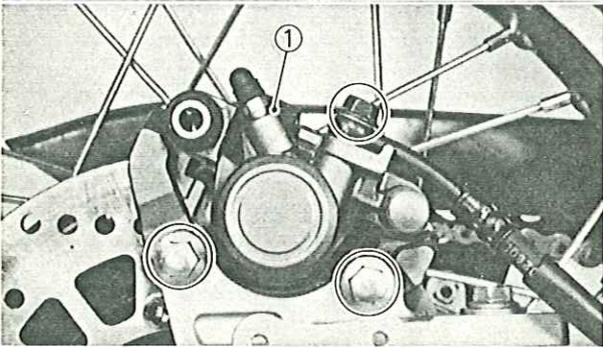
- Blow compressed air into the tube joint opening to force out the piston from the caliper body.

**WARNING:**

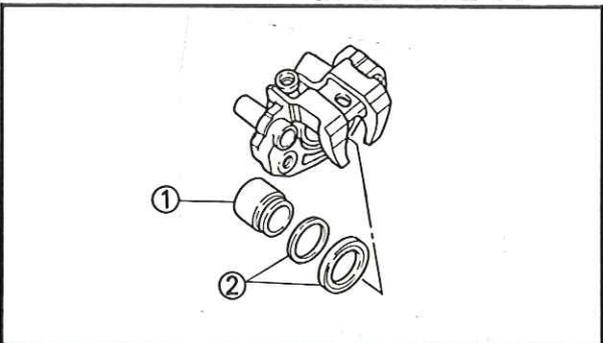
- Never try to pry out the piston.
- Cover the piston with a rag. Use care so that piston does not cause injury as it is expelled from the cylinder.

**Rear Brake**

1. Remove:
- Brake pads
- Refer to the "BRAKE PAD REPLACEMENT" section in the CHAPTER 6.

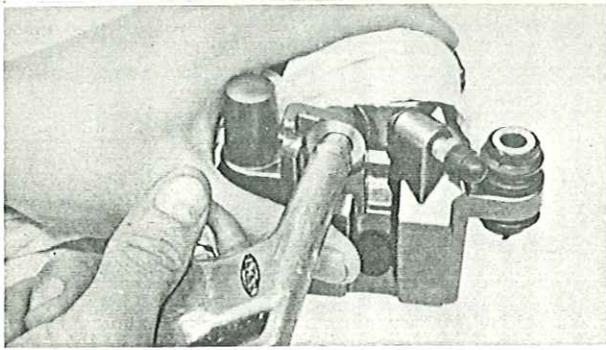


2. Remove:
- Caliper body ①



3. Remove:
- Piston ①
  - Piston seal ②





**Removal steps:**

- Blow compressed air into the tube joint opening to force out the piston from the caliper body,

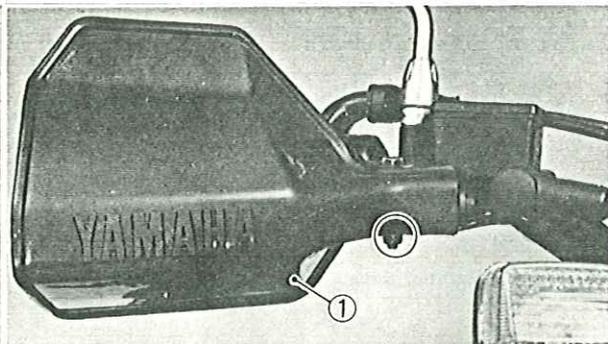
**WARNING:**

- Never try to pry out the piston.
- Cover the piston with a rag. Use care so that piston does not cause injury as it is expelled from the cylinder.

**MASTER CYLINDER DISASSEMBLY**

**NOTE:**

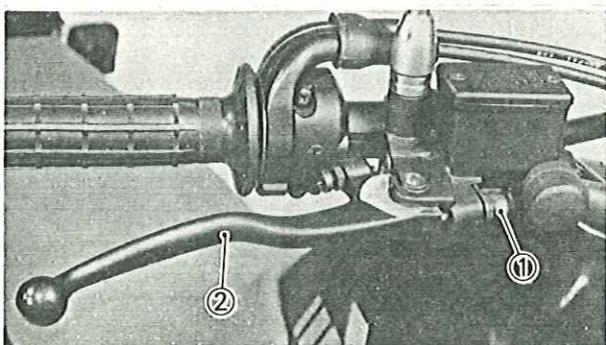
Before disassembling the front or rear brake master cylinders, drain the brake system of the brake fluid.



**Front Brake**

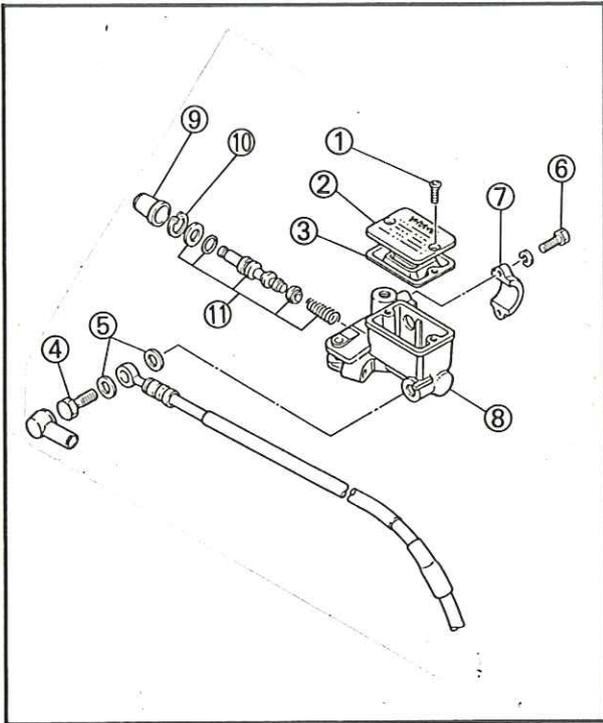
**1. Remove:**

- Guard ①



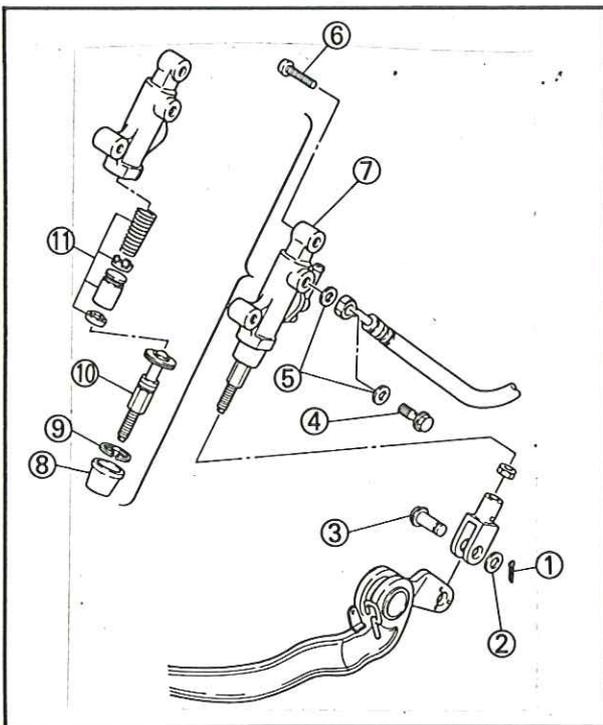
**2. Remove:**

- Brake switch ①
- Brake lever ②



3. Remove:

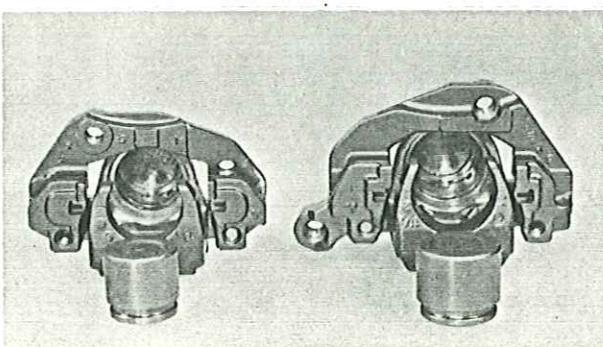
- Screw ① (Master cylinder cap)
- Master cylinder cap ②
- Rubber seal ③
- Union bolt ④
- Copper washer ⑤
- Bolt ⑥ (Master cylinder bracket)
- Master cylinder bracket ⑦
- Master cylinder ⑧
- Dust boot ⑨
- Circlip ⑩
- Master cylinder kit ⑪



Rear Brake

1. Remove:

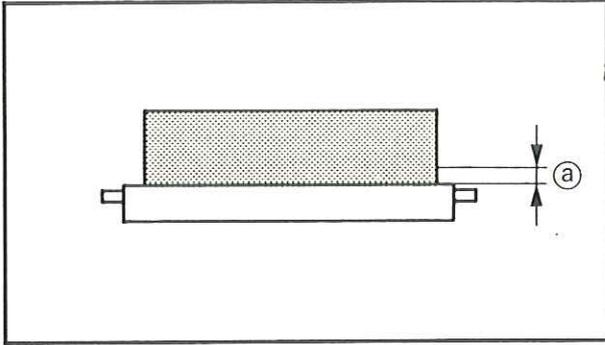
- Cotter pin ①
- Plain washer ②
- Shaft ③
- Union bolt ④
- Copper washer ⑤
- Bolt ⑥ (Master cylinder)
- Master cylinder ⑦
- Dust boot ⑧
- Circlip ⑨
- Adjusting rod ⑩
- Master cylinder kit ⑪



INSPECTION AND REPAIR

1. Inspect:

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



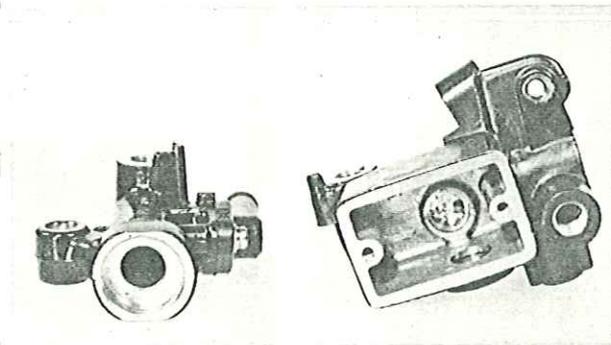
2. Measure:
- Brake pad thickness (a)
- Out of specification → Replace.

	<p><b>Pad Wear Limit:</b> 0.8 mm (0.031 in)</p>
---	---

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

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

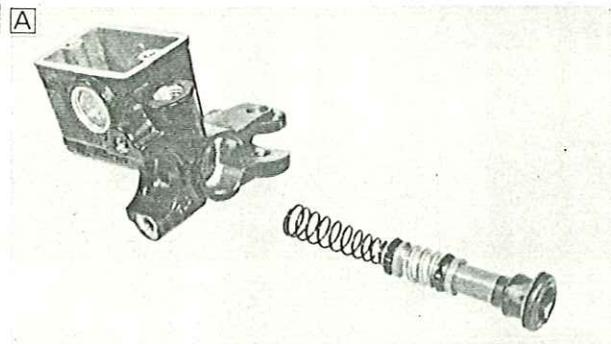
3. Inspect:
- Brake hose
- Cracks/Damage → Replace.



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

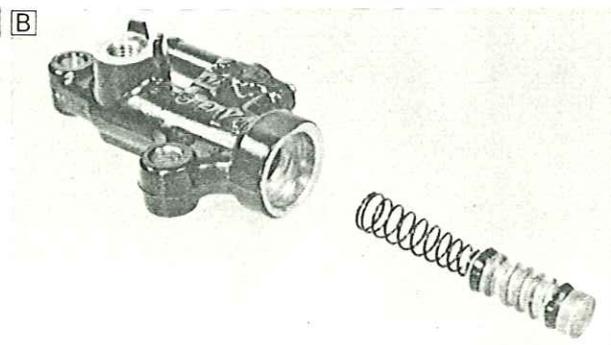
**NOTE:** \_\_\_\_\_

Clean all passages with new brake fluid.



5. Inspect:
- Master cylinder kit
- Scratches/Wear → Replace.

- A** Front brake  
**B** Rear brake





## ASSEMBLY

### WARNING:

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



### Brake Fluid:

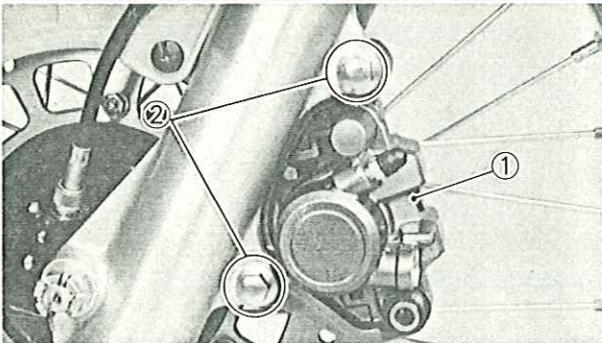
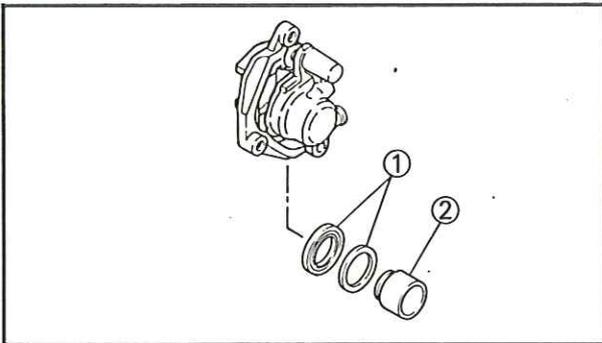
Front Brake

DOT #3

Rear Brake

DOT #4

- Replace the piston seals whenever a caliper is disassembled.



### Front Brake

#### 1. Install:

- Piston seal ①
- Piston ②

#### 2. Install:

- Brake caliper ①



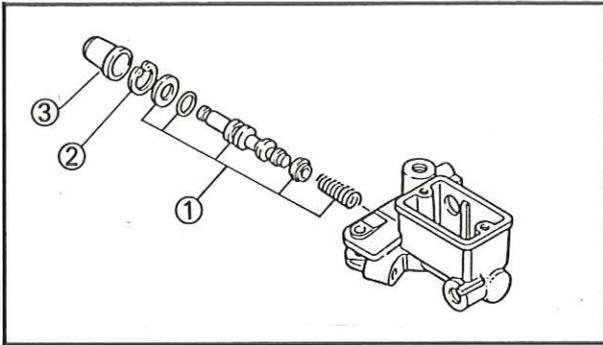
**Bolt ② (Brake Caliper):**

**35 Nm (3.5 m•kg, 25 ft•lb)**

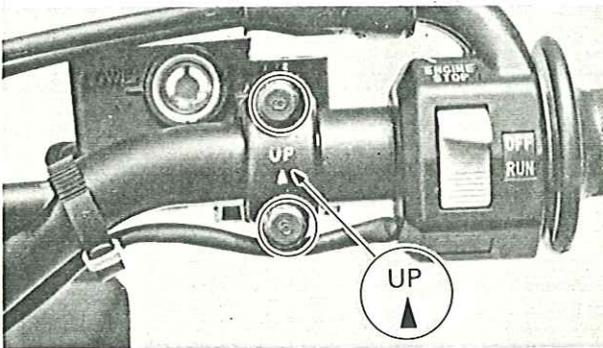
#### 3. Install:

- Brake pad
- Shim
- Pad spring
- Retaining bolt

Refer to the "BRAKE PAD REPLACEMENT" section in the CHAPTER 6.



4. Install:
- Master cylinder kit ①
  - Circlip ②
  - Dust boot ③

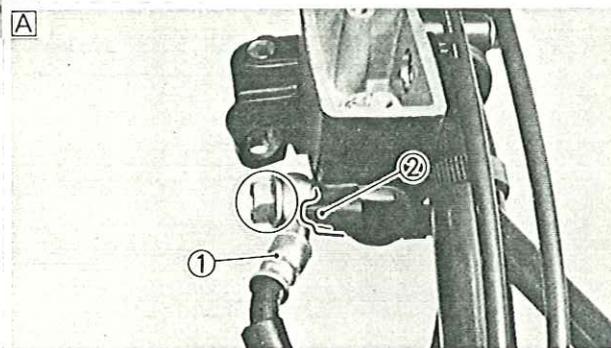


5. Install:
- Master cylinder

**NOTE:**

- Install the master cylinder bracket with the "UP" mark facing upward.
- Tighten first the upper bolt, then the lower bolt.

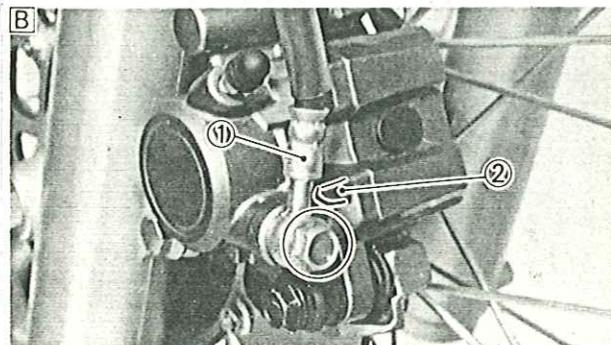
 **Bolts (Master Cylinder Bracket):**  
10 Nm (1.0 m•kg, 7.2 ft•lb)



6. Install:
- Brake hose
  - Copper washers
  - Union bolts

 **Union Bolts:**  
27 Nm (2.7 m•kg, 19 ft•lb)

- A Master cylinder
- B Brake caliper

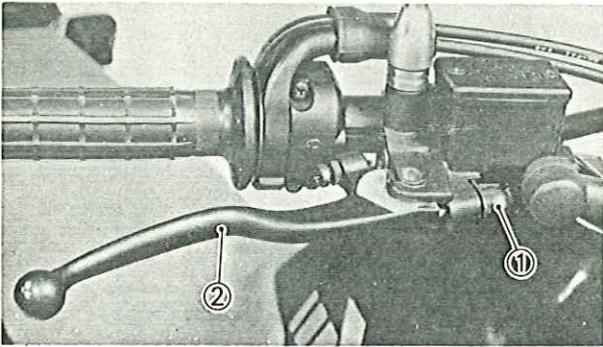


**CAUTION:**

When installing the brake hose to the caliper, lightly touch the brake pipe ① with the projections ② on the caliper and master cylinder.

**WARNING:**

Always use new copper washers.



7. Install:
- Brake switch ①
  - Brake lever ②

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

Apply lithium soap base grease to pivot shaft of brake lever.

8. Fill:
- Brake fluid



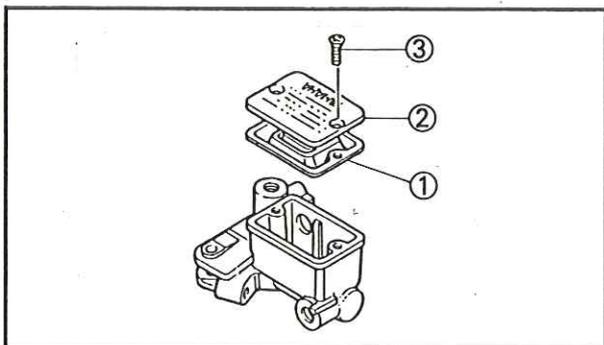
**Recommended Brake Fluid:**  
DOT #3

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

Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

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

- Use only the designated quality brake fluid; otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.
- Refill with the same type of brake fluid; mixing fluids may result in a harmful chemical reaction and lead to poor performance.
- Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.



9. Install:
- Rubber seal ①
  - Master cylinder cap ②

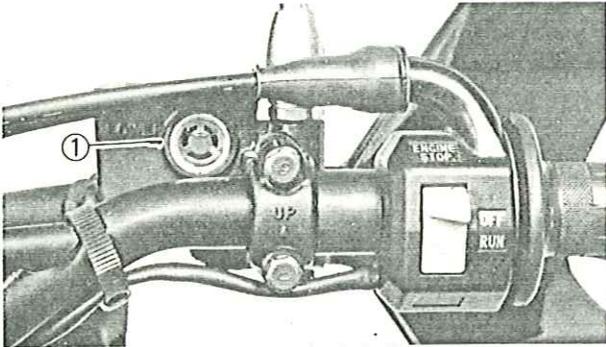


**Screws ③ (Master Cylinder Cap):**  
2 Nm (0.2 m•kg, 1.4 ft•lb)

10. Air bleed:

- Brake system

Refer to the "AIR BLEEDING" section in the CHAPTER 6.



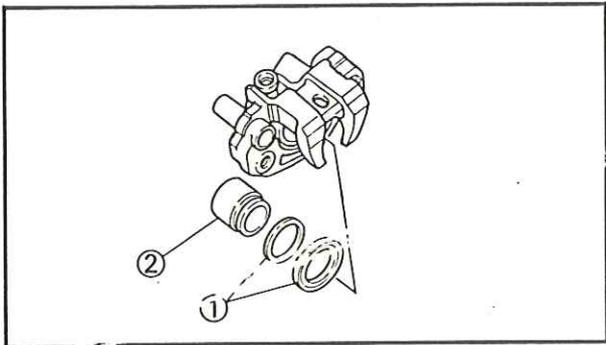
11. Inspect:

- Brake fluid level

Fluid level is under "LOWER" level line

① → Replenish.

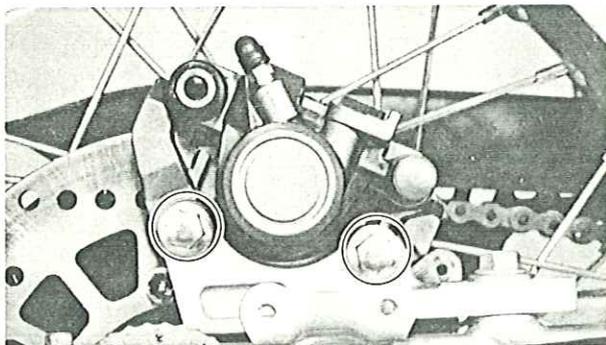
Refer to the "BRAKE FLUID INSPECTION" section in the CHAPTER 3.



### Rear Brake

1. Install:

- Piston seal ①
- Piston ②



2. Install:

- Brake caliper

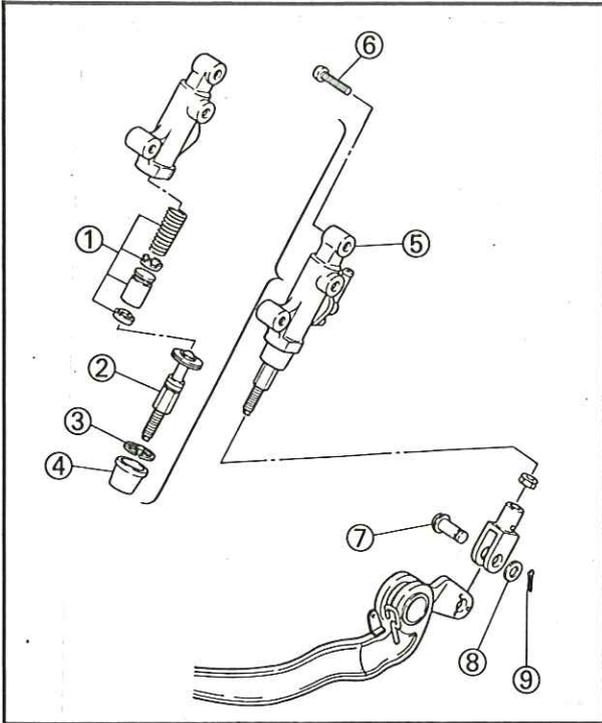


**Bolts (Brake Caliper):**  
35 Nm (3.5 m•kg, 25 ft•lb)

3. Install:

- Brake pad
- Pad spring
- Retaining bolt

Refer to the "BRAKE PAD REPLACEMENT" section in the CHAPTER 6.



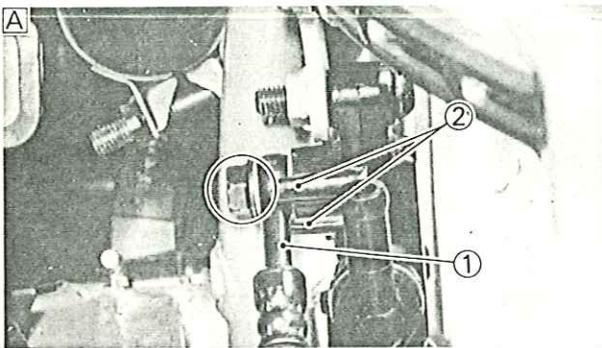
4. Install:

- Master cylinder kit ①
- Adjusting rod ②
- Circlip ③
- Dust boot ④
- Master cylinder ⑤
- Bolt ⑥ (Master Cylinder)
- Shaft ⑦
- Plain washer ⑧
- Cotter pin ⑨

 **Bolt (Master Cylinder):**  
20 Nm (2.0 m•kg, 14 ft•lb)

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

Always use new cotter pin.

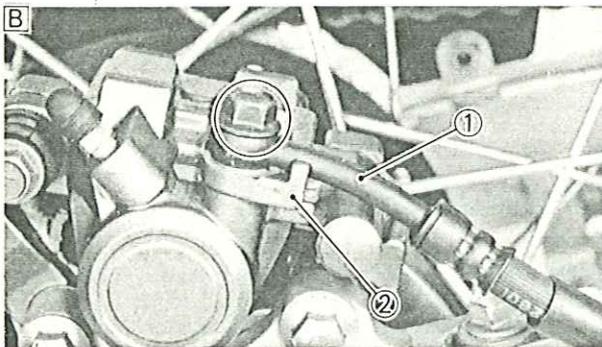


5. Install:

- Brake hose
- Copper washer
- Union bolt

 **Union Bolt:**  
27 Nm (2.7 m•kg, 19 ft•lb)

- A Master cylinder
- B Brake caliper



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

When installing the brake hose, lightly touch the brake pipe ① with the projections ② on the caliper and master cylinder.

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

Always use new copper washers.





## 6. Fill:

- Brake fluid



Recommended Brake Fluid:  
DOT #4

**CAUTION:**

Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

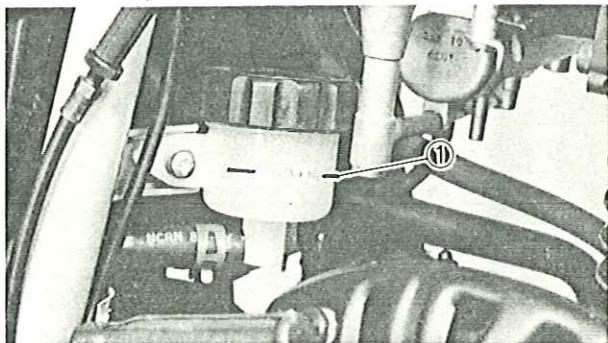
**WARNING:**

- Use only the designated quality brake fluid; otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.
- Refill with the same type of brake fluid; mixing fluids may result in a harmful chemical reaction and lead to poor performance.
- Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.

## 7. Air bleed:

- Brake system

Refer to the "AIR BLEEDING" section in the CHAPTER 6.



## 8. Inspect:

- Brake fluid level

Fluid level is under "LOWER" level line

① → Replenish.

Refer to the the "BRAKE FLUID INSPECTION" section in the CHAPTER 3.

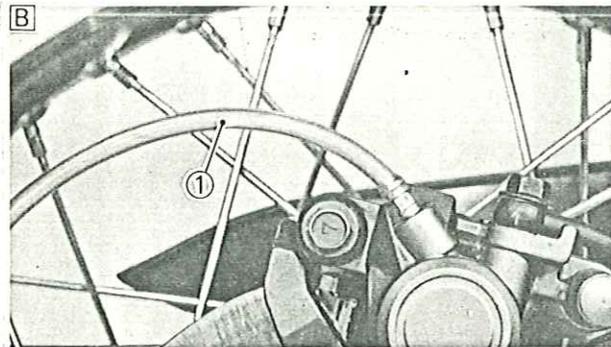
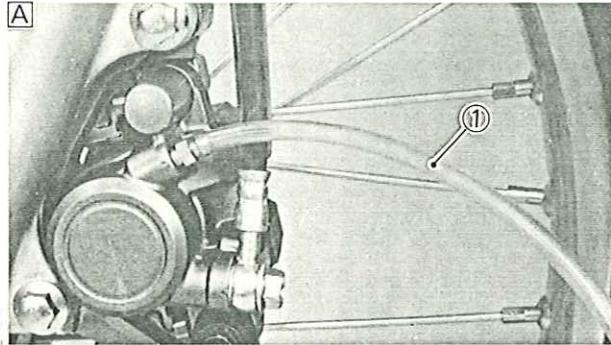
**AIR BLEEDING**

**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. Bleed:
  - Brake fluid

**Air bleeding steps:**

- a. Add proper brake fluid to the reservoir.
- b. Install the diaphragm. Be careful not to spill any fluid or allow the reservoir to overflow.
- c. Connect the clear plastic tube ① tightly to the caliper bleed screw.

- A** Front
- B** Rear

- d. Place the other end of the tube into a container.
- e. Slowly apply the brake lever or pedal several times.
- f. Pull the lever in or push down on the pedal. Hold the lever or pedal in position.
- g. Loosen the bleed screw and allow the lever or pedal to travel towards its limit.
- h. Tighten the bleed screw when the lever or pedal limit has been reached; then release the lever or pedal.



**Bleed Screw:**  
5 Nm (0.5 m•kg, 3.6 ft•lb)

- 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 the system have disappeared.

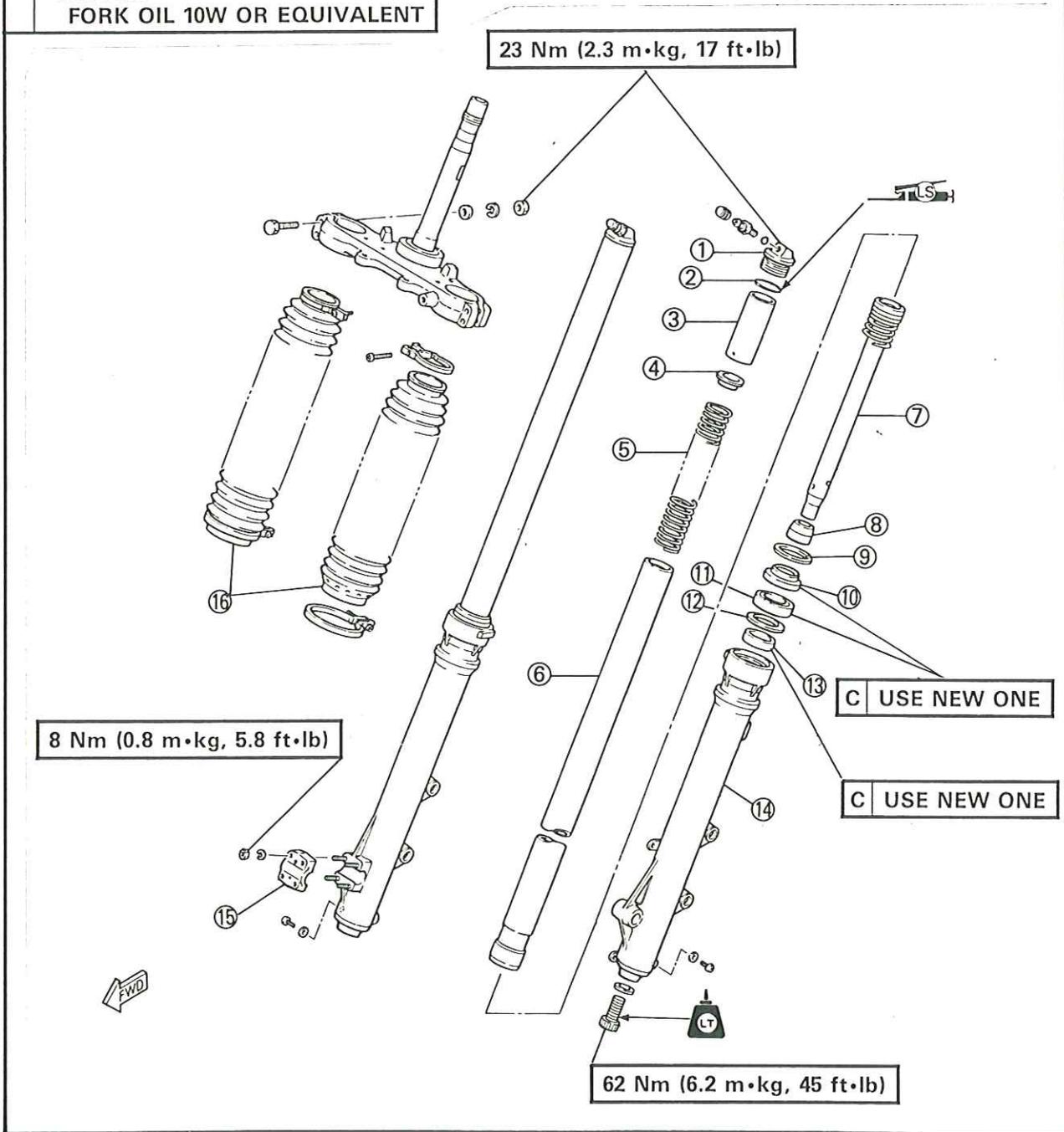
- j Add brake fluid to the level line on the reservoir.

**FRONT FORK**

- ① Cap bolt
- ② O-ring
- ③ Spacer
- ④ Spring seat
- ⑤ Fork spring
- ⑥ Inner fork tube
- ⑦ Damper rod
- ⑧ Oil lock pieces
- ⑨ Circlip
- ⑩ Dust seal
- ⑪ Oil seal
- ⑫ Washer
- ⑬ Slide metal
- ⑭ Outer fork tube
- ⑮ Axle holder
- ⑯ Fork boot

**A** FORK OIL (EACH):  
 CAPACITY:  
 537 cm<sup>3</sup> (18.9 Imp oz, 18.1 US oz)  
 GRADE:  
 FORK OIL 10W OR EQUIVALENT

**B** FORK SPRING:  
 MINIMUM FREE LENGTH:  
 410.0 mm (16.1 in)





## REMOVAL

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

**WARNING:**

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

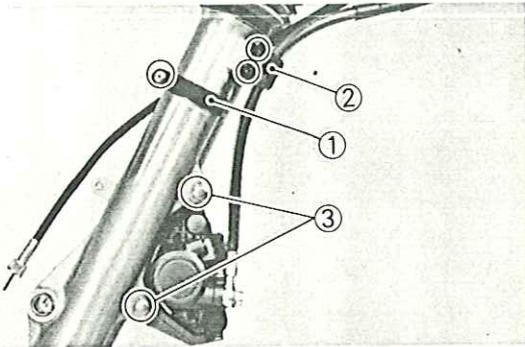
## 2. Remove:

- Front wheel

Refer to the "FRONT WHEEL — REMOVAL" section in the CHAPTER 6.

