



YAMAHA

302 motorcycle

XV250

Service Manual

YAMAHA

**XV250G
XV250GC**

**SUPPLEMENTARY
SERVICE MANUAL**

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and data for the XV250G/XV250GC. For complete service information procedures it is necessary to use this Supplementary Service Manual together with the following manual.

XV250U/XV250UC SERVICE MANUAL: 2UJ-28197-10
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XV250G/XV250GC SUPPLEMENTARY SERVICE MANUAL

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1st Edition, September 1994

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NOTICE

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

For USA, California

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

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

NOTE:

FOR USA, California:

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

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.



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

⚠ WARNING

Failure to follow WARNING instructions could result in severe injury or death to the motorcycle operator, a bystander, or a person inspecting or repairing the motorcycle.

CAUTION:

A CAUTION indicates special precautions that must be taken to avoid damage to the motorcycle.

NOTE:

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

HOW TO USE THIS MANUAL

CONSTRUCTION OF THIS MANUAL

This manual consists of chapters for the main categories of subject. (See "Illustrated symbols")

- 1st title ① : This is a chapter with its symbol on the upper right of each page.
- 2nd title ② : This title appears on the upper of each page on the left of the chapter symbol. (For the chapter "Periodic inspection and adjustment" the 3rd title appears.)
- 3rd title ③ : This is a final title.

MANUAL FORMAT

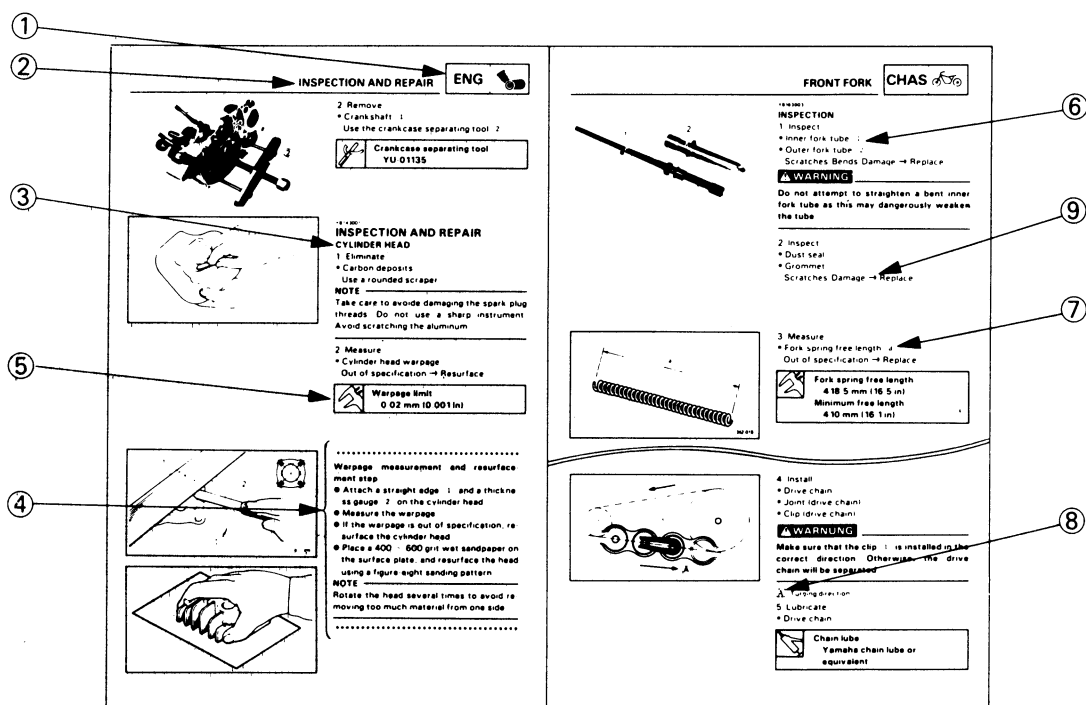
All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspections. A set of particularly important procedure ④ is placed between a line of asterisks "*" with each procedure preceded by "●".

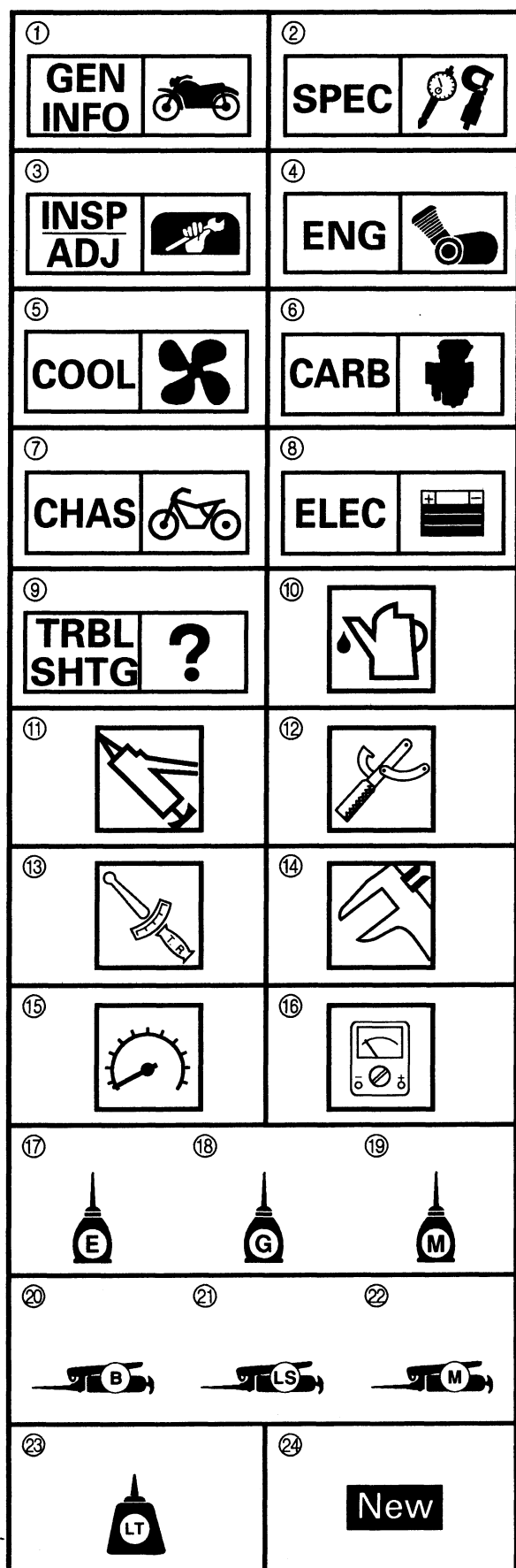
IMPORTANT FEATURES

- Data and a special tool are framed in a box preceded by a relevant symbol ⑤.
- An encircled numeral ⑥ indicates a part name, and an encircled alphabetical letter data or an alignment mark ⑦, the others being indicated by an alphabetical letter in a box ⑧.
- A condition of a faulty component will precede an arrow symbol and the course of action required the symbol ⑨.

EXPLODED DIAGRAM

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





ILLUSTRATED SYMBOLS (Refer to the illustration)

Illustrated symbols ① to ⑨ are designed as thumb tabs to indicate the chapter's number and 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 are used to identify the specifications appearing in the text.

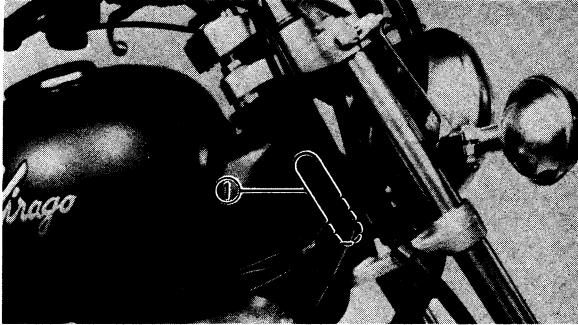
- ⑩ Filling fluid
- ⑪ Lubricant
- ⑫ Special tool
- ⑬ Tightening
- ⑭ Wear limit, clearance
- ⑮ Engine speed
- ⑯ Ω , V, A

Illustrated symbols ⑰ to ㉔ in the exploded diagram indicate grade of lubricant and location of lubrication point.

- ⑰ Apply engine oil
- ⑱ Apply gear oil
- ⑲ Apply molybdenum disulfide oil
- ㉑ Apply wheel bearing grease
- ㉒ Apply lightweight lithium-soap base grease
- ㉓ Apply molybdenum disulfide grease
- ㉔ Apply locking agent (LOCTITE®)
- ㉕ Use new one

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GENERAL INFORMATION

MOTORCYCLE IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

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

Starting serial number:

(For USA)

XV250GJYA2UJE0*SA035101

(For California)

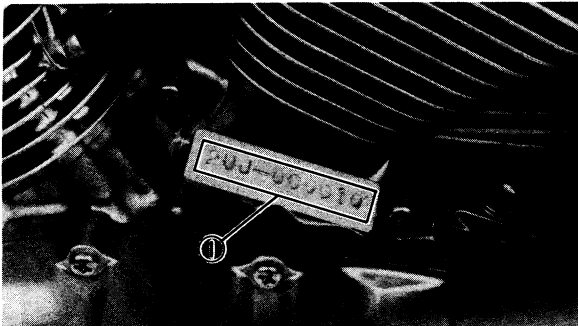
XV250GCJYA3BGC0*SA006101

(For CDN)

XV250SGJYA3DNN0*SA007101

NOTE:

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



ENGINE SERIAL NUMBER

The engine serial number ① is stamped into the crankcase.

Starting serial number:

(For USA)

XV250G2UJ-035101

(For California)

XV250GC3BG-006101

(For CDN)

XV250SG3DN-007101

NOTE:

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



SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	XV250(S)G/XV250GC
Model code number:	2UJ4 (USA) 3BG4 (California) 3DN5 (CDN)
Vehicle identification number:	JYA2UJE0*SA035101 (USA) JYA3BGC0*SA006101 (California) JYA3DNN0*SA007101 (CDN)
Engine starting number:	2UJ-035101 (USA) 3BG-006101 (California) 3DN-007101 (CDN)
Dimensions: Overall length Overall width Overall height Seat height Wheelbase Minimum ground clearance	2,190 mm (86.2 in) 815 mm (32.1 in) 1,140 mm (44.9 in) 685 mm (27.0 in) 1,490 mm (58.7 in) 145 mm (5.7 in)
Basic weight: With oil and full fuel tank	147 kg (324 lb) (USA, CDN) 148 kg (326 lb) (California)
Oil type or grade: Engine oil	Yamalube 4 or SAE 20W40 type SE/SF motor oil SAE 10W30 type SE/SF motor oil
Oil capacity: Engine oil: Periodic oil change With oil filter replacement Total amount	1.4 L (1.2 Imp qt, 1.5 US qt) 1.6 L (1.4 Imp qt, 1.7 US qt) 1.8 L (1.6 Imp qt, 1.9 US qt)
Spark plug: Type Manufacturer Spark plug gap	C6HSA/U20FS-U (USA, California) CR6HSA/U20FSR-U (CDN) NGK/NIPPONDENSO 0.6 ~ 0.7 mm (0.024 ~ 0.028 in)
Tire: Type Size Manufacturer Type	front rear With tube 3.00-18 47P 130/90-15M/C 66P CHENG SHIN CHENG SHIN C916 C915 front rear

GENERAL SPECIFICATIONS/ MAINTENANCE SPECIFICATIONS

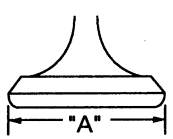
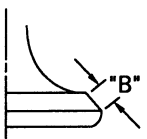
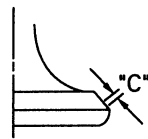
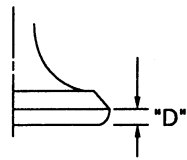
SPEC



Model	XV250(S)G/XV250GC
Tire pressure (cold tire): Maximum load-except motorcycle Loading condition A* front rear Loading condition B* front rear	183 kg (404 lb) (USA, CDN) 182 kg (401 lb) (California) 0 ~ 90 kg (0 ~ 198 lb) 175 kPa (1.75 kg/cm ² , 25 psi) 200 kPa (2.0 kg/cm ² , 28 psi) 90 kg (198 lb) ~ Maximum load 200 kPa (2.0 kg/cm ² , 28 psi) 225 kPa (2.25 kg/cm ² , 32 psi) * Load is the total weight of cargo, rider, passenger and accessories.
Shock absorber: Front shock absorber Rear shock absorber	Coil spring/Oil damper Coil spring/Oil damper
Bulb wattage × quantity: Headlight Tail/brake light Front flasher light Rear flasher light Meter light Indicator light: "NEUTRAL" "HIGH BEAM" "TURN"	12V, 65W/60W × 1 12V, 8W/27W × 1 12V, 8W/27W × 2 12V, 27W × 2 12V, 3W × 1 12V, 3W × 1 12V, 1.7W × 1 12V, 3W × 1

MAINTENANCE SPECIFICATIONS

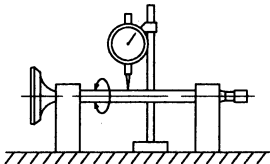
ENGINE

Model	XV250(S)G/XV250GC
Valve, valve seat, valve guide: Valve clearance (cold): IN. EX. Valve dimensions:    	0.08 ~ 0.12 mm (0.003 ~ 0.005 in) 0.10 ~ 0.14 mm (0.004 ~ 0.006 in) 25.9 ~ 26.1 mm (1.020 ~ 1.028 in) 21.9 ~ 22.1 mm (0.862 ~ 0.870 in) 1.4 ~ 3.2 mm (0.055 ~ 0.126 in) 1.7 ~ 2.8 mm (0.067 ~ 0.110 in) 0.9 ~ 1.1 mm (0.035 ~ 0.043 in) 0.9 ~ 1.1 mm (0.035 ~ 0.043 in) <Limit> <1.6 mm (0.063 in)> <1.6 mm (0.063 in)> 0.4 ~ 0.8 mm (0.016 ~ 0.031 in) 0.8 ~ 1.2 mm (0.031 ~ 0.047 in) 4.975 ~ 4.990 mm (0.1959 ~ 0.1965 in) 4.960 ~ 4.975 mm (0.1953 ~ 0.1959 in) <Limit> <4.950 mm (0.1949 in)> <4.953 mm (0.1950 in)>
"A" Head dia. "B" Face width "C" Seat width <Limit> "D" Margin thickness Stem outside dia. <Limit>	IN. EX. IN. EX. IN. EX. IN. EX. IN. EX. IN. EX. IN. EX. IN. EX.

MAINTENANCE SPECIFICATIONS

SPEC



Model		XV250(S)G/XV250GC
Guide inside dia.	IN.	5.000 ~ 5.012 mm (0.1969 ~ 0.1973 in)
	EX.	5.000 ~ 5.012 mm (0.1969 ~ 0.1973 in)
<Limit>	IN.	<5.03 mm (0.198 in)>
	EX.	<5.03 mm (0.198 in)>
Stem-to-guide clearance	IN.	0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in)
	EX.	0.025 ~ 0.052 mm (0.0010 ~ 0.0020 in)
<Limit>	IN.	<0.08 mm (0.0031 in)>
	EX.	<0.10 mm (0.0039 in)>
Stem runout limit		<0.02 mm (0.0008 in)>
		
Carburetor:		
I.D. mark		2UJ10 (USA) 3BG10 (California) 3DM10 (CDN)
Main jet	(M.J.)	#110
Main air jet	(M.A.J.)	#60
Jet needle	(J.N.)	4DM3-1 (USA, California) 4DM1-3 (CDN)
Needle jet	(N.J.)	O-0
Pilot jet	(P.J.)	#17.5
Pilot air jet	(P.A.J.)	#155
Pilot screw	(P.S.)	3-1/4 (USA, California) 2-5/8 (CDN)
Pilot outlet	(P.O.)	ø0.85
Bypass	(B.P. 1)	ø0.8
	(B.P. 2)	ø0.8
	(B.P. 3)	ø0.8
Valve seat size	(V.S.)	ø1.0
Starter jet	(G.S. 1)	#25
	(G.S. 2)	0.7
Throttle valve size	(Th.V.)	#140
Fuel level	(F.L.)	16.5 ~ 17.5 mm (0.65 ~ 0.69 in)
Engine idling speed		1,350 ~ 1,450 r/min (USA, California) 1,250 ~ 1,350 r/min (CDN)
Intake vacuum		47.9 kPa (360 mmHg, 14.17 inHg)



CHASSIS

Model	XV250(S)G/XV250GC
Front suspension: Front fork travel Fork spring free length <Limit> Spring rate: K1 K2 Stroke: K1 K2 Optional spring Oil capacity Oil level Oil grade	140 mm (5.5 in) 415 mm (16.3 in) <410 mm (16.1 in)> 7.85 N/mm (0.8 kg/mm, 44.8 lb/in) 11.28 N/mm (1.15 kg/mm, 64.4 lb/in) 0 ~ 106 mm (0 ~ 4.17 in) 106 ~ 140 mm (4.17 ~ 5.51 in) No 245 cm ³ (8.64 Imp oz, 8.28 US oz) 120 mm (4.72 in) From top of fully compressed inner tube without fork spring Yamaha fork oil 10WT
Rear suspension: Shock absorber travel Spring free length <Limit> Fitting length Spring rate: K1 K2 Stroke: K1 K2 Optional spring	70 mm (2.76 in) 233 mm (9.17 in) <226 mm (8.90 in)> 207.5 mm (8.17 in) 15.7 N/mm (1.6 kg/mm, 89.6 lb/in) 22.6 N/mm (2.3 kg/mm, 129 lb/in) 0 ~ 48 mm (0 ~ 1.89 in) 48 ~ 70 mm (1.89 ~ 2.76 in) No
Front wheel: Type Rim size Rim material Rim runout limit: radial lateral	Spoke wheel 18 × 1.60 Steel <2 mm (0.08 in)> <2 mm (0.08 in)>
Rear wheel: Type Rim size Rim material Rim runout limit: radial lateral	Spoke wheel 15M/C × MT2.75 Steel <2 mm (0.08 in)> <2 mm (0.08 in)>
Drive chain: Type/manufacturer No. of links Drive chain slack	520DS/DAIDO 114 30 ~ 40 mm (1.2 ~ 1.6 in)
Front disc brake: Type Disc outside diameter × thickness Pad thickness: inner <Limit>* outer <Limit>*  Master cylinder inside diameter Caliper cylinder inside diameter Brake fluid type	Single 282 × 5.0 mm (11.1 × 0.20 in) 6.2 mm (0.24 in) <0.8 mm (0.03 in)> 6.2 mm (0.24 in) <0.8 mm (0.03 in)> 12.70 mm (0.50 in) 25.40 mm (1.00 in) + 30.10 mm (1.19 in) DOT #4

MAINTENANCE SPECIFICATIONS

SPEC



Model	XV250(S)G/XV250GC
Rear drum brake:	
Type	Leading and trailing
Drum inside diameter	130 mm (5.12 in)
<Limit>	<131 mm (5.16 in)>
Lining thickness	4 mm (0.16 in)
<Limit>	<2 mm (0.08 in)>
Shoe spring free length	50.5 mm (1.99 in)

Tightening torques

Part to be tightened	Thread size	Tightening torque			Remarks
		Nm	m • kg	ft • lb	
Headlight stay and headlight (lower)	M6 × 1.0	7	0.7	5.1	See NOTE. 
Headlight stay and flasher light	M12 × 1.25	23	2.3	17	
Handlebar crown and inner tube	M8 × 1.25	30	3.0	22	
Steering stem and ring nut	M25 × 1.0	38	3.8	27	
Handlebar crown and handlebar holder (lower)	M10 × 1.25	23	2.3	17	
Handlebar and handlebar holder (upper)	M8 × 1.25	23	2.3	17	
Front brake disc and hub	M8 × 1.25	23	2.3	17	
Front brake hose and caliper	M10 × 1.25	30	3.0	22	
Front brake caliper and caliper bracket	M8 × 1.25	23	2.3	17	
Caliper bracket and frontfork	M10 × 1.25	35	3.5	25	
Master cylinder and bracket	M6 × 1.0	7	0.7	5.1	
Engine stay (front) and frame	M10 × 1.25	40	4.0	28	
Engine stay (rear) and frame	M8 × 1.25	35	3.5	25	
Engine (front) and frame	M8 × 1.25	40	4.0	28	
Engine (rear-upper) and engine stay (rear)	M8 × 1.25	35	3.5	25	
Engine (rear-lower) and frame	M8 × 1.25	35	3.5	25	
Footrest	M10 × 1.25	40	4.0	28	
Sidestand	M10 × 1.25	23	2.3	17	
Pivot shaft and swingarm	M12 × 1.25	46	4.6	33	
Fuel tank and frame	M8 × 1.25	16	1.6	11	
Seat (rear) and reinforcement	M8 × 1.25	16	1.6	11	
Rear shock absorber (upper)	M8 × 1.25	23	2.3	17	
Rear shock absorber (lower)	M8 × 1.25	23	2.3	17	
Rear wheel axle	M14 × 1.5	104	10.4	75	
Rear fender and flasher light stay	M8 × 1.25	10	1.0	7.2	
Brake rod and swingarm	M8 × 1.25	23	2.3	17	
Brake rod and brake shoe plate	M8 × 1.25	23	2.3	17	
Sidestand switch pannel and frame	M6 × 1.0	13	1.3	9.4	

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 20 Nm (2.0 m • kg, 14 ft • lb).



ELECTRICAL

Model	XV250(S)G/XV250GC
Ignition coil: Model/manufacturer Minimum spark gap Primary winding resistance Secondary winding resistance	JO226, JO227/NIPPONDENSO 6 mm (0.24 in) 3.2 ~ 4.8Ω at 20°C (68°F) 10.4 ~ 15.6kΩ at 20°C (68°F)
A.C. generator: Model/manufacturer Nominal output	LMZ65/NIPPONDENSO 14V, 25A at 5,000 r/min
Output current (A) Engine speed (x10³ r/min)	
Stator coil resistance	0.21 ~ 0.31Ω at 20°C (68°F) (White – White)
Rectifier/regulator: Type Model/manufacturer No load regulated voltage Capacity Withstand voltage	Semiconductor – short circuit SH650/SHINDENGEN 14.2 ~ 15.2V 18A 240V
Electric starter system: Type Starter motor: Model/manufacturer Output Armature coil resistance Brush: Overall length <Limit> Spring pressure Commutator: Outside diameter <Wear limit> Mica undercut Starter relay: Model/manufacturer Amperage rating Coil winding resistance	Constant mesh type 2UJ/YAMAHA 0.4 kW 0.019 ~ 0.023Ω at 20°C (68°F) 10 mm(0.39 in) <3.5 mm (0.14 in)> 560 ~ 840 g (19.8 ~ 29.7 oz) 22 mm (0.87 in) <21 mm (0.83 in)> 1.5 mm (0.059 in) A104-128/HITACHI 100A 3.0 ~ 3.7Ω at 20°C (68°F)

MAINTENANCE SPECIFICATIONS

SPEC

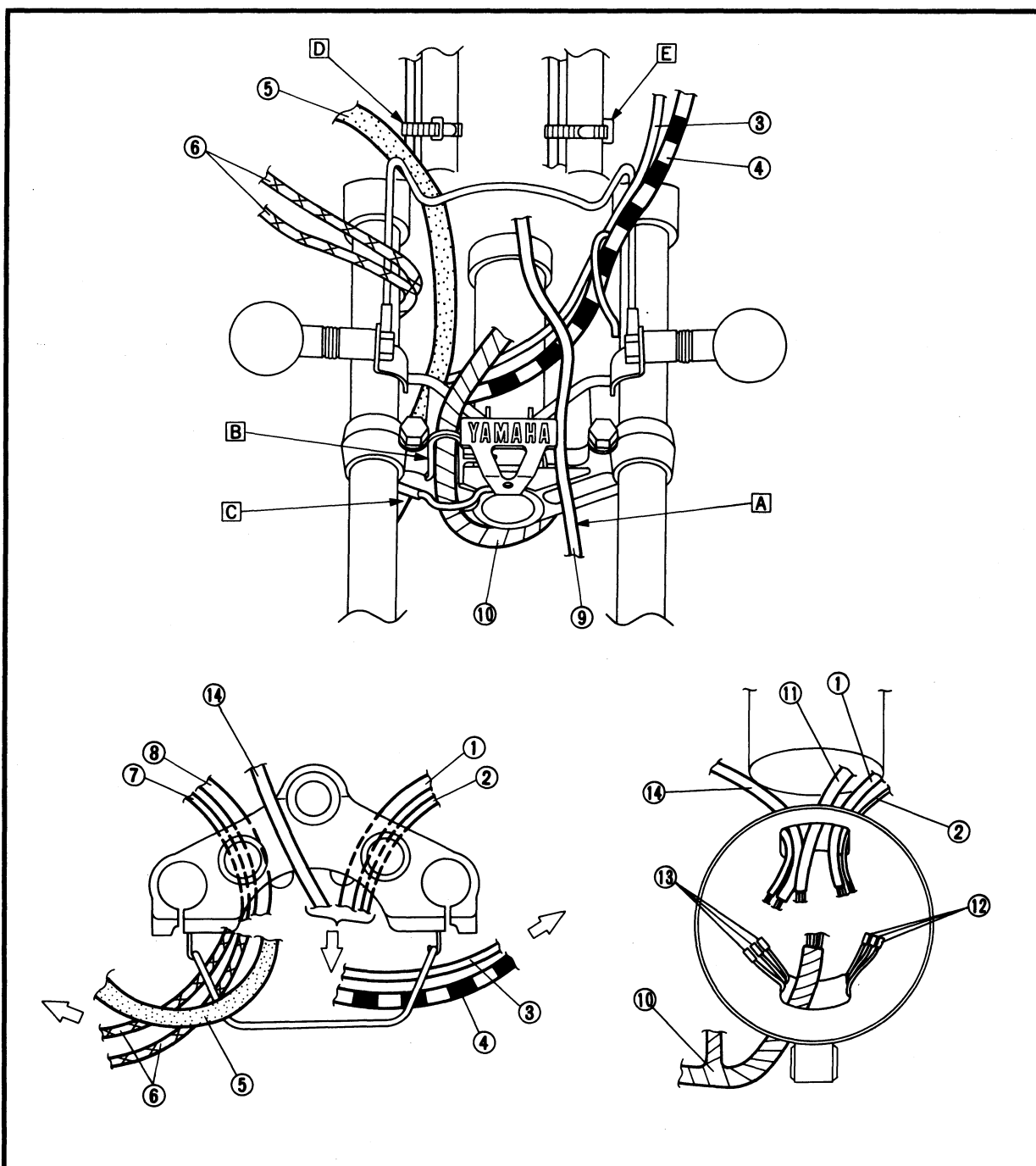


Model	XV250(S)G/XV250GC
Flasher relay: Type Model/manufacture Self-cancelling device Flasher frequency Wattage	Full-transistor FE246BH/NIPPONDENSO No 75 ~ 95 cycle/min 27W × 2 + 3W
Carburetor heater: Output Heater resistance	12V 30W × 1 + 14V 20W × 1 (USA) 12V 30W × 1 (California) 12V 30W × 2 (CDN) 6 ~ 10Ω at 23°C (73°F)
Horn: Type/quantity Model/manufacture Maximum amperage	Plain type × 1 MF-12/NIKKO (USA, CDN) GF-12/NIKKO (California) 1.5A
Circuit breaker: Type Amperage for individual circuit × quantity: Main Signal Reserve	Fuse 30A × 1 10A × 1 30A × 1 10A × 1



CABLE ROUTING

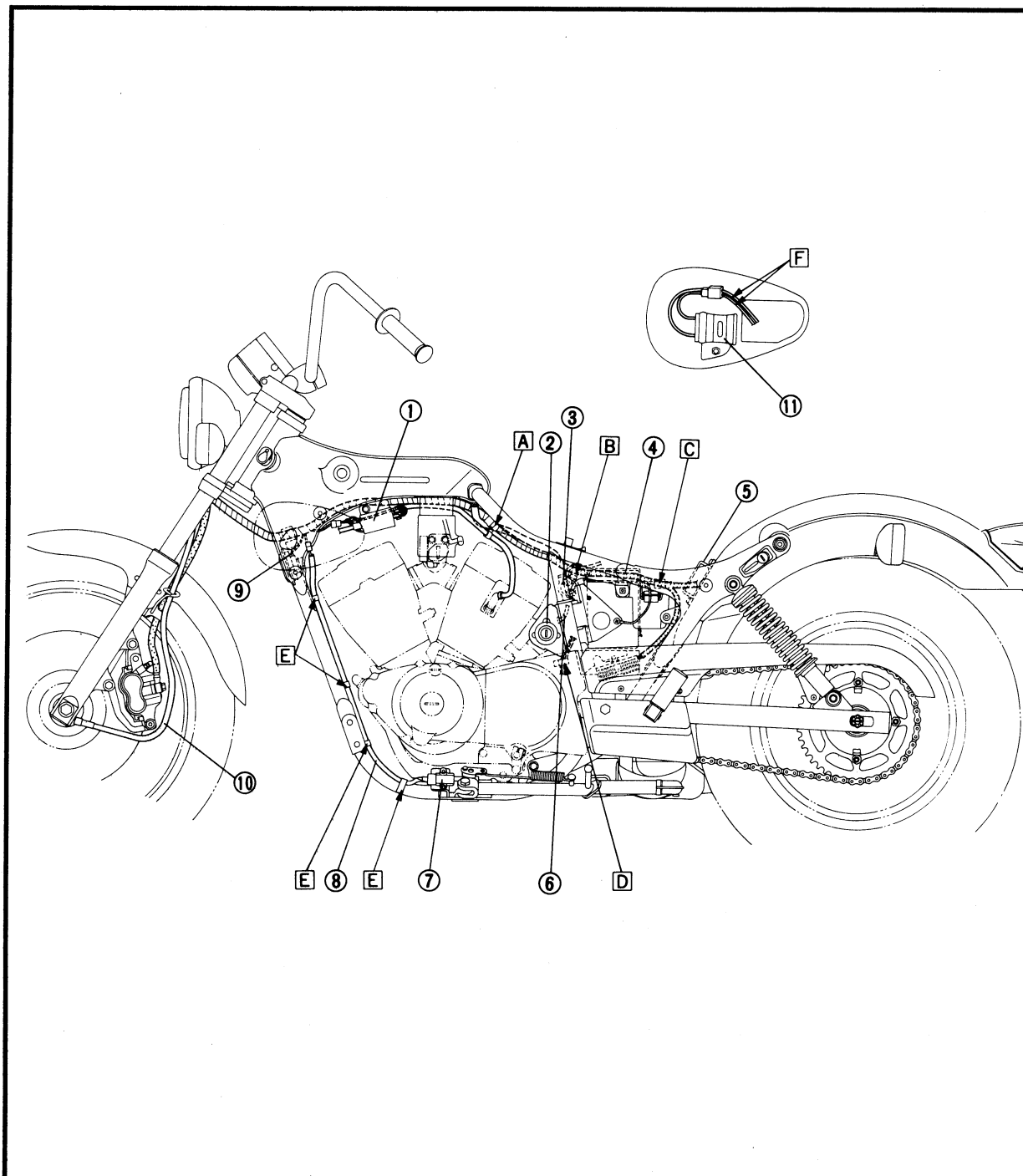
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|---------------------------------|--|
| ① Handlebar switch lead (left) | ⑪ Speedometer lead |
| ② Clutch switch lead | ⑫ Flasher light lead (left) |
| ③ Choke cable | ⑬ Flasher light lead (right) |
| ④ Clutch cable | ⑭ Indicator light lead |
| ⑤ Brake hose | A Pass the speedometer cable in front of the steering stem. |
| ⑥ Throttle cable | B Pass the wire harness through the guide. |
| ⑦ Front brake switch lead | C Clamp the brake hose behind the steering stem. |
| ⑧ Handlebar switch lead (right) | D Clamp the handlebar switch lead (right) and front brake switch lead. |
| ⑨ Speedometer cable | E Clamp the handlebar switch lead (left) and clutch switch lead. |
| ⑩ Wire harness | |





- ① Ignition coil
- ② Main switch
- ③ Starter relay
- ④ Rectifier/regulator
- ⑤ Ignitor unit
- ⑥ Main switch lead
- ⑦ Sidestand switch
- ⑧ Sidestand switch lead
- ⑨ Horn lead
- ⑩ Speedometer cable
- ⑪ Thermo switch

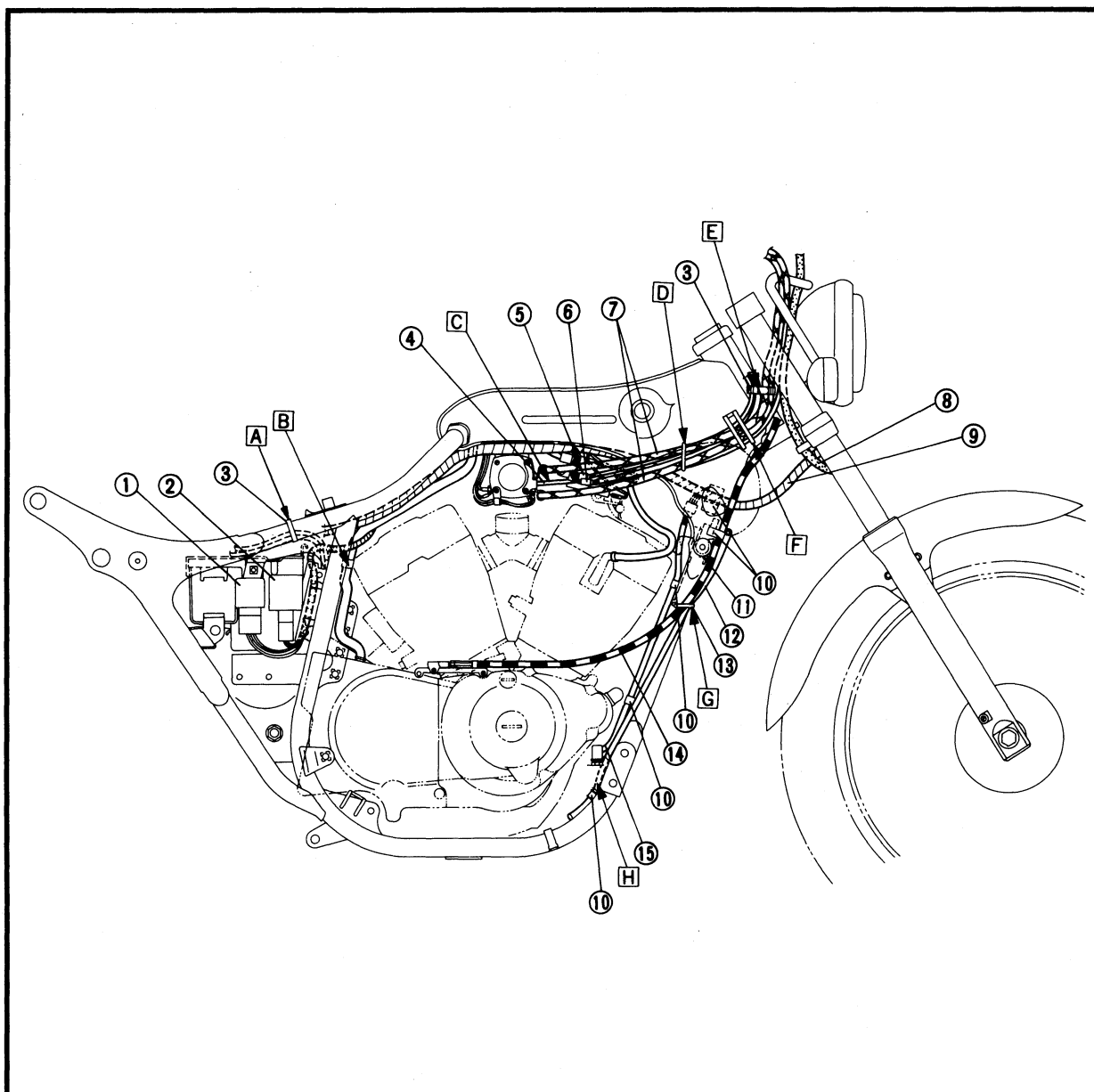
- A Clamp the wire harness.
- B Pass the wire harness and battery positive + lead through the clamp.
- C Pass the rectifier/regulator lead in front of the frame.
- D Clamp the starter motor lead and neutral switch lead.
- E Clamp the sidestand switch lead.
- F To wire harness.





- ① Flasher relay
- ② Starting circuit cut-off relay
- ③ Band
- ④ Choke cable
- ⑤ Handlebar switch lead (right)
- ⑥ Front brake switch lead
- ⑦ Throttle cable
- ⑧ Brake hose
- ⑨ Wire harness
- ⑩ Clamp
- ⑪ Horn
- ⑫ Air cleaner drain hose
- ⑬ Guide
- ⑭ Clutch cable
- ⑮ Rear brake switch

- [A] Clamp the main switch lead and neutral switch lead.
- [B] Clamp the breather hose.
- [C] Pass the choke cable between the ignition coil and bridge plate.
- [D] Pass the throttle cables, handlebar switch lead (right), front brake switch lead and choke cable through the guide.
- [E] Clamp the handlebar switch lead (right), front brake switch lead and throttle cables.
- [F] Pass the throttle cables, handlebar switch lead (right), front brake switch lead and starter cable through the holder.
- [G] Pass the clutch cable and air cleaner drain hose through the guide.
- [H] Pass the air cleaner drain hose inside the engine stay.



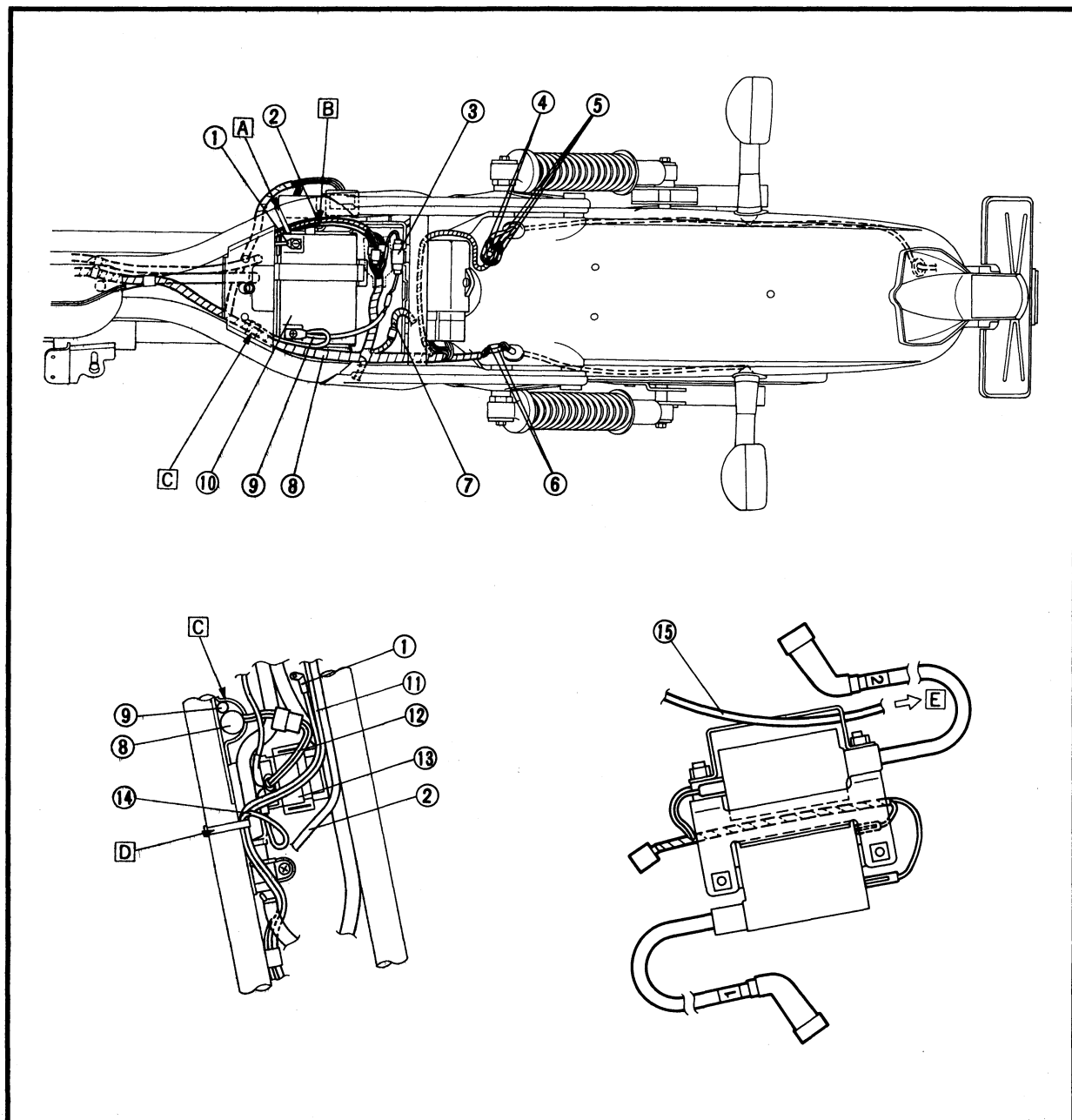
CABLE ROUTING

SPEC



- ① Battery negative $\ominus$ lead
- ② Main switch lead
- ③ Fuse holder
- ④ Flasher light lead (right)
- ⑤ Tail/brake light lead
- ⑥ Flasher light lead (left)
- ⑦ Rectifier/regulator lead
- ⑧ Wire harness
- ⑨ Battery positive $\oplus$ lead
- ⑩ Battery
- ⑪ Neutral switch lead
- ⑫ Starter relay lead

- ⑬ Starter relay
- ⑭ Starter motor lead
- ⑮ Choke cable
- A Clamp the main switch lead and neutral switch lead.
- B Do not pinch the leads with the seat.
- C Clamp the wire harness and battery positive $\oplus$ lead.
- D Clamp the starter motor lead, neutral switch lead and battery negative $\ominus$ lead.
- E To carburetors.



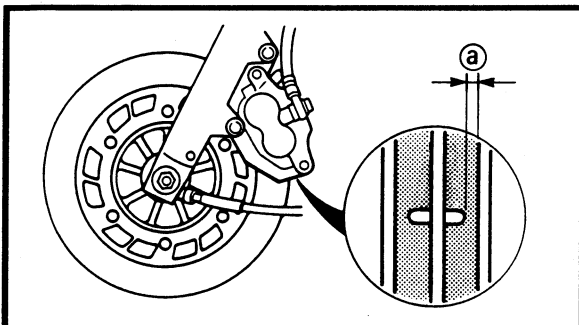


PERIODIC INSPECTION AND ADJUSTMENT

CHASSIS

BRAKE PAD INSPECTION

1. Activate the brake lever.



2. Inspect:

- Brake pad thickness (front)



Wear limit @:
0.8 mm (0.03 in)

Wear/Damage → Replace brake pad as a set.
Refer to the "BRAKE PAD REPLACEMENT"
section .

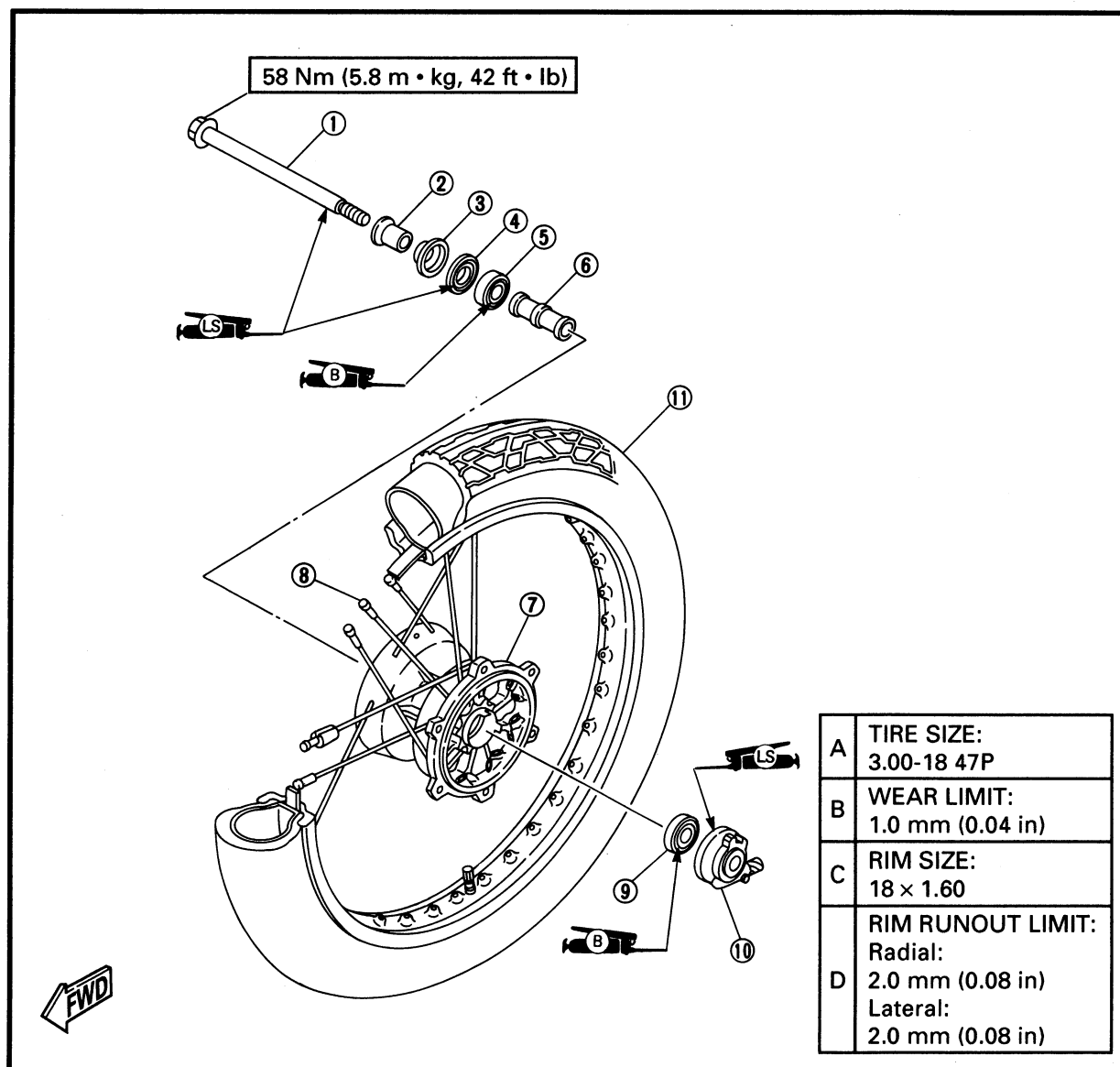
CHASSIS

FRONT WHEEL

- ① Wheel axle
- ② Collar
- ③ Dust seal
- ④ Oil seal
- ⑤ Bearing
- ⑥ Spacer
- ⑦ Hub
- ⑧ Spoke
- ⑨ Bearing
- ⑩ Speedometer gear unit
- ⑪ Tire

Basic weight: With oil and full fuel tank	147 kg (324 lb) (USA, CDN) 148 kg (326 lb) (California)	
Maximum load*:	183 kg (404 lb) (USA, CDN) 182 kg (401 lb) (California)	
Cold tire pressure:	Front	Rear
Up to 90 kg (198 lbs) load*	175 kPa (1.75 kgf/cm ² , 25 psi)	200 kPa (2.0 kgf/cm ² , 28 psi)
90 kg (198 lbs) ~ Maximum load*	200 kPa (2.0 kgf/cm ² , 28 psi)	225 kPa (2.25 kgf/cm ² , 32 psi)

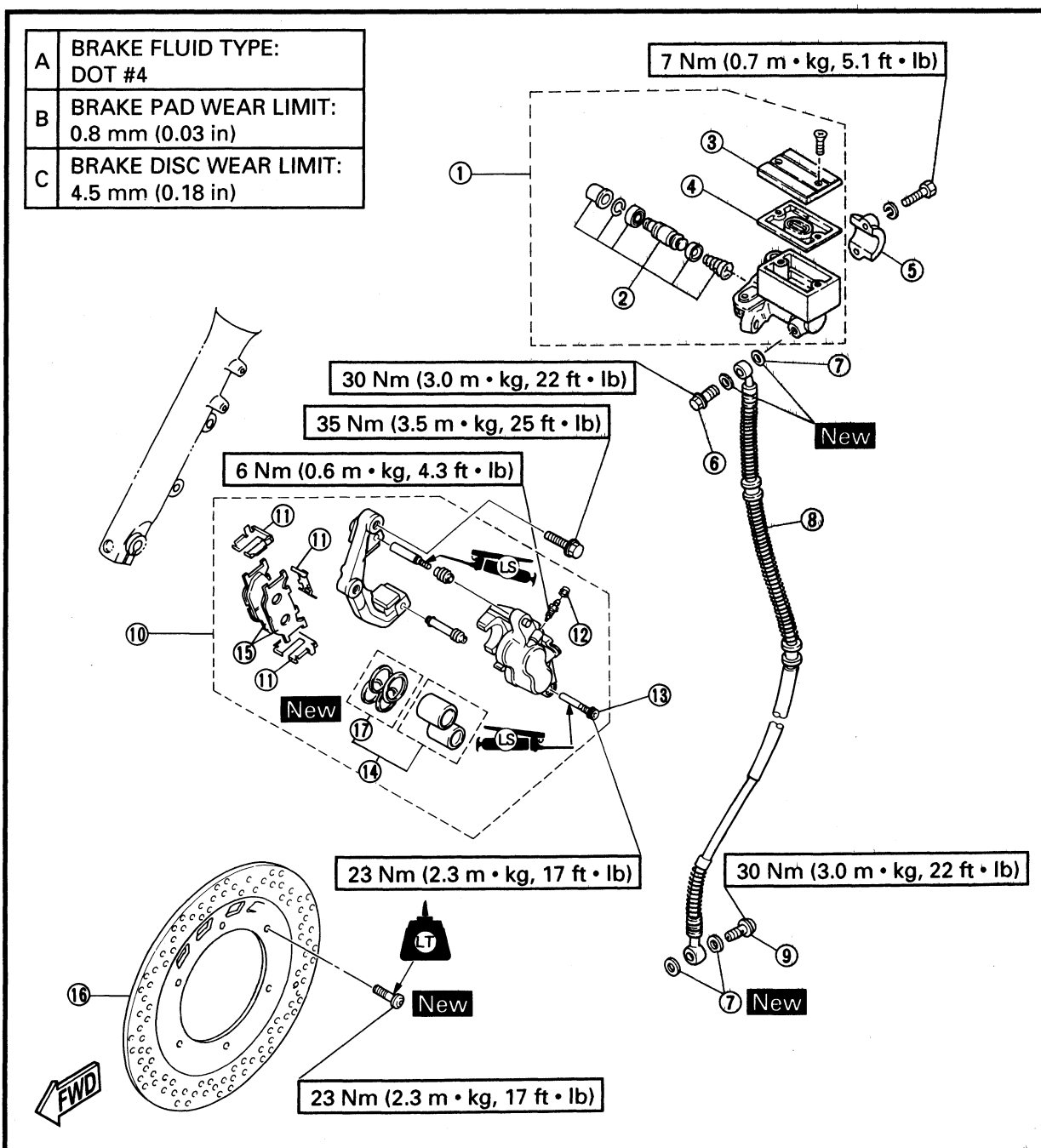
* Load is the total weight of cargo, rider, passenger, and accessories.





FRONT BRAKE

- | | |
|----------------------------|---------------------------|
| ① Master cylinder assembly | ⑩ Caliper assembly |
| ② Master cylinder kit | ⑪ Pad spring |
| ③ Master cylinder cap | ⑫ Bleed screw |
| ④ Diaphragm | ⑬ Retaining bolt |
| ⑤ Bracket | ⑭ Caliper piston assembly |
| ⑥ Union bolt | ⑮ Brake pad |
| ⑦ Copper washer | ⑯ Brake disc |
| ⑧ Brake hose | ⑰ Piston seal |
| ⑨ Union bolt | |



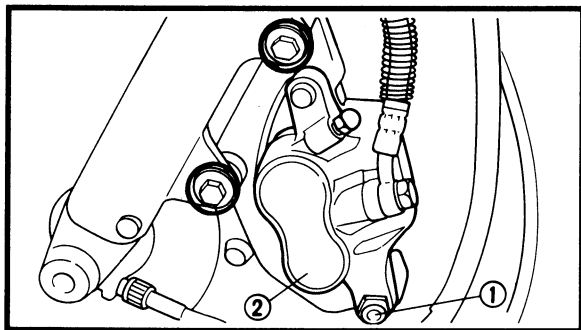
**CAUTION:**

Disc brake components rarely require disassembly. **DO NOT:**

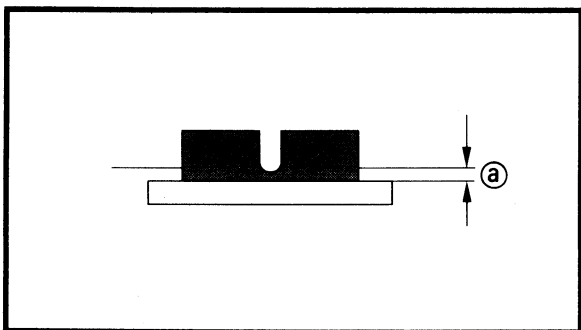
- Disassembly components unless absolutely necessary.
- Use solvents on internal brake components.
- Use contaminated brake fluid for cleaning.
- Allow brake fluid to come in contact with the eyes, otherwise eye injury may occur.
- Allow brake fluid to contact painted surfaces or plastic parts, otherwise damage may occur.
- Disconnect any hydraulic connection, otherwise the entire system must be disassembled, drained, cleaned, and then, properly filled and bled after reassembly.

BRAKE PAD REPLACEMENT**NOTE:**

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

**1. Remove:**

- Retaining bolt ①
- Caliper assembly ②

**2. Remove:**

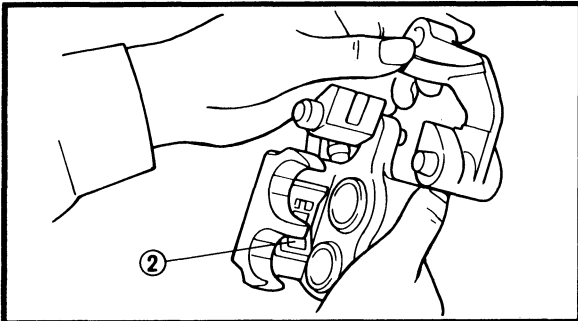
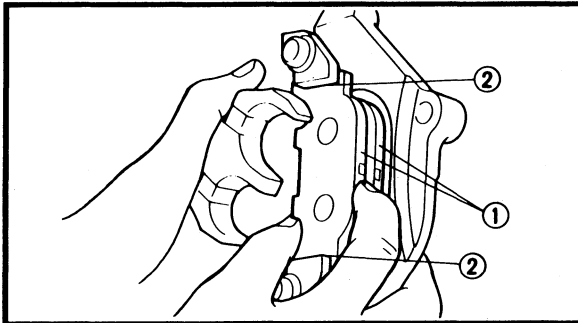
- Brake pads

NOTE:

- Replace the pad spring if pad replacement is required.
- Replace the pads as a set if either is found to be worn to the wear limit.

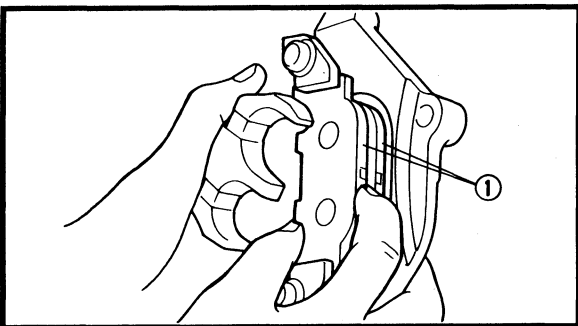


Wear limit ②:
0.8 mm (0.03 in)



3. Install:

- Brake pads ①
- Pad springs ②



Installation steps:

- Tightly connect a suitable hose to the caliper bleed screw. Then, place the other end of that hose into an open container.
- Loosen the caliper bleed screw and push the piston into the caliper using your finger.
- Tighten the caliper bleed screw.



Caliper bleed screw:
6 Nm (0.6 m • kg, 4.3 ft • lb)

- Be careful to install the pad springs in their proper positions.
- Install the brake pads ①.

4. Lubricate:

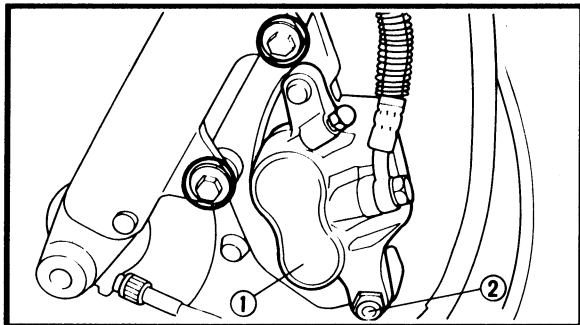
- Retaining bolt (caliper body)
- Caliper guide shaft



Recommended lubricant:
Lithium soap base grease

CAUTION:

- Don't allow any grease to splatter onto the brake pads.
- Wipe off any excess grease.



5. Install:

- Caliper assembly ①
- Retaining bolt ②



Retaining bolt:

23 Nm (2.3 m • kg, 17 ft • lb)

Bolt (caliper bracket):

35 Nm (3.5 m • kg, 25 ft • lb)

6. Inspect:

- Brake fluid level
Refer to the "BRAKE FLUID LEVEL INSPECTION" section.

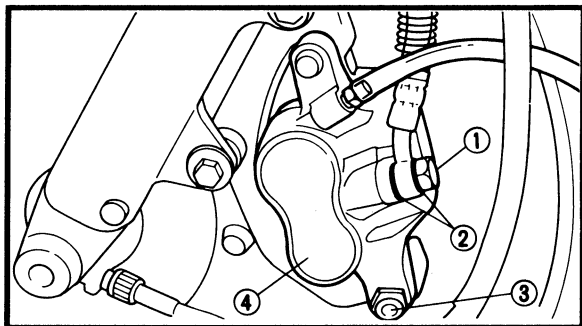
7. Check:

- Brake lever operation
A soft, spongy feeling → Bleed brake system.
Refer to the "AIR BLEEDING" section.

CALIPER DISASSEMBLY

NOTE:

Before disassembling the front brake caliper, drain the brake hose, master cylinder, brake caliper and reservoir tank of their brake fluid.

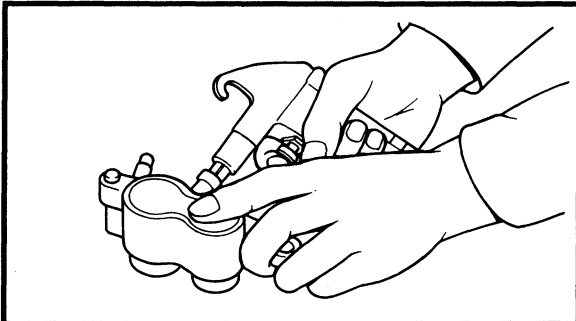
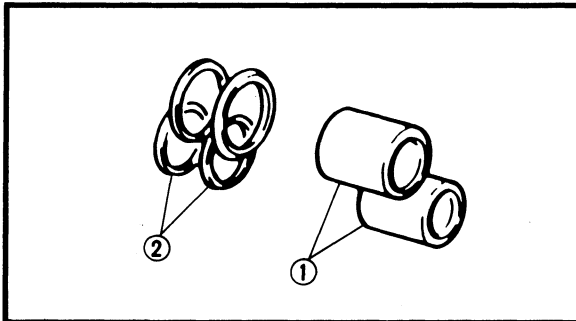


1. Remove:

- Union bolt ①
- Copper washers ②
- Retaining bolt ③
- Caliper assembly ④
- Brake pads
- Pad springs

NOTE:

Place the open hose end into a container and carefully drain the brake fluid.



2. Remove:

- Caliper pistons ①
- Piston seals ②

Removal steps:

- Blow compressed air into the hose joint opening to force out the caliper 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.

- Remove the piston seals.

INSPECTION AND REPAIR

Recommended brake component replacement schedule:

Brake pads	As required
Piston seal, Dust seal	Every two years
Brake hoses	Every four years
Brake fluid	Replace only when brakes are disassembled.

⚠ WARNING

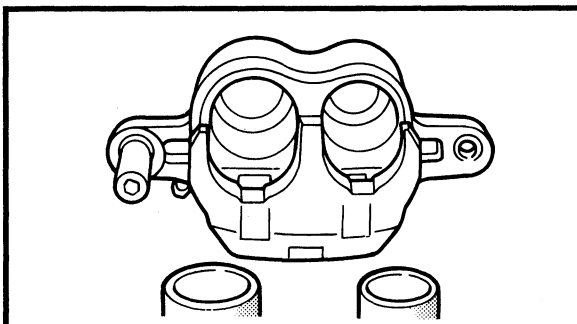
All internal parts should only be cleaned with new brake fluid. Do not use solvents which cause seals to swell and distort.

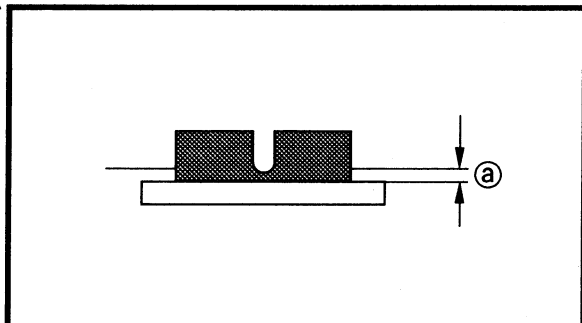
1. Inspect:

- Caliper piston
Scratches/Rust/Wear → Replace caliper assembly.
- Caliper cylinder
Wear/Scratches → Replace caliper assembly.

⚠ WARNING

Replace the piston seals whenever a caliper is disassembled.





2. Inspect:

- Caliper body
- Caliper bracket
- Cracks/Damage → Replace.
- Oil delivery passage (caliper body)
- Blow out with compressed air.

3. Inspect:

- Brake hose
- Cracks/Wear/Damage → Replace.

4. Measure:

- Brake pads (thickness)
- Out of specification → Replace.



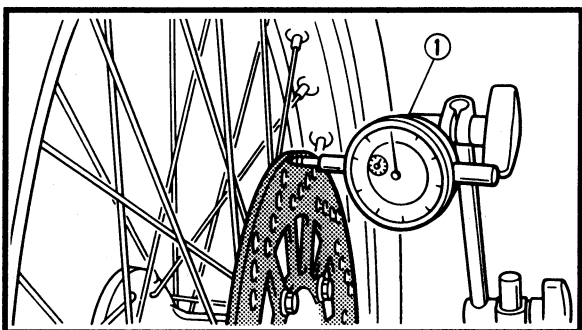
Wear limit ③:
0.8 mm (0.03 in)

NOTE:

- Replace the pad spring as a set if pad replacement is required.
- Replace the pad as a set if either is found to be worn to the wear limit.

5. Inspect:

- Brake disc
- Scratches/Damage → Replace.



6. Measure:

- Brake disc deflection
- Out of specification → Inspect wheel runout.
- If wheel runout is in good condition, replace the brake disc.



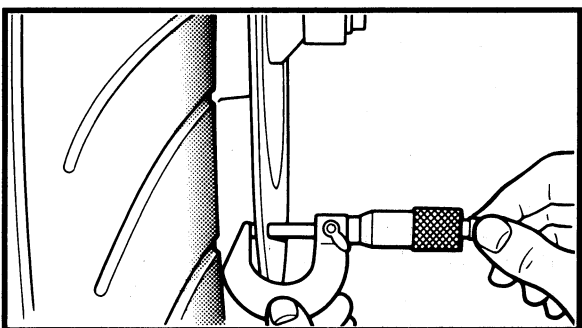
Maximum deflection:
0.15 mm (0.006 in)

① Dial gauge

- Brake disc thickness
- Out of specification → Replace.



Minimum thickness:
4.5 mm (0.18 in)





NOTE:

Tighten the bolts (brake disc) in stage using a crisscross pattern.



Bolt (brake disc):
23 Nm (2.3 m • kg, 17 ft • lb)
LOCTITE®

CALIPER ASSEMBLY

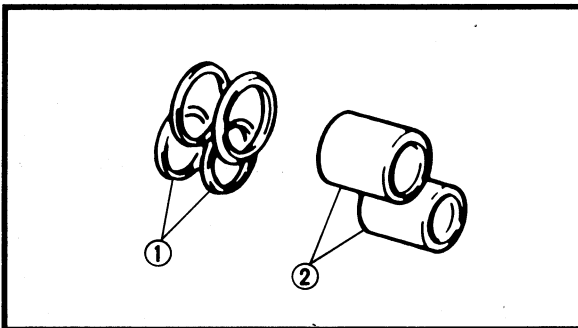
⚠ WARNING

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



Recommended brake fluid:
DOT #4

- Replace the piston seals whenever a caliper is disassembled.



1. Install:

- Piston seals ①
- Caliper pistons ②
- Pad springs

⚠ WARNING

Always use new piston seals.

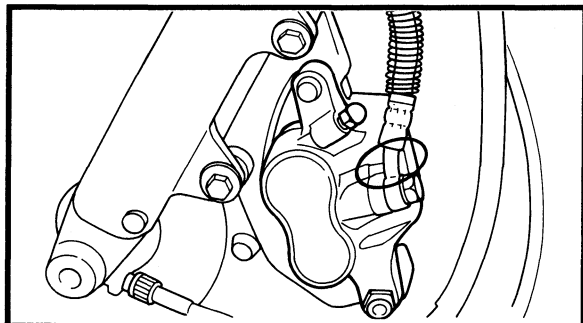
2. Install

- Brake pads
- Caliper body
- Caliper bracket

Refer to the "BRAKE PAD REPLACEMENT" section.



Retaining bolt (caliper body):
23 Nm (2.3 m • kg, 17 ft lb)
Bolt (caliper bracket):
35 Nm (3.5 m • kg, 25 ft • lb)



3. Install:

- Brake hose
- Copper washers
- Union bolt



Union bolt:
30 Nm (3.0 m • kg, 22 ft • lb)

CAUTION:

When installing the brake hose to the caliper, lightly touch the brake pipe with the projection on the caliper.

⚠ WARNING

- Proper hose routing is essential to ensure safe motorcycle operation. Refer to the "CABLE ROUTING" section.
- Always use new copper washers.

4. 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 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, which may result in vapor lock.