## 3. Remove (For left-hand front fork):

- Holder ① (Speedometer cable)
- Holder ② (Brake hose)
- Bolt ③ (Brake caliper)

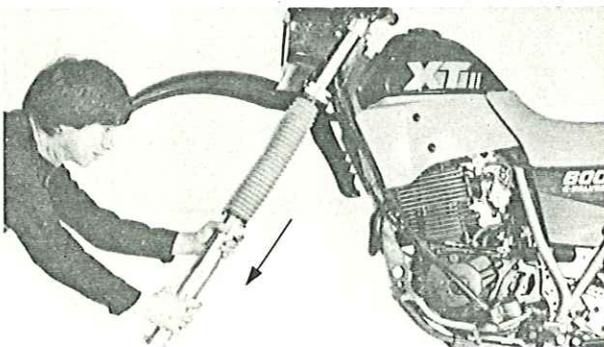
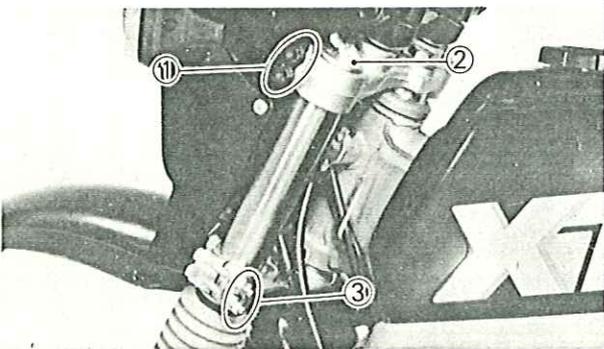


## 4. Loosen:

- Pinch bolt ① (Handlebar crown)
- Cap bolt ②
- Pinch bolt ③ (Lower bracket)

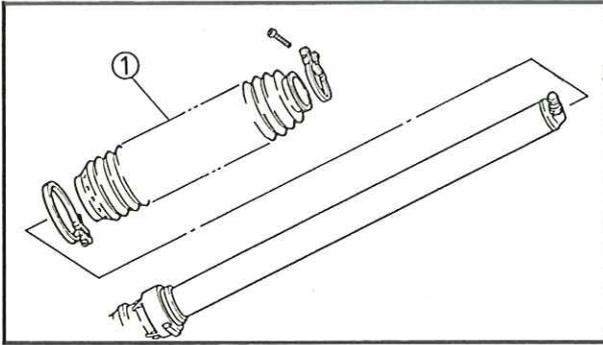
**WARNING:**

Support the fork before loosening the pinch bolt.



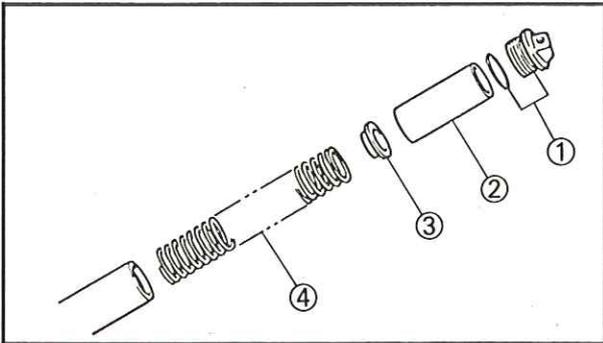
## 5. Remove:

- Front fork

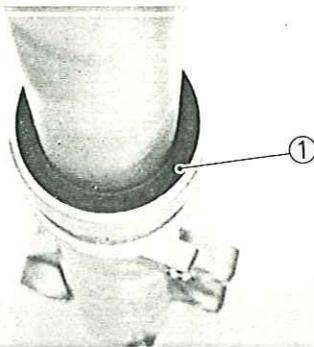


**DISASSEMBLY**

1. Remove:
  - Fork boot ①

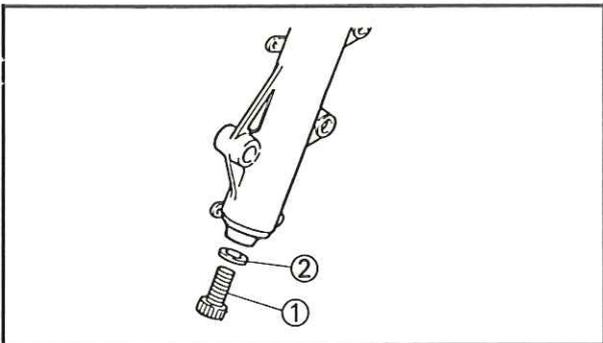


2. Remove:
  - Cap bolt ①
  - Spacer ②
  - Spring seat ③
  - Fork spring ④



3. Drain:
  - Fork oil
4. Remove:
  - Circlip ①

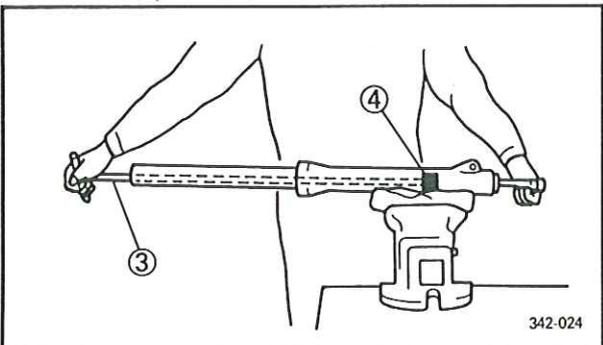
**NOTE:** \_\_\_\_\_  
 Use a thin screwdriver, and be careful not to scratch the inner fork tube.



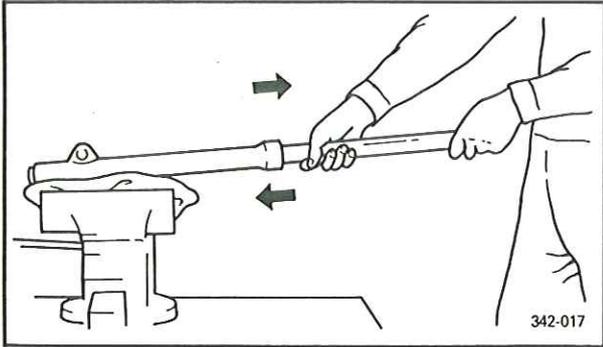
5. Remove:
  - Bolt ① (Damper rod)
  - Washer ②

**NOTE:** \_\_\_\_\_  
 Hold the damper rod to loosen the bolt (Damper rod) by the T-Handle ③ and Holder ④.

	T-Handle:
	90890-01326
	Holder:
	90890-01388



342-024



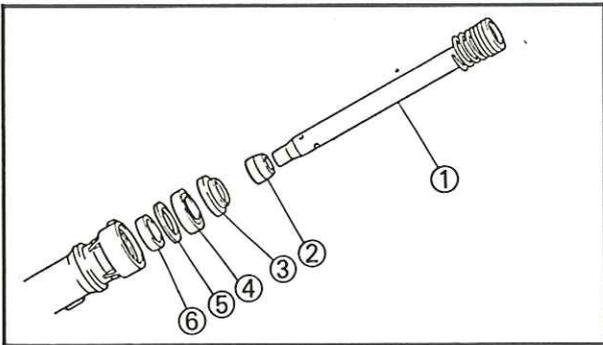
6. Remove:
- Inner fork tube

**Removal steps:**

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

**CAUTION:**

Avoid bottoming the inner tube in the outer tube during the above procedure, as the oil lock piece will be damaged.



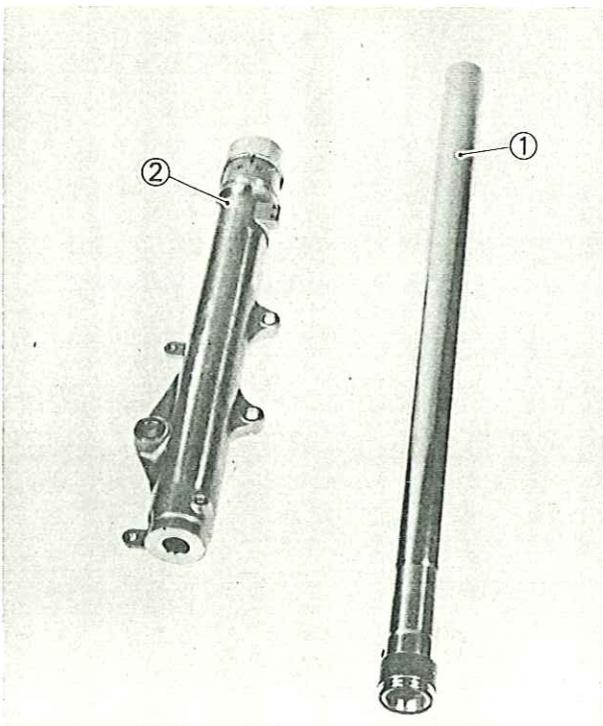
7. Remove:
- Damper rod ①
  - Oil lock pieces ②
  - Dust seal ③
  - Oil seal ④
  - Washer ⑤
  - Guide bush ⑥

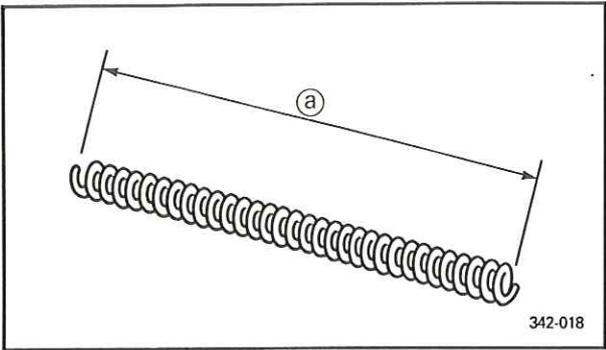
**INSPECTION**

1. Inspect:
- Inner fork tube ①
  - Outer fork tube ②
- Scratches/Bends/Damage → Replace.

**WARNING:**

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



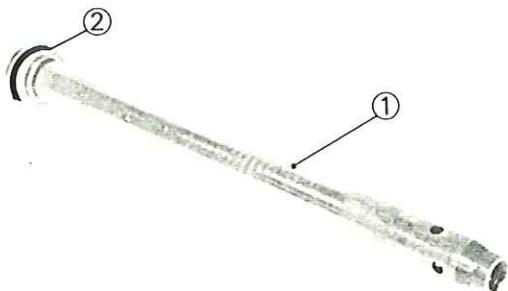


2. Measure:

- Fork spring free length (a)  
Out of specification → Replace.

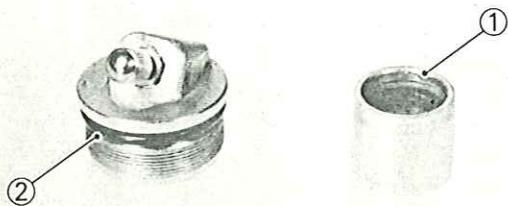


**Fork Spring Free Length:**  
414.5 mm (16.3 in)  
**Minimum Free Length:**  
410.0 mm (16.1 in)



3. Inspect:

- Damper rod (1)  
Wear/Damage → Replace.  
Contamination → Blow out all oil passages with compressed air.
- Piston ring (2)  
Wear/Damage → Replace.



4. Inspect:

- Oil lock piece (1)
- O-ring (2) (Cap bolt)  
Damage → Replace.

**ASSEMBLY**

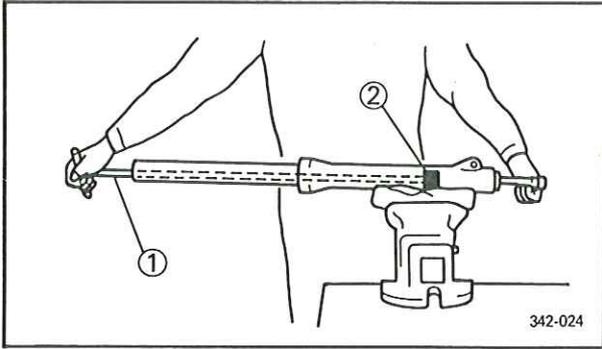
Reverse the "DISASSEMBLY" procedure.  
Note the following points.

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

- In front fork reassembly, be sure to use following new parts.
  - \* Guide bush
  - \* Oil seal
  - \* Dust seal
- Make sure all components are clean before reassembly.

# FRONT FORK

CHAS



1. Tighten:
  - Bolt (Damper rod)

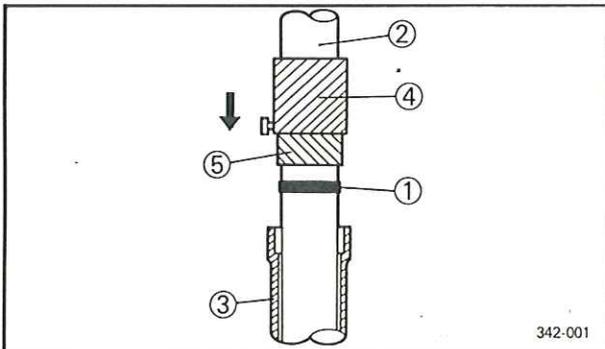


**Bolt (Damper Rod):**  
62 Nm (6.2 m•kg, 45 ft•lb)  
Apply LOCTITE®.

**NOTE:** \_\_\_\_\_  
Hold the damper rod to tighten the bolt (Damper rod) by the T-Handle (1) and Holder (2).



**T-Handle:**  
90890-01326  
**Holder:**  
90890-01388

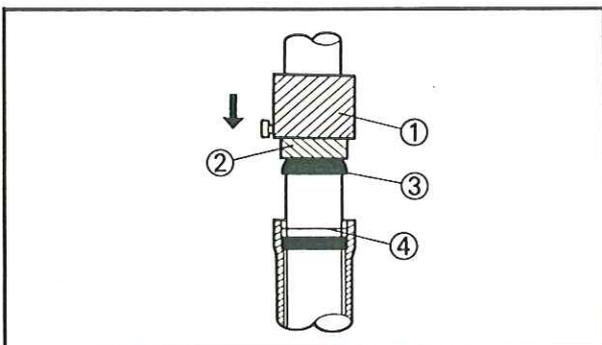


2. Install:
  - Guide bush (1)Use the Fork Seal Driver Weight (4) and Adapter (5).

- (2) Inner fork tube
- (3) Outer fork tube



**Fork Seal Driver Weight:**  
90890-01367  
**Adapter:**  
90890-01381



3. Install:
  - Oil seal (3)Use the Fork Seal Driver Weight (1) and Adapter (2).

- (4) Washer



**Fork Seal Driver Weight:**  
90890-01367  
**Adapter:**  
90890-01381

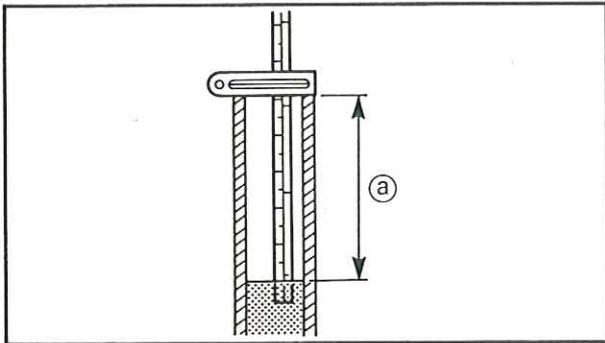


4. Fill:
- Front fork

	<p>Fork Oil Capacity:                      537 cm<sup>3</sup> (18.9 Imp oz,                      18.1 US oz)</p>
<p>Grade:                      Fork Oil 10W or Equivalent</p>	

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

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



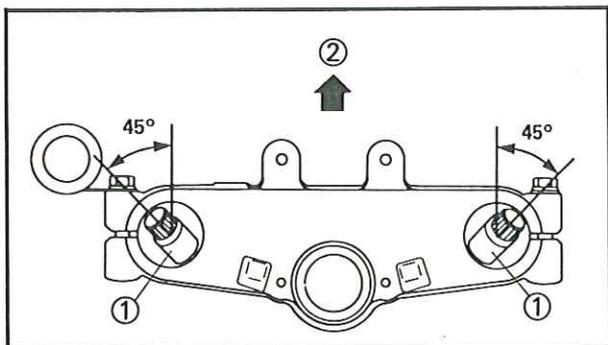
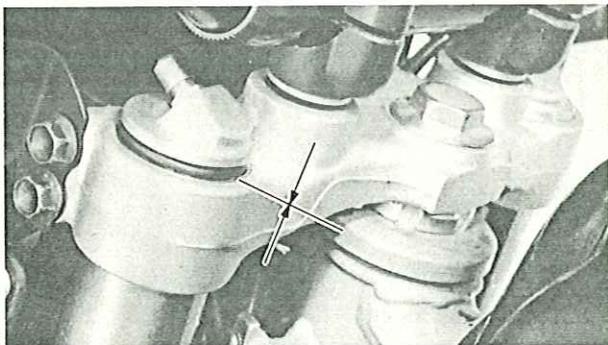
5. Measure:
- Oil level (a)
- Out of specification → Add or reduce oil.

	<p>Oil Level:                      140 mm (5.51 in)                      From the top of the inner fork                      tube.</p>
---	--

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

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

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



**INSTALLATION**

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

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

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

- Install the front fork until the top of the inner fork tube is flush with the top of the handlebar crown.
  - Face the air valve ① as shown.
  - ② Forward
- \_\_\_\_\_

2. Tighten:
  - Pinch bolt (Lower bracket)
  - Cap bolt
  - Pinch bolt (Handlebar crown)

	<b>Pinch Bolt (Lower Bracket):</b>
	23 Nm (2.3 m•kg, 17 ft•lb)
	<b>Cap Bolt:</b>
	23 Nm (2.3 m•kg, 17 ft•lb)
	<b>Pinch Bolt (Handlebar Crown):</b>
	23 Nm (2.3 m•kg, 17 ft•lb)

3. Install:
  - Front wheel

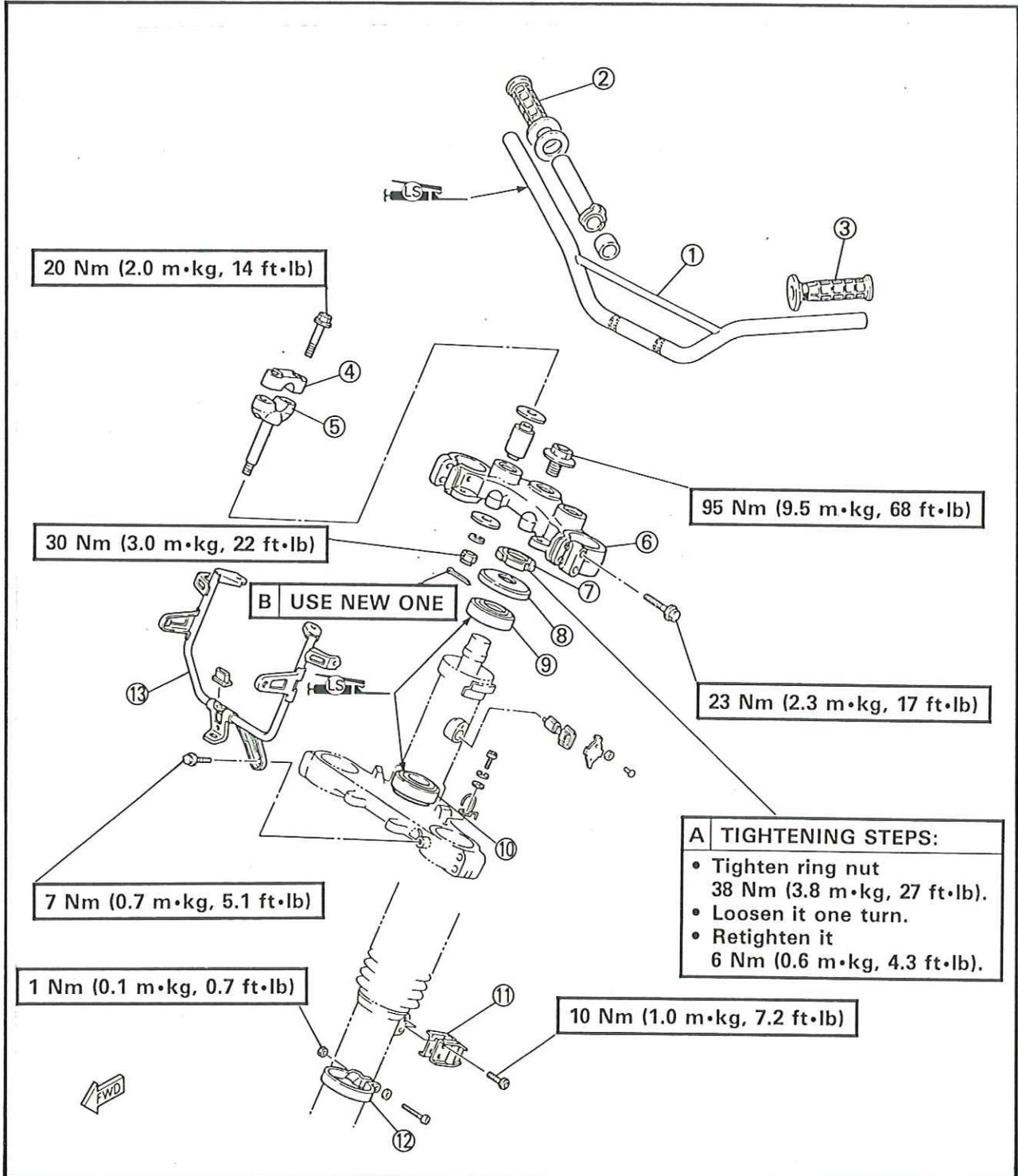
	<b>Nut (Axle Holder):</b>
	8 Nm (0.8 m•kg, 5.8 ft•lb)
	<b>Wheel Axle:</b>
	110 Nm (11.0 m•kg, 80 ft•lb)
	<b>Bolts (Brake Caliper):</b>
	35 Nm (3.5 m•kg, 25 ft•lb)

Refer to "FRONT WHEEL — INSTALLATION" section in CHAPTER 6.



## STEERING HEAD AND HANDLEBAR

- |                            |                                    |
|----------------------------|------------------------------------|
| ① Handlebar                | ⑧ Cover                            |
| ② Handlebar grip (Right)   | ⑨ Bearing (Upper)                  |
| ③ Handlebar grip (Left)    | ⑩ Bearing (Lower)                  |
| ④ Handlebar holder (Upper) | ⑪ Clamp (Brake hose)               |
| ⑤ Handlebar holder (Lower) | ⑫ Cable holder (Speedometer cable) |
| ⑥ Handle crown             | ⑬ Headlight stay                   |
| ⑦ Ring nut                 |                                    |





## REMOVAL

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

### WARNING:

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

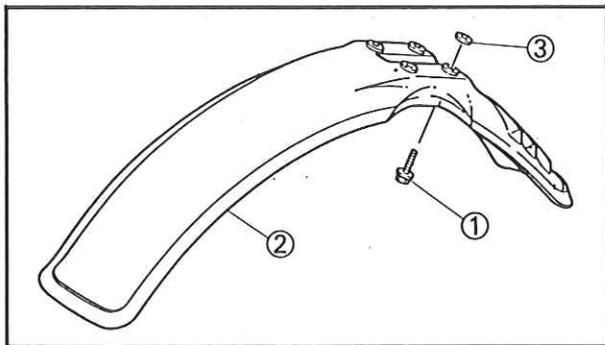
### 2. Remove:

- Front wheel

Refer to the "FRONT WHEEL—REMOVAL" section in the CHAPTER 6.

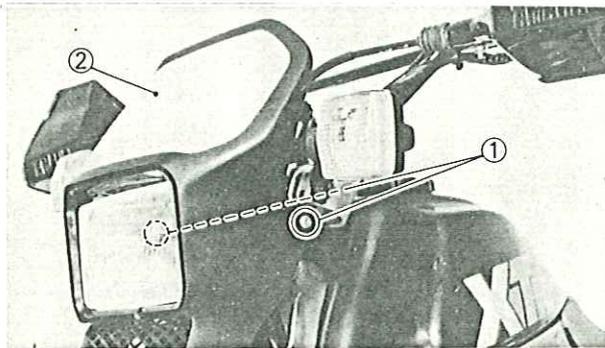
- Front fork

Refer to the "FRONT FORK—REMOVAL" section in the CHAPTER 6.



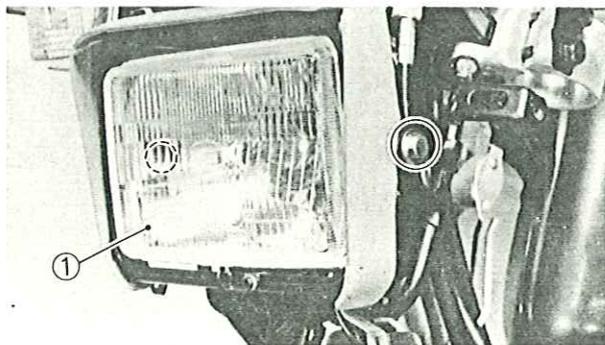
### 3. Remove:

- Bolt ① (Front fender)
- Front fender ②
- Washer ③



### 4. Remove:

- Bolt ① (Cowling)
- Cowling ②

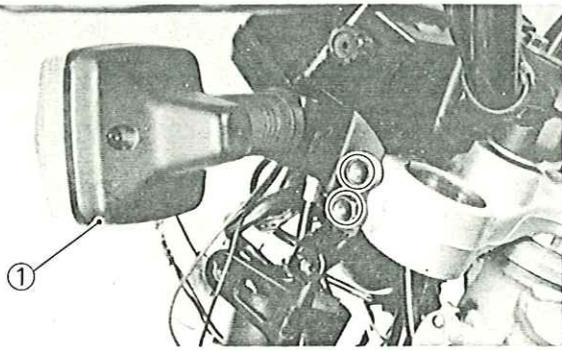


### 5. Disconnect:

- Headlight lead

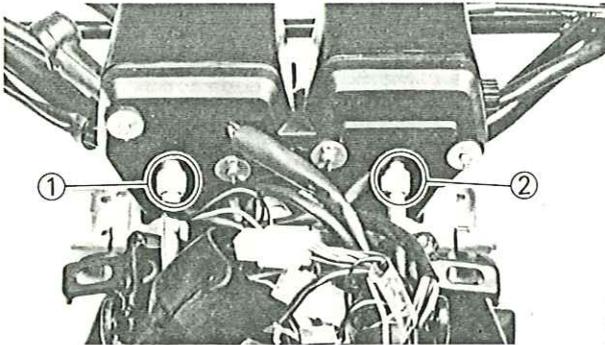
### 6. Remove:

- Headlight lens unit ①

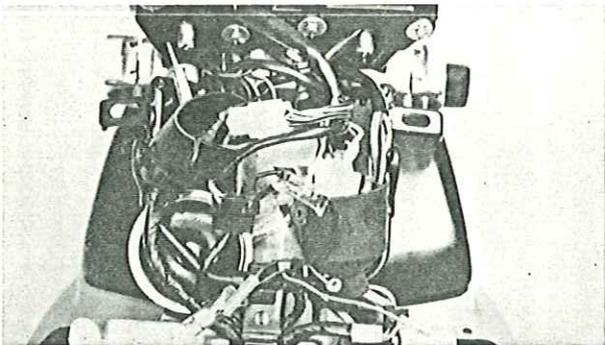


7. Disconnect:  
 • Flasher light lead

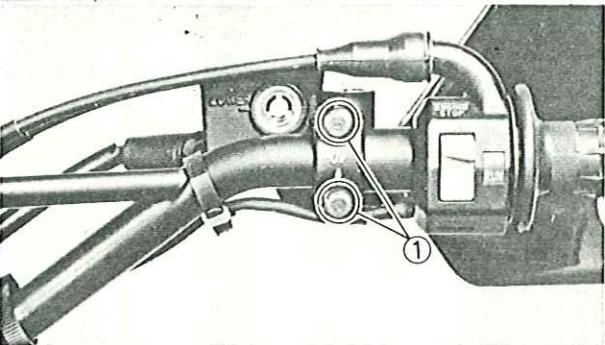
8. Remove:  
 • Flasher light ①



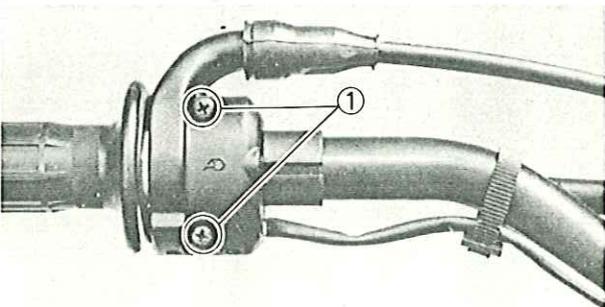
9. Remove:  
 • Tachometer cable ①  
 • Speedometer cable ②



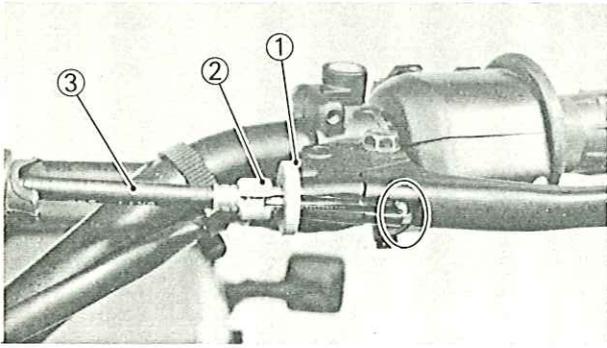
10. Disconnect:  
 • Meter lead  
 • Handlebar switch lead  
 • Horn lead  
 • Main switch lead



11. Remove:  
 • Bolt ① (Master cylinder)

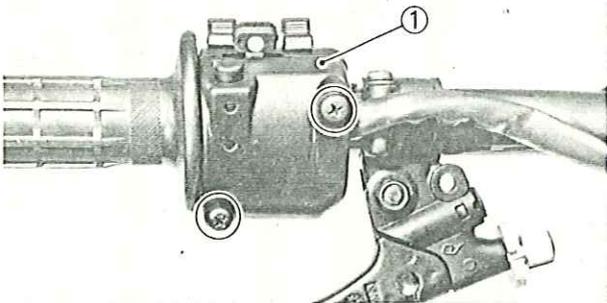


12. Loosen:  
 • Screw ① (Handlebar switch-Right)

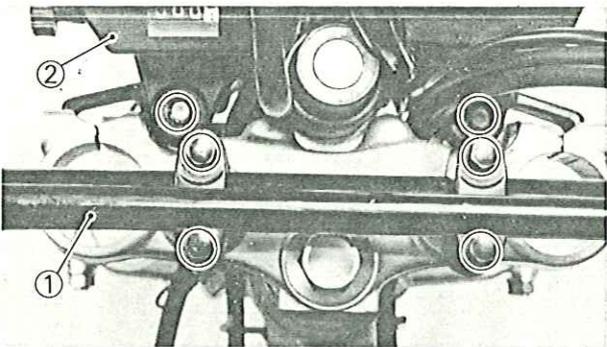


13. Loosen:
- Locknut ① (Clutch cable)
  - Adjuster ② (Clutch cable)

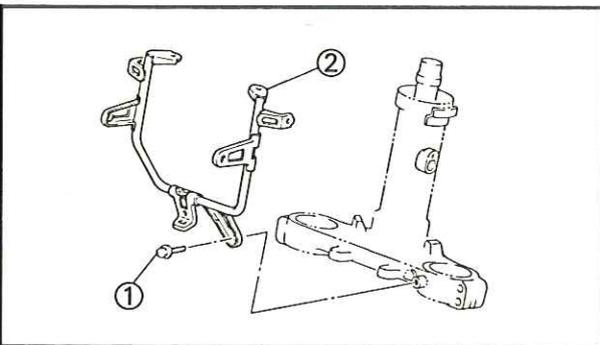
14. Remove:
- Clutch cable ③



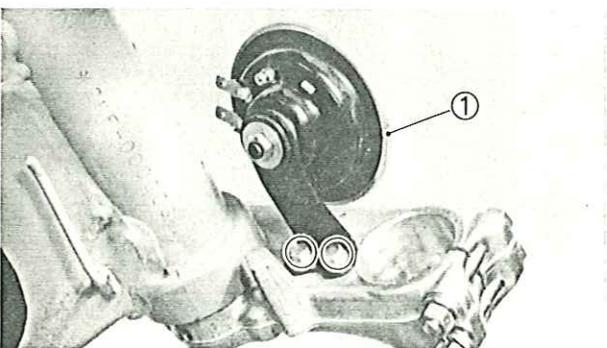
15. Remove:
- Handlebar switch ① (Left)



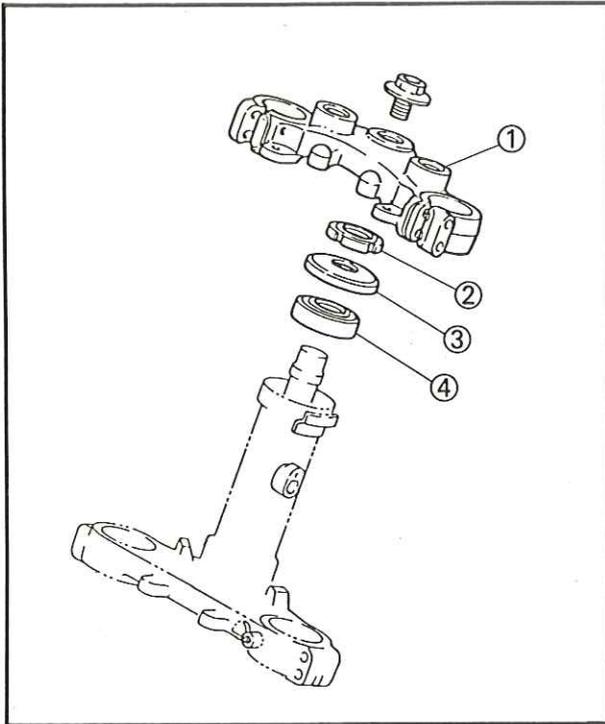
16. Remove:
- Handlebar ①
  - Meter assembly ②



17. Remove:
- Bolt ① (Headlight stay)
  - Headlight stay ②



18. Remove:
- Horn ①



19. Remove:

- Handlebar crown ①
- Ring nut ②
- Bearing cover ③
- Bearing (Upper) ④

NOTE:

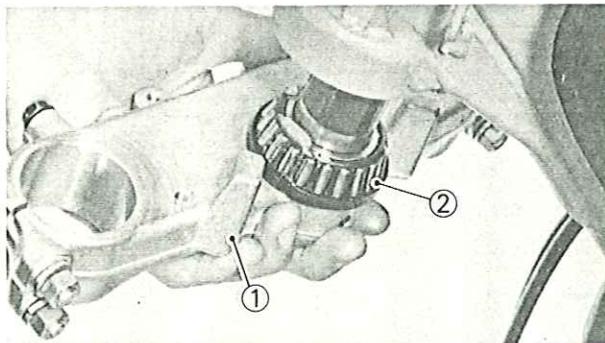
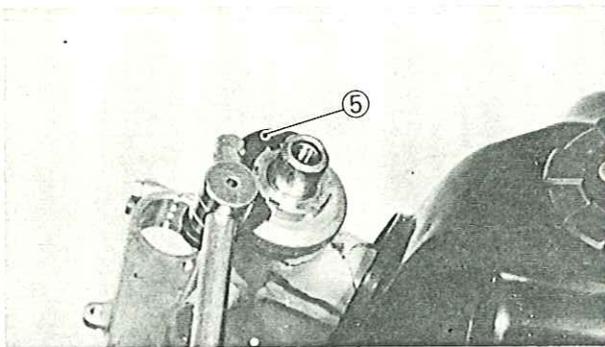
Remove the ring nut by the Ring Nut Wrench ⑤.