**5. Air bleed:**

- Brake system

Refer to the "AIR BLEEDING" section.

6. Inspect:

- Brake fluid level

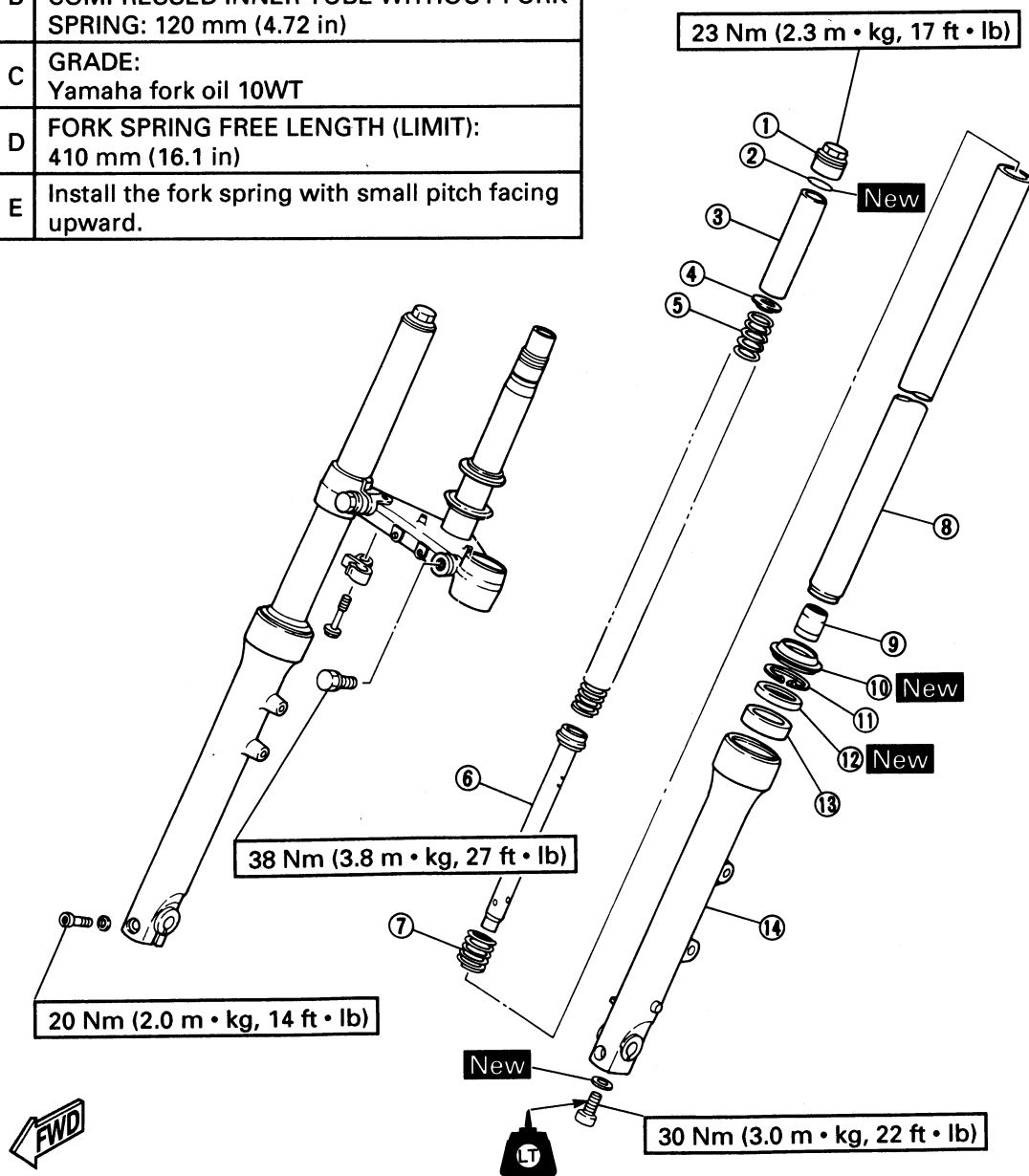
Brake fluid level is under "LOWER" level line → Fill to proper level.

Refer to the "BRAKE FLUID LEVEL INSPECTION" section.

FRONT FORK

- | | |
|-------------------|-------------------|
| ① Cap bolt | ⑧ Inner fork tube |
| ② O-ring | ⑨ Oil lock piece |
| ③ Spacer | ⑩ Dust seal |
| ④ Spring retainer | ⑪ Circlip |
| ⑤ Fork spring | ⑫ Oil seal |
| ⑥ Damper rod | ⑬ Slide metal |
| ⑦ Rebound spring | ⑭ Outer fork tube |

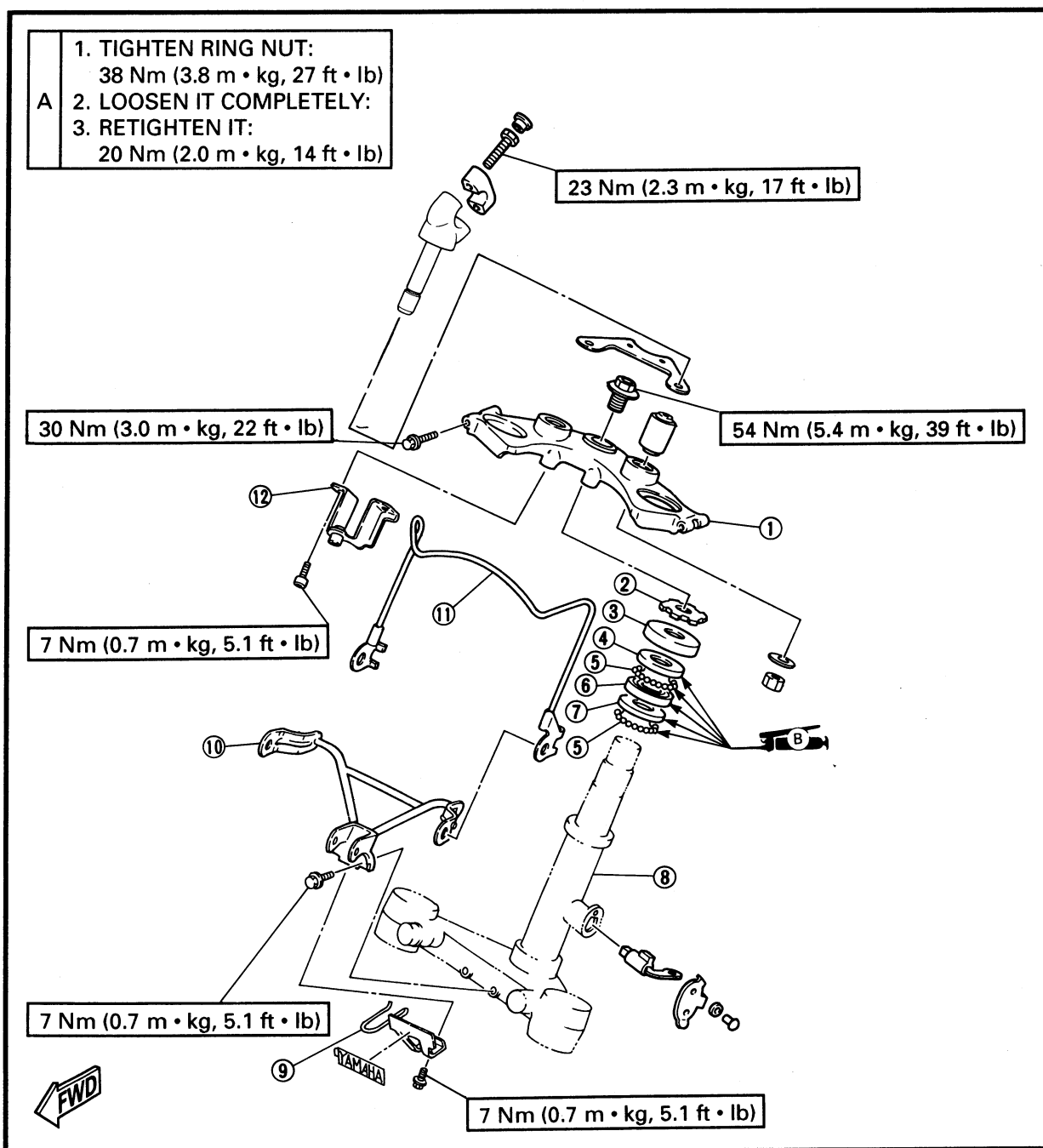
A	FORK OIL CAPACITY (EACH): 245 cm ³ (8.64 Imp oz, 8.28 US oz)
B	FORK OIL LEVEL (FROM TOP OF FULLY COMPRESSED INNER TUBE WITHOUT FORK SPRING: 120 mm (4.72 in))
C	GRADE: Yamaha fork oil 10WT
D	FORK SPRING FREE LENGTH (LIMIT): 410 mm (16.1 in)
E	Install the fork spring with small pitch facing upward.



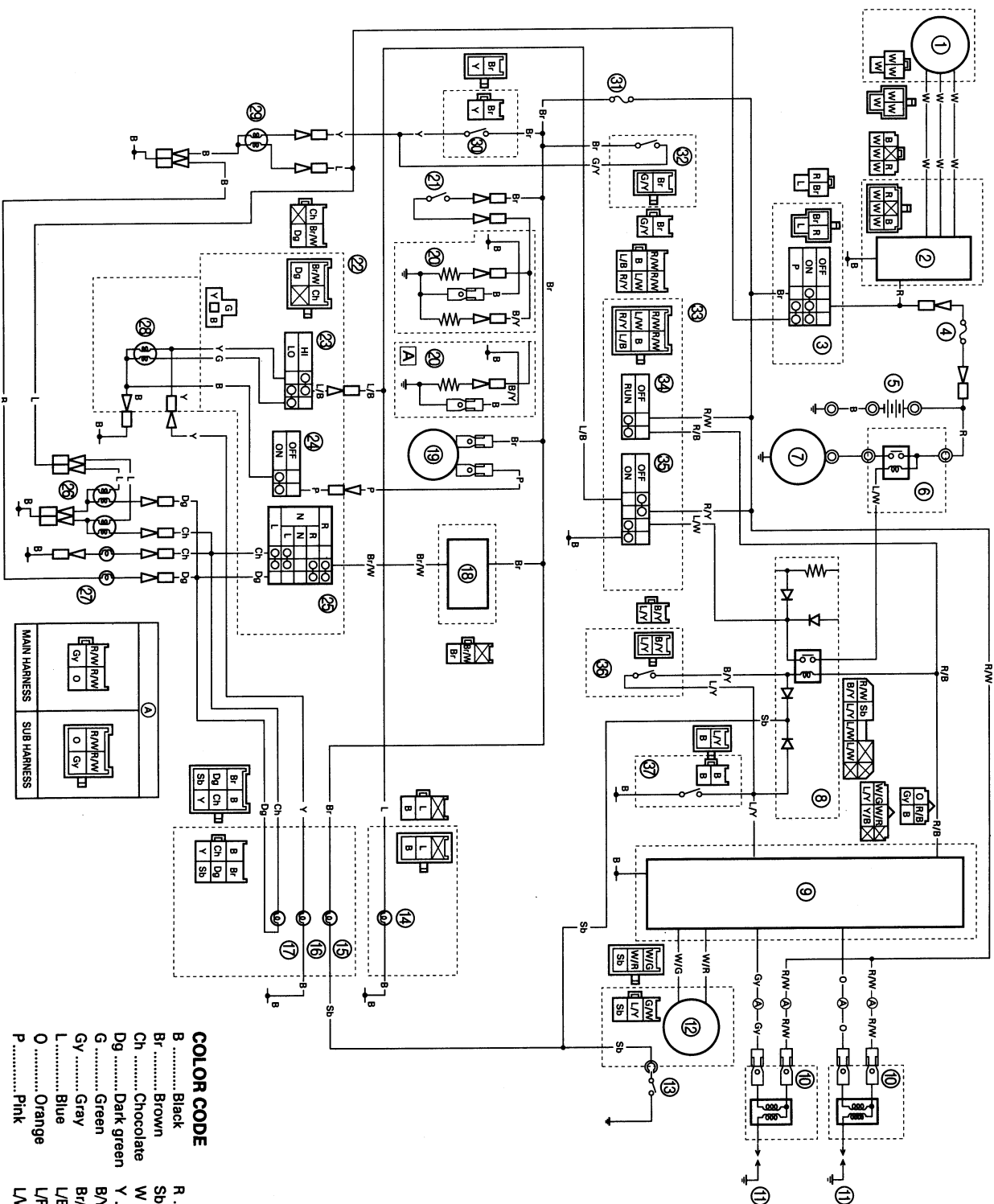


STEERING HEAD

- | | |
|------------------------------|---------------------------|
| ① Handlebar crown | ⑦ Ball race (lower – top) |
| ② Ring nut | ⑧ Steering stem |
| ③ Bearing cover | ⑨ Wire guide |
| ④ Ball race (upper – top) | ⑩ Headlight stay |
| ⑤ Ball (38 pcs.) | ⑪ Headlight guard stay |
| ⑥ Ball race (upper – bottom) | ⑫ Stay 2 |



XV250(S)G/XV250GC WIRING DIAGRAM



- ① A.C. magneto
- ② Rectifier/regulator
- ③ Main switch
- ④ Fuse (main)
- ⑤ Battery
- ⑥ Starter relay
- ⑦ Starter motor
- ⑧ Starting circuit cut-off relay
- ⑨ Ignitor unit
- ⑩ Ignition coil
- ⑪ Spark plug
- ⑫ Pickup coil
- ⑬ Neutral switch
- ⑭ Meter light
- ⑮ "NEUTRAL" indicator light
- ⑯ "HIGH BEAM" indicator light
- ⑰ "TURN" indicator light
- ⑱ Flasher relay
- ⑲ Horn
- ⑳ Carburetor heater
- ㉑ Thermo switch
- ㉒ Handlebar switch (left)
- ㉓ "LIGHTS" (dimmer) switch
- ㉔ "HORN" switch
- ㉕ "TURN" switch
- ㉖ Front flasher light
- ㉗ Rear flasher light
- ㉘ Headlight
- ㉙ Tail/brake light
- ㉚ Rear Brake switch
- ㉛ Fuse (signal)
- ㉜ Front brake switch
- ㉝ Handlebar switch (right)
- ㉞ "ENGINE STOP" switch
- ㉟ "START" switch
- ㊱ Clutch switch
- ㊲ Side stand switch
- ㊳ For California

COLOR CODE

B Black
 Br Brown
 Ch Chocolate
 Dg Dark green
 G Green
 Gy Gray
 L Blue
 O Orange
 P Pink

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



YAMAHA MOTOR CO., LTD.

IWATA, JAPAN

PRINTED IN U.



YAMAHA

XV250U XV250UC

SERVICE MANUAL

**XV250U/XV250UC
SERVICE MANUAL**

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1st edition, January 1988

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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.

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

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

NOTE:

This Service Manual contains information regarding periodic maintenance to the emission control system for the XV250U/UC. Please read this material carefully.

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

HOW TO USE THIS MANUAL

PARTICULARLY IMPOTANT INFORMATION

This material is distinguished by the following notations.

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

CAUTION:

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

WARNING:

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

MANUAL FORMAT

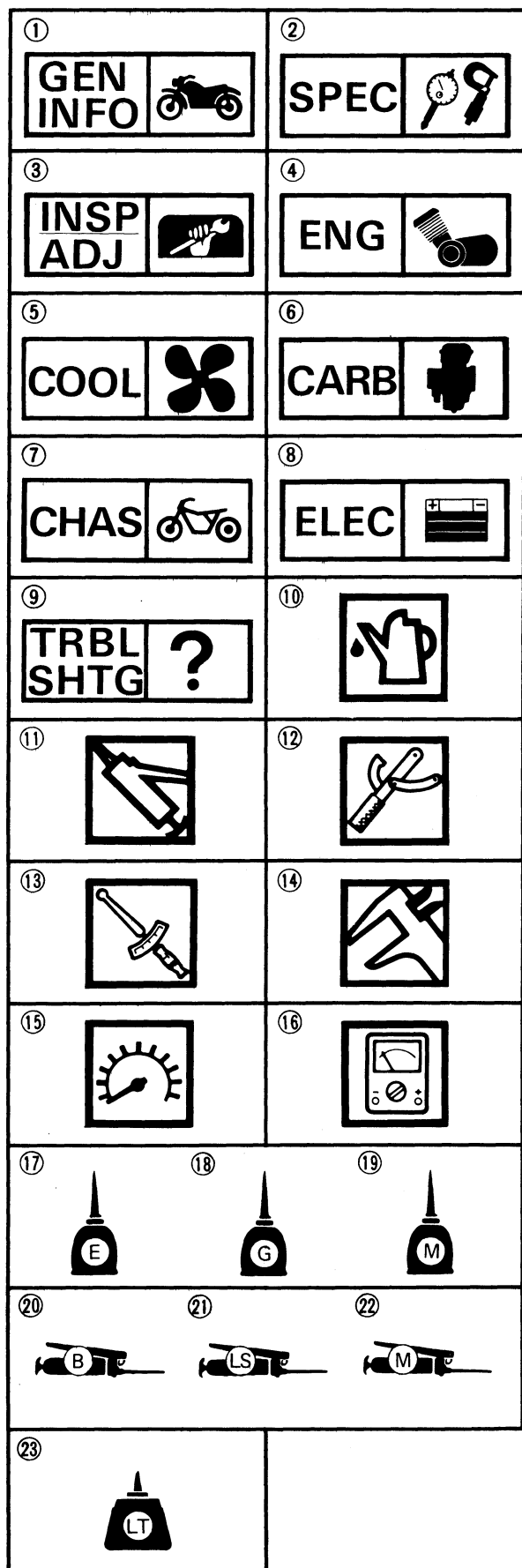
All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspection operations.

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

- Bearings:
Pitting/Damage → Replace.

EXPLODED DIAGRAM

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



ILLUSTRATED SYMBOLS

(Refer to the illustration)

Illustrated symbols ① to ⑨ are designed as thumb tabs to indicate the chapter's number and 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 are used to identify the specifications appearing in the text.

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

Illustrated symbols ⑰ to ㉓ in the exploded diagram indicate grade of lubricant and location of lubrication point.

- ⑰ Apply engine oil
- ⑱ Apply gear oil
- ⑲ Apply molybdenum disulfide oil
- ㉑ Apply wheel bearing grease
- ㉒ Apply lightweight lithium-soap base grease
- ㉓ Apply molybdenum disulfide grease
- ㉔ Apply locking agent (LOCTITE®)

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**GEN
INFO** **1**



SPEC **2**



**INSP
ADJ** **3**



ENG **4**



CARB **5**



CHAS **6**



ELEC **7**

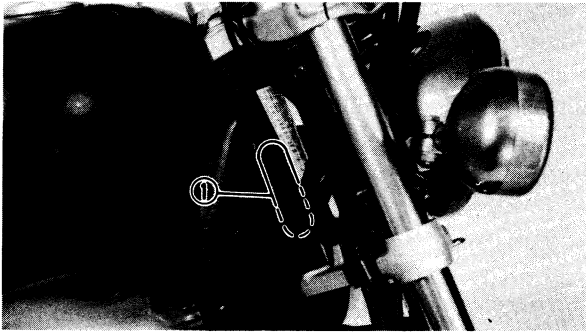


**TRBL
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GENERAL INFORMATION



MOTORCYCLE IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

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

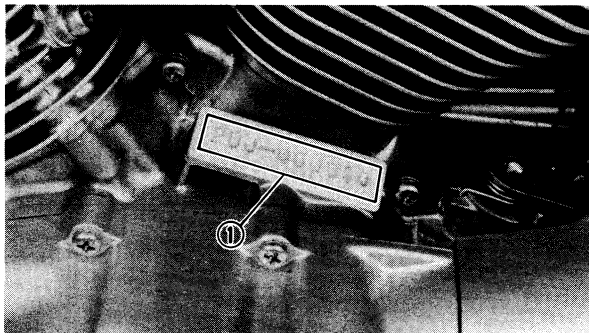
NOTE: _____

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

Starting Serial Number:

XV250U JYA2UJE0 * JA000101

XV250UC . . . JYA3BGE0 * JA000101



ENGINE SERIAL NUMBER

The engine serial number ① is stamped into the right side of the engine.

NOTE: _____

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

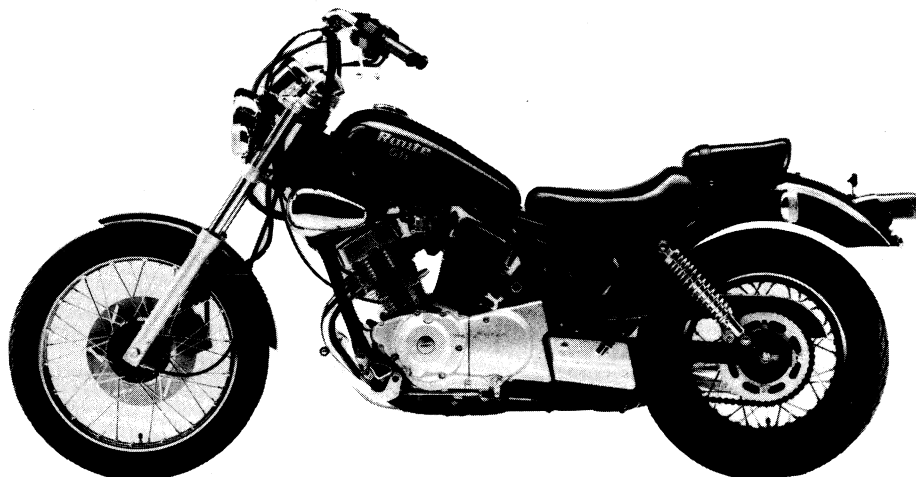
Starting Serial Number:

XV250U2UJ-000101

XV250UC3BG-000101

NOTE: _____

Designs and specifications are subject to change without notice.



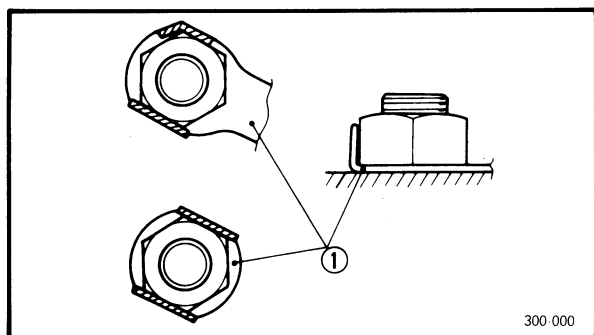
IMPORTANT INFORMATION

ALL REPLACEMENT PARTS

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

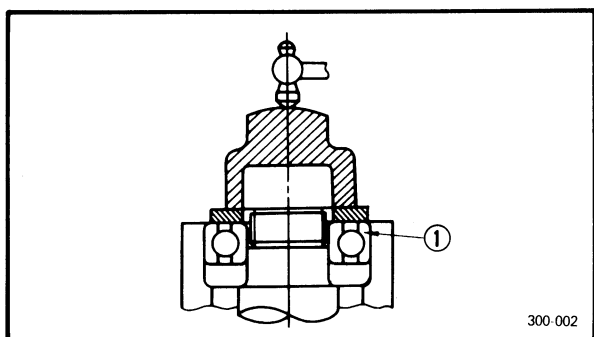
GASKETS, OIL SEALS, AND O-RINGS

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



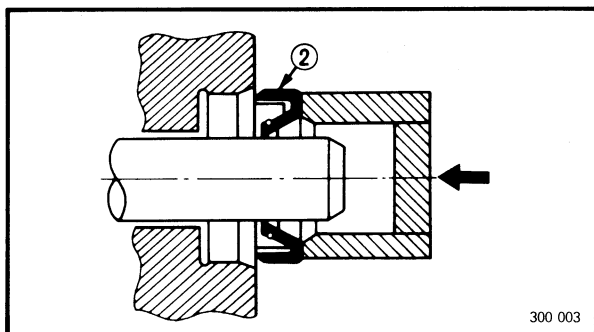
LOCK WASHERS/PLATES AND COTTER PINS

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



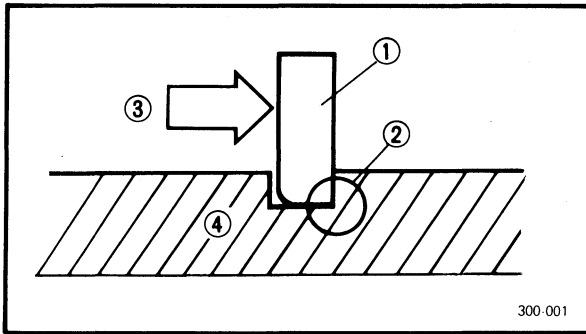
BEARINGS AND OIL SEALS

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



⚠ CAUTION:

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

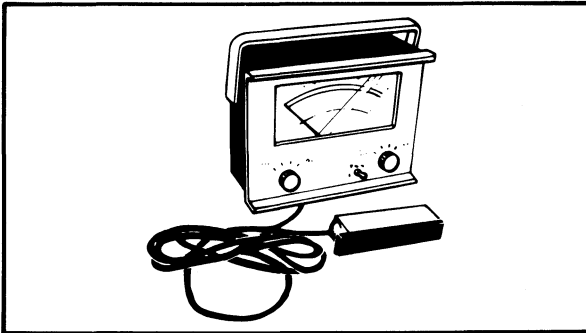
**CIRCLIPS**

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

④ Shaft

SPECIAL TOOLS

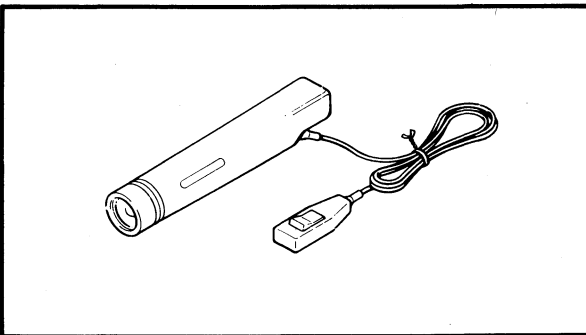
The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques.

**FOR TUNE UP**

1. Inductive Tachometer

P/N YU-08036

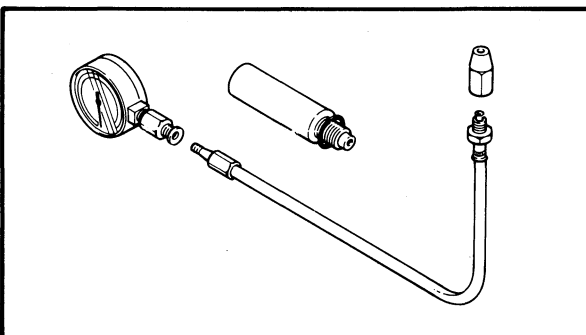
This tool is needed for detecting engine rpm.



2. Inductive Timing Light

P/N YM-33277

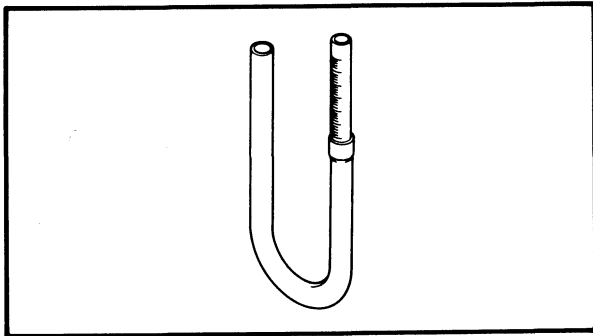
This tool is necessary for checking ignition timing.



3. Compression Gauge

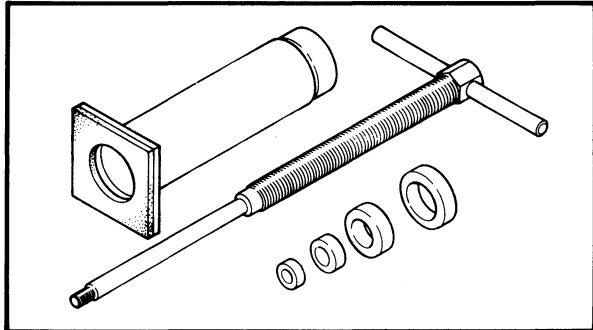
P/N YU-33223

This gauge is used to measure the engine compression.



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

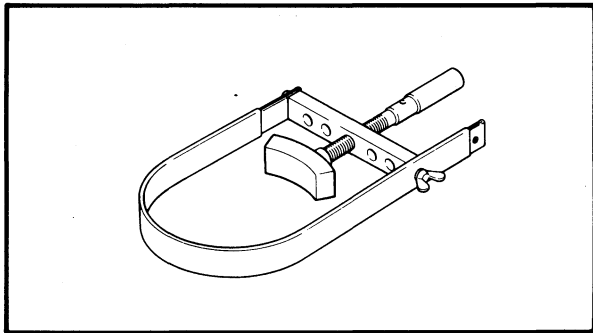
This gauge is used to measure the fuel level in the float chamber.



FOR ENGINE SERVICE

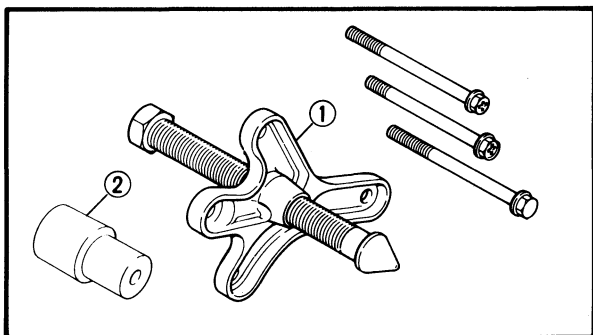
1. Piston Pin Puller
P/N YU-01304

This tool is used to remove the piston pin.



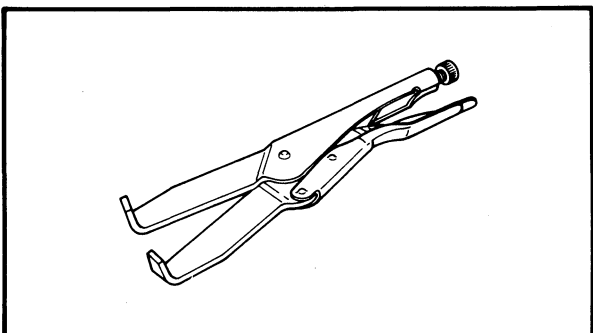
2. Sheave Holder
P/N YS-01880

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



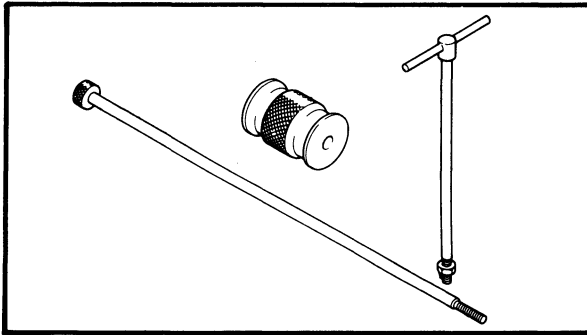
3. Flywheel Puller
P/N YU-33270 – ①
Adapter
P/N YM-33282 – ②

These tools are used to remove the flywheel.



4. Clutch Holder
P/N YM-91042

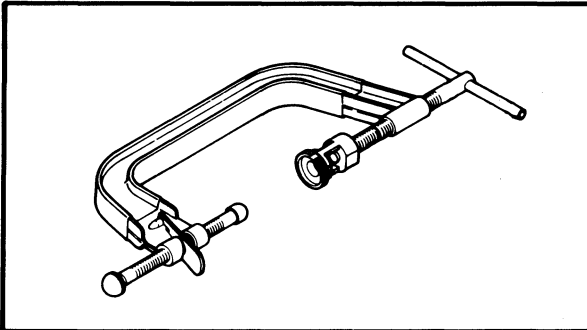
This tool is used to hold the clutch when removing or installing the clutch boss locknut.



5. Slide Hammer Set

P/N YU-01083

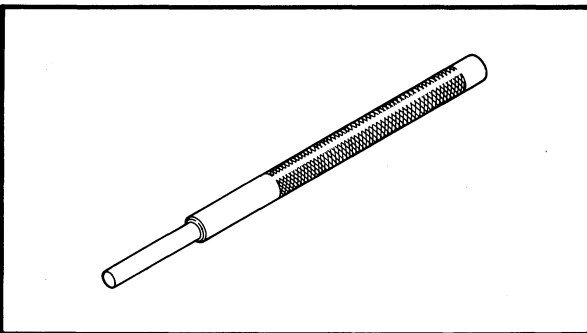
These tools are used when removing the rocker arm shaft.



6. Valve Spring Compressor

P/N YM-04019

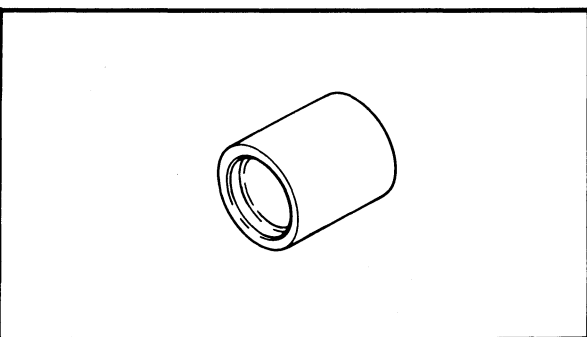
This tool is needed to remove and install the valve assemblies.



7. Valve Guide Remover (7.0 mm)

P/N YM-01225

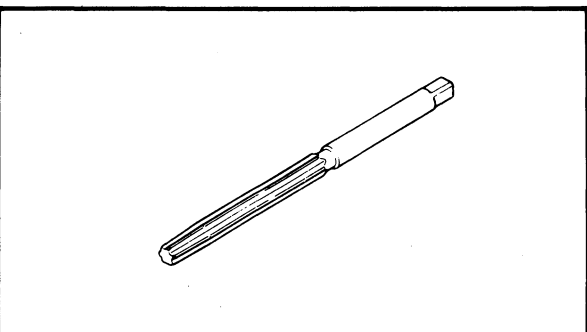
This tool is used to remove the valve guides.



8. Valve Guide Installer

P/N YM-04017

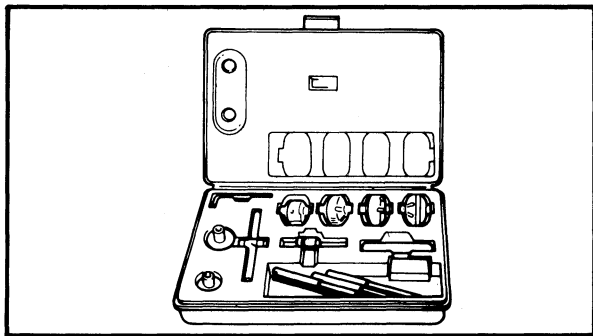
This tool is needed to install the valve guides properly.



9. Valve Guide Reamer (7.0 mm)

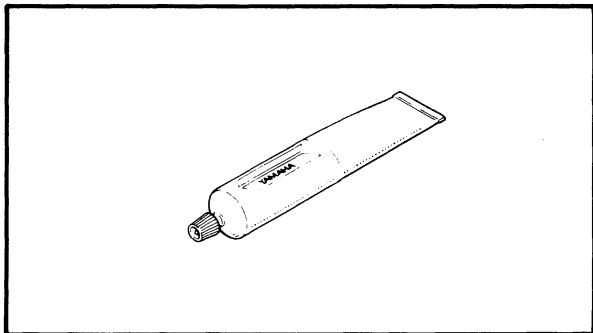
P/N YM-01227

This tool is used to rebores the new valve guide.

**10. Valve Seat Cutter Set**

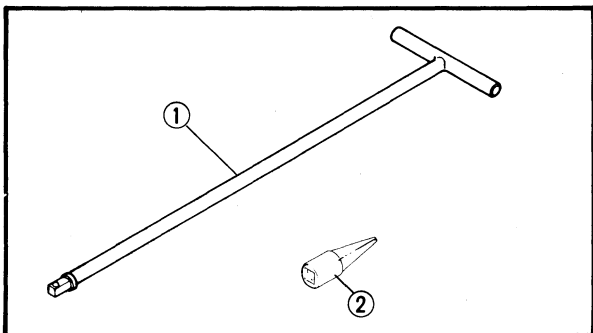
P/N YM-91043

This tool is needed to resurface the valve seat.

**11. Sealant (Quick Gasket®)**

P/N ACC-11001-05-01

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

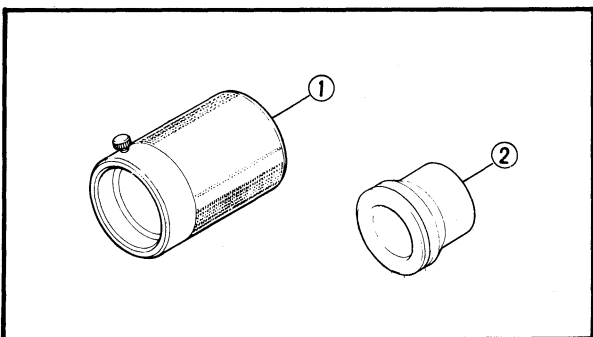
**FOR CHASSIS SERVICE****1. T-Handle**

P/N YM-01326 – ①

Damper Rod Holder

P/N YM-01300-1 – ②

These tools are used to loosen and tighten the front fork cylinder holding bolt.

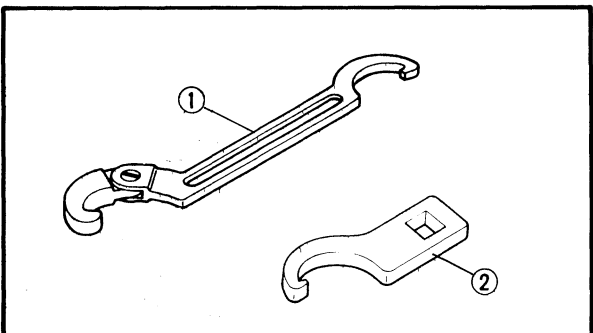
**2. Front Fork Seal Driver Weight**

P/N YM-01367 – ①

Adapter (33 mm)

P/N YM-1368 – ②

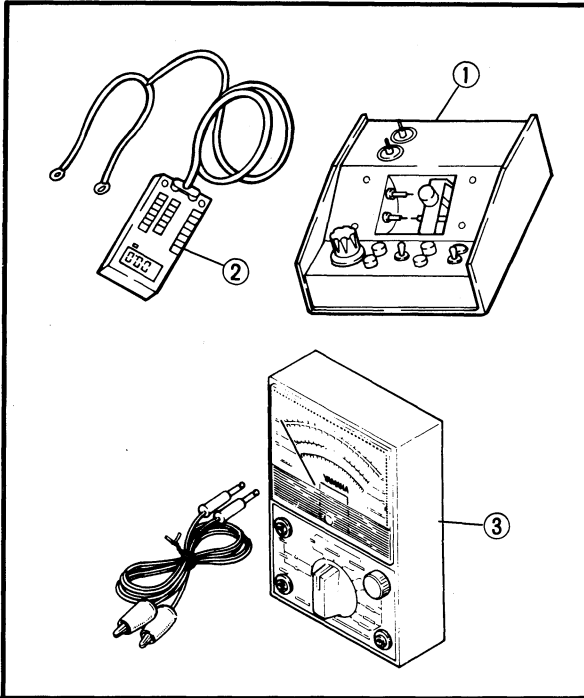
These tools are used when installing the fork seal.

**3. Ring Nut Wrench**

P/N YU-01268 – ①

P/N YU-33975 – ②

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

**FOR ELECTRICAL COMPONENTS****1. Coil Tester**

P/N YU-33261 – ①

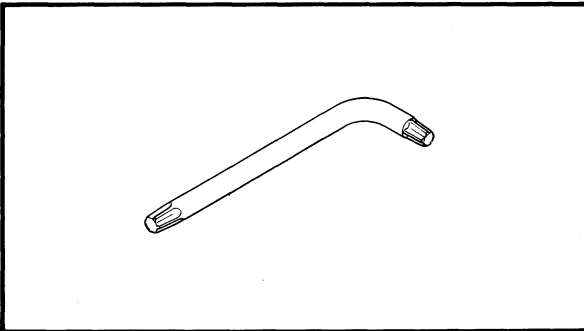
This instrument is necessary for checking the ignition system components.

2. Pocket Tester

P/N YU-33263 – ② or

P/N YU-03112 – ③

This instrument is invaluable for checking the electrical system.

**3. Special Torx Driver (T30)**

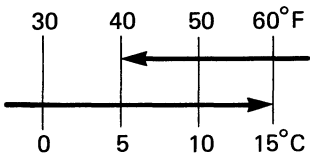
P/N YU-05258

This tool is used to remove and install the main switch bracket.



SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	XV250U/UC
Model Code Number	2UJ1 (XV250U) 3BG1 (XV250UC)
Vehicle Identification Number	JYA2UJE0 * JA000101 (XV250U) JYA3BGE0 * JA000101 (XV250UC)
Engine Starting Number	2UJ-000101 (XV250U) 3BG-000101 (XV250UC)
Dimensions: Overall Length Overall Width Overall Height Seat Height Wheelbase Minimum Ground Clearance	2,190 mm (86.2 in) 800 mm (31.5 in) 1,130 mm (44.5 in) 685 mm (27.0 in) 1,488 mm (58.6 in) 145 mm (5.7 in)
Basic Weight: Weight Oil and Full Fuel Tank	XV250U: 137 kg (302 lb) XV250UC: 138 kg (304 lb)
Minimum Turning Radius:	2,800 mm (110.2 in)
Engine: Engine Type Cylinder Arrangement Displacement Bore x Stroke Compression Ratio Compression Pressure Starting System	Air cooled 4-stroke gasoline, SOHC V-2 cylinder 249 cm ³ 49 x 66 mm (1.929 x 2.598 in) 10 : 1 1,100 kPa (11 kg/cm ² , 156 psi) Electric starter
Lubrication System:	Wet sump
Oil Type or Grade: Engine Oil  Oil Capacity: Engine Oil: Periodic Oil Change With Oil Filter Replacement Total Amount	Yamalube 4 or SAE 20W40 type SE motor oil (If temperature does not go below 5°C (40°F)) SAE 10W30 type SE motor oil (If temperature does not go above 15°C (60°F)) 1.4 L (1.2 Imp qt, 1.5 US qt) 1.6 L (1.4 Imp qt, 1.7 US qt) 1.8 L (1.6 Imp qt, 1.9 US qt)
Air Filter:	Wet type element
Fuel: Type Tank Capacity: Total Reserve	Unleaded fuel recommended. XV250U: 9.5 L (2.1 Imp gal, 2.5 US gal) XV250UC: 9.2 L (2.0 Imp gal, 2.4 US gal) 2.6 L (0.6 Imp gal, 0.7 US gal)

GENERAL SPECIFICATIONS

SPEC



Model	XV250U/UC	
Carburetor: Type/Manufacturer	BDS26 x 1/MIKUNI	
Spark Plug: Type/Manufacturer Gap	C6HSA/NGK, U20FS-U/NIPPONDENSO 0.6 ~ 0.7 mm (0.024 ~ 0.028 in)	
Clutch Type:	Wet, multiple-disc	
Transmission: Primary Reduction System Primary Reduction Ratio Secondary Reduction System Secondary Reduction Ratio Transmission Type Operation Gear Ratio: 1st 2nd 3rd 4th 5th	Spur gear 72/23 (3.130) Chain drive 45/16 (2.813) Constant mesh, 5-speed Left foot operation 37/14 (2.643) 32/19 (1.684) 29/23 (1.261) 26/26 (1.000) 23/28 (0.821)	
Chassis: Frame Type Caster Angle Trail	Double-cradle 32° 120 mm (4.7 in)	
Tire: Type Size (F) Size (R) Wear Limit	With tube 3.00S-18 4PR CHENG SHIN C916 130/90-15 66P CHENG SHIN C915 0.8 mm (0.03 in)	
Tire Pressure (Cold Tire): Basic Weight: With Oil and Full Fuel Tank Maximum Load*	XV250U: 147 kg (324 lb) XV250UC: 148 kg (326 lb) XV250U: 198 kg (437 lb) XV250UC: 197 kg (434 lb)	
Cold Tire Pressure: Up to 90 kg (198 lb) Load * 90 kg (198 lb)* ~ Maximum Load * High Speed Riding	FRONT	REAR
	175 kPa (1.75 kg/cm ² , 25 psi)	200 kPa (2.0 kg/cm ² , 28 psi)
	200 kPa (2.0 kg/cm ² , 28 psi)	225 kPa (2.25 kg/cm ² , 32 psi)
	200 kPa (2.0 kg/cm ² , 28 psi)	225 kPa (2.25 kg/cm ² , 32 psi)
	* Load is the total weight of cargo, rider, passenger, and accessories.	
Brake: Front Operation Rear Operation	Single disc brake Right hand operation Drum brake Right foot operation	

GENERAL SPECIFICATIONS

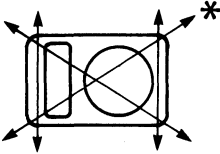
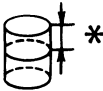
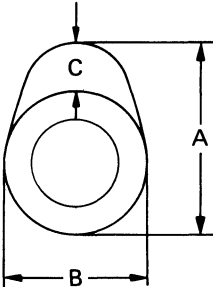
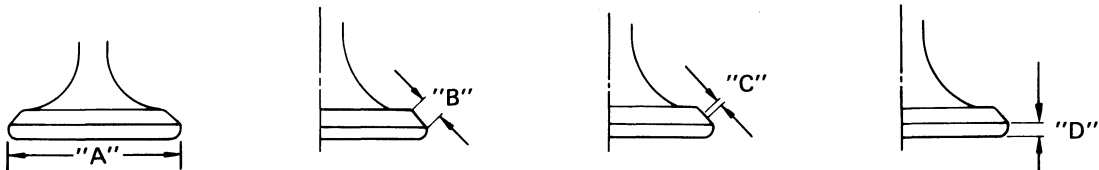
SPEC



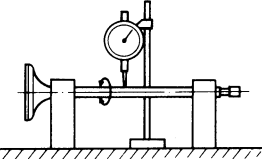
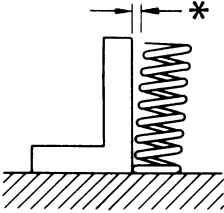
Model	XV250U/UC
Suspension: Front Suspension Rear Suspension	Telescopic fork Swing arm
Shock Absorber: Front Shock Absorber Rear Shock Absorber	Coil spring, Oil damper Gas/Coil spring, Oil damper
Wheel Travel: Front Wheel Travel Rear Wheel Travel	140 mm (5.5 in) 100 mm (3.9 in)
Electrical: Ignition System Generator System Battery Type or Model Battery Capacity	T.C.I. (Digital) A.C. magneto generator GM10-3A-2 12V 10AH
Headlight Type:	Bulb type
Bulb Wattage x Quantity: Headlight Tail/Brake Light Rear Flasher Light Front Position Light/Front Flasher Light Licence Light Indicator Light: "NEUTRAL" "HIGH BEAM" "TURN" Meter Light	12V, 65W/60W x 1 12V, 8W/27W x 2 12V, 27W x 2 12V, 8W/27W x 2 12V, 7W x 1 12V, 3W x 1 12V, 1.7W x 1 12V, 3W x 1 12V, 3W x 1

MAINTENANCE SPECIFICATIONS

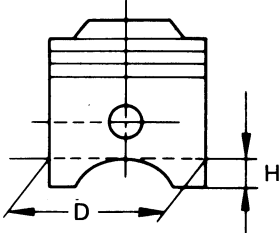
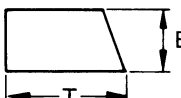
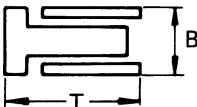
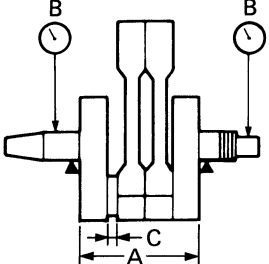
Engine

Model	XV250U/UC	
Cylinder Head: Warp Limit * 	< 0.03 mm (0.0012 in) > * Lines indicate straight edge measurement.	
Cylinder: Bore Size/Measuring Point * 	48.99 ~ 49.03 mm (1.929 ~ 1.930 in) 45 mm (1.77 in)	
Wear Limit	< 0.15 mm (0.006 in) >	
Camshaft: Drive Method Cam Cap Inside Dia. Camshaft Outside Dia. Shaft-to-Cap Clearance Cam Dimensions: Intake: "A" < Limit > "B" < Limit > "C" Exhaust: "A" < Limit > "B" < Limit > "C" Camshaft Runout Limit 	Chain drive (Left and right) 22.000 ~ 22.021 mm (0.866 ~ 0.867 in) 21.96 ~ 21.98 mm (0.864 ~ 0.865 in) 0.020 ~ 0.061 mm (0.0008 ~ 0.0024 in) 26.190 mm (1.031 in) < 26.090 mm (1.027 in) > 21.045 mm (0.829 in) < 20.045 mm (0.789 in) > 5.190 mm (0.204 in) 26.190 mm (1.031 in) < 26.090 mm (1.027 in) > 21.087 mm (0.830 in) < 20.087 mm (0.791 in) > 5.190 mm (0.204 in) < 0.015 mm (0.0006 in) >	
Rocker Arm and Rocker Arm Shaft: Rocker Arm Inside Diameter Shaft Outside Diameter Arm-to-Shaft Clearance < Limit >	10.000 ~ 10.015 mm (0.3937 ~ 0.3943 in) 9.981 ~ 9.991 mm (0.3930 ~ 0.3933 in) 0.009 ~ 0.034 mm (0.0004 ~ 0.0013 in) < 0.08 mm (0.0032 in) >	
Cam Chain: Cam Chain Type/No. of Links Cam Chain Adjustment Method	BUSH CHAIN/110 Automatic	
Valve, Valve Seat, Valve Guide: Valve Clearance (Cold): IN. EX. Valve Dimensions: 	0.08 ~ 0.12 mm (0.003 ~ 0.005 in) 0.10 ~ 0.14 mm (0.004 ~ 0.006 in)	



Model		XV250U/UC
"A" Head Dia.	IN. EX.	25.9 ~ 26.1 mm (1.020 ~ 1.028 in) 21.9 ~ 22.1 mm (0.862 ~ 0.870 in)
"B" Face Width	IN. EX.	1.4 ~ 3.2 mm (0.055 ~ 0.126 in) 1.7 ~ 2.8 mm (0.067 ~ 0.110 in)
"C" Seat Width	IN. EX.	0.9 ~ 1.1 mm (0.035 ~ 0.043 in) 0.9 ~ 1.1 mm (0.035 ~ 0.043 in)
< Limit >	IN. EX.	< 1.6 mm (0.063 in) > < 1.6 mm (0.063 in) >
"D" Margin Thickness	IN. EX.	1.0 ~ 1.4 mm (0.04 ~ 0.06 in) 1.0 ~ 1.4 mm (0.04 ~ 0.06 in)
< Limit >	IN. EX.	< 0.7 mm (0.028 in) > < 0.7 mm (0.028 in) >
Stem Outside Dia.	IN. EX.	6.975 ~ 6.990 mm (0.274 ~ 0.275 in) 6.960 ~ 6.975 mm (0.273 ~ 0.274 in)
< Limit >	IN. EX.	< 6.945 mm (0.273 in) > < 6.920 mm (0.272 in) >
Guide Inside Dia.	IN. EX.	7.000 ~ 7.012 mm (0.275 ~ 0.276 in) 7.000 ~ 7.012 mm (0.275 ~ 0.276 in)
< Limit >	IN. EX.	< 7.05 mm (0.278 in) > < 7.05 mm (0.278 in) >
Stem-to-Guide Clearance	IN. EX.	0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in) 0.025 ~ 0.052 mm (0.0010 ~ 0.0020 in)
< Limit >	IN. EX.	< 0.08 mm (0.0031 in) > < 0.10 mm (0.0039 in) >
Stem Runout Limit		< 0.03 mm (0.0012 in) >
		
Valve Spring:		
Free Length	IN. EX.	29.75 mm (1.171 in) 29.75 mm (1.171 in)
< Limit >	IN. EX.	< 28.75 mm (1.131 in) > < 28.75 mm (1.131 in) >
Set Length (Valve Closed)	IN. EX.	25.7 mm (1.012 in) 25.7 mm (1.012 in)
Compressed Pressure (Installed)	IN. EX.	7.31 ~ 8.09 mm (16.1 ~ 17.8 in) 7.31 ~ 8.09 mm (16.1 ~ 17.8 in)
Tilt Limit *	IN. EX.	< 2.5°/1.2 mm (0.047 in) > < 2.5°/1.2 mm (0.047 in) >
		
Direction of Winding	IN. EX.	Right Right



Model	XV250U/UC
Piston: Piston-to-Cylinder Clearance < Limit > Piston Size "D" Measuring Point "H" 	0.02 ~ 0.04 mm (0.0008 ~ 0.0016 in) < 0.1 mm (0.004 in) > 48.96 ~ 49.00 mm (1.928 ~ 1.929 in) 6 mm (0.24 in)
Overize: 1st 2nd	49.25 mm (1.939 in) 49.50 mm (1.949 in)
Piston Ring: Top Ring: Type Dimensions (B x T) End Gap (Installed) < Limit > Side Clearance (Installed) < Limit >  2nd Ring: Type Dimensions (B x T) End Gap (Installed) < Limit > Side Clearance < Limit >   Oil Ring: Dimensions (B x T) End Gap (Installed)	Barrel 1 x 2 mm (0.04 x 0.08 in) 0.15 ~ 0.30 mm (0.006 ~ 0.012 in) < 0.4 mm (0.016 in) > 0.03 ~ 0.07 mm (0.001 ~ 0.003 in) < 0.12 mm (0.005 in) > Taper 1 x 2 mm (0.04 x 0.08 in) 0.15 ~ 0.30 mm (0.006 ~ 0.012 in) < 0.4 mm (0.016 in) > 0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in) < 0.12 mm (0.005 in) > 2.0 x 2.2 mm (0.078 x 0.087 in) 0.3 ~ 0.9 mm (0.012 ~ 0.035 in)
Connecting Rod: Oil Clearance	0.020 ~ 0.048 mm (0.0008 ~ 0.0019 in)
Crankshaft: 	
Crank Width "A" Runout Limit "B" Big End Side Clearance "C" Journal Oil Clearance	67.95 ~ 68.00 mm (2.675 ~ 2.677 in) < 0.03 mm (0.0012 in) > 0.40 ~ 1.05 mm (0.016 ~ 0.041 in) 0.020 ~ 0.048 mm (0.0008 ~ 0.0019 in)

MAINTENANCE SPECIFICATIONS

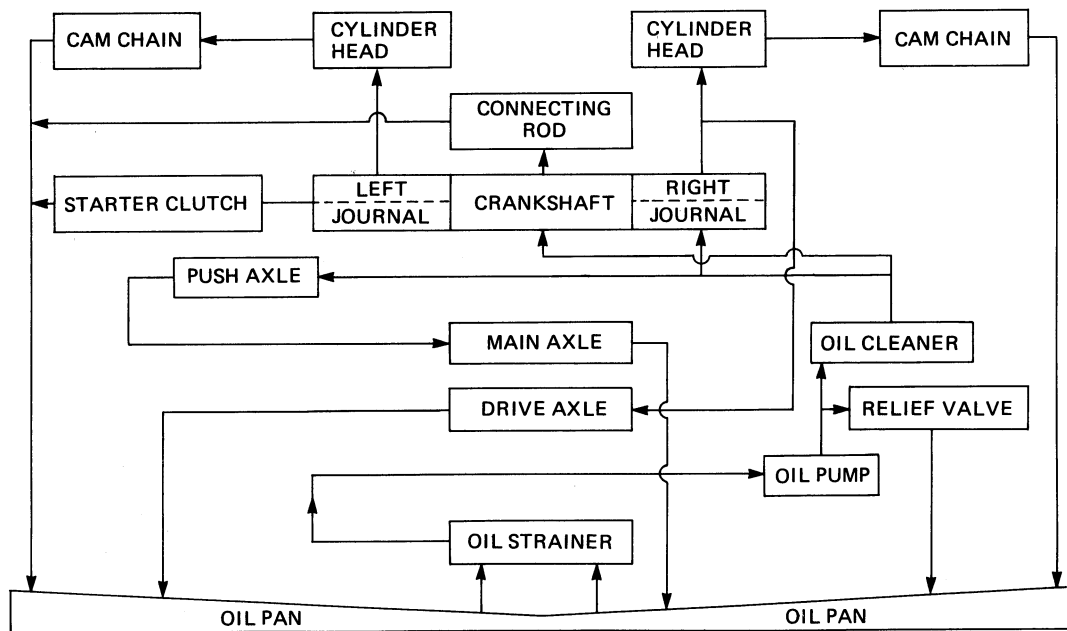
SPEC



Model	XV250U/UC
Clutch: Friction Plate: Thickness Quantity Wear Limit Clutch Plate: Thickness Quantity Warp Limit Clutch Spring: Free Length Quantity Minimum Length Push Rod Bending Limit	2.9 ~ 3.1 mm (0.114 ~ 0.122 in) 5 pcs. < 2.5 mm (0.098 in) > 1.9 ~ 2.1 mm (0.075 ~ 0.083 in) 4 pcs. < 0.05 mm (0.002 in) > 34.6 mm (1.36 in) 4 pc. < 33.6 mm (1.32 in) > < 0.5 mm (0.02 in) >
Transmission: Main Axle Deflection Limit Drive Axle Deflection Limit	< 0.08 mm (0.0031 in) > < 0.08 mm (0.0031 in) >
Shifter: Shifter Type Guide Bar Bending Limit	Cam Drum and Guide Bar < 0.025 mm (0.001 in) >
Carburetor: I.D. Mark Main Jet (M.J.) Main Air Jet (M.A.J.) Jet Needle (J.N.) Needle Jet (N.J.) Pilot Jet (P.J.) Pilot Air Jet (P.A.J.) Pilot Screw (P.S.) Pilot Outlet (P.O.) Bypass (B.P. 1) (B.P. 2) Valve Seat Size (V.S.) Starter Jet (G.S. 1) (G.S. 2) Fuel Level Engine Idling Speed Vacuum Pressure at Idling Speed Vacuum Synchronous Difference	2UJ00 FOR CALIFORNIA: 3BG00 #110 #60 4DM3-1 O-0 #17.5 #155 Preset ϕ0.85 ϕ0.8 ϕ0.8 ϕ1.0 #25 0.7 13.5 ~ 14.5 mm (0.53 ~ 0.57 in) 1,350 ~ 1,450 r/min Above 47.9 kPa (360 mmHg, 14.17 inHg) Below 1.3 kPa (10 mmHg, 0.39 inHg)
Fuel Pump: Type	Vacuum type
Lubrication System: Oil Filter Type Oil Pump Type: Tip Clearance < Limit > Side Clearance < Limit > Relief Valve Operating Pressure	Paper type Trochoid type 0 ~ 0.15 mm (0 ~ 0.006 in) < 0.20 mm (0.008 in) > 0.03 ~ 0.09 mm (0.001 ~ 0.004 in) < 0.09 mm (0.004 in) > 441 ~ 539 kPa (4.5 ~ 5.5 kg/cm ² , 64 ~ 78 psi)

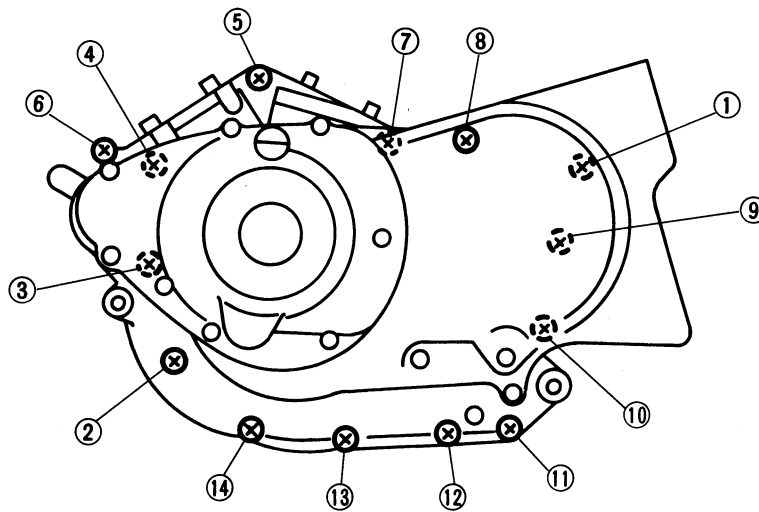
Model	XV250U/UC
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Lubrication Chart:



Crankcase Tightening Sequence:

LEFT-CASE



MAINTENANCE SPECIFICATIONS



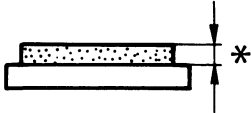
TIGHTENING TORQUE

Parts to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m·kg	ft·lb	
Cam Sprocket Cover	Bolt	M6 x 1.0	4	7	0.7	5.1	
Tappet Cover	—	M45	4	7	0.7	5.1	
Cylinder Head	Flange bolt	M8 x 1.25	8	22	2.2	16	
	Bolt	M6 x 1.25	4	12	1.2	8.7	
Cylinder Head (Exhaust pipe)	Stud bolt	M6 x 1.0	4	7	0.7	5.1	
Spark Plug	—	M10 x 1.25	2	13	1.3	8.4	
Cylinder Head (Cover)	Bolt	M6 x 1.0	8	10	1.0	7.2	
Rotor (A.C. Magneto)	Flange nut	M12	1	80	8.0	58	
Valve Adjusting Locknut	Nut	M5 x 1.0	4	7	0.7	5.1	
Rocker Arm Shaft Stopper	Bolt	M6 x 1.0	2	12	1.2	8.7	
Cam Sprocket	Bolt	M8 x 1.25	2	26	2.6	19	
Chain Guide	Bolt	M6 x 1.0	4	10	1.0	7.2	
Chain Tensioner	Bolt	M6 x 1.0	4	10	1.0	7.2	
Chain Tensioner End	Cap bolt	M8 x 1.25	2	8	0.8	5.8	
Oil Pump Cover	Screw	M6 x 1.0	1	7	0.7	5.1	
Oil Strainer Cover	Screw	M6 x 1.0	1	7	0.7	5.1	
Oil Pump	Screw	M6 x 1.0	3	7	0.7	5.1	
Oil Filter Cover	Screw	M6 x 1.0	3	7	0.7	5.1	
Drain Plug	—	M35 x 1.5	1	32	3.2	23	
Carburetor Joint	Bolt	M6 x 1.0	4	10	1.0	7.2	
Air Filter Element	Screw	M6 x 1.0	2	7	0.7	5.1	
Air Filter Cover	Bolt	M6 x 1.0	2	10	1.0	7.2	
Exhaust Pipe 3	Flange bolt	M8 x 1.25	2	20	2.0	14	
Exhaust Pipe Joint (Lower)	Flange bolt	M8 x 1.25	1	20	2.0	14	
Exhaust Pipe	Flange nut	M6 x 1.0	4	10	1.0	7.2	
Muffler	Flange bolt	M10 x 1.25	1	25	2.5	18	
Exhaust Pipe Joint (Upper)	Flange bolt	M6 x 1.0	1	10	1.0	7.2	
Air Filter Plate	Flange bolt	M6 x 1.0	2	10	1.0	7.2	
	Screw	M4 x 1.0	2	3	0.3	2.2	
Crankcase	Screw	M6 x 1.0	14	7	0.7	5.1	
Crankcase Cover (Left)	Screw	M6 x 1.0	9	7	0.7	5.1	
Crankcase Cover (Right)	Screw	M6 x 1.0	10	7	0.7	5.1	
Cover (Drive chain)	Screw	M6 x 1.0	3	7	0.7	5.1	
Drain Plug	—	M14 x 1.25	1	34	3.4	24	
Nozzle	—	M8 x 1.25	2	5	0.5	3.6	
Starter Clutch	Bolt	M8 x 1.25	3	30	3.0	22	Stake
Primary Drive Gear	Nut	M16 x 1.0	1	80	8.0	58	Use lock washer
Clutch Boss	Nut	M16 x 1.0	1	75	7.5	54	Use lock washer
Clutch Spring	Screw	M6 x 1.0	4	8	0.8	5.8	
Clutch Adjuster Locknut	Nut	M6 x 1.0	1	8	0.8	5.8	
Clutch Push Lever	Screw	M8 x 1.0	1	12	1.2	8.7	
Drive Sprocket	Bolt	M6 x 1.0	2	10	1.0	7.2	
Shiftcam Side Plate	Screw	M5 x 0.8	1	4	0.4	2.9	
Shiftcam Stopper	Screw	M8 x 1.0	1	22	2.2	16	
Shift Lever 3	Bolt	M6 x 1.0	1	8	0.8	5.8	
Shift Pedal	Nut	M6 x 1.0	1	8	0.8	5.8	Left-hand thread
	Nut	M6 x 1.0	1	8	0.8	5.8	
Neutral Switch	—	M10 x 1.25	1	20	2.0	14	
Stator	Screw	M6 x 1.0	3	7	0.7	5.1	
Pickup Coil	Screw	M5 x 1.0	2	5	0.5	3.6	
Starter Motor	Bolt	M6 x 1.0	2	10	1.0	7.2	

SPEC

Model	XV250U/UC
Steering System: Steering Bearing Type Number/Size of Steel Ball: Upper Lower	Ball bearing 19 pcs./0.25 in 19 pcs./0.25 in
Front Suspension: Front Fork Travel Fork Spring Free Length < Limit > Spring Rate: K1 K2 Stroke K1 K2 Optional Spring Oil Capacity Oil Level Oil Grade	140 mm (5.5 in) 415 mm (16.3 in) < 410 mm (16.1 in) > 3.92 N/mm (0.4 kg/mm, 22.4 lb/in) 5.69 N/mm (0.58 kg/mm, 32.5 lb/in) 0 ~ 106 mm (0 ~ 4.17 in) 106 ~ 162 mm (4.17 ~ 6.38 in) No. 245 cm ³ (8.62 Imp oz, 8.28 US oz) 120 mm (4.72 in) From top of fully compressed inner tube without fork spring Yamaha fork oil 10wt or equivalent
Rear Suspension: Shock Absorber Travel Spring Free Length < Limit > Fitting Length Spring Rate: K1 K2 Stroke: K1 K2 Optional Spring	70 mm (2.76 in) 233 mm (9.17 in) < 226 mm (8.90 in) > 207.5 mm (8.17 in) 15.7 N/mm (1.6 kg/mm, 89.6 lb/in) 22.6 N/mm (2.3 kg/mm, 128.8 lb/in) 0 ~ 75 mm (0 ~ 2.95 in) 75 ~ 162 mm (2.95 ~ 6.38 in) No.
Swingarm: Swingarm Free Play Limit: End	< 1 mm (0.04 in) >
Front Wheel: Type Rim Size Rim Material Rim Runout Limit: Vertical Lateral	Spoke wheel MT1.60 x 18 Steel < 2 mm (0.08 in) > < 2 mm (0.08 in) >
Rear Wheel: Type Rim Size Rim Material Rim Runout Limit: Vertical Lateral	Spoke wheel MT2.75 x 15 Steel < 2 mm (0.08 in) > < 2 mm (0.08 in) >
Drive Chain: Type/Manufacturer No. of Links Drive Chain Slack	520DS/D.I.D. 140 30 ~ 40 mm (1.18 ~ 1.57 in)



Model	XV250U/UC
Front Disc Brake: Type Disc Outside Diameter x Thickness Pad Thickness < Limit > * 	Single 267 x 5 mm (10.5 x 0.2 in) 6.8 mm (0.27 in) < 0.8 mm (0.03 in) >
Master Cylinder Inside Diameter Caliper Cylinder Inside Diameter Brake Fluid Type	12.7 mm (0.45 in) 38.1 mm (1.50 in) DOT #3 or #4
Rear Drum Brake: Type Drum Inside Diameter < Limit > Lining Thickness < Limit > Shoe Spring Free Length	Leading and trailing 130 mm (5.12 in) < 131 mm (5.16 in) > 4 mm (0.16 in) < 2 mm (0.08 in) > 36.5 mm (1.44 in)
Brake Lever and Brake Pedal: Brake Lever Free Play Brake Pedal Position Brake Pedal Free Play	2 ~ 5 mm (0.08 ~ 0.20 in) 45 ~ 55 mm (1.77 ~ 2.17 in) 20 ~ 30 mm (0.8 ~ 1.2 in)
Clutch Lever: Clutch Lever Free Play	3 ~ 5 mm (0.12 ~ 0.20 in)

MAINTENANCE SPECIFICATIONS

SPEC



TIGHTENING TORQUE:

Part to be tightened	Thread size	Tightening torque			Remarks
		Nm	m·kg	ft·lb	
Front Wheel Axle	M14 x 1.5	58	5.8	42	See NOTE
Front Axle Bolt	M8 x 1.25	20	2.0	14	
Steering Stem and Inner Tube	M12 x 1.25	38	3.8	27	
Front Fender and Front Fork	M8 x 1.25	20	2.0	14	
Front Brake Caliper and Front Fork	M10 x 1.25	35	3.5	25	
Steering Stem and Clamp	M6 x 1.0	7	0.7	5.1	
Headlight Stay and Steering Stem	M6 x 1.0	7	0.7	5.1	
Headlight Stay and Headlight (Lower)	M8 x 1.25	20	2.0	14	
Handlebar Crown and Inner Tube	M8 x 1.25	20	2.0	14	
Handlebar Crown and Steering Stem	M14 x 1.25	54	5.4	39	
Steering Stem and Ring Nut	M25 x 1.0	38	3.8	27	
Handlebar Crown and Handlebar Holder (Lower)	M10 x 1.25	20	2.0	14	
Handlebar and Handlebar Holder (Upper)	M8 x 1.25	20	2.0	14	
Speedometer and Handle Crown	M6 x 1.0	7	0.7	5.1	
Headlight (Upper) and Meter Stay	M6 x 1.0	7	0.7	5.1	
Indicator Light Box and Meter Stay	M4 x 0.7	1	0.1	0.7	
Headlight Stay and Flasher Light Stay	M12 x 1.25	20	2.0	14	
Front Brake Disc and Hub	M8 x 1.25	20	2.0	14	Use lock washer 
Front Brake Hose and Caliper	M10 x 1.25	26	2.6	19	
Front Brake Bleed Screw	M8 x 1.25	6	0.6	4.3	
Master Cylinder and Brake Hose	M10 x 1.25	26	2.6	19	
Master Cylinder and Cap	M5 x 0.8	2	0.2	1.4	
Master Cylinder and Bracket	M6 x 1.0	9	0.9	6.5	
Horn and Frame	M6 x 1.0	7	0.7	5.1	
Frame and Ignition Coil Stay	M6 x 1.0	7	0.7	5.1	
Ignition Coil and Coil Stay	M5 x 0.8	4	0.4	2.9	
Engine Stay (Front) and Frame	M10 x 1.25	55	5.5	40	
Igniter Unit and Fender (Rear)	M6 x 1.0	4	0.4	2.9	
Air Filter Case and Frame	M6 x 1.0	4	0.4	2.9	
Engine Stay (Rear) and Frame	M8 x 1.25	35	3.5	25	
Engine Mounting (Rear-Top) and Stay	M8 x 1.25	35	3.5	25	
Engine Mounting (Rear-Bottom) and Frame	M8 x 1.25	35	3.5	25	
Engine Mounting (Front) and Frame	M8 x 1.25	35	3.5	25	
Main Switch and Frame	M6 x 1.0	15	1.5	11	
Regulator and Frame	M6 x 1.0	7	0.7	5.1	
Helmet Hanger and Frame	M6 x 1.0	15	1.5	11	
Brake Pedal Adjuster Locknut	M6 x 1.0	7	0.7	5.1	
Sidestand	M10 x 1.25	26	2.6	19	
Rear Footrest and Frame	M8 x 1.25	30	3.0	22	
Pivot Shaft and Swingarm	M12 x 1.25	43	4.3	31	
Fuel Pump and Pump Bracket	M6 x 1.0	7	0.7	5.1	
Pump Bracket and Fuel Tank	M6 x 1.0	7	0.7	5.1	
Fuel Cock and Fuel Cock Stay	M6 x 1.0	7	0.7	5.1	
Fuel Tank and Fuel Cock Stay	M6 x 1.0	7	0.7	5.1	
Fuel Tank (Rear-Top) and Frame	M6 x 1.0	9	0.9	6.5	
Battery Box and Frame	M6 x 1.0	7	0.7	5.1	
Bracket 1 and Reinforcement (Rear Fender)	M6 x 1.0	7	0.7	5.1	
Seat (Front) and Frame	M6 x 1.0	7	0.7	5.1	
Seat (Rear) and Reinforcement	M6 x 1.0	7	0.7	5.1	

MAINTENANCE SPECIFICATIONS



Part to be tightened	Thread size	Tightening torque			Remarks
		Nm	m·kg	ft·lb	
Rear Shock Absorber (Upper)	M8 x 1.25	20	2.0	14	
Rear Shock Absorber (Lower)	M8 x 1.25	20	2.0	14	
Rear Wheel Axle	M14 x 1.5	105	10.5	75	
Rear Fender (Front) and Frame	M10 x 1.25	60	6.0	43	
Rear Fender (Rear) and Frame	M10 x 1.25	60	6.0	43	
Rear Fender and Flasher Light Stay	M12 x 1.25	20	2.0	14	
Rear Fender and Taillight	M6 x 1.0	7	0.7	5.1	
Rear Fender and Licence Bracket	M6 x 1.0	7	0.7	5.1	
Brake Rod and Swingarm	M8 x 1.25	20	2.0	14	
Brake Rod and Brake Shoe Plate	M8 x 1.25	20	2.0	14	
Sidestand Switch and Sidestand Bracket	M5 x 1.0	3	0.3	2.2	
Sidestand Switch Pannel and Frame	M6 x 0.8	13	1.3	9.4	
Flasher Light and Flasher Stay	M6 x 1.0	7	0.7	5.1	
Wire Harness and Frame	M6 x 1.0	4	0.4	2.9	

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 10 Nm (1.0 m·kg, 7.2 ft·lb).



Electrical

Model	XV250U/UC
Voltage:	12V
Ignition System: Ignition Timing (B.T.D.C.) Advanced Timing (B.T.D.C.) Advancer Type	8° at 1,300 r/min 27° at 3,000 r/min Electrical
Ignition Timing (B.T.D.C.) Engine Speed (x 10³ r/min)	
T.C.I.:	
Pickup Coil Resistance (Color)	178 ~ 266Ω at 20°C (68°F) (Blue/Yellow – Green/White)
T.C.I. Unit-Model/Manufacturer	QCA03/NIPPONDENSO
Ignition Coil:	
Model/Manufacturer	J0226/NIPPONDENSO
Primary Winding Resistance	3.2 ~ 4.8Ω at 20°C (68°F)
Secondary Winding Resistance	10.4 ~ 15.6 kΩ at 20°C (68°F)
Spark Plug Cap Resistance	10 kΩ
Charging System/Type:	A.C. magneto generator
A.C. Generator:	
Model/Manufacturer	LMZ42/NIPPONDENSO
Nominal Output	14V, 21A at 5,000 r/min
Output current (A) Engine speed (x 10³ r/min)	
Stator Coil Resistance	0.19 ~ 0.29Ω at 20°C (68°F) (White – White)

MAINTENANCE SPECIFICATIONS

SPEC



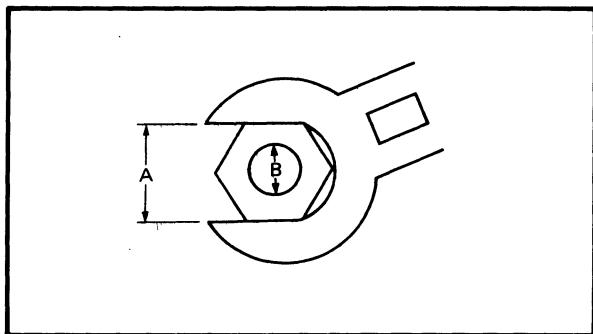
Model	XV250U/UC
Voltage Regulator: Type Model/Manufacturer No Load Regulated Voltage	Short circuit SH569/SHINDENGEN 14.3 ~ 15.3V
Rectifier: Model/Manufacturer Capacity Withstand Voltage	SH569/SHINDENGEN 25A 200V
Battery: Capacity: Specific Gravity	12V, 10AH 1.280
Electric Starter System: Type Starter Motor: Model/Manufacturer Output Brush Overall Length < Limit > Spring Pressure Commutator: Outside Diameter < Wear Limit > Mica Undercut Starter Relay: Model/Manufacturer Amperage Rating Coil Winding Resistance	Constant mesh type 2UJ/MORIYAMA 0.4 kW 10 mm (0.39 in) < 3.5 mm (0.14 in) > 560 ~ 840 g (19.8 ~ 29.7 oz) 22 mm (0.87 in) < 21 mm (0.83 in) > 1.5 mm (0.059 in) A104-128/HITACHI 100A 3.0 ~ 3.7Ω at 20°C (68°F)
Heater (Carburetor): Resistance	9.5 ~ 10.5Ω at 20°C (68°F)
Horn: Type/Quantity Model/Manufacturer Maximum Amperage	Plain type x 1 MF-12/NIKKO 1.5A
Flasher Relay: Type Model/Manufacturer Self Cancelling Device Flasher Frequency Wattage	Semi transistor type FB257H/NIPPONDENSO Yes. 75 ~ 95 cycle/min 27W x 2 + 3.4W
Self Cancelling Unit: Model/Manufacturer	FB257H
Starting Circuit Cut-off Relay: Model/Manufacturer Diode	2UJ/OMRON Yes
Circuit Breaker: Type Amperage for Individual Circuit x Quantity: Main Signal	Fuse 20A x 1 10A x 1



GENERAL TORQUE SPECIFICATIONS

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

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



A: Distance across flats
B: Outside thread diameter

DEFINITION OF UNITS

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



LUBRICATION POINTS AND LUBRICANT TYPE

ENGINE

Lubrication Point	Symbol	Lubricant Type
Oil seal lip		Lithium-soap base grease
O-Ring		Lithium-soap base grease
Bearing		Engine oil
Cylinder head bolt/Washer		Engine oil
Rocker shaft bearing		Molybdeum disulfide oil
Crankshaft pin		Engine oil
Crankshaft journal		Engine oil
Connecting rod		Engine oil
Piston surface		Engine oil
Piston pin		Engine oil
Camshaft cam lobe/Journal		Engine oil
Valve stem (IN, EX)		Molybdeum disulfide oil
Valve stem end (IN, EX)		Engine oil
Cam chain/Cam sprocket		Engine oil
Oil pump shaft, rotor (IN, OUT), housing		Engine oil
Idle gear 1, 2 surface/Bushing		Engine oil
Starter clutch		Engine oil
Primary driven gear		Engine oil
Push lever axle		Molybdeum disulfide oil
Transmission gear (Wheel/Pinion)		Molybdeum disulfide oil
Axle (Main/Drive)		Molybdeum disulfide oil
Shift cam		Molybdeum disulfide oil
Shift fork/Guide bar		Engine oil
Crankcase mating surfaces		Yamaha bond No. 4®

LUBRICATION POINTS AND LUBRICANT TYPE

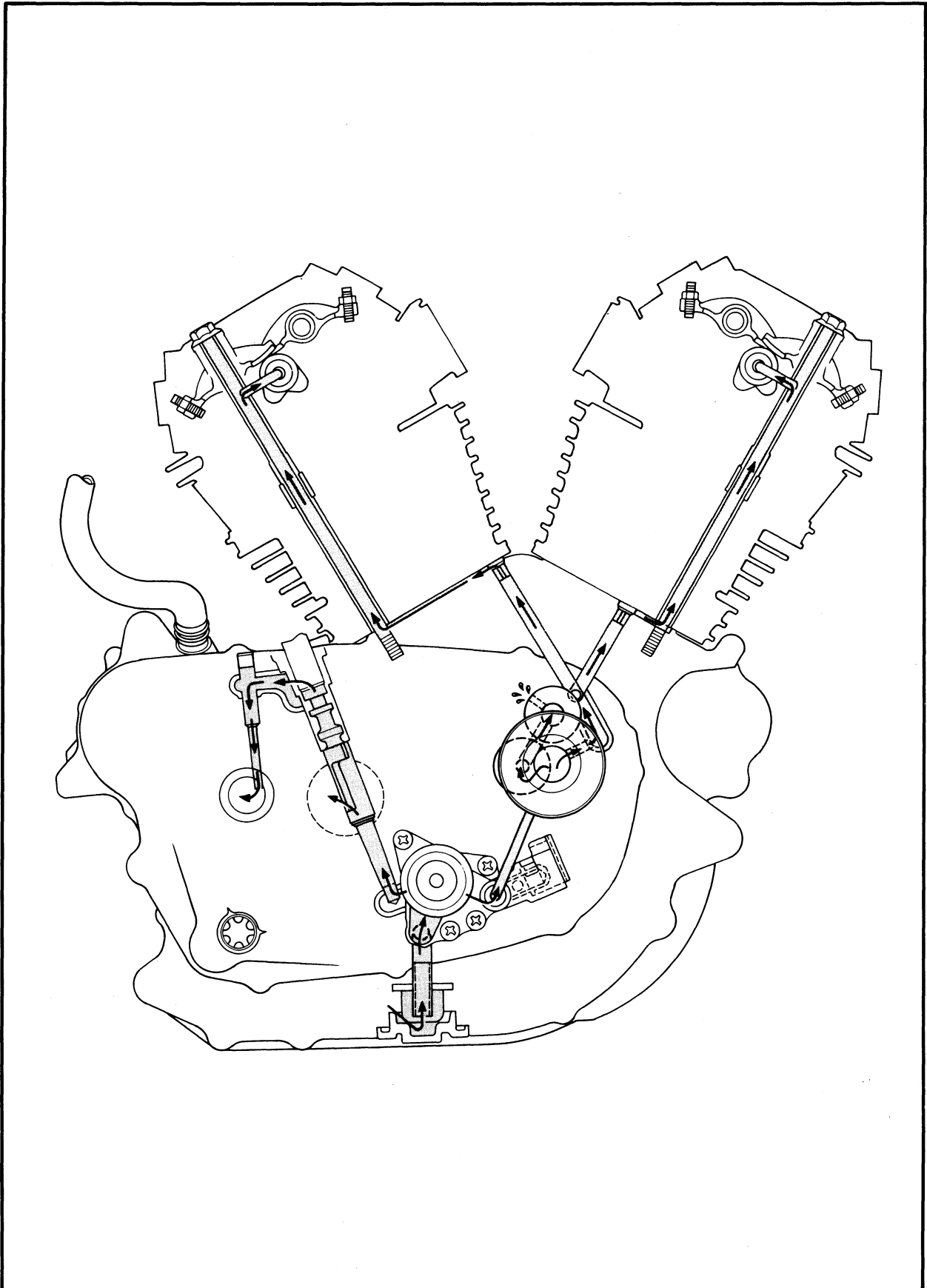


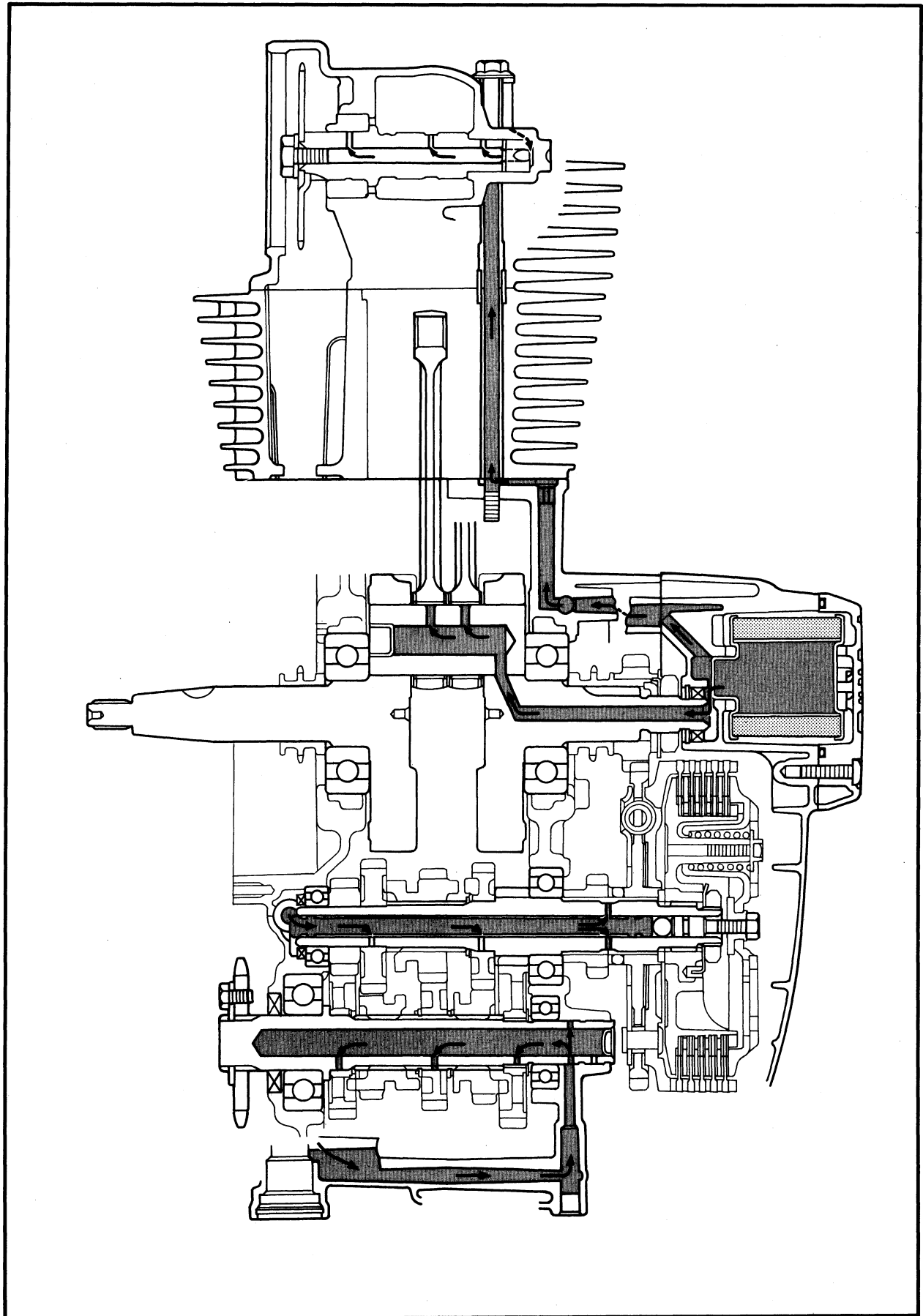
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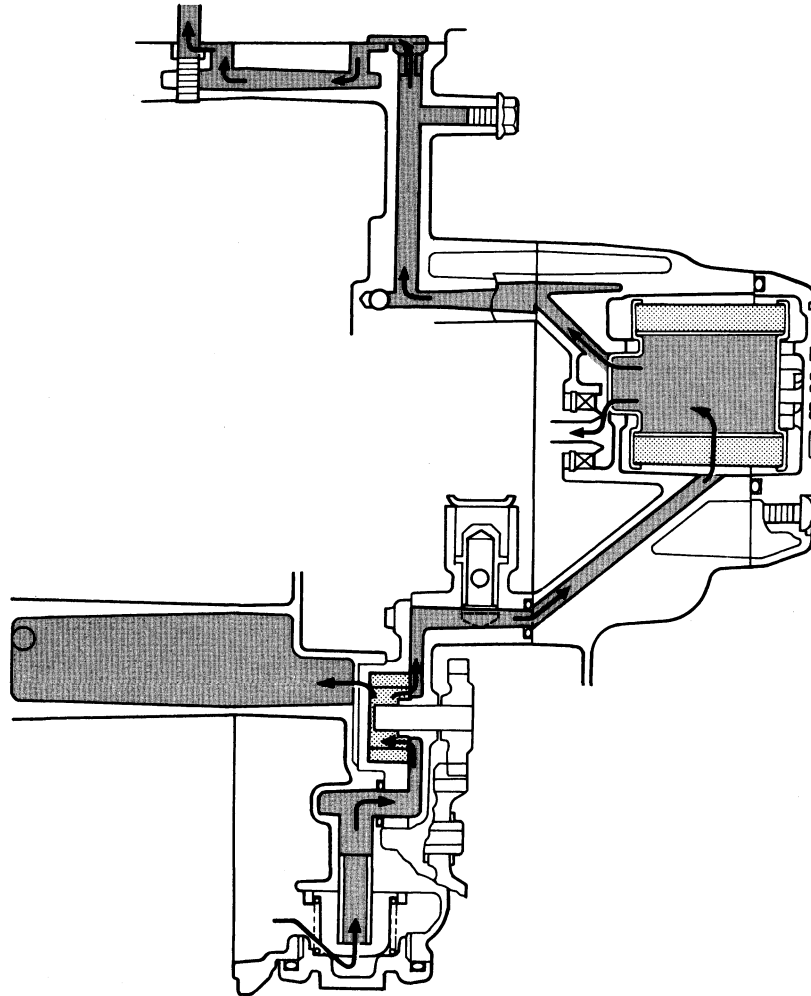
Lubrication Point	Symbol	Lubricant Type
Steering bearing (Upper/Lower)		Lithium-soap base grease
Wheel bearing/Axle		Lithium-soap base grease
Front wheel oil seal (Right/Left)		Lithium-soap base grease
Rear wheel oil seal		Lithium-soap base grease
Clutch hub oil seal		Lithium-soap base grease
Clutch hub fitting area		Lithium-soap base grease
Rear brake pedal shaft		Lithium-soap base grease
Change pedal		Wheel bearing grease
Side stand sliding surface		Wheel bearing grease
Tube guide (Throttle grip) inner surface		Wheel bearing grease
Brake lever bolt, sliding surface		Wheel bearing grease
Clutch lever collar, sliding surface		Wheel bearing grease
Swingarm pivot bearing		Lithium-soap base grease
Speedometer gear unit		Lithium-soap base grease
Rear brake camshaft		Lithium-soap base grease
Brake shoe plate pivot		Lithium-soap base grease



LUBRICATION DIAGRAMS







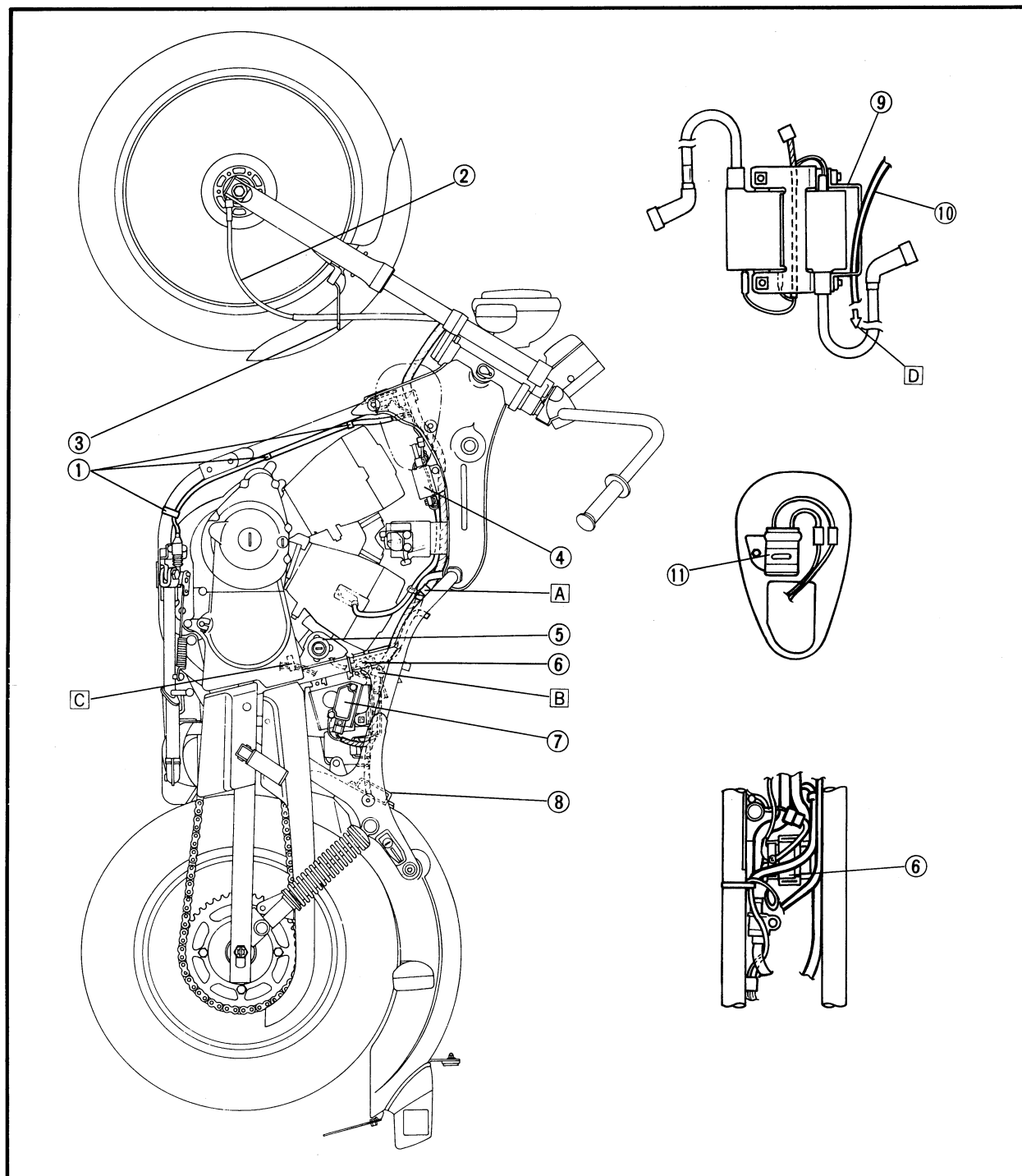


CABLE ROUTING

- ① Clamp
- ② Speedometer cable
- ③ Cable guide
- ④ Ignition coil
- ⑤ Main switch
- ⑥ Starter switch

- ⑦ Rectifier/Regulator
- ⑧ Ignitor unit (Digital)
- ⑨ Plate
- ⑩ Starter cable
- ⑪ Thermo switch

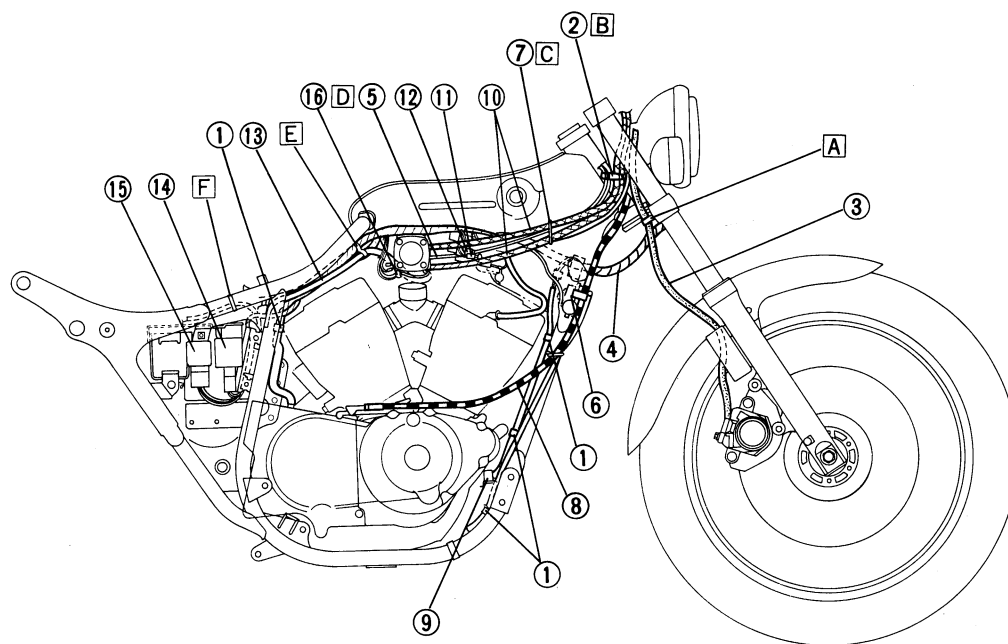
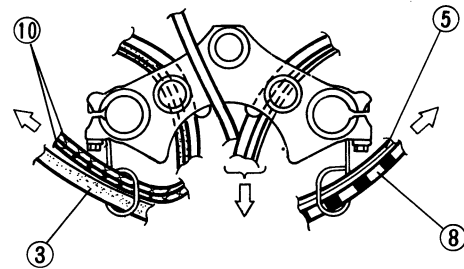
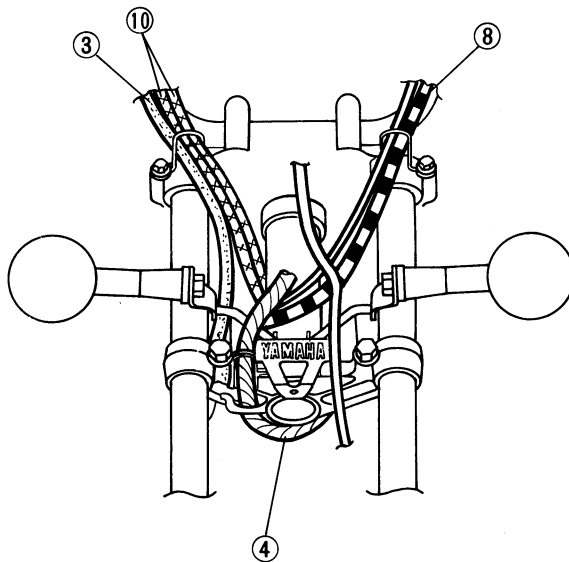
- A Clamp the wireharness.
- B Pass the wireharness and possitive lead.
- C Clamp the starter motor lead and neutral switch lead.
- D To carburetor





- ① Clamp
- ② Band
- ③ Brake hose
- ④ Wire harness
- ⑤ Starter cable
- ⑥ Horn
- ⑦ Cable guide
- ⑧ Clutch cable
- ⑨ Rear brake switch
- ⑩ Throttle cables
- ⑪ Front brake switch coupler
- ⑫ Handlebar switch (Right) coupler
- ⑬ Canister hose
- ⑭ Relay assembly
- ⑮ Flasher relay
- ⑯ Heater (Carburetor)

- A Clamp the brake hose with hose holder.
- B Clamp the leads.
- C Pass the cables and leads.
- D Pass the starter cable between ignition coil and plate.
- E Clamp the wire harness and canister hose.
- F Clamp the main switch and neutral switch leads.



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.

MAINTENANCE INTERVALS CHARTS

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

PERIODIC MAINTENANCE EMISSION CONTROL SYSTEM

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

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

NOTE:

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

MAINTENANCE INTERVALS CHARTS



GENERAL MAINTENANCE/LUBRICATION

No.	Item	Remarks	Type	Initial	Odometer readings					
				1,000 km or 1 month (600 mi)	**1 7,000 km or 7 months (4,400 mi)	**2 13,000 km or 13 months (8,200 mi)	19,000 km or 19 months (12,000 mi)	**3 25,000 km or 25 months (15,800 mi)	31,000 km or 31 months (19,600 mi)	
1	Engine oil	Warm-up engine before draining.	See NOTE	○	○	○	○	○	○	
2*	Oil filter	Replace.	—	○		○		○		
3*	Air filter	Clean with compressed air. Replace if necessary.	—		○	○	○	○	○	
4*	Brake system	Adjust free play. Replace pads if necessary. (Front) Replace shoes if necessary. (Rear)	—	○	○	○	○	○	○	
5*	Clutch	Adjust free play.	—	○	○	○	○	○	○	
6	Control and meter cable	Apply chain lube thoroughly.	Yamaha chain or SAE 10W30 motor oil.	○	○	○	○	○	○	
7*	Rear arm pivot bearing	Check bearing assembly for looseness. Moderately repack every 24,000 km. (15,200 mi)	Medium weight wheel bearing grease.					Repack		
8	Brake/Clutch lever pivot shaft	Apply chain lube lightly.	Yamaha chain and cable lube or SAE 10W30 motor oil.		○	○	○	○	○	
9	Brake pedal and change pedal shaft	Apply chain lube lightly.	Yamaha chain and cable lube or SAE 10W30 motor oil.		○	○	○	○	○	
10*	Sidestand pivot	Check operation and lubricate. Apply chain lube lightly.	Yamaha chain and cable lube or SAE 10W30 motor oil.		○	○	○	○	○	
11*	Front fork oil	Check operation and leakage.	—		○	○	○	○	○	
12*	Steering bearings	Check bearings assembly for looseness. Moderately repack every 24,000 km. (15,200 mi)	Medium weight wheel bearing grease.		○	○	○	Repack	○	

MAINTENANCE INTERVALS CHARTS



No.	Item	Remarks	Type	Initial	Odometer readings				
				1,000 km or 1 month (600 mi)	**1 7,000 km or 7 months (4,400 mi)	**2 13,000 km or 13 months (8,200 mi)	19,000 km or 19 months (12,000 mi)	**3 25,000 km or 25 months (15,800 mi)	31,000 km or 31 months (19,600 mi)
13*	Wheel bearings	Check bearings for smooth rotation.	—		○	○	○	○	○
14	Battery	Check specific gravity and breather pipe for proper operation.	—		○	○	○	○	○
15*	Sidestand switch	Check and clean or replace if necessary.	—	○	○	○	○	○	○

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

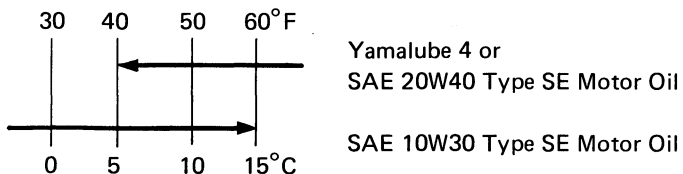
NOTE:

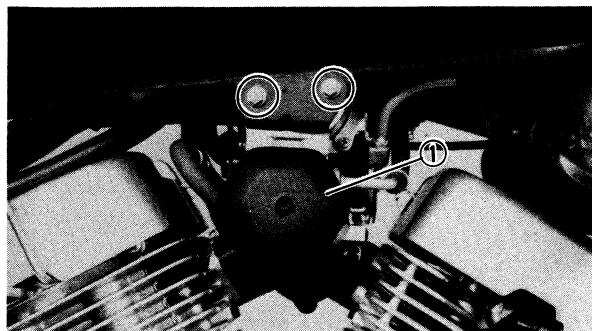
• For farther odometer reading, repeat the above maintenance at the period established; **1: Every 6,000 km (3,800 mi), **2: Every 12,000 km (7,600 mi), and **3: Every 24,000 km (15,200 mi) intervals.

• 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 it cracked or damaged.

• Engine oil:

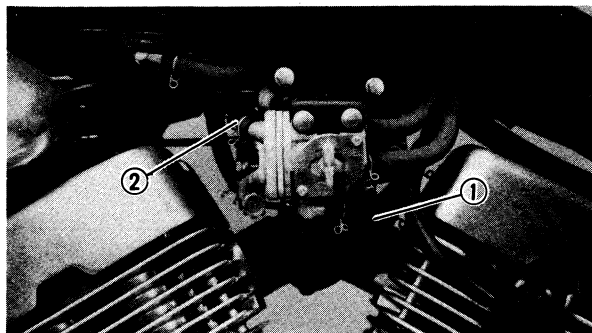




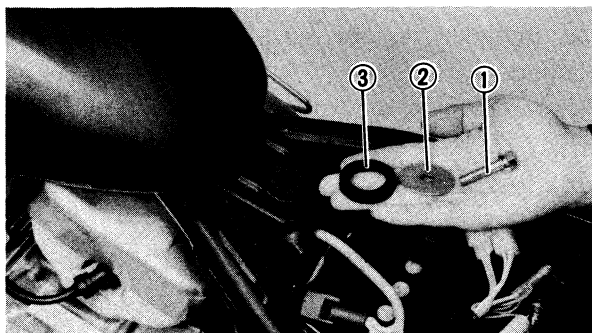
FUEL TANK REMOVAL AND INSTALLATION

Removal

1. Place the motorcycle on a level place.
2. Turn the fuel cock to "ON" position.
3. Remove:
 - Seat
 - Fuel pump ①



4. Disconnect:
 - Fuel hose ①
 - Vacuum hose ②



5. Remove:
 - Bolt ①
 - Plate ②
 - Damper ③
 - Fuel tank

Installation

1. Install:
 - Reverse removal procedure.
2. Turn the fuel cock to "ON" position.

ENGINE**VALVE CLEARANCE ADJUSTMENT****⚠ WARNING:**

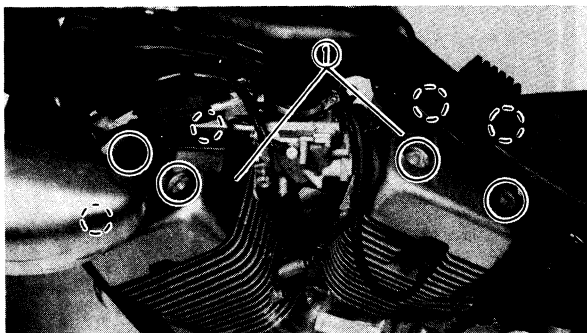
The engine must be cool before servicing the valve clearance.

NOTE:

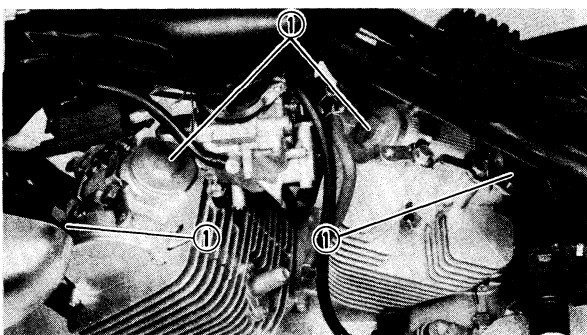
Measure and adjust valve clearance when piston is at TDC on compression stroke.

Removal**1. Remove:**

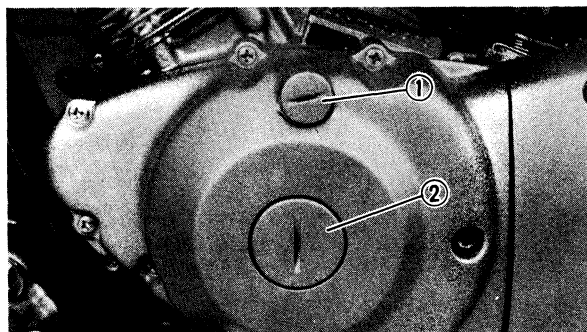
- Seat
- Fuel tank
- Air filter case

**2. Remove:**

- Covers (Cylinder head) ①
- Spark plug leads
- Spark plugs

**3. Remove:**

- Tappet covers ①

**4. Remove:**

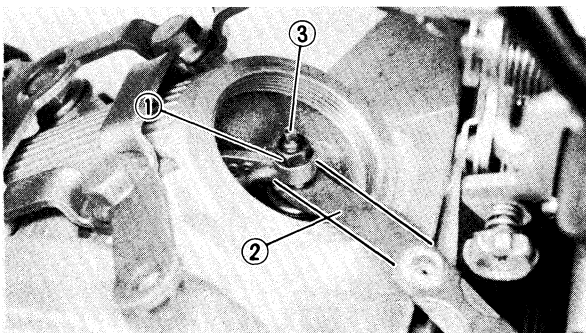
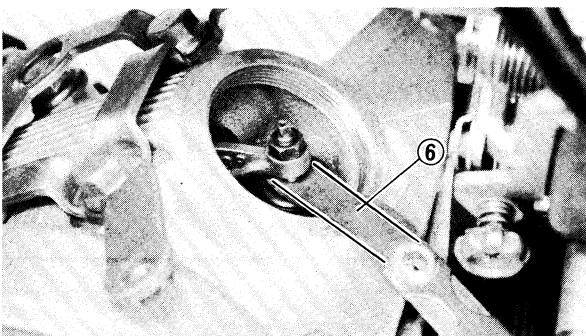
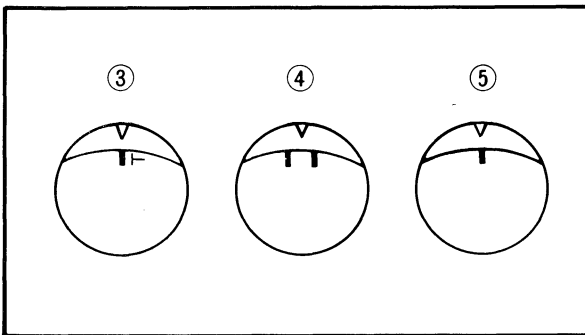
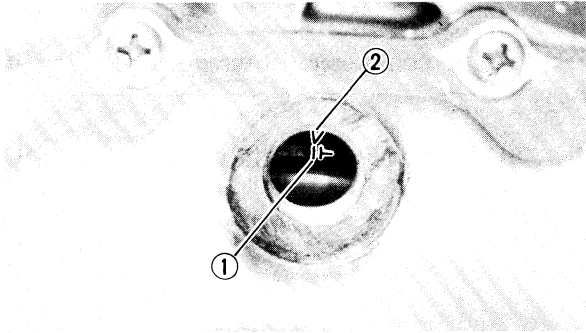
- Timing plug ①
- Plate (Crankcase cover) ②



Measurement and Adjustment

1. Measure:

- Valve clearance



Valve clearance measurement steps:

- Turn the crankshaft clockwise with wrench.

NOTE:

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

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

NOTE:

Be sure piston is at Top Dead Center (TDC) on compression stroke when measuring clearance.

- Note marks on flywheel to obtain correct valve clearance measurements.

- ③ TDC for front cylinder
- ④ Firing range for front cylinder
- ⑤ TDC for rear cylinder

- Measure the valve clearance using a Feeler Gauge ⑥ .
Out of specification → Adjust clearance.



Intake Valve (Cold):

0.08 ~ 0.12 mm (0.003 ~ 0.005 in)

Exhaust Valve (Cold):

0.10 ~ 0.14 mm (0.004 ~ 0.006 in)

- Repeat the above steps for front cylinder.

2. Adjust:

- Valve clearance

Valve clearance adjustment steps:

- Loosen the locknut ① .
- Insert a Feeler Gauge ② between the adjuster end and the valve end.
- Turn the adjuster ③ clockwise or counter-clockwise with a wrench until proper clearance is attained.



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

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



Valve Clearance Adjusting Locknut:
7 Nm (0.7 m·kg, 5.8 ft·lb)

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

Assembly

Reverse the removal procedure. Note the following points.

1. Inspect:

- O-rings (Tappet covers)
 - O-ring (Timing plug)
 - O-ring (Crankcase cover plate)
- Damage → Replace.

2. Install:

- Tappet covers
- Spark plugs
- Covers (Cylinder head)
- Fuel tank
- Seat



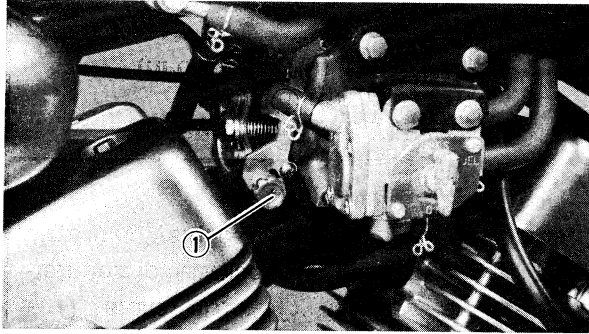
Tappet Covers:
7 Nm (0.7 m·kg, 5.8 ft·lb))
Spark Plugs:
13 Nm (1.3 m·kg, 8.4 ft·lb)
Covers (Cylinder Head):
10 Nm (1.0 m·kg, 7.2 ft·lb)

CAM CHAIN ADJUSTMENT

This model has been equipped the automatic cam chain tensioner. No adjustment is necessary.

IDLE SPEED ADJUSTMENT/ THROTTLE CABLE FREE PLAY ADJUSTMENT

**INSP
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IDLE SPEED ADJUSTMENT

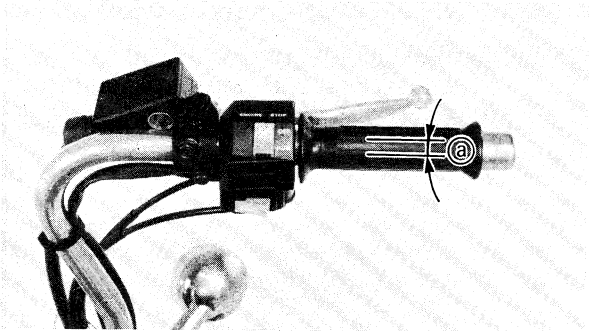
1. Adjust:

- Idle speed

Warm up the engine and turn the throttle stop screw ① to adjust.



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



THROTTLE CABLE FREE PLAY ADJUSTMENT

NOTE:

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

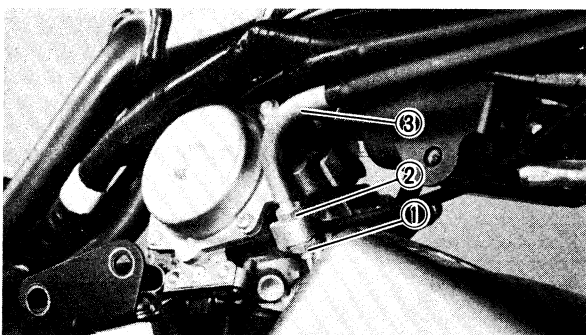
1. Check:

- Throttle cable free play ②

Out of specification → Adjust.



Throttle Cable Free Play ② :
3 ~ 5 mm (0.12 ~ 0.20 in)



2. Adjust:

- Throttle cable free play

Throttle cable adjustment steps:

First step:

- Loosen the locknuts (Throttle cable 2) ① .
- Turn the adjuster (Throttle cable 2) ② clockwise or counterclockwise until the specified free play ② .



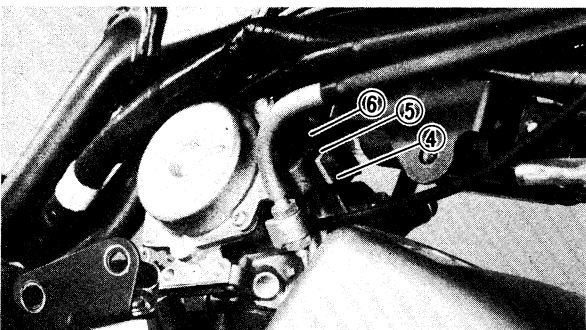
Throttle Cable 2 Free Play ② :
Zero mm (Zero in)

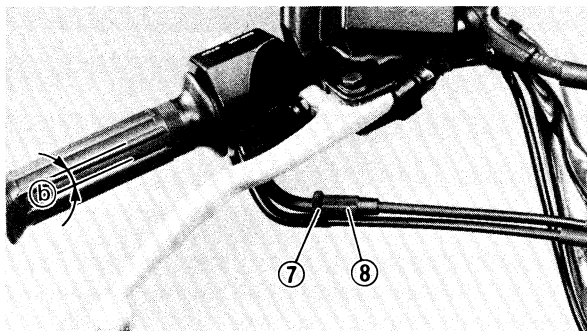
③ Throttle cable 2

- Tighten the locknuts ① .

Second step:

- Loosen the locknuts (Throttle cable 1) ④ .
- Turn the adjuster (Throttle cable 1) ⑤ clockwise or counterclockwise until proper free play (Throttle grip) is attained.





**Throttle Cable Free Play
(Throttle Grip):**
3 ~ 5 mm (0.12 ~ 0.20 in)

⑥ Throttle cable 1

- Tighten the locknuts ④.

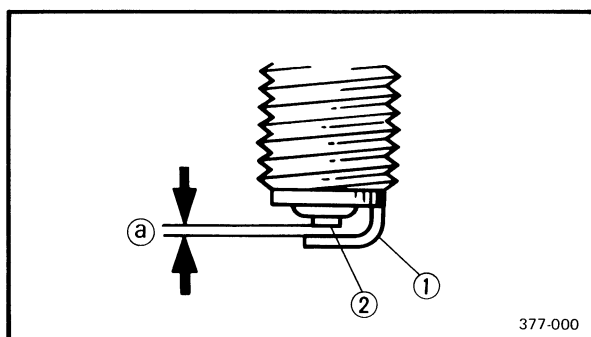
Final step:

- If the free play is incorrect, adjust the throttle cable free play with the adjuster (Throttle grip side).
- Loosen the locknut (Throttle cable 1 — Throttle grip side) ⑦.
- Turn the adjuster (Throttle cable 1 — Throttle grip side) ⑧ clockwise or counter-clockwise until proper free play (Throttle grip) ⑥ is attained.



**Throttle Cable Free Play
(Throttle Grip) ⑥ :**
3 ~ 5 mm (0.12 ~ 0.20 in)

- Tighten the locknut ⑦.



SPARK PLUG INSPECTION

1. Inspect:

- Electrode ①
Wear/Damage → Replace.
- Insulator color ②
Normal condition is a medium to light tan color.
Distinctly different color → Check the engine condition.

① Spark plug gap

2. Clean:

- Spark plug
Clean the spark plug with a spark plug cleaner or wire brush.



3. Inspect:

- Spark plug type
Incorrect → Replace.

Standard Spark Plug:
C6HSA (NGK) or U20FS-U (N.D.)

4. Measure:

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



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

5. Tighten:

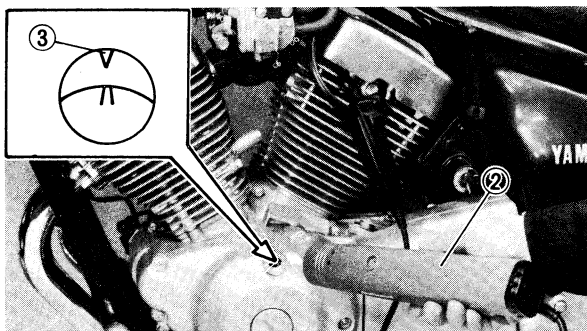
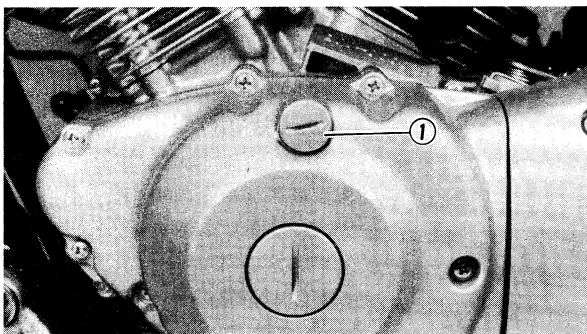
- Spark plugs

NOTE:

- Before installing a spark plug, clean the gasket surface and plug surface.
- If a torque wrench is not available when you are installing a spark plug, a good estimate of the correct torque is 1/4 to 1/2 turns part finger tight. Have the spark plug torqued to the correct value as soon as possible with a torque wrench.



Spark Plugs:
13 Nm (1.3 m·kg, 8.4 ft·lb)



IGNITION TIMING CHECK

1. Check:

- Ignition timing

Ignition timing check steps:

- Remove the timing plug ①.
- Connect the Timing Light ② to rear (#1) cylinder spark plug lead.



Timing Light:
YM-33277

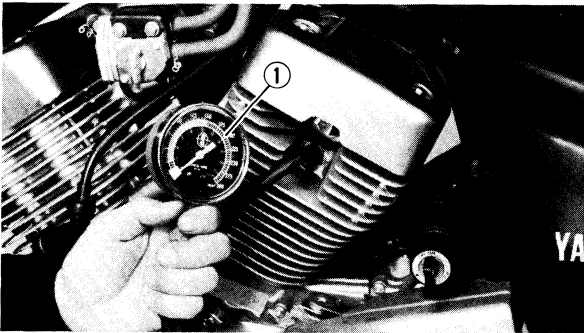
- Warm up the engine and let it idle at the specified idle speed of 1,200 r/min.
- Visually check the stationary pointer ③ in the timing window to verify it is within the required firing range indicated on the fly-wheel.

Incorrect firing range → Check flywheel and/or pickup assembly (Tightness damage).
Refer to "CHAPTER 7. ELECTRICAL" for further information.

COMPRESSION PRESSURE MEASUREMENT

NOTE:

Insufficient compression pressure will result in performance loss.



1. Measure:

- Valve clearance
Out of specification → Adjust.

2. Warm up the engine.

3. Remove:

- Spark plugs

4. Measure:

- Compression pressure

Compression pressure measurement steps:

- Install the Compression Gauge ① using an adapter.



Compression Gauge:
YU-33223

- Crank over the engine with the electric starter (Be sure the battery is fully charged) with the throttle wide open until the compression reading on the gauge stabilizes.
- Check readings with specified levels (See chart)

Compression Pressure (At sea level):

Standard:

1,100 kPa (11 kg/cm², 156 psi)

Minimum:

1,000 kPa (10 kg/cm², 142 psi)

Maximum:

1,200 kPa (12 kg/cm², 171 psi)

⚠ WARNING:

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

ENGINE OIL LEVEL INSPECTION



- Repeat the previous steps for the other cylinders.
- 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.

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

Difference Between Each Cylinder:
 Less than 100 kPa
 (1 kg/cm², 14 psi)

ENGINE OIL LEVEL INSPECTION

1. Inspect:

- Oil level

Oil level low → Add sufficient oil.

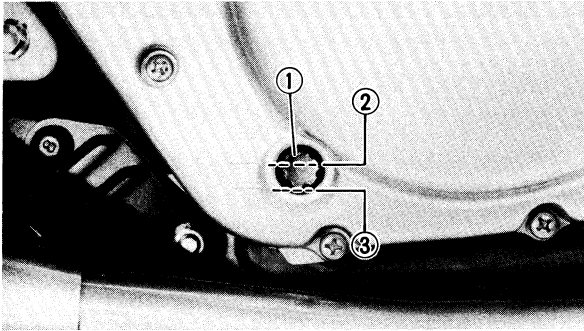
Engine oil level visual inspection steps:

- Place the motorcycle on a level place and support the motorcycle with a suitable stand.

NOTE: _____
 Position motorcycle straight up when checking oil level, a slight tilt to the side can produce false readings.

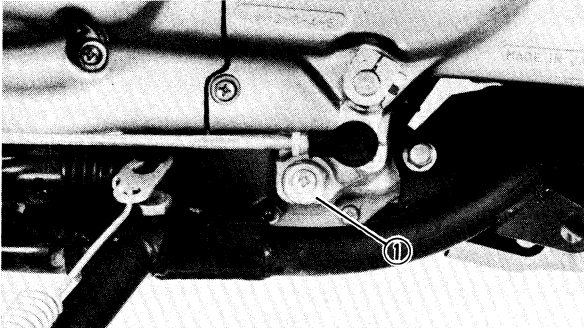
ENGINE OIL REPLACEMENT

**INSP
ADJ**



- Warm up the engine for several minutes.
- Stop the engine and visually check the oil level through the level window ①.

- ② Maximum
- ③ Minimum



ENGINE OIL REPLACEMENT

1. Warm up the engine for several minutes, then place an oil pan under the engine.
2. Remove:
 - Oil filler cap
 - Drain plug ①
 Drain the engine oil.
3. Tighten:
 - Drain plug ①

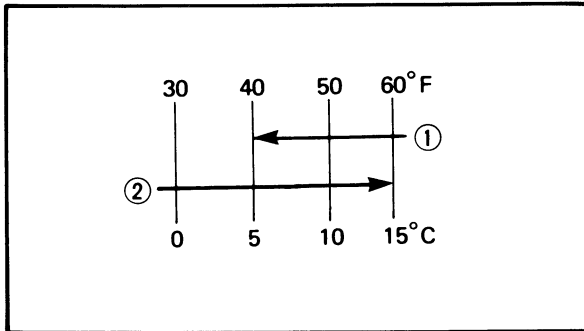


Drain Plug:
43 Nm (4.3 m·kg, 31 ft·lb)

4. Fill:
 - Crankcase



Recommended Oil:
 At 5°C (40°F) or Higher ① :
 Yamalube 4 or
 SAE 20W40 Type SE Motor Oil
 At 15°C (60°F) or Lower ② :
 SAE 10W30 Type SE Motor Oil
Periodic Oil Change:
 1.4 L (1.2 Imp qt, 1.5 US qt)

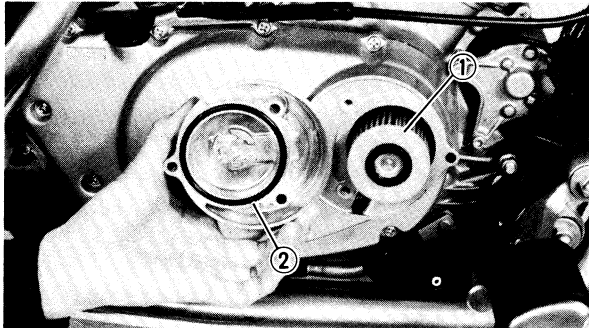
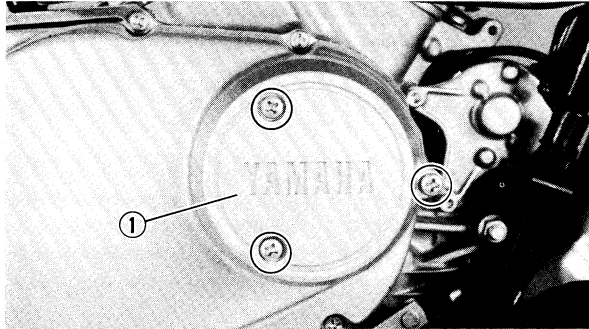


⚠ CAUTION:

Do not allow foreign material to enter the crankcase.

5. Install:
 - Filler cap
6. Inspect:
 - Oil leaks
 - Oil level

ENGINE OIL FILTER REPLACEMENT



ENGINE OIL FILTER REPLACEMENT

1. Warm up the engine and place a drain pan under the engine.
2. Remove:
 - Oil filler cap
 - Drain plug
 Drain the engine oil.
3. Remove:
 - Cover (Oil filter) ①
4. Install:
 - Drain plug

Drain Plug:
 32 Nm (3.2 m·kg, 23 ft·lb)

- Oil filter (New) ①
- O-ring (New) ②
- Oil filter cover

NOTE:

Be sure the O-ring is positioned properly.

5. Tighten:
 - Screw (Oil filter)

Screw (Oil Filter):
 7 Nm (0.7 m·kg, 5.1 ft·lb)

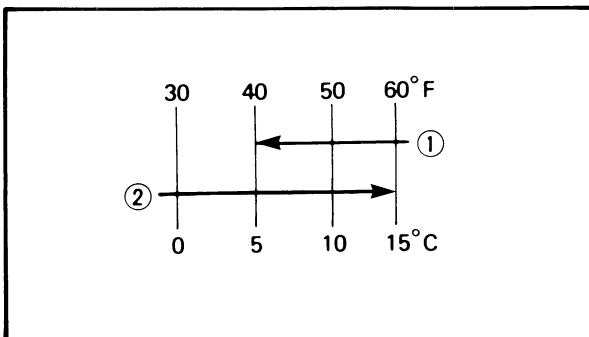
6. Fill:
 - Crankcase

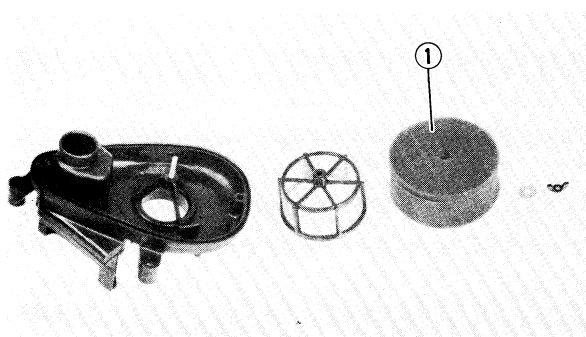
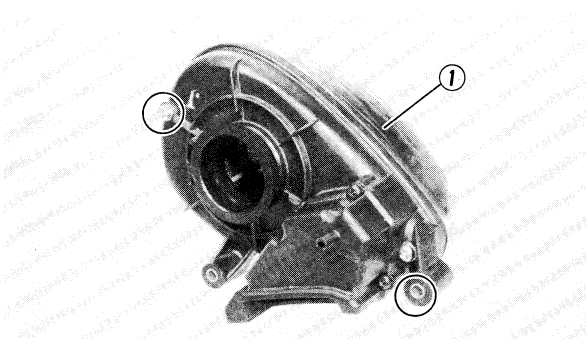
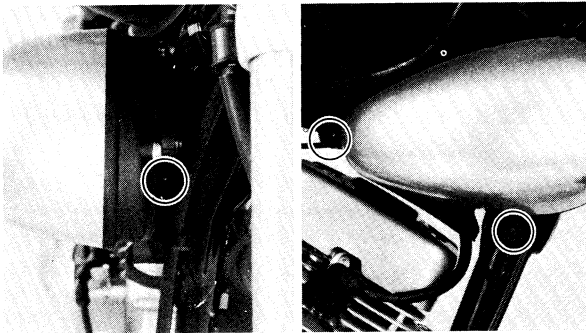
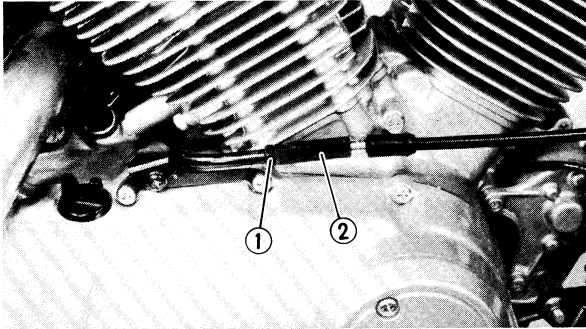
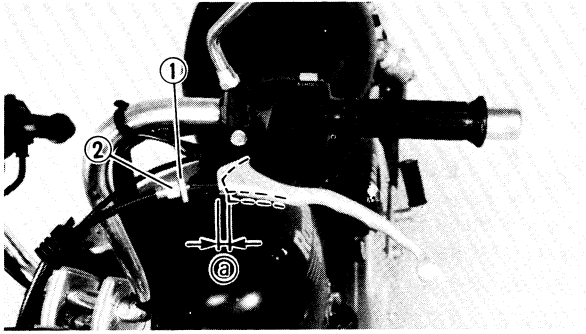
Recommended Oil:
 At 5°C (40°F) or Higher ① :
 Yamalube 4 or
 SAE 20W40 Type SE Motor Oil
 At 15°C (60°F) or Lower ② :
 SAE 10W30 Type SE Motor Oil
With Oil Filter Replacement:
 1.6 L (1.4 Imp qt, 1.7 US qt)

⚠ CAUTION:

Do not allow foreign material to enter the crankcase.

7. Install:
 - Oil filter cap
8. Inspect:
 - Oil leaks
 - Oil level





CLUTCH ADJUSTMENT

Free Play Adjustment

1. Loosen:
 - Locknuts ①
2. Adjust:
 - Free play ③
 Turn the adjusters ② until the free play is within the specified limits.



Free Play ③ :
 3 ~ 5 mm (0.12 ~ 0.20 in)

3. Tighten:
 - Locknuts

NOTE:

The above procedure provides for maximum cable free play to allow for proper clutch actuating mechanism adjustment. Refer to "CHAPTER 4. ENGINE OVERHAUL — ENGINE ASSEMBLY AND ADJUSTMENT" section.

AIR FILTER CLEANING

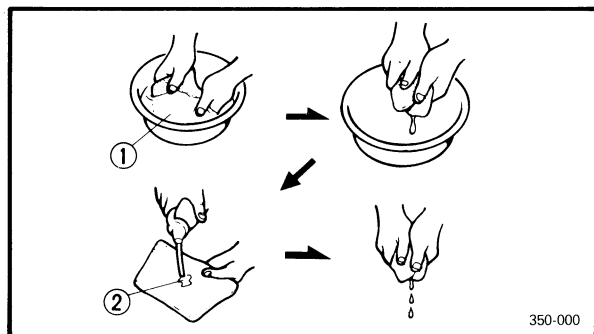
1. Remove:
 - Air filter case
2. Remove:
 - Cover (Air filter case) ①
3. Remove:
 - Element (Air filter) ①

⚠ CAUTION:

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

4. Inspect:

- Element (Air filter)
- Damage → Replacement.



5. Clean:

- Air filter element

Cleaning steps:

- Wash the element gently, but thoroughly in solvent ①.

⚠ 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.

- Apply the SAE 10W30 motor oil ②.
- Squeeze out the excess oil.

NOTE:

The element should be wet but not dripping.