Ring Nut Wrench:  
90890-01403

**WARNING:**

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



20. Remove:

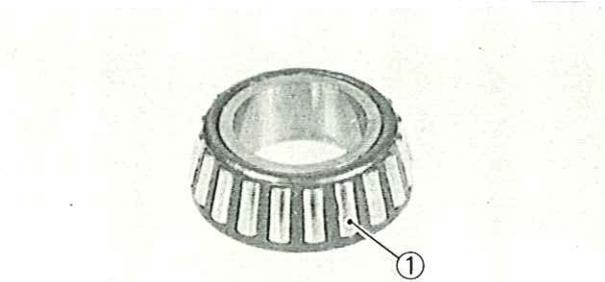
- Lower bracket ①
- Bearing ② (Lower)

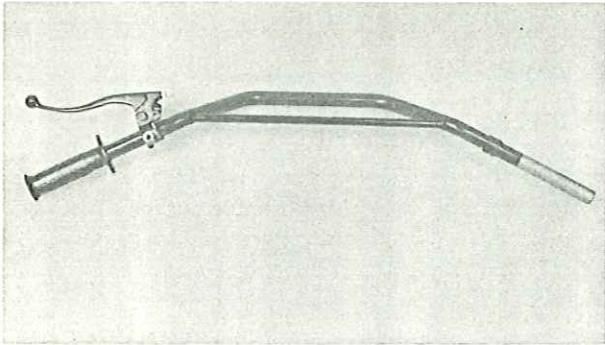
### INSPECTION

1. Wash the bearings with a solvent.

2. Inspect:

- Bearing ①
- Pitting/Damage → Replace.





3. Inspect:
- Handlebars
- Bends/Cracks/Damage → Replace.

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

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

**Handlebar replacement steps:**

- Remove the handlebar grip and lever holder.
- Install the lever holder to a new handlebar.
- Apply a light coat of an adhesive for rubber on the left handlebar end.
- Install the handlebar grip.

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

Wipe off excess adhesive with a clean rag.

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

Leave the handlebar intact until the adhesive becomes dry enough to make the grip and handlebar stuck securely.

## INSTALLATION

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

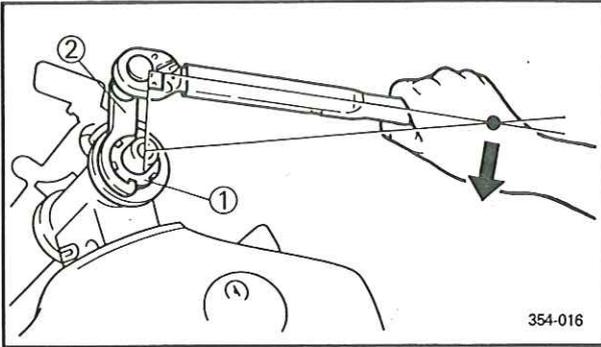
1. Apply:
- Lithium soap base grease
- To the bearing.

2. Install:
- Lower bracket

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

Hold the under bracket until it is secured.





3. Tighten:
- Ring nut ①

**Ring nut tightening steps:**

- Tighten the ring nut using the Ring Nut Wrench ②.



**Ring Nut Wrench:**  
90890-01403

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



**Ring Nut (Initial Tightening):**  
38 Nm (3.8 m•kg, 27 ft•lb)

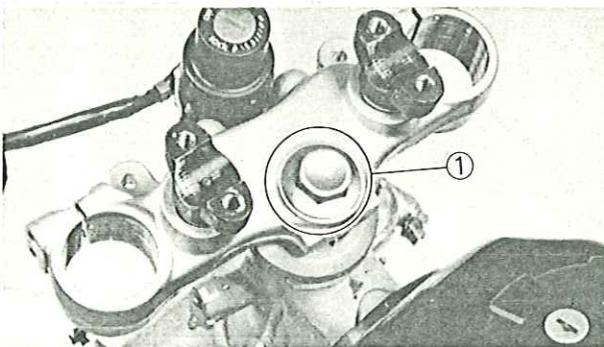
- Loosen the ring nut one turn.
- Retighten the ring nut using the Ring Nut Wrench.

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

Avoid over-tightening.



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



4. Install:
- Handlebar crown

**NOTE:** \_\_\_\_\_  
Temporary tighten the steering fitting bolt ①.

5. Install:
- Flasher light (Right)
  - Flasher light (Left)

**NOTE:** \_\_\_\_\_  
On the left side, install the flasher light having a chocolate color lead. Next, install the other flasher light with a dark green color lead on the right side.



6. Tighten:
- Bolt (Headlight stay)
  - Bolt (Meter assembly)

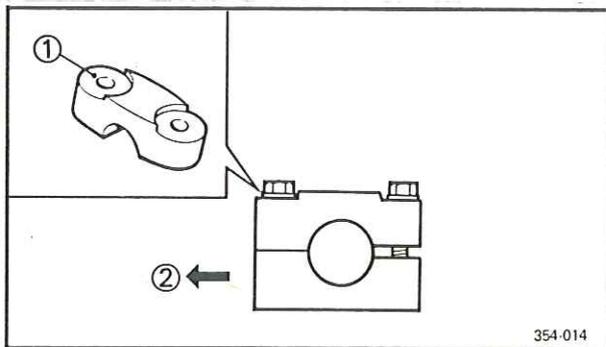
	<b>Bolt (Headlight Stay):</b> 7 Nm (0.7 m•kg, 5.1 ft•lb)
	<b>Bolt (Meter Assembly):</b> 7 Nm (0.7 m•kg, 5.1 ft•lb)

7. Install:
- Front fork
- Refer to the "FRONT FORK—INSTALLATION" section.

	<b>Pinch Bolt (Lower Bracket):</b> 23 Nm (2.3 m•kg, 17 ft•lb)
	<b>Pinch Bolt (Handlebar Crown):</b> 23 Nm (2.3 m•kg, 17 ft•lb)

8. Tighten:
- Steering fitting bolt

	<b>Steering Fitting Bolt:</b> 95 Nm (9.5 m•kg, 68 ft•lb)
--	---



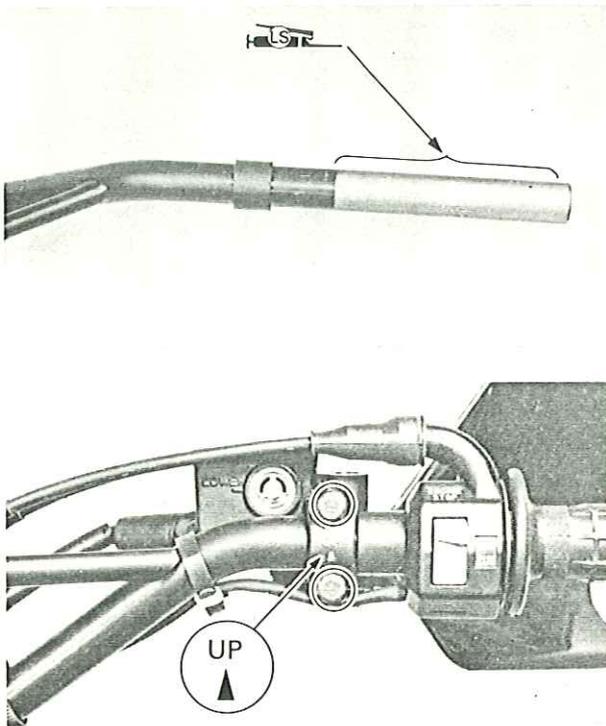
9. Install:
- Handlebars

	<b>Bolt (Handlebars):</b> 20 Nm (2.0 m•kg, 14 ft•lb)
--	---

**NOTE:** \_\_\_\_\_  
The upper handlebar holder should be installed with the punched mark ① forward.

② Forward

**CAUTION:** \_\_\_\_\_  
First tighten the bolts on the front side of the handlebar holder, and then tighten the bolts on the rear side.


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

Before installing the handlebar onto the handlebar crown, apply a light coat of lithium soap base grease onto the handlebar end and install the throttle grip to the handlebar.

10. Install:
- Brake master cylinder

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

- Install the master cylinder bracket with the "UP" mark facing upward.
- Tighten first the upper bolt, then the lower bolt.



**Bolts (Master Cylinder Bracket):**  
**10 Nm (1.0 m•kg, 7.2 ft•lb)**

11. Install:
- Clutch cable

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

Apply a light coat of lithium soap base grease onto the clutch cable end.

12. Install:
- Front wheel
- Refer to "FRONT WHEEL—INSTALLATION" section in CHAPTER 6.



**Axle nut:**  
**110 Nm (11.0 m•kg, 80 ft•lb)**  
**Nut (Axle holder):**  
**8 Nm (0.8 m•kg, 5.8 ft•lb)**

13. Adjust:
- Clutch cable free play

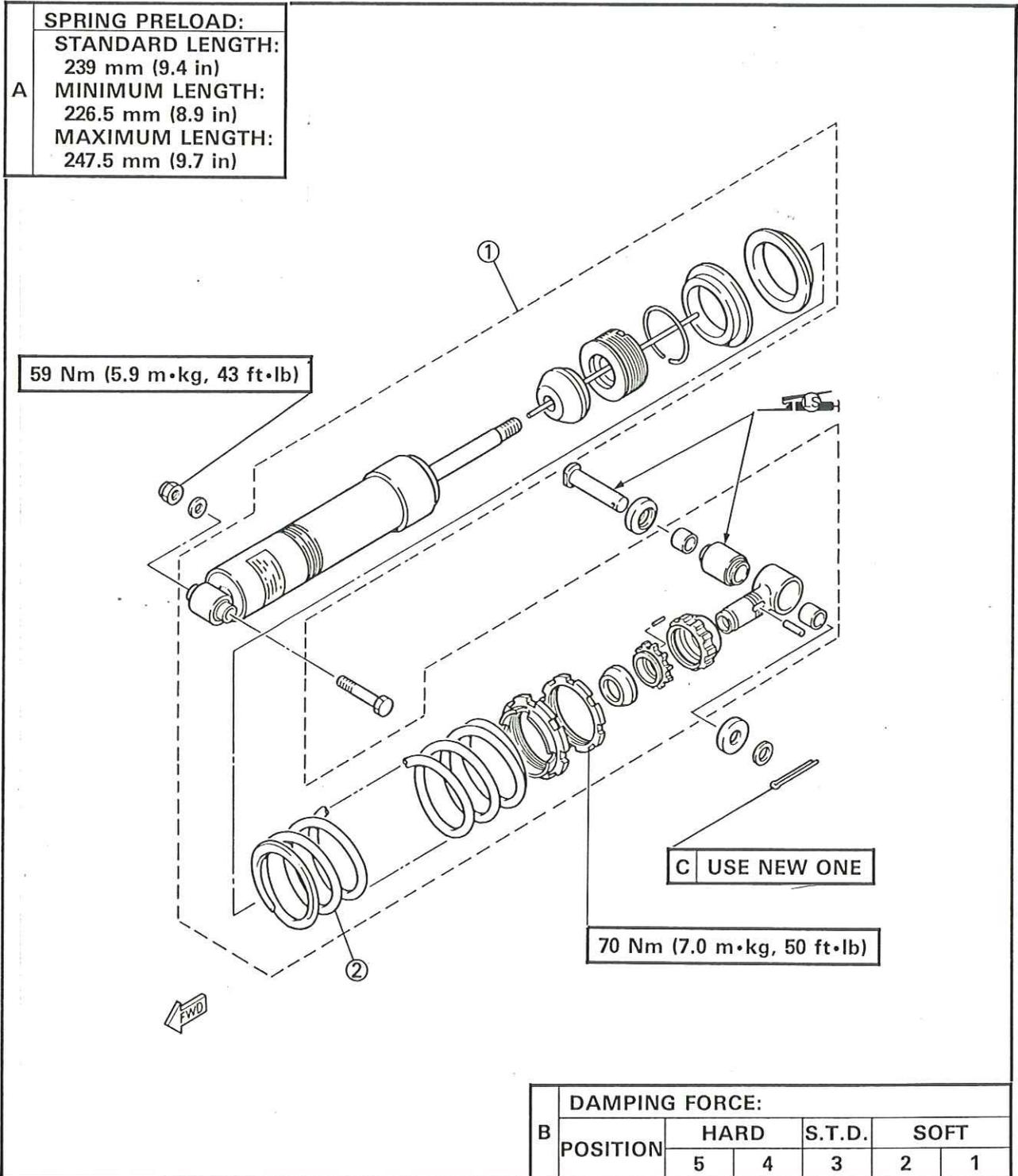


**Free Play:**  
**2~3 mm (0.08~0.12 in)**  
**At Lever Pivot.**

Refer to "CLUTCH ADJUSTMENT" section in CHAPTER 3.

REAR SHOCK ABSORBER AND SWINGARM

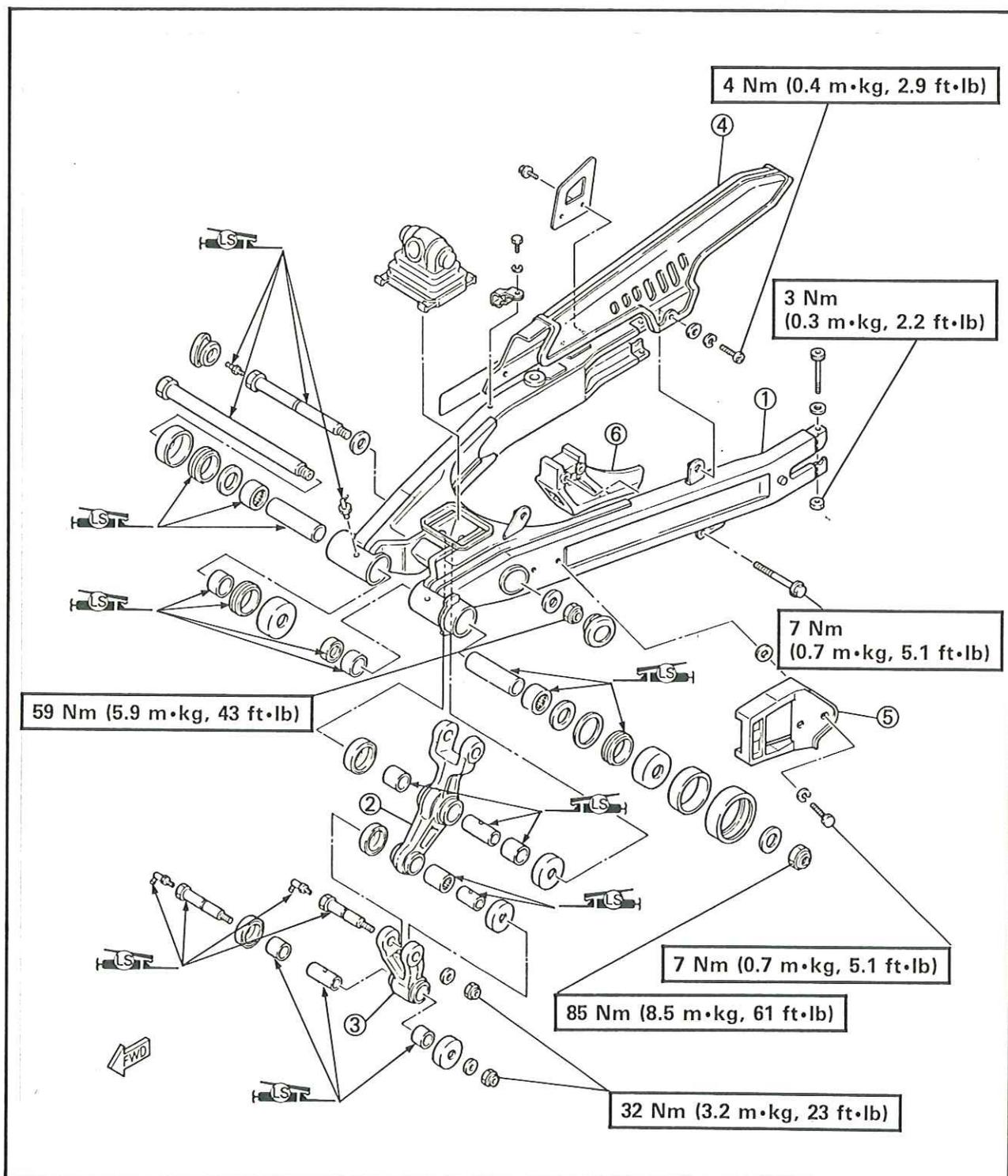
- ① Rear shock absorber assembly
- ② Spring



# REAR SHOCK ABSORBER AND SWINGARM



- ① Swingarm
- ② Relay arm
- ③ Connecting arm
- ④ Chain case
- ⑤ Chain protector
- ⑥ Chain guide

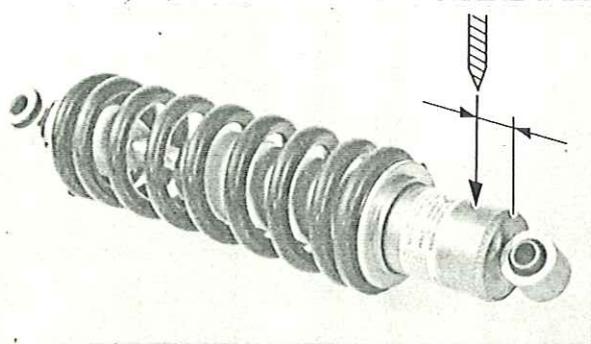


## HANDLING NOTES

### WARNING:

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

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



## NOTES ON DISPOSAL

### Shock absorber disposal steps:

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

### WARNING:

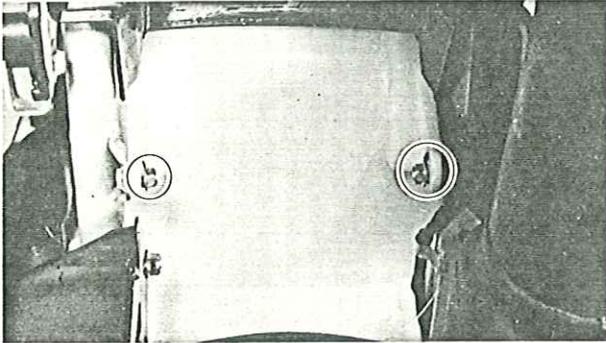
Wear eye protection to prevent eye damage from escaping gas and/or metal chips.

## REMOVAL

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

### WARNING:

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



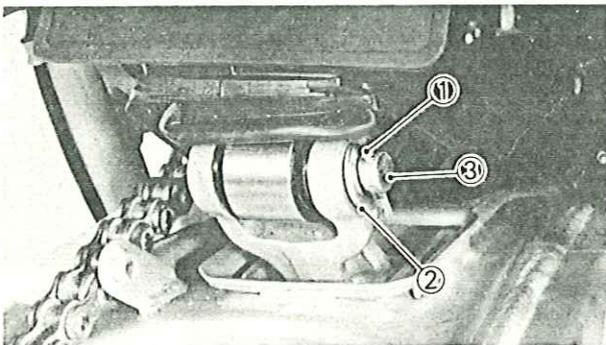
2. Remove:
  - Seat

3. Remove:
  - Rear wheel

Refer to the "REAR WHEEL—REMOVAL" section in the CHAPTER 6.



4. Remove:
  - Chain case ①

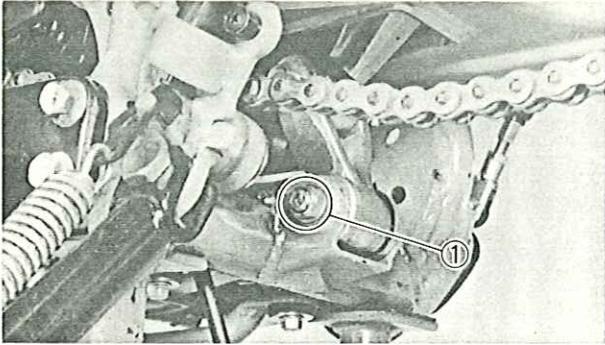


5. Remove:
  - Cotter pin ①
  - Plain washer ②
  - Shaft ③

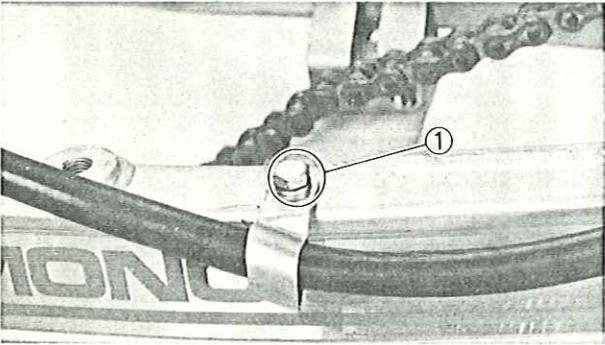


6. Remove:
  - Rear shock absorber ①

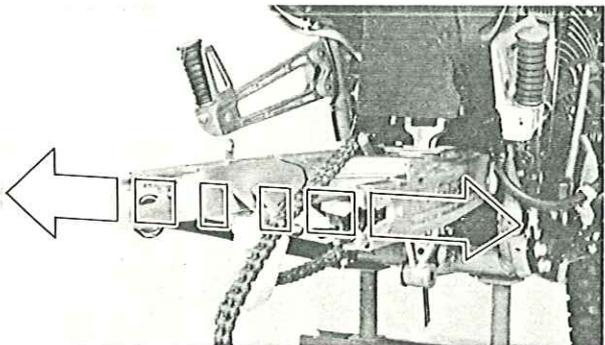
## REAR SHOCK ABSORBER AND SWINGARM



7. Remove:
- Bolt ① (Connecting arm)



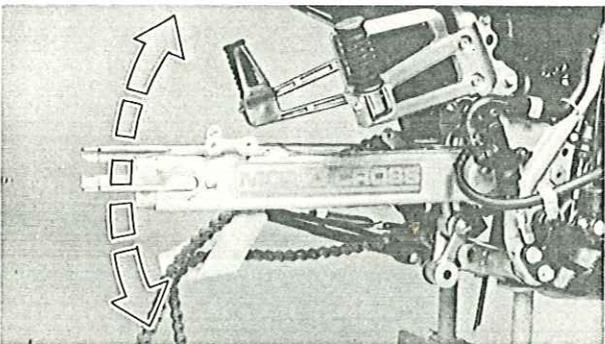
8. Remove:
- Bolt ① (Hose clamp)



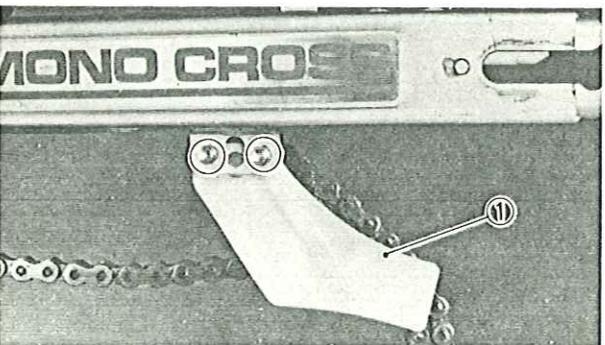
9. Check:
- Swingarm (side play)  
Move swingarm from side to side.  
Over specified limit → Replace bearings



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

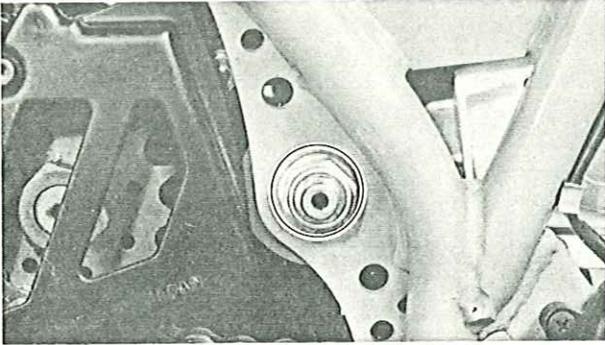


10. Check:
- Swingarm (Vertical movement)  
Move swingarm up and down.  
Tightness/Binding/Rough spots → Replace bearings.

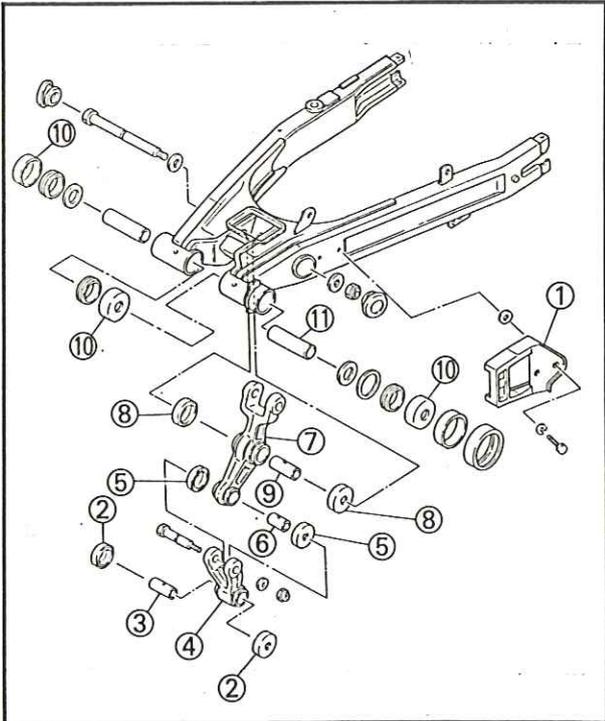


11. Remove:
- Chain guide ①

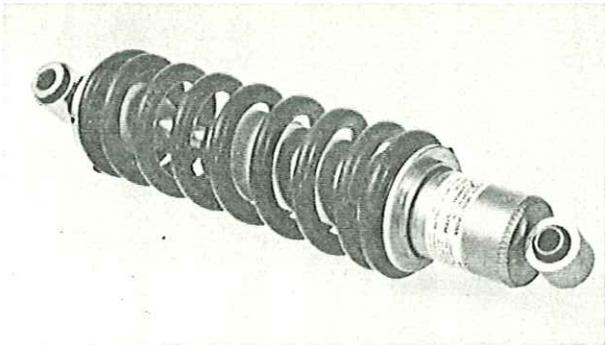




12. Remove:
- Pivot shaft
  - Swingarm

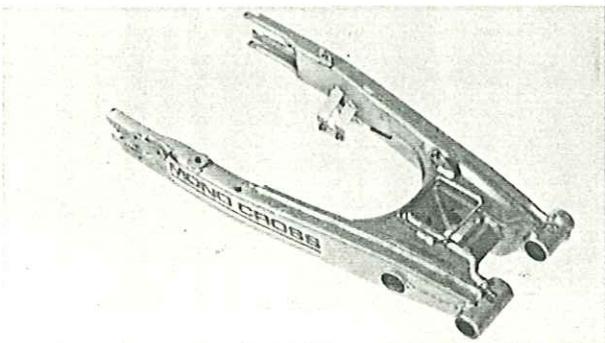


13. Remove:
- Chain protector ①
  - Thrust cover ② (Connecting arm)
  - Bush ③ (Connecting arm)
  - Connecting arm ④
  - Thrust cover ⑤ (Relay arm)
  - Bush ⑥ (Relay arm)
  - Relay arm ⑦
  - Thrust cover ⑧ (Relay arm)
  - Bush ⑨ (Relay arm)
  - Thrust cover ⑩ (Swingarm)
  - Bush ⑪ (Swingarm)

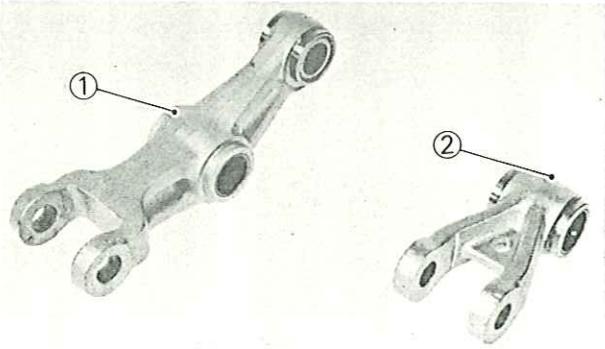


## INSPECTION

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



2. Inspect:
- Swingarm  
Bends/Cracks/Damage → Replace.



3. Inspect:

- Relay arm ①
  - Connecting arm ②
- Bends/Cracks/Damage → Replace.

4. Inspect:

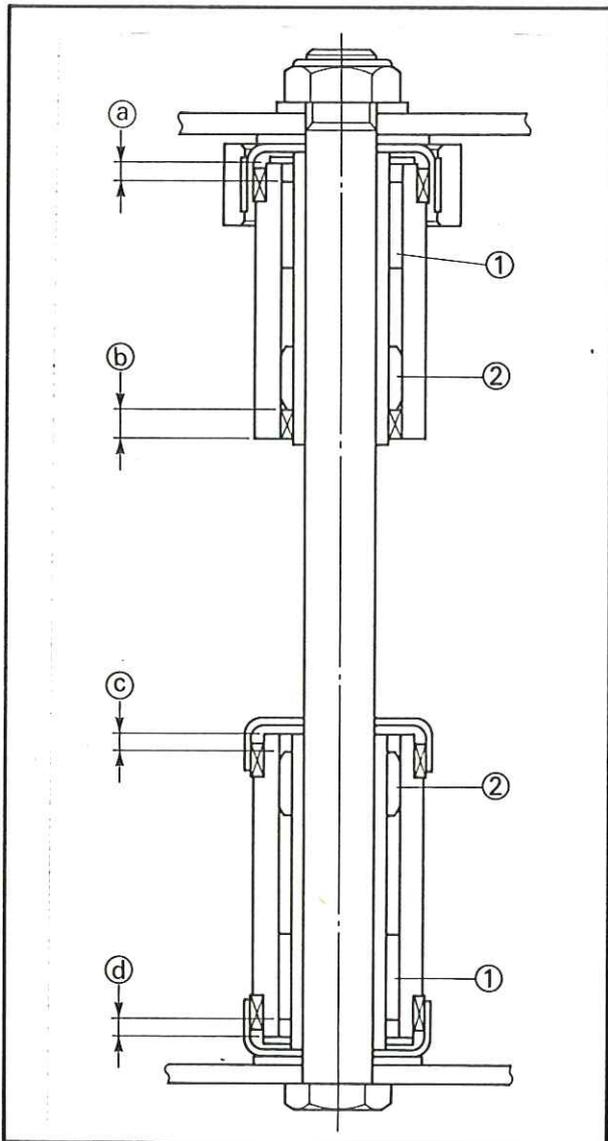
- Oil seal  
Damage → Replace.
- Thrust cover  
Damage → Replace.
- Bushe  
Scratches/Damage → Replace.
- Bearing  
Pitting/Damage → Replace.

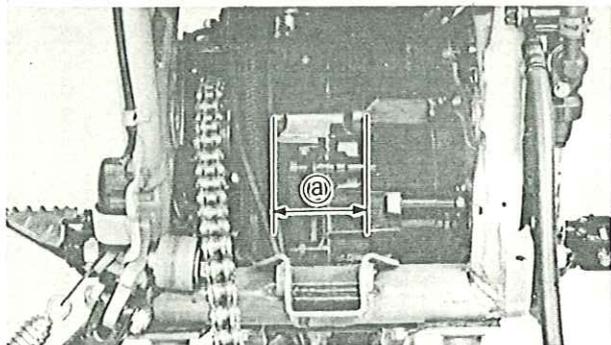
NOTE: \_\_\_\_\_

When replacing the bearing and bush of swingarm pivot, install new bearing ① and bush ② as shown.