6. Install:

- Element (Air filter)
- Air filter case



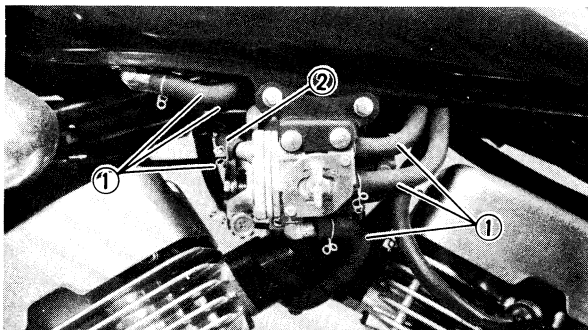
Bolts (Air Filter Case):
4 Nm (0.4 m·kg, 2.9 ft·lb)



CARBURETOR JOINT INSPECTION

1. Inspect:

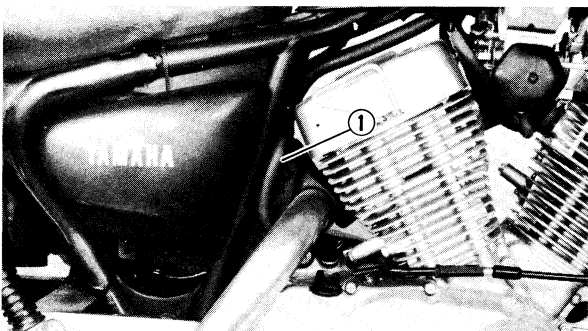
- Carburetor joint
Cracks/Damage → Replace.



FUEL LINE INSPECTION

1. Inspect:

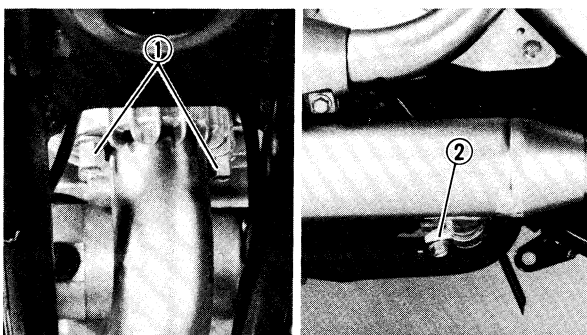
- Fuel hoses ①
- Vacuum hose ②
Cracks/Damage → Replace.
Clogs → Clean.



CRANKCASE VENTILATION HOSE INSPECTION

1. Inspect:

- Crankcase ventilation hose ①
Cracks/Damage → Replace.



EXHAUST SYSTEM INSPECTION

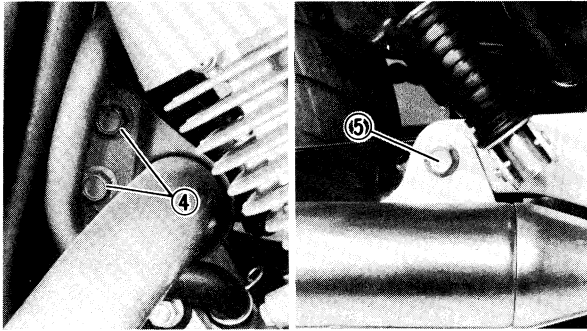
1. Remove:

- Side cover (Right)

2. Inspect:

- Exhaust pipes
- Muffler
- Gaskets
Cracks/Damage → Replace.
- Nuts
- Bolts
Loose → Tighten.

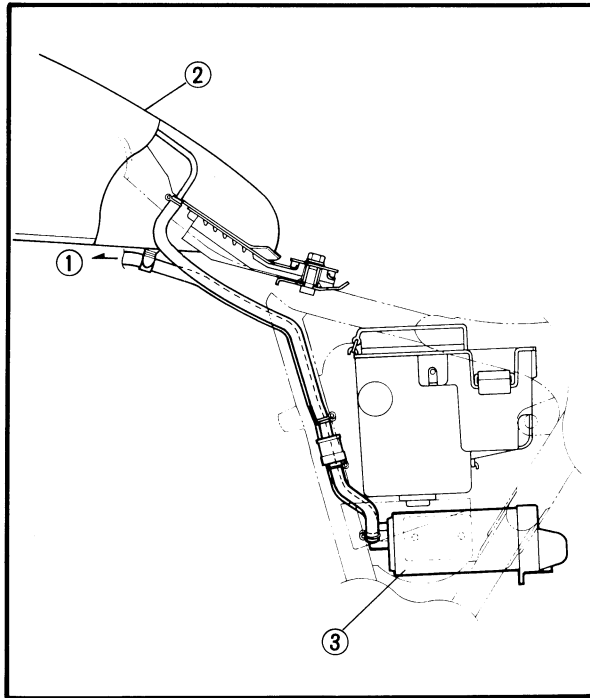
CANISTER INSPECTION (XV250UC ONLY)



3. Tighten:



- Nuts (Exhaust Pipe) ① :**
10 Nm (1.0 m·kg, 7.2 ft·lb)
- Bolt (Exhaust Pipe Joint – Upper) ② :**
10 Nm (1.0 m·kg, 7.2 ft·lb)
- Bolt (Exhaust Pipe Joint – Lower) ③ :**
20 Nm (2.0 m·kg, 14 ft·lb)
- Bolts (Exhaust Pipe 3) ④ :**
20 Nm (2.0 m·kg, 14 ft·lb)
- Bolt (Muffler) ⑤ :**
25 Nm (2.5 m·kg, 18 ft·lb)

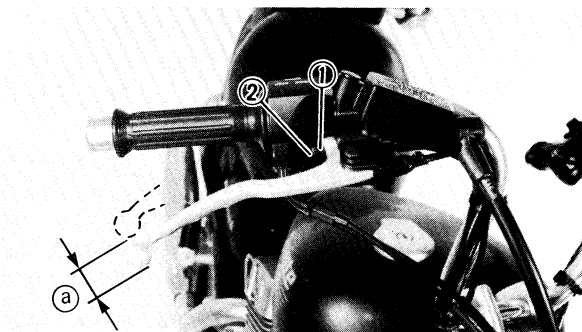


CANISTER INSPECTION (XV250UC ONLY)

1. Inspect:

- Hose connection
Poor condition → Correct.
- Hoses
- Canister
Cracks/Damage → Replaces.
Clogs → Clean.

- ① To carburetor
② Fuel tank
③ Canister



CHASSIS

FRONT BRAKE ADJUSTMENT

1. Loosen:
 - Locknut ①
2. Adjust:
 - Free play ②

Turn the adjuster ② until the free play ② is within the specified limits.



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

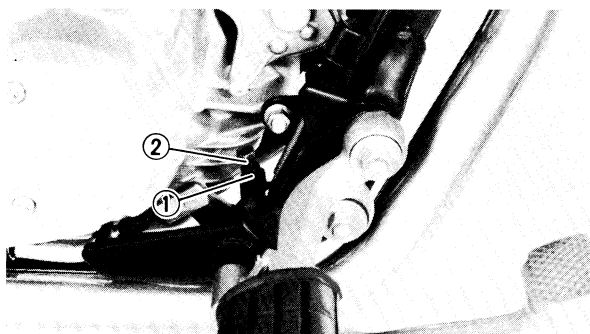
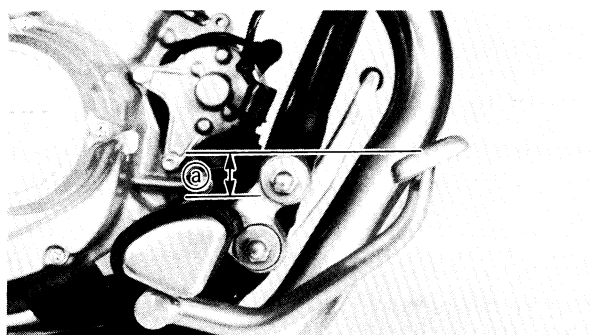
⚠ CAUTION:

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

⚠ WARNING:

A soft or spongy feeling in the brake lever can indicate the presence of air in the brake system. This air must be removed by bleeding the brake system before the motorcycle is operated. Air in the system will cause greatly diminished braking capability and can result in loss of control and an accident. Inspect and bleed the system if necessary.

3. Tighten:
 - Locknut



REAR BRAKE ADJUSTMENT

Brake Pedal Height Adjustment

1. Loosen:
 - Locknut ①
2. Adjust:
 - Brake pedal height ②

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

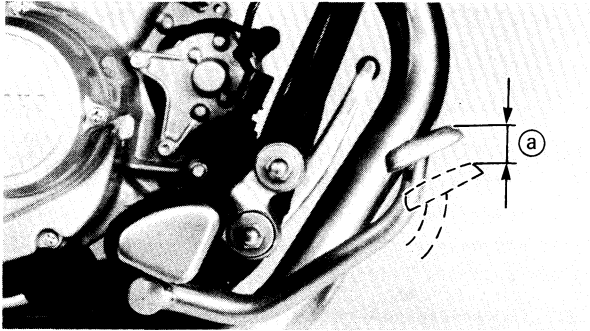


Brake Pedal Height ② :
45 ~ 55 mm (1.77 ~ 2.17 in)
Above the Top of the Footrest

⚠ WARNING:

Check the operation of the brake light after adjusting the brake pedal height.

BRAKE FLUID LEVEL INSPECTION



Brake Pedal Free Play Adjustment

1. Adjust:

- Brake pedal free play (a)

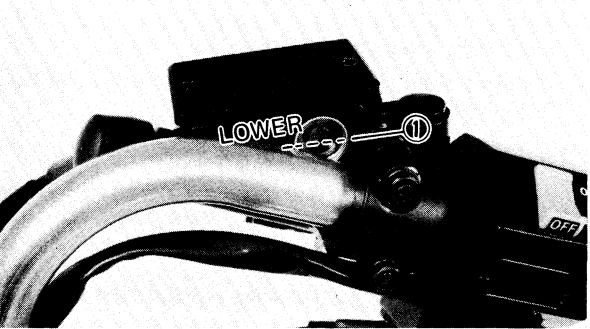
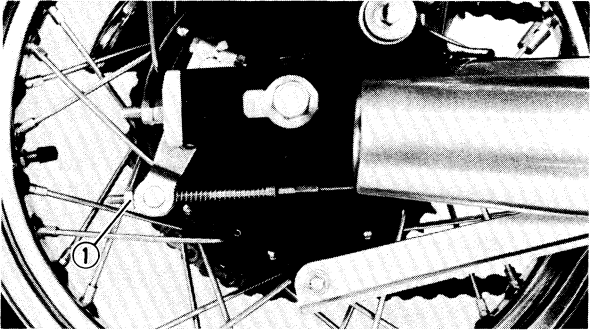
Turn the adjuster ① until the free play is within the specified limits.



Free Play (a) :
20 ~ 30 mm (0.8 ~ 1.2 in)

⚠ WARNING:

After adjusting the pedal height, adjust the brake pedal free play.



BRAKE FLUID LEVEL INSPECTION

1. Inspect:

- Brake fluid level

Level low → Replenish fluid.



Brake Fluid:
DOT # 3 or # 4
If DOT # 4 is not available,
#3 can be used.

① Lower level

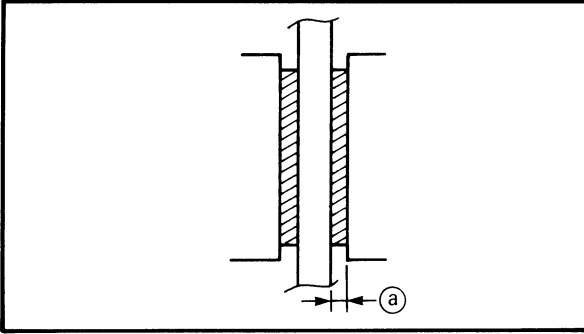
NOTE:

Be sure that:

- 1) The master cylinder top is horizontal by turning the handlebars.
- 2) Spilled fluid is cleaned up immediately to prevent painted surfaces or plastic parts from eroding.

⚠ WARNING:

- Use only the designated quality brake fluid, otherwise poor brake performance will result.
- Water does not enter the master cylinder when refilling, otherwise poor brake performance.



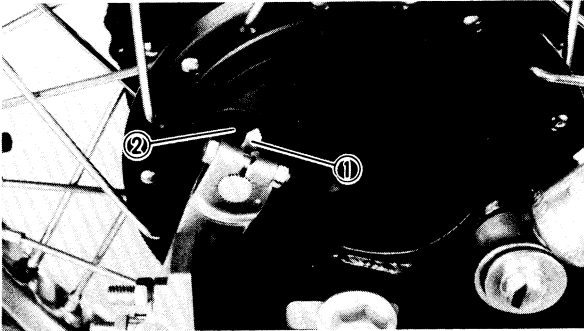
FRONT BRAKE PAD INSPECTION

1. Remove:
 - Brake caliper
2. Inspect:
 - Wear limit (a)
Out of specification → Replace pads.



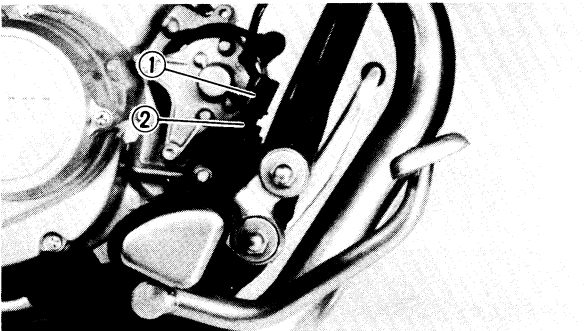
Wear Limit:
0.8 mm (0.03 in)

Refer to "CHAPTER 5. CHASSIS" section.



REAR BRAKE SHOE INSPECTION

1. Activate the brake pedal.
2. Inspect:
 - Wear indicator (1)
Indicator reaches wear limit line (2) → Replace shoes.
Refer to "CHAPTER 5. CHASSIS" section.



BRAKE LIGHT SWITCH ADJUSTMENT

1. Adjust:
 - Brake light operating timing
Hold the main body (1) of the switch with your hand so it does not rotate, and turn the adjuster (2) until the operating timing is correct.

BRAKE HOSE INSPECTION

1. Inspect:
 - Brake hose
Cracks/Wear/Damage → Replace.

AIR BLEEDING

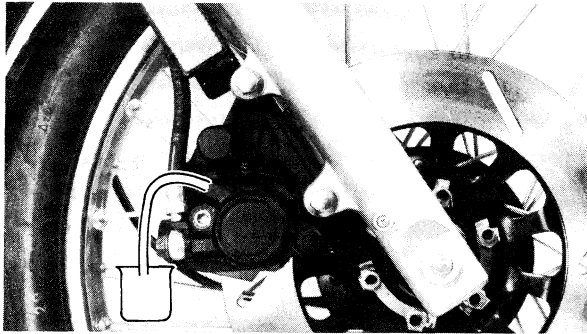
⚠ WARNING:

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.

SHIFT PEDAL ADJUSTMENT



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.
- d. Place the other end of the tube into a container.
- e. Slowly apply the brake lever several times.
- f. Pull the lever in. Hold the lever in position.
- g. Loosen the bleed screw and allow the lever to travel towards its limit.
- h. Tighten the bleed screw when the lever limit has been reached; then release the lever.



Bleed Screw:

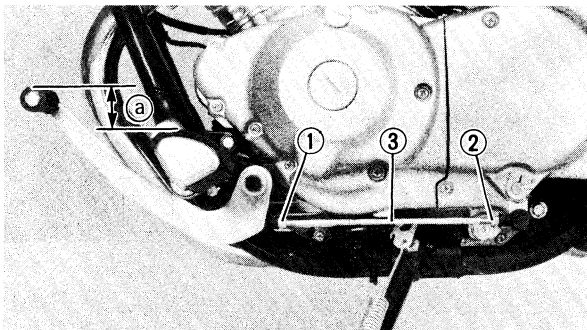
6 Nm (0.6 m·kg, 4.3 ft·lb)

- 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.



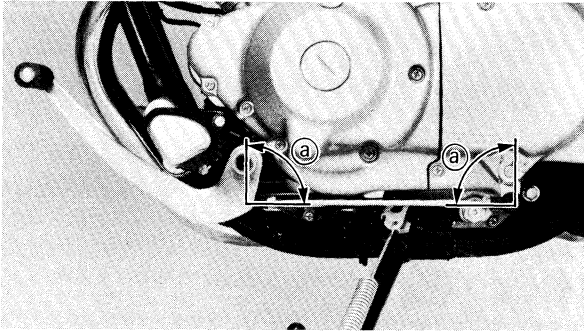
SHIFT PEDAL ADJUSTMENT

1. Loosen:
 - Locknut (Front) ①
 - Locknut (Rear) ②

NOTE: _____

The locknut (Front) has left-hand threads.

DRIVE CHAIN SLACK CHECK/ DRIVE CHAIN SLACK ADJUSTMENT



2. Adjust:

- Shift pedal height ①

Turn the adjuster rod ③ until the shift pedal position is at the specified height.



Shift Pedal Height:

30 ~ 36 mm (1.2 ~ 1.4 in)

Above the Top of the Footrest

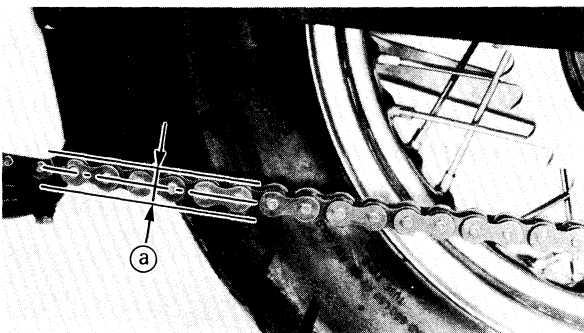
⚠ WARNING:

After adjusting the shift pedal height, visually check the angle of shift pedal arms. The angle of arms must be at right angles ① with the adjuster rod.

DRIVE CHAIN SLACK CHECK

NOTE:

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



1. Place the motorcycle vertically on a level place.

2. Measure:

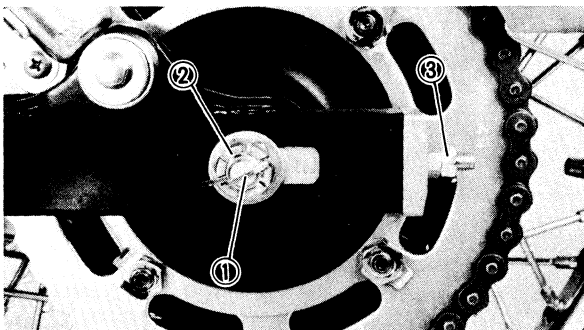
- Drive chain slack ①

Out of specification → Adjust.



Drive Chain Slack:

15 ~ 20 mm (0.6 ~ 0.8 in)



DRIVE CHAIN SLACK ADJUSTMENT

1. Remove:

- Cotter pin ①

2. Loosen:

- Nut (Rear axle) ②
- Locknut ③

3. Adjust:

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

STEERING HEAD ADJUSTMENT

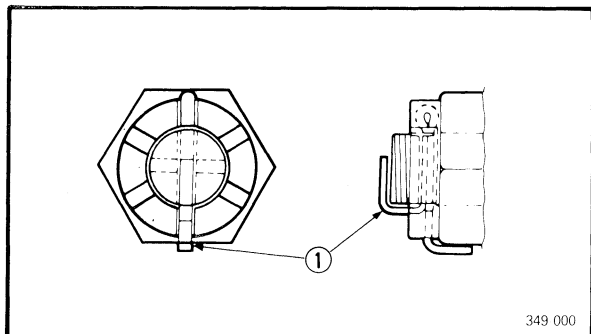


NOTE: _____

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

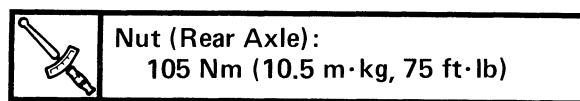
⚠ CAUTION: _____

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



4. Tighten:

- Locknut
- Nut (Rear axle)



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

5. Install:

- Cotter pin ① (New)

⚠ WARNING: _____

Always use a new cotter pin on the axle nut.

NOTE: _____

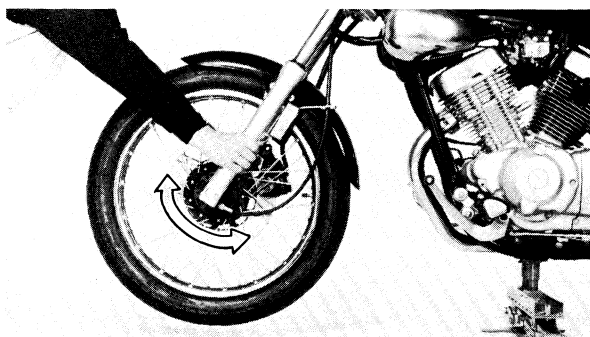
Do not loosen the axle nut after torque tightening. If the axle nut groove is not aligned with the wheel shaft cotter pin hole, align groove to hole by tightening up on the axle nut.

STEERING HEAD ADJUSTMENT

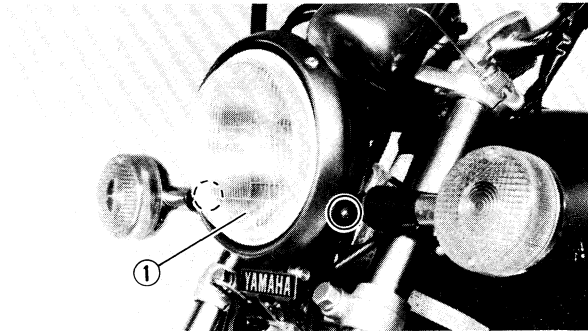
Inspection

⚠ WARNING: _____

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

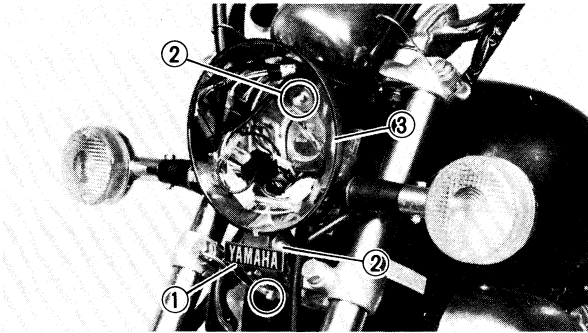


1. Place the motorcycle on a level place.
2. Elevate the front wheel by placing a suitable stand under the engine.
3. Check:
 - Steering assembly bearingsGrasp the bottom of the forks and gently rock the fork assembly back and forth.
Looseness → Adjust steering head.

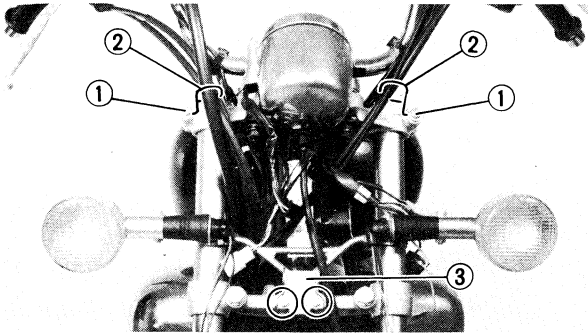


Adjustment

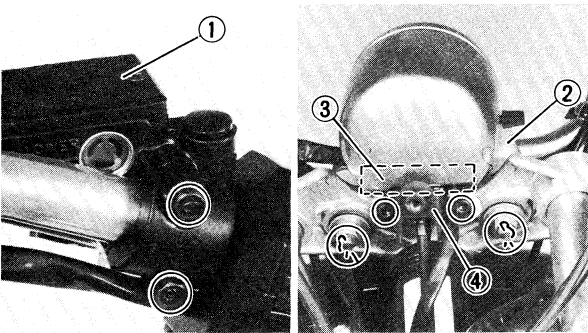
1. Remove:
 - Headlight lens unit ①
2. Disconnect:
 - All leads (In the headlight body)



3. Remove:
 - Emblem ①
 - Bolts (Headlight body) ②
 - Headlight body ③

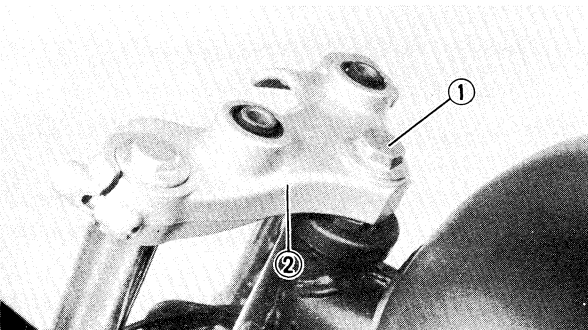


4. Remove:
 - Bolts (Handlebar crown) ①
 - Cable holders ②
 - Bracket (Flasher relay) ③

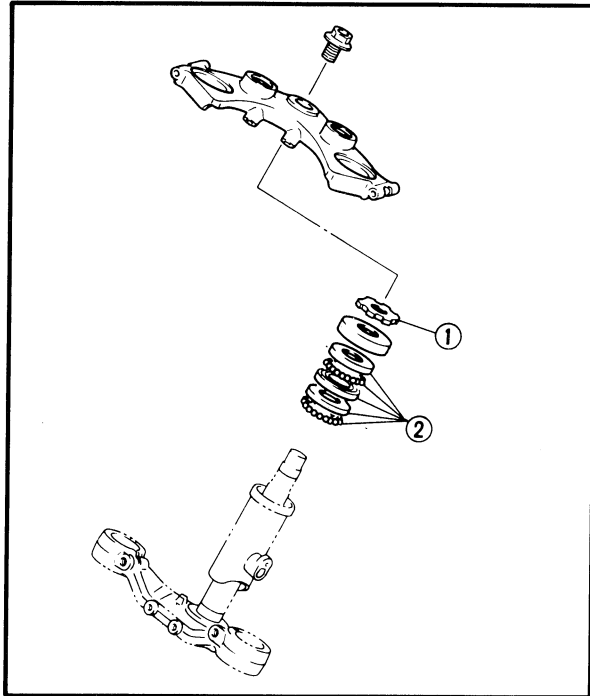


5. Remove:
 - Master cylinder assembly ①
 - Handlebar holder assembly ②
 - Indicator light box ③
 - Speedometer with bracket ④
 - Handlebar

NOTE: _____
Take care not to lose the clevis pins.



6. Remove:
 - Bolt (Steering stem) ①
 - Handlebar crown ②



7. Adjust:

- Steering head tightening condition

Steering head adjustment steps:

- Loosen the ring nut ① completely.
- Tighten the ring nut using the Ring Nut Wrench.



Ring Nut Wrench:
YU-33975

NOTE:

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



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

- Loosen the ring nut completely and retighten it to specification.

⚠ WARNING:

Do not over-tightening.



Ring Nut (Final Tightening):
10 Nm (1.0 m·kg, 7.2 ft·lb)

- Check the steering stem by turning it lock to lock. If there is any binding, remove the steering stem assembly and inspect the steering bearings ②.
Refer to "CHAPTER 6. STEERING HEAD" for more details.

8. Install:

- Reverse the removal procedure.
- Note the following points.

NOTE:

- Do not forget to fit:
 - 1) The clevis pins to the handlebar holders.
 - 2) The cable holders to the front fork top.
- After installing the headlight lens unit, adjust the headlight beam.



Bolt (Steering Stem):
54 Nm (5.4 m·kg, 39 ft·lb)

Bracket (Speedometer):
7 Nm (0.7 m·kg, 5.1 ft·lb)

Handlebar Holder (Lower):
20 Nm (2.0 m·kg, 14 ft·lb)

Master Cylinder Bracket:
9 Nm (0.9 m·kg, 6.5 ft·lb)

Headlight/Flasher Light Bracket:
7 Nm (0.7 m·kg, 5.1 ft·lb)

Bolts (Handlebar Crown):
20 Nm (2.0 m·kg, 14 ft·lb)

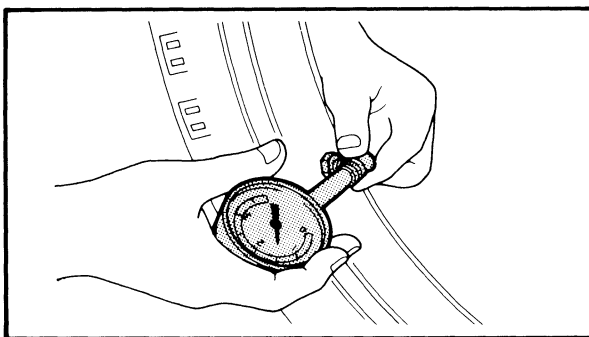
Headlight Body Bracket:
7 Nm (0.7 m·kg, 5.1 ft·lb)

TIRE INSPECTION

1. Measure:

- Tire pressure

Out of specification → Adjust.



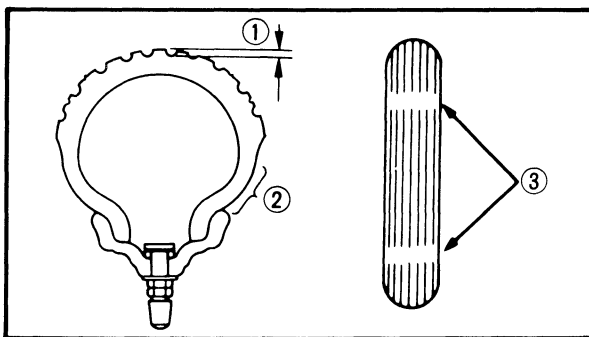
Basic weight:	147 kg (324 lb)	
With oil and full fuel tank	**148 kg (326 lb)	
Maximum load*	198 kg (437 lb)	
	**197 kg (434 lb)	
Cold tire pressure	Front	Rear
Up to 90 kg (198 lb) load*	175 kPa (1.75 kg/cm ² , 25 psi)	200 kPa (2.0 kg/cm ² , 28 psi)
90 kg (198 lb) ~ Maximum load*	200 kPa (2.0 kg/cm ² , 28 psi)	225 kPa (2.25 kg/cm ² , 32 psi)
High speed riding	200 kPa (2.0 kg/cm ² , 28 psi)	225 kPa (2.25 kg/cm ² , 32 psi)

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

** For California

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



2. Inspect:

- Tire surfaces

Wear/Damage → Replace.



**Minimum Tire Tread Depth:
(Front and Rear)
0.8 mm (0.03 in)**

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

⚠ WARNING:

- It is dangerous to ride with a wornout tire. When a tire tread begins to show lines, replace the tire immediately.
- Patching a punctured tube is not recommended. If it is absolutely necessary to do so, use great care and replace the tube as soon as possible with a good quality replacement.

WHEEL INSPECTION/ SPOKE INSPECTION AND TIGHTENING/ CABLE INSPECTION AND LUBRICATION



WHEEL INSPECTION

1. Inspect:

- Wheels

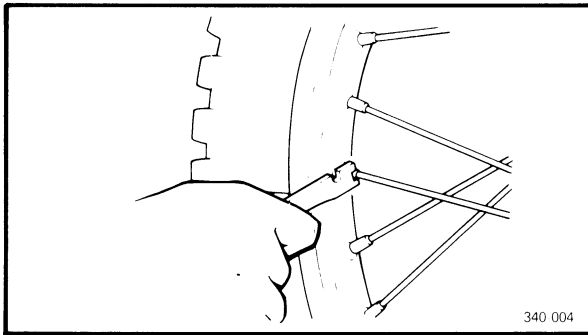
Damage/Bends → Replace.

NOTE:

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

⚠ WARNING:

- Never attempt even small repairs to the wheel.
- Ride conservatively after installing a tire to allow it to seat itself properly on the rim.



SPOKE INSPECTION AND TIGHTENING

1. Inspect:

- Spokes

Bend/Damage → Replace.

Loose spoke → Retighten.

2. Tighten:

- Spokes



Nipple:

6 Nm (0.6 m·kg, 4.3 ft·lb)

CABLE INSPECTION AND LUBRICATION

Cable inspection and lubrication steps:

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



Yamaha Chain and Cable Lube or
SAE 10W30 Motor Oil

**BRAKE AND SHIFT PEDALS/BRAKE AND CLUTCH
LEVERS LUBRICATION/SIDESTAND LUBRICATION/
SWINGARM LUBRICATION**



**BRAKE AND SHIFT PEDALS/BRAKE AND
CLUTCH LEVERS LUBRICATION**

Lubricate pivoting parts of each lever and pedal.



Yamaha Chain and Cable Lube or
SAE 10W30 Motor Oil

SIDESTAND LUBRICATION

Lubricate the centerstand and sidestand at their
pivot points.



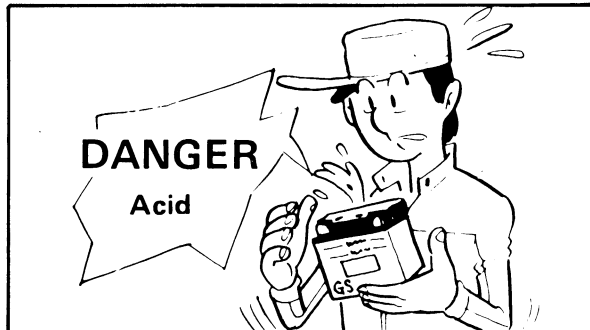
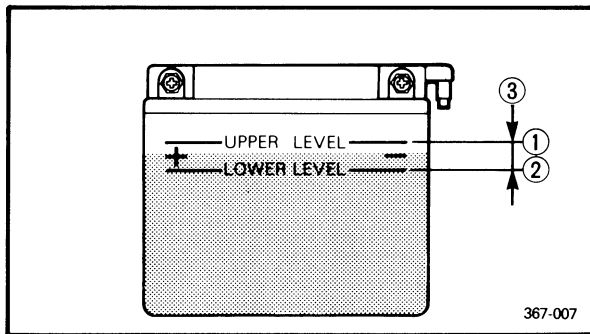
Yamaha Chain and Cable Lube or
SAE 10W30 Motor Oil

SWINGARM LUBRICATION

Lubricate the swingarm bearing.



Medium Weight Wheel
Bearing Grease



ELECTRICAL

BATTERY INSPECTION

1. Inspect:

- Battery fluid level ③

Battery fluid level low → Fill.

Fluid level should be between upper and lower level marks.

- ① Upper level
- ② Lower level

⚠ CAUTION:

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

⚠ 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.

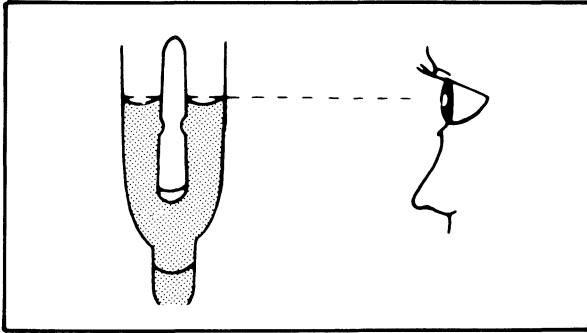
Antidote (INTERNAL):

- 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.

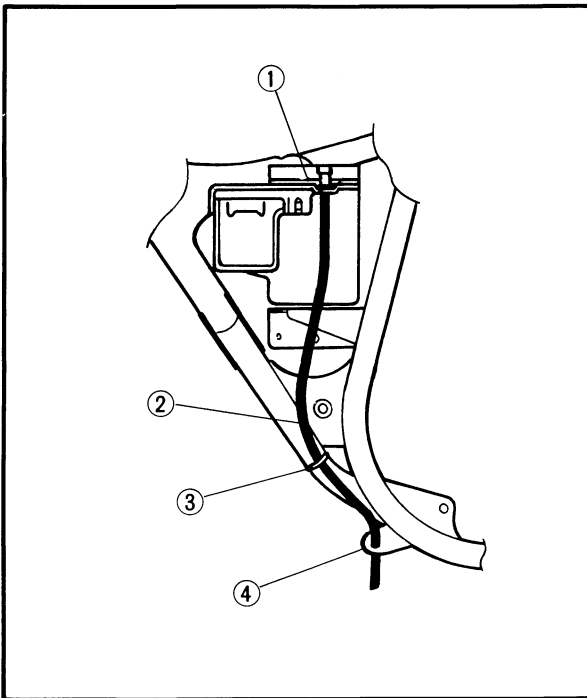


2. Remove:
 - Battery
3. Inspect:
 - Battery fluid specific gravity
 - Out of specification → Charge.

⚠ CAUTION:

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

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



4. Install:
 - Battery ①
5. Connect:
 - Breather hose ②
 - Be sure the hose is properly attached and routed.

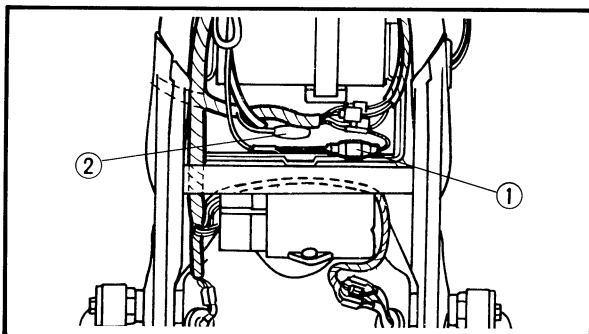
⚠ CAUTION:

When inspecting the battery, be sure the breather hose is routed correctly. If the breather hose 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.

- ③ Pass through the clamp
④ Pass through the bracket

6. Inspect:
 - Breather hose
 - Obstruction → Remove.
 - Damage → Replace.

FUSE INSPECTION/HEADLIGHT BEAM ADJUSTMENT/ HEADLIGHT BULB REPLACEMENT



FUSE INSPECTION

1. Remove:
 - Seat
2. Inspect:
 - Fuse "MAIN" ①
 - Fuse "SIGNAL" ②

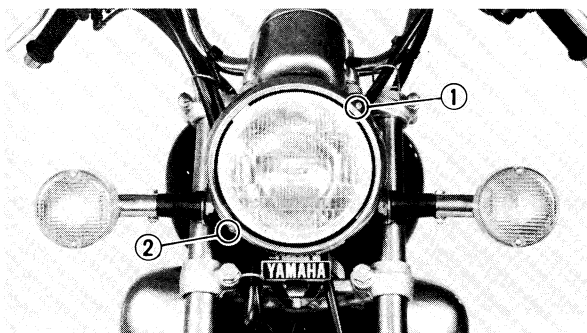
Defective → Replace.
Blown fuse (new) → Inspect circuit.

⚠ CAUTION:

Do not use fuses of higher amperage rating than those recommended.

Substitution of a fuse of improper rating can cause extensive electrical system damage and possibly a fire.

Description	Amperage	Quantity
Main	20A	1
Signal	10A	1



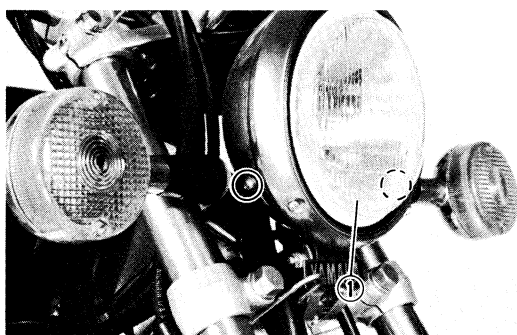
HEADLIGHT BEAM ADJUSTMENT

1. Adjust:
 - Headlight beam (Horizontally)

Horizontal Adjustment	
Right	Turn adjusting screw ① clockwise
Left	Turn adjusting screw ① counter-clockwise

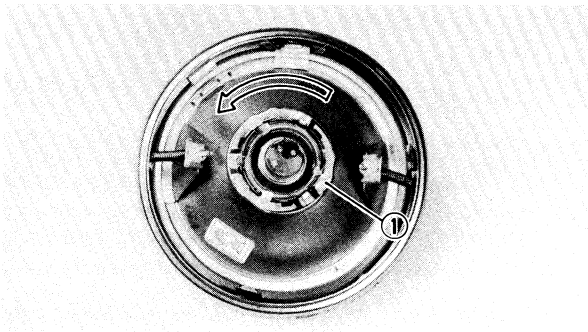
2. Adjust:
 - Headlight beam (Vertically)

Vertical Adjustment	
Higher	Turn the adjusting screw ② clockwise.
Lower	Turn the adjusting screw ② counter-clockwise.



HEADLIGHT BULB REPLACEMENT

1. Remove:
 - Headlight lens unit ①
2. Disconnect:
 - Headlight lens unit leads



3. Remove:
- Cover (Bulb) ①
 - Bulb

⚠ WARNING:

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

4. Install:
- Bulb (New)
- Secure the new bulb with the bulb holder.

⚠ CAUTION:

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

5. Install:
- Cover (Bulb)
 - Headlight lens unit

6. Adjust:
- Headlight beam
- Refer to "HEADLIGHT BEAM ADJUSTMENT" section.



ENGINE OVERHAUL

ENGINE REMOVAL

NOTE:

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

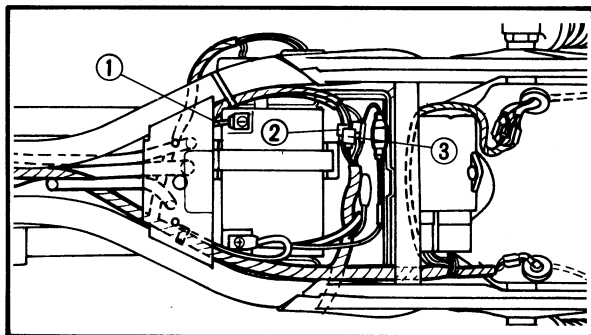
- Clutch
- Carburetor
- AC magneto

SEAT, FUEL TANK

1. Remove:

- Seat
- Fuel tank
- Side covers (Right/Left)

Refer to "CHAPTER – 3 FUEL TANK REMOVAL AND INSTALLATION".



LEADS

1. Disconnect:

- Leads (Battery)
- Coupler (Pickup coil) ②
- Coupler (A.C. Magneto) ③
- Leads (Spark plug)

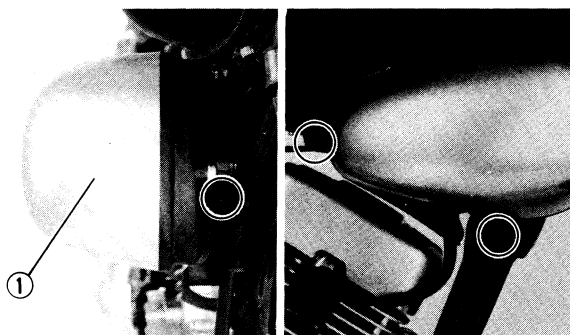
NOTE:

Disconnect the negative lead ① first.

2. Drain:

- Engine oil

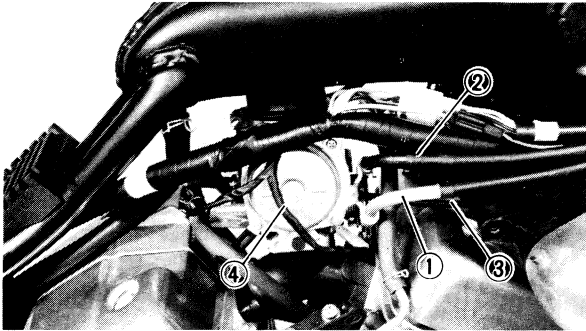
Refer to "CHAPTER – 3 ENGINE OIL REPLACEMENT".



AIR FILTER

1. Remove:

- Case (Air filter) ①
- Case (Thermo switch)

**CARBURETOR**

1. Remove:

- Fuel pump,

2. Disconnect:

- Throttle cable 1 ①
- Throttle cable 2 ②
- Choke cable ③
- Hoses
- Leads (Carburetor heater) ④

3. Loosen:

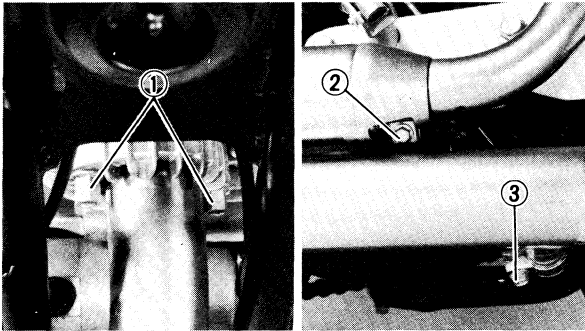
- Clamps

4. Remove:

- Carburetor

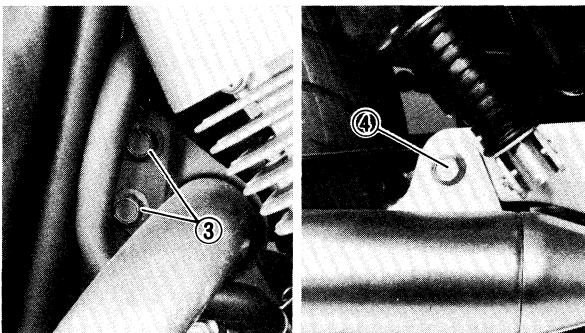
Move up the carburetor, and pull out the carburetor.

NOTE: _____
Cover the carburetor with a clean rag to prevent dirt or foreign matter into the carburetor.

**MUFFLER ASSEMBLY**

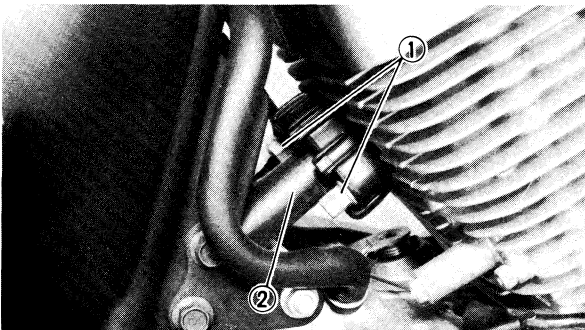
1. Remove:

- Nuts (Exhaust pipe 1 – Front) ①
- Bolt (Exhaust pipe joint – Lower) ②
- Bolts (Exhaust pipe 3) ③
- Bolt (Muffler) ④
- Muffler assembly



2. Remove:

- Nuts (Exhaust pipe 2 – Rear) ①
- Exhaust pipe (Rear) ②

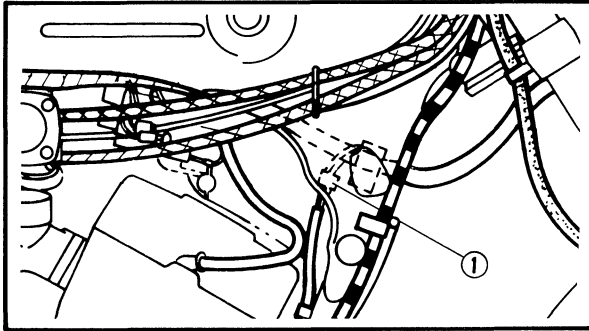




3. Support the motorcycle with a suitable stand at the swingarm pivot.

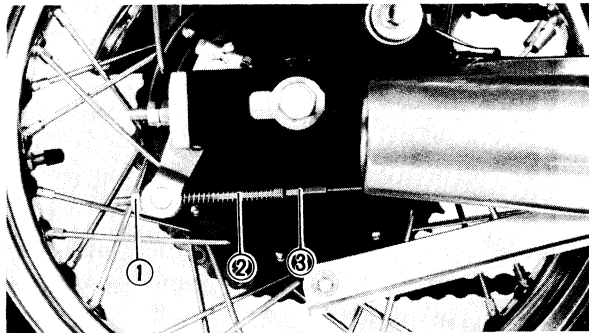
⚠ WARNING:

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

**BRAKE PEDAL/FOOTREST (RIGHT) AND SHIFT PEDAL/FOOTREST (LEFT)**

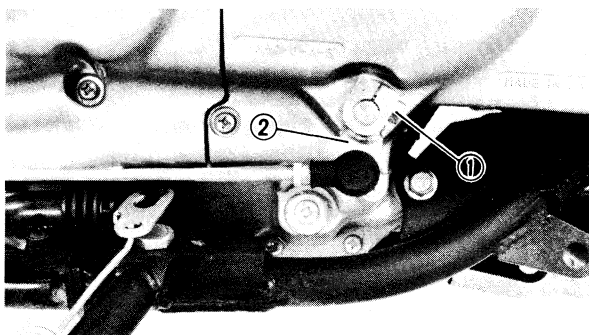
1. Disconnect:

- Brake switch coupler (Brown and Yellow) ①



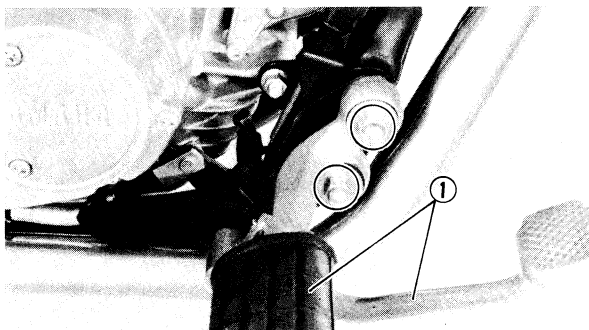
2. Remove:

- Adjuster (Rear brake) ①
- Spring ②
- Brake rod ③



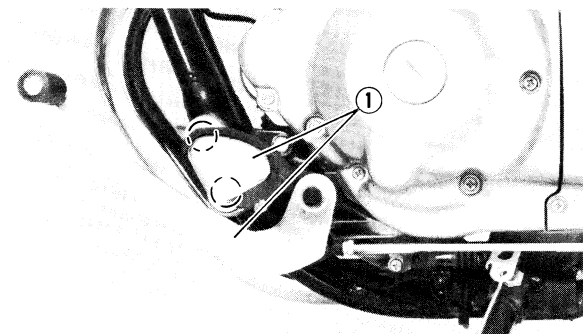
3. Remove:

- Bolt (Shift pedal link) ①
- Shift pedal link ②



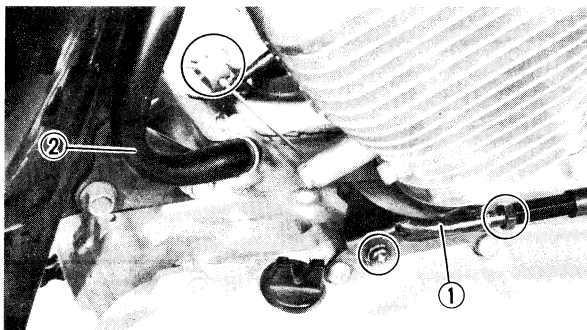
4. Remove:

- Brake pedal and footrest (Right) assembly ①



5. Remove:

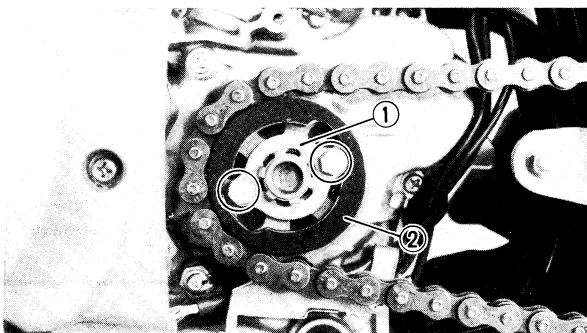
- Shift pedal and footrest (Left) assembly ①



CLUTCH CABLE AND DRIVE SPROCKET

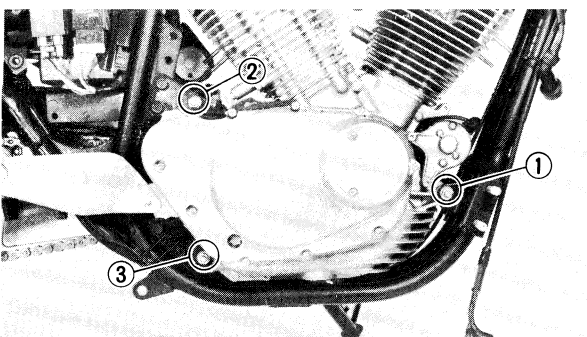
1. Disconnect:

- Clutch cable ①
Loosen the locknuts and disconnect the clutch cable.
- Hose (Crankcase ventilation) ②



2. Remove:

- Cover (Drive chain)
- Sprocket holder ①
- Drive sprocket ②

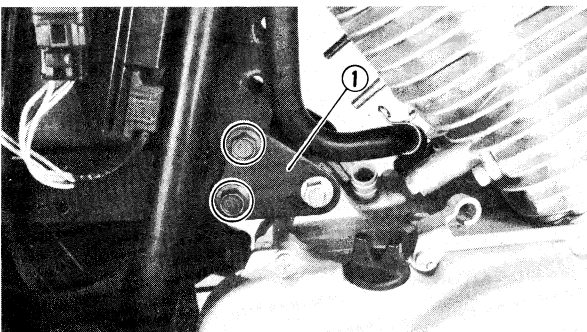


ENGINE REMOVAL

1. Place a suitable stand under the engine.

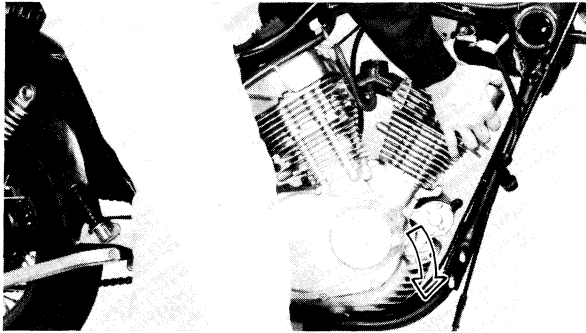
2. Remove:

- Bolt (Engine mounting – Front) ①
- Bolt (Engine mounting – Rear-Top) ②
- Bolt (Engine mounting – Rear-Bottom) ③



3. Remove:

- Engine stay (Rear – Upper) ①
- Engine stay (Rear – Lower) ②



4. Remove:

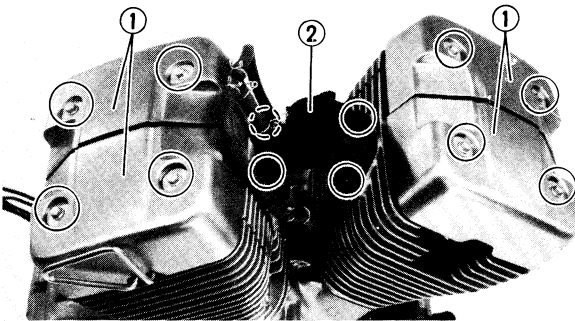
- Engine assembly
From the right side.

ENGINE DISASSEMBLY

CYLINDER HEAD/CYLINDER AND PISTON

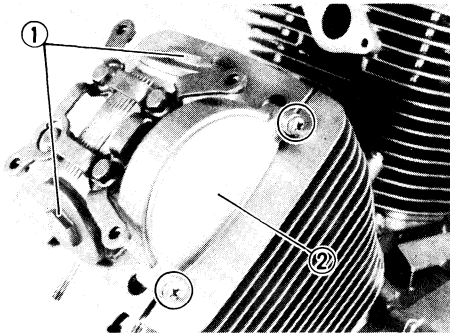
1. Remove:

- Cylinder head covers ①
- Carburetor joint ②
- Spark plugs



2. Remove:

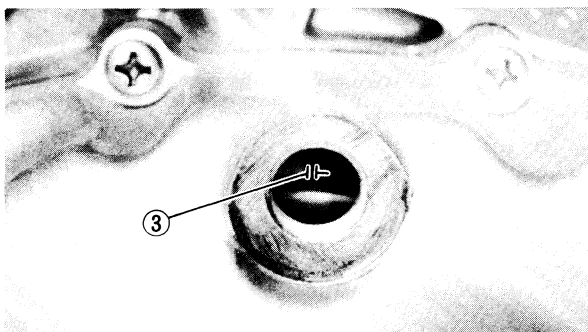
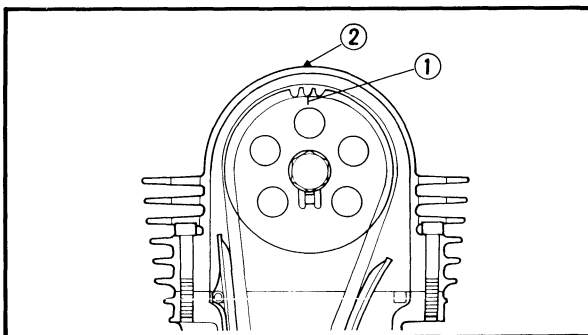
- Tappet covers ①
- Covers (Cam sprocket) ②



Front side

1. Align:

- Cam sprocket punch mark
With the stationary pointer on the front cylinder head.



TDC alignment steps (Front cylinder):

- Turn the crankshaft counter clockwise with a wrench.
- Align the cam sprocket punch mark ① with the stationary pointer ② on the front cylinder head. When the punch mark is aligned with the stationary pointer, the piston is at Top Dead Center (TDC).

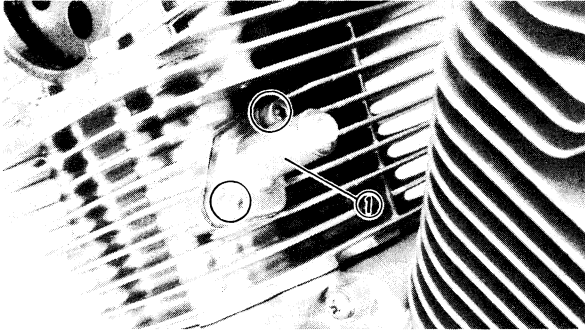
NOTE:

TDC on compression stroke check:

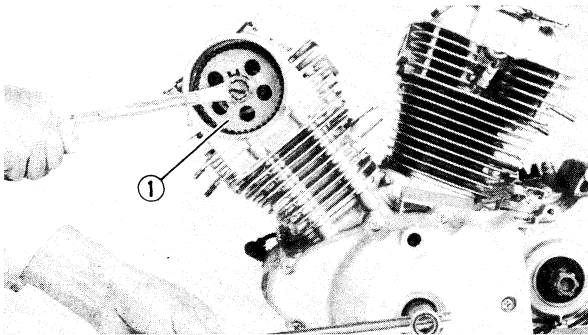
- Both rocker arms must have a valve clearance when the "H" mark ③ on the flywheel is aligned with the center line of the front cylinder.



- If not, give the crankshaft one counter clockwise turn too meet above condition.



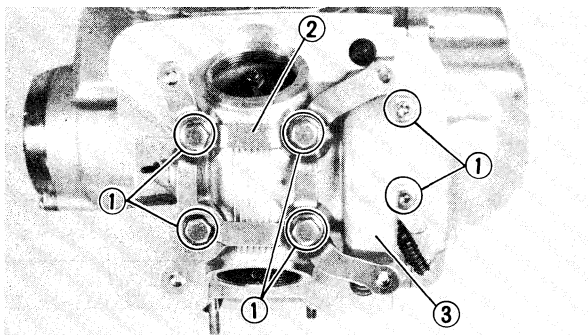
2. Remove:
- Chain tensioner (Front cylinder) ①
 - Gasket



3. Remove:
- Cam sprocket ①
 - Dowel pin

NOTE:

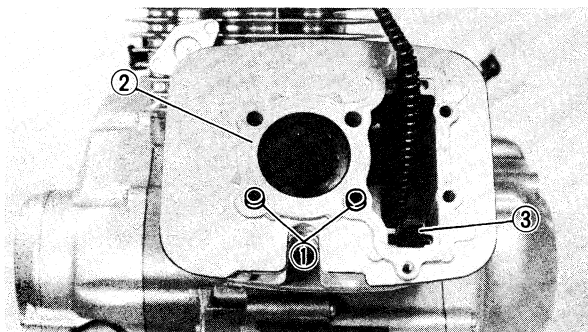
- Hold the crankshaft end with a wrench.
- Fasten a safety wire to the cam chain.
- When removing the cam sprocket, it is not necessary to separate the cam chain.



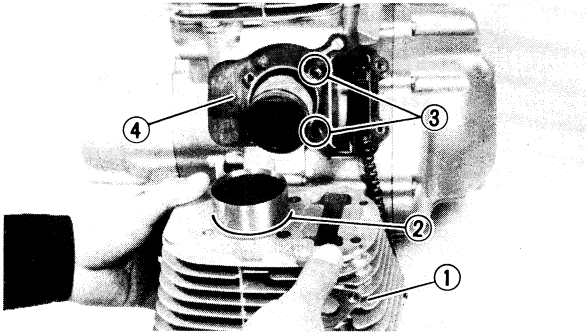
4. Remove:
- Bolts (Cylinder head) ①
 - Bracket ②
 - Cylinder head ③

NOTE:

Loosen the bolts in this stage, using a crisscross pattern.



5. Remove:
- Dowel pin ①
 - Gasket (Cylinder head) ②
 - Chain damper (Intake) ③



6. Remove:

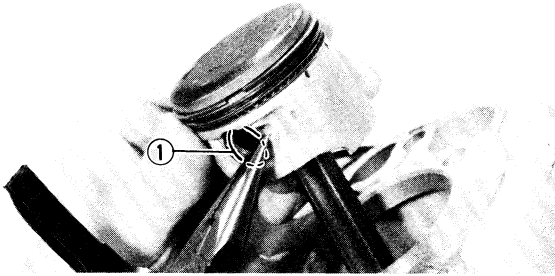
- Cylinder ①
- O-ring ②
- Dowel pins ③
- Gasket (Cylinder) ④

7. Remove:

- Piston pin clip ①

NOTE:

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

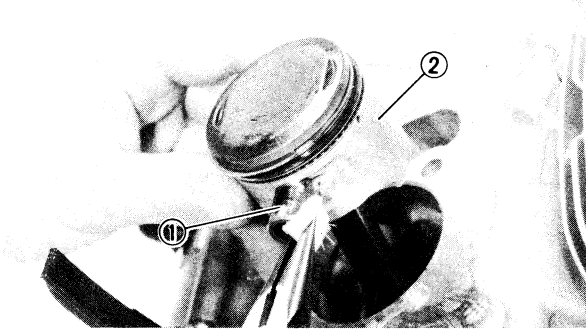


8. Remove:

- Piston pin ①
- Piston ②

NOTE:

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



Piston Pin Puller:
YU-01304

CAUTION:

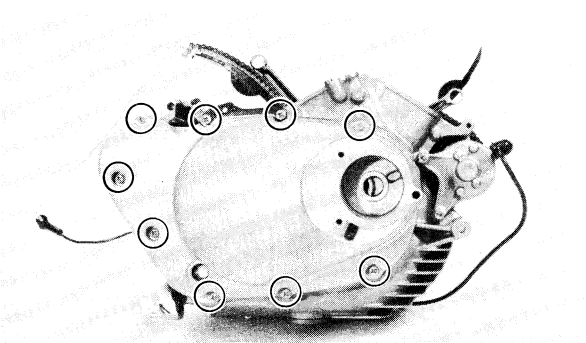
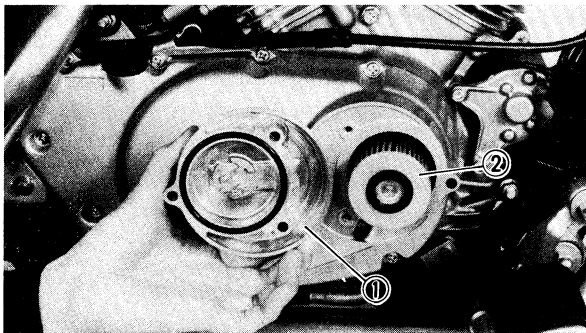
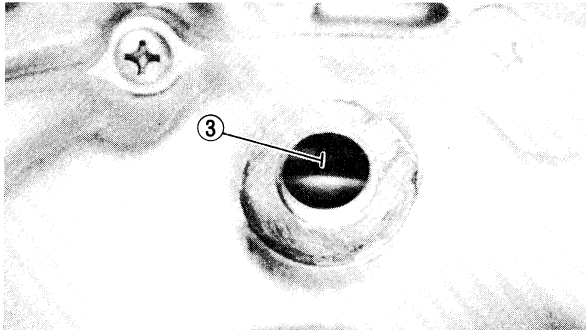
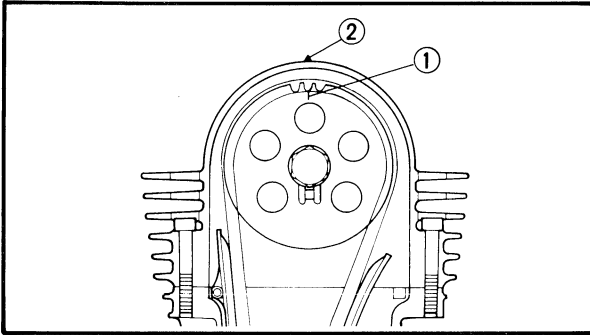
Do not use a hammer to drive the piston pin out.

Rear Side

When removing the rear side components, repeat the front side removal procedure. However, note the following points.

1. Align:

- Cam sprocket punch mark
With the stationary pointer on the rear cylinder head.

**TDC alignment steps (Rear cylinder):**

- Turn the crankshaft counter clockwise with wrench.
- Align the cam sprocket punch mark ① with the stationary pointer ② on the rear cylinder head. When the slit ③ is aligned with the stationary pointer, the piston is at Top Dead Center (TDC).

NOTE:**TDC on compression stroke check:**

- Both rocker arms must have a valve clearance when the slit on the rotor is aligned with the center line of the rear cylinder.
- If not, give the crankshaft one clockwise turn to meet above condition.

CRANKCASE COVER (RIGHT)**1. Remove:**

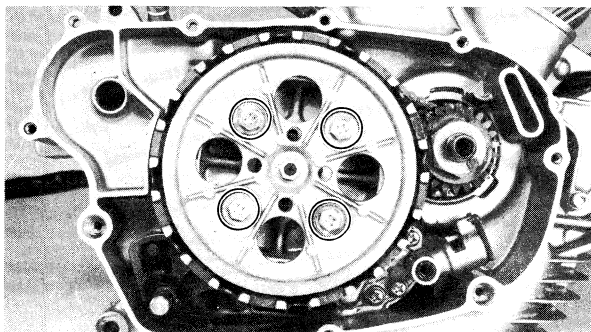
- Oil filter cover ①
- Oil filter ②
- O-ring (Filter cover)

2. Remove:

- Crankcase cover (Right)
- Gasket
- Dowel pins

NOTE:

- Working in a crisscross pattern, loosen screw 1/4 turn each. Remove them after all are loosened.
- Be sure not to give damages to the mating surface.

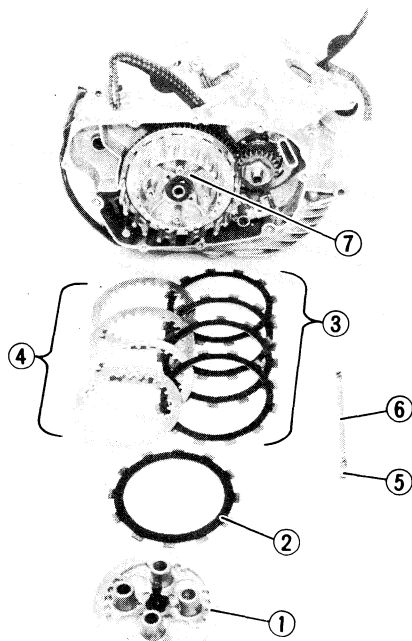
**CLUTCH**

1. Remove:

- Screws (Clutch spring)
- Clutch springs

NOTE:

Loosen the screws in this stage, using a crisscross pattern.

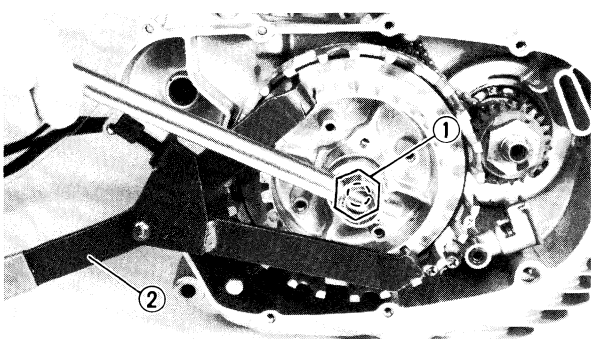


2. Remove:

- Pressure plate ①
- Friction plate 1 (1 pc) ②
- Friction plate 2 (4 pcs.) ③
- Clutch plates (4 pcs.) ④
- Ball ⑤
- Push rod #2 ⑥

3. Straighten:

- Lock washer tab ⑦

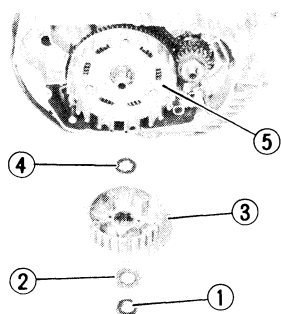


4. Loosen:

- Nut (Clutch boss) ①
- Use the Universal Clutch Holder ② .

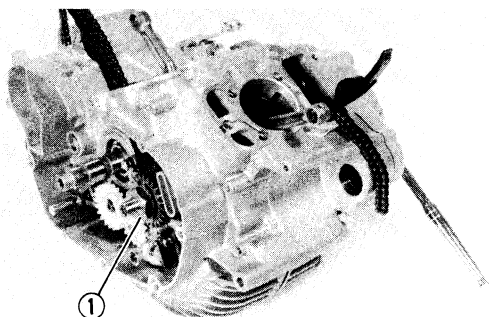


Universal Clutch Holder:
YM-91042



5. Remove:

- Nut (Clutch boss) ①
- Lock washer ②
- Clutch boss ③
- Holding plate ④
- Clutch housing ⑤



6. Straighten:

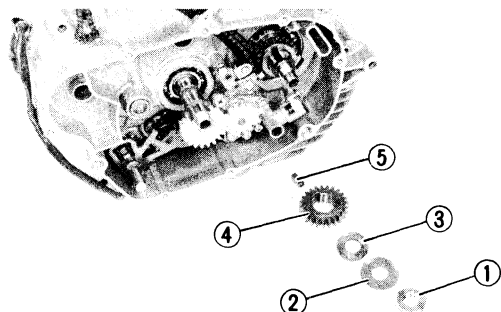
- Lock washer tab

7. Loosen:

- Nut (Primary driven gear) (1)

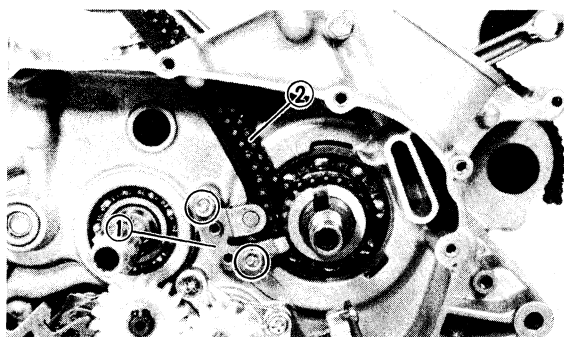
NOTE:

Use a wrench to hold the flywheel.



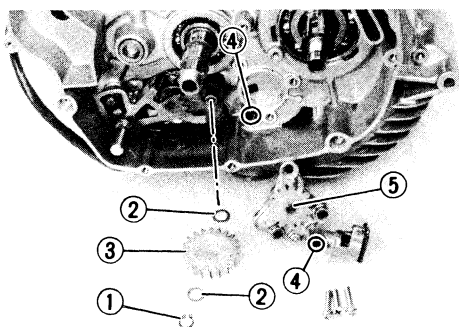
8. Remove:

- Nut (Primary drive gear) (1)
- Lock washer (2)
- Washer (3)
- Primary drive gear (4)
- Key (5)



9. Remove:

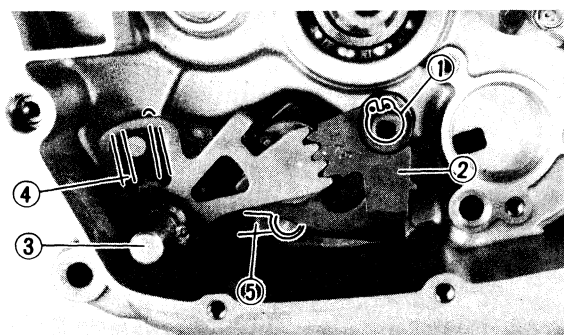
- Chain guide (Exhaust) (1)
- Timing chain (2)



OIL PUMP

1. Remove:

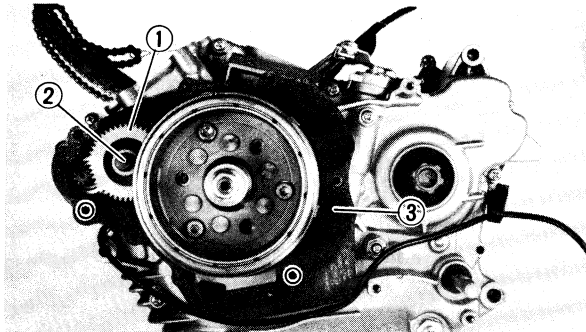
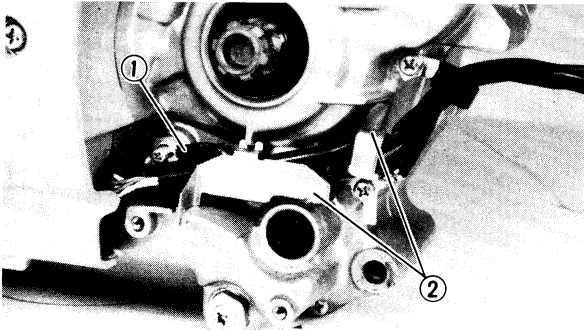
- Circlip (1)
- Washers (2)
- Drive gear (Oil pump) (3)
- O-rings (4)
- Oil pump (5)



SHIFT SHAFT

1. Remove:

- Circlip (1)
- Shift lever (2)
- Shift shaft (3)
- Spring (4)
- Shift cam stopper (5)

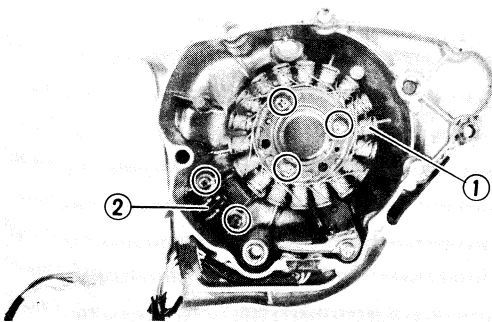
**CRANKCASE COVER (LEFT)**

1. Disconnect:
 - Neutral switch lead ①
2. Remove:
 - Holders (Wiring) ②

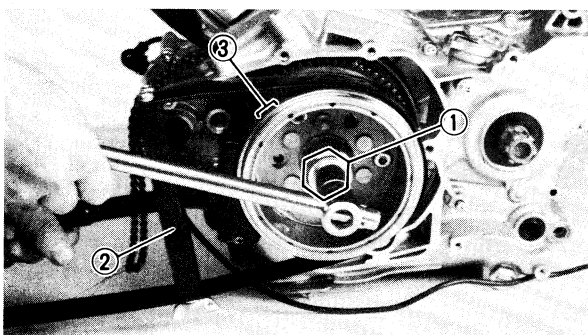
3. Remove:
 - Crankcase cover (Left)
 - Idle gear #1 ①
 - Guide bar ②
 - Dowel pins
 - Gasket ③

NOTE:

- Working in a crisscross pattern, loosen the bolts 1/4 turn each. Remove them after all are loosened.
- Be sure not to give damages to the mating surface.



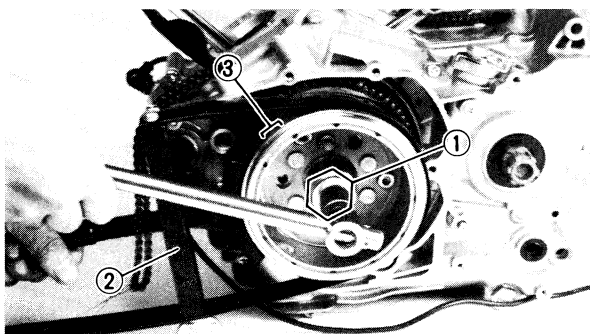
4. Remove:
 - Stator ①
 - Pickup coil ②

**A.C. MAGNETO**

1. Remove:
 - Bolt (Rotor) ①
 Use the Sheave Holder ② .



Sheave Holder:
YS-01880

**NOTE:**

Do not allow the special tool to touch the projection ③ on the rotor.

2. Remove:

- Rotor

Use the Flywheel Puller Set and Adapter.



Flywheel Puller Set:
YU-33270

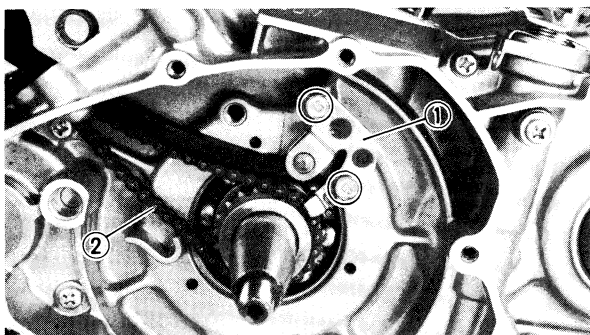
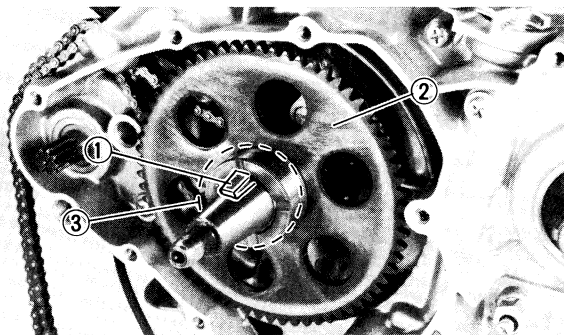
Adapter:
YM-33282

3. Remove:

- Woodruff key ①
- Idle gear #2 ②
- Washer ③

NOTE:

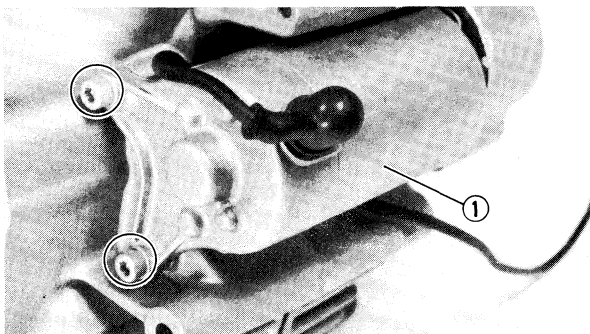
When removing the idler gear # 2, the washer ④ fall out. Take care not to lose it.

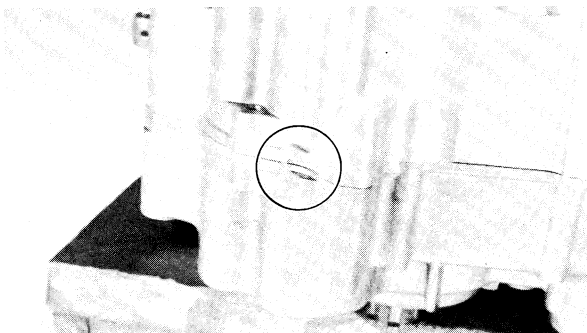
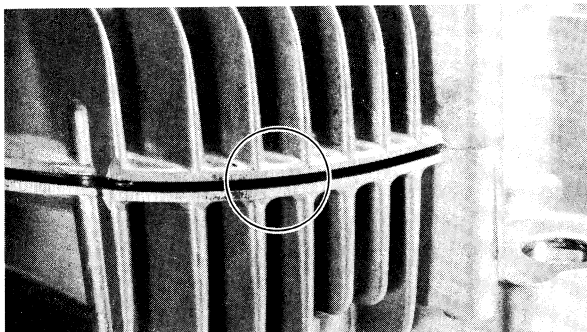
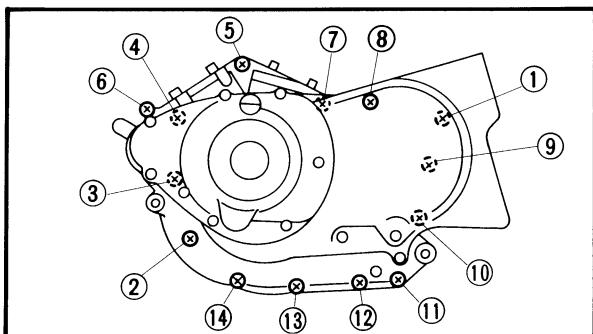
**4. Remove:**

- Chain guide (Intake) ①
- Timing chain ②

STARTER MOTOR**1. Remove:**

- Starter motor ①



**CRANKCASE**

1. Remove:

- Screws (Crankcase) ① ~ ⑭

NOTE:

Remove the screws starting with the highest numbered one.

2. Remove:

- Crankcase (Right)

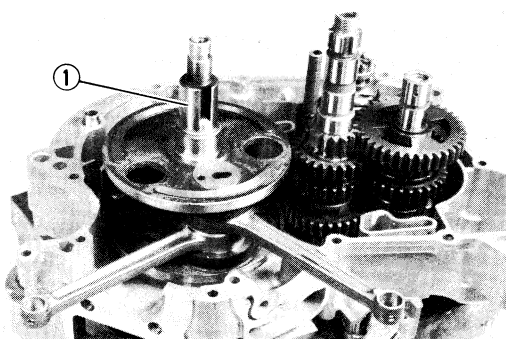
As pressure is applied, alternately tap on the front engine mounting boss, transmission shafts, and shift cam.

NOTE:

- For this removal, slits in the crankcase can be used as shown.
- Be sure not to give damages to the mating surface.

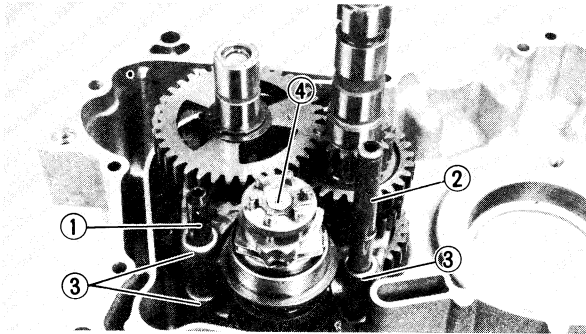
CAUTION:

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.

**CRANKSHAFT AND TRANSMISSION**

1. Remove:

- Crankshaft ①
- Dowel pins



2. Remove:

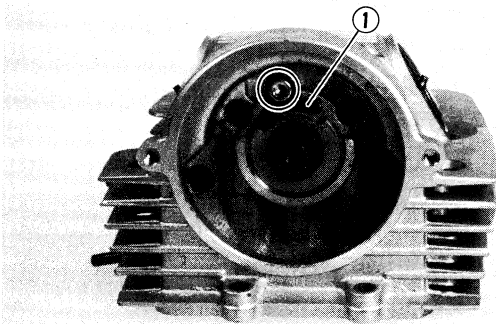
- Guide bar (Rear — Longer) ①
- Guide bar (Front — Shorter) ②
- Shift forks ③
- Shift cam ④

NOTE:

Note the position of each part. Pay particular attention to the location and direction of shift forks.

3. Remove:

- Transmission

**CYLINDER HEAD**

1. Remove:

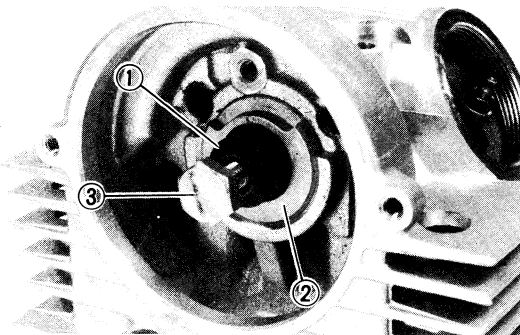
- Tappet covers

2. Loosen:

- Locknuts
- Adjusters

3. Remove:

- Stopper ①



4. Remove:

- Camshaft ①
- Camshaft bushing ②

NOTE:

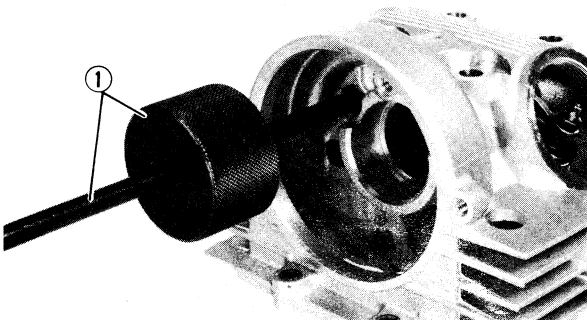
Screw in a suitable length of 10 mm bolt ③ into the thread hole on the camshaft, and pull out the camshaft.

5. Attach:

- Slide Hammer Set ①



Slide Hammer Set:
YU-01083



6. Remove:

- Rocker arm shafts
- Rocker arms (Intake/Exhaust)



VALVE

NOTE:

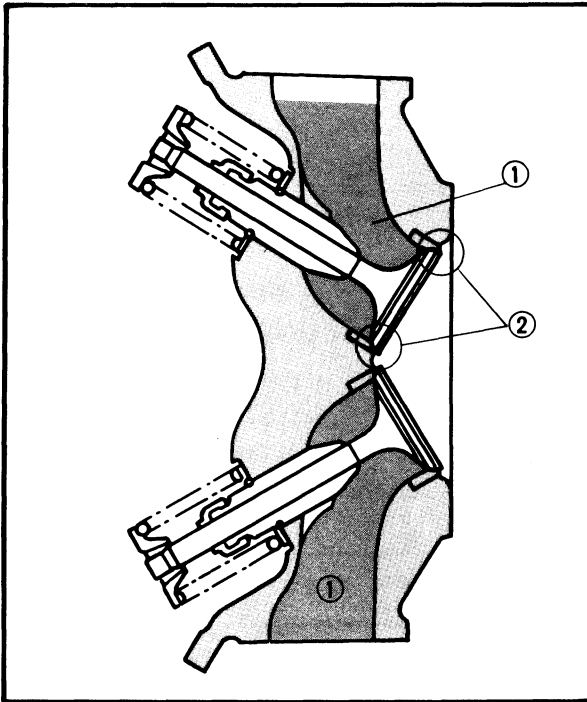
Before removing the internal parts (Valve, valve spring, valve seat etc.) of the cylinder head, the valve sealing should be checked.

1. Check:

• Valve sealing

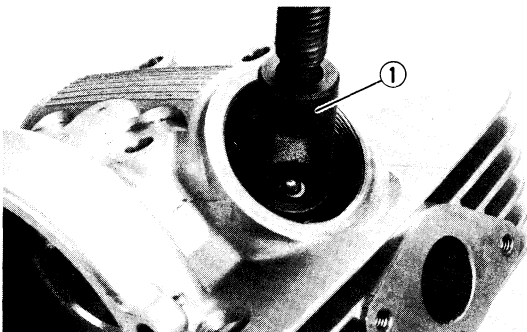
Leakage at valve seat → Inspect the valve face, valve seat and valve seat width.

Refer to "INSPECTION AND REPAIR – VALVE SEAT".



Valve Seat Checking Steps:

- Pour a clean solvent ① into the intake and exhaust ports.
- Check the valve seating.
There should be no leakage at the valve seat ② .

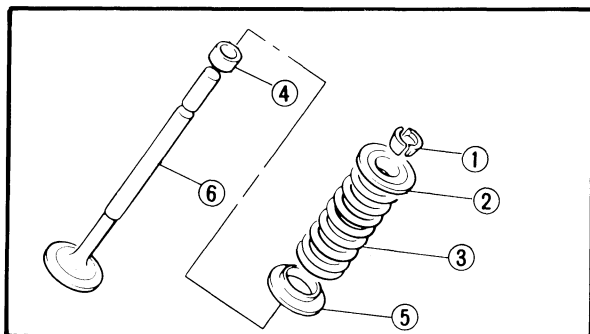


2. Attach:

- Valve spring compressor ①



Valve Spring Compressor:
YM-04019

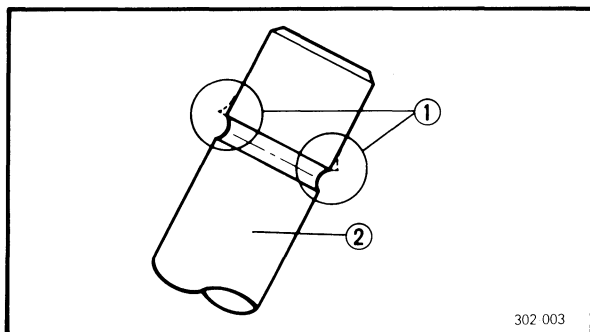


3. Remove:

- Valve cotter ①
- Valve spring seat ②
- Valve spring ③
- Valve stem seal ④
- Valve spring seat ⑤
- Valve ⑥

NOTE:

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

**NOTE:**

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

- ① Deburr
- ② Valve stem

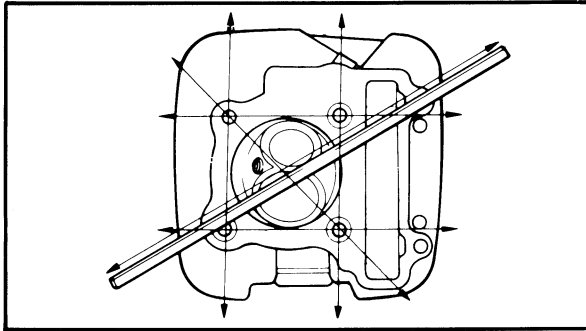
4. Eliminate:

- Carbon deposit
From the combustion chamber.
Use a rounded scraper.

NOTE:

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

- Spark plug threads
- Valve seat
- Cylinder head



INSPECTION AND REPAIR CYLINDER HEAD

1. Measure:

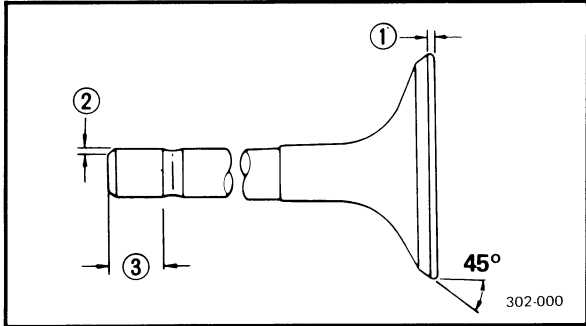
- Warpage

Under specification → Reface.

Over specification → Replace.



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



VALVE

1. Inspect:

- Valve face
- Stem end

Wear/Pitting → Reface.

Out of specification → Replace.

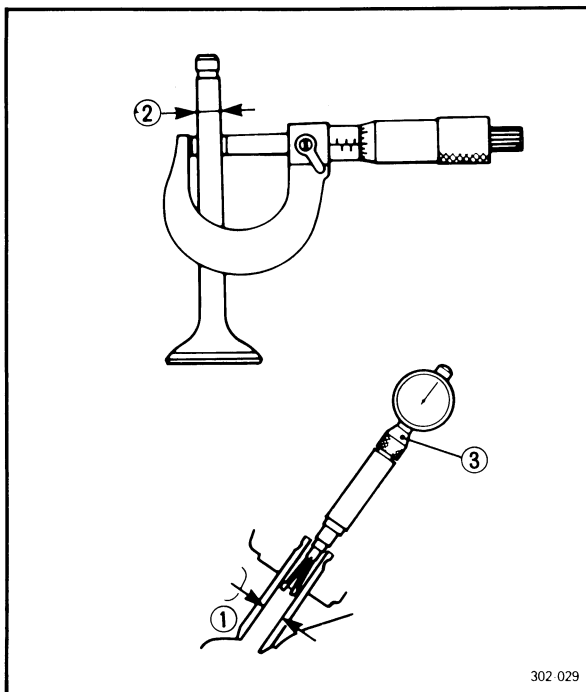
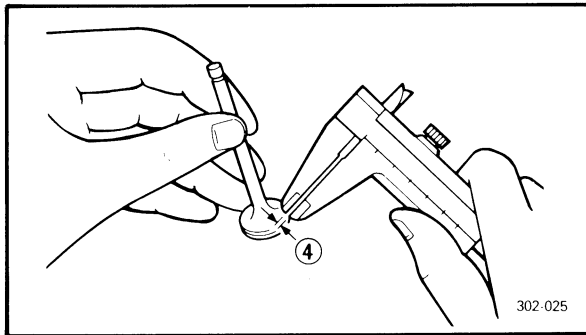


Minimum Thickness (Service limit) ① :
0.7 mm (0.0276 in)

Beveled ② :
0.5 mm (0.020 in)

Minimum Length (Service limit) ③ :
4.0 mm (0.157 in)

Seat Width (Valve face) ④ :
0.9 ~ 1.1 mm (0.035 ~ 0.43 in)



2. Measure:

- Valve stem clearance

Valve stem clearance =

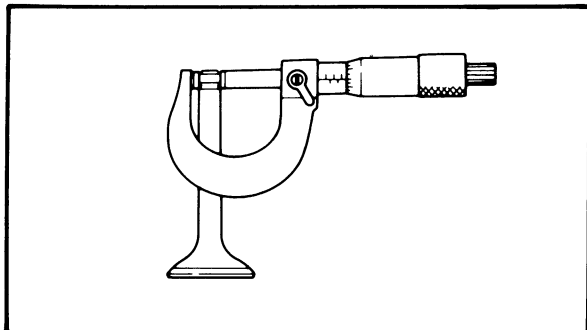
Valve guide inside diameter ① –
Valve stem diameter ②

Out of specification → Replace either valve and/or guide.

Use a Micrometer and Bore Gauge ③ .

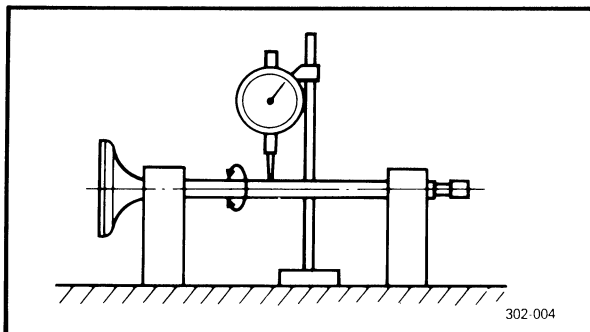


	Valve Stem Clearance	Maximum
Intake	0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in)	0.08 mm (0.0031 in)
Exhaust	0.025 ~ 0.052 mm (0.0010 ~ 0.0020 in)	0.10 mm (0.0039 in)



3. Inspect:

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



4. Measure:

- Valve stem runout
Out of specification → Replace.



Maximum Runout:
0.03 mm (0.0012 in)

VALVE GUIDE

NOTE:

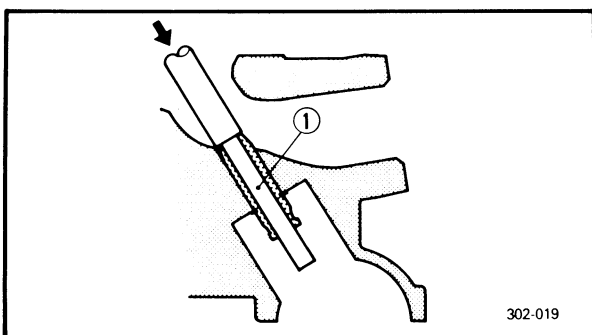
- Always replace the valve guide if the valve is replaced.
- Always replace the oil seal if the valve is removed.

1. Inspect:

- Valve guide
Wear/Oil leakage into cylinder → Replace.

2. Remove:

- Valve guide
Use the Valve Guide Remover ①.



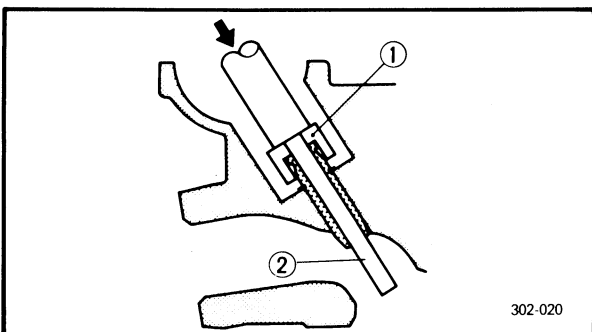
Valve Guide Remover (7.0 mm):
YM-01225

NOTE:

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

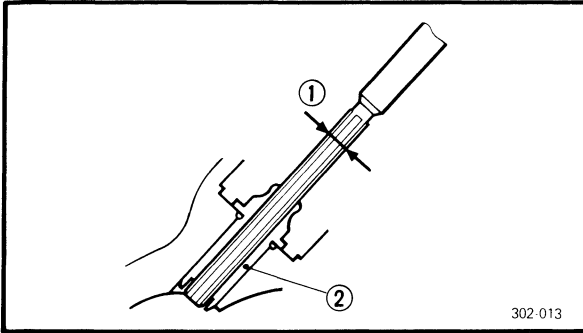
3. Install:

- Valve guide (New)
Use the Valve Guide Installer ① with the valve Guide Remover ②.



Valve Guide Installer:
YM-04017

Valve Guide Remover (7.0 mm):
YM-01225



302-013

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

Use the Valve Guide Reamer (7.0 mm) (1).



Valve Guide Reamer (7.0 mm):
YM-01227

NOTE:

Reface the valve seat after installing the valve guide.

VALVE SEAT

1. Clean:

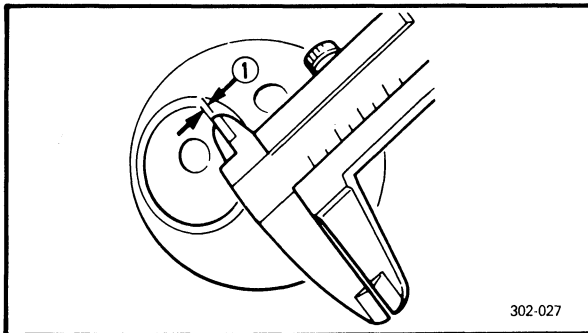
- Valve face
- Valve seat

Remove carbon deposit.

2. Inspect:

- Valve seat

Pitting/Wear → Reface valve seat.



302-027

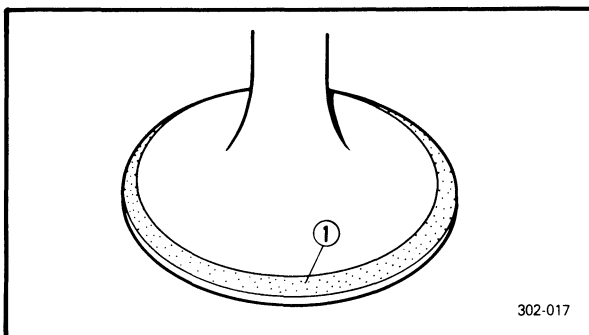
3. Measure:

- Valve seat width (1)

Out of specification → Reface valve seat.

**Valve Seat Width**

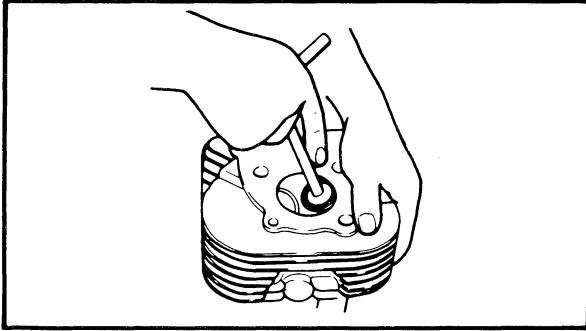
Intake	0.9 ~ 1.1 mm (0.035 ~ 0.043 in)
Exhaust	0.9 ~ 1.1 mm (0.035 ~ 0.043 in)



302-017

Valve seat width 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 clean pattern.
- Measure the valve seat width. Whether 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:

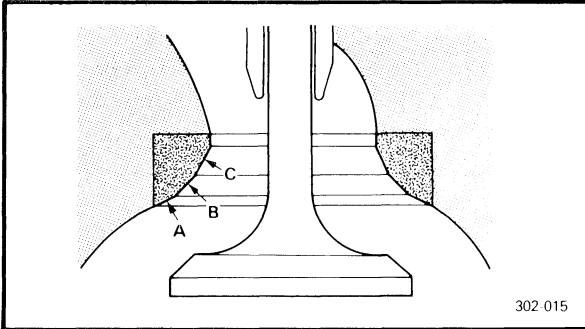
- Valve seat

Use 20°, 45° and 60° Valve Seat Cutter.

CAUTION:

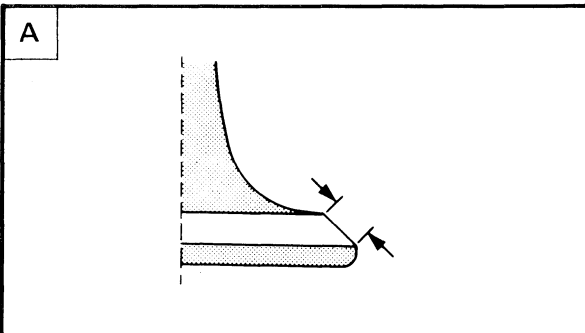
Remove just enough material to achieve satisfactory seat.

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



Cut sections as follows

Section	Cutter
A	20°
B	45°
C	60°



Valve seat refacing steps:

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

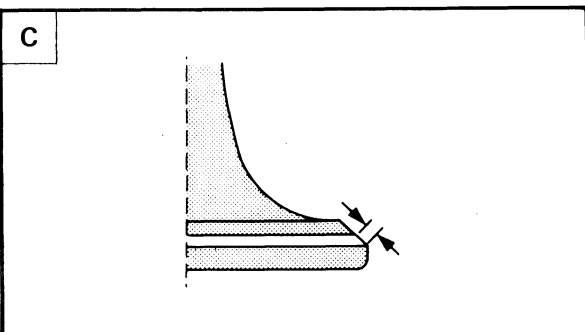
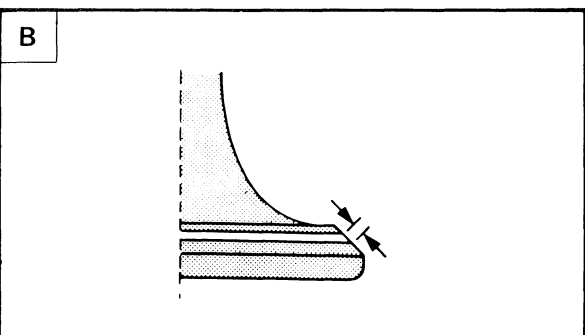
Valve Seat Cutter Set		Desired Result
Use lightly	20° cutter	To reduce valve seat width to 1.0 mm (0.04 in)
	60° cutter	

- 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 (0.04 in)

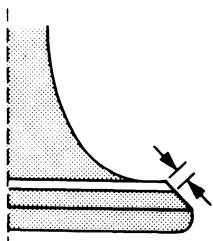
- C** Valve seat is too narrow and right up near valve margin.

Valve Seat Cutter Set		Desired Result
Use	20° cutter	To center the seat and to achieve its width of 1.0 mm (0.04 in)
	45° cutter	





D



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

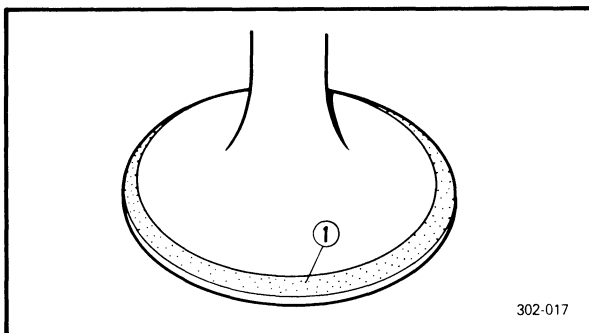
Valve Seat Cutter Set		Desired Result
Use	60° cutter, first	To center the seat and increase its width.
	45° cutter	

5. Lap:

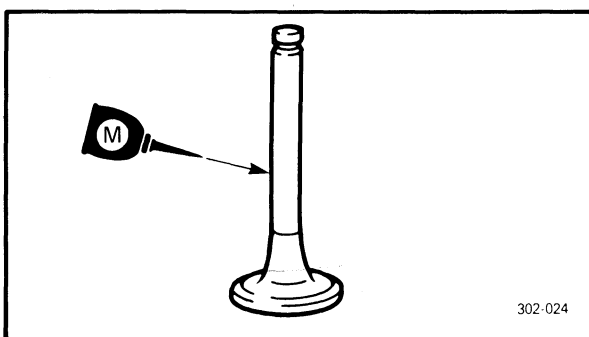
- Valve face
- Valve seat

NOTE: _____

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



302-017



302-024

Valve lapping steps:

- Apply a coarse lapping compound ① to the valve face.

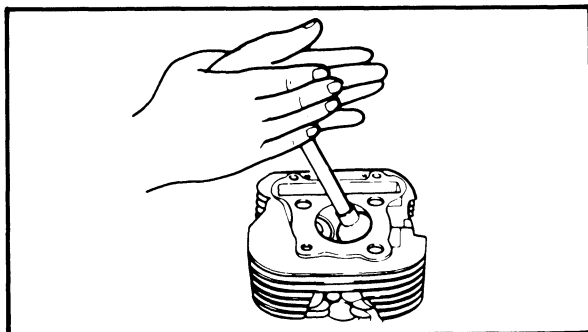
CAUTION: _____

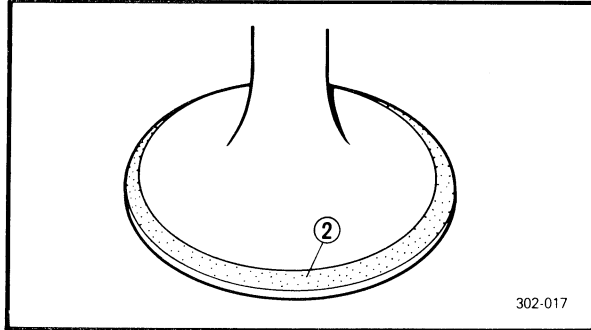
Be sure no compound enters the gap between the valve stem and guide.

- 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 result, lightly tap the valve seat while rotating the valve back and forth between your hand.



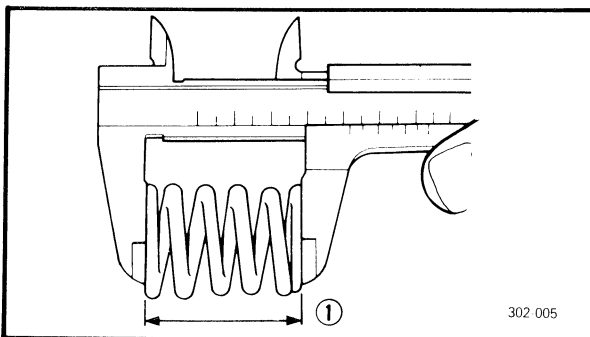
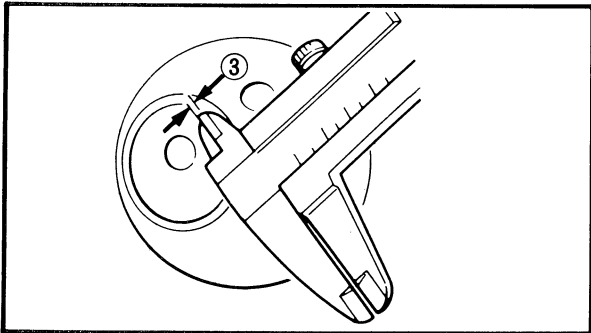


- Apply a fine lapping compound to the valve face and repeat the above steps.

NOTE:

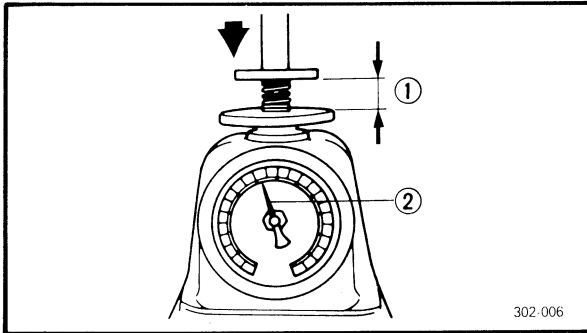
Be sure to clean off all compound from the valve face and valve seat after every lapping operation.

- Apply the Mechanic's bluing dye (Dykem) ② 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 ③ again. If the valve seat width is out of specification, reface and lap the valve seat.

**VALVE SPRING****1. Measure:**

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

Valve Spring Free Length	
Intake spring	Exhaust spring
29.75 mm (1.171 in)	29.75 mm (1.171 in)

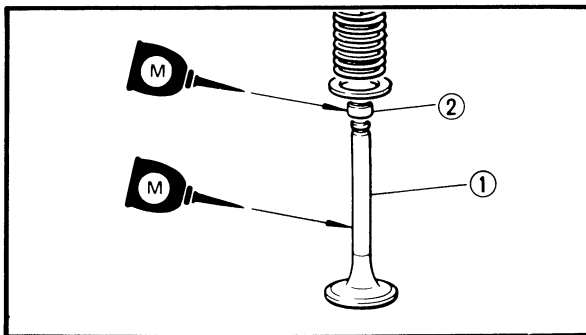


2. Measure:

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

① Installed length

Valve Spring Installed Force			
Intake spring		Exhaust spring	
①	②	①	②
25.7 mm (1.012 in)	7.31 ~ 8.09 mm (16.1 ~ 17.8 in)	25.7 mm (1.012 in)	7.31 ~ 8.09 mm (16.1 ~ 17.8 in)



VALVE INSTALLATION

1. Lubricate:

- Valve stem ①
- Oil seal ②



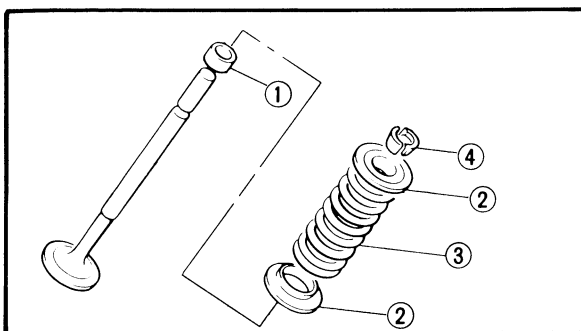
High-Quality Molybdenum Disulfide
Motor Oil or Molybdenum, Disulfide
Grease

2. Install:

- Intake valves
- Exhaust valves

NOTE:

Be sure to reinstall in its original place.

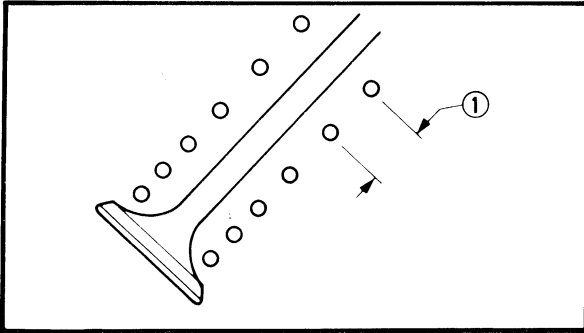


3. Install:

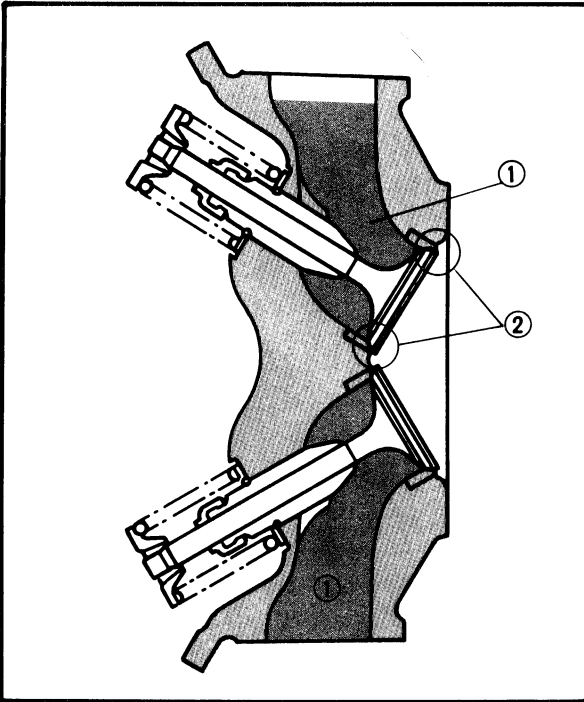
- Oil seal ①
 - Valve spring seat ②
 - Valve spring ③
 - Valve retainers ④
- Use the Valve Spring Compressor.



Valve Spring Compressor:
YM-04019

**NOTE:**

- All valve springs must be installed with the larger pitch ① upward as shown.
- Be sure the "Blue" spring is for intake and "Red" for exhaust.

**4. Check:**

- Valve sealing
Leakage at valve seat → Reface, relap or replace valve, relap.
Refer to "VALVE SEAT".

Valve seat checking steps:

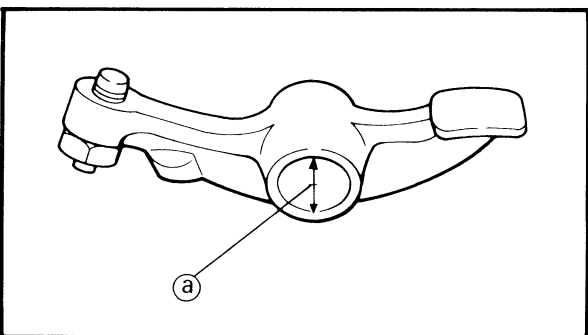
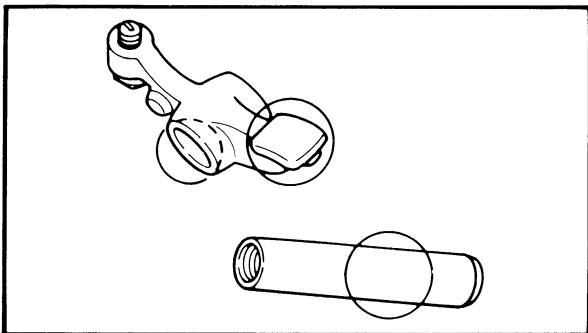
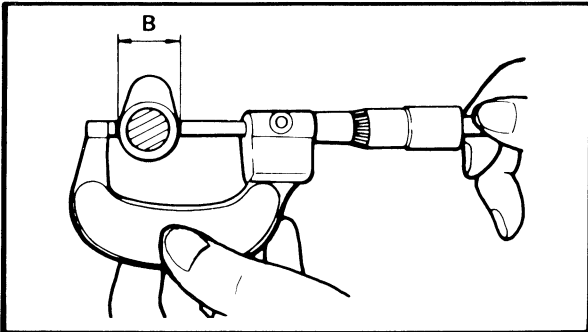
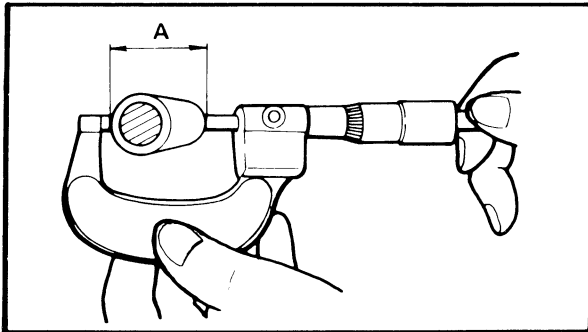
- Pour a clean solvent ① into the intake and exhaust ports.
- Check the valve sealing, there should be no leakage at the valve seat ②.

Relapping steps:

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

CAM SHAFT**1. Inspect:**

- Camshaft bushing (Cylinder head)
Wear/Damage → Replace.



2. Inspect:

- Cam lobes

Pitting/Scratches/Blue discoloration → Replace.

3. Measure:

- Cam lobes

Use a Micrometer.

Out of specification → Replace.

	Cam Lobe Limit "A"	Cam Lobe Limit "B"
Intake	26.090 mm (1.027 in)	20.045 mm (0.789 in)
Exhaust	26.090 mm (1.027 in)	20.087 mm (0.791 in)

ROCKER ARM AND ROCKER ARM SHAFT

1. Inspect:

- Rocker arm shafts
- Rocker arms

Wear/Damage → Replace.

Rocker arm shaft and arm inspection steps:

- Inspect the two areas on the rocker arm for signs of unusual wear.

1) Rocker arm shaft hole.

2) Cam-lobe-contact surface.

Excessive wear → Replace.

- Inspect the surface condition of the rocker arm shaft.

Pitting/Scratches/Blue discoloration → Replace/Check lubrication.

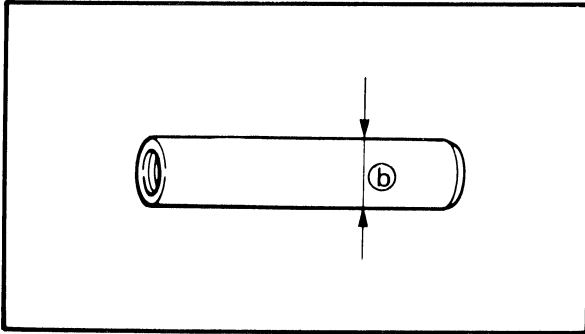
- Measure the inside diameter (a) of the rocker arm hole.

Out of specification → Replace.



Rocker Arm Inside Diameter:

10.000 ~ 10.015 mm
(0.3937 ~ 0.3943 in)



- Measure the outside diameter (b) of the rocker arm shaft.
Out of specification → Replace.



Rocker Arm Shaft Outside Diameter:
9.981 ~ 9.991 mm
(0.3930 ~ 0.3933 in)

- Calculate the clearance by subtracting the rocker-arm-shaft outside diameter from the rocker-arm inside diameter.
Clearance is greater than 0.08 mm (0.0032 in) → Replace either or both parts.



Arm-to-shaft Clearance (Standard):
0.009 ~ 0.034 mm
(0.0004 ~ 0.0013 in)

2. Lubricate:

- Rocker arms
- Rocker arm shafts
- Cam shafts

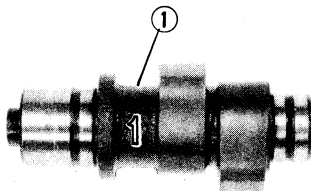


SAE 10W30 Motor Oil

3. Install:

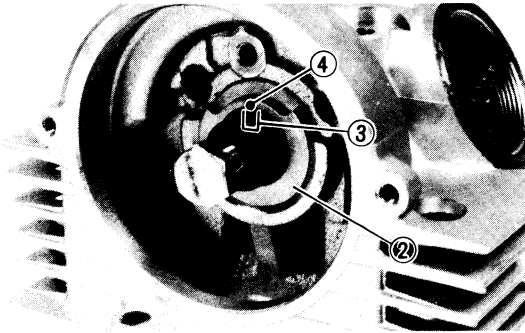
- Rocker arms
- Rocker arm shafts

NOTE: _____
Thread hole of the rocker arm shaft should be placed outside.



4. Install:

- Camshaft ①
 - Camshaft bushing ②
- To the cylinder head.

**NOTE:**

- Install the #1 camshaft into the front cylinder head.
- The Groove ③ on the end of the camshaft must align with the timing mark ④ on the cylinder head.
- The cut-out portion of the bushing must be flush with the cylinder head.

⚠ CAUTION:

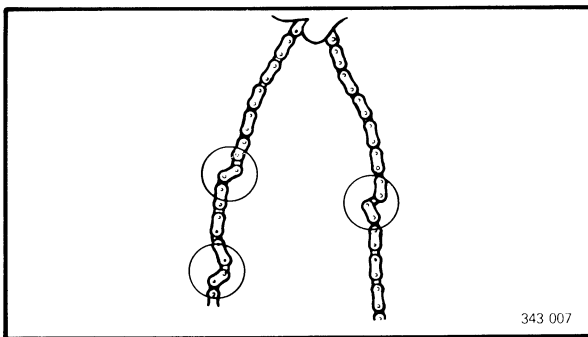
Do not cock the bushing during installation. The bushing must be perpendicular to the camshaft during installation.

5. Install:

- Stopper

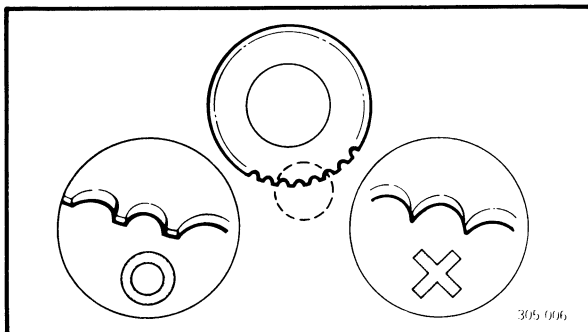


Bolt (Stopper):
12 Nm (1.2 m·kg, 8.7 ft·lb)

**TIMING CHAIN, CAM SPROCKET AND CHAIN TENSIONER**

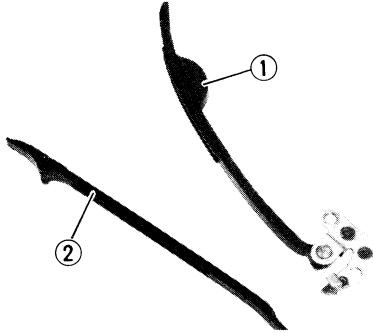
1. Inspect:

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

**Cam Sprocket**

1. Inspect:

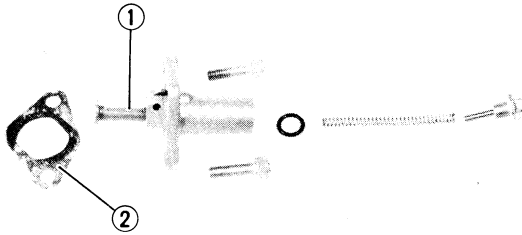
- Cam sprocket
Wear/Damage → Replace.

**Chain Guide**

1. Inspect:

- Cam chain damper (Intake) ①
- Cam chain damper (Exhaust) ②

Wear → Replace.

**Chain Tensioner**

1. Inspect:

- Chain tensioner rod ①
- Gasket ②

Damage/Wear → Replace.

TAPPET COVER AND CAM SPROCKET COVER

1. Inspect:

- Tappet covers
- Cam sprocket cover
- O-rings

Damage → Replace.

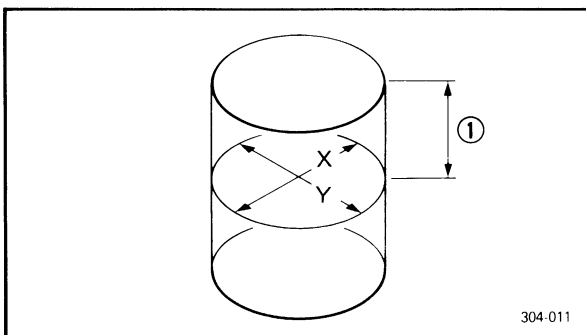
CYLINDER AND PISTON

1. Inspect:

- Cylinder and piston walls
- Vertical scratches → Rebore or replace cylinder and piston.

2. Measure:

- Piston-to-cylinder clearance

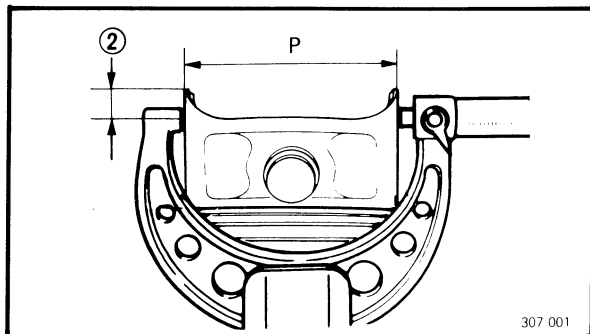
**Piston-to-cylinder clearance measurement steps:****First step:**

- Measure the cylinder bore "C" with the Cylinder Bore Gauge.

① 45 mm (1.77 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.



307 001

**Standard****Wear Limit**Cylinder
Bore "C":48.99 ~ 49.03 mm
(1.929 ~ 1.930 in)49.10 mm
(1.933 in)

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

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

Second step:

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

② 6 mm (0.24 in) from the piston bottom edge

**Piston Outside Diameter "P"****Standard**48.96 ~ 49.00 mm
(1.928 ~ 1.929 in)**Oversize 1**

49.25 mm (1.939 in)

Oversize 2

49.50 mm (1.949 in)

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

Third step:

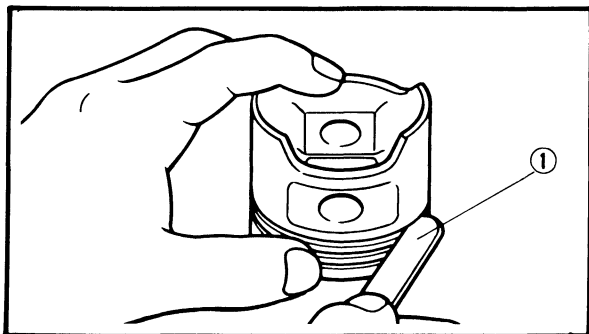
- Find the piston-to-cylinder clearance with following formula:

$$\text{Piston-to-cylinder Clearance} = \text{Cylinder Bore "C"} - \text{Piston Skirt Diameter "P"}$$

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



Piston-to-cylinder Clearance:
0.02 ~ 0.04 mm
(0.0008 ~ 0.0016 in)



PISTON RING AND PISTON PIN

Piston Ring

1. Measure:

- Side clearance

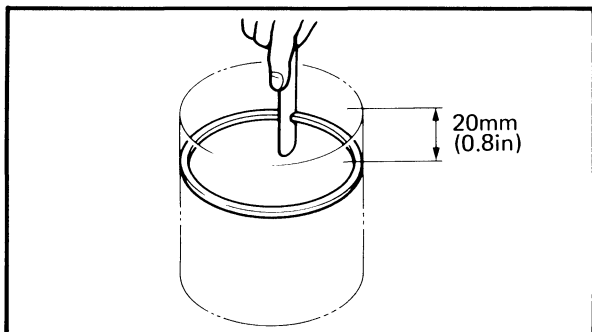
Use the Feeler Gauge ①.

Out of specification → Replace piston and/or rings.

NOTE: _____

Decarbon the piston ring grooves and rings before measuring the side clearance.

	Side Clearance	
	Standard	Limit
Top Ring	0.03 ~ 0.07 mm (0.001 ~ 0.003 in)	0.12 mm (0.005 in)
2nd Ring	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)	0.12 mm (0.005 in)



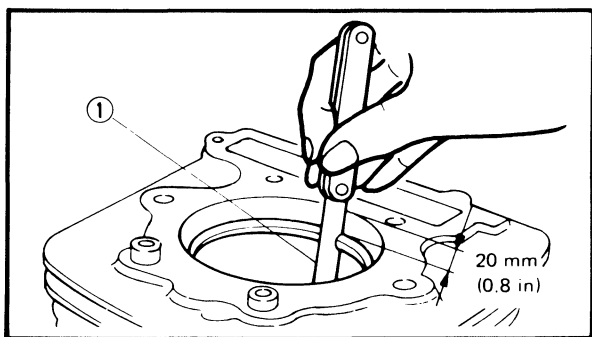
2. Position:

- Piston ring

Into cylinder.

NOTE: _____

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



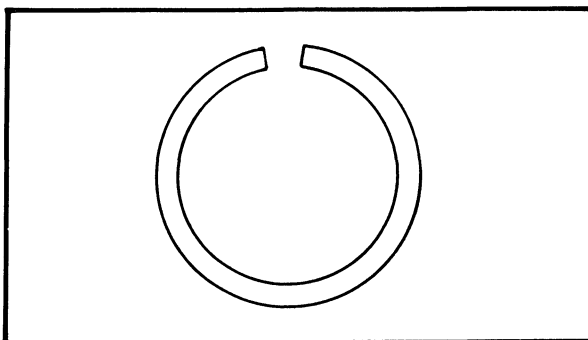
3. Measure:

- End gap

Use a Feeler Gauge ①

Out of specification → Replace rings as set.

	End Gap	
	Standard	Limit
Top Ring	0.15 ~ 0.30 mm (0.006 ~ 0.012 in)	0.4 mm (0.016 in)
2nd Ring	0.15 ~ 0.30 mm (0.006 ~ 0.012 in)	0.4 mm (0.016 in)
Oil Ring	0.2 ~ 0.9 mm (0.008 ~ 0.035 in)	—

**Piston Ring Oversize**

- Top and 2nd piston ring

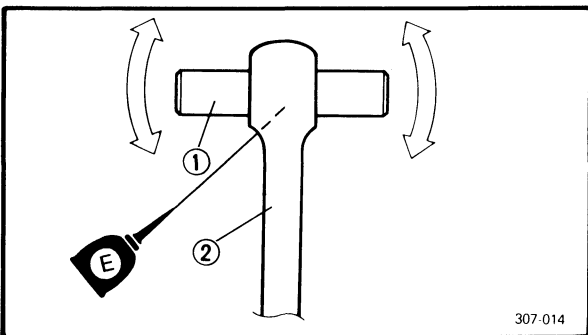
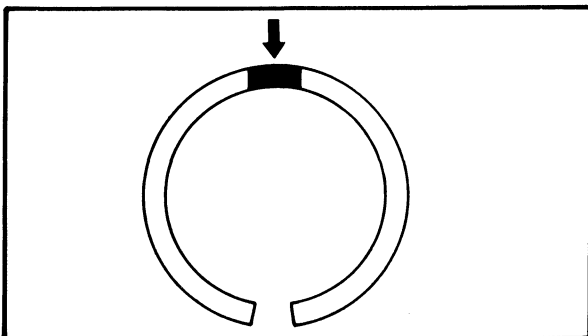
Oversize top and middle ring sizes are stamped on top of ring.

Oversize 1	0.25 mm (0.0098 in)
Oversize 2	0.50 mm (0.0197 in)

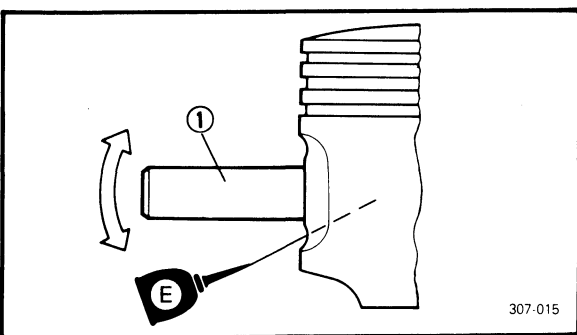
- Oil control ring

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

Size	Color
Oversize 2	Blue
Oversize 4	Yellow



307-014



307-015

Piston Pin

1. Lubricate:

- Piston pin (Lightly)

2. Install:

- Piston pin ①

Into small end of connecting rod ②.

3. Check:

- Free play

Free play → Inspect connecting rod and piston pin for wear.

4. Position:

- Piston pin ①

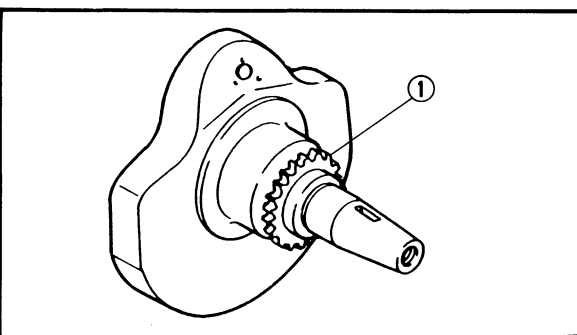
Into piston.

5. Check:

- Free play

When pin is in place in piston.

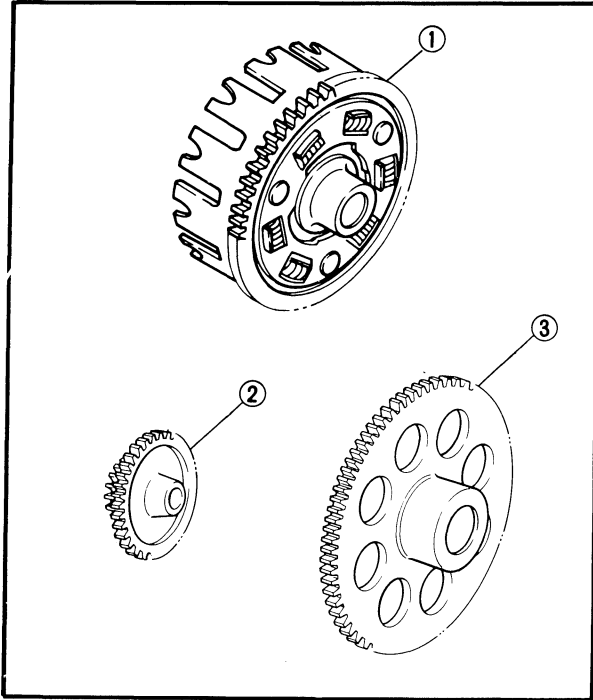
Free play → Replace piston pin and/or piston.

**PRIMARY GEARS AND STARTER**

1. Inspect:

- Drive gear ①

Scratches/Wear/Damage → Replace crankshaft.

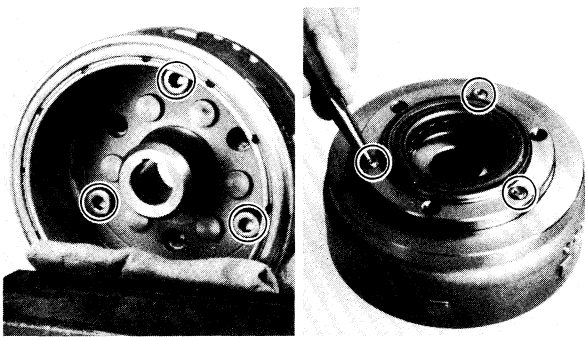


2. Inspect:

- Driven gear ①
Scratches/Wear/Damage → Replace clutch housing assembly.
- Idler gears (# 1 and # 2) ② ③
Scratches/Wear/Damage → Replace.

3. Check:

- Starter clutch operation
Unsmooth operation → Replace one way clutch.



4. Inspect:

- Bolts (Starter clutch)
Loose → Replace with a new one, and clinch the end of the bolt.