\_\_\_\_\_

- ① a : 4 mm (0.16 in)
- ② b : 8 mm (0.32 in)
- ③ c : 4 mm (0.16 in)
- ④ d : 4 mm (0.16 in)

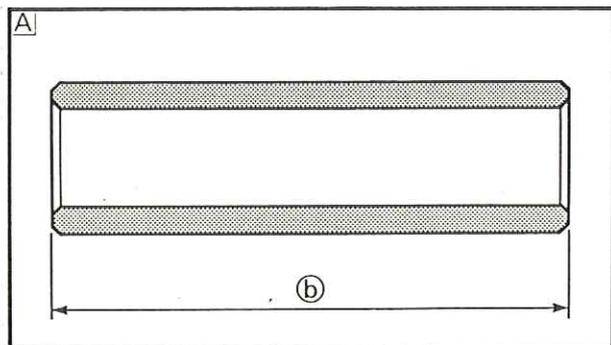




## SIDE CLEARANCE ADJUSTMENT

1. Measure:

- Engine mounting boss width (a)



2. Measure:

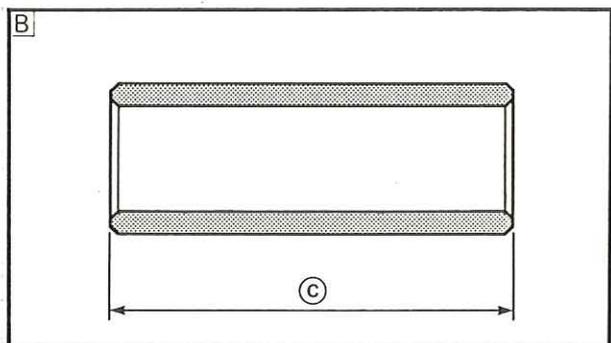
- Bush length (b) and (c)
- Out of specification → Replace.



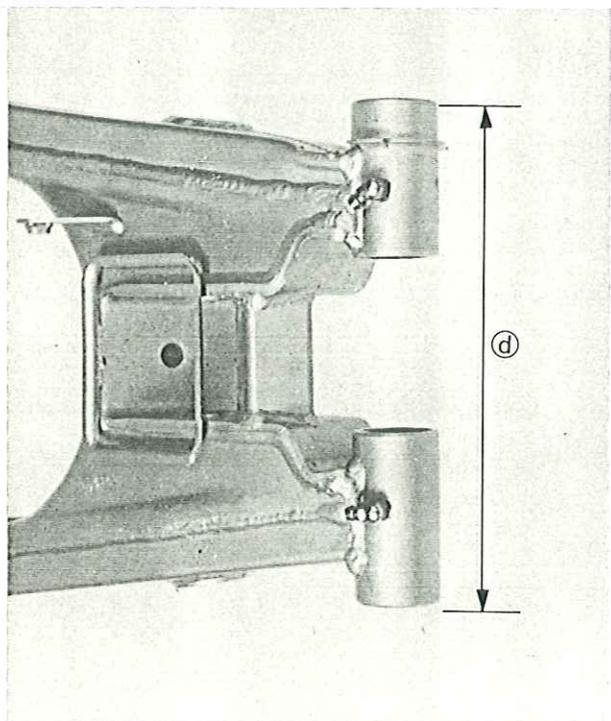
**Specified Length:**

b: 72.9 ~ 73.0 mm  
(2.870 ~ 2.874 in)

c: 64.9 ~ 65.0 mm  
(2.555 ~ 2.559 in)

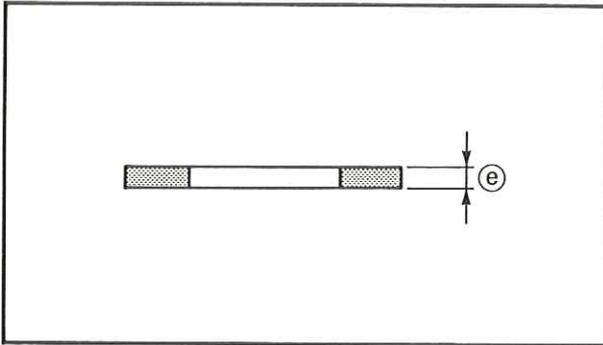


- A Bush (Right-hand)
- B Bush (Left-hand)



3. Measure:

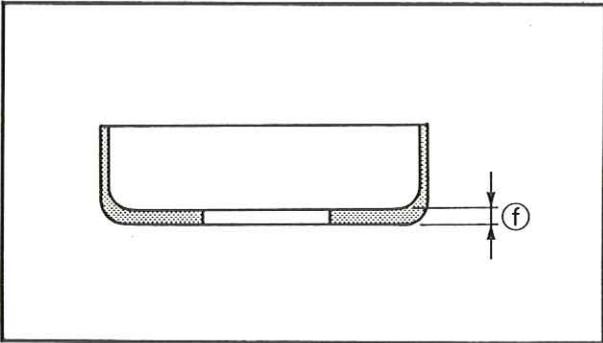
- Pivot width (d)



4. Measure:
- Washer thickness (e)  
Out of specification → Replace.



**Washer Thickness:**  
1.90 ~ 2.00 mm (0.075 ~ 0.079 in)



5. Measure:
- Thrust cover thickness (f)  
Out of specification → Replace.



**Thrust Cover Thickness:**  
1.70 ~ 1.90 mm (0.067 ~ 0.075 in)

6. Calculate:
- Swingarm side clearance  
Out of specification → Adjust side clearance using shim.  
By using formula given below.

**Side Clearance:**  

$$= (a) + (b) + (c) + (f) - (d) + (e) \times 2$$



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

**Example:**

- If the engine mounting boss width (a), bush length (b), (c) and thrust cover thickness (f) are below.
  - (a) : 63.6 mm (2.50 in)
  - (b) : 72.9 mm (2.870 in)
  - (c) : 64.9 mm (2.555 in)
  - (f) : 1.7 mm (0.067 in)
- If the pivot width (d) and washer thickness (e) are below.
  - (d) : 198.5 mm (7.81 in)
  - (e) : 1.9 mm (0.075 in)



### Side Clearance

$$= (63.6 + 72.9 + 64.9 + 1.7) - (198.5 + 1.9 \times 2)$$

$$= 0.8 \text{ mm (0.03 in)}$$

Then, install the one shim.



**Shim Thickness:**  
0.3 mm (0.012 in)

## INSTALLATION

Reverse the "REMOVAL" procedure.

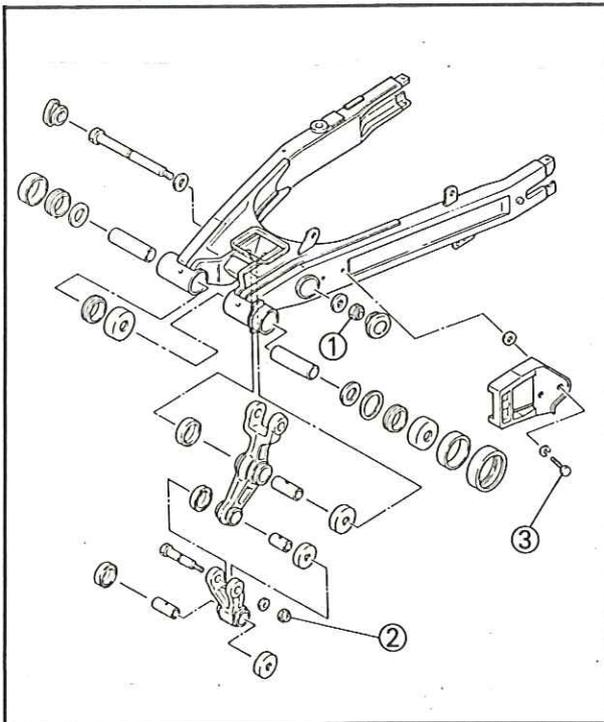
Note the following points.

### 1. Apply:

- Lithium soap base grease  
To oil seals, bearings, bushes and inside of thrust covers.

### 2. Tighten:

- Nut ① (Relay arm-Swingarm)
- Nut ② (Relay arm-Connecting arm)
- Bolt ③ (Chain protector)



**Nut ① (Relay Arm-Swingarm):**  
59 Nm (5.9 m•kg, 43 ft•lb)

**Nut ② (Relay arm-Connecting Arm):**  
32 Nm (3.2 m•kg, 23 ft•lb)

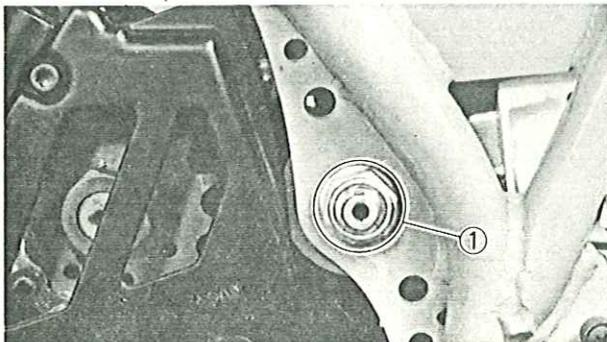
**Bolt ③ (Chain Protector):**  
7 Nm (0.7 m•kg, 5.1 ft•lb)

### 3. Tighten:

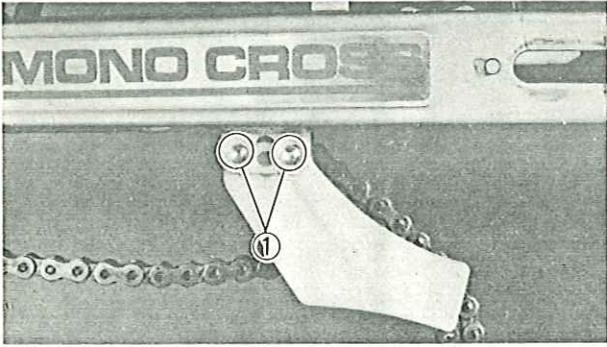
- Nut ① (Pivot shaft)



**Nut ① (Pivot Shaft):**  
85 Nm (8.5 m•kg, 61 ft•lb)



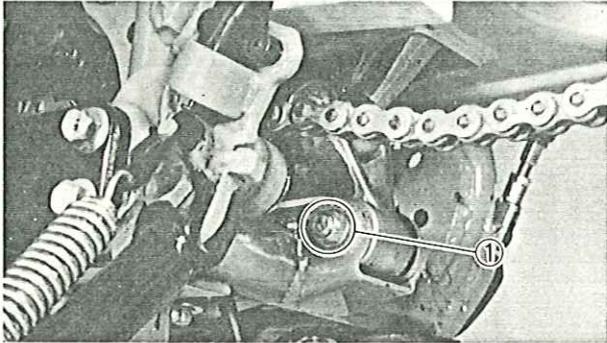
# REAR SHOCK ABSORBER AND SWINGARM



4. Tighten:  
• Bolt ① (Chain guide)



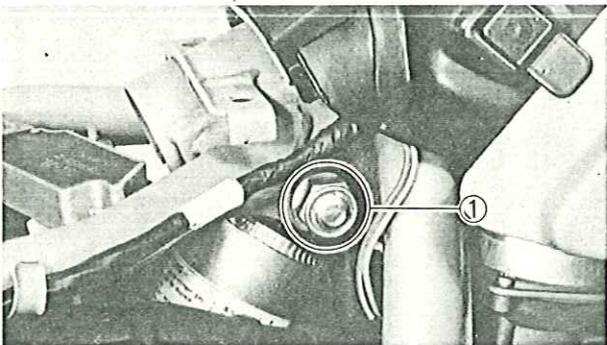
**Bolt ① (Chain Guide):**  
7 Nm (0.7 m•kg, 5.1 ft•lb)



5. Tighten:  
• Nut ① (Connecting arm—frame)



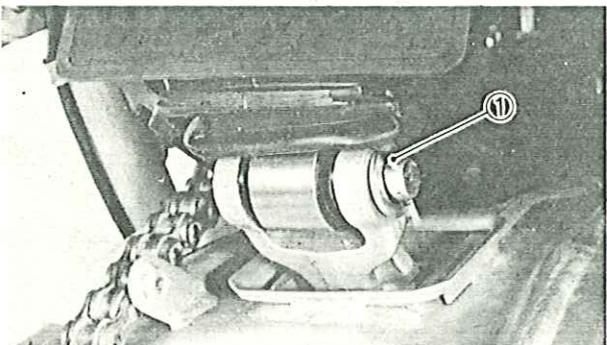
**Nut ① (Connecting Arm-Frame):**  
32 Nm (3.2 m•kg, 23 ft•lb)



6. Tighten:  
• Nut ① (Rear shock absorber)



**Nut ① (Rear Shock Absorber):**  
59 Nm (5.9 m•kg, 43 ft•lb)



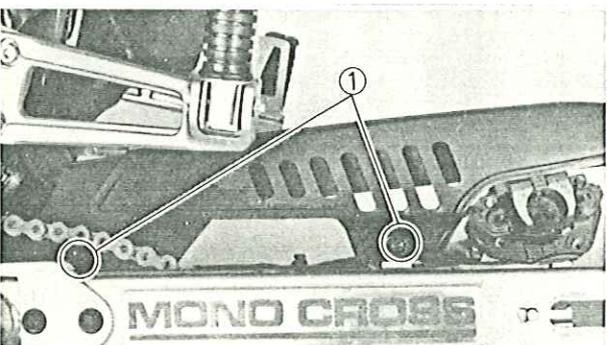
7. Install:  
• Cotter pin ①

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

Bend the ends of the cotter pin.

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

Always use a new cotter pin.



8. Tighten:  
• Screw ① (Chain Case)



**Screw ① (Chain Case):**  
4 Nm (0.4 m•kg, 2.9 ft•lb)



9. Adjust:  
• Drive chain slack



**Drive Chain Slack:**  
30 ~ 40 mm (1.18 ~ 1.57 in)

Refer to the "DRIVE CHAIN SLACK ADJUSTMENT" section in the CHAPTER 3.

10. Install:  
• Rear wheel



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

Refer to the "REAR WHEEL—INSTALLATION" section in the CHAPTER 6.

11. Install:  
• Seat

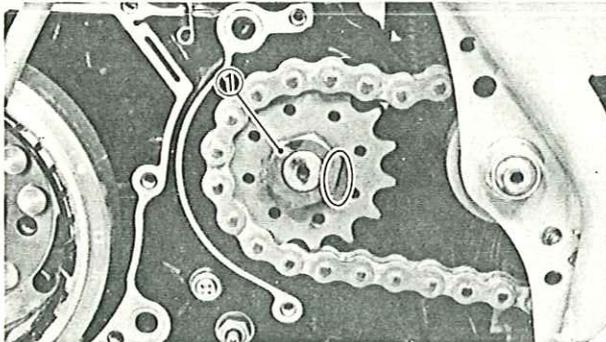
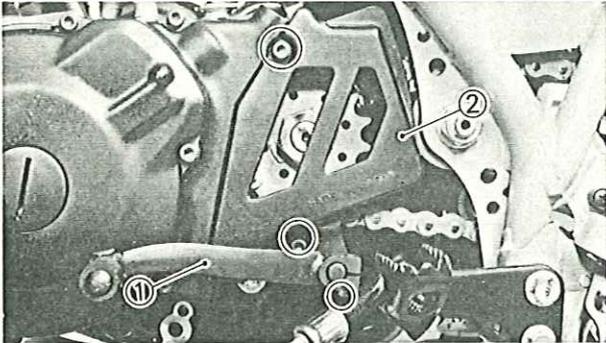


**Bolt (Seat):**  
10 Nm (1.0 m•kg, 7.2 ft•lb)

## DRIVE CHAIN AND SPROCKET

## NOTE:

Before removing the drive chain and sprockets, drive chain slack and 10-link length of drive chain should be measured.



## REMOVAL

## 1. Remove:

- Change pedal ①
- Cover ② (Drive sprocket)

## 2. Remove:

- Drive sprocket ①

## NOTE:

Before removing the nut (Drive sprocket), straighten the lock washer tab.

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

**WARNING:**

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

## 4. Remove:

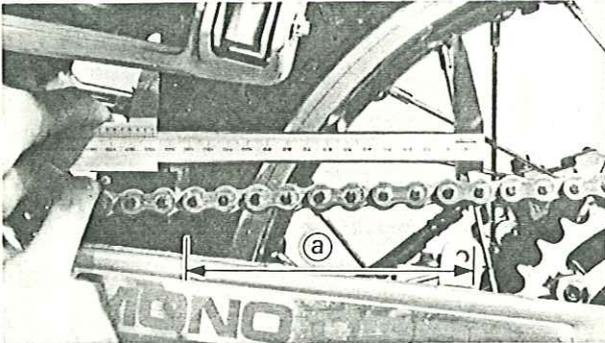
- Rear Wheel
- Refer to the "REAR WHEEL—REMOVAL" section in the CHAPTER 6.



5. Remove:

- Swingarm
- Drive chain

Refer to the "REAR SHOCK ABSORBER AND SWINGARM—REMOVAL" section in the CHAPTER 6.

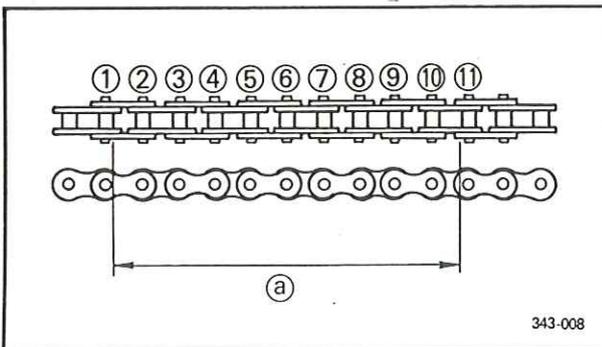


**INSPECTION**

1. Measure:

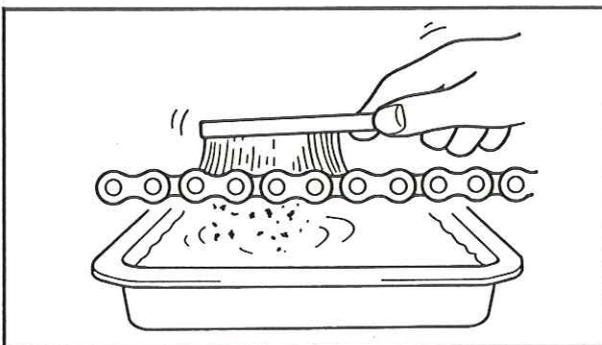
- 10-link length (a) (Drive chain)
- Out of specification → Replace drive chain.

 **10-Link Length Limit:**  
150.2 mm (5.91 in)



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

- For measurement make the chain tense by finger.
- 10-link length is a measurement between the in-sides of the ① and ⑪ rollers as shown.
- Two or three different 10-link lengths should be measured.

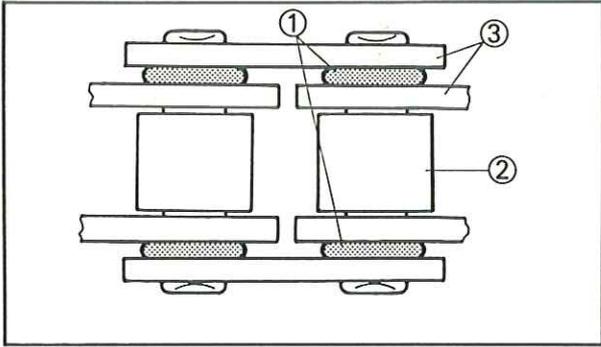


2. Clean:

- Drive chain
- Place it in kerosene, and brush off as much dirt as possible. Then, dry the chain.

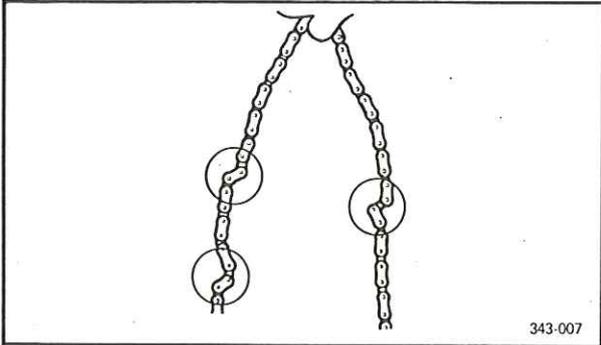
**CAUTION:** \_\_\_\_\_

- The solvents can damage the O-rings. Use only kerosene to clean the chain.
- Do not use wire brush to clean the chain.



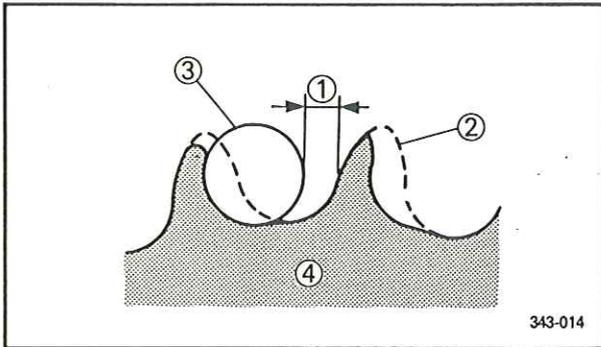
3. Inspect:

- O-rings ① (Drive Chain)  
Damage → Replace drive chain.
- Rollers ② and side plates ③  
Damage/Wear → Replace drive chain.



4. Inspect:

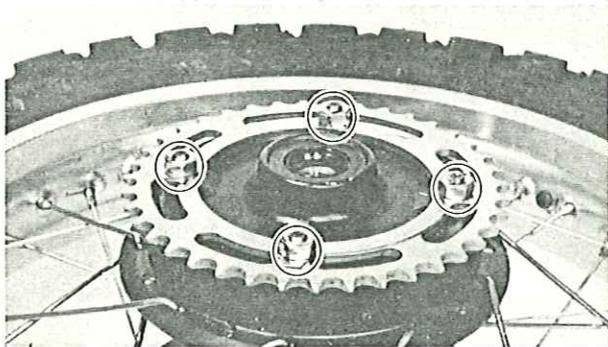
- Drive chain  
Stiff → Lubricate or replace.



5. Inspect:

- Drive and driven sprockets  
Wear/Damage → Replace.

- ① 1/4 tooth
- ② Correct
- ③ Roller
- ④ Sprocket



**Driven sprocket replacement steps:**

- Straighten the lock washer tabs and remove the driven sprocket.
- Install a new driven sprocket and lock washers.

**WARNING:**

Always use new lock washers.



**Nuts (Driven Sprocket):**  
32 Nm (3.2 m•kg, 23 ft•lb)

- Bend the lock washer tabs along the nut flats.

## INSTALLATION

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

1. Install:
  - Swingarm



**Nut (Pivot Shaft):**

85 Nm (8.5 m•kg, 61 ft•lb)

**Nut (Frame—Connecting Arm):**

32 Nm (3.2 m•kg, 23 ft•lb)

2. Install:
  - Drive sprocket



**Nut (Drive Sprocket):**

110 Nm (11.0 m•kg, 80 ft•lb)

### WARNING:

Always use a new lock washer.

### NOTE:

After tightening the nut, bend the lock washer tab along the nut flats.

3. Install:
  - Rear wheel

Refer to the "REAR WHEEL—INSTALLATION" section in the CHAPTER 6.



**Axle Nut:**

105 Nm (10.5 m•kg, 75 ft•lb)

4. Adjust:
  - Drive chain slack

Refer to the "DRIVE CHAIN SLACK ADJUSTMENT" section in the CHAPTER 3.



**Drive Chain Slack:**

30~40 mm (1.18~1.57 in)

5. Install:
  - Cover (Drive sprocket)
  - Change pedal)



**Bolt (Cover):**

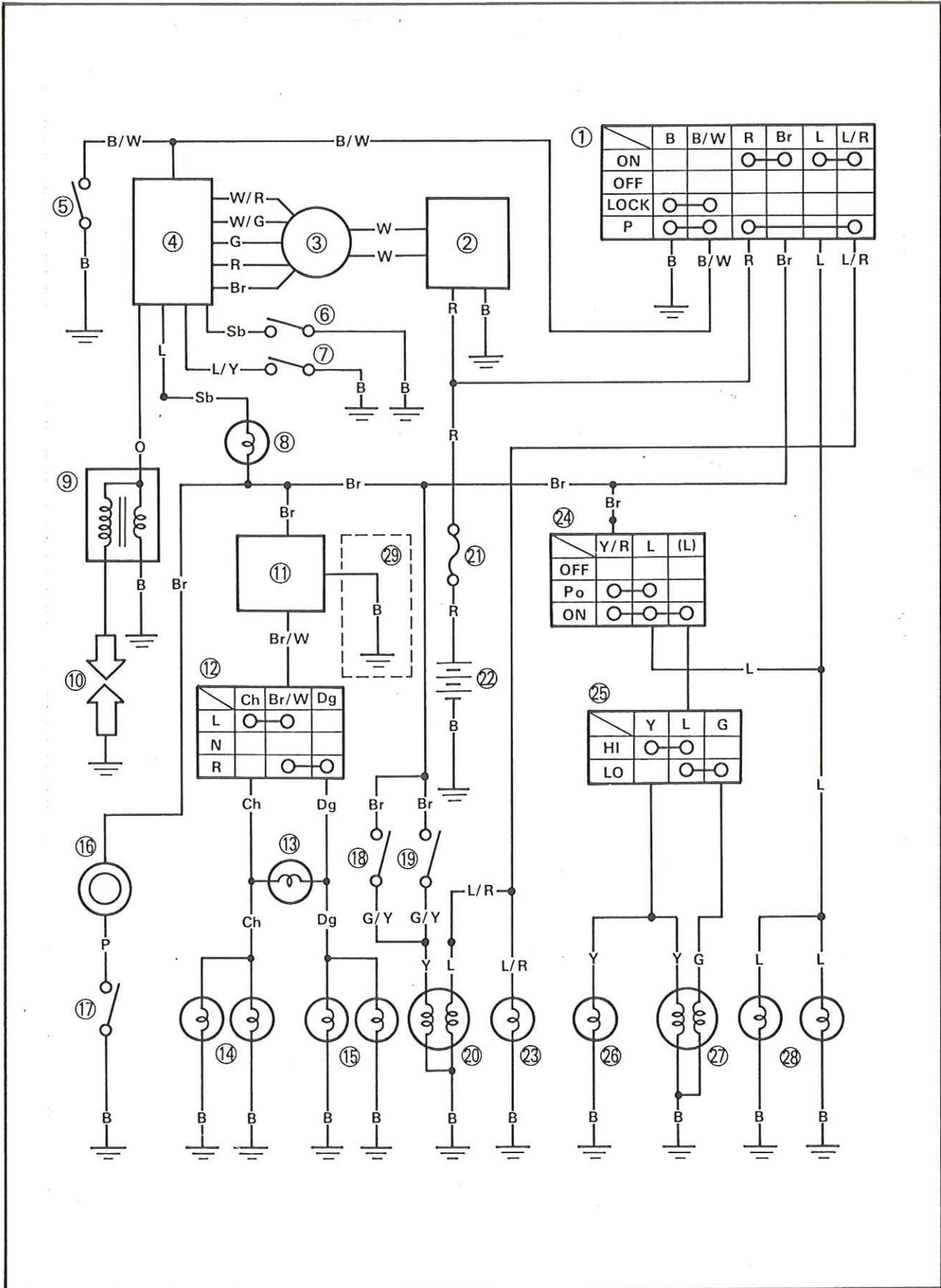
10 Nm (1.0 m•kg, 7.2 ft•lb)

**Bolt (Change Pedal):**

10 Nm (1.0 m•kg, 7.2 ft•lb)

ELECTRICAL

XT600 CIRCUIT DIAGRAM



# XT600 CIRCUIT DIAGRAM



- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>① Main switch</li> <li>② Rectifier/Regulator</li> <li>③ C.D.I. magneto</li> <li>④ C.D.I. unit</li> <li>⑤ "ENGINE STOP" switch</li> <li>⑥ Neutral switch</li> <li>⑦ Sidestand switch</li> <li>⑧ "NEUTRAL" indicator light</li> <li>⑨ Ignition coil</li> <li>⑩ Spark plug</li> <li>⑪ Flasher relay</li> <li>⑫ "TURN" switch</li> <li>⑬ "TURN" indicator light</li> <li>⑭ Flasher light (Left)</li> <li>⑮ Flasher light (Right)</li> </ul> | <ul style="list-style-type: none"> <li>⑯ Horn</li> <li>⑰ "HORN" switch</li> <li>⑱ Front brake switch</li> <li>⑲ Rear brake switch</li> <li>⑳ Tail/Brake light</li> <li>㉑ Fuse .</li> <li>㉒ Battery</li> <li>㉓ Auxiliary light</li> <li>㉔ "LIGHTS" switch</li> <li>㉕ "LIGHTS" (Dimmer) switch</li> <li>㉖ "HIGH BEAM" indicator light</li> <li>㉗ Headlight</li> <li>㉘ Meter light</li> <li>㉙ For Germany only</li> </ul> |
|--|--|

## COLOR CODE

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



ELECTRICAL COMPONENTS

- ① Wireharness
- ② Main switch
- ③ Ignition coil
- ④ Rectifier/Regulator
- ⑤ Battery
- ⑥ C.D.I. unit
- ⑦ Fuse

IGNITION COIL:

PRIMARY COIL RESISTANCE:

0.23 ~ 0.38Ω at 20°C (68°F)

SECONDARY COIL RESISTANCE:

3.4 ~ 5.2kΩ at 20°C (68°F)

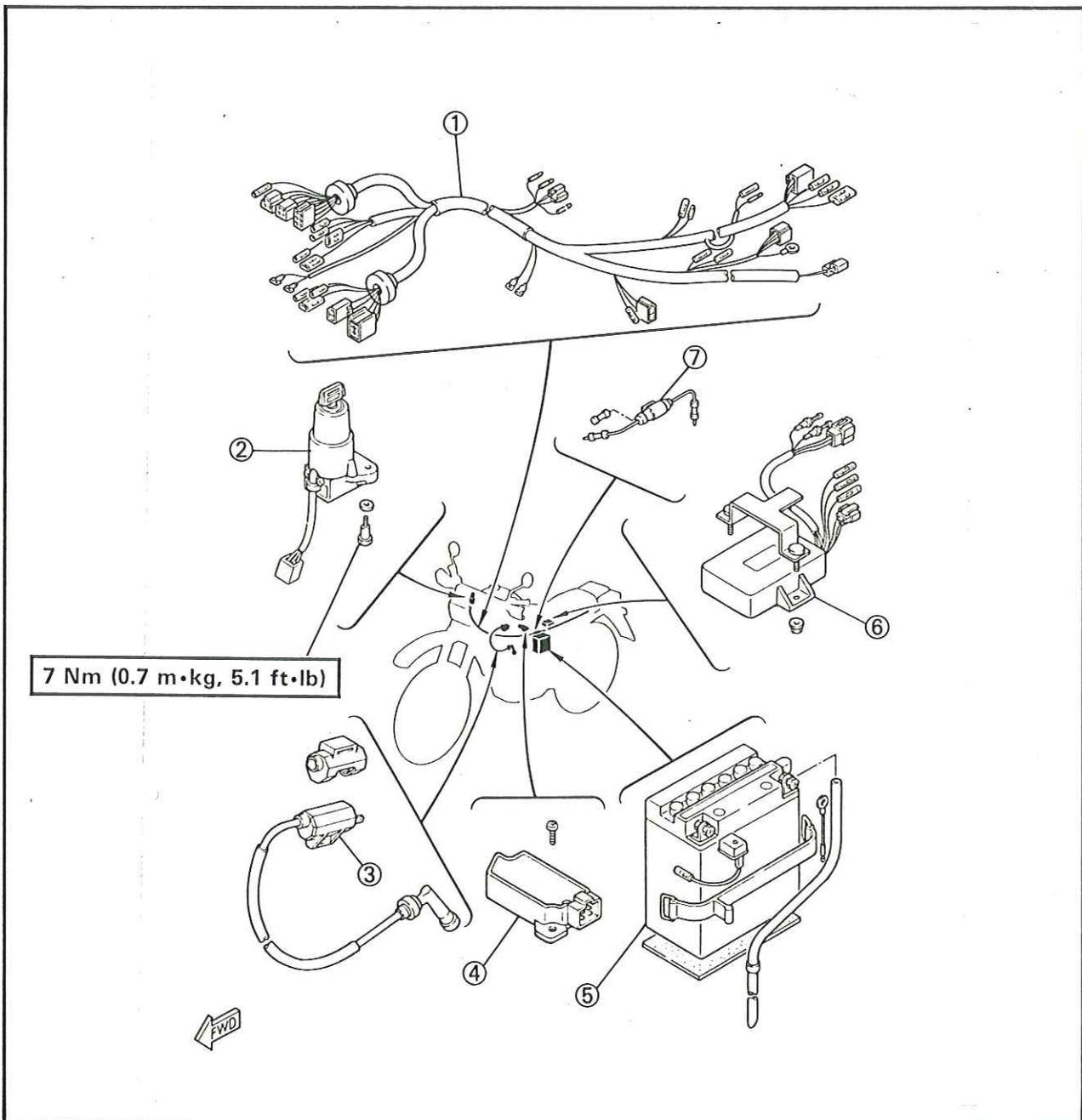
BATTERY:

CAPACITY:

12V 4AH

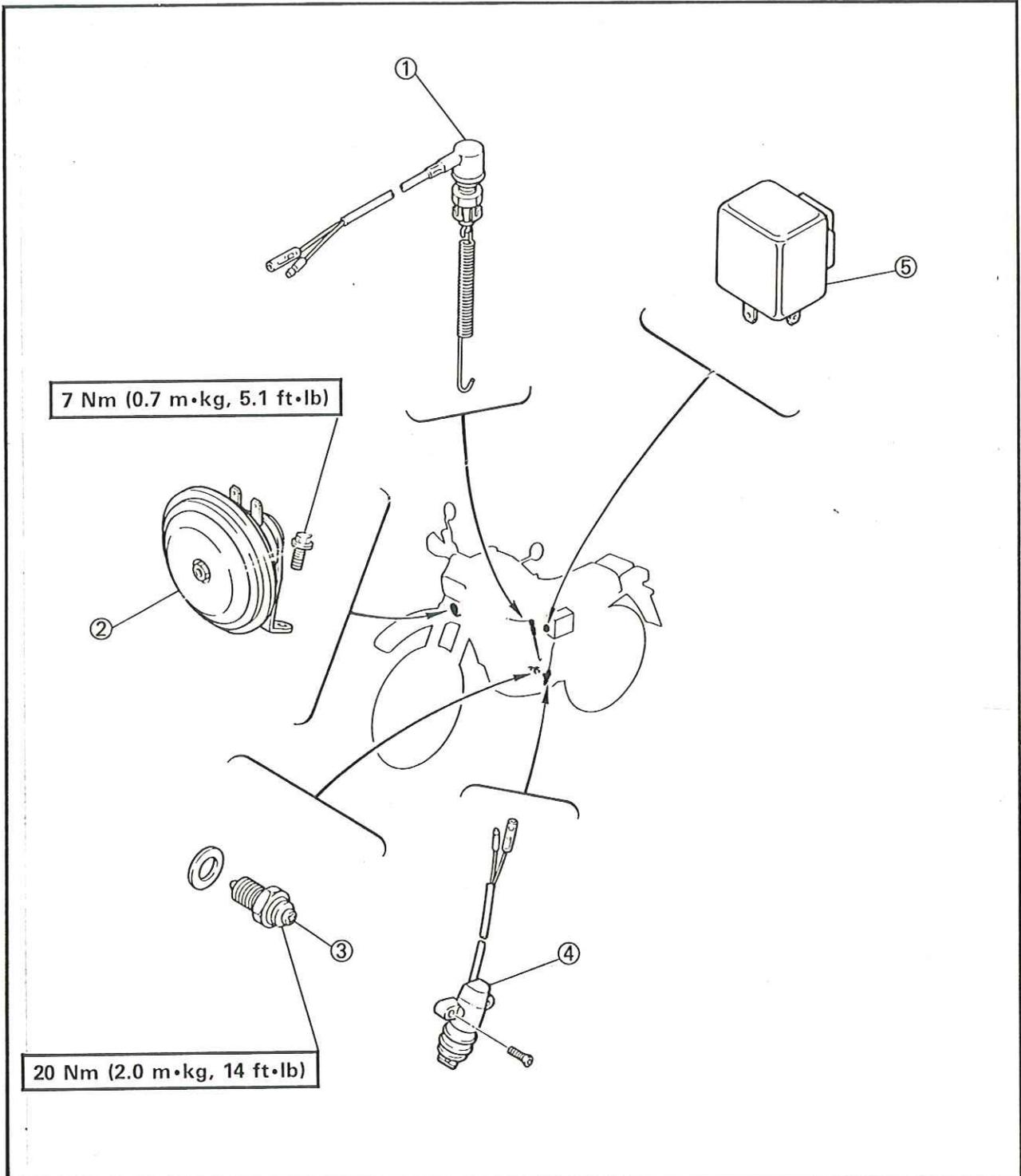
SPECIFIC GRAVITY:

1.280





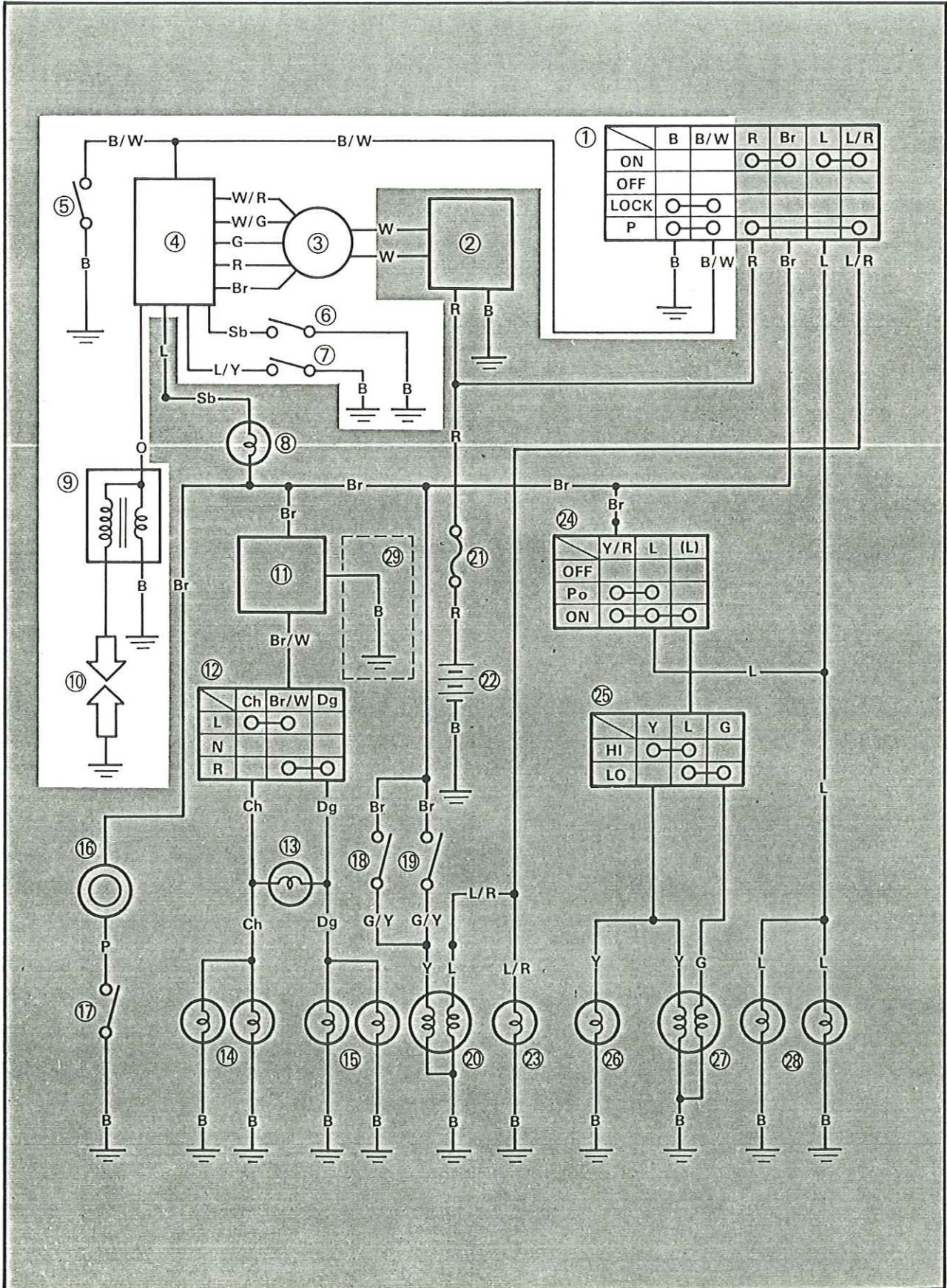
- ① Rear brake switch
- ② Horn
- ③ Neutral switch
- ④ Sidestand switch
- ⑤ Flasher relay



IGNITION SYSTEM

CIRCUIT DIAGRAM

Below circuit diagram shows ignition system.



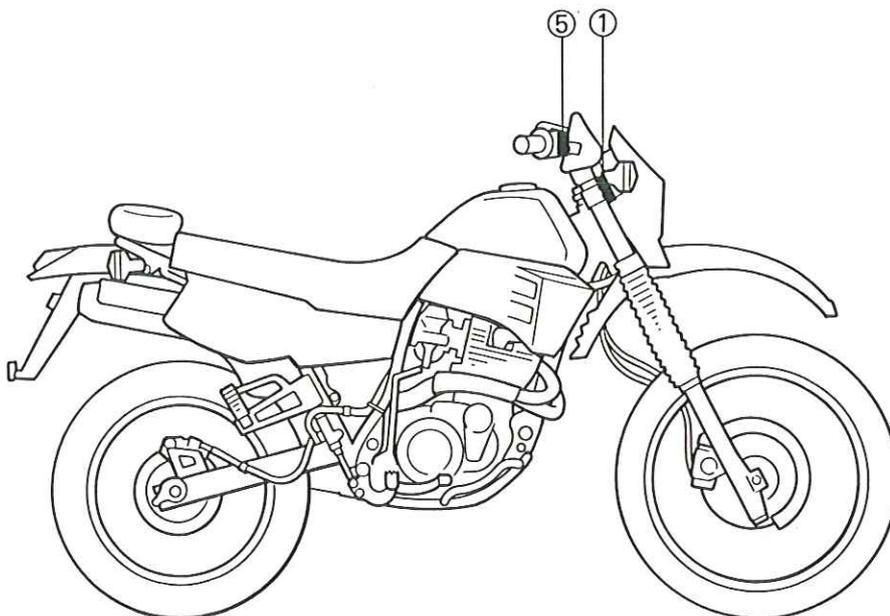
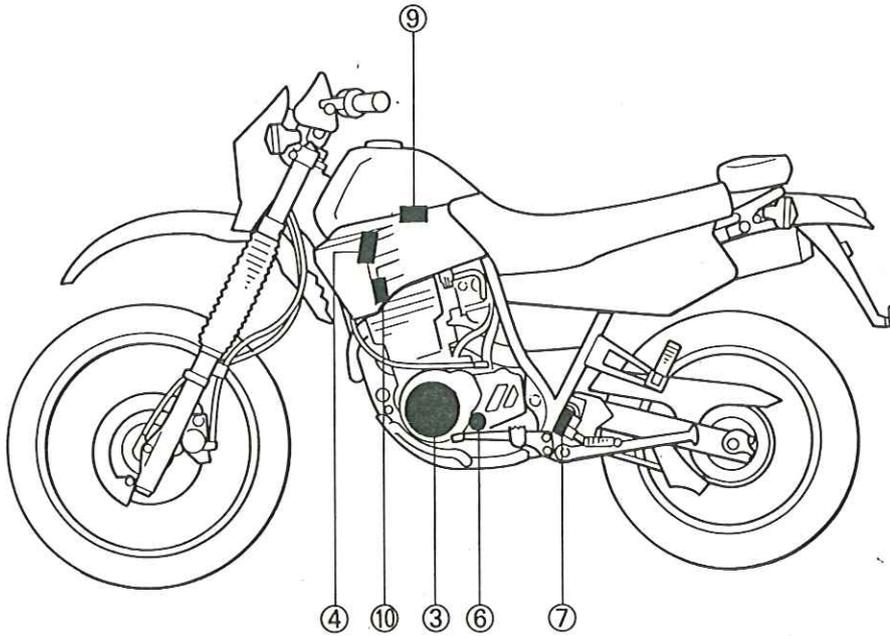




**NOTE:** \_\_\_\_\_

For the color codes, see page 7-2.

- ① Main switch
- ③ C.D.I. magneto
- ④ C.D.I. unit
- ⑤ "ENGINE STOP" switch
- ⑥ Neutral switch
- ⑦ Sidestand switch
- ⑨ Ignition coil
- ⑩ Spark plug



## TROUBLESHOOTING

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

### Procedure

Check;

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Spark plug</li> <li>2. Ignition spark gap</li> <li>3. Spark plug cap resistance</li> <li>4. Ignition coil resistance</li> <li>5. "ENGINE STOP" switch</li> <li>6. Main switch</li> </ol> | <ol style="list-style-type: none"> <li>7. Sidestand switch</li> <li>8. Neutral switch</li> <li>9. Pickup coil resistance</li> <li>10. Source coil resistance</li> <li>11. Wiring connection<br/>(Entire ignition system)</li> </ol> |
|--|---|

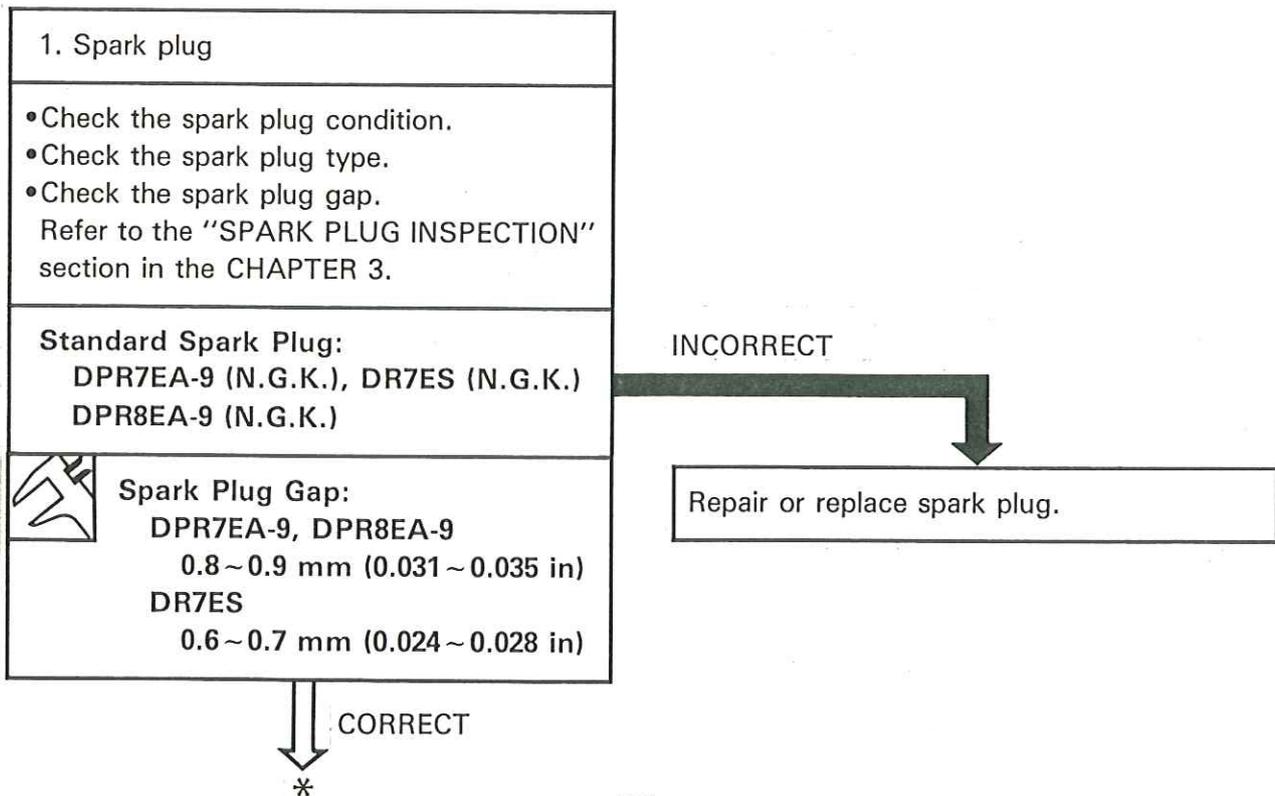
### NOTE:

- Remove the following parts before troubleshooting.
 

1) Seat	5) Side cover (Left)
2) Air scoop (Left)	6) Side cover (Right)
3) Air scoop (Right)	7) Cowling (Headlight)
4) Fuel tank	
- Use the following special tools in this troubleshooting.

	<b>Electro Tester:</b> P/N. 90890-03021
---	--

	<b>Pocket Tester:</b> P/N. 90890-03112
---	---





**2. Ignition spark gap**

- Connect the Electro Tester ① as shown.
- ② Spark plug cap
- ③ Spark plug

373-006

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

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

MEETS SPECIFICATION

Ignition system is good.

OUT OF SPECIFICATION  
OR NO SPARK

**3. Spark plug cap resistance**

- Remove the spark plug cap.
- Connect the pocket Tester ( $\Omega \times 1k$ ) to the spark plug cap.

- Check the spark plug cap for specified resistance.

**Spark Plug Cap Resistance:**  
8 ~ 12k $\Omega$  at 20°C (68°F)

OUT OF SPECIFICATION

Spark plug cap is faulty, replace it.

MEETS  
SPECIFICATION





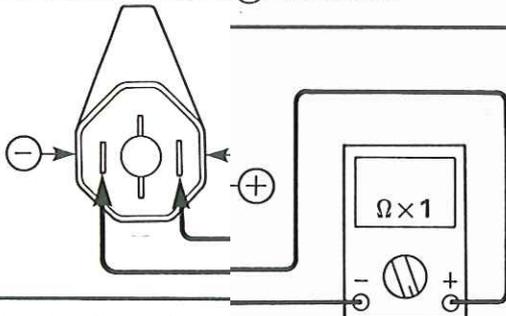
\*



4. Ignition coil resistance

- Disconnect the ignition coil leads (Orange and Black) from the wiring harness.
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the ignition coil.

Tester (+) Lead →  $\oplus$  Terminal  
 Tester (-) Lead →  $\ominus$  Terminal



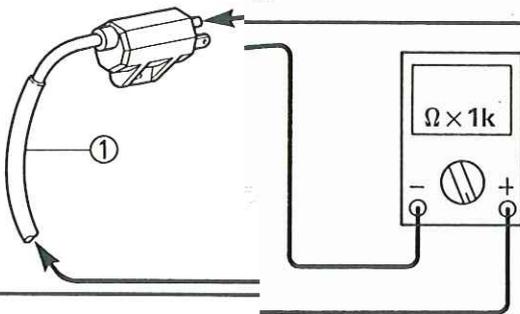
- Check the primary resistance. Verify coil for specified resistance.



**Primary Coil Resistance:**  
 0.23 ~ 0.38  $\Omega$  at 20°C (68°F)  
 ( $\oplus$  Terminal —  $\ominus$  Terminal)

- Connect the Pocket Tester ( $\Omega \times 1k$ ) to the ignition coil.

Tester (+) Lead → Spark Plug Lead ①  
 Tester (-) Lead →  $\ominus$  Terminal



- Check the secondary resistance. Verify coil for specified resistance.



**Secondary Coil Resistance:**  
 3.4 ~ 5.2k  $\Omega$  at 20°C (68°F)  
 (Spark Plug Lead —  $\ominus$  Terminal)

OUT OF SPECIFICATION

Ignition coil is faulty, replace it.

BOTH MEET SPECIFICATIONS

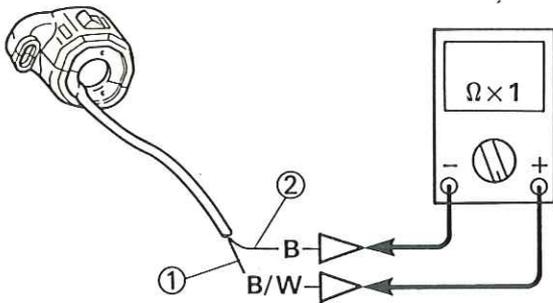
\*



5. "ENGINE STOP" switch

- Disconnect the "ENGINE STOP" switch leads (Black/White and Black) from the wireharness.
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the "ENGINE STOP" switch leads.

Tester (+) Lead  $\rightarrow$  Black/White ① Lead  
 Tester (-) Lead  $\rightarrow$  Black ② Lead



- Turn the "ENGINE STOP" switch to "OFF" and "RUN".
- Check the "ENGINE STOP" switch for continuity.

Switch position	Good condition		Bad condition		
	①	②	③	④	⑤
RUN	×	○	×	×	○
OFF	○	×	×	×	○

○: Continuity    ×: Nocontinuity

BAD CONDITION

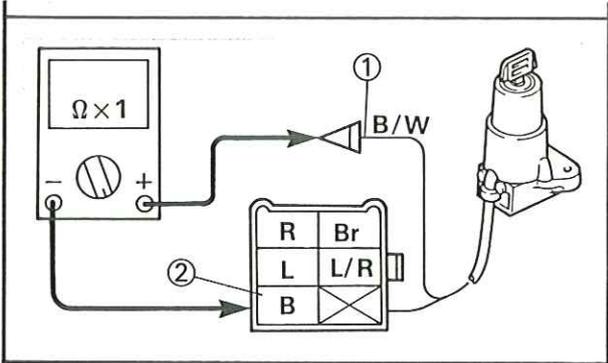
"ENGINE STOP" switch is faulty, replace handlebar switch (Right).

GOOD CONDITION

6. Main switch

- Disconnect the main switch coupler (Red, Brown, Blue, Blue/Red and Black) and lead (Black/White) from the wireharness.
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the main switch leads.

Tester (+) Lead  $\rightarrow$  Black/White ① Lead  
 Tester (-) Lead  $\rightarrow$  Black ② Lead



- Turn the main switch to "ON" and "OFF".
- Check the main switch for continuity.

Switch position	Good condition	Bad condition		
		○	×	○
OFF	○	×	×	○
ON	×	○	×	○

○: Continuity    ×: Nocontinuity

BAD CONDITION

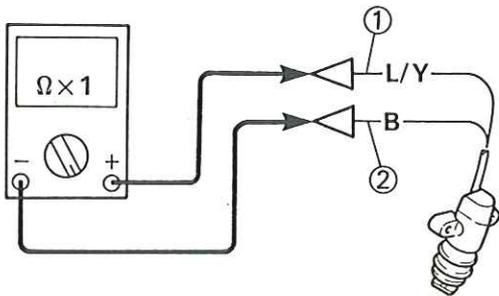
Main switch is faulty, replace it.

GOOD CONDITION

7. Sidestand switch

- Disconnect the sidestand switch leads (Blue/Yellow and Black) from the wire-harness.
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the side-stand switch leads.

Tester (+) Lead → Blue/Yellow ① Lead  
 Tester (-) Lead → Black ② Lead



- Move the sidestand to up position and down position.



- Check the sidestand switch for continuity.

Sidestand position	Good condition	Bad condition		
		○	×	○
Up	○	×	×	○
Down	×	○	×	○

○: Continuity    ×: Nocontinuity

BAD CONDITION

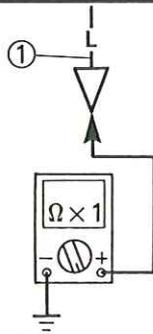
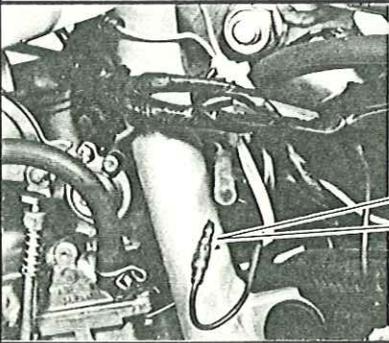
Sidestand switch is faulty, replace it.

GOOD CONDITION

### 8. Neutral switch

- Disconnect the neutral switch lead (Blue) from the wireharness.
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the neutral switch lead.

Tester (+) Lead → Blue ① Lead  
Tester (-) Lead → Frame Ground



- Shift the transmission in neutral and gear.
- Check the neutral switch for continuity.

Transmission position	Good condition	Bad condition		
		○	×	○
Neutral	○	×	×	○
Gear	×	○	×	○

○: Continuity    ×: Nocontinuity

BAD CONDITION

Neutral switch is faulty, replace it.

GOOD CONDITION

### 9. Pickup coil resistance

- Disconnect the C.D.I. magneto coupler (Black/Yellow, Green/White and Blue/Yellow) from the wireharness.
- Connect the Pocket Tester ( $\Omega \times 100$ ) to the pickup coil leads.

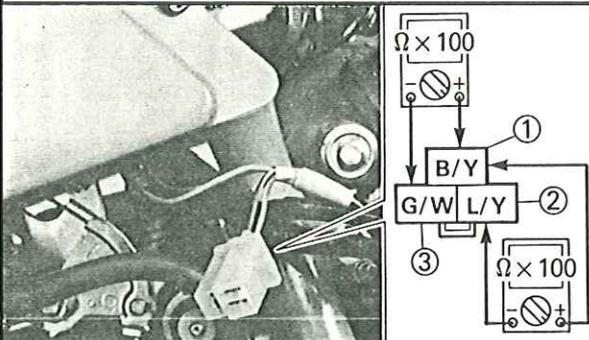


**For Pickup Coil (1):**

- Tester (+) Lead → Black/Yellow ① Lead
- Tester (-) Lead → Blue/Yellow ② Lead

**For Pickup Coil (2):**

- Tester (+) Lead → Black/Yellow ① Lead
- Tester (-) Lead → Green/White ③ Lead



OUT OF SPECIFICATION

- Check the pickup coil for specified resistance.



**Pickup Coil (1) Resistance:**  
 90 ~ 130Ω at 20°C (68°F)  
 (Black/Yellow – Blue/Yellow)

**Pickup Coil (2) Resistance:**  
 90 ~ 130Ω at 20°C (68°F)  
 (Black/Yellow – Green/White)

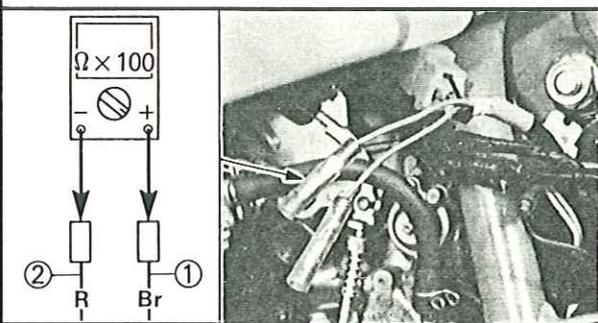
Pickup coil is faulty, replace it.

↓ BOTH MEET SPECIFICATIONS

**10. Source coil resistance**

- Disconnect the C.D.I. magneto leads (Brown and Red) from the wireharness.
- Connect the Pocket Tester (Ω × 100) to the source coil leads.

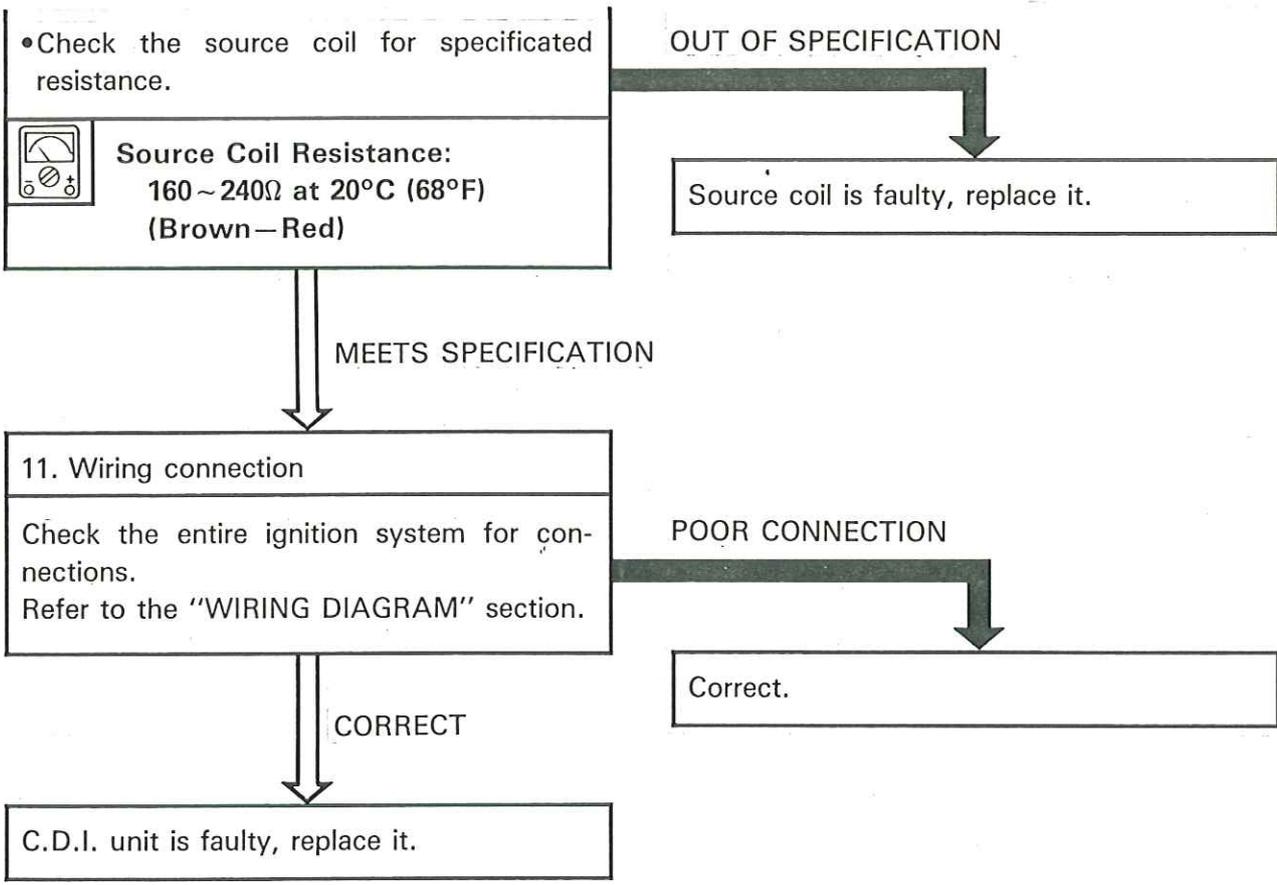
- Tester (+) Lead → Brown ① Lead
- Tester (-) Lead → Red ② Lead





# IGNITION SYSTEM

ELEC

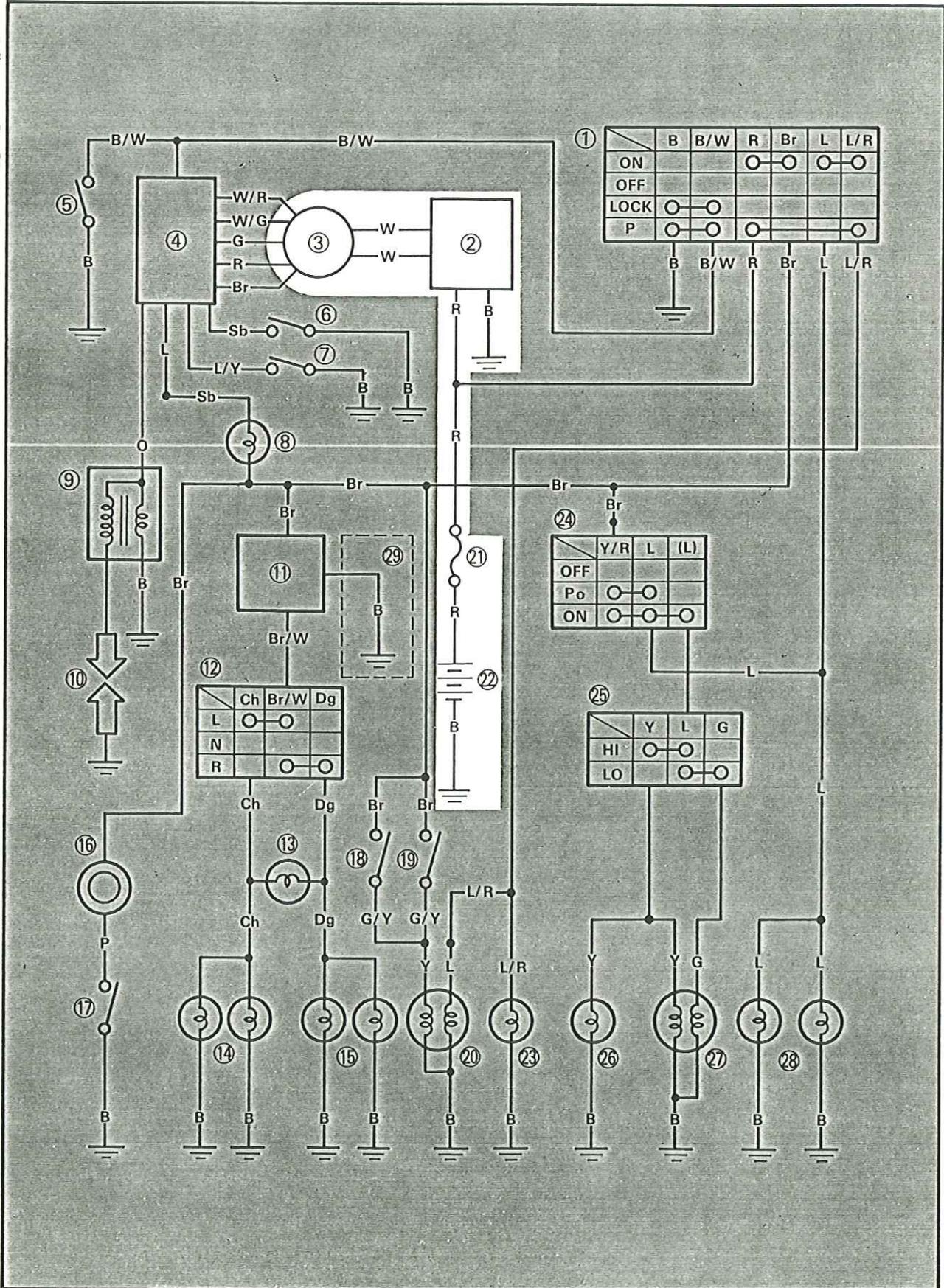




CHARGING SYSTEM

CIRCUIT DIAGRAM

Below circuit diagram shows charging system.