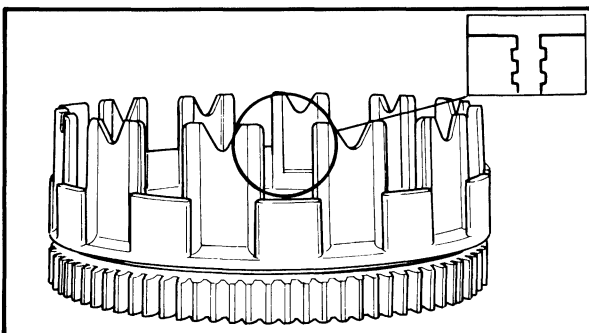


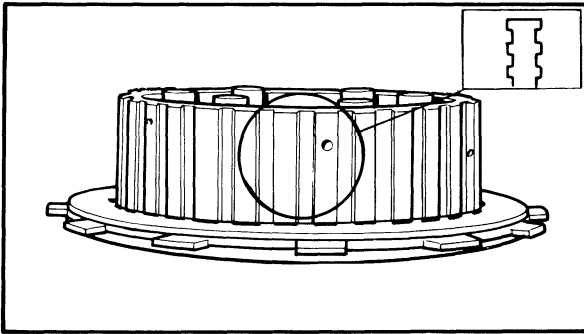
Bolts (Starter Clutch):
30 Nm (3.0 m·kg, 22 ft·lb)
LOCTITE®
Stake Over the End of the Bolt

CLUTCH**Clutch Housing**

1. Inspect:

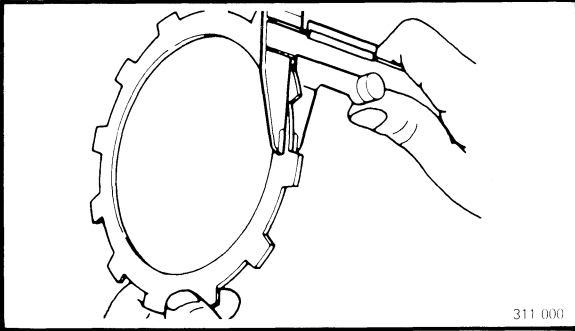
- Dogs on the housing
Cracks/Wear/Damage → Deburr or replace.
- Clutch housing bearing
Chafing/Wear/Damage → Replace.





1. Inspect:

- Clutch boss splines
Scoring/Wear/Damage → Replace clutch boss assembly.

**Friction Plates**

1. Inspect:

- Friction plate
Damage/Wear → Replace friction plate as a set.

2. Measure:

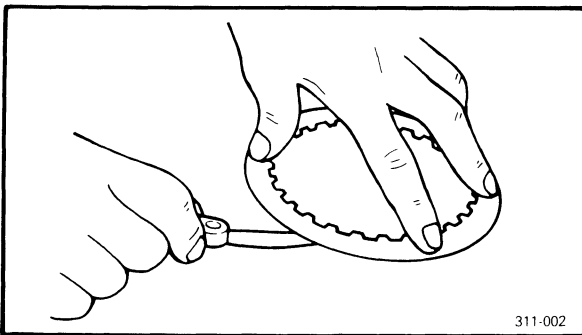
- Friction plate thickness
Measure at all four points.
Out of specification → Replace friction plate as a set.

**Friction Plate 1 Wear Limit:**

2.8 mm (0.11 in) x 1 pc.

Friction Plate 2 Wear Limit:

2.5 mm (0.098 in) x 4 pcs.

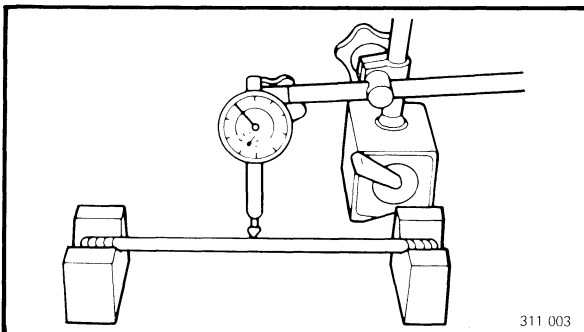
**Clutch Plates**

1. Measure:

- Clutch plate warpage
Use the surface plate and the Feeler Gauge.
Out of specification → Replace.

**Warp Limit:**

0.2 mm (0.008 in)

**Push Rod**

1. Measure:

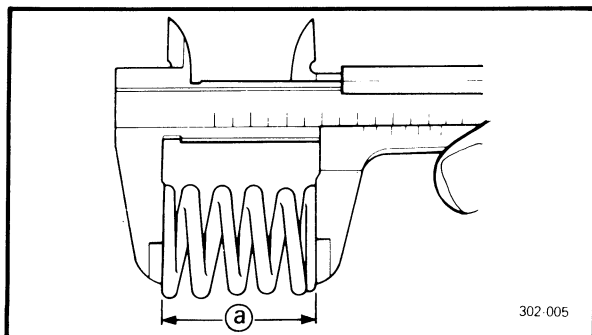
- Push rod runout
Use V-Blocks and the Dial Gauge.
Out of specification → Replace.

**Bending Limit:**

0.5 mm (0.02 in)

**Clutch Bearing**

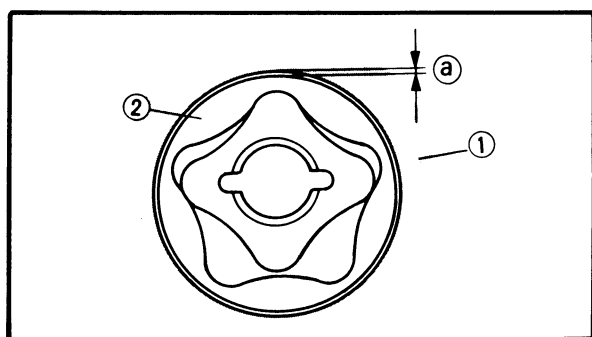
1. Inspect:
 - Bearing
Pitting/Damage → Replace.

**Clutch Spring**

1. Inspect:
 - Clutch spring
Wear/Damage → Replace.
2. Measure:
 - Clutch spring free length (a)
Out of specification → Replace springs as a set.



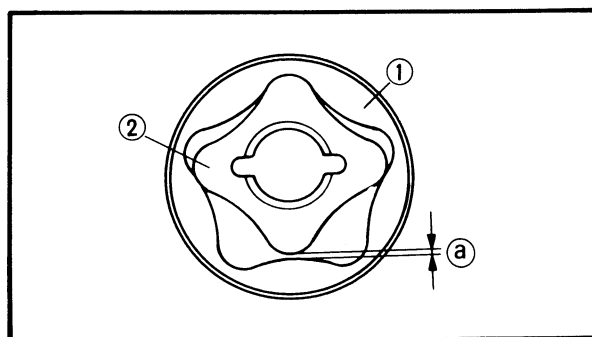
Clutch Spring Minimum Length:
33.6 mm (1.32 in)

**OIL PUMP**

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



Side Clearance Limit:
0.09 mm (0.004 in)



2. Measure:
 - Outer rotor ① /Inner rotor ② clearance (a)
Use a Feeler Gauge.
Out of specification → Replace oil pump assembly.

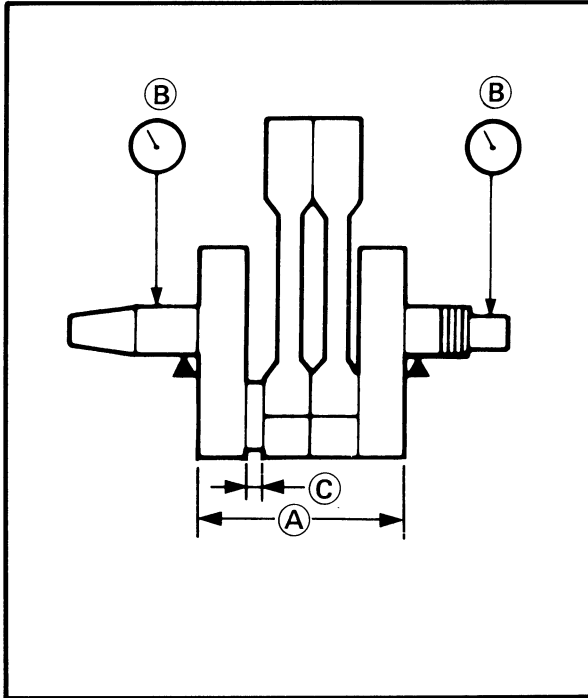


Tip Clearance Limit:
0.20 mm (0.008 in)



3. Inspect:

- Oil pump drive gear
 - Oil pump driven gear
- Wear/Damage → Replace.



CRANKSHAFT

1. Measure:

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



Crank Width:
69.75 ~ 68.00 mm
(2.675 ~ 2.677 in)

- Runout (B)

Out of specification → Replace crankshaft and/or bearing.



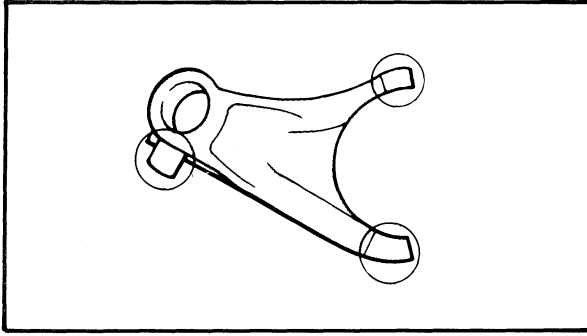
Runout Limit:
0.03 mm (0.001 in)

- Side clearance (C)

Out of specification → Replace connecting rod.



Big End Side Clearance:
0.40 ~ 1.05 mm (0.016 ~ 0.041 in)

**TRANSMISSION****Shift Fork**

1. Inspect:

- Shift forks

On the gear and shift cam contact surfaces.

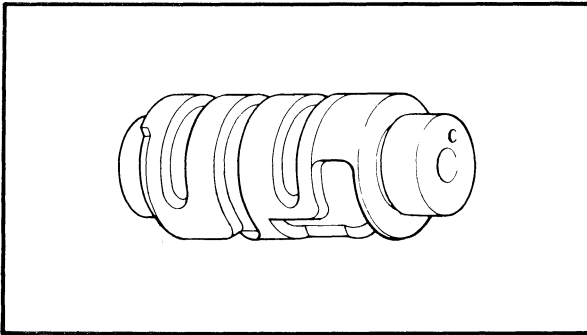
Wear/Chafing/Bends/Damage → Replace.

2. Check:

- Shift fork movement

On its guide bar.

Unsmooth operation → Replace fork and/or guide bar.

**Shift Cam**

1. Inspect:

- Shift cam grooves

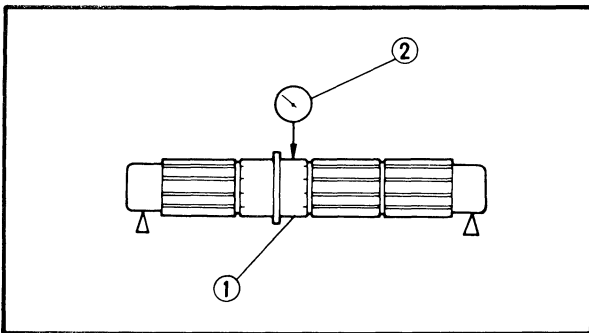
Wear/Damage/Scratches → Replace.

- Shift cam segment

Damage/Wear → Replace.

- Shift cam bearing

Pitting/Damage → Replace.

**Main/Drive Axles and Gears**

1. Measure:

- Axle runout ①

Use the centering device and Dial Gauge

② .

Out of specification → Replace.



Runout Limit:
0.08 mm (0.0031 in)

2. Inspect:

- Gears

Damage/Wear → Replace.

3. Check:

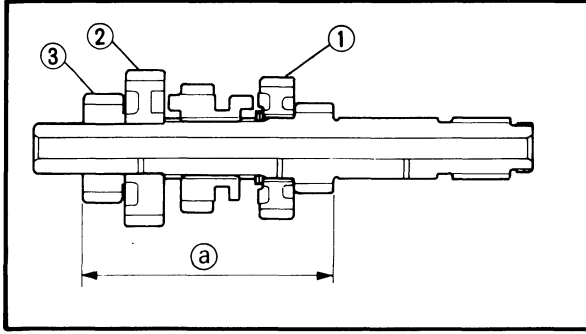
- Gear movement

Unsmooth operation → Replace.

4. Inspect:

- Mating dogs

Cracks/Wear/Damage → Replace.

**NOTE:**

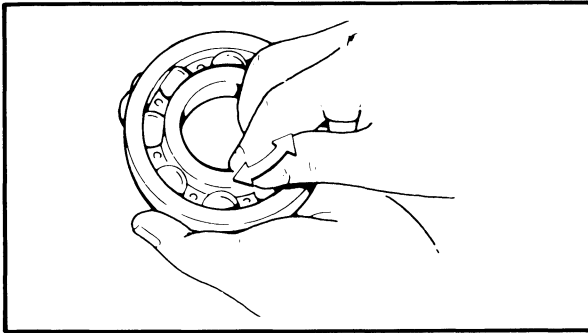
When replacing the main axle or pinions, take the following steps:

- Apply molybdenum oil to the 4th ① and 5th ② pinion gear bosses.
- Using a hydraulic press; force-fit the 2nd pinion gear ③ to the position specified ② .



2nd Pinion Gear Position ② :
87.2 ~ 87.4 mm
(3.43 ~ 3.44 in)

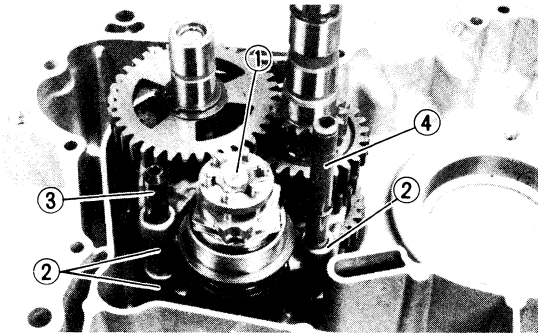
- After installing the pinions onto the main axle, make sure the 4th and 5th pinion gears turn freely.

**BEARINGS****1. Inspect:**

- Axle bearings
- Shift cam bearing
Pitting/Damage → Replace.

CIRCLIPS AND WASHERS**1. Inspect:**

- Circlips
- Washers
Damage/Looseness/Bends → Replace.



ENGINE ASSEMBLY AND ADJUSTMENT

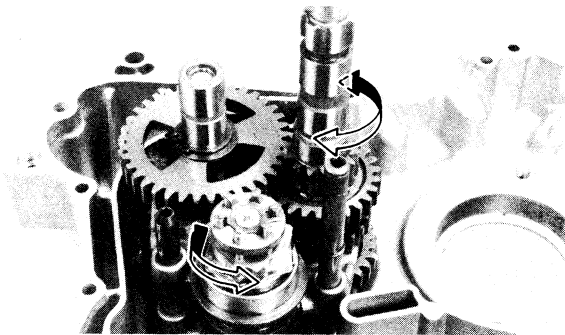
TRANSMISSION AND CRANKSHAFT

1. Install:

- Transmission
- Shift cam ①
- Shift forks ②
- Guide bar (Rear – Longer) ③
- Guide bar (Front – Shorter) ④

NOTE:

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

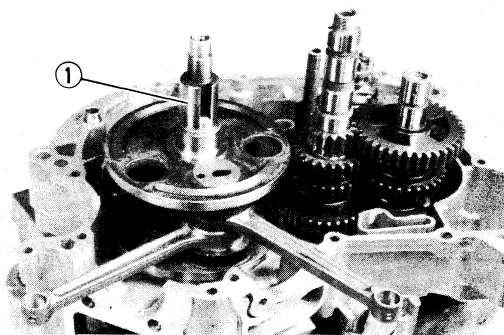


2. Check:

- Shifter operation
- Unsmooth operation → Repair.

NOTE:

- Oil each gear and bearing thoroughly.
- Before assembling the crankcase, be sure that the transmission is in neutral and that the gears turn freely.



3. Install:

- Crankshaft ①
- Into the crankcase (Left).

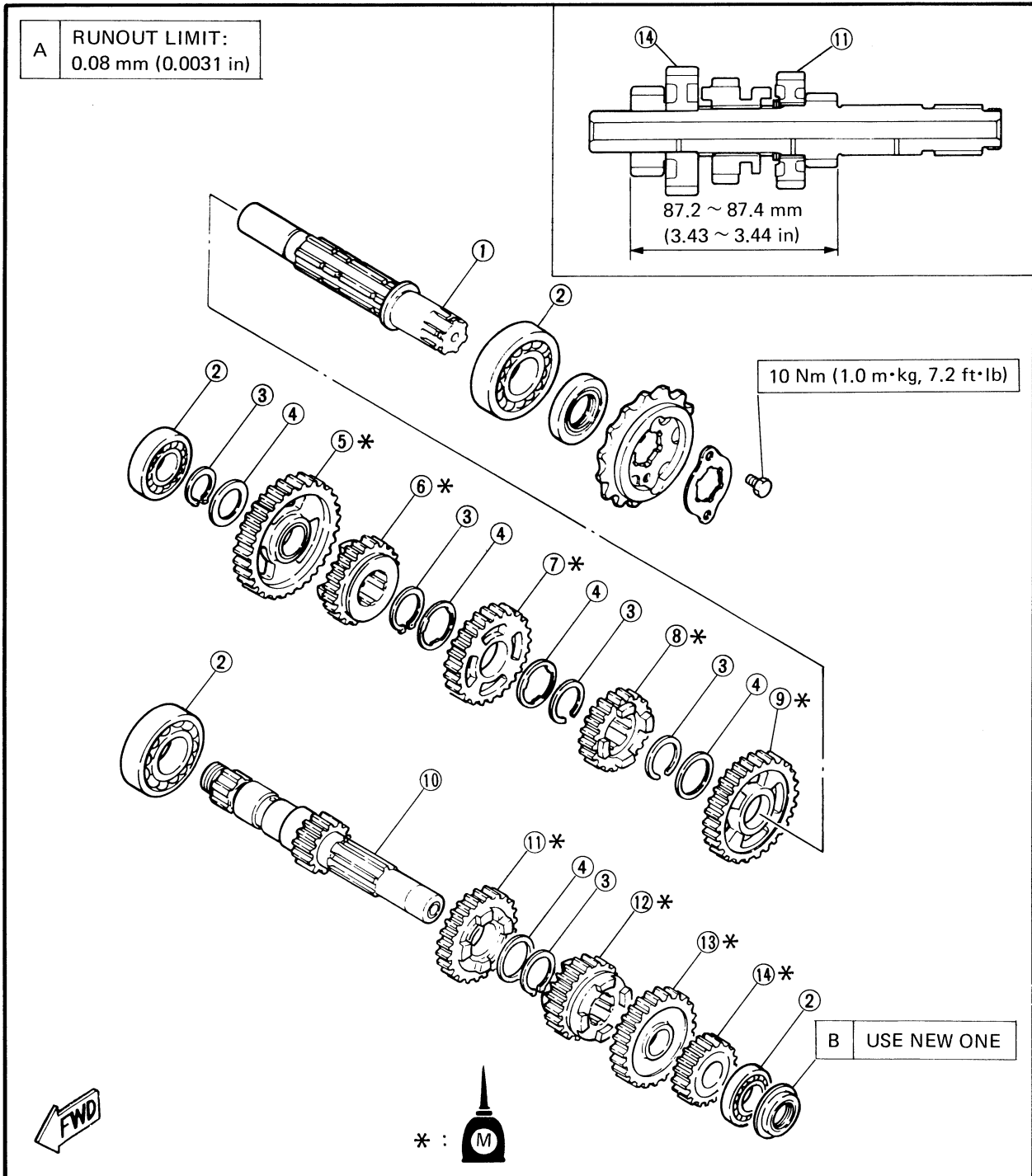
NOTE:

- Install the tapered end of the crankshaft (Left side) into the crankcase.
- Align the left connecting rod with the rear cylinder sleeve hole.
- The rod must be in this hole when the crankshaft is properly installed.



TRANSMISSION

- | | |
|--------------------------|---------------------------|
| ① Drive axle | ⑧ Wheel gear (5th) (29T) |
| ② Bearing | ⑨ Wheel gear (2nd) (38T) |
| ③ Circlip | ⑩ Main axle |
| ④ Washer | ⑪ Pinion gear (4th) (24T) |
| ⑤ Wheel gear (1st) (38T) | ⑫ Pinion gear (3rd) (24T) |
| ⑥ Wheel gear (4th) (28T) | ⑬ Pinion gear (5th) (30T) |
| ⑦ Wheel gear (3rd) (35T) | ⑭ Pinion gear (2nd) (20T) |





CRANKSHAFT

- ① Piston ring set
- ② Piston
- ③ Piston pin
- ④ Connecting rod
- ⑤ Crank pin
- ⑥ Crank (Right)
- ⑦ Crank (Left)
- ⑧ Woodruff key

☐ J "Y" mark towards the outside.

K For rear cylinder

☐ For front cylinder

		A	TOP RING	B	2ND RING
C	SIDE CLEARANCE LIMIT:		0.12 mm (0.005 in)		0.12 mm (0.005 in)
D	END GAP LIMIT:		0.4 mm (0.016 in)		0.4 mm (0.016 in)

E	PISTON-TO-CYLINDER CLEARANCE: 0.02 ~ 0.04 mm (0.0008 ~ 0.0016 in)
---	--

I	USE NEW ONE
---	-------------

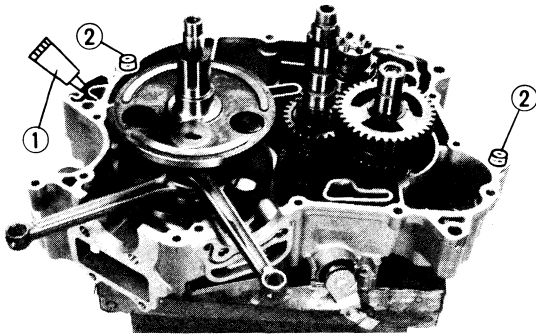
F	CRANK WIDTH: 69.75 ~ 68.00 mm (2.675 ~ 2.677 in)
---	--

G	CRANKSHAFT RUNOUT LIMIT: 0.03 mm (0.0012 in)
---	--

H	BIG END SIDE CLEARANCE: 0.40 ~ 1.05 mm (0.016 ~ 0.041 in)
---	--

80 Nm (8.0 m·kg, 58 ft·lb)



**CRANKCASE**

1. Apply:

- Sealant (Quick Gasket®) ① (ACC-11001-05-01)

To the mating surfaces of both case halves.

2. Install:

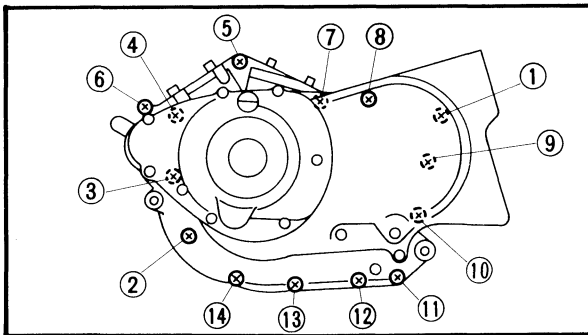
- Dowel pins ②

3. Fit the right crankcase onto the left case.

Tap lightly on the case with a soft hammer.

⚠ CAUTION:

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



4. Tighten:

- Screws (Crankcase) ① ~ ⑭

NOTE:

Tighten the screws starting with the lowest numbered one.



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

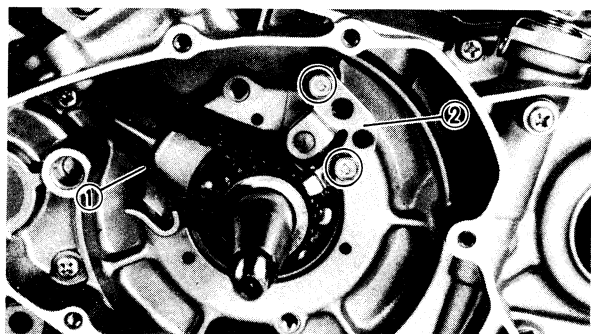
5. Apply:

- 4-stroke engine oil

To the crank pin, bearing and oil delivery hole.

6. Check:

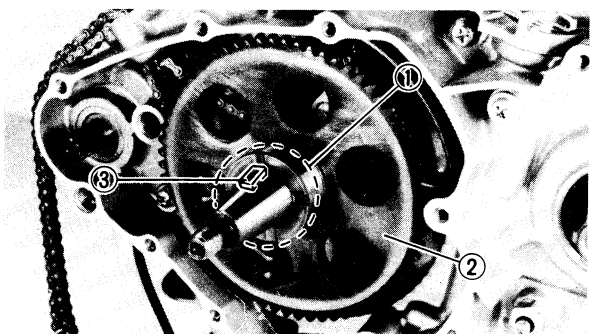
- Crankshaft and transmission operation
Unsmooth operation → Repair.

**A.C. MAGNETO****1. Install:**

- Timing chain ①
- Chain guide (Intake) ②



Bolts (Chain Guide):
10 Nm (1.0 m·kg, 7.2 ft·lb)

**2. Install:**

- Washer ①
- Idler gear # 2 ②
- Woodruff key ③

NOTE: _____

Before installing the idler gear # 2, do not forget to fit the washer ①.

3. Install:

- Rotor
- Plain washer
- Nut (Rotor)

NOTE: _____

- Before installing the rotor, clean the outside of the crankshaft and inside of the rotor.
- When installing the rotor, make sure the woodruff key is properly seated in the key way of the crankshaft.

4. Tighten:

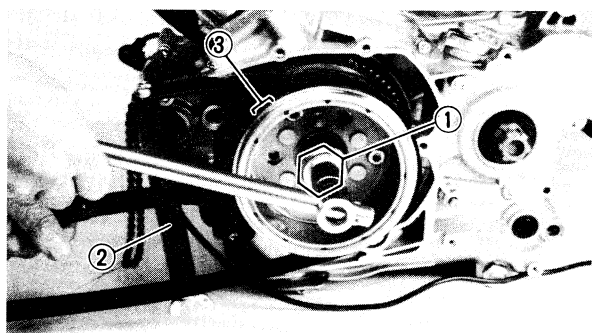
- Nut (Rotor) ①
- Use the Sheave Holder ②.



Sheave Holder:
YS-01880

NOTE: _____

Do not allow the special tool to touch the projection ③ on the rotor.



Nut (Rotor):
80 Nm (8.0 m·kg, 58 ft·lb)



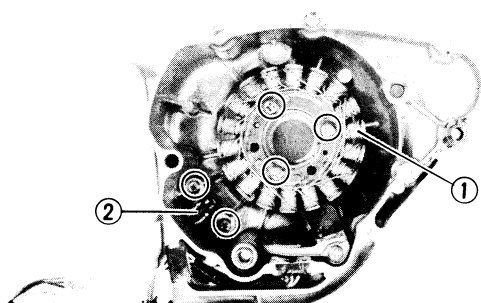
STARTER MOTOR

1. Install:

- Starter motor



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



CRANKCASE COVER (LEFT)

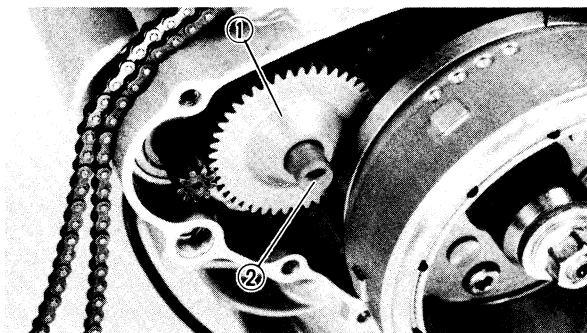
1. Install:

- Stator ①
- Pickup coil ②



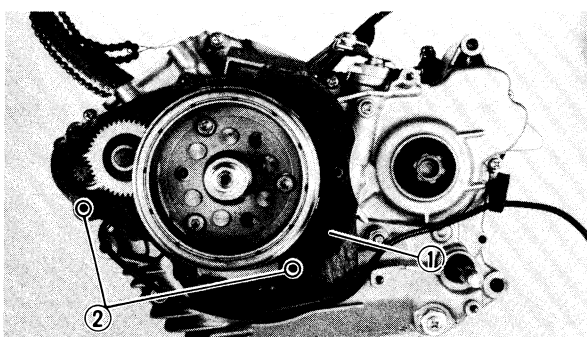
Screws (Stator Coil):
7 Nm (0.7 m·kg, 5.1 ft·lb)

Screws (Pickup Coil):
5 Nm (0.5 m·kg, 3.6 ft·lb)



2. Install:

- Idle gear #1 ①
- Guide bar ②



3. Install:

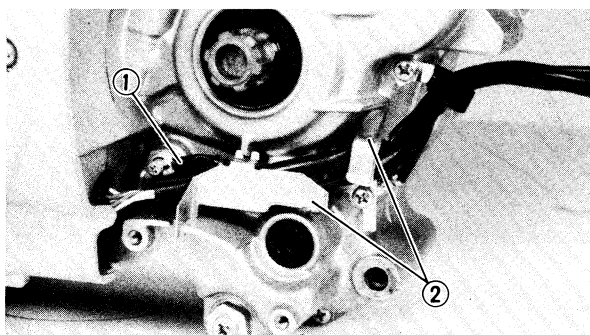
- Gasket ①
- Dowel pins ②
- Crankcase cover (Left)

NOTE:

Tighten in a crisscross pattern.



Screws (Crankcase Cover – Left):
7 Nm (0.7 m·kg, 5.1 ft·lb)



4. Connect:

- Neutral switch lead ①

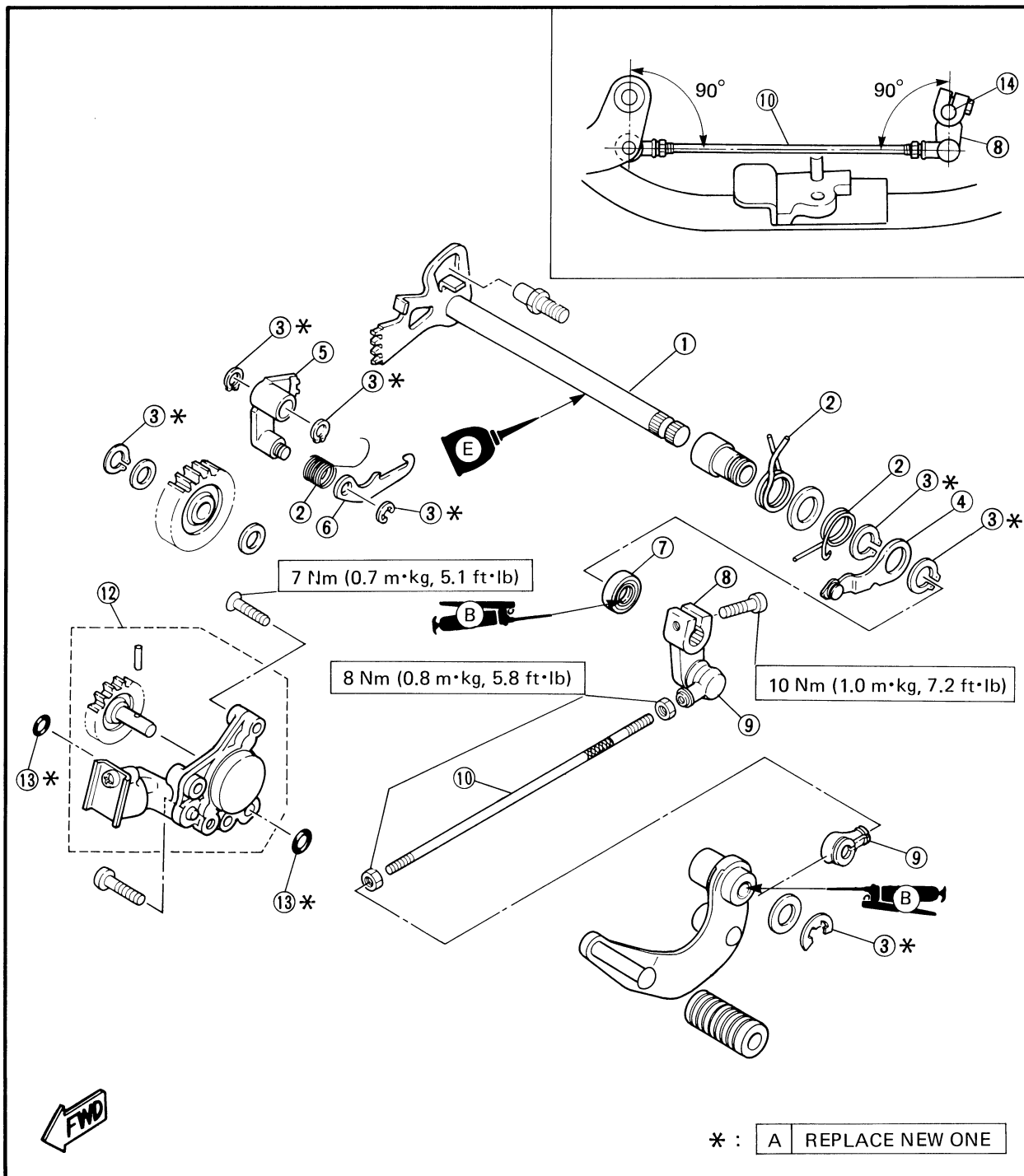
5. Install:

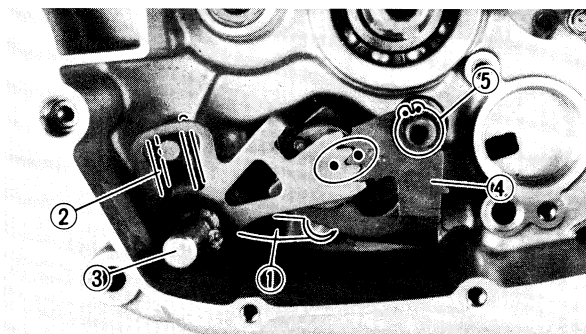
- Holders (Wiring) ②



SHIFT SHAFT/OIL PUMP

- | | |
|---------------------|--------------------|
| ① Shift shaft | ⑧ Shift pedal link |
| ② Spring | ⑨ Dust cover |
| ③ Circlip | ⑩ Adjuster rod |
| ④ Shift cam stopper | ⑪ Shift pedal |
| ⑤ Shift lever | ⑫ Oil pump |
| ⑥ Shift lever arm | ⑬ O-ring |
| ⑦ Oil seal | ⑭ Align mark |





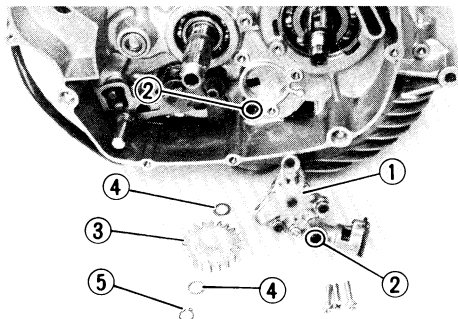
SHIFT SHAFT

1. Install:

- Shift cam stopper ①
- Spring ②
- Shift shaft ③
- Shift lever ④
- Circlip ⑤

NOTE:

Be sure to align the match marks.



OIL PUMP

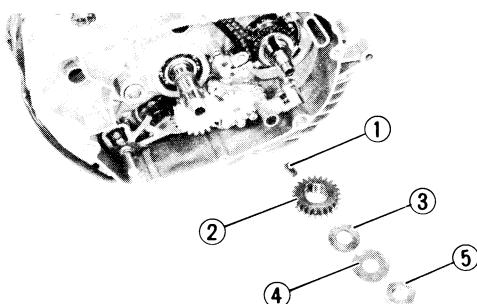
1. Install:

- Oil pump ①
- O-rings ②



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

- Drive gear (Oil pump) ③
- Washers ④
- Circlip ⑤



CLUTCH

1. Install:

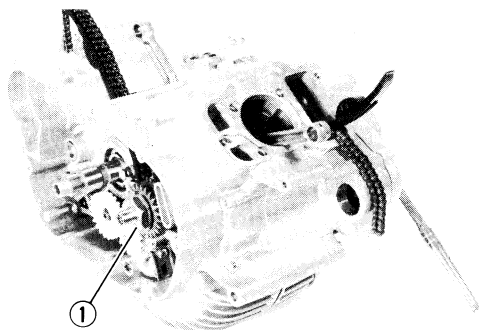
- Key ①
- Primary drive gear ②
- Washer ③
- Lock washer ④ (New)
- Nut (primary drive gear) ⑤

2. Tighten:

- Nut (Primary drive gear) ①

NOTE:

- Use a wrench to hold the rotor.
- Bend the lock washer tab along the nut flats.

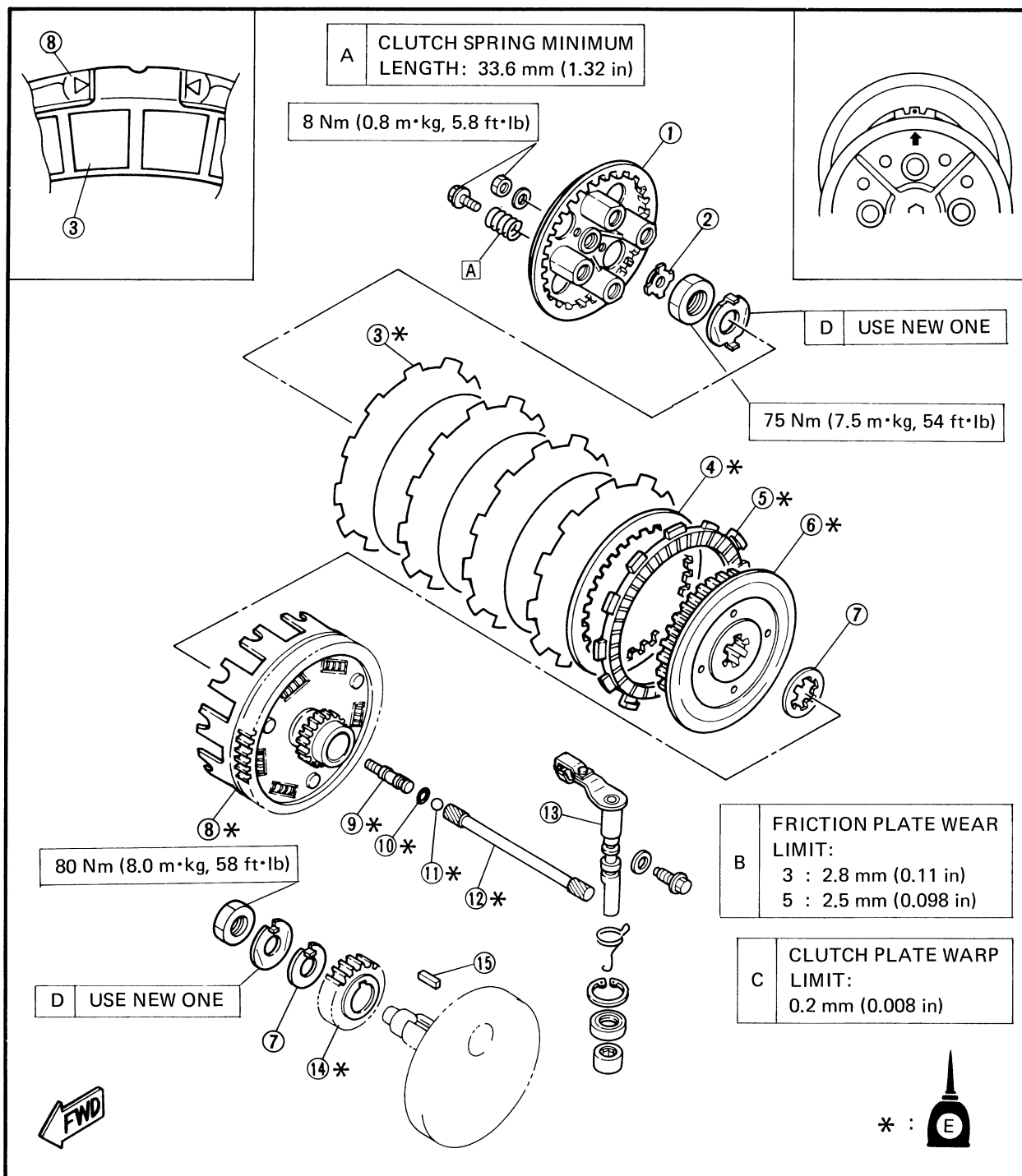


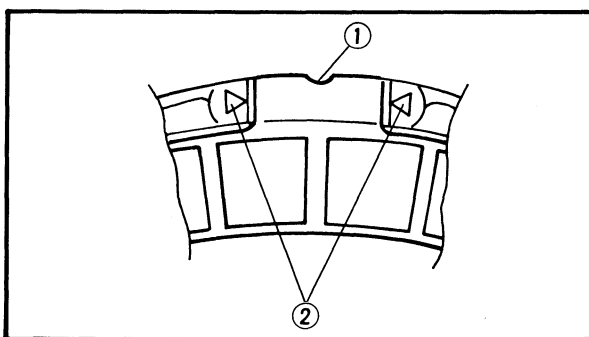
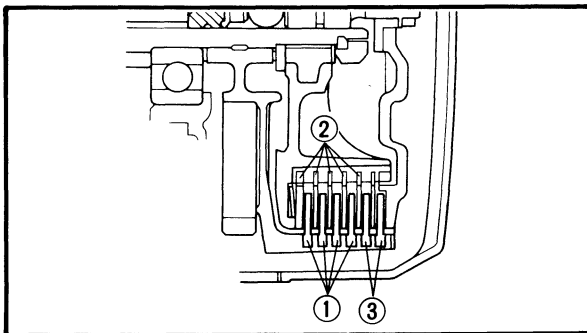
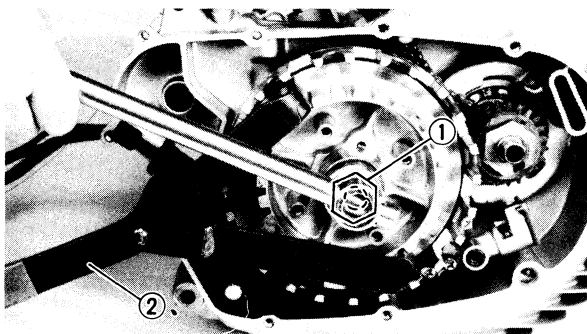
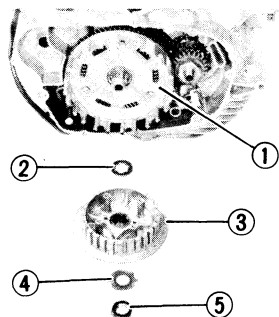
Nut (Primary Drive Gear):
80 Nm (8.0 m·kg, 58 ft·lb)



CLUTCH

- | | |
|-----------------------------|-----------------------|
| ① Pressure plate | ⑨ Push rod # 1 |
| ② Push plate | ⑩ O-ring |
| ③ Friction plate 1 (1 pc.) | ⑪ Ball |
| ④ Clutch plate (4 pcs.) | ⑫ Push rod #2 |
| ⑤ Friction plate 2 (4 pcs.) | ⑬ Push lever assembly |
| ⑥ Clutch boss | ⑭ Primary drive gear |
| ⑦ Holding plate | ⑮ Key |
| ⑧ Clutch housing | |





3. Install:

- Clutch housing ①
- Holding plate ②
- Clutch boss ③
- Lock washer ④ (New)
- Nut (Clutch boss) ⑤

NOTE:

Make sure that the tab of the lock washer engages the slots in the clutch boss.

4. Tighten:

- Nut (Clutch boss) ①
- Use the Universal Clutch Holder ② .



Universal Clutch Holder:
YM-91042



Nut (Clutch Boss):
75 Nm (7.5 m·kg, 54 ft·lb)

5. Install:

- Push rod #2
- Ball
- Friction plate 2 (4 pcs.) ①
- Clutch plates ②
- Friction plate 1 (1 pc) ③

NOTE:

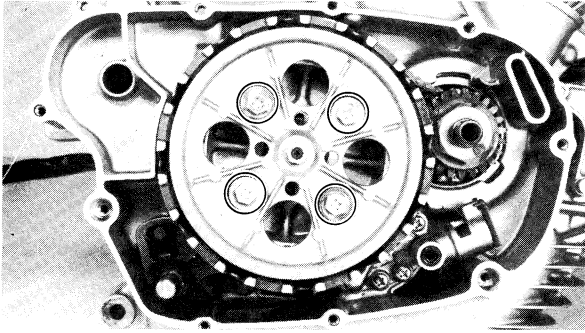
Install the clutch plates and friction plate alternately on the clutch boss, starting with a friction plate and ending with a friction plate.

Friction plates and clutch plates installation steps:

- Install the four friction plates 2 (without the single semi-circular slots) and the four clutch plates.
- Install the one friction plate 1.

NOTE:

- Be sure the single semi-circular slot ① on the friction plate is aligned with the clutch housing embossed match marks ②.

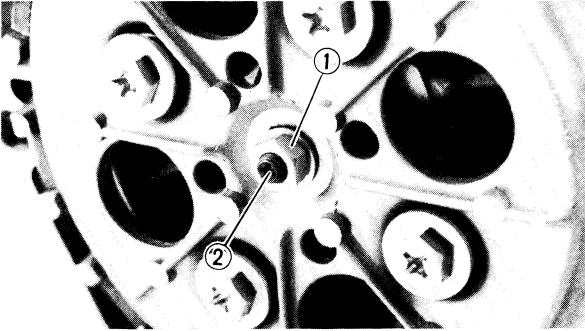


6. Install:

- Pressure plate
- Clutch springs
- Screws (Clutch spring)



Screws (Clutch Spring):
8 Nm (0.8 m·kg, 5.8 ft·lb)



7. Adjust:

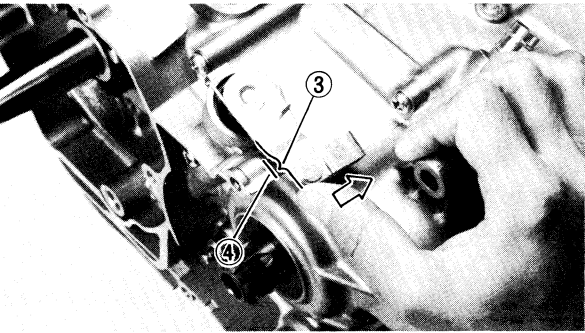
- Clutch mechanism free play

Clutch mechanism free play adjustment steps:

- Loosen the locknut ①.
- Push the push lever toward the front of the engine with your finger until it stops.
- 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.
- Tighten the locknut.

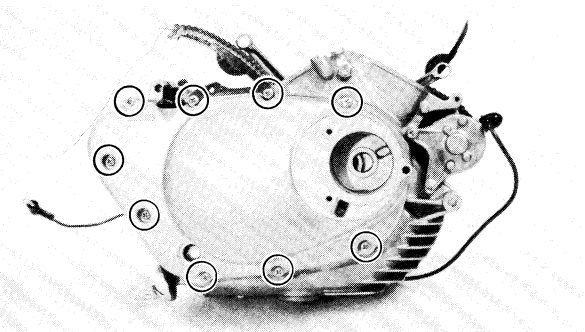


Locknut:
8 Nm (0.8 m·kg, 5.8 ft·lb)



8. Install:

- Timing chain
- Chain damper (Exhaust)

**CRANKCASE COVER (RIGHT)**

1. Install:

- Dowel pins
- Gasket (New)
- Crankcase cover (Right)

2. Tighten:

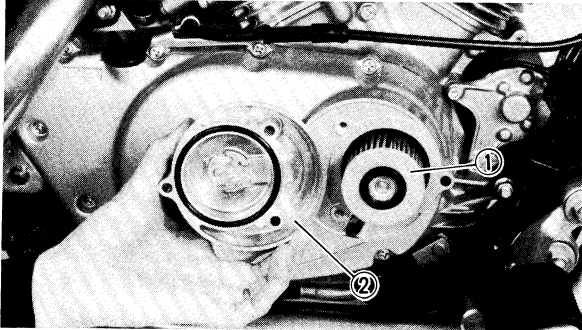
- Screws (Crankcase cover)

**NOTE:**

Tighten using a crisscross pattern.



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

**2. Install:**

- Oil filter ①
- Oil filter cover ②
- O-ring (Filter cover)

PISTON/CYLINDER AND CYLINDER HEAD**NOTE:**

Identify following parts position carefully so that they can be installed in its original place.

- Piston
- Cylinder
- Cylinder head
- Cam sprocket

Front Side**1. Install:**

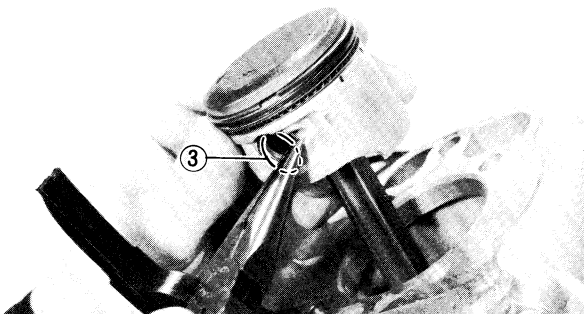
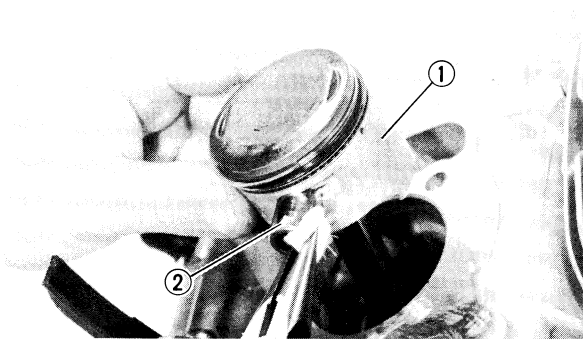
- Piston ①
- Piston pin ②
- Piston pin clip ③

NOTE:

- The "F" mark on the piston must point to the forward side 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:

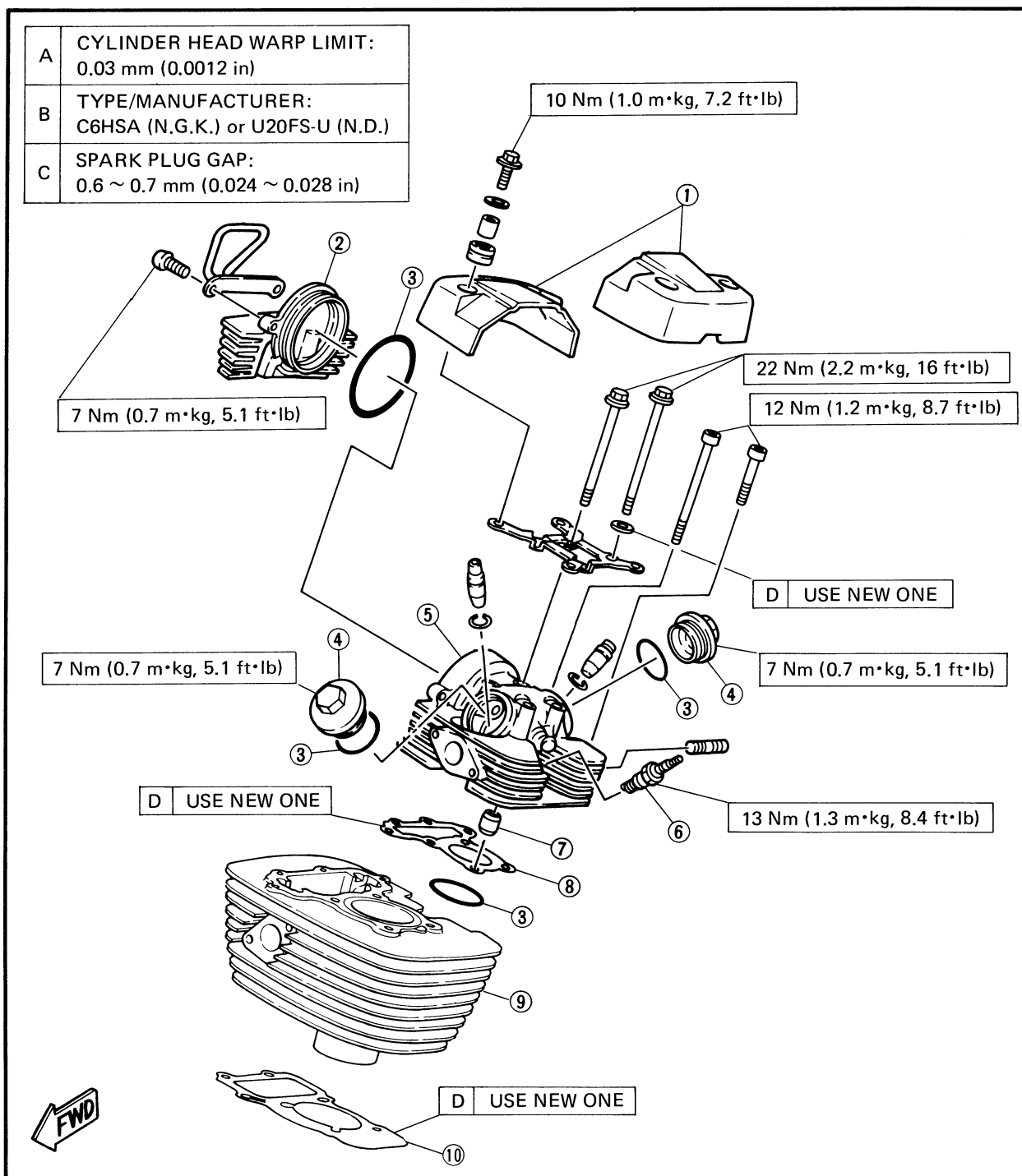
Always use a new piston pin clip.





CYLINDER AND CYLINDER HEAD

- | | |
|------------------------|--------------------------|
| ① Cylinder head covers | ⑥ Spark plug |
| ② Cam sprocket cover | ⑦ Dowel pin |
| ③ O-ring | ⑧ Gasket (Cylinder head) |
| ④ Tappet cover | ⑨ Cylinder |
| ⑤ Cylinder head | ⑩ Gasket (Cylinder) |

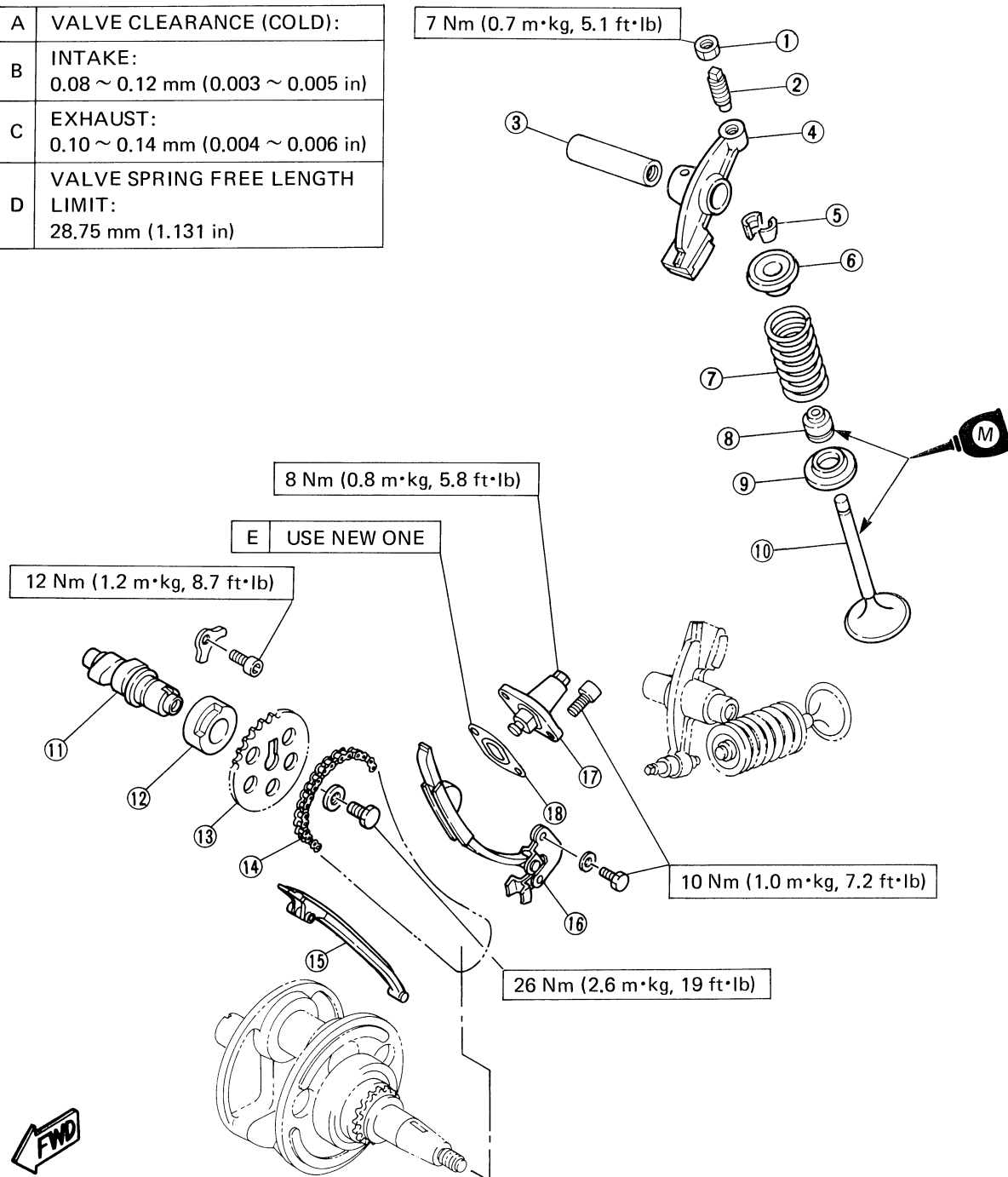


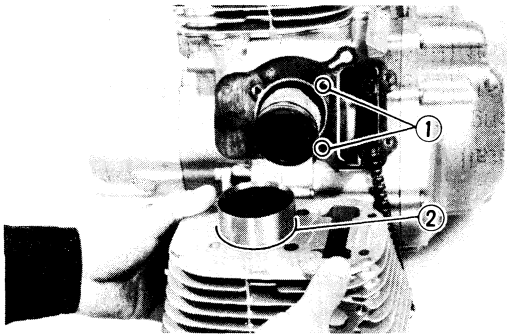


VALVE, CAMSHAFT AND TIMING CHAIN

- | | |
|-------------------------|-------------------------|
| ① Locknut | ⑩ Valve |
| ② Adjuster | ⑪ Camshaft |
| ③ Rocker arm shaft | ⑫ Camshaft bushing |
| ④ Rocker arm | ⑬ Cam sprocket |
| ⑤ Valve Cotten | ⑭ Timing chain |
| ⑥ Valve spring retainer | ⑮ Chain guide (Exhaust) |
| ⑦ Valve spring | ⑯ Chain guide (Intake) |
| ⑧ Valve stem seal | ⑰ Chain tensioner |
| ⑨ Valve spring seat | ⑱ Gasket |

A	VALVE CLEARANCE (COLD):
B	INTAKE: 0.08 ~ 0.12 mm (0.003 ~ 0.005 in)
C	EXHAUST: 0.10 ~ 0.14 mm (0.004 ~ 0.006 in)
D	VALVE SPRING FREE LENGTH LIMIT: 28.75 mm (1.131 in)





2. Apply:

- 4-stroke engine oil

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

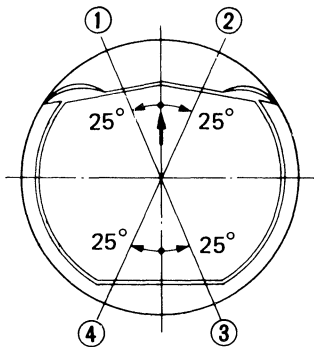
3. Install:

- Gasket (New)
- Dowel pins ①
- O-rings ②

4. 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.



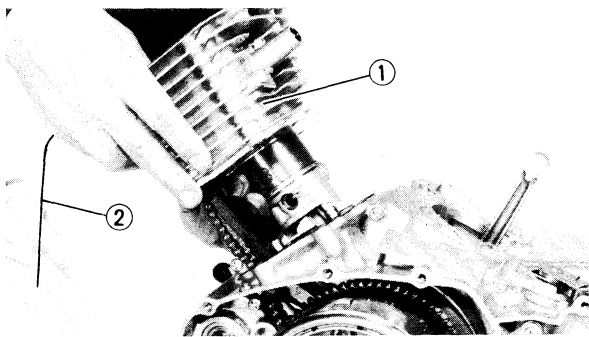
- ① Top ring
- ② Oil ring (Lower rail)
- ③ 2nd ring
- ④ Oil ring (Upper rail)

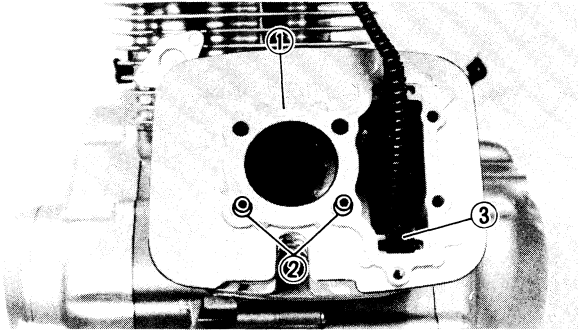
5. Install:

- Cylinder ①

NOTE:

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





6. Install:

- Gasket (New) ①
- Dowel pins ②
- Chain guide (Exhaust) ③

NOTE: _____

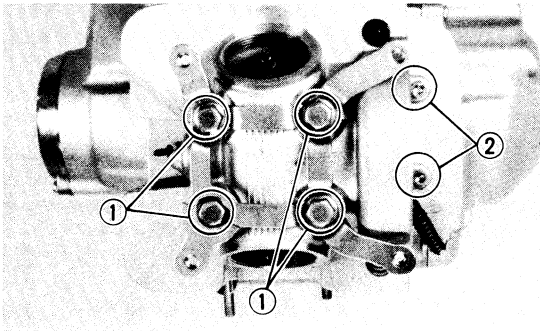
The chain guide should be installed with the "UP" mark upward.

7. Install:

- Cylinder head
- Washers
- Bracket

NOTE: _____

- Tie the timing chain so that it does not fall into the crankcase.
- The bracket with its has projected nut facing the inside.



8. Tighten:

- Bolts (Cylinder head) ①
- Bolts (Cylinder head) ②

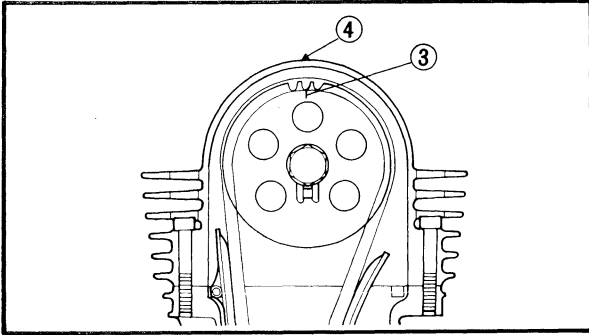
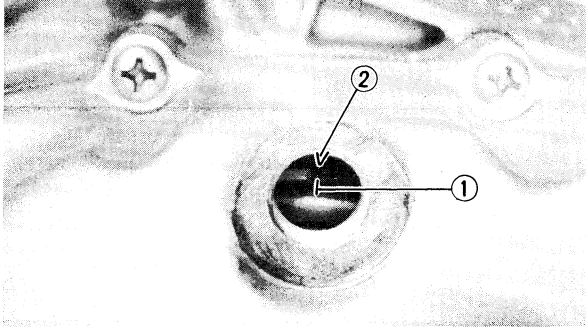
NOTE: _____

Tighten the bolts in this stage, using a crisscross pattern.



Bolts (Cylinder Head):
22 Nm (2.2 m·kg, 16 ft·lb)

Bolts (Cylinder Head):
12 Nm (1.2 m·kg, 8.7 ft·lb)



9. Install:

- Cam sprocket

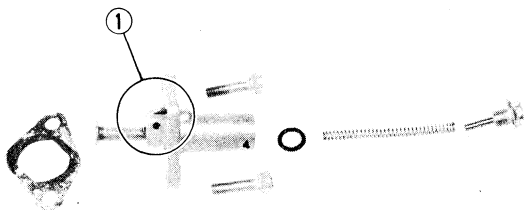
Cam sprocket installing steps (Front cylinder):

- Remove the timing plug and crankcase cover plate.
- Turn the crankshaft clockwise with wrench.
- Align the "T" mark ① on the rotor with the stationary pointer ② on the crankcase cover.
- Install the cam sprocket with the punched mark ③ facing outward.
- Force the camshaft 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 the cam sprocket punch mark ③ aligns with the stationary pointer ④ on the cylinder head at TDC.
- If marks are aligned, tighten the cam sprocket bolt.



Bolt (Cam Sprocket):
26 Nm (2.6 m·kg, 19 ft·lb)

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

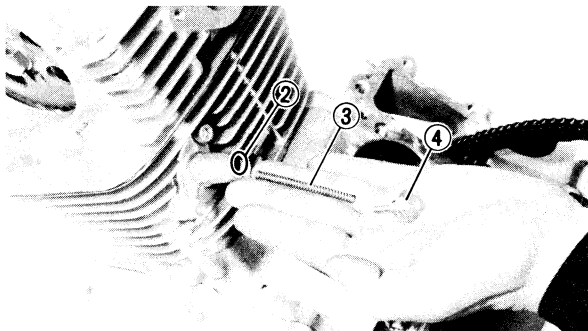


10. Install:

- Gasket (New)
- Cam chain tensioner

Cam chain tensioner installation steps:

- Remove the tensioner end cap bolt and spring.
- Release the cam chain tensioner one-way cam ①.



- Install the tensioner with a new gasket into the cylinder.



Cam Chain Tensioner Body:
10 Nm (1.0 m·kg, 7.2 ft·lb)

- Install the O-ring ② , tension spring ③ and end cap bolt ④ .



End Bolt (Chain Tensioner):
8 Nm (0.8 m·kg, 5.8 ft·lb)

11. Adjust:

- Valve clearance

Refer to "CHAPTER 3. VALVE CLEAR-
ANCE ADJUSTMENT" section.



Intake Valve (Cold):
0.08 ~ 0.12 mm
(0.003 ~ 0.005 in)

Exhaust Valve (Cold):
0.10 ~ 0.14 mm
(0.004 ~ 0.006 in)

12. Install:

- O-rings
- Tappet cover (Intake)
- Tappet cover (Exhaust)
- Cam sprocket cover

NOTE:

Inspect the O-rings. If damaged, replace them.



Tappet covers:
7 Nm (0.7 m·kg, 5.1 ft·lb)

Cam Sprocket Cover:
7 Nm (0.7 m·kg, 5.1 ft·lb)

13. Install:

- Carburetor joint
- Cylinder head covers
- Spark plugs



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

Bolts (Cylinder Head Cover):
10 Nm (1.0 m·kg, 7.2 ft·lb)

Spark Plug:
13 Nm (1.3 m·kg, 8.4 ft·lb)

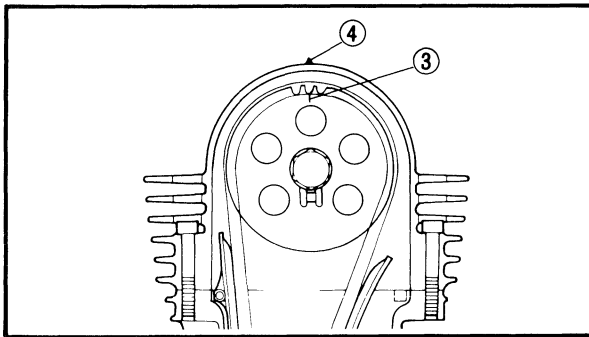
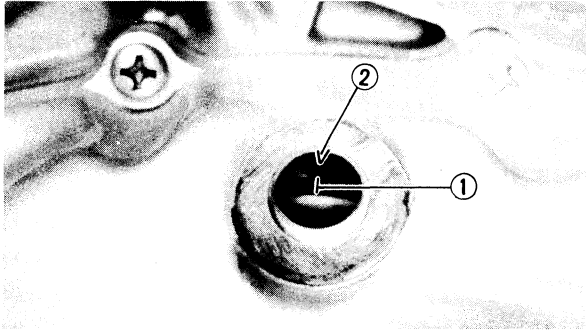


Rear Side

When installing the rear side components, repeat the front side installation procedure. However, note the following points.

1. Install:

- Cam sprocket



Cam sprocket installing steps (Rear cylinder):

- Turn the crankshaft counter clockwise with wrench.
- Align the slit ① on the rotor with the stationary pointer ② on the crankcase cover.
- Install the cam sprocket with the punched mark ③ facing outward.
- Force the camshaft 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 the cam sprocket punch mark ③ aligns with the stationary pointer ④ on the cylinder head at TDC.
- If marks are aligned, tighten the cam sprocket bolt.



Bolt (Cam Sprocket):
26 Nm (2.6 m·kg, 19 ft·lb)

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



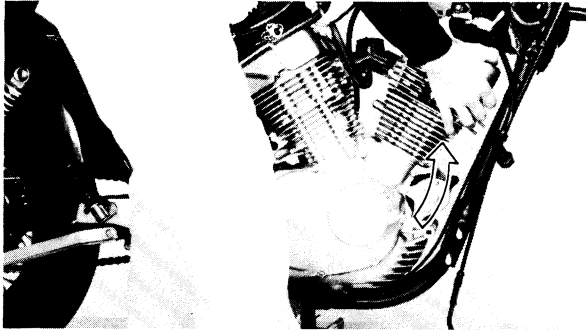
REMounting ENGINE

When remounting the engine, reverse the removal procedure. Note the following points.

1. Place the suitable stands under the engine.

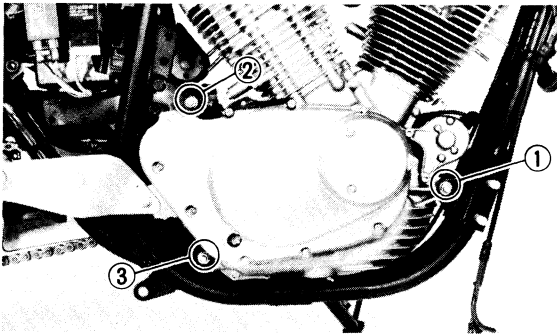
⚠ WARNING:

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



2. Install:

- Engine assembly
- To the right side.



3. Install:

- Engine stay (Rear)
- Bolt (Engine mounting – Front) ①
- Bolt (Engine mounting – Rear-Top) ②
- Bolt (Engine mounting – Rear-Bottom) ③



Engine Stay (Rear) and Frame:
35 Nm (3.5 m·kg, 25 ft·lb)

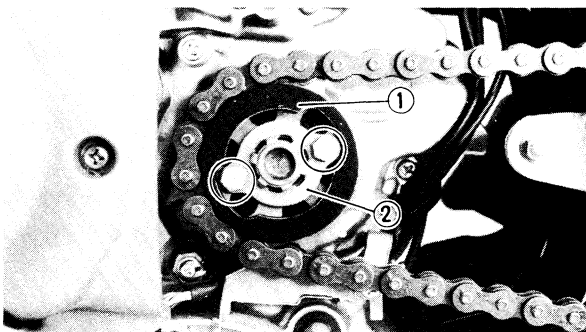
Engine Mounting (Front) and Frame:
35 Nm (3.5 m·kg, 25 ft·lb)

Engine Mounting (Rear-Top) and Stay:
35 Nm (3.5 m·kg, 25 ft·lb)

Engine Mounting (Rear-Bottom) and Frame:
35 Nm (3.5 m·kg, 25 ft·lb)

4. Install:

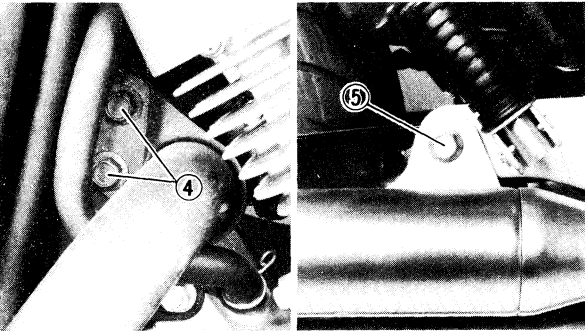
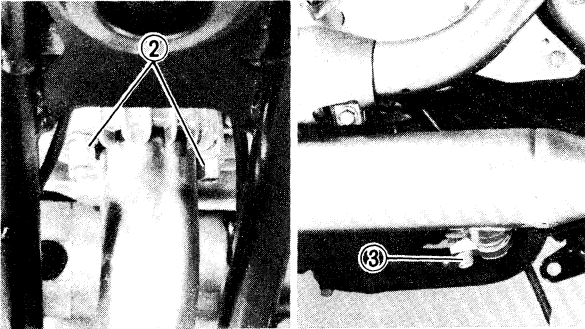
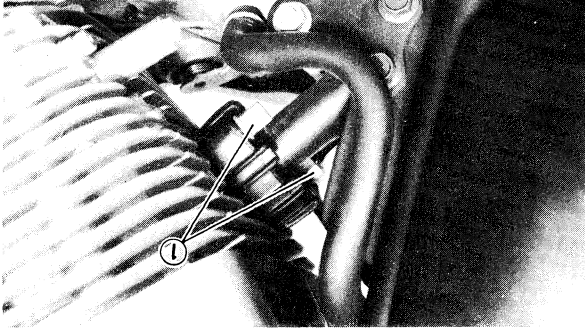
- Drive sprocket ①
- Sprocket holder ②
- Cover (Drive chain)
- Shift pedal link



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

Screws (Cover – Drive Chain):
7 Nm (0.7 m·kg, 5.1 ft·lb)

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



5. Tighten:

- Nuts (Exhaust pipe – Rear) ①
- Nuts (Exhaust pipe 1 – Front) ②
- Bolt (Exhaust pipe joint – Lower) ③
- Bolts (Exhaust pipe 3) ④
- Bolt (Muffler) ⑤



Nuts (Exhaust Pipe 2 – Rear):
10 Nm (1.0 m·kg, 7.2 ft·lb)

Nuts (Exhaust Pipe 1 – Front):
10 Nm (1.0 m·kg, 7.2 ft·lb)

Bolt (Exhaust Pipe Joint – Lower):
20 Nm (2.0 m·kg, 14 ft·lb)

Bolts (Exhaust Pipe 3):
20 Nm (2.0 m·kg, 14 ft·lb)

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

6. Adjust:

- Drive chain slack

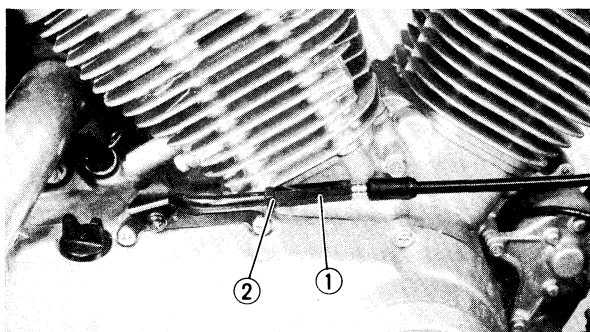
Refer to "CHAPTER 3 – DRIVE CHAIN SLACK ADJUSTMENT".



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

⚠ WARNING:

Always use a new lock washer.



7. Adjust:

- Clutch cable free play

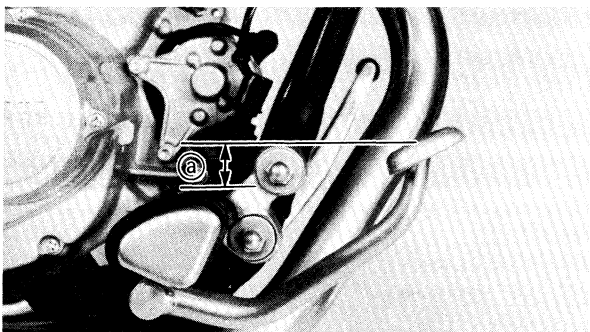
Refer to "CHAPTER 3. – CLUTCH ADJUSTMENT".

**Clutch Cable Free Play:**

3 ~ 5 mm (0.12 ~ 0.20 in)

① Locknut

② Adjuster



8. Adjust:

- Brake pedal height (a)

Refer to "CHAPTER 3. – REAR BRAKE ADJUSTMENT".

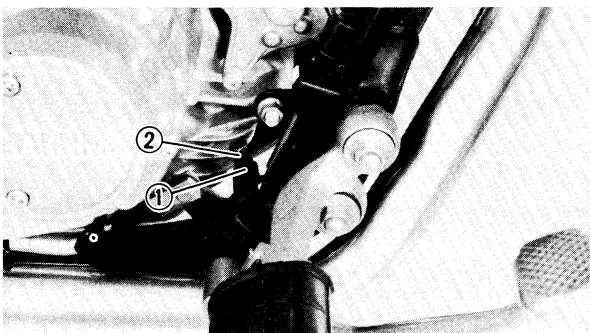
**Brake Pedal Height (a) :**

45 ~ 55 mm (1.77 ~ 2.17 in)

Above the Top of the Footrest

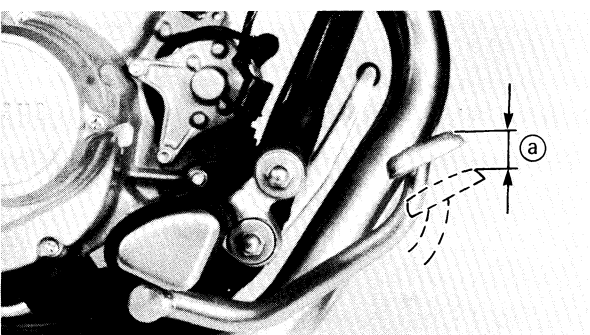
⚠ WARNING:

Check the operation of the brake light after adjusting the brake pedal height.



① Locknut

② Adjuster



9. Adjust:

- Brake pedal free play (a)

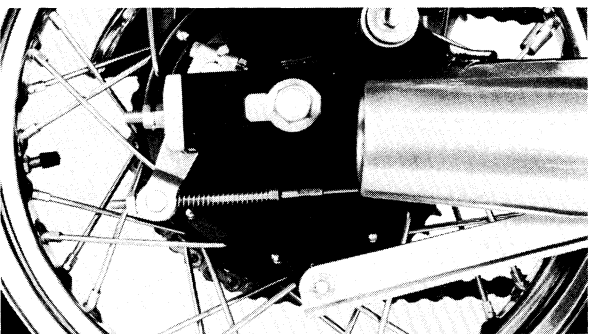
Refer to "CHAPTER 3. – REAR BRAKE ADJUSTMENT".

**Brake Pedal Free Play (a) :**

20 ~ 30 mm (0.8 ~ 1.2 in)

⚠ WARNING:

After adjusting the pedal height, adjust the brake pedal free play.





10. Adjust:

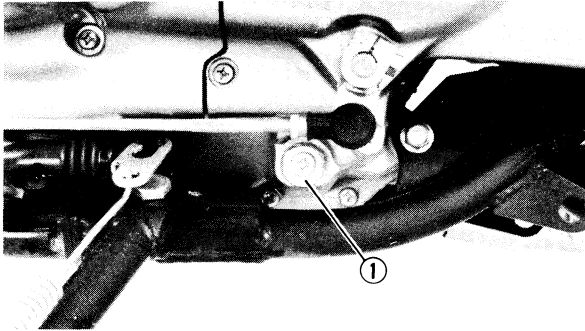
- Throttle cable free play

Refer to "CHAPTER 3. – THROTTLE CABLE FREE PLAY ADJUSTMENT".



Throttle Cable Free Play:

3 ~ 5 mm (0.12 ~ 0.20 in)



11. Tighten:

- Drain plug ①



Drain Plug:

43 Nm (4.3 m·kg, 31 ft·lb)

12. Fill:

- Crankcase



Recommended Oil:

At 5°C (40°F) or Higher ① :

Yamalube 4 or SAE 20W40

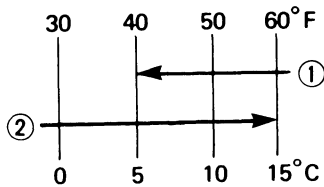
Type SE Motor Oil

At 15°C (60°F) or Lower ② :

SAE 10W30 Type SE Motor Oil

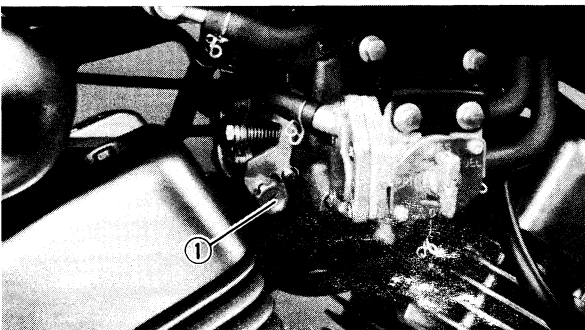
With Oil Filter Replacement:

1.6 L (1.4 Imp qt, 1.7 US qt)



⚠ CAUTION:

Do not allow foreign material to enter the crankcase.



13. Adjust:

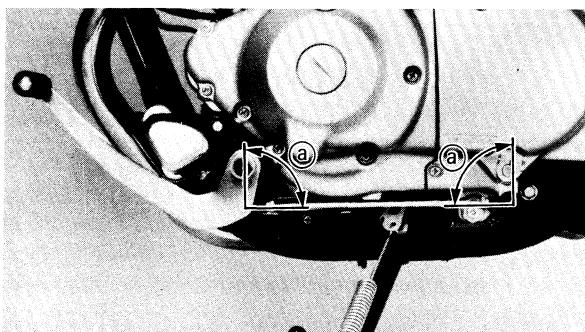
- Idle speed



Idle Speed:

1,150 ~ 1,250 r/min

① Throttle stop screw



10. Adjust:

- Change pedal height ①

Refer to "CHAPTER 3. – SHIFT PEDAL ADJUSTMENT".



Shift Pedal Height:

30 ~ 36 mm (1.2 ~ 1.4 in)

Above the Top of the Footrest

⚠ WARNING:

After adjusting the shift pedal height, visually check the angle of shift pedal arms. The angle of arms must be at right angles ① with the adjuster rod.

11. Adjust:

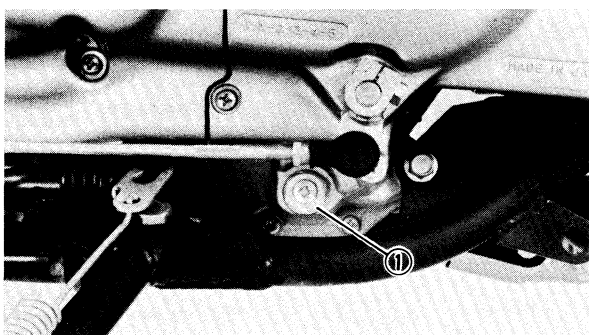
- Throttle cable free play

Refer to "CHAPTER 3. – THROTTLE CABLE FREE PLAY ADJUSTMENT".



Throttle Cable Free Play:

3 ~ 5 mm (0.12 ~ 0.20 in)



12. Tighten:

- Drain plug ①



Drain Plug:

43 Nm (4.3 m·kg, 31 ft·lb)

13. Fill:

- Crankcase



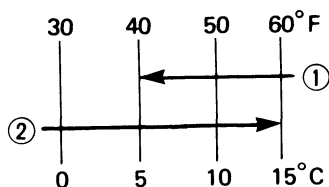
Recommended Oil:

At 5°C (40°F) or Higher ① :
Yamalube 4 or SAE 20W40

AT 15°C (60°F) or Lower ② :
SAE 10W30 Type SE Motor Oil

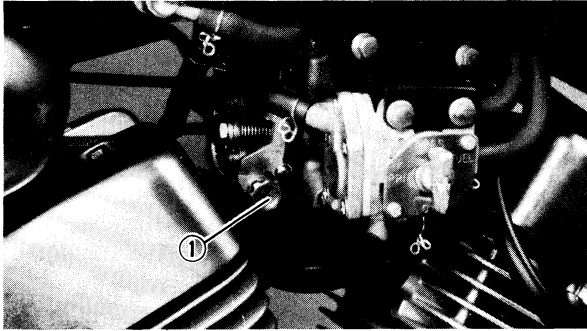
With Oil Filter Replacement:

1.6 L (1.4 Imp qt, 1.7 US qt)



**⚠ CAUTION:**

Do not allow foreign material to enter the crankcase.



1. Adjust:

- Idle speed

Warm up the engine and turn the throttle stop screw ① to adjust.



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



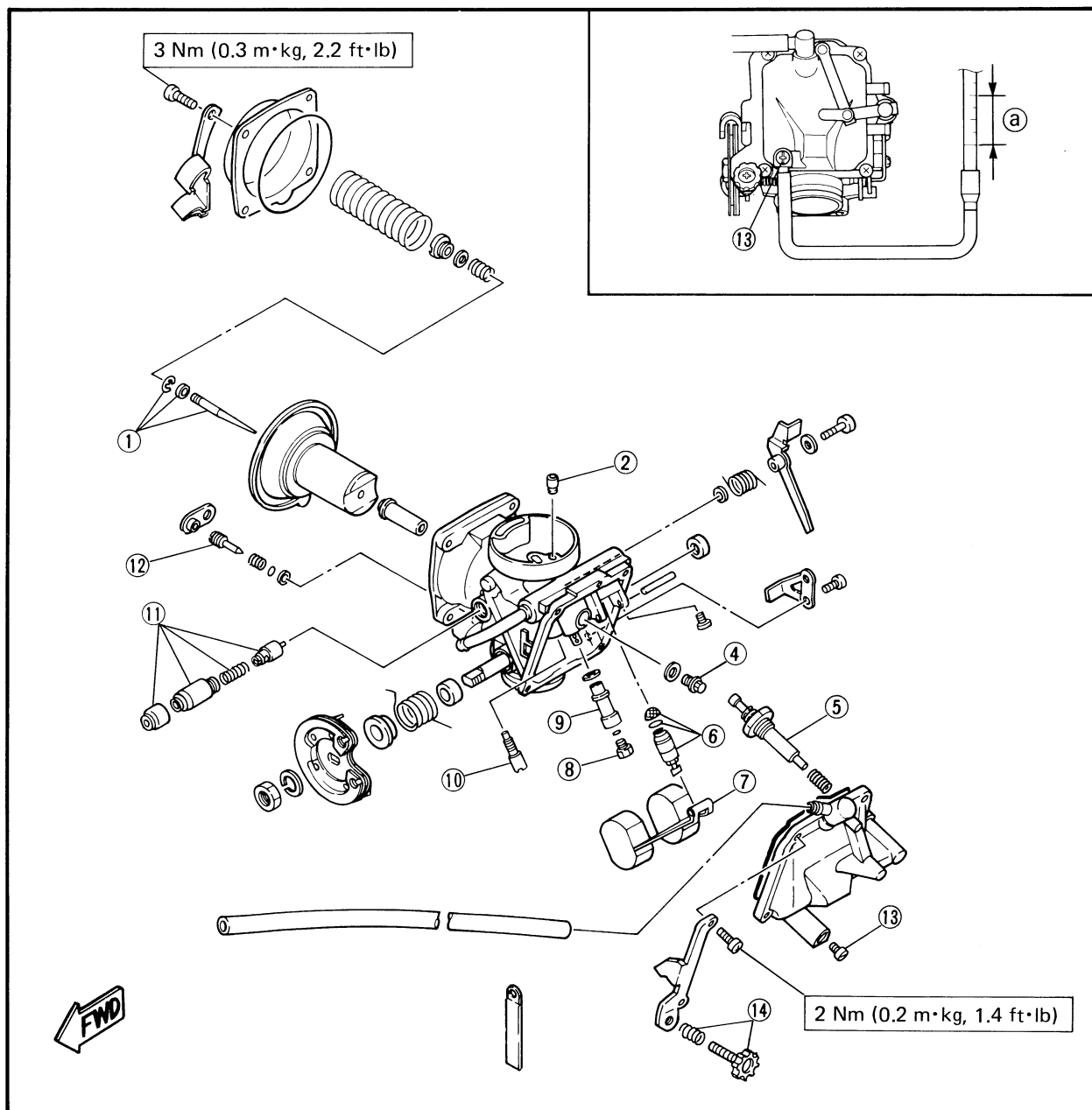
CARBURETION

CARBURETOR

- | | |
|------------------------|----------------------------|
| ① Jet needle set | ⑧ Main jet |
| ② Pilot air jet | ⑨ Main bleed |
| ③ Heater | ⑩ Pilot jet |
| ④ Plug | ⑪ Starter plunger assembly |
| ⑤ Accelerator plunger | ⑫ Pilot screw |
| ⑥ Float valve assembly | ⑬ Drain plug |
| ⑦ Float | ⑭ Throttle stop screw |

SPECIFICATIONS

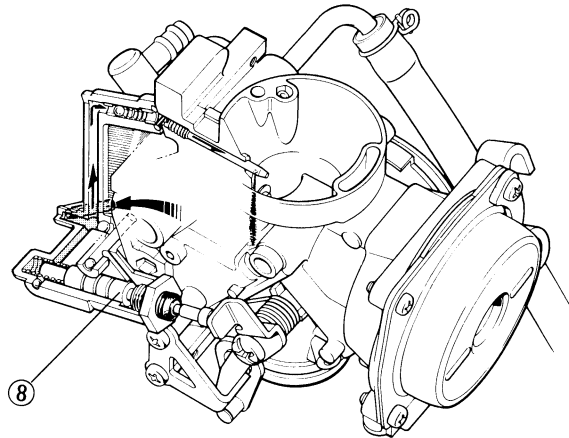
ID MARK	3BG01
MAIN JET	# 110
MAIN AIR JET	#60
JET NEEDLE-CLIP POSITION	4DM-1
NEEDLE JET	O-0
PILOT JET	# 17.5
PILOT SCREW	PRESET
STARTER JET 1	#25
FUEL LEVEL ^(a)	16.5 ~ 17.5 mm (0.65 ~ 0.69 in)
ENGINE IDLING SPEED	1,250 ~ 1,350 r/min



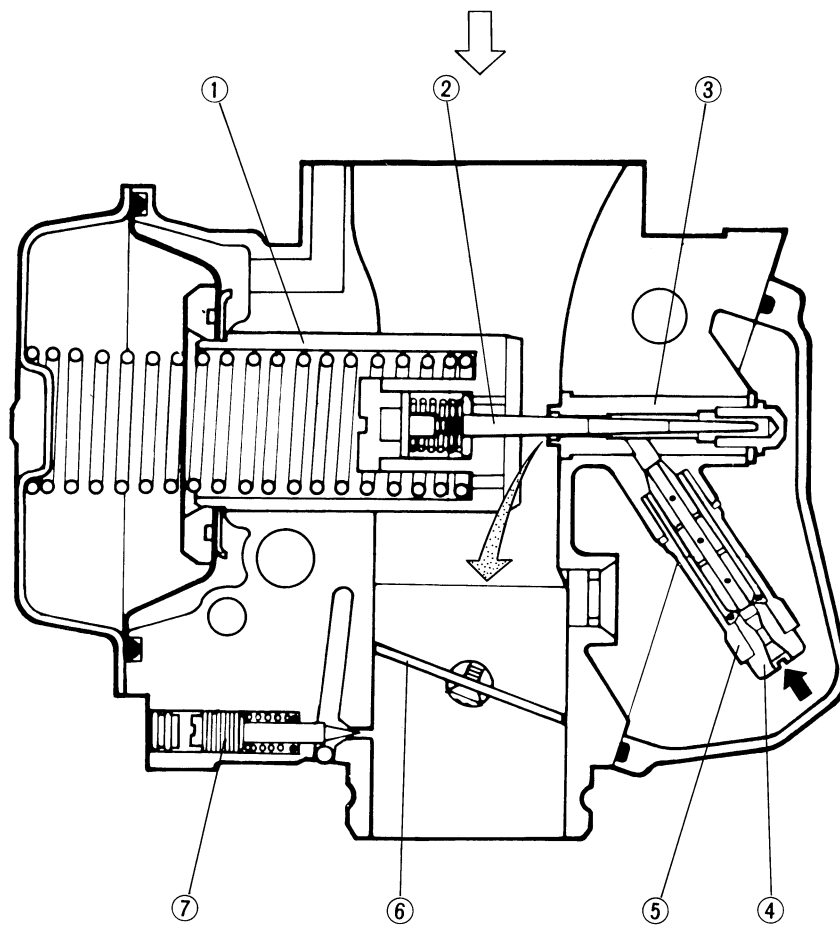


SECTION VIEW

- ① Piston valve
- ② Jet needle
- ③ Needle jet
- ④ Main jet
- ⑤ Main bleed
- ⑥ Throttle valve
- ⑦ Pilot screw
- ⑧ Accelerator pump plunger



A		: Air
B		: Mixture
C		: Fuel





REMOVAL

1. Remove:

- Carburetor assembly
Refer to engine removal section.

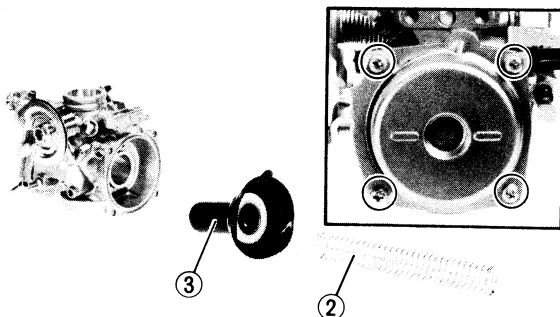
NOTE:

The following parts can be cleaned and inspected without disassembly.

- Vacuum piston
- Throttle stop screw

⚠ WARNING:

The pilot screw settings are adjusted for maximum performance at the factory with special equipment. DO NOT attempt to change these settings. If all other engine systems are functioning correctly, any changes will decrease performance and cause increased exhaust emissions.



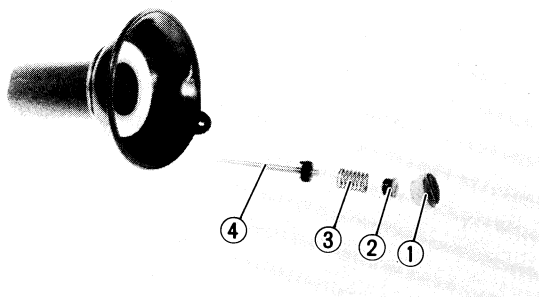
DISASSEMBLY

1. Remove:

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

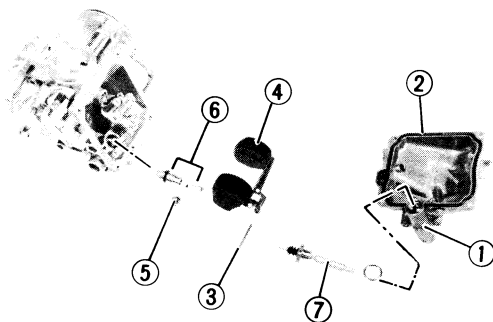
2. Remove:

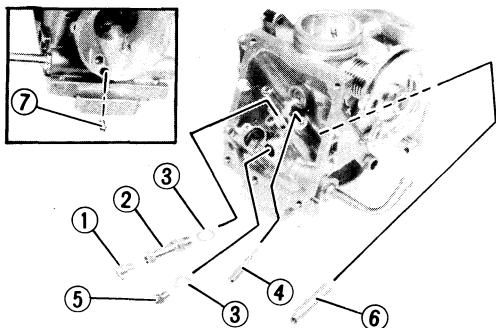
- Plug (Jet needle) ①
- Washer ②
- Spring ③
- Jet needle ④



3. Remove:

- Float chamber cover ①
- Gasket ②
- Float pin ③
- Float ④
- Screw (Valve seat) ⑤
- Valve seat assembly ⑥
- Accelerator pump plunger ⑦





4. Remove:

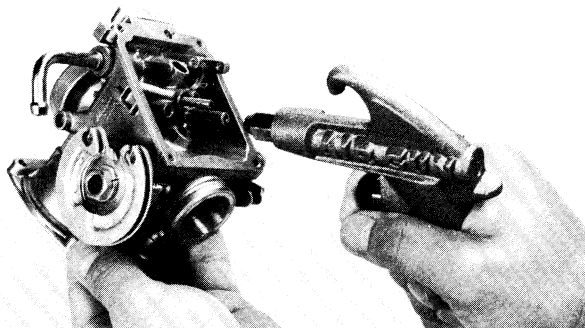
- Main jet ①
- Main bleed ②
- Washer ③
- Pilot jet ④
- Plug ⑤
- Needle jet ⑥
- Pilot air jet ⑦

INSPECTION

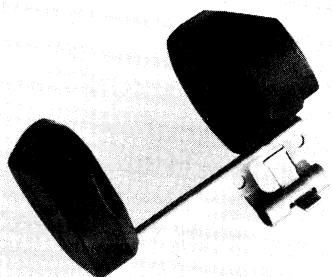
1. Inspect:

- Carburetor body
- Fuel passage

Contamination → Clean as indicated.

**Carburetor cleaning steps:**

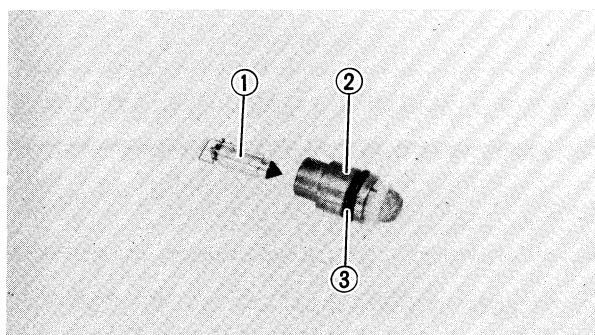
- Wash carburetor in petroleum based solvent. (Do not use any caustic carburetor cleaning solution.)
- Blow out all passages and jets with a compressed air.



2. Inspect:

- Floats

Damage → Replace.



3. Inspect:

- Float needle valve ①
- Seat ②
- O-ring ③

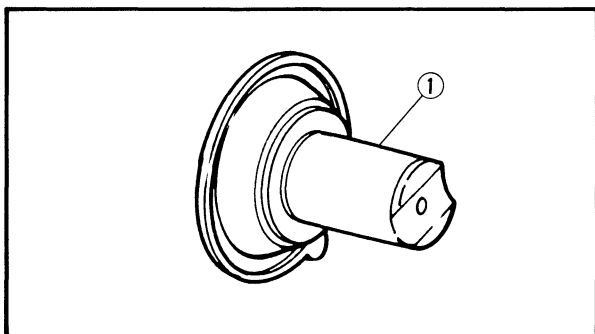
Damage/Wear/Contamination → Replace as a set.

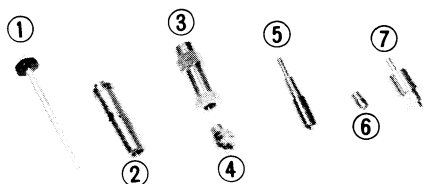
4. Inspect:

- Vacuum piston ①
- Cracks → Replace.
- Diaphragm
- Tears → Replace.

NOTE:

If you suspect the piston valve has been damaged, check the component for cracks by pouring gasoline into the valve. If it leaks, replace with a new piston valve.



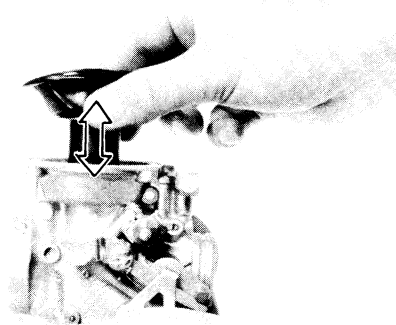


5. Inspect:

- Jet needle ①
- Needle jet ②
- Main bleed ③
- Main jet ④
- Pilot jet ⑤
- Pilot air jet ⑥
- Starter plunger ⑦

Bends/Wear/Damage → Replace.

Contamination → Blow out jets with a compressed air.



6. Check:

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

ASSEMBLY

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

⚠ CAUTION: _____

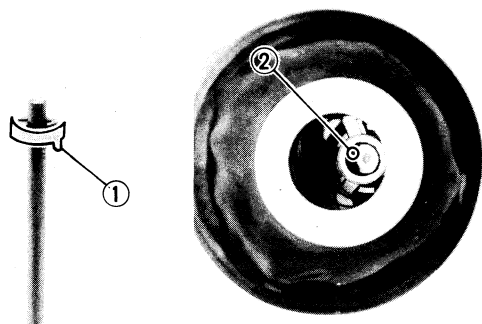
- Before reassembling, wash all parts in clean gasoline.
- Always use a new gasket.

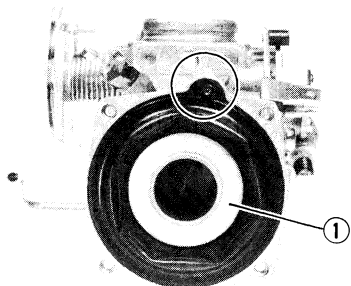
1. Install:

- Jet needle assembly
To the vacuum piston.

NOTE: _____

Be sure to install the jet needle plate so that the projection ① is located toward the hole ② in the vacuum piston.



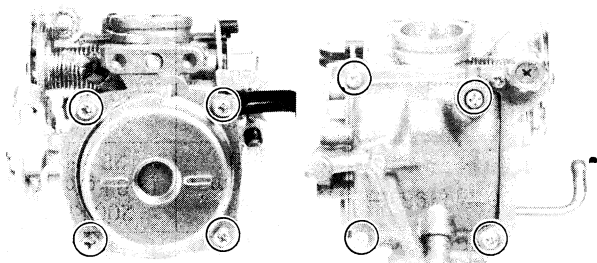


2. Install:

- Vacuum piston ①

NOTE:

Match the tab on the diaphragm to the matching recess in the vacuum piston.



3. Install:

- Vacuum chamber cover
- Float chamber cover



Screw (Vacuum Chamber Cover):

3 Nm (0.3 m·kg, 2.2 ft·lb)

Screw (Float Chamber Cover):

2 Nm (0.2 m·kg, 1.4 ft·lb)

INSTALLATION

1. Install:

- Carburetor assembly
- Reverse the removal procedure.

ADJUSTMENT**Fuel Level Adjustment**

1. Measure:

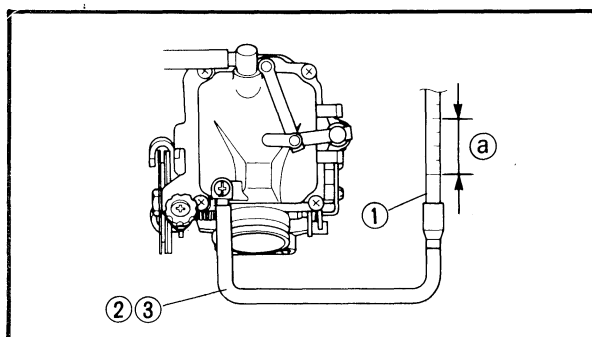
- Fuel level
- Out of specification → Adjust.



Fuel Level:

16.5 ~ 17.5 mm (0.65 ~ 0.69 in)

Below the Carburetor Piston Valve
Center Mark.

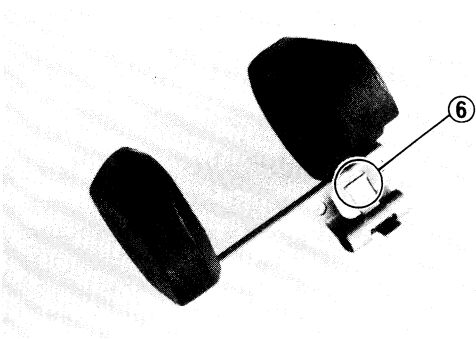
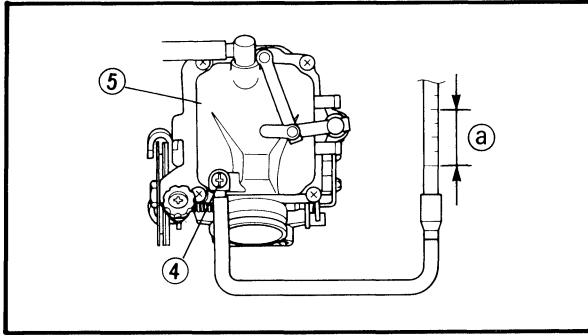
**Fuel level measurement and adjustment steps:**

- Place the motorcycle on a level surface.
- Use a garage jack under the engine to ensure that the carburetor is positioned vertically.
- Connect the Fuel Level Gauge ① to the drain pipe ② using a level gauge adapter ③.



Fuel Level Gauge:

YM-01312-A



- Loosen the drain screw ④ and warm up the engine for several minutes.
- Measure the fuel level ① with the gauge.

⑤ Piston valve center mark

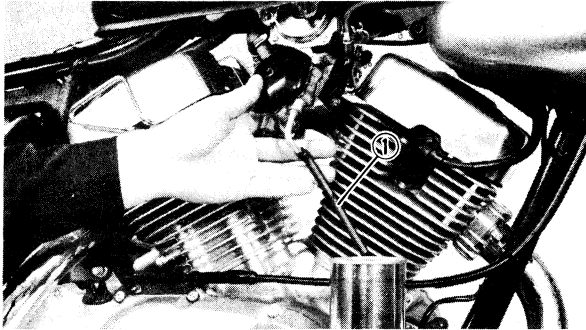
- Repeat the above procedure for other carburetors.
- If the fuel level(s) is incorrect, adjust the fuel level(s).
- Remove the carburetors.
- Inspect the needle valve.
- If it is worn, replace it.
- If it is fine, adjust float level by bending the float tang ⑥ slightly.
- Repeat the procedure for the other carburetors.



FUEL PUMP

PUMP OPERATION INSPECTION

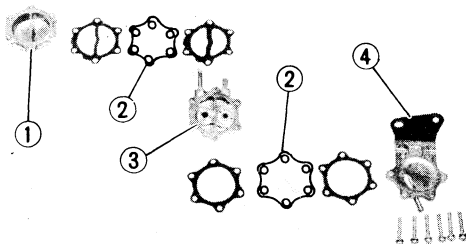
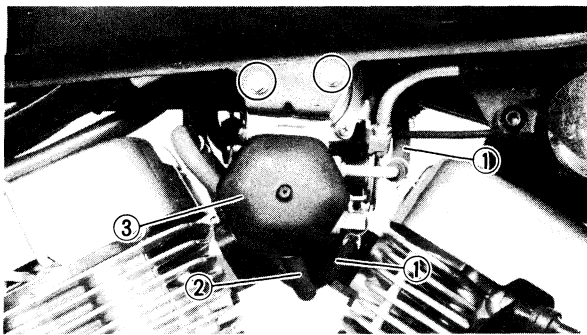
1. Inspect:
 - Fuel pump operation



Pump operation inspection steps:

- Turn the fuel cock to "ON".
- Disconnect the fuel hose (Fuel pump – Carburetor) ①.
- Place a container under the fuel hose end.
- Turn the main switch to "ON".
- Push the "START" switch.
- Check the fuel flows out from the fuel hose ① end.

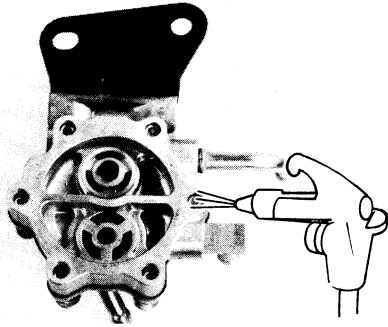
If fuel does not flow out, refer to "FUEL PUMP INSPECTION" section.



FUEL PUMP INSPECTION

Removal

1. Turn the fuel cocks (Right and left) to "OFF".
2. Disconnect:
 - Fuel hoses ①
 - Pulser hose ②
3. Remove:
 - Fuel pump ③
4. Remove:
 - Fuel pump cover (Outer) ①
 - Diaphragms ②
 - Fuel pump body ③
 - Fuel pump cover (Inner) ④

**Inspection****1. Inspect:**

- Fuel pump body ①
Contamination → Clean.
Cracks/Damage → Replace fuel pump assembly.

NOTE:

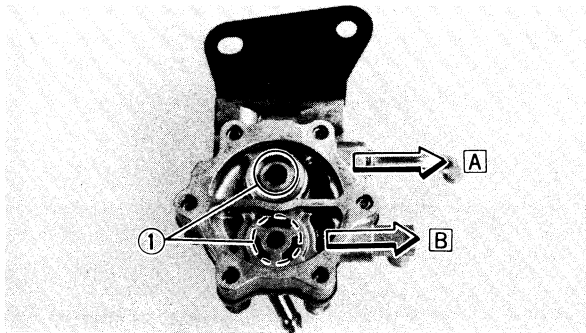
- Use a petroleum based solvent for cleaning.
- Blow out all passage with compressed air.

2. Inspect:

- Diaphragms ①
Torn/Fatigue/Cracks → Replace fuel pump assembly.
- Gaskets (Outer and inner) ②
Torn/Damage → Replace fuel pump assembly.

3. Inspect:

- Valves ①
Clacks/Damage → Replace fuel pump assembly.



- [A] Upper side
[B] Lower side

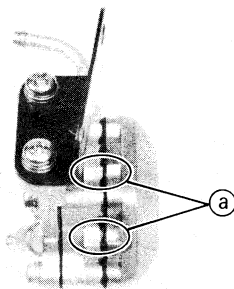
Assembly and installation

Reverse the removal procedure.

Note the following points.

NOTE:

- Gaskets with two tabs should be installed outer side.
- Align the tabs (a) of the fuel pump cover and gaskets with those of the pump body.



Screws (Pump Bracket – Fuel Tank):
7 Nm (0.7 m·kg, 5.1 ft·lb)

NOTE:

Be sure to connect the hoses correctly.



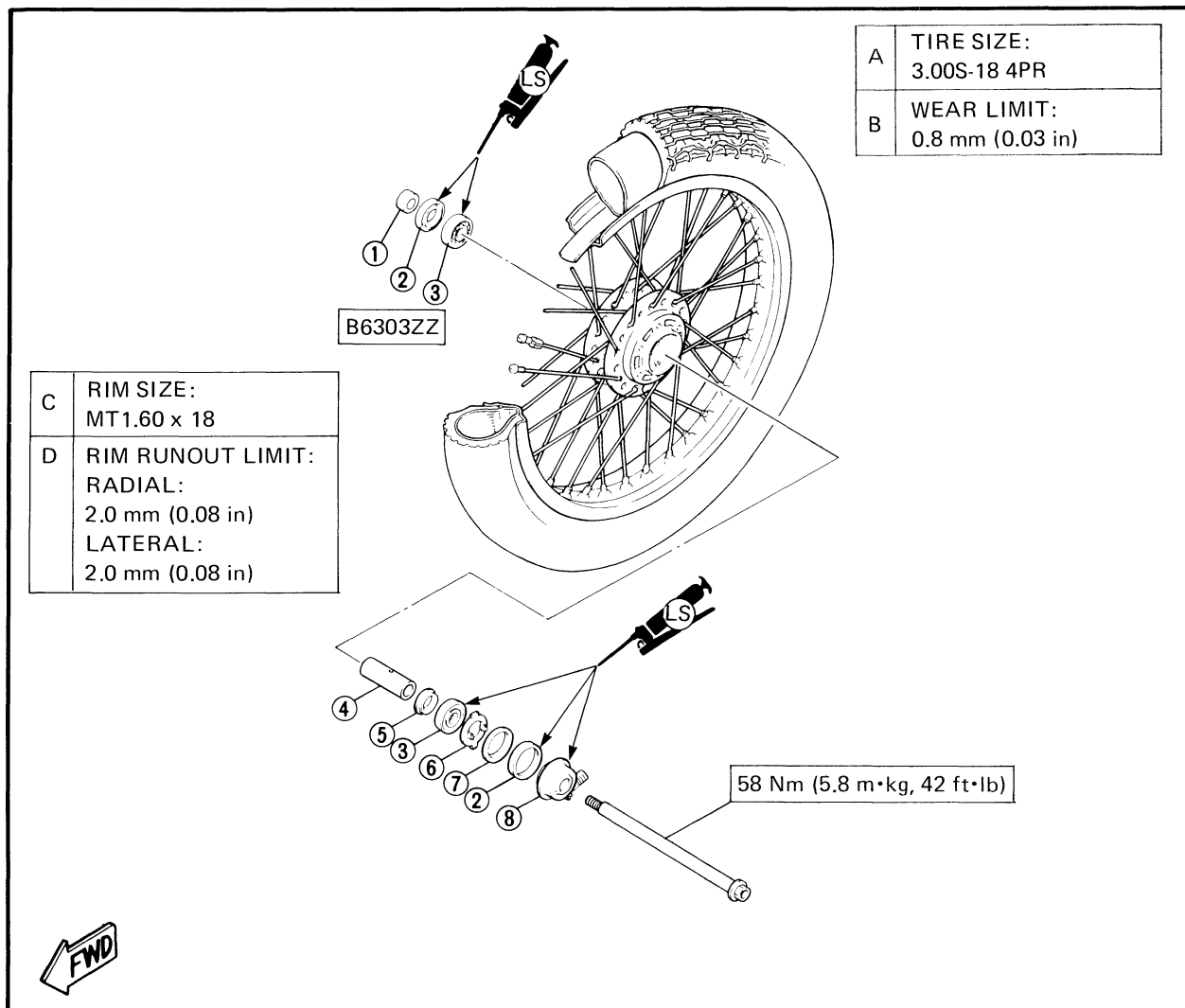
CHASSIS

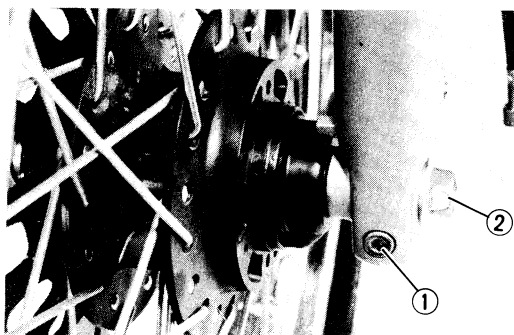
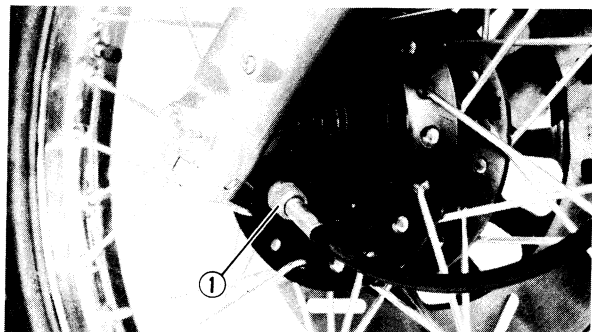
FRONT WHEEL

- ① Collar
- ② Oil seal
- ③ Bearing
- ④ Spacer
- ⑤ Spacer flange
- ⑥ Meter clutch
- ⑦ Clutch retainer
- ⑧ Speedometer gear unit

Basic weight: With oil and full fuel tank	147 kg (324 lb) CAL: 197 kg (434 lb)	
Maximum load*	198 kg (437 lb) CAL: 198 kg (437 lb)	
Cold tire pressure	Front	Rear
Up to 90 kg (198 lb) load*	175 kPa (1.75 kg/cm ² , 25 psi)	200 kPa (2.0 kg/cm ² , 28 psi)
90 kg (198 lb) ~ Maximum load*	200 kPa (2.0 kg/cm ² , 28 psi)	225 kPa (2.25 kg/cm ² , 32 psi)
High speed riding	200 kPa (2.0 kg/cm ² , 28 psi)	225 kPa (2.25 kg/cm ² , 32 psi)

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





REMOVAL

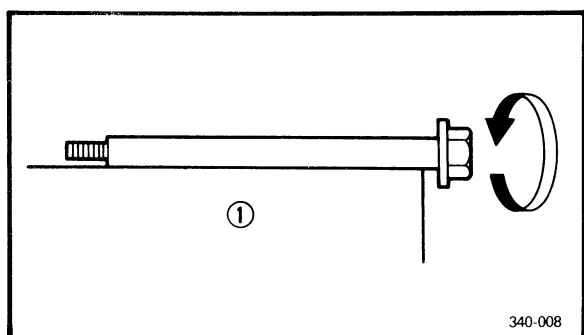
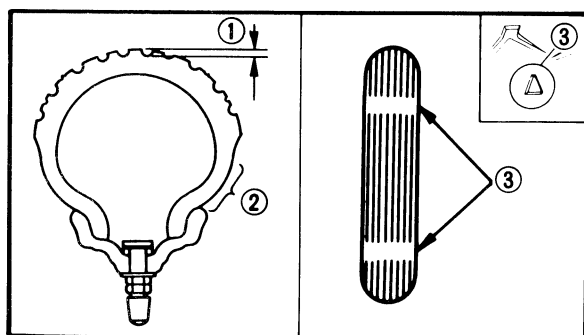
⚠ WARNING:

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

1. Place the motorcycle on level place.
2. Remove:
 - Speedometer cable ①
3. Loosen:
 - Pinch bolt (Front axle) ①
 - Front axle ②
4. Elevate the front wheel by placing a suitable stand under the engine.
5. Remove:
 - Front axle
 - Front wheel

NOTE:

Do not squeeze the brake lever while the wheel is off the motorcycle.



340-008

INSPECTION

1. Inspect:
 - Tire

Tire tread shows crosswise lines (Minimum tread depth)/Cracks → Replace.



Minimum Tire Tread Depth:
0.8 mm (0.03 in)

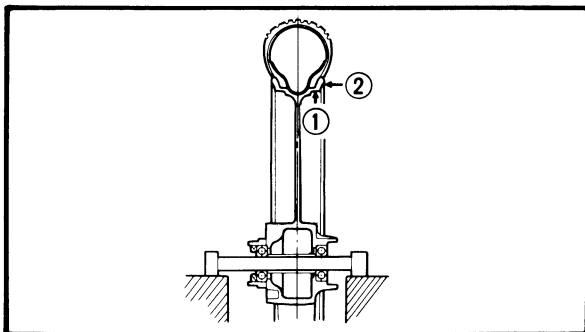
① Tread depth ② Sidewall ③ Wear indicator

2. Inspect:
 - Front axle

Bends → Replace.
Roll the axle on a flat surface ① .

⚠ WARNING:

Do not attempt to straighten a bent axle.



3. Inspect:

- Wheel
Cracks/Bends/Warping → Replace.

4. Measure:

- Wheel runout
Out of specification → Replace.

**Rim Runout Limits:**

Raidal ① : 2.0 mm (0.08 in)

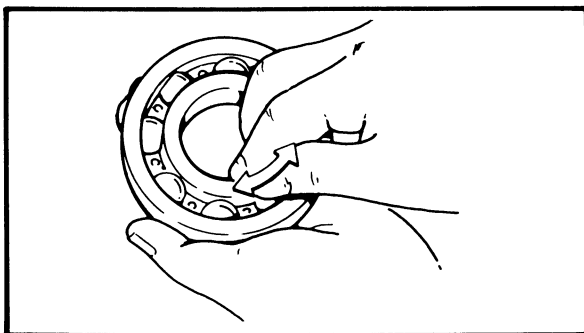
Lateral ② : 2.0 mm (0.08 in)

⚠ CAUTION:

Be sure the valve stem locknut is tightened securely after repairing or replacing a tire and/or wheel.

⚠ WARNING:

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



5. Inspect:

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

Wheel bearing replacement steps:

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

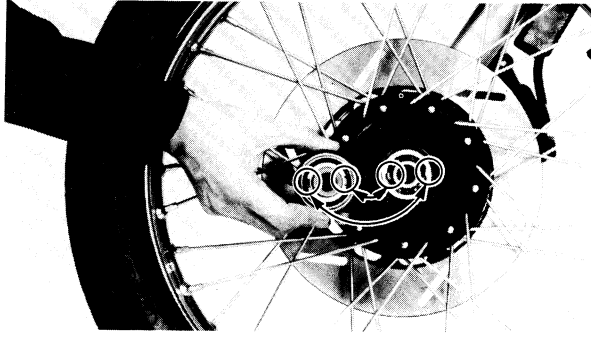
⚠ WARNING:

Eye protection is recommended when using striking tools.

- Install the new bearing by reversing the previous steps.

⚠ CAUTION:

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

**INSTALLATION**

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

1. Lubricate:

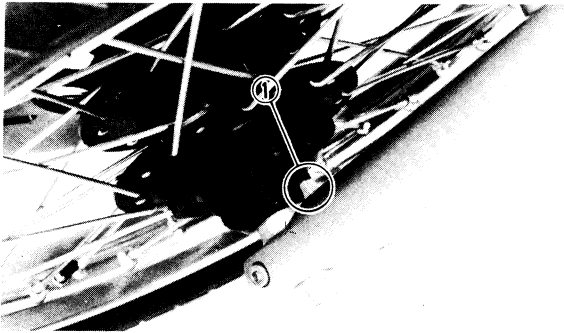
- Bearings
- Oil seal

**Lithium-Soap Base Grease****2. Install:**

Speedometer gear unit

NOTE:

Be sure that the two projections inside the wheel hub mesh with the two slots in the gear unit assembly.

**3. Install:**

- Front wheel

NOTE:

Be sure that the projecting portion (Torque stopper) ① of the gear unit housing is positioned correctly.

4. Tighten:

- Front axle
- Pinch bolt (Front axle)

**Front Axle:****58 Nm (5.8 m·kg, 42 ft·lb)****Pinch Bolt (Front Axle):****20 Nm (2.0 m·kg, 14 ft·lb)**



STATIC WHEEL BALANCE ADJUSTMENT

NOTE:

- After replacing the tire and/or rim, wheel balance should be adjusted.
- Adjust the wheel balance with brake disc installed.

1. Remove:

- Balancing weight

2. Check:

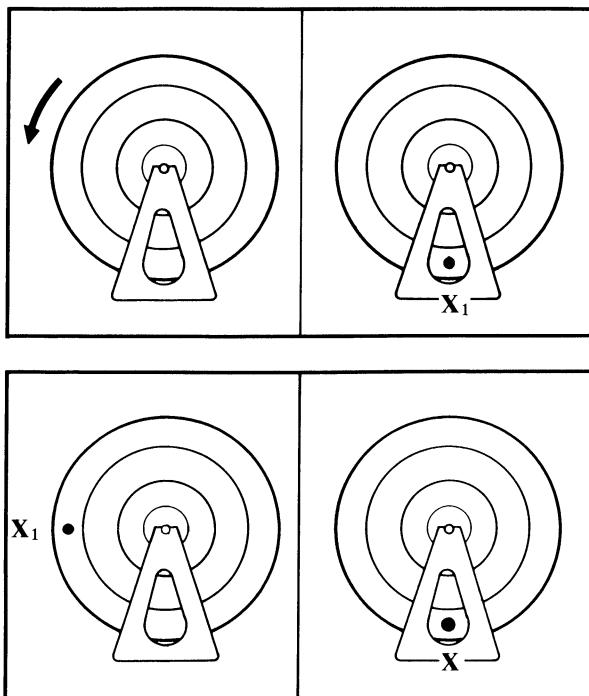
- Spoke(s)

Loose spoke(s) → Retighten.



Spoke:

6 Nm (0.6 m·kg, 4.3 ft·lb)



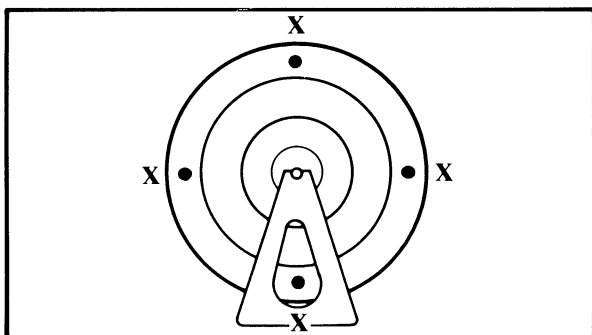
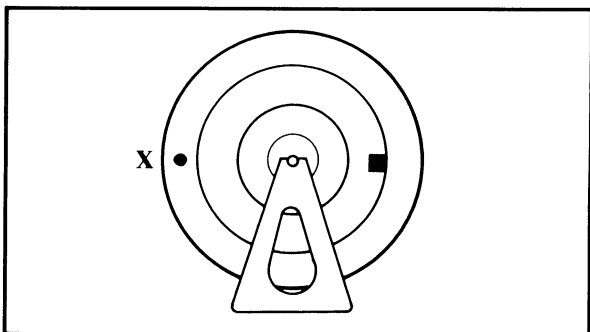
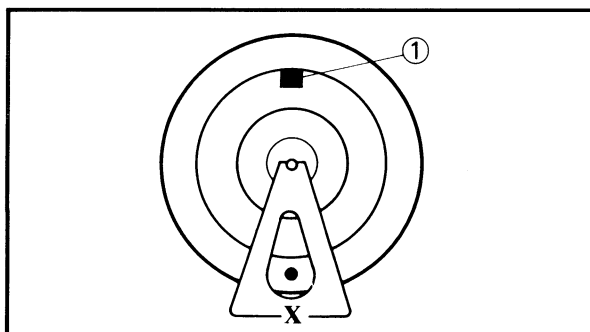
3. Set the wheel on a suitable stand.

4. Find:

- Heavy spot

Procedure:

- Spin the wheel and wait for it to rest.
- Put an "X₁" mark on the wheel bottom spot.
- Turn the wheel so that the "X₁" mark is 90° up.
- Let the wheel fall and wait for it to rest. Put an "X" mark on the wheel bottom spot.
- Repeat the above b., c., and d. several times until these marks come: to the same spot.
- This spot is the heavy spot "X".



5. Adjust:
Wheel balance

Adjusting steps:

- Install a balancing weight ① on the spoke exactly opposite to the heavy spot "X".

NOTE:

Start with the smallest weight.

- Turn the wheel so that the heavy spot is 90° up.
- Check that the heavy spot is at rest there. If not, try another weight until the wheel is balanced.

6. Check:
• Wheel balance

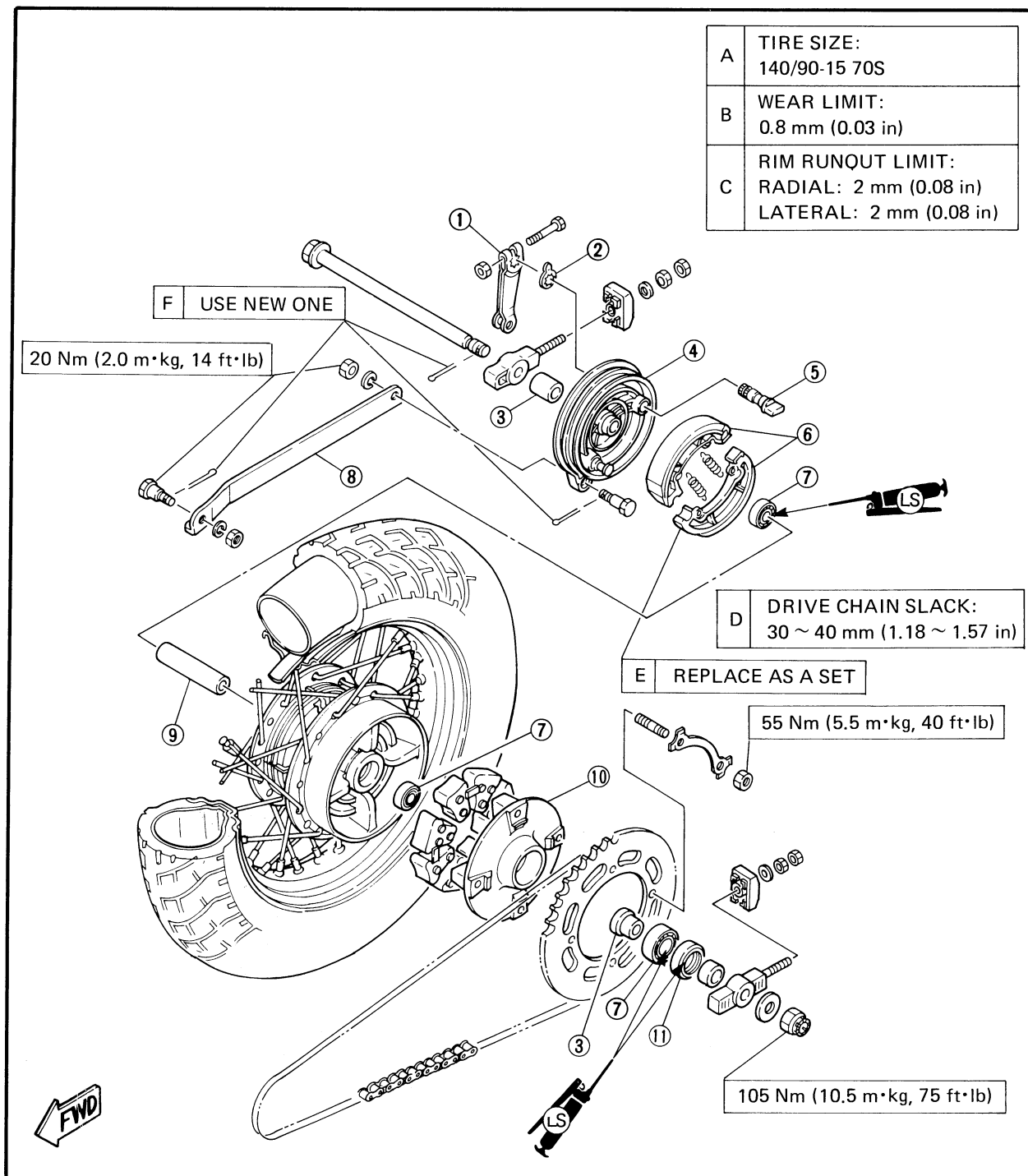
Checking steps:

- Turn the wheel so that it comes to each point as shown.
- Check the wheel is at rest at each point. If not, readjust the wheel balance.



REAR WHEEL

- | | |
|------------------------|--------------|
| ① Brake camshaft lever | ⑦ Bearing |
| ② Indicator plate | ⑧ Brake rod |
| ③ Collar | ⑨ Spacer |
| ④ Brake shoe plate | ⑩ Clutch hub |
| ⑤ Brake camshaft | ⑪ Oil seal |
| ⑥ Brake shoe | |

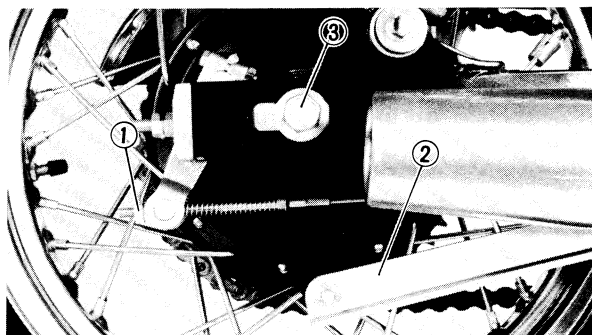


REMOVAL

⚠ WARNING:

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

1. Place the motorcycle on level place.



2. Remove:

- Adjuster (Rear brake) ①
- Tension bar ②

3. Loosen:

- Pinch bolt (Rear axle) ③

4. Remove:

- Cotter pin
- Nut (Rear axle)
- Plain washer

5. Elevate the rear wheel by placing a suitable stand.

6. Remove:

- Rear axle
- Rear wheel
- Washer
- Collars

NOTE:

Move the rear wheel to the right side to separate it from the final gear case, and remove the wheel.

INSPECTION

1. Inspect:

- Tire
- Rear axle
- Wheel
- Wheel bearings

Refer to "FRONT WHEEL — INSPECTION" section.

2. Measure:

- Wheel runout

Refer to "FRONT WHEEL – INSPECTION" section.

3. Check:

- Wheel balance

Refer to "FRONT WHEEL – INSPECTION" section.

4. Inspect:

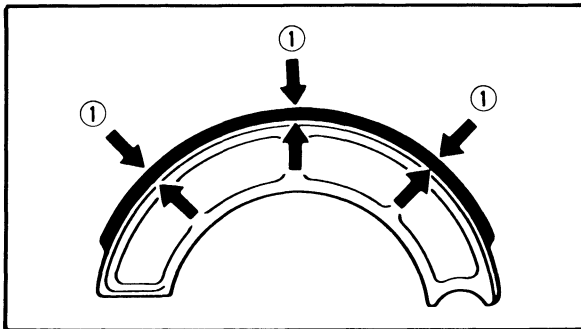
- Brake lining surface

Glazed areas → Remove.

Use a coarse sand paper.

NOTE:

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



5. Measure:

- Brake lining thickness

Out of specification → Replace.

① Measuring points

NOTE:

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



Brake Lining Thickness:
4 mm (0.16 in)

Wear Limit:
2 mm (0.08 in)

6. Inspect:

- Brake drum inner surface

Oil/Scratches → Replace.

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

7. Inspect:

- Camshaft face

Wear → Replace.



INSTALLATION

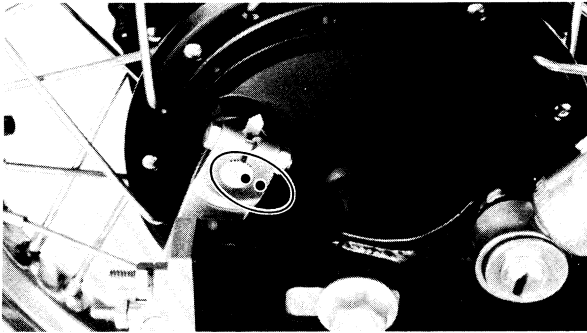
When installing the rear wheel, reverse the removal procedure. Note the following points.