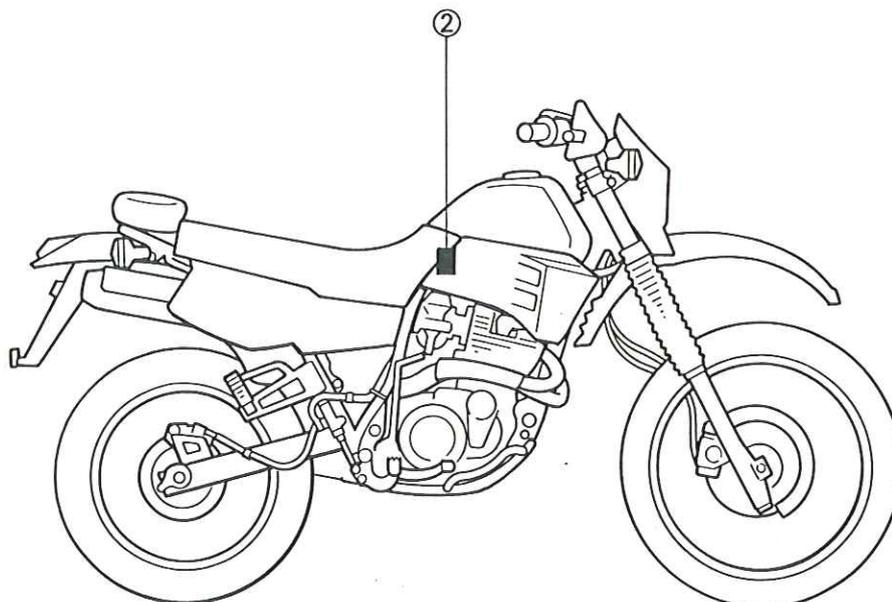
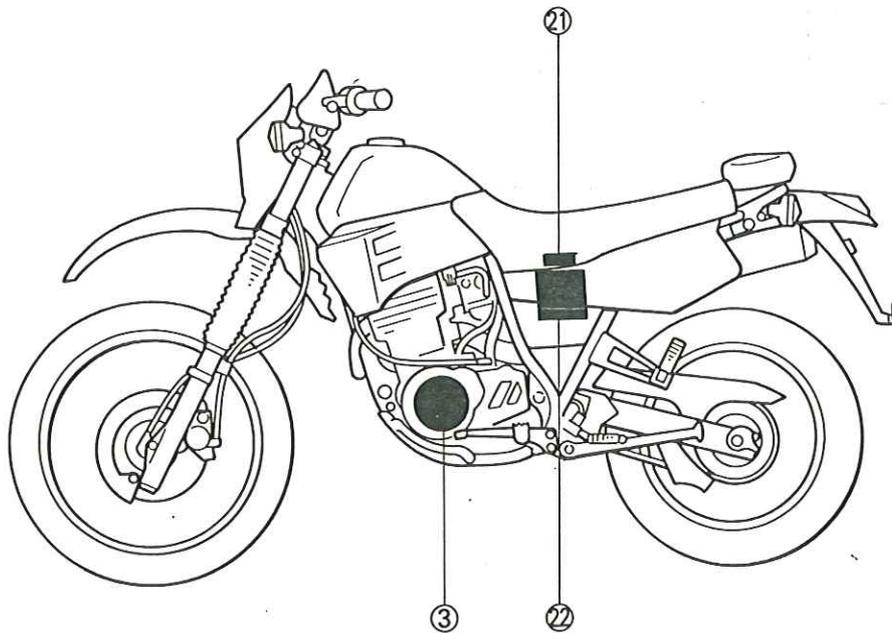


NOTE: \_\_\_\_\_

For the color codes, see page 7-2.

\_\_\_\_\_

- ② Rectifier/Regulator
- ③ C.D.I. magneto
- ① Fuse
- ② Battery





### TROUBLESHOOTING

**THE BATTERY IS NOT CHARGED.**

#### Procedure

Check;

- |                    |                             |
|--------------------|-----------------------------|
| 1. Fuse            | 4. Charging coil resistance |
| 2. Battery         | 5. Wiring connection        |
| 3. Charging output | (Entire charging system)    |

#### NOTE:

- Remove the following parts before troubleshooting.
  - 1) Seat
  - 2) Side cover (Left)
- Use the following special tool(s) in this troubleshooting.



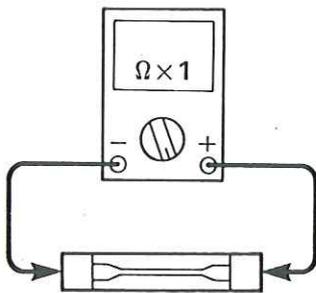
**Inductive Tachometer:**  
P/N. 90890-03113



**Pocket Tester:**  
P/N. 90890-03112

#### 1. Fuse

- Connect the Pocket Tester ( $\Omega \times 1$ ) to the fuse.
- Check the fuse for continuity.



CONTINUITY

\*

NOCONTINUITY

Replace fuse.



<b>2. Battery</b>
Check the battery condition. Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.
<b>Specific Gravity:</b> 1.280 at 20°C (68°F)

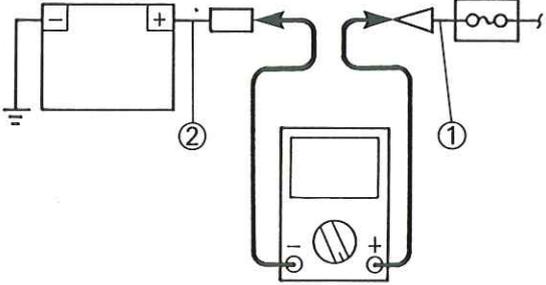
INCORRECT

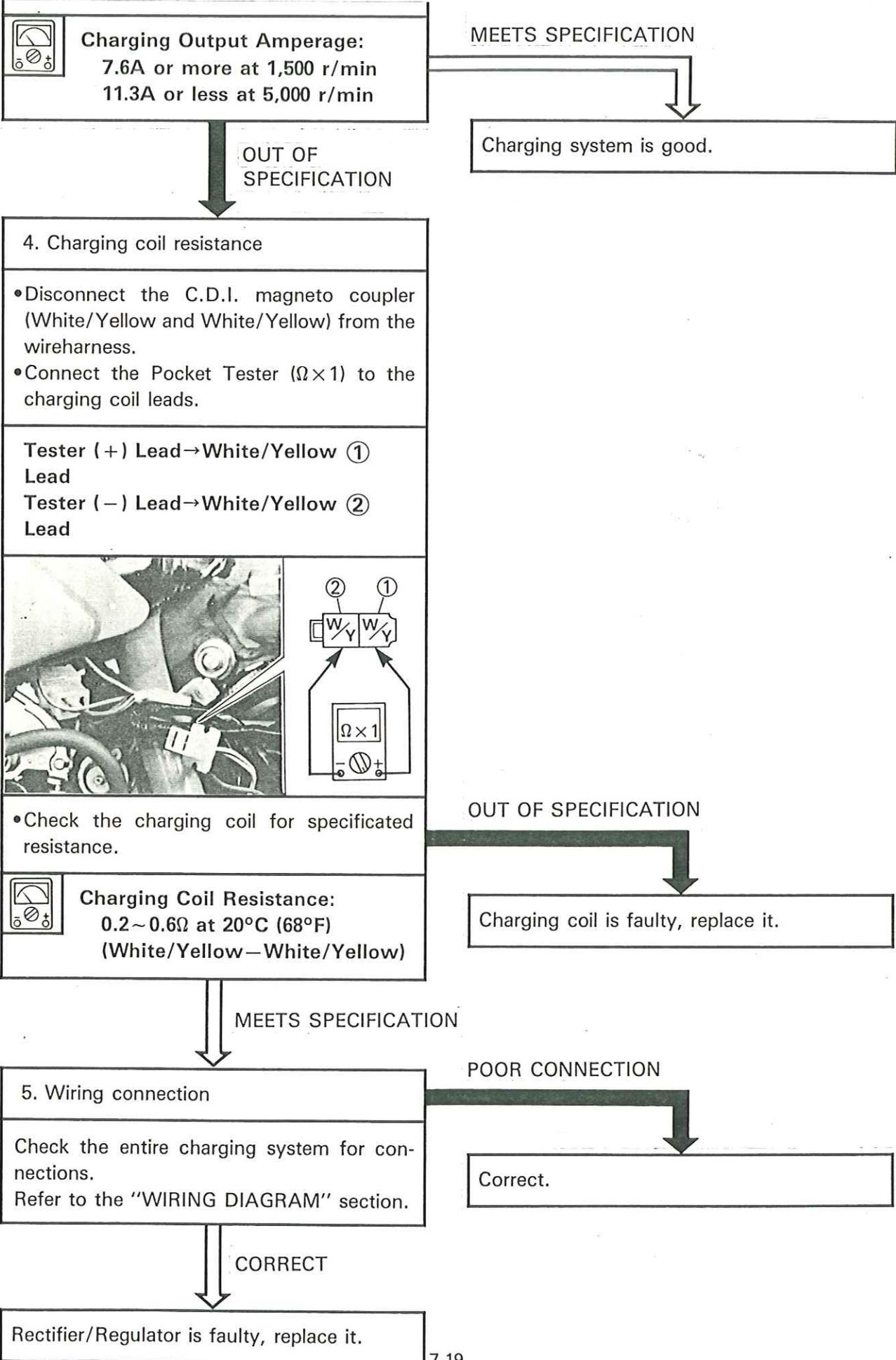


- |   |
|---|
| <ul style="list-style-type: none"> <li>• Refill battery fluid.</li> <li>• Clean battery terminals.</li> <li>• Recharge or replace battery.</li> </ul> |
|---|



CORRECT

<b>3. Charging output</b>
<ul style="list-style-type: none"> <li>• Disconnect the battery positive lead (Red) from the wireharness.</li> <li>• Connect the Inductive Tachometer to the spark plug lead.</li> <li>• Connect an ammeter ("DC A" range) to the battery positive lead.</li> </ul>
<p>Tester (+) Lead → Fuse ① Lead                      Tester (-) Lead → Battery Positive ② Lead</p>

<ul style="list-style-type: none"> <li>• Start the engine.</li> <li>• Accelerate the engine to specifications and check the charging amperage.</li> </ul>
<p><b>CAUTION:</b> _____</p> <p>Never disconnect the leads from the battery before stopping the engine.</p>





---

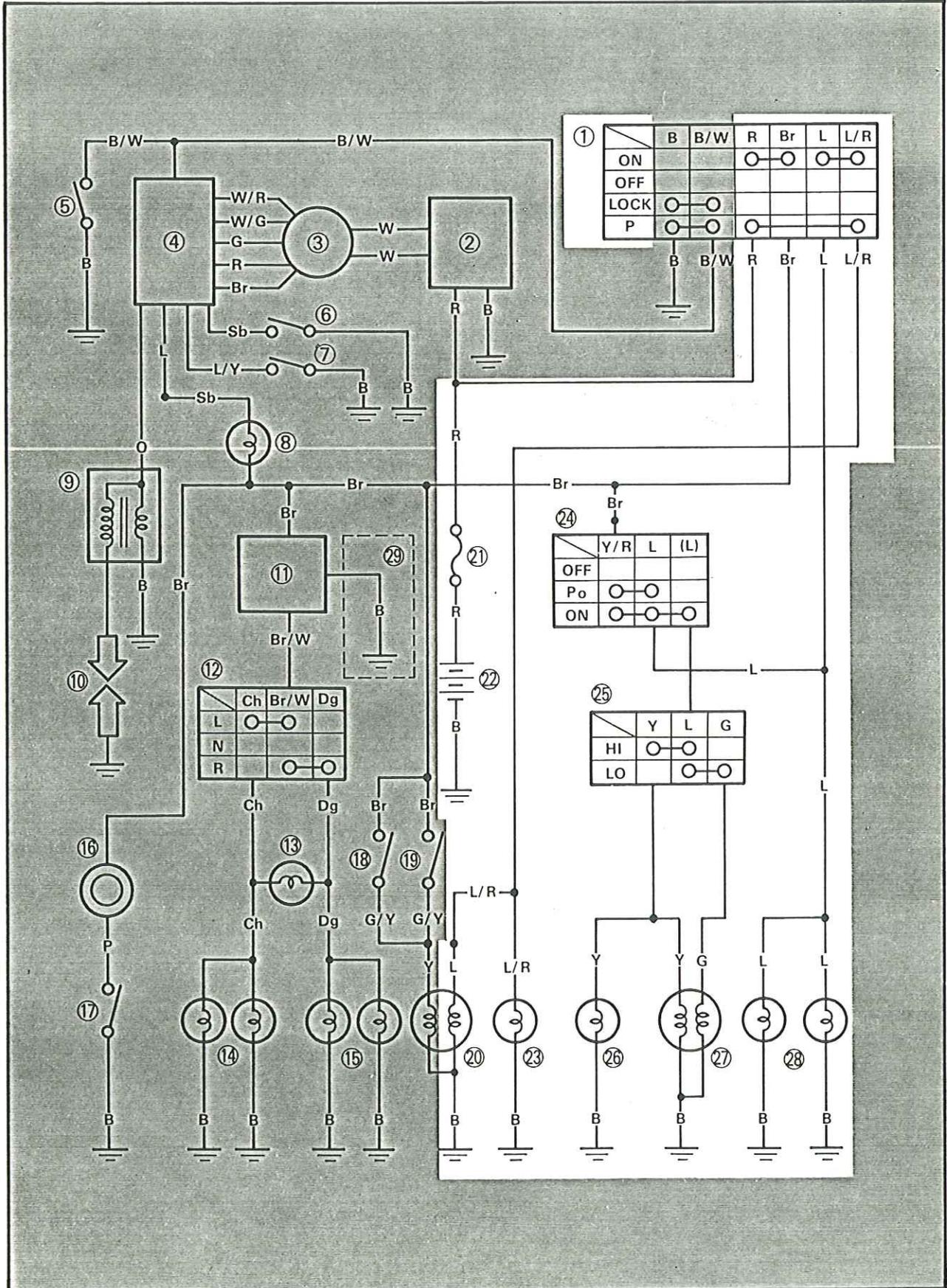
**MEMO**



LIGHTING SYSTEM

CIRCUIT DIAGRAM

Below circuit diagram shows lighting system.





# LIGHTING SYSTEM

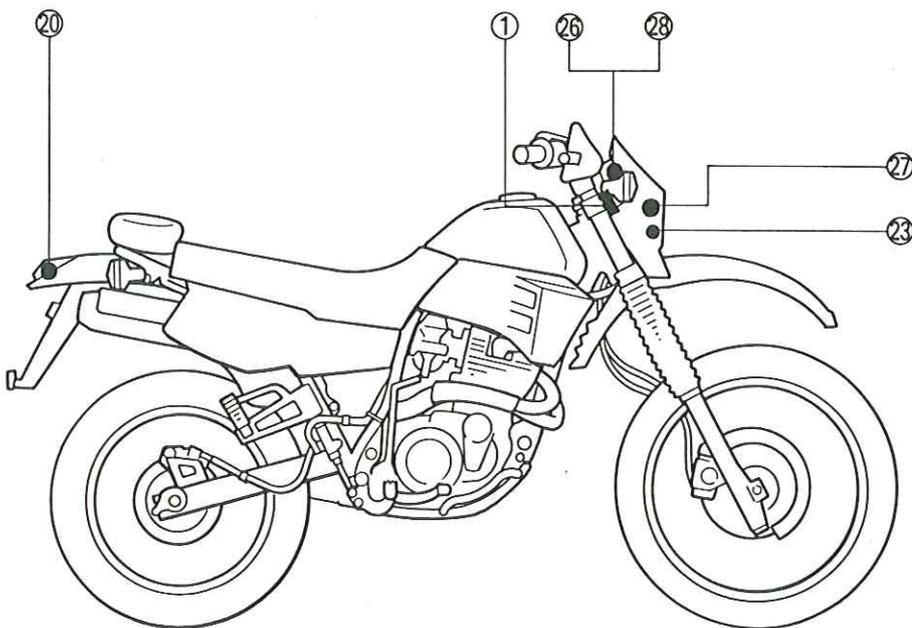
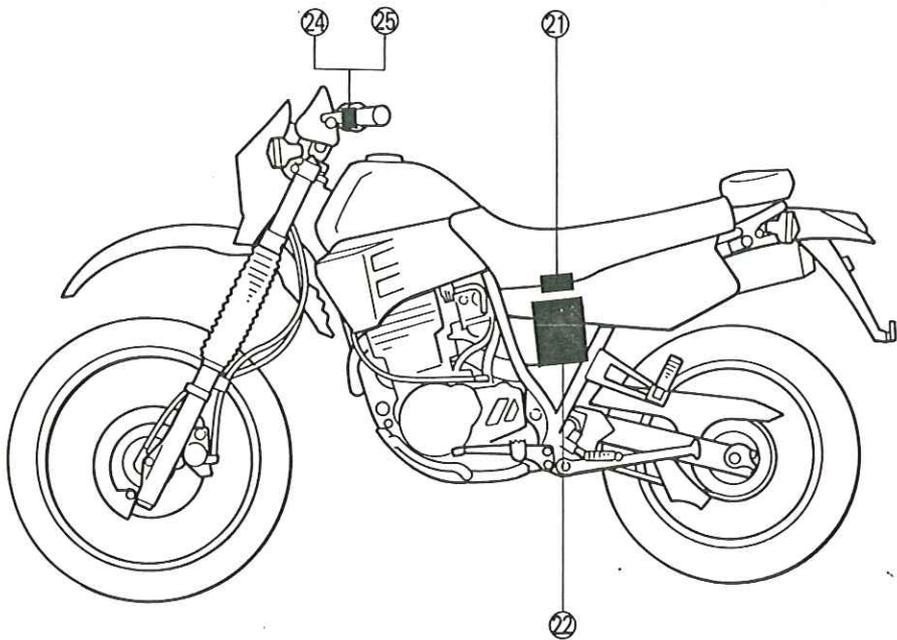
ELEC



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

For the color codes, see page 7-2.

- ① Main switch
- ② Tail/Brake light
- ③ Fuse
- ④ Battery
- ⑤ Auxiliary light
- ⑥ "LIGHTS" switch
- ⑦ "LIGHTS" (Dimmer) switch
- ⑧ "HIGH BEAM" indicator light
- ⑨ Headlight
- ⑩ Meter light



TROUBLESHOOTING

HEADLIGHT, TAILLIGHT, AUXILIARY LIGHT AND/OR METER LIGHT DO NOT COME ON.

**Procedure**

Check;

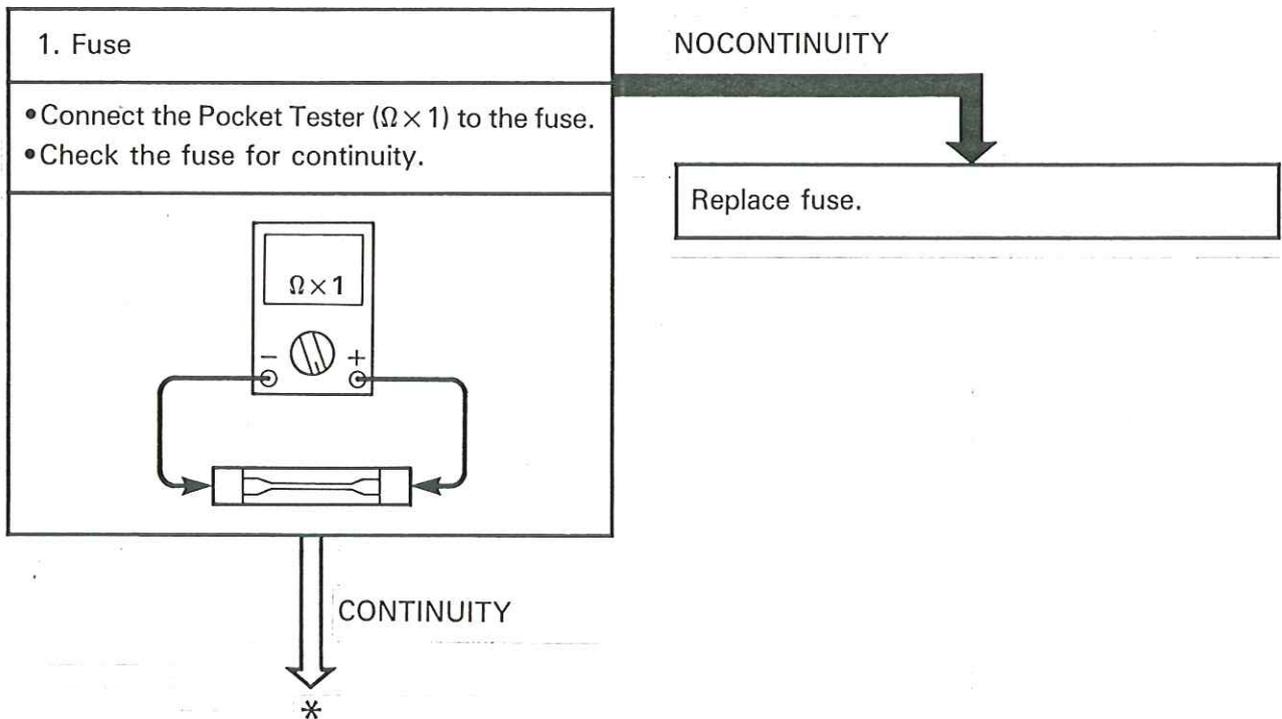
1. Fuse
2. Battery
3. Main switch
4. "LIGHTS" switch
5. Wiring connection  
(Entire lighting system)

**NOTE:**

- Remove the following parts before troubleshooting.
 

1) Seat	3) Cowling (Headlight)
2) Side cover (Left)	4) Headlight lens unit
- Use the following special tool(s) in this troubleshooting.

	<p><b>Pocket Tester:</b> P/N. 90890-03112</p>
---	---





**2. Battery**

Check the battery condition.  
Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

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



CORRECT

**3. Main switch**

- Disconnect the main switch coupler (Red, Brown, Black, Blue and Blue/Red) from the wireharness.
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the main switch leads.
- Check the main switch for continuity.

**A** Tester (+) Lead → Red ① Lead  
Tester (-) Lead → Brown ② Lead

Switch position	Good condition		Bad condition		
	○	×	×	×	○
ON	○	×	×	×	○
OFF	×	○	×	×	○

**B** Tester (+) Lead → Blue ③ Lead  
Tester (-) Lead → Blue/Red ④ Lead

Switch position	Good condition		Bad condition		
	○	×	×	×	○
ON	○	×	×	×	○
OFF	×	○	×	×	○

**C** Tester (+) Lead → Red ① Lead  
Tester (-) Lead → Blue/Red ④ Lead

Switch position	Good condition		Bad condition		
	○	×	×	×	○
P	○	×	×	×	○
OFF	×	○	×	×	○

○: Continuity    ×: Nocontinuity

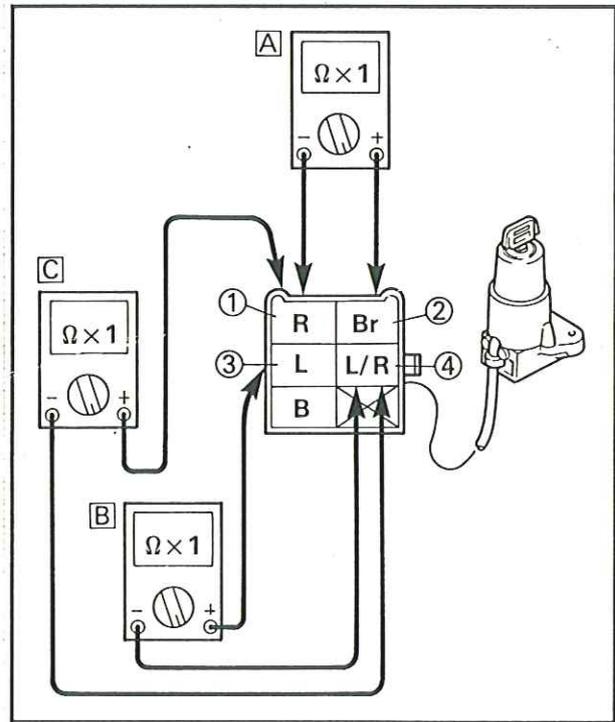


GOOD CONDITION

\*

INCORRECT

- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.



BAD CONDITION

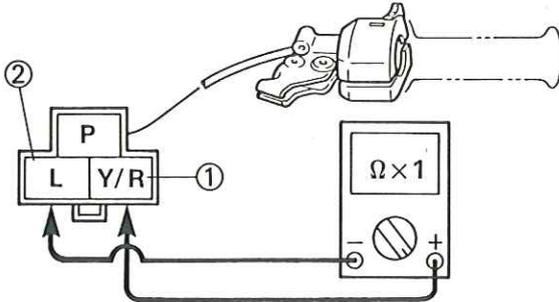
Main switch is faulty, replace it.



4. "LIGHTS" switch

- Disconnect the handlebar switch (Left) coupler (Blue, Yellow/Red and Pink) from the wireharness.
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the "LIGHTS" switch leads.

Tester (+) Lead  $\rightarrow$  Yellow/Red ① Lead  
 Tester (-) Lead  $\rightarrow$  Blue ② Lead



- Turn the "LIGHTS" switch to "ON", "PO" and "OFF".
- Check the "LIGHTS" switch for continuity.

Switch position	Good condition		Bad condition	
	○	×	×	○
ON	○	×	×	○
PO	○	×	×	○
OFF	×	○	×	○

○: Continuity    ×: Nocontinuity

BAD CONDITION

"LIGHTS" switch is faulty, replace handlebar switch (Left).

GOOD CONDITION

5. Wiring connection

Check the entire lighting system for connections.  
 Refer to the "WIRING DIAGRAM" section.

POOR CONNECTION

Correct.

CORRECT

Check condition of each circuit for lighting system.  
 Refer to "LIGHTING SYSTEM CHECK" section.



LIGHTING SYSTEM CHECK

1. Headlight does not come on.

1. Bulb

- Remove the headlight bulb.
- Connect the Pocket Tester ( $\Omega \times 1k$ ) to the headlight bulb.

Tester (+) Lead  $\rightarrow$  Terminal ①  
 Tester (-) Lead  $\rightarrow$  Terminal ③

Tester (+) Lead  $\rightarrow$  Terminal ②  
 Tester (-) Lead  $\rightarrow$  Terminal ③

- Check the headlight for continuity.

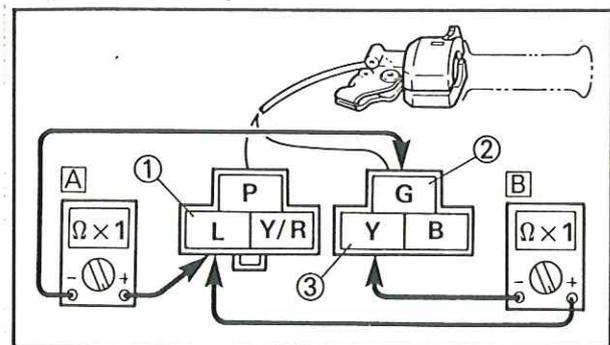
CONTINUITY DOES NOT EXIST ON ONE CIRCUIT

Headlight is faulty, replace it.

CONTINUITY EXISTS ON BOTH CIRCUITS

2. "LIGHTS" (Dimmer) switch

- Disconnect the handlebar switch (Left) coupler (Blue, Yellow/Red and Pink) from the wireharness.
- Turn the "LIGHTS" switch to "ON".
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the "LIGHTS" (Dimmer) switch.
- Check the "LIGHTS" (Dimmer) switch for continuity.



A) Tester (+) Lead  $\rightarrow$  Blue ① Lead  
 Tester (-) Lead  $\rightarrow$  Green ② Lead

Switch position	Good condition	Bad condition		
		①	②	③
HI	×	○	×	○
LO	○	×	×	○

BAD CONDITION

B) Tester (+) Lead  $\rightarrow$  Blue ① Lead  
 Tester (-) Lead  $\rightarrow$  Yellow ③ Lead

Switch position	Good condition	Bad condition		
		①	②	③
HI	○	×	×	○
LO	×	○	×	○

"LIGHTS" (Dimmer) switch is faulty, replace handlebar switch (Left).

○: Continuity    ×: Nocontinuity

GOOD CONDITION 7-26  
 \*



3. Voltage

- Connect the Pocket Tester (DC20V) to the "LIGHTS" switch connector.

Tester (+) Lead → Brown ① Lead  
 Tester (-) Lead → Frame Ground

- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at the "LIGHTS" switch connector.

OUT OF SPECIFICATION

Wiring circuit from main switch to "LIGHTS" switch connector is faulty, repair.

MEETS SPECIFICATION (12V)

Bulb socket is faulty, replace handlebar switch (Left).

2. "HIGH BEAM" indicator light does not come on.

1. Bulb

- Remove the "HIGH BEAM" indicator light bulb from the tachometer.
- Connect the Pocket Tester ( $\Omega \times 1k$ ) to the bulb.

- Check the bulb for continuity.

NOCONTINUITY

Bulb is faulty, replace it.

CONTINUITY

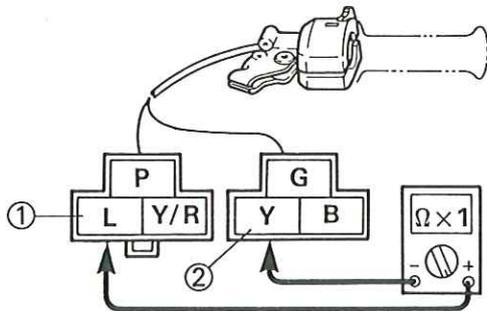
\*



2. "LIGHTS" (Dimmer) switch

- Disconnect the handlebar switch (Left) coupler (Blue, Yellow/Red and Pink) from the wireharness.
- Turn the "LIGHTS" switch to "ON".
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the "LIGHTS" (Dimmer) switch.

Tester (+) Lead → Blue ① Lead  
 Tester (-) Lead → Yellow ② Lead



- Check the "LIGHTS" (Dimmer) switch for continuity.

Switch position	Good condition	Bad condition		
HI	○	×	×	○
LO	×	○	×	○

○: Continuity    ×: Nocontinuity



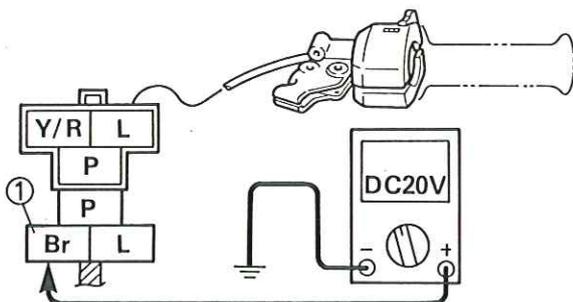
BAD CONDITION

"LIGHTS" (Dimmer) switch is faulty, replace handlebar switch (Left).

3. Voltage

- Connect the Pocket Tester (DC20V) to the "LIGHTS" switch connector.

Tester (+) Lead → Brown ① Lead  
 Tester (-) Lead → Frame Ground



# LIGHTING SYSTEM

<b>ELEC</b>	
-------------	---

- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at the "LIGHTS" switch connector.

OUT OF SPECIFICATION

MEETS SPECIFICATION (12V)

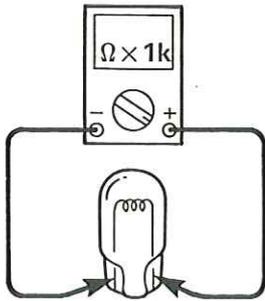
Wiring circuit from main switch to "LIGHTS" switch connector is faulty, repair.

Bulb socket is faulty, replace it.

3. Meter light does not come on.

1. Bulb

- Remove the meter light bulb from the meter.
- Connect the Pocket Tester ( $\Omega \times 1k$ ) to the bulb.



NOCONTINUITY

- Check the bulb for continuity.

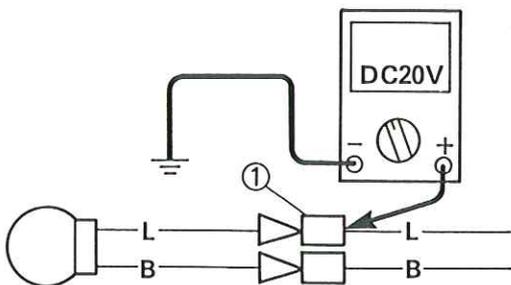
Bulb is faulty, replace it.

CONTINUITY

2. Voltage

- Connect the Pocket Tester (DC20V) to the bulb socket connector.

Tester (+) Lead → Blue ① Lead  
 Tester (-) Lead → Frame Ground







- Turn the main switch to "ON".
- Turn the "LIGHTS" switch to "ON".
- Check for voltage (12V) on the "Blue" lead at the bulb socket connector.

MEETS SPECIFICATION (12V)

Bulb socket is faulty, replace it.

OUT OF SPECIFICATION

Wiring circuit from "LIGHTS" switch to bulb socket connector is faulty, repair.

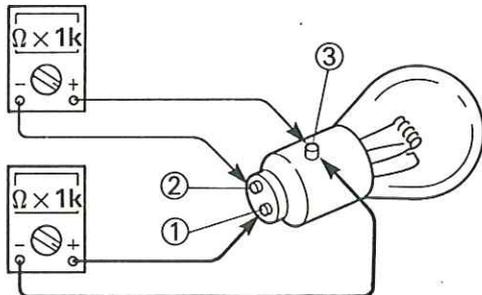
## 4. Taillight does not come on.

### 1. Bulb

- Remove the tail/brake light bulb.
- Connect the Pocket Tester ( $\Omega \times 1k$ ) to the tail/brake light bulb.

Tester (+) Lead → Terminal ①  
Tester (-) Lead → Terminal ③

Tester (+) Lead → Terminal ③  
Tester (-) Lead → Terminal ②



- Check the tail/brake light bulb for continuity.

CONTINUITY EXISTS ON BOTH CIRCUITS

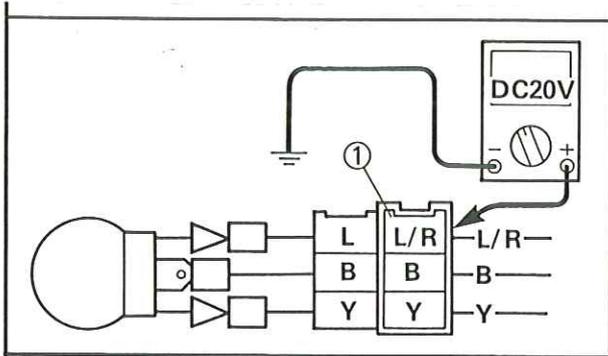
CONTINUITY DOES NOT EXIST ON ONE CIRCUIT

Tail/Brake light bulb is faulty, replace it.

### 2. Voltage

- Connect the Pocket Tester (DC20V) to the bulb socket connector.

Tester (+) Lead → Blue/Red ① Lead  
Tester (-) Lead → Frame Ground



OUT OF SPECIFICATION

Wiring circuit from main switch to bulb socket connector is faulty, repair.

- Turn the main switch to "ON".
- Turn the "LIGHTS" switch to "ON".
- Check for voltage (12V) on the "Blue/Red" lead at the bulb socket connector.

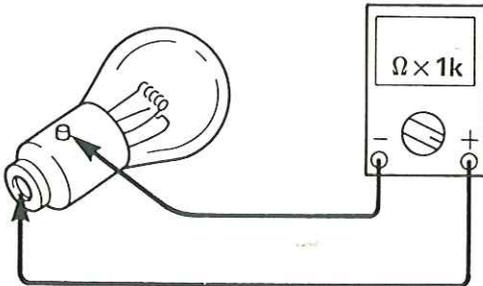
MEETS SPECIFICATION (12V)

Bulb socket is faulty, replace it.

5. Auxiliary light does not come on.

1. Bulb

- Remove the auxiliary light bulb from the headlight body.
- Connect the Pocket Tester ( $\Omega \times 1k$ ) to the auxiliary light bulb.



NOCONTINUITY

Bulb is faulty, replace it.

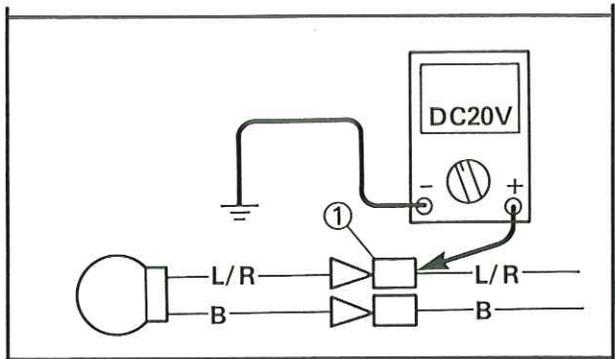
- Check the auxiliary light bulb for continuity.

CONTINUITY

2. Voltage

- Connect the Pocket Tester (DC20V) to the bulb socket connector.

Tester (+) Lead → Blue/Red ① Lead  
 Tester (-) Lead → Frame Ground



- Turn the main switch to "ON".
- Turn the "LIGHTS" switch to "ON".
- Check for voltage (12V) on the "Blue/Red" lead at the bulb socket connector.

OUT OF SPECIFICATION

Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V)

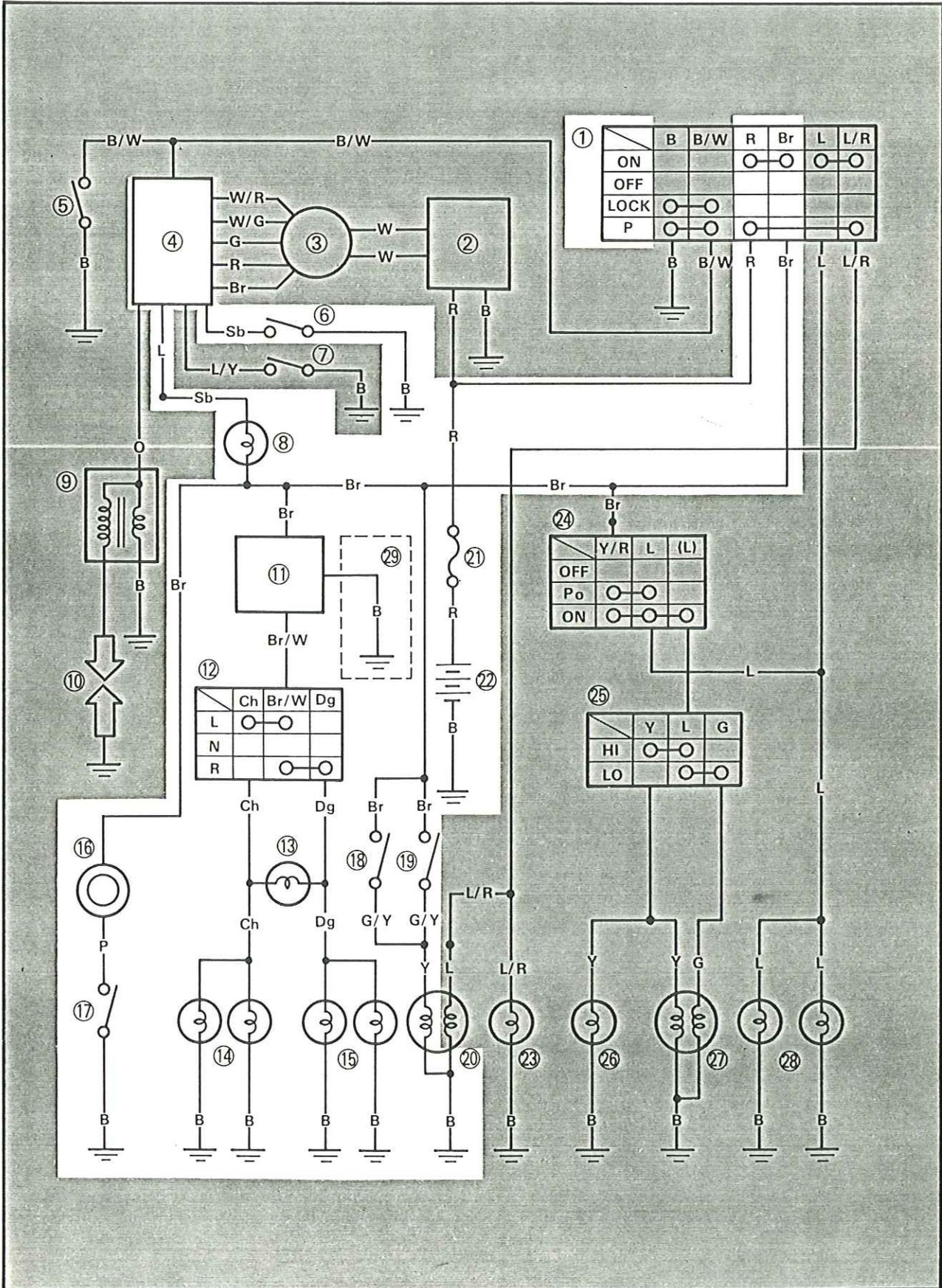
Bulb socket is faulty, replace it.



SIGNAL SYSTEM

CIRCUIT DIAGRAM

Below circuit diagram shows signal system.

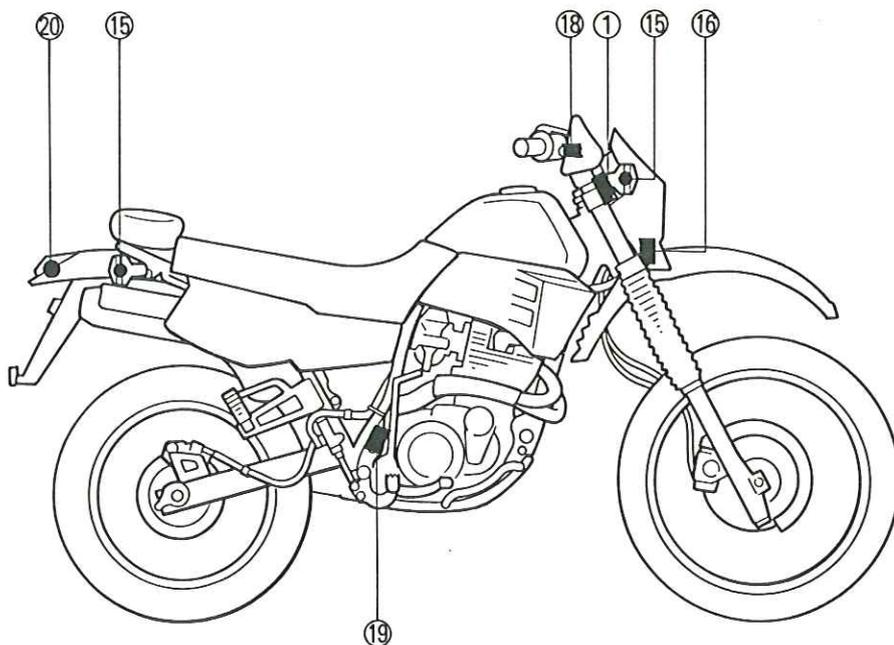
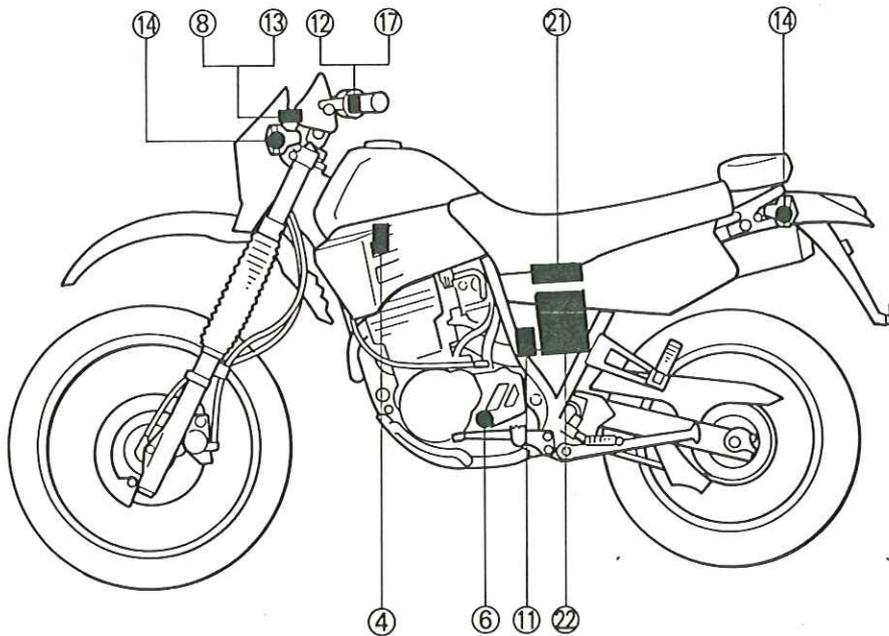




**NOTE:** \_\_\_\_\_

For the color code, see page 7-2.

- |                             |                         |
|-----------------------------|-------------------------|
| ① Main switch               | ⑮ Flasher light (Right) |
| ④ C.D.I. unit               | ⑯ Horn                  |
| ⑥ Neutral switch            | ⑰ "HORN" switch         |
| ⑧ "NEUTRAL" indicator light | ⑱ Front brake switch    |
| ⑪ Flasher relay             | ⑲ Rear brake switch     |
| ⑫ "TURN" switch             | ⑳ Tail/Brake light      |
| ⑬ "TURN" indicator light    | ㉑ Fuse                  |
| ⑭ Flasher light (Left)      | ㉒ Battery               |





TROUBLESHOOTING

- FLASHER LIGHT, BRAKE LIGHT AND/OR INDICATOR LIGHT DO NOT COME ON.
- HORN DOES NOT SOUND.

Procedure

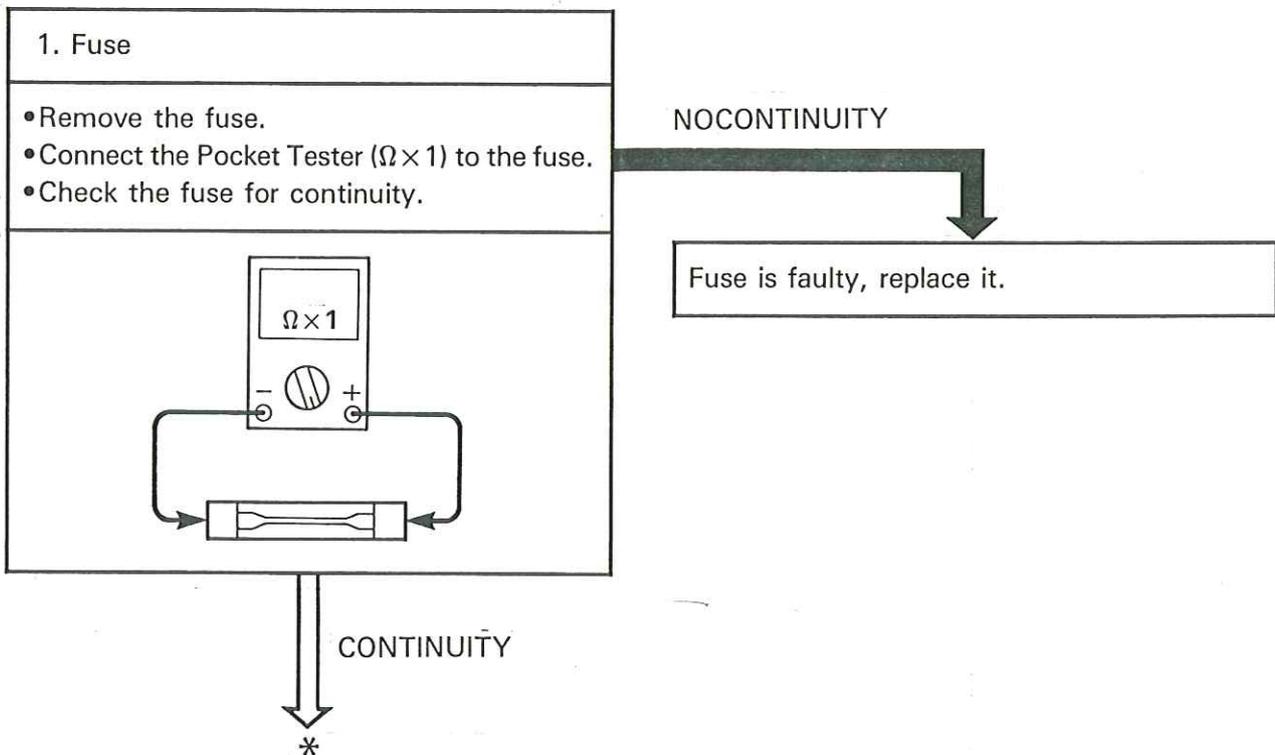
Check;

1. Fuse
2. Battery
3. Main switch
4. Wiring connection  
(Entire signal system)

NOTE:

- Remove the following parts before troubleshooting.
  - 1) Seat
  - 2) Side cover (Left)
  - 3) Cowling (Headlight)
  - 4) Headlight lens unit
- Use the following special tool(s) in this troubleshooting.

	<p><b>Pocket Tester:</b> P/N. 90890-03112</p>
--	---





2. Battery

Check the battery condition.  
Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

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

INCORRECT

- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.

CORRECT

3. Main switch

- Disconnect the main switch coupler (Red, Brown, Blue, Blue/Red and Black) from the wireharness.
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the main switch leads.

Tester (+) Lead  $\rightarrow$  Red ① Lead  
Tester (-) Lead  $\rightarrow$  Brown ② Lead

- Turn the main switch to "ON" and "OFF".
- Check the main switch for continuity.

Switch position	Good condition			Bad condition		
	○	×	○	×	×	○
ON	○	×	×	×	×	○
OFF	×	○	×	○	×	○

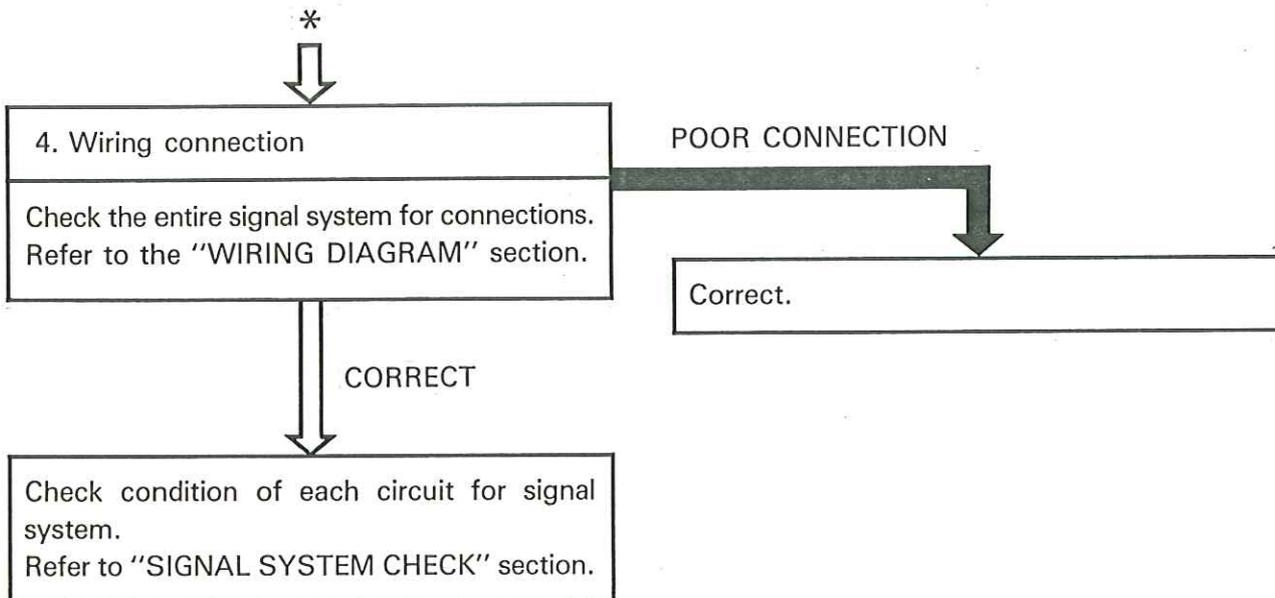
○: Continuity    ×: Nocontinuity

BAD CONDITION

Main switch is faulty, replace it.

GOOD CONDITION





**SIGNAL SYSTEM CHECK**

1. Horn does not sound.

1. "HORN" switch.

- Disconnect the handlebar switch couplers [(Pink, Blue and Yellow/Red) and (Chocolate, Dark green, Black and Brown/White)] from the wireharness.
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the "HORN" switch leads.

**Tester (+) Lead → Pink ① Lead**  
**Tester (-) Lead → Black ② Lead**





•Check the "HORN" switch for continuity.

Switch position	Good condition	Bad condition		
"HORN" switch is pushed.	○	×	×	○
"HORN" switch is not pushed.	×	○	×	○

○: Continuity    ×: Nocontinuity

BAD CONDITION

"HORN" switch is faulty, replace handlebar switch (Left).

GOOD CONDITION

2. Voltage

•Connect the Pocket Tester (DC20V) to the horn lead.

Tester (+) Lead → Brown ① Lead  
 Tester (-) Lead → Frame Ground

•Turn the main switch to "ON".  
 •Check for voltage (12V) on the "Brown" lead at the horn terminal.

OUT OF SPECIFICATION

Wiring circuit from main switch to horn terminal is faulty, repair.

MEETS SPECIFICATION (12V)

3. Horn

•Disconnect the "Pink" lead at the horn terminal.  
 •Connect a jumper lead ① to the horn terminal and ground the jumper lead.  
 •Turn the mainswitch to "ON".

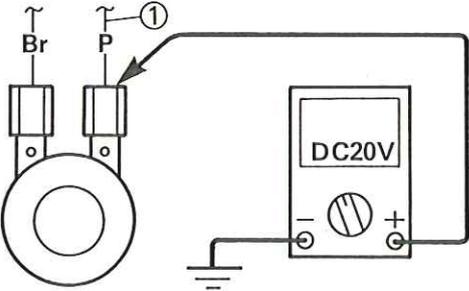
HORN IS SOUNDED

Horn is good.

HORN IS NOT SOUNDED

\*



<b>4. Voltage</b>
<ul style="list-style-type: none"> <li>• Connect the Pocket Tester (DC20V) to the horn at the Pink terminal.</li> </ul>
<p>Tester (+) Lead → Pink ① Lead                  Tester (-) Lead → Frame Ground</p>

<ul style="list-style-type: none"> <li>• Turn the main switch to "ON".</li> <li>• Check for voltage (12V) on the "Pink" lead at the horn terminal.</li> </ul>

OUT OF SPECIFICATION

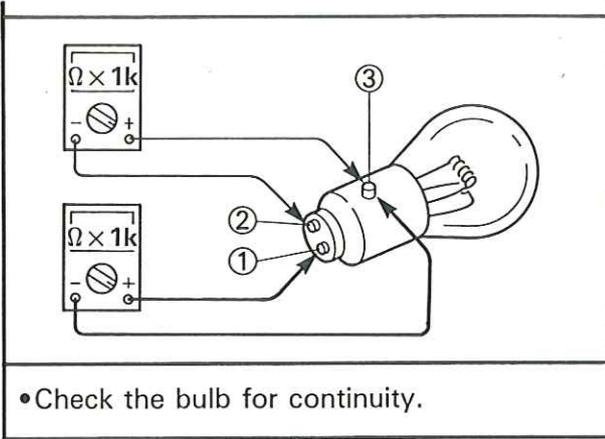
Horn is faulty, replace it.

MEETS SPECIFICATION  
(12V)

Adjust or replace horn.

**2. Brake light does not come on.**

<b>1. Bulb</b>
<ul style="list-style-type: none"> <li>• Remove the tail/brake light bulb.</li> <li>• Connect the Pocket Tester (<math>\Omega \times 1k</math>) to the bulb.</li> </ul>
<p>Tester (+) Lead → Terminal ①                  Tester (-) Lead → Terminal ③</p>
<p>Tester (+) Lead → Terminal ③                  Tester (-) Lead → Terminal ②</p>



CONTINUITY DOES NOT EXIST ON ONE CIRCUIT

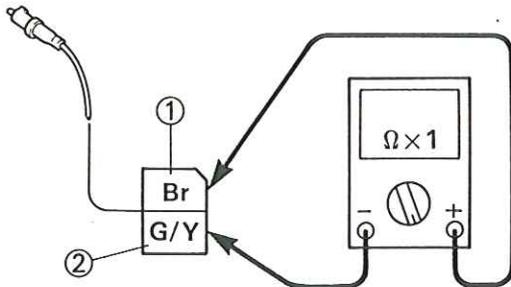
Tail/Brake light bulb is faulty, replace it.

CONTINUITY EXISTS ON BOTH CIRCUITS

2. Front brake switch

- Disconnect the front brake switch coupler (Brown and Green/Yellow) from the wire-harness.
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the brake switch leads.

Tester (+) Lead  $\rightarrow$  Brown ① Lead  
 Tester (-) Lead  $\rightarrow$  Green/Yellow ② Lead



- Check the brake switch for continuity.

Switch position	Good condition		Bad condition	
	○	×	×	○
Front brake is applied.	○	×	×	○
Front brake is not applied.	×	○	×	○

○: Continuity    ×: Nocontinuity

BAD CONDITION

Front brake switch is faulty, replace it.

GOOD CONDITION

\*



**3. Voltage**

- Connect the Pocket Tester (DC20V) to the front brake switch.

**Tester (+) Lead → Brown ① Lead**  
**Tester (-) Lead → Frame Ground**

- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at the brake switch coupler.

OUT OF SPECIFICATION

Wiring circuit from main switch to brake switch connector is faulty, repair.

MEETS SPECIFICATION (12V)

**4. Rear brake switch**

- Disconnect the rear brake switch leads (Brown and Green/Yellow) from the wire-harness.
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the brake switch lead.

**Tester (+) Lead → Brown ① Lead**  
**Tester (-) Lead → Green/Yellow ② Lead**



• Check the brake switch for continuity.

Switch position	Good condition	Bad condition		
Rear brake is applied.	○	×	×	○
Rear brake is not applied.	×	○	×	○

○: Continuity    ×: Nocontinuity

BAD CONDITION

Rear brake switch is faulty, replace it.

GOOD CONDITION

5. Voltage

• Connect the Pocket Tester (DC20V) to the rear brake switch.

Tester (+) Lead → Brown ① Lead  
 Tester (-) Lead → Frame Ground

• Turn the main switch to "ON".  
 • Check for voltage (12V) on the "Brown" lead at the brake switch connector.

OUT OF SPECIFICATION

Wiring circuit from main switch to brake switch connector is faulty, repair.

MEETS SPECIFICATION (12V)

Tail/Brake light bulb socket is faulty, replace tail/brake light assembly.



3. Flasher light does not blink.

1. Bulb

- Remove the flasher light bulb.
- Connect the Pocket Tester ( $\Omega \times 1k$ ) to the bulb.

- Check the bulb for continuity.

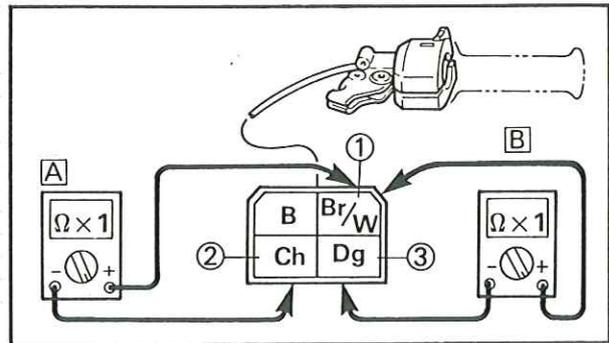
NOCONTINUITY

Bulb is faulty, replace it.

CONTINUITY

2. "TURN" switch

- Disconnect the handlebar switch coupler (Chocolate, Dark green, Black and Brown/White) from the wireharness.
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the "TURN" switch leads.
- Check the "TURN" switch for continuity.



**A** Tester (+) Lead  $\rightarrow$  Brown/White ① Lead  
Tester (-) Lead  $\rightarrow$  Chocolate ② Lead

Switch position	Good condition	Bad condition		
L	○	×	×	○
N	×	○	×	○

**B** Tester (+) Lead  $\rightarrow$  Brown/White ① Lead  
Tester (-) Lead  $\rightarrow$  Dark green ③ Lead

Switch position	Good condition	Bad condition		
R	○	×	×	○
N	×	○	×	○

○: Continuity    ×: Nocontinuity

BAD CONDITION

"TURN" switch is faulty, replace handlebar switch (Left).

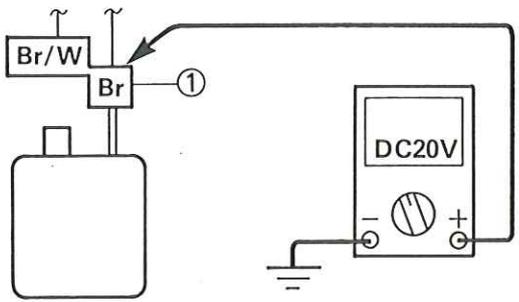
GOOD CONDITION  
\*



**3. Voltage**

- Connect the Pocket Tester (DC20V) to the flasher relay.

Tester (+) Lead → Brown ① Lead  
 Tester (-) Lead → Frame Ground



- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at the flasher relay terminal.

OUT OF SPECIFICATION

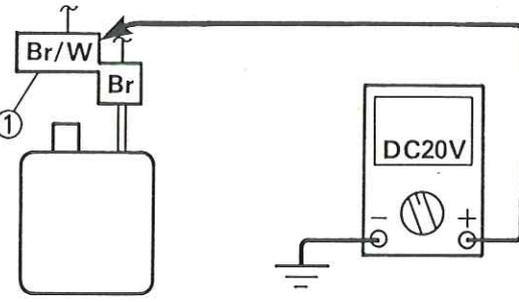
Wiring circuit from main switch to flasher relay connector is faulty, repair.

MEETS SPECIFICATION (12V)

**4. Voltage**

- Connect the Pocket Tester (DC20V) to the flasher relay.

Tester (+) Lead → Brown/White ① Lead  
 Tester (-) Lead → Frame Ground



- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown/White" lead at the flasher relay terminal.

OUT OF SPECIFICATION

Flasher relay is faulty, replace it.

MEETS SPECIFICATION (12V)





5. Voltage

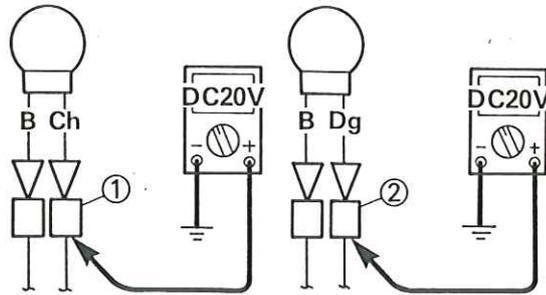
- Connect the Pocket Tester (DC20V) to the bulb socket connector.

At Flasher Light (Left):

- Tester (+) Lead → Chocolate ① Lead
- Tester (-) Lead → Frame Ground

At Flasher Light (Right):

- Tester (+) Lead → Dark green ② Lead
- Tester (-) Lead → Frame Ground



- Turn the main switch to "ON".
- Turn the "TURN" switch to "L" or "R".
- Check for voltage (12V) on the "Chocolate" lead or "Dark green" lead at the bulb socket connector.

OUT OF SPECIFICATION

Wiring circuit from "TURN" switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V)

Bulb socket is faulty, replace it.

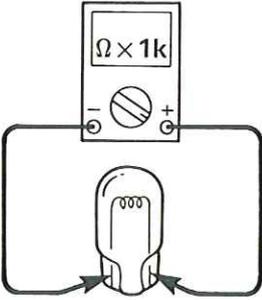




4. "TURN" indicator light does not blink.

1. Bulb

- Remove the "TURN" indicator light bulb from the tachometer.
- Connect the Pocket Tester ( $\Omega \times 1k$ ) to the bulb.



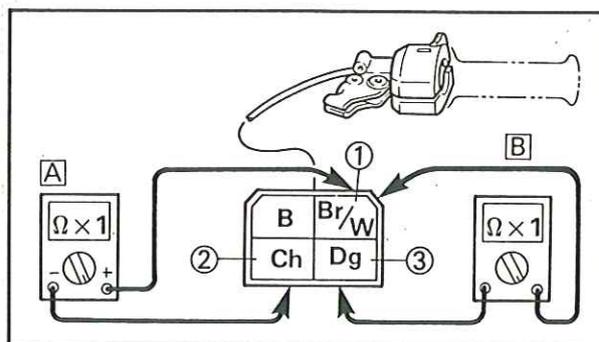
- Check the bulb for continuity.

NOCONTINUITY

Bulb is faulty, replace it.

2. "TURN" switch

- Disconnect the handlebar switch coupler (Chocolate, Dark green, Black and Brown/White) from the wireharness.
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the "TURN" switch leads.
- Check the "TURN" switch for continuity.



**A** Tester (+) Lead  $\rightarrow$  Brown/White ① Lead  
 Tester (-) Lead  $\rightarrow$  Chocolate ② Lead

Switch position	Good condition	Bad condition		
L	○	×	×	○
N	×	○	×	○

**B** Tester (+) Lead  $\rightarrow$  Brown/White ① Lead  
 Tester (-) Lead  $\rightarrow$  Dark green ③ Lead

Switch position	Good condition	Bad condition		
R	○	×	×	○
N	×	○	×	○

○: Continuity    ×: Nocontinuity

BAD CONDITION

"TURN" switch is faulty, replace handlebar switch (Left).

GOOD CONDITION

\*



**3. Voltage**

- Connect the Pocket Tester (DC20V) to the flasher relay.

**Tester (+) Lead → Brown ① Lead**  
**Tester (-) Lead → Frame Ground**

- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at the flasher relay terminal.

OUT OF SPECIFICATION

Wiring circuit from main switch to flasher relay connector is faulty, repair.

MEETS SPECIFICATION (12V)

**4. Voltage**

- Connect the Pocket Tester (DC20V) to the flasher relay.

**Tester (+) Lead → Brown/White ① Lead**  
**Tester (-) Lead → Frame Ground**

- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown/White" lead at the flasher relay terminal.

OUT OF SPECIFICATION

Flasher relay is faulty, replace it.

MEETS SPECIFICATION (12V)





5. Voltage

- Connect the Pocket Tester (DC20V) to the bulb socket connector.

Tester (+) Lead → Chocolate ① Lead  
 Tester (-) Lead → Frame Ground

- Turn the main switch to "ON".
- Turn the "TURN" switch to "L".
- Check for voltage (12V) on the "Chocolate" lead at bulb socket connector.

OUT OF SPECIFICATION

Wiring circuit from "TURN" switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V)

Bulb socket is faulty, replace it.

5. "NEUTRAL" indicator light does not come on.

1. Bulb

- Remove the "NEUTRAL" indicator light bulb from the tachometer.
- Connect the Pocket Tester ( $\Omega \times 1k$ ) to the bulb.



• Check the bulb for continuity.

NOCONTINUITY

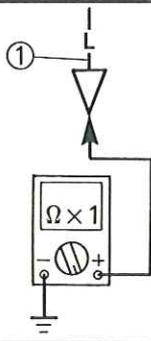
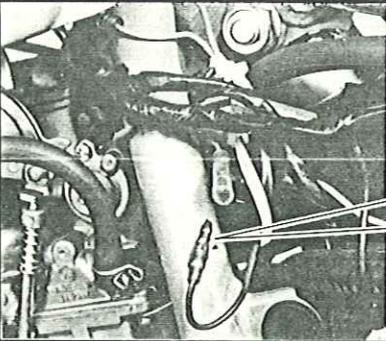
CONTINUITY

Bulb is faulty, replace it.

2. Neutral switch

- Disconnect the neutral switch lead (Blue) from the wireharness.
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the neutral switch lead.

Tester (+) Lead  $\rightarrow$  Blue ① Lead  
 Tester (-) Lead  $\rightarrow$  Frame Ground



- Shift the transmission in neutral and gear.
- Check the neutral switch for continuity.

BAD CONDITION

Transmission position	Good condition		Bad condition	
	○	×	×	○
Neutral	○	×	×	○
Gear	×	○	×	○

○: Continuity    ×: Nocontinuity

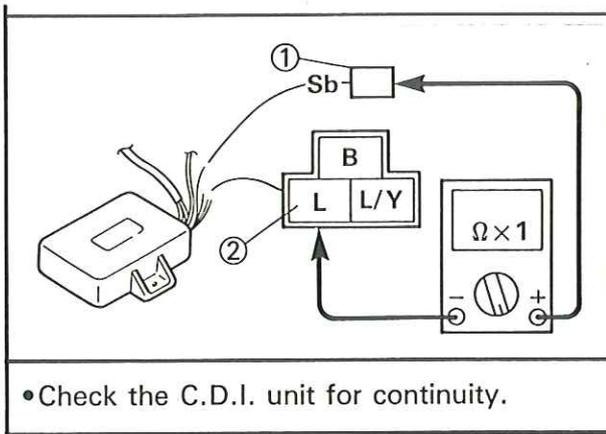
Neutral switch is faulty, replace it.

GOOD CONDITION

3. C.D.I. unit

- Disconnect the C.D.I. unit coupler (Blue/Yellow, Blue and Black) and lead (Sky blue) from the wireharness.
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the C.D.I. unit leads.

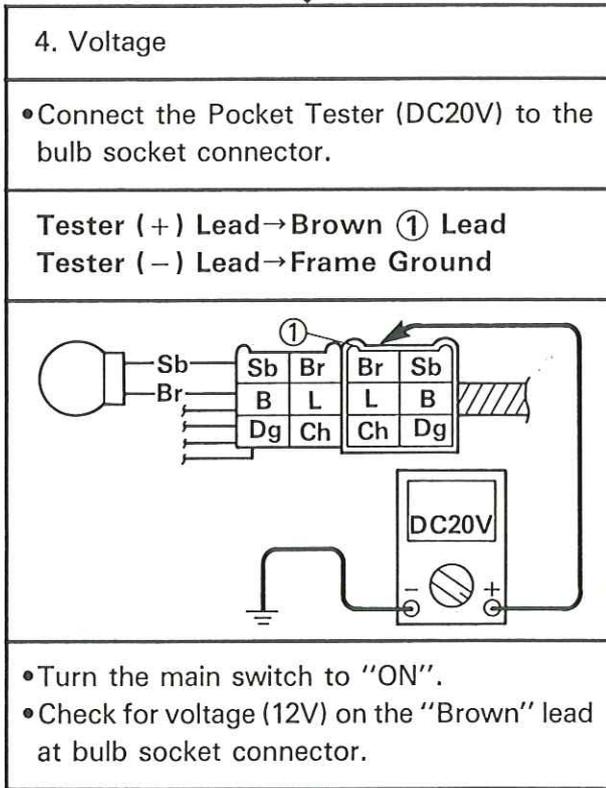
Tester (+) Lead  $\rightarrow$  Sky blue ① Lead  
 Tester (-) Lead  $\rightarrow$  Blue ② Lead



NOCONTINUITY

C.D.I. unit is faulty, replace it.

CONTINUITY



OUT OF SPECIFICATION

Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V)

Bulb socket is faulty, replace it.

**TROUBLESHOOTING**

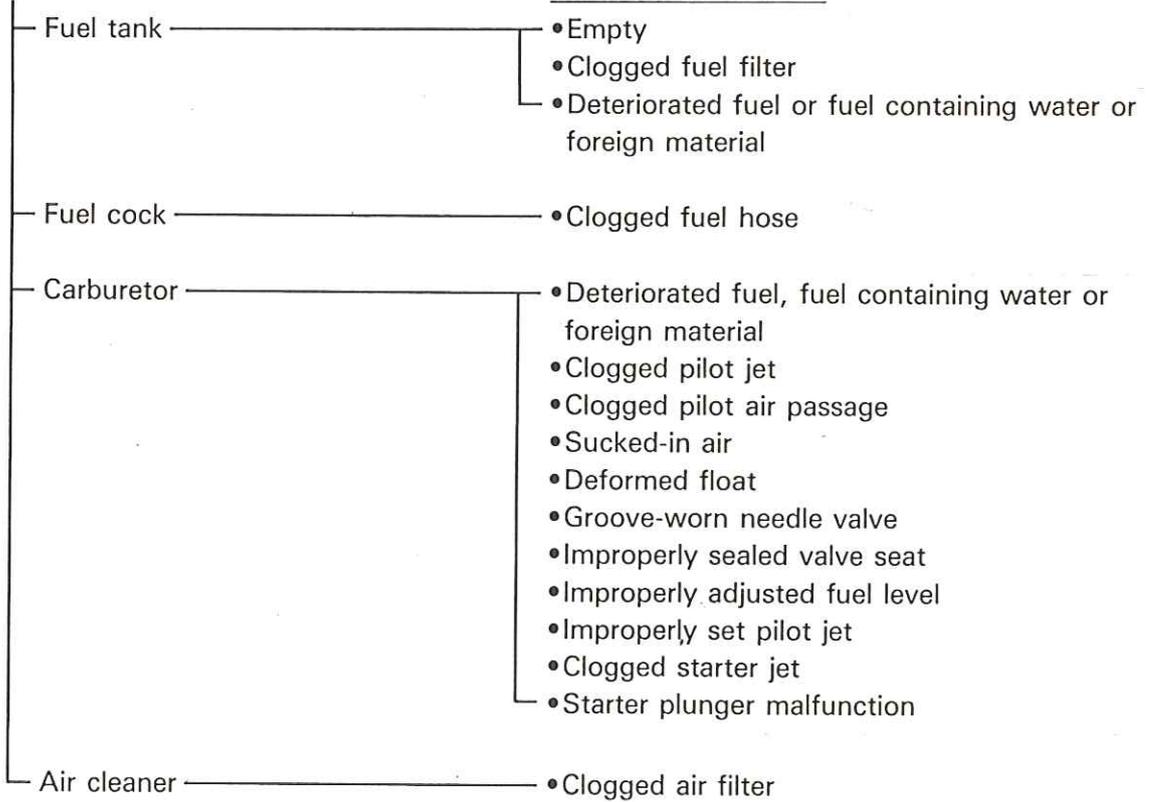
**NOTE:**

The following troubleshooting does not cover all the possible causes of trouble. It should be helpful, however, as a guide to troubleshooting. Refer to the relative procedure in this manual for inspection, adjustment and replacement of parts.

**STARTING FAILURE/HARD STARTING**

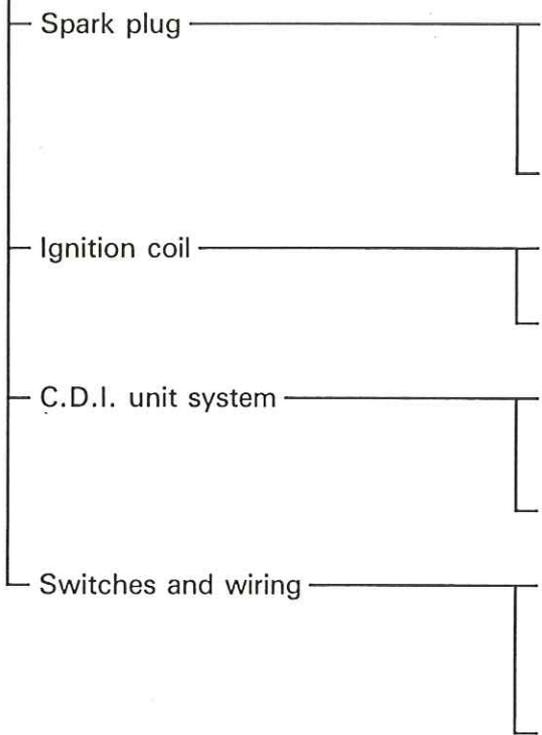
**FUEL SYSTEM**

**PROBABLE CAUSE**

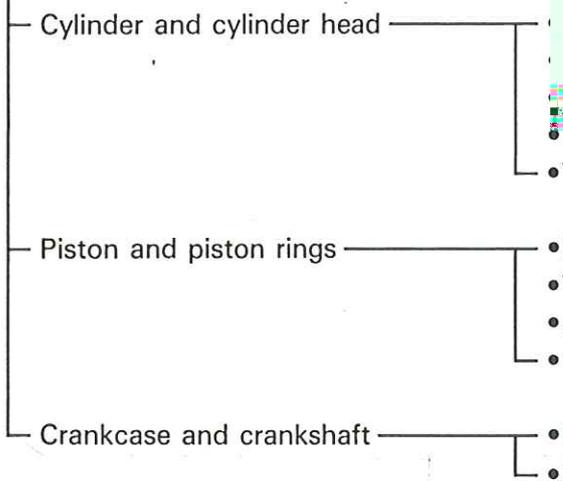


# STARTING FAILURE/HA

## ELECTRICAL SYSTEM



## COMPRESSION SYSTEM



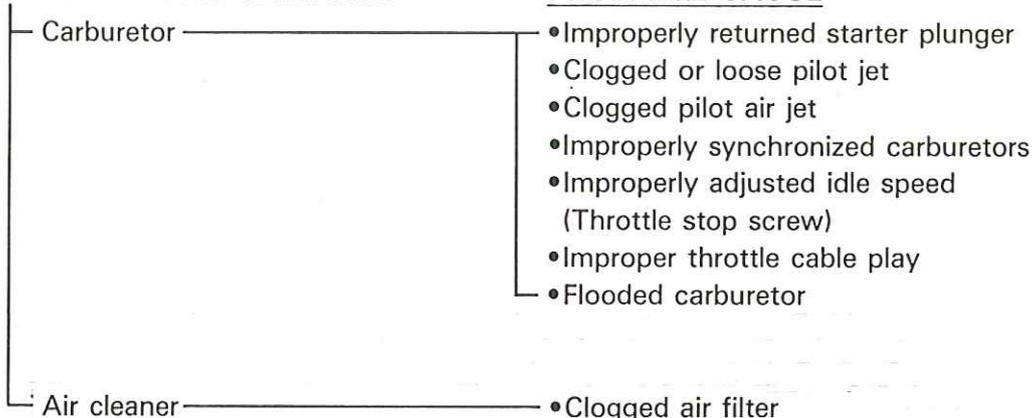
# POOR IDLE SPEED PERFORMANCE/ POOR MEDIUM AND HIGH SPEED PERFORMANCE

TRBL SHTG	?
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## POOR IDLE SPEED PERFORMANCE

### POOR IDLE SPEED PERFORMANCE

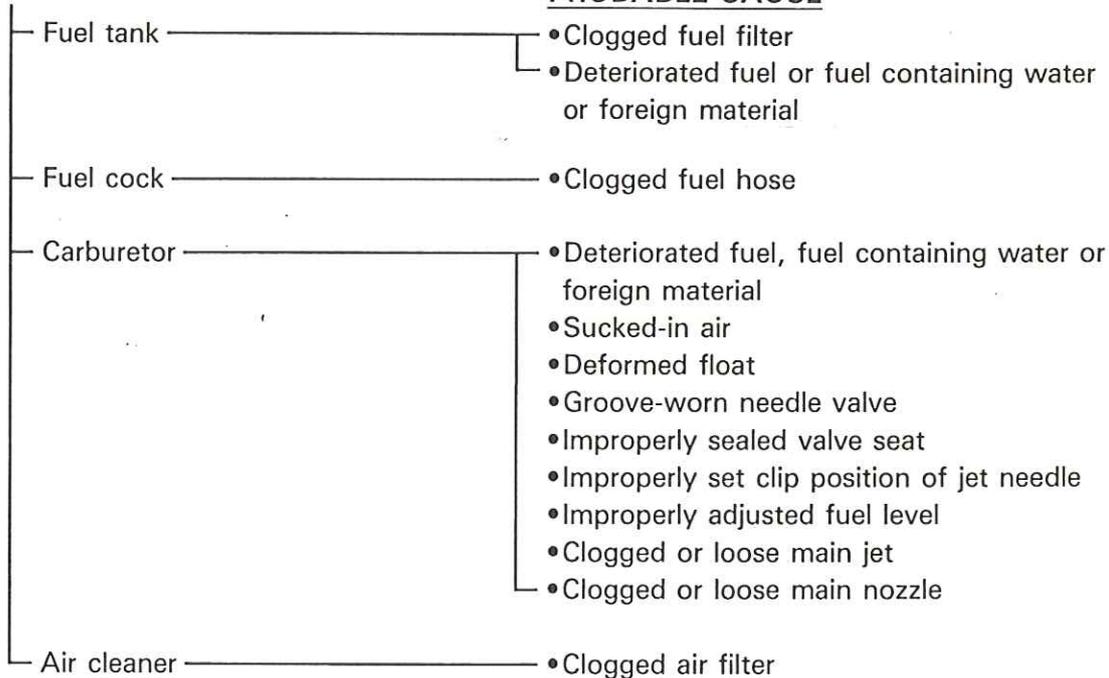
### PROBABLE CAUSE



## POOR MEDIUM AND HIGH SPEED PERFORMANCE

### FUEL SYSTEM

### PROBABLE CAUSE





# POOR MEDIUM AND HIGH SPEED PERFORMANCE

TRBL SHTG	?
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## ELECTRICAL SYSTEM

## PROBABLE CAUSE

- |                    |   |
|--------------------|---|
| Spark plug         | • Improper plug gap<br>• Worn electrodes<br>• Wire between terminals broken<br>• Improper heat range<br>• Faulty spark plug cap |
| C.D.I. unit system | • Faulty C.D.I. unit<br>• Faulty source coil<br>• Faulty pick-up coil   |

## COMPRESSION SYSTEM

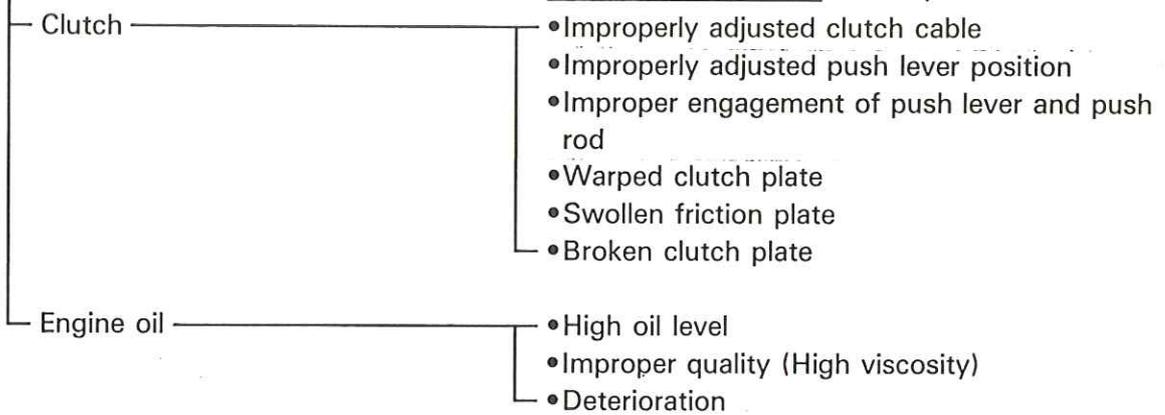
## PROBABLE CAUSE

- |                            |  |
|----------------------------|--|
| Cylinder and cylinder head | • Loose spark plug<br>• Broken cylinder head gasket<br>• Broken cylinder gasket<br>• Loose cylinder head or cylinder<br>• Worn, damaged or seized cylinder |
| Piston and piston ring     | • Improperly installed piston ring<br>• Worn, fatigued or broken piston ring<br>• Seized piston ring<br>• Seized or damaged piston                         |
| Crankcase and crankshaft   | • Improperly seated crankcase<br>• Seized crankshaft   |

**FAULTY GEAR SHIFTING**

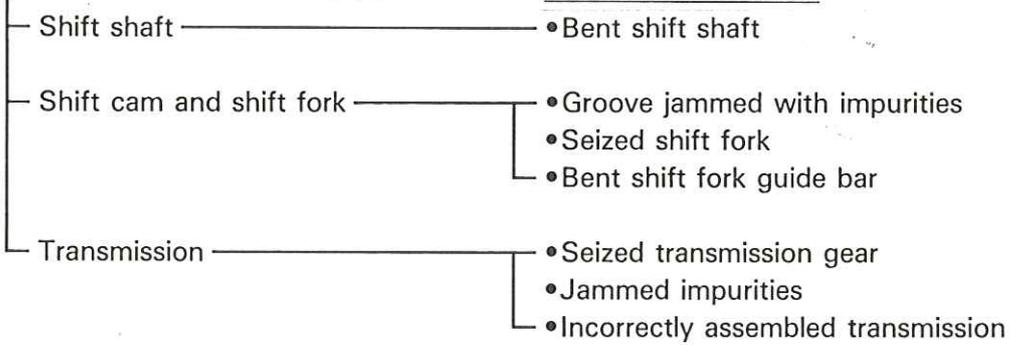
**HARD SHIFTING**

PROBABLE CAUSE



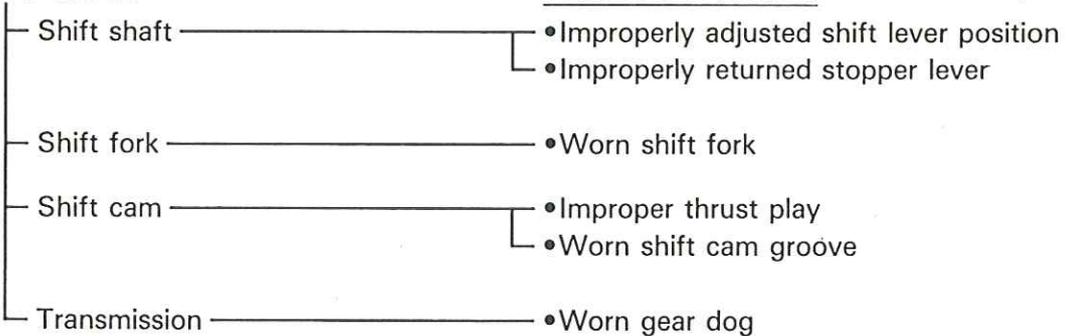
**CHANGE PEDAL DOES NOT MOVE**

PROBABLE CAUSE



**JUMP-OUT GEAR**

PROBABLE CAUSE

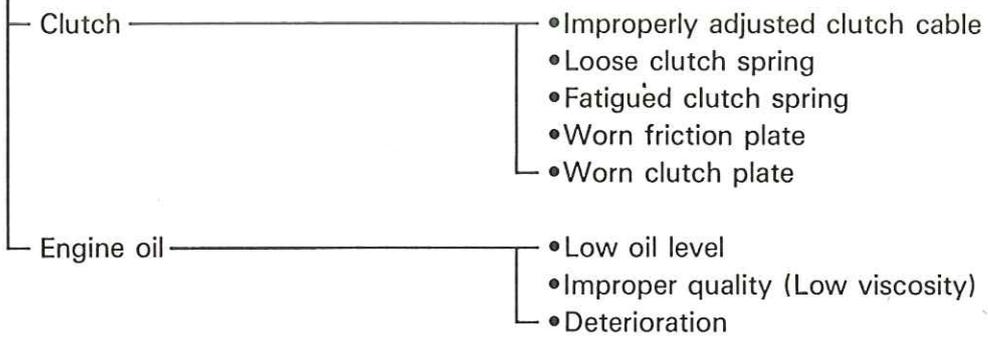


# CLUTCH SLIPPING/DRAGGING

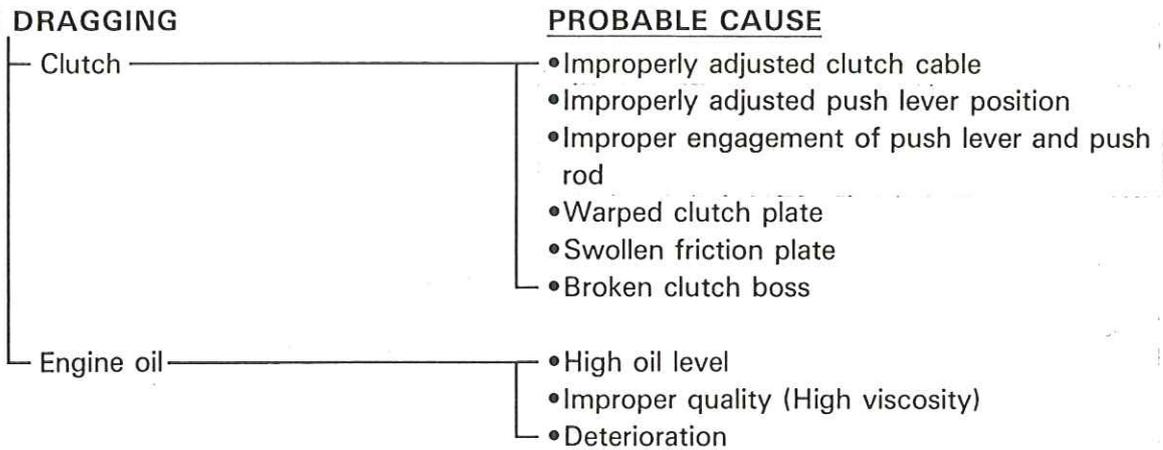
TRBL SHTG	?
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## CLUTCH SLIPPING/DRAGGING

### CLUTCH SLIPPING

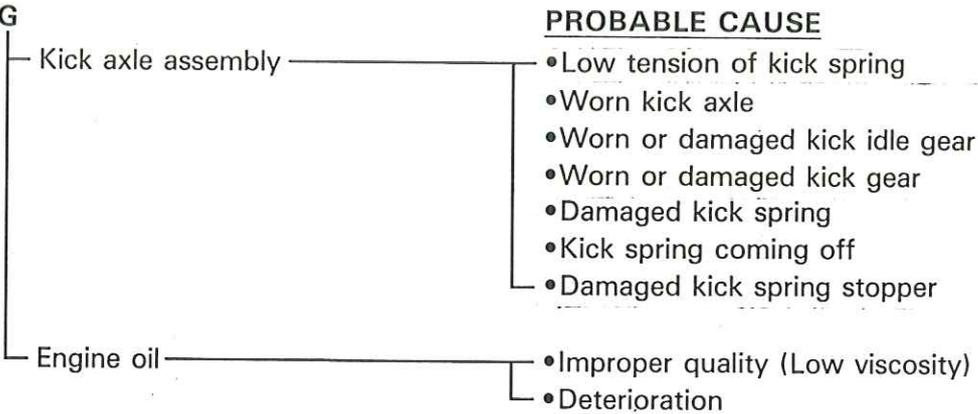


### CLUTCH DRAGGING

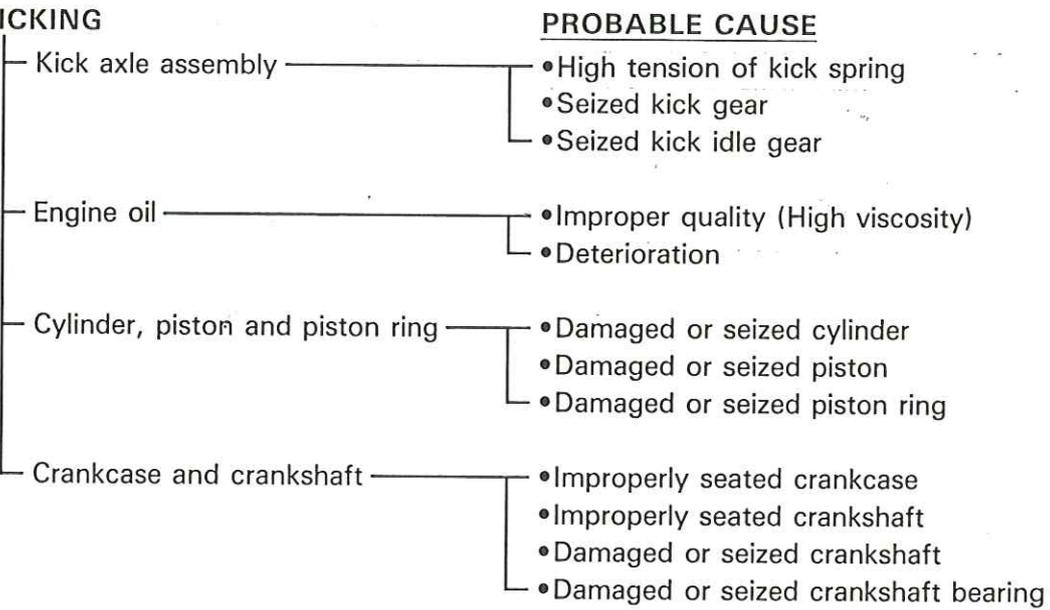


**IMPROPER KICKING**

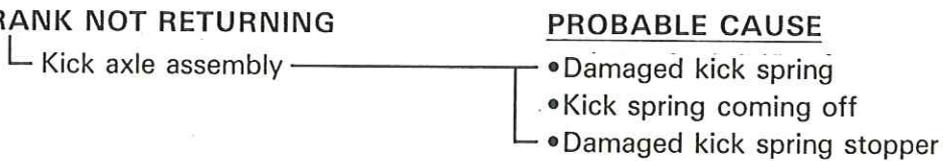
**SLIPPING**



**HARD KICKING**



**KICK CRANK NOT RETURNING**



# FAULTY BRAKE/FRONT FORK OIL LEAKAGE AND FRONT FORK MALFUNCTION

TRBL  
SHTG

?

## FAULTY BRAKE

### POOR BRAKING EFFECT

### PROBABLE CAUSE

- Worn brake pad
- Worn brake disc
- Air in brake fluid
- Leaking brake fluid
- Faulty cylinder kit cup
- Faulty caliper kit seal
- Loose union bolt
- Broken brake hose
- Oily or greasy brake disc
- Oily or greasy brake pad
- Improper brake fluid level

## FRONT FORK OIL LEAKAGE AND FRONT FORK MALFUNCTION

### OIL LEAKAGE

### PROBABLE CAUSE

- Bent, damaged or rusty inner tube
- Damaged or cracked outer tube
- Damaged oil seal lip
- Improperly installed oil seal
- Improper oil level (too much)
- Loose damper rod holding bolt
- Broken cap bolt O-ring
- Loose drain bolt
- Damaged drain bolt gasket

### MALFUNCTION

### PROBABLE CAUSE

- Bent, deformed or damaged inner tube
- Bent or deformed outer tube
- Damaged fork spring
- Worn or damaged slide metal
- Bent or damaged damper rod
- Improper oil viscosity
- Improper oil level

**INSTABLE HANDLING**

**INSTABLE HANDLING**

**PROBABLE CAUSE**

Handlebars	<ul style="list-style-type: none"> <li>• Improperly installed or bent</li> </ul>
Steering	<ul style="list-style-type: none"> <li>• Improperly installed handle crown</li> <li>• Bent under-bracket</li> <li>• Improperly installed steering shaft (Improperly tightened ringnut)</li> <li>• Damaged bearing or bearing race</li> </ul>
Front forks	<ul style="list-style-type: none"> <li>• Uneven oil levels on both sides</li> <li>• Uneven air pressures on both sides</li> <li>• Broken spring</li> <li>• Twisted front forks</li> </ul>
Tires	<ul style="list-style-type: none"> <li>• Uneven tire pressures on both sides</li> <li>• Incorrect tire pressure</li> <li>• Unevenly worn tires</li> </ul>
Wheels	<ul style="list-style-type: none"> <li>• Incorrect wheel balance</li> <li>• Deformed wheel</li> <li>• Loose bearing</li> <li>• Bent or loose wheel axle</li> <li>• Excessive wheel run-out</li> </ul>
Frame	<ul style="list-style-type: none"> <li>• Twisted</li> <li>• Damaged head pipe</li> <li>• Improperly installed bearing race</li> </ul>
Swingarm	<ul style="list-style-type: none"> <li>• Worn bearing or bush</li> <li>• Bent or damaged</li> </ul>
Rear shock absorber	<ul style="list-style-type: none"> <li>• Fatigued spring</li> <li>• Improperly adjusted spring preload and damping</li> <li>• Oil leakage</li> </ul>
Drive chain	<ul style="list-style-type: none"> <li>• Improperly adjusted chain slack</li> </ul>

**FAULTY SIGNAL AND LIGHTING SYSTEM**

**HEADLIGHT DARK**

PROBABLE CAUSE

- Improper bulb
- Too many electric accessories
- Hard charging (Broken charging coil and/or faulty rectifier/regulator)
- Incorrect connection
- Improperly grounded
- Poor contacts (main or light switch)
- Bulb life expired

**BULB BURNT OUT**

PROBABLE CAUSE

- Improper bulb
- Faulty battery
- Faulty rectifier/regulator
- Improperly grounded
- Faulty main and/or light switch
- Bulb life expired

**FLASHER DOES NOT LIGHT**

PROBABLE CAUSE

- Improperly grounded
- Discharged battery
- Faulty "TURN" switch
- Faulty flasher relay
- Broken wireharness
- Loosely connected coupler
- Bulb burnt out

**FLASHER KEEPS ON**

PROBABLE CAUSE

- Faulty flasher relay
- Insufficient battery capacity (nearly discharged)
- Bulb burnt out
- Faulty "TURN" switch

# FAULTY SIGNAL AND LIGHTING SYSTEM/ OVERHEATING

TRBL  
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## FLASHER WINKS SLOWER

### PROBABLE CAUSE

- Faulty flasher relay
- Insufficient battery capacity (nearly discharged)
- Improper bulb
- Faulty main and/or "TURN" switch

## FLASHER WINKS QUICKER

### PROBABLE CAUSE

- Improper bulb
- Faulty flasher relay

## HORN IS INOPERATIVE

### PROBABLE CAUSE

- Faulty battery
- Faulty main and/or horn switch
- Improperly adjusted horn
- Faulty horn
- Broken wireharnes

## OVERHEATING

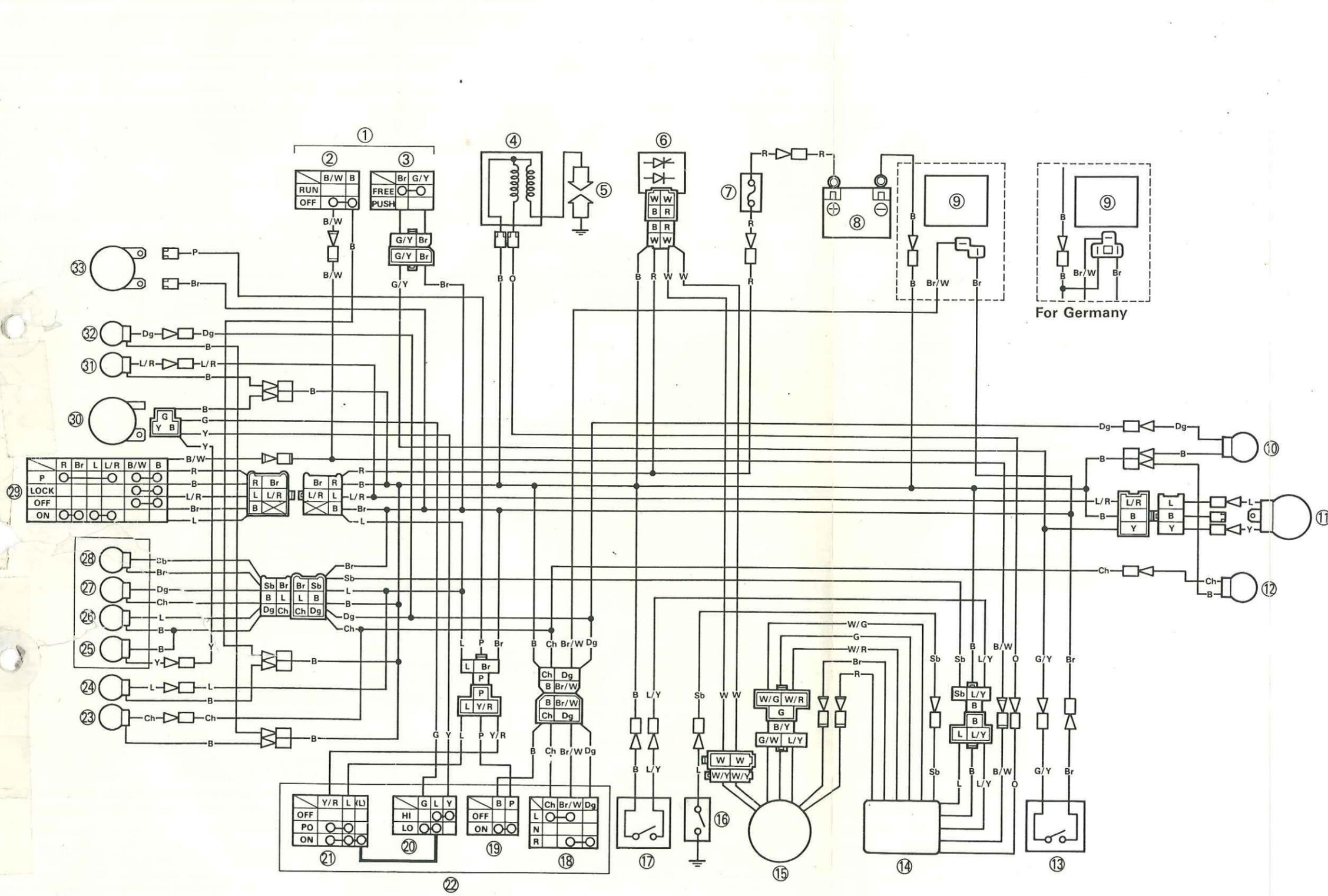
### OVERHEATING

### PROBABLE CAUSE

- Ignition system
  - Improper spark plug gap
  - Improper spark plug heat range
  - Faulty C.D.I. unit
- Fuel system
  - Improper carburetor main jet (Improper setting)
  - Improperly adjusted fuel height
  - Clogged air cleaner element
- Compression system
  - Heavy carbon build-up
- Engine oil
  - Incorrect oil level
  - Improper oil viscosity
  - Inferior oil quality
- Brake
  - Dragging brake



# XT600 WIRING DIAGRAM



- ① Handlebar switch (R)
- ② "ENGINE STOP" switch
- ③ Front brake switch
- ④ Ignition coil
- ⑤ Spark plug
- ⑥ Rectifier/Regulator
- ⑦ Fuse
- ⑧ Battery
- ⑨ Flasher relay
- ⑩ Rear flasher light (R)
- ⑪ Tail/Brake light
- ⑫ Rear flasher light (L)
- ⑬ Rear brake switch
- ⑭ C.D.I. unit
- ⑮ C.D.I. magneto
- ⑯ Neutral switch
- ⑰ Sidestand switch
- ⑱ Handlebar switch (L)
- ⑲ "TURN" switch
- ⑲ "HORN" switch
- ⑲ "LIGHTS" (Dimmer) switch
- ⑲ "LIGHTS" switch
- ⑲ Front flasher light (L)
- ⑲ Speedometer light
- ⑲ "HIGH BEAM" indicator light
- ⑲ Tachometer light
- ⑲ "TURN" indicator light
- ⑲ "NEUTRAL" indicator light
- ⑲ Main switch
- ⑲ Headlight
- ⑲ Auxiliary light
- ⑲ Front flasher light (R)
- ⑲ Horn

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

For Germany