1. Lubricate:

- Bearings
- Oil seals



Lithium — Soap Base Grease



2. Install:

- Brake camshaft
 - Brake camshaft lever
- To brake shoe plate.

NOTE:

Align the match marks.

3. Adjust:

- Drive chain slack



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

Refer to "CHAPTER 3. — DRIVE CHAIN SLACK ADJUSTMENT".

4. Tighten:

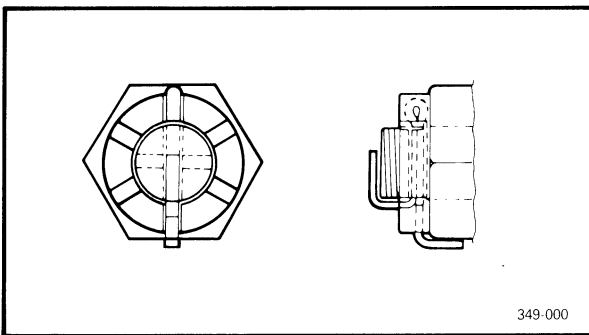
- Nut (Rear axle)



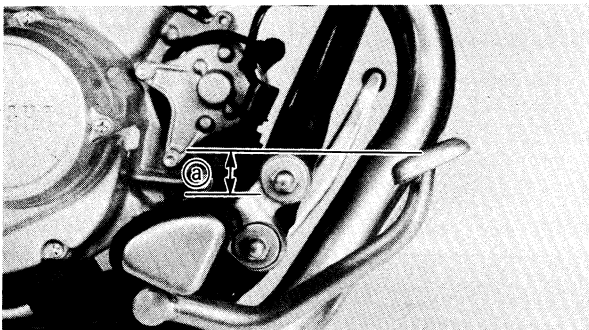
Nut (Rear Axle):
105 Nm (10.5 m·kg, 75 ft·lb)

⚠ WARNING:

Always use a new cotter pin on the axle nut.



349-000



5. Adjust:

- Brake pedal free play ^a

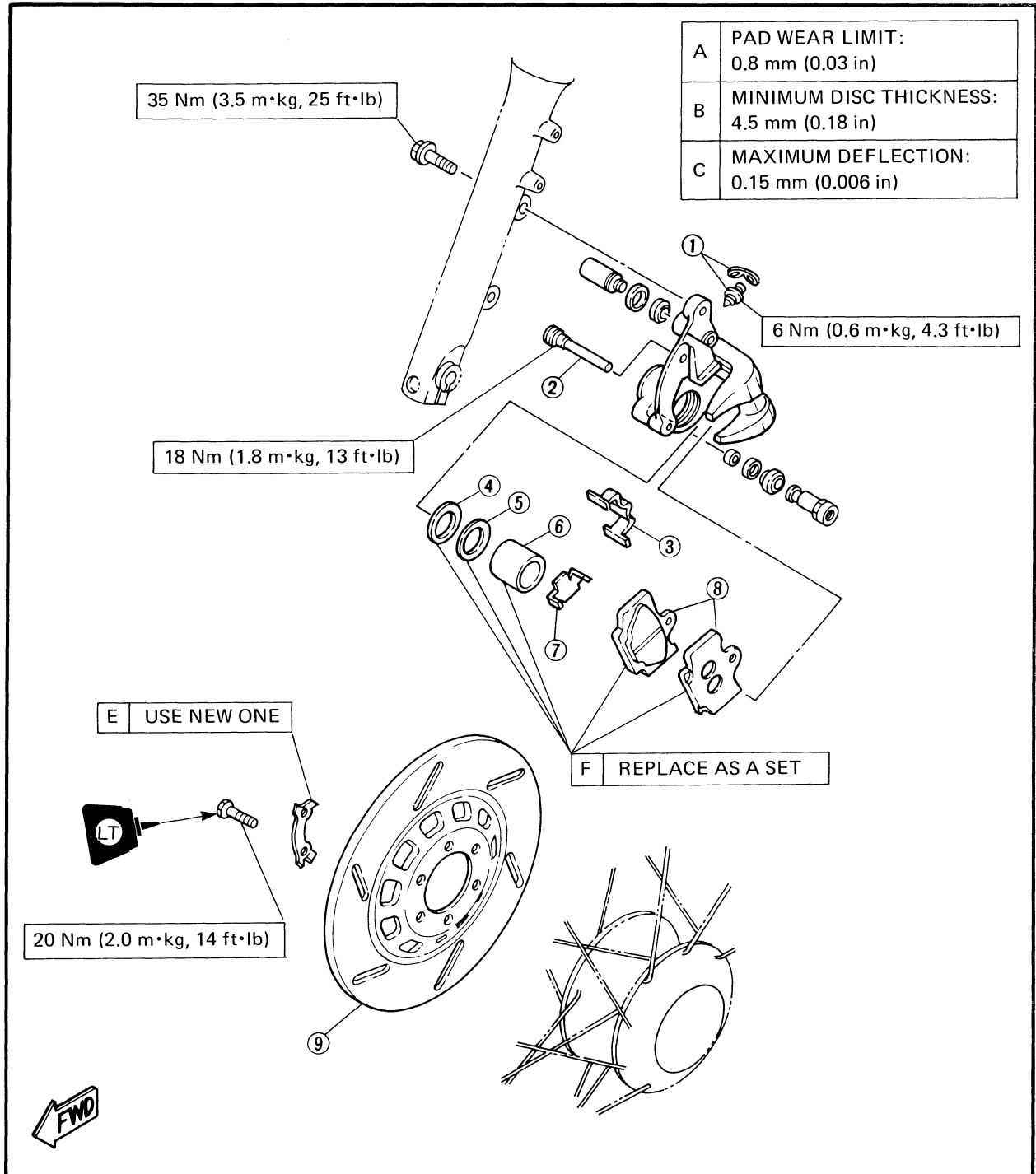
Refer to "CHAPTER 3. — REAR BRAKE ADJUSTMENT" section.

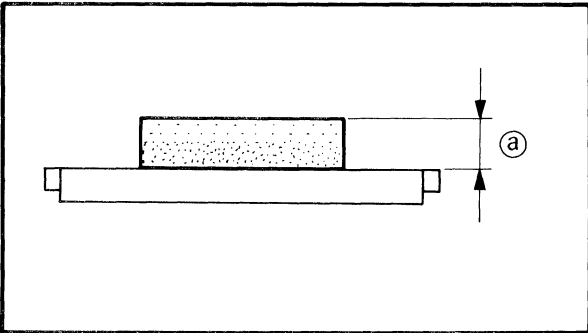
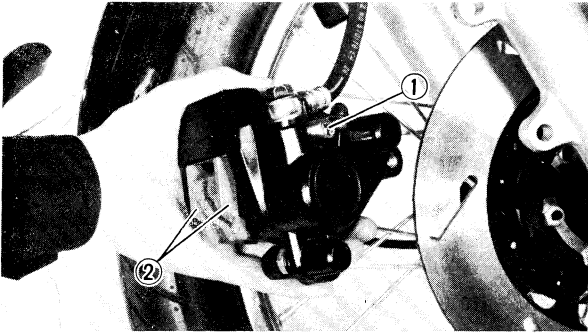
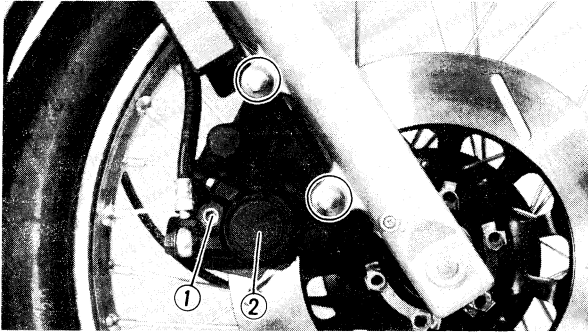


Brake Pedal Free Play:
20 ~ 30 mm (0.8 ~ 1.2 in)

FRONT BRAKE

- ① Air bleed screw
- ② Retaining bolt
- ③ Pad springs
- ④ Piston seal
- ⑤ Dust seal
- ⑥ Piston
- ⑦ Pad shim
- ⑧ Pads
- ⑨ Brake disc





CALIPER PAD REPLACEMENT

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

1. Loosen:
 - Retaining bolt ①
2. Remove:
 - Brake caliper ②
3. Remove:
 - Retaining bolt ①
 - Pads ②
 - Pad springs

4. Measure:
 - Pad thickness (a)

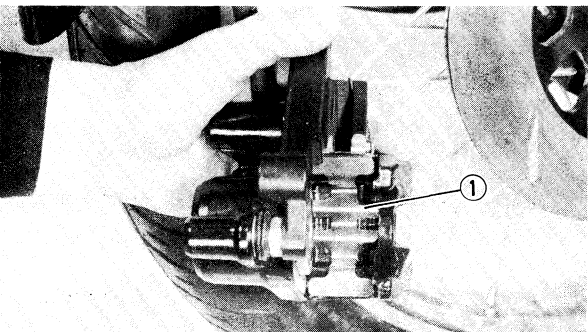
Out of specification → Replace.

NOTE:

- Replace the pad spring if pad replacement is required.
- Replace the pads as a set if either if found to be worn to the wear limit.



Wear Limit:
0.8 mm (0.03 in)



5. Install:
 - Pad spring (New) ①
 - Pads (New)

To the caliper.



6. Install:

- Retainign bolt
- Brake caliper

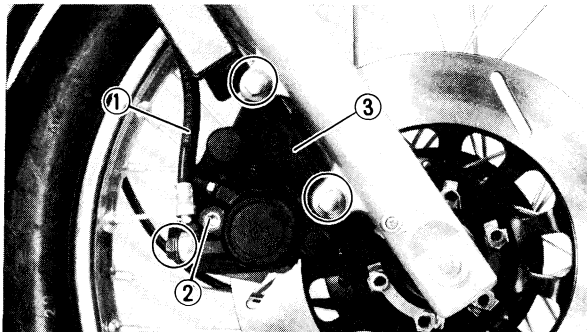


Retaining Bolt:

18 Nm (1.8 m·kg, 13 ft·lb)

Bolts (Brake Caliper):

35 Nm (3.5 m·kg, 25 ft·lb)



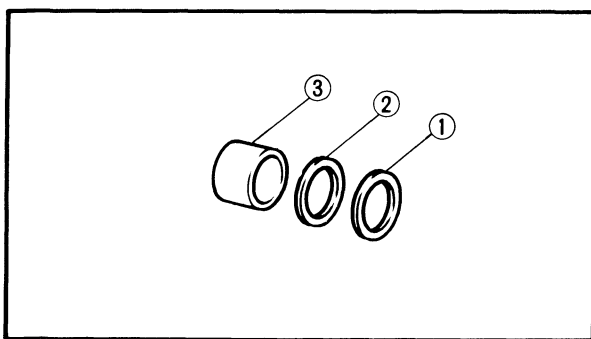
CALIPER DISASSEMBLY

1. Remove:

- Brake hose ①
- Retaining bolt ②
- Brake caliper ③
- Pads
- Pad springs

NOTE:

Drain the brake fluid before removing brake caliper.



3. Remove:

- Dust seal ①
- Piston seal ②
- Piston ③

Caliper piston removal steps:

- Blow compressed air into the tube joint opening to force out the caliper piston from the caliper body.

⚠ WARNING:

- Never try to pry out the caliper 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

- ① Master cylinder cap
- ② Rubber seal
- ③ Master cylinder kit
- ④ Copper washer

A BRAKE FLUID TYPE:
DOT #3 or #4

9 Nm (0.9 m•kg, 6.5 ft•lb)

B USE NEW ONE

26 Nm (2.6 m•kg, 19 ft•lb)

2 Nm (0.2 m•kg, 1.4 ft•lb)

C REPLACE AS A SET

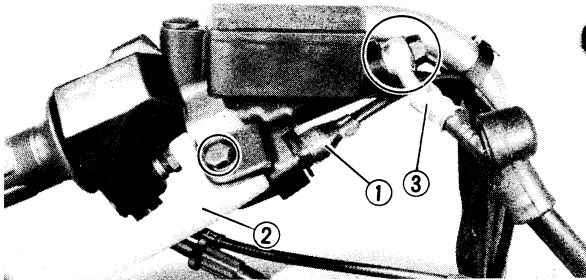
26 Nm (2.6 m•kg, 19 ft•lb)

B USE NEW ONE

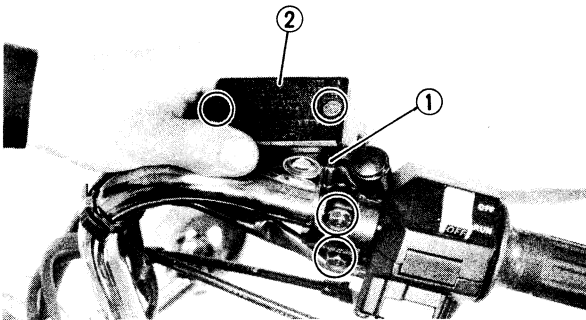


MASTER CYLINDER DISASSEMBLY

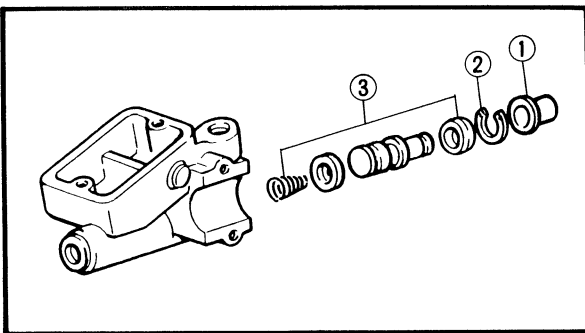
NOTE: _____
 Drain the brake fluid before removing master cylinder.



1. Remove:
 - Brake light switch lead ①
 - Brake lever ②
 - Lever spring
2. Disconnect:
 - Brake hose ③
 Drain the fluid.



3. Remove:
 - Master cylinder ①
 - Master cylinder cap ②



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

BRAKE INSPECTION AND REPAIR

Recommended Brake Component Replacement Schedule:	
Brake pads	As required
Piston seal, dust seal	Every two years
Brake hoses	Every four years
Brake fluid	Replace only when brakes are disassembled

**⚠ WARNING:**

All internal parts should be cleaned in new brake fluid only. Do not use solvents will cause seals to swell and distort.

1. Inspect:

- Brake pads (Thickness) (a)
Out of specification → Replace.

NOTE:

- Replace the pad spring if pad replacement is required.
- Replace the pads as a set if either if found to be worn to the wear limit.



Wear Limit:
0.8 mm (0.03 in)

2. Inspect:

- Caliper piston
Rust/Wear/Damage → Replace.
- Dust seal/Piston seal
Damage → Replace.

⚠ WARNING:

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

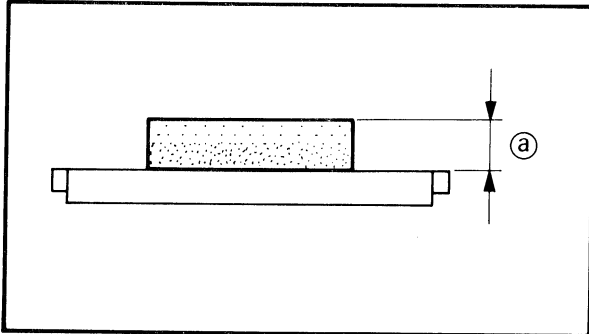
- Master cylinder kit
- Master cylinder body
Scratches/Wear → Replace.
- Brake hose
Cracks/Wear/Damage → Replace.

3. Inspect:

- Brake disc
Out of specification → Replace.



Maximum Deflection:
0.15 mm (0.006 in)
Minimum Disc Thickness:
4.5 mm (0.18 in)





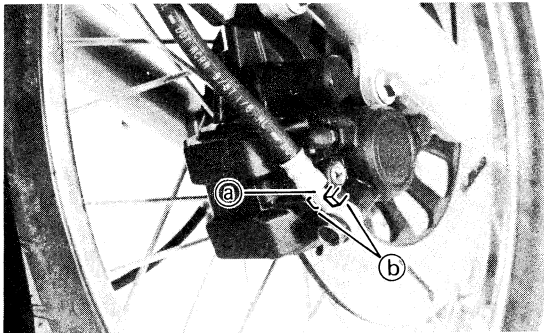
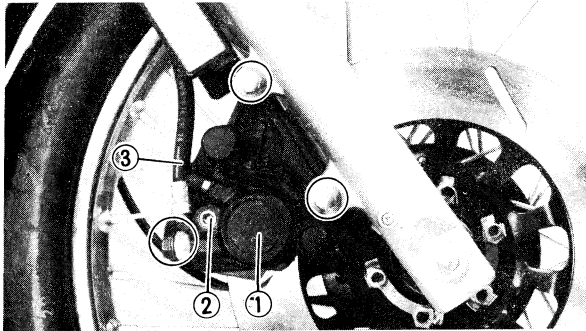
BRAKE REASSEMBLY

⚠ WARNING:

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



Brake Fluid: DOT #4 or #3
If DOT #4 is not available,
#3 can be used.

**Caliper Reassembly**

When assembling the caliper, reverse the disassembly procedure. Note the following points.

1. Install:

- Brake caliper ①
- Retaining bolt ②
- Brake hose ③

⚠ CAUTION:

When installing the brake hose, lightly touch the brake pipe (a) with projections (b) on the caliper.



Brake Caliper:
35 Nm (3.5 m·kg, 25 ft·lb)
Retaining Bolt:
18 Nm (1.8 m·kg, 13 ft·lb)
Brake Hose:
26 Nm (2.6 m·kg, 19 ft·lb)

2. Bleed:

- Air
Refer to "CHAPTER 3. – AIR BLEEDING".

Master Cylinder Reassembly

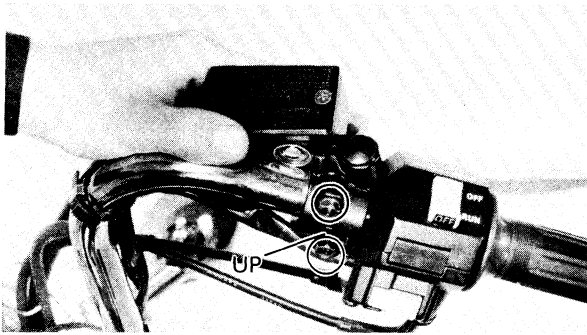
When assembling the master cylinder, reverse the disassembly procedure. Note the following points.

1. Install:

- Master cylinder kit

⚠ WARNING:

Internal parts should be lubricated with brake fluid when installed.



2. Install:

- Master cylinder
- Brake hose

NOTE:

Install the master cylinder bracket with its "UP" mark to top.



Bracket (Master Cylinder):
9 Nm (0.9 m·kg, 6.5 ft·lb)

Brake Hose:
26 Nm (2.6 m·kg, 19 ft·lb)

3. Fill:

- Master cylinder



Brake Fluid:
DOT #3 or #4
If DOT #4 is not available,
#3 can be used.

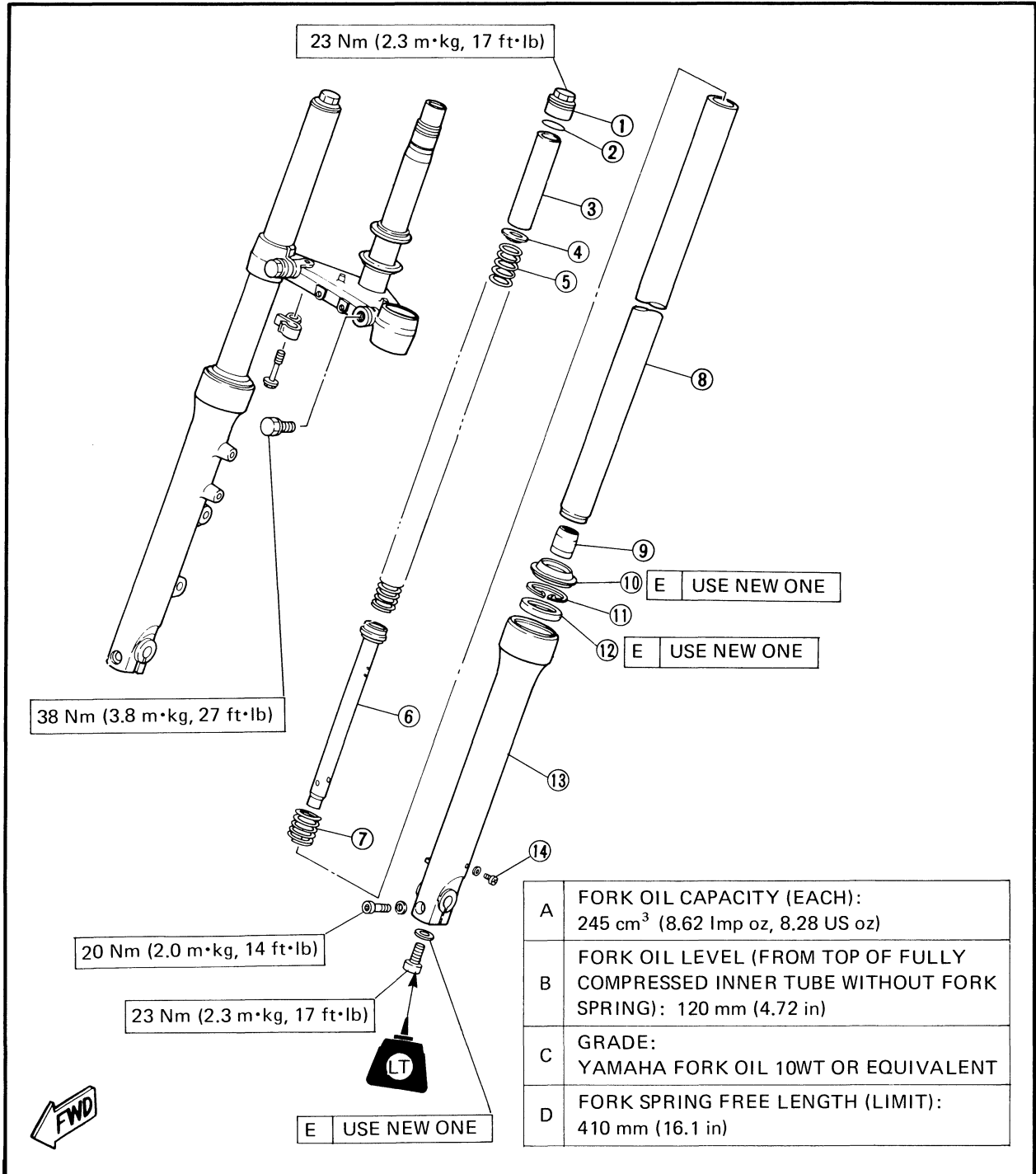
4. Bleed:

- Air

Refer to "CHAPTER 3. — AIR BLEED-ING".

FRONT FORK

- ① Cap bolt
- ② O-ring
- ③ Spacer
- ④ Spring retainer
- ⑤ Fork spring
- ⑥ Damper rod
- ⑦ Rebound spring
- ⑧ Inner fork tube
- ⑨ Oil lock piece
- ⑩ Dust seal
- ⑪ Circlip
- ⑫ Oil seal
- ⑬ Outer fork tube
- ⑭ Drain screw



REMOVAL

⚠ WARNING:

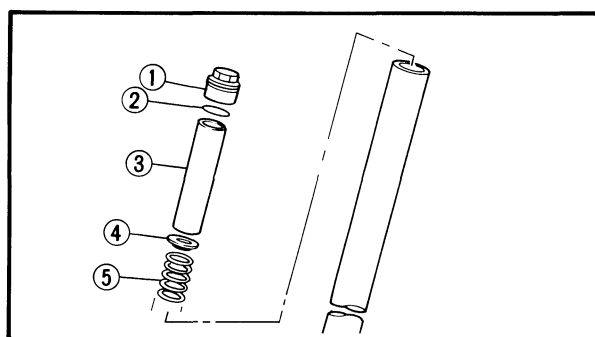
Securely support the motorcycle so there is no danger of it falling over.

1. Remove:
 - Front wheel
 - Brake caliper

Refer to "FRONT WHEEL and FRONT BRAKE" sections.
2. Remove:
 - Front fender



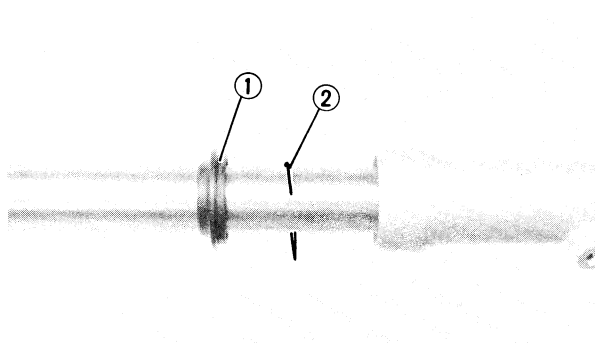
3. Loosen:
 - Bolts (Handlebar crown)
 - Bolts (Steering stem)
 - Cap bolts
4. Remove:
 - Front fork(s)



DISASSEMBLY

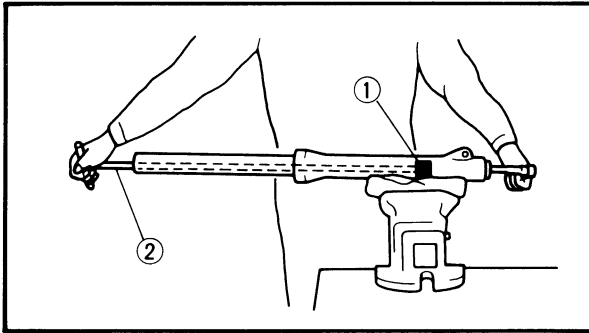
1. Remove:
 - Cap bolt ①
 - O-ring ②
 - Spacer ③
 - Spring retainer ④
 - Fork spring ⑤

Drain the fork oil.



2. Remove:
 - Dust seal ①
 - Circlip ②

Use a thin screwdriver, and be careful not to scratch the inner fork tube.



3. Remove:

- Bolt (Damper rod)

Use the Damper Rod Holder ① and T-Handle ② to lock the damper rod.

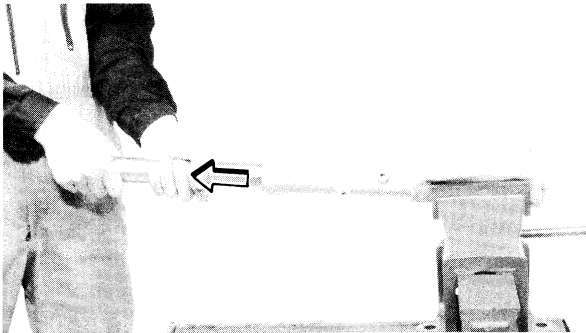
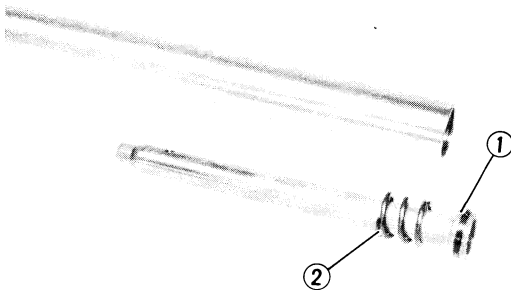


Damper Rod Holder:
YM-01300-1

T-Handle:
YM-01326

4. Remove:

- Damper rod (Cylinder complete) ①
- Rebound spring ②



5. Remove:

- Inner fork tube

Inner fork tube removal steps:

- Hold fork leg horizontally.
- Clamp the caliper mounting boss of the outer tube securely in a vise with soft jaws.
- Pull out the inner fork tube from the outer tube by forcefully, but carefully, with drawing the inner tube.

NOTE:

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

6. Remove:

- Oil seal
- Oil lock piece

INSPECTION

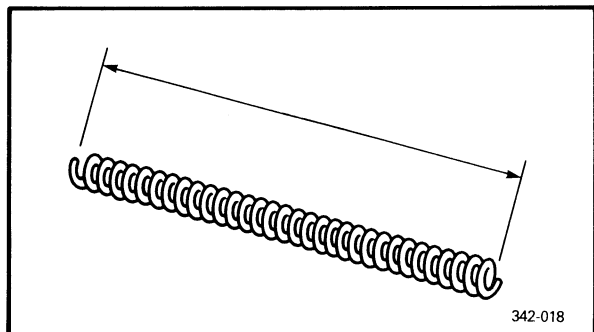
1. Inspect:

- Inner fork tube
Scratches/Bends → Replace.

⚠ WARNING:

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

- Outer fork tube
Scratches/Bends/Damage → Replace.
- Fork spring
Over specified limit → Replace.



**Fork Spring Free Length (Limit):
410 mm (16.1 in)**

2. Inspect:

- Damper rod
Wear/Damage → Replace.
Contamination → Blow out all oil passages with compressed air.
- Oil lock piece
- O-ring (Cap bolt)
Damage → Replace.



ASSEMBLY

Before assembling, clean and inspect all parts and replace when necessary.

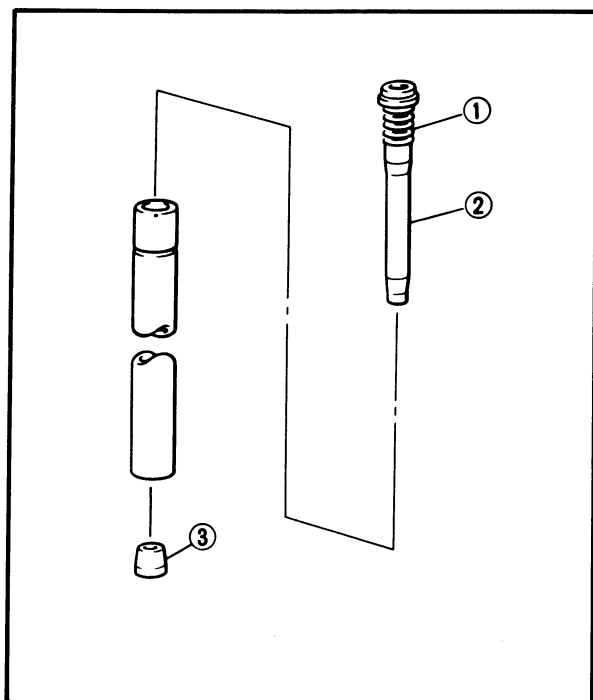
NOTE:

In front fork assembly, be sure to use following new parts. Do not reuse them.

- Oil seal
- Dust seal

1. Install:

- Rebound spring ①
- Damper rod ②
Allow the rod to slide slowly down the tube until the it protrudes from the bottom.
- Oil lock piece ③
Fit oil lock piece over damper rod sticking out of the inner fork tube.



2. Install:

- Inner fork tube
Into outer tube.

3. Tighten:

- Bolt (Damper rod)
Use the Damper Rod Holder and the T-Handle to lock the damper rod.

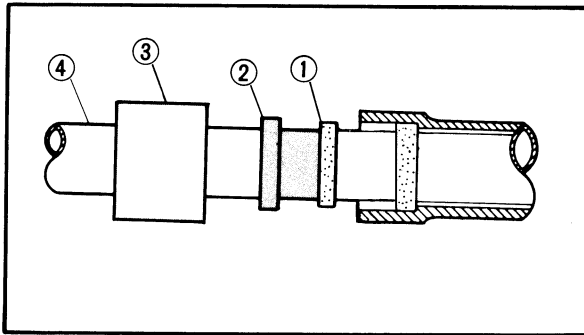


Damper Rod Holder:
YM-01300-1

T-Handle:
YM-01326



Bolt (Damper Rod):
23 Nm (2.3 m·kg, 17 ft·lb)
Apply LOCTITE®



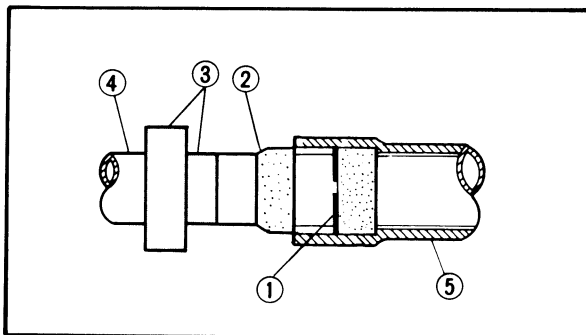
4. Install:

- Oil seal ①
Use the Fork Seal Driver Weight ③ and the Adapter ②.



Fork Seal Driver Weight:
YM-01367

Adapter (33 mm):
YM-1368



- ④ Inner fork tube
- ⑤ Outer fork tube

5. Install:

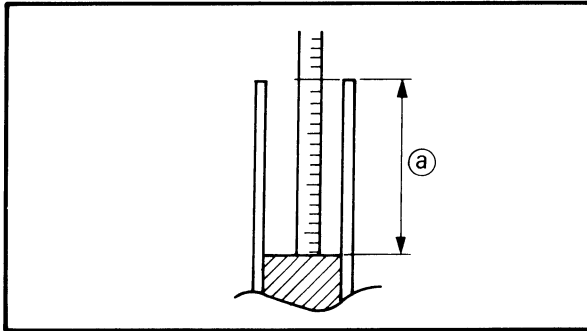
- Circlip ①
- Dust seal ②
Use the Fork Seal Driver Weight ③ and the Adapter ②.



Fork Seal Driver Weight:
YM-01367

Adapter (33 mm):
YM-1368

- ④ Inner fork tube
- ⑤ Outer fork tube



6. Fill:

- Front fork



Fork Oil Capacity (Each):

245 cm³ (8.62 Imp oz, 8.28 US oz)

Fork Oil Level ^a (From Top of Fully Compressed Inner Tube Without Fork Spring):

120 mm (4.72 in)

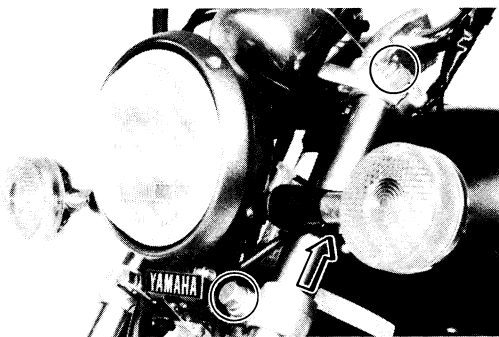
Grade:

Yamaha fork oil 10wt or equivalent

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

7. Install:

- Fork spring
With the smaller pitch side up.
- Spring retainer
- Cap bolt
Temporarily tighten the cap bolt.



INSTALLATION

When installing the front fork, reverse the removal procedure.

Note the following points.

1. Install:

- Front fork(s)
Into the steering stem.

2. Tighten:

- Pinch bolts (Steering stem)
- Pinch bolt(s) (Handle crown)
Temporarily tighten the pinch bolts.

NOTE:

Position the inner tube end so that it is flush with the top of the steering crown.



3. Tighten:

- Bolts (Steering stem)



Bolts (Steering Stem):
20 Nm (2.0 m·kg, 14 ft·lb)

NOTE:

Do not tighten the pinch bolt (Handlebar crown) in this stage.

4. Tighten:

- Cap bolt
- Bolt (Handlebar crown)
- Bolts (Handlebar)



Cap Bolt:
23 Nm (2.3 m·kg, 17 ft·lb)

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

5. Install:

- Fork caps
- Front fender



Front Fender:
20 Nm (2.0 m·kg, 14 ft·lb)

6. Install:

- Front wheel
- Brake caliper (Right)
Refer to "FRONT WHEEL and FRONT BRAKE" section.

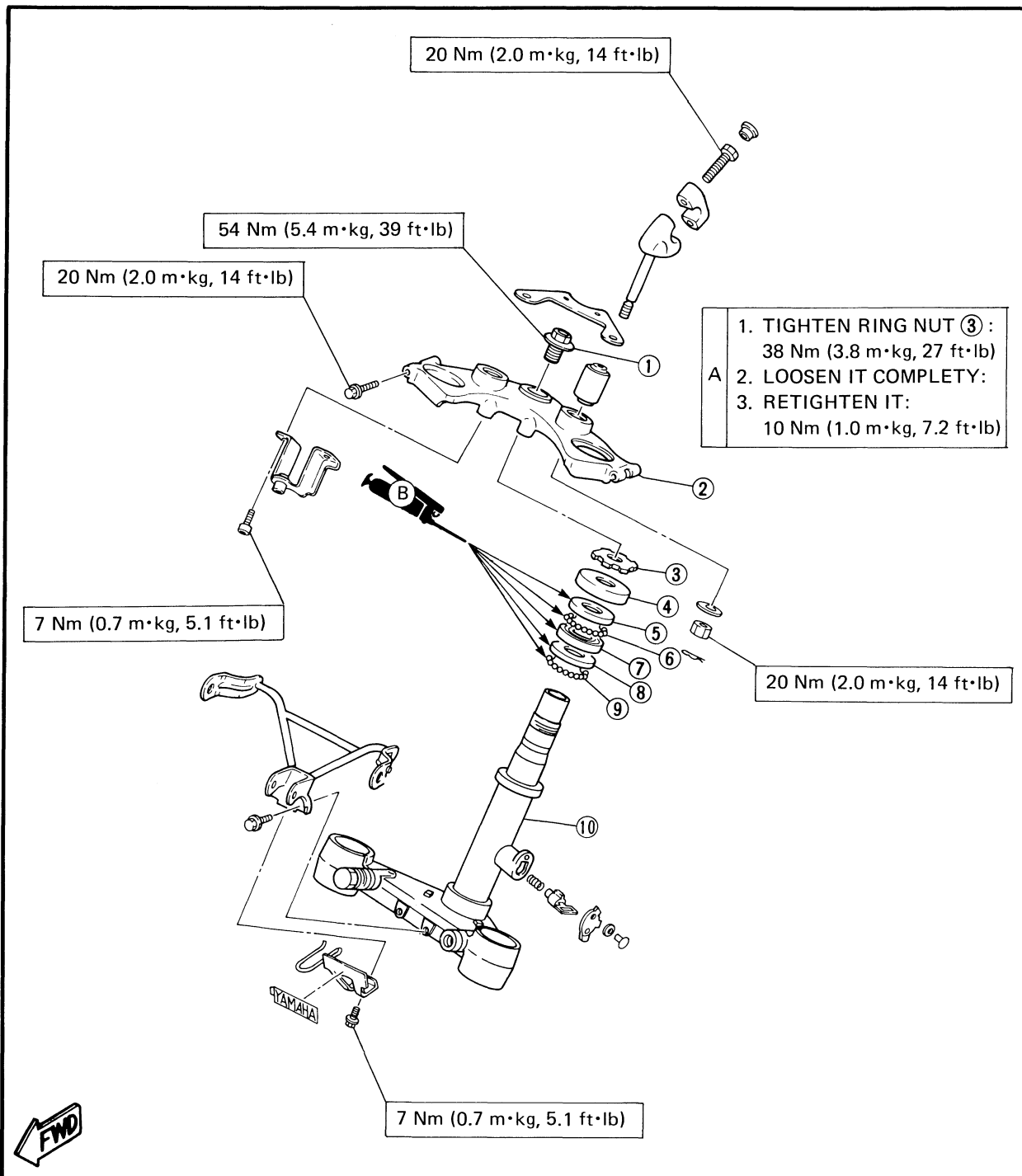
7. Inspect:

- Fork operation
Unsmooth operation → Repair.
- Oil leaks
Leakage → Repair.



STEERING HEAD

- ① Steering stem bolt
- ② Handlebar crown
- ③ Ring nut
- ④ Bearing cover
- ⑤ Ball race (Upper – Top)
- ⑥ Ball (19 pcs.)
- ⑦ Ball race (Upper – Bottom)
- ⑧ Ball race (Lower – Top)
- ⑨ Ball (19 pcs.)
- ⑩ Steering stem





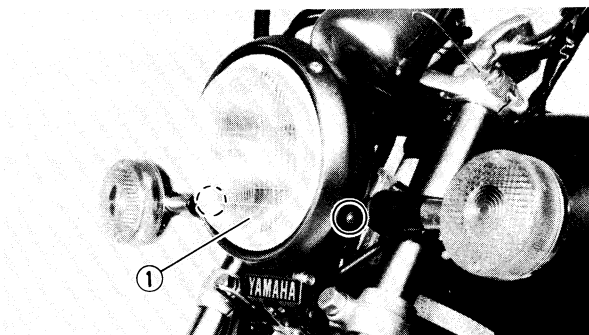
REMOVAL

⚠ WARNING:

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

1. Remove:

- Front wheel
Refer to "FRONT WHEEL".

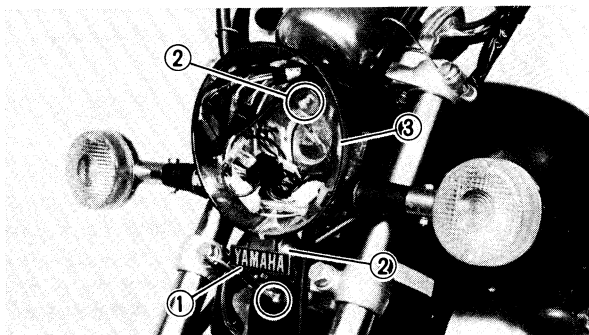


2. Remove:

- Headlight lens unit ①

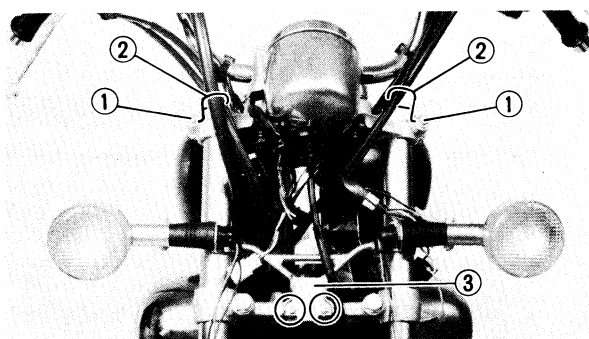
3. Disconnect:

- All leads (In the headlight body)



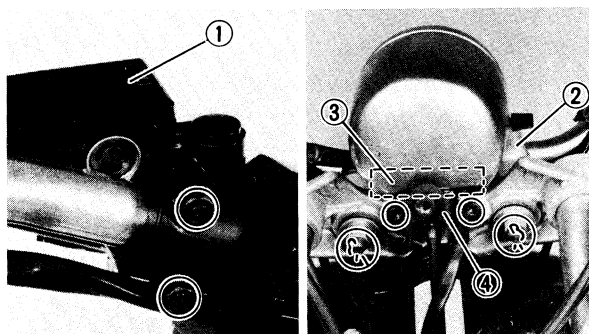
4. Remove:

- Emblem ①
- Bolts (Headlight body) ②
- Headlight body ③



5. Remove:

- Bolts (Handlebar crown) ①
- Cable holders ②
- Bracket (Flasher relay) ③

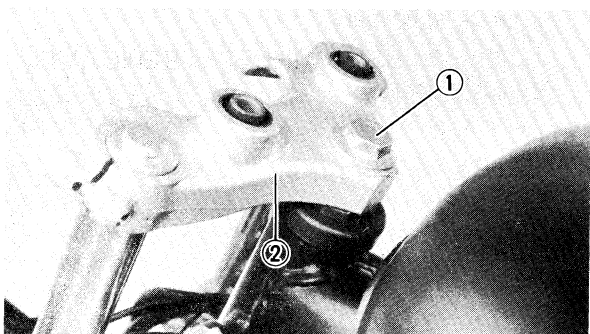


6. Remove:

- Master cylinder assembly ①
- Handlebar holder assembly ②
- Indicator light box ③
- Speedometer with bracket ④
- Handlebar

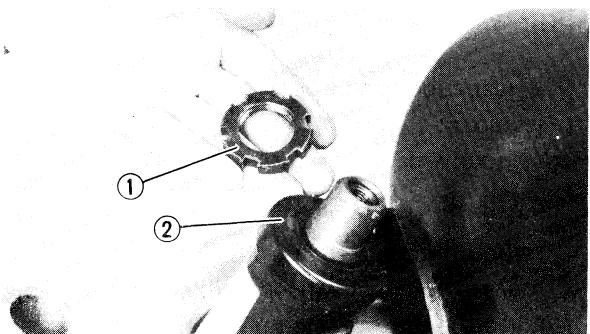
NOTE:

Take care not to lose the clevis pins.



7. Remove:

- Bolt (Steering stem) ①
- Crown ②
- Front fork assembly



8. Remove:

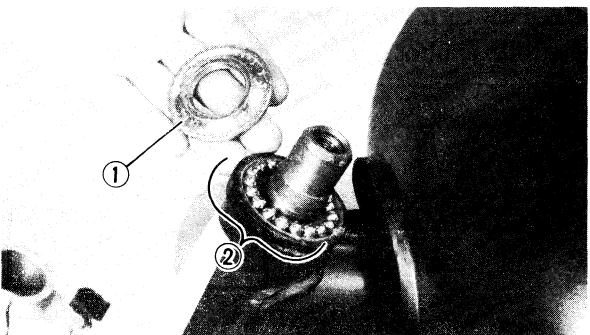
- Ring nut ①
Use the Ring Nut Wrench.
- Bearing cover ②



Ring Nut Wrench:
YU-01268

⚠ WARNING:

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



9. Remove:

- Steering stem
- Ball race (Upper – Top) ①
- Ball (19 pcs.) ②
- Ball (19 pcs.) ③



10. Remove:

- Ball race (Upper – Bottom)
- Ball race (Lower – Top)
Use a drift punch and a hammer.

NOTE:

Work the race out gradually by tapping lightly around its complete backside diameter.

**INSPECTION**

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

NOTE:

Always replace ball and race as a set.

INSTALLATION

1. Install:
 - Ball race (Upper – Bottom) ①
 - Ball race (Lower – Top) ②
 Tap in the new races in the head pipe.
2. Lubricate:
 - Ball race (Upper – Bottom)
 - Ball race (Lower – Top)



Wheel Bearing Grease

3. Install:
 - Balls (Upper and lower) ③ , ④
 Arrange the balls around race, and apply more grease.

Ball Quantity/Size:
19 pcs./0.25 in

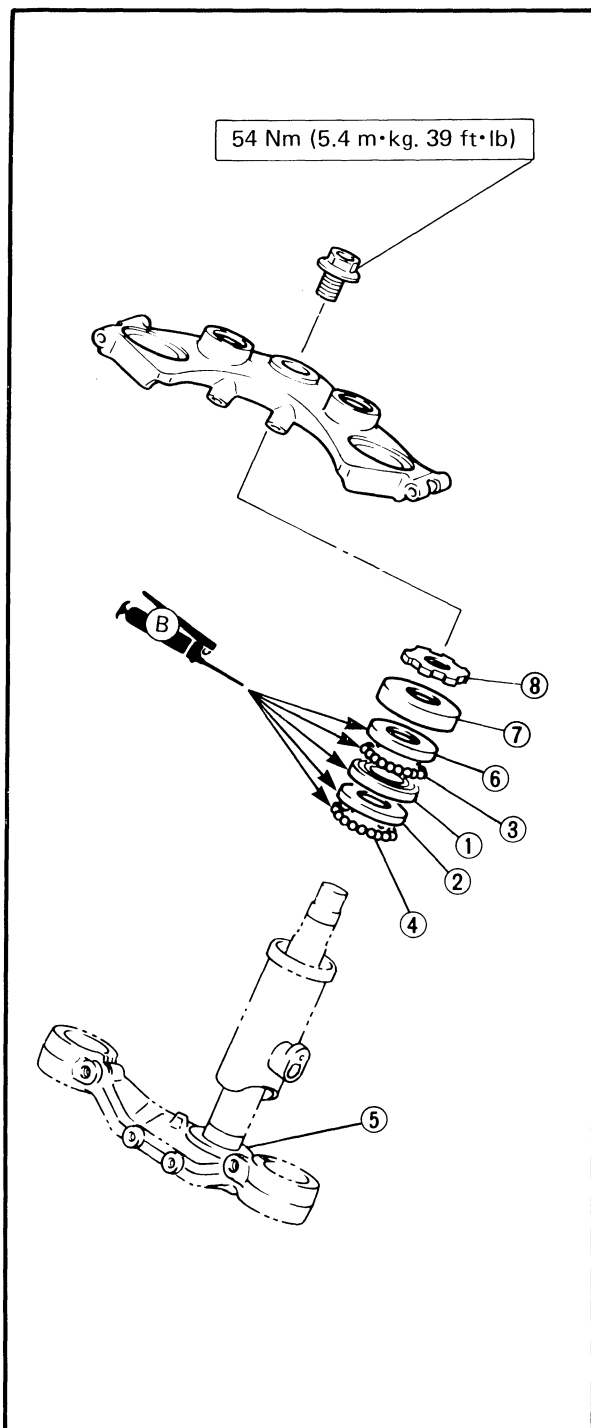
4. Install:
 - Steering stem ⑤
 - Ball race (Upper – Top) ⑥
 - Bearing cover ⑦
 - Ring nut ⑧

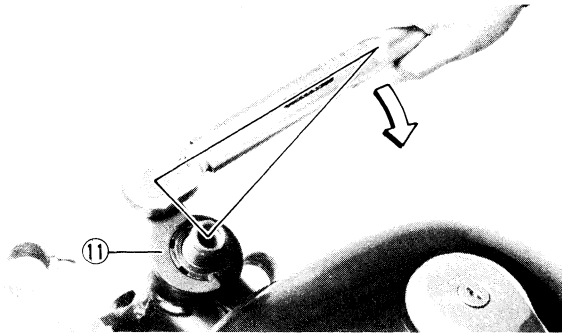
NOTE:

The tapered side of ring nut must face downward.

⚠ CAUTION:

Hold the steering stem until it is secured.





5. Tighten:

- Ring nut (8)

Ring nut tightening steps:

NOTE:

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

- Tighten the ring nut (8) using the Ring Nut Wrench (11).



Ring Nut Wrench:
YU-33975



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

- Loosen the ring nut (8) completely and re-tighten it to specification.

⚠ WARNING:

Do not over-tightening.



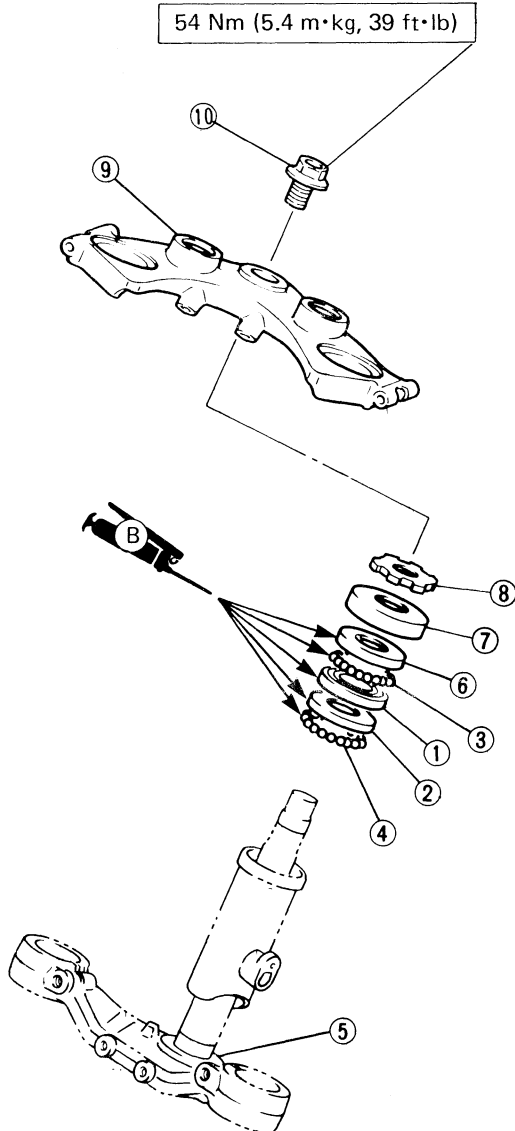
Ring Nut (Final Tightening):
10 Nm (1.0 m·kg, 7.2 ft·lb)

- Check the steering stem by turning it lock to lock. If there is any binding, remove the steering stem assembly and inspect the steering bearings (3), (4).

- Install the Handlebar crown (9) and tighten the steering stem nut (10) to specification.



Nut (Steering Stem):
54 Nm (5.4 m·kg, 39 ft·lb)



6. Install:

Reverse the removal procedure.

NOTE:

- Do not forget to fit:
 - 1) The clevis pins to the handlebar holders.
 - 2) The cable holders to the front fork top.
- After installing the headlight lens unit, adjust the headlight beam.



Bolt (Steering Stem):

54 Nm (5.4 m·kg, 39 ft·lb)

Bracket (Speedometer):

7 Nm (0.7 m·kg, 5.1 ft·lb)

Handlebar Holder (Lower):

20 Nm (2.0 m·kg, 14 ft·lb)

Master Cylinder Bracket:

9 Nm (0.9 m·kg, 6.5 ft·lb)

Headlight/Flasher Light Bracket:

7 Nm (0.7 m·kg, 5.1 ft·lb)

Bolts (Handlebar Crown):

20 Nm (2.0 m·kg, 14 ft·lb)

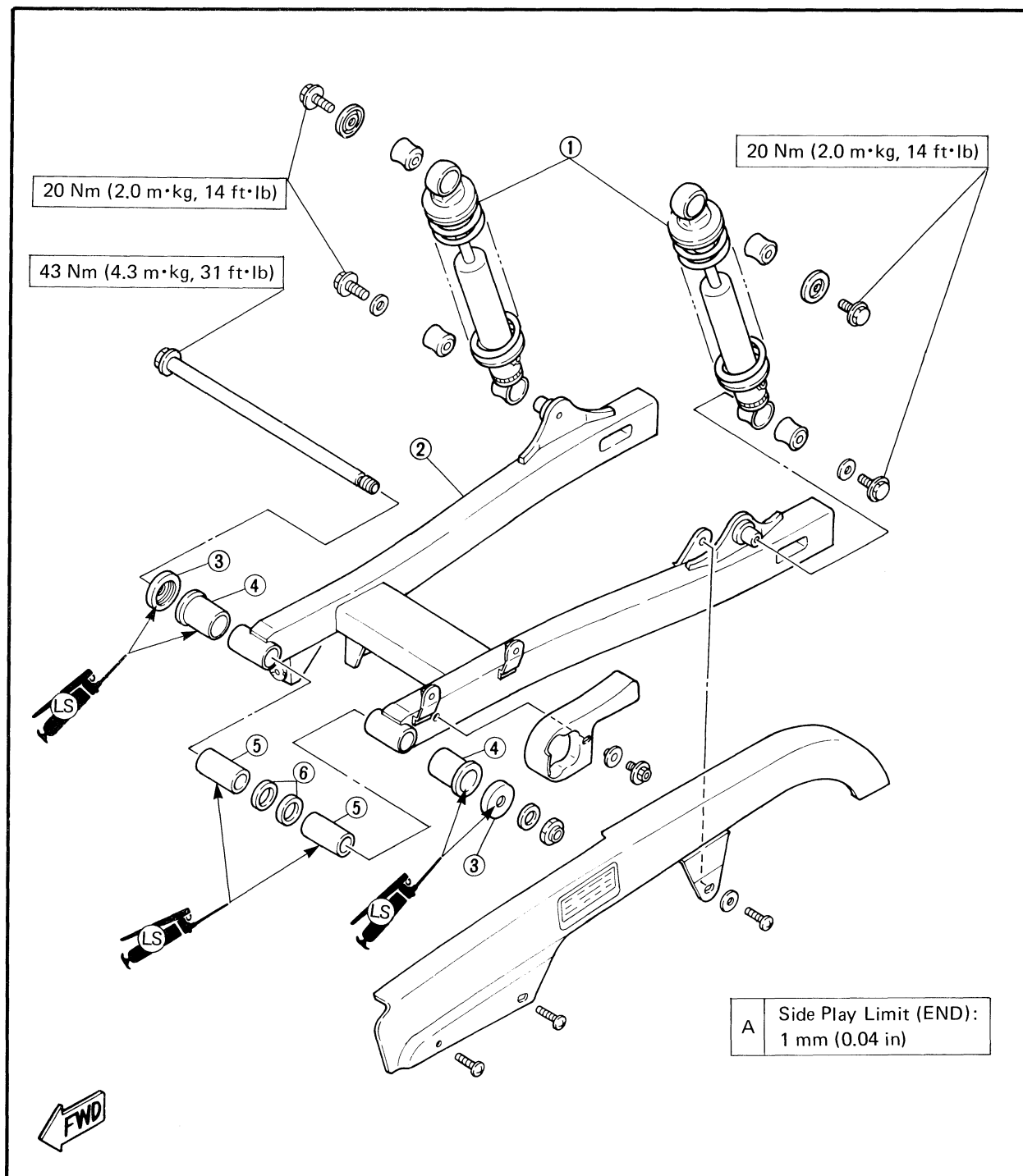
Headlight Body Bracket:

7 Nm (0.7 m·kg, 5.1 ft·lb)



REAR SHOCK ABSORBER AND SWINGARM

- ① Rear shock absorber
- ② Swingarm
- ③ Thrust cover
- ④ Bush (Outer)
- ⑤ Bush (Inner)
- ⑥ Oil seal



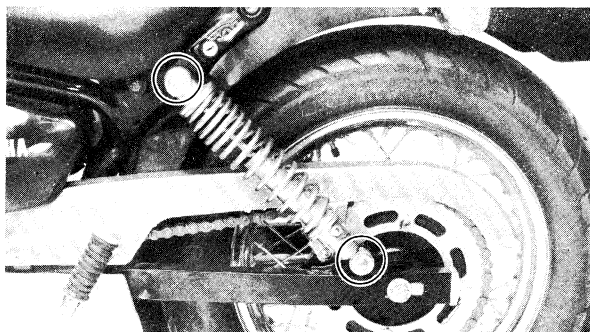


REMOVAL

⚠ WARNING:

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

1. Place the motorcycle on level place.
2. Elevate the rear wheel by placing a suitable stand under the engine.

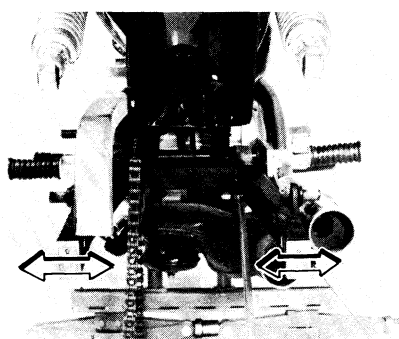


Rear Shock Absorber

1. Remove:
 - Rear shock absorbers

Swingarm

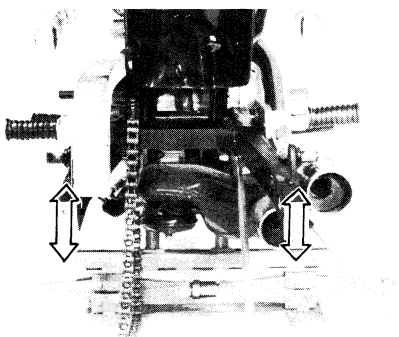
1. Remove:
 - Rear wheel
Refer to "REAR WHEEL – REMOVAL".
 - Shock absorbers



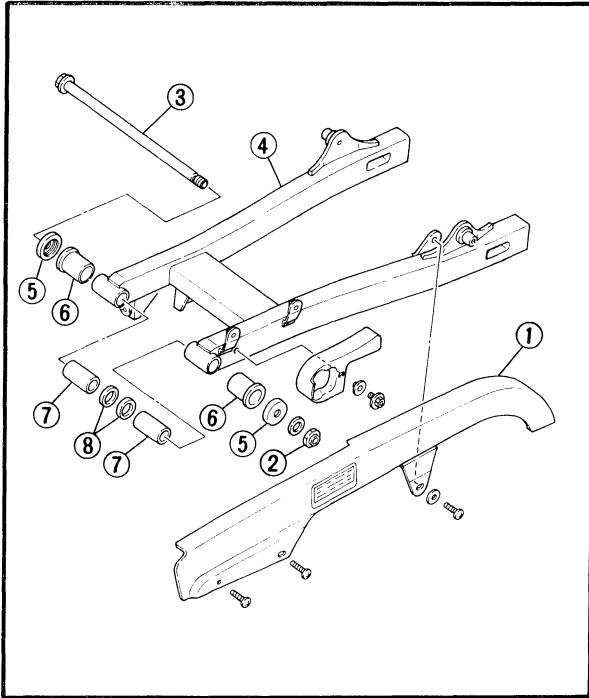
2. Check:
 - Swingarm (Side play)
Side play → Replace bushes.
Move the swingarm from side to side.



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



3. Check:
 - Swingarm (Vertical movement)
Tightness/Binding/Rough spots → Replace bushes.
Move the swingarm up and down.

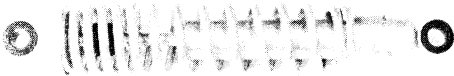


4. Remove:

- Chain case ①
- Nut (Pivot shaft) ②
- Pivot shaft ③
- Swingarm ④
- Brake rod
- Chain guide

5. Remove:

- Thrust covers ⑤
- Bushes (Outer) ⑥
- Bushes (Inner) ⑦
- Oil seals ⑧



INSPECTION

Rear Shock Absorber

1. Inspect:

- Shock absorber rod
Bends/Damage → Replace the shock absorber assembly.
- Shock absorber
Oil leaks → Replace the shock absorber assembly.
- Spring
Fatigue → Replace the shock absorber assembly.
Move the spring up and down.

Swingarm

1. Inspect:

- Bushes (Outer/Inner)
- Thrust covers
- Oil seals
Damage → Replace.

INSTALLATION

Reverse the removal procedure. Note the following points.

Rear Shock Absorber

1. Install:
 - Rear shock absorbers



Rear Shock Absorber:

Upper:

20 Nm (2.0 m·kg, 14 ft·lb)

Lower:

20 Nm (2.0 m·kg, 14 ft·lb)

Swingarm

1. Lubricate:
 - Thrust covers
 - Bushings



**Lithium Base Waterproof
Wheel Bearing Grease**

2. Install:
 - Brake rod
 - Cotter pin (New)
 - Chain guide



Bolt (Brake Rod):

20 Nm (2.0 m·kg, 14 ft·lb)



WARNING:

Always use new cotter pin.

3. Install:
 - Swingarm



Pivot Shaft (Swingarm):

43 Nm (4.3 m·kg, 31 ft·lb)

4. Install:
 - Rear wheel

Refer to "REAR WHEEL — INSTALLATION".



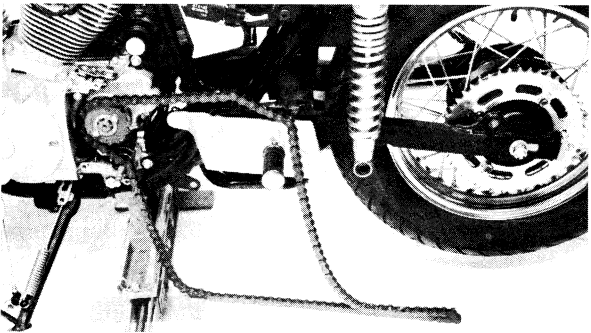
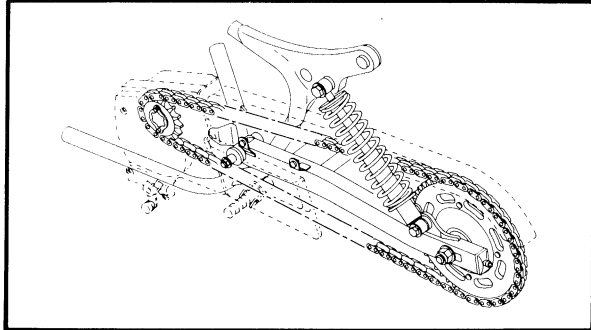
WARNING:

Always use a new cotter pin on the axle nut.

DRIVE CHAIN AND SPROCKETS

NOTE:

Before removing the drive chain and the sprocket, drive chain stretch should be checked.



REMOVAL

1. Place the motorcycle on a level place.

⚠ WARNING:

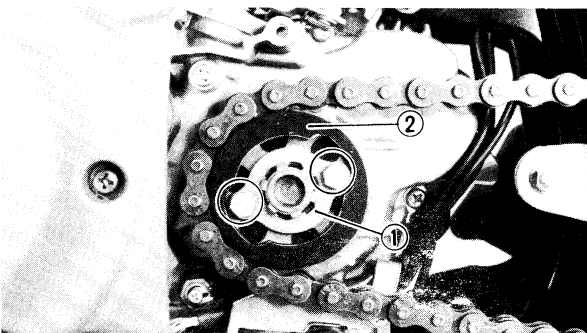
Securely support the motorcycle so there is no danger of it falling over.

Drive Chain

1. Remove:
 - Shift pedal link
 - Cover (Drive sprocket)
 - Chain case
 - Bolt (Rear shock absorber — Lower)
 - Rear shock absorber
 - Drive chain

NOTE:

The drive chain can be removed without removing the swingarm and both sprockets.



Sprockets

1. Remove:
 - Shift pedal link
 - Cover (Drive sprocket)
 - Sprocket holder ①
 - Drive sprocket ②

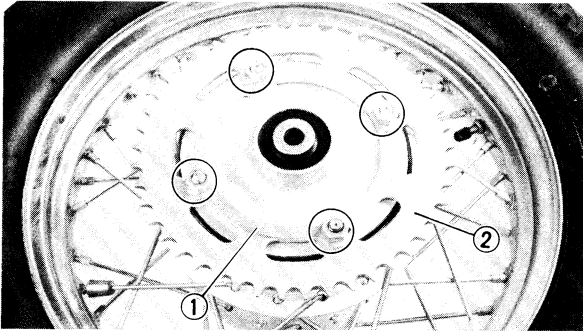
Refer to "CHAPTER 4. ENGINE — REMOVAL".



2. Remove:

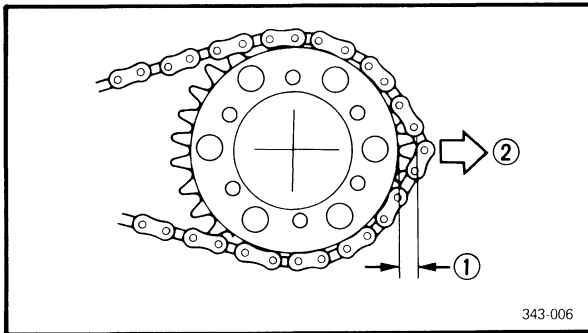
- Rear wheel
- Drive chain

Refer to "REAR WHEEL – REMOVAL"
and REAR SHOCK ABSORBER AND
SWINGARM – REMOVAL".



3. Remove:

- Lock washer ①
- Driven sprocket ②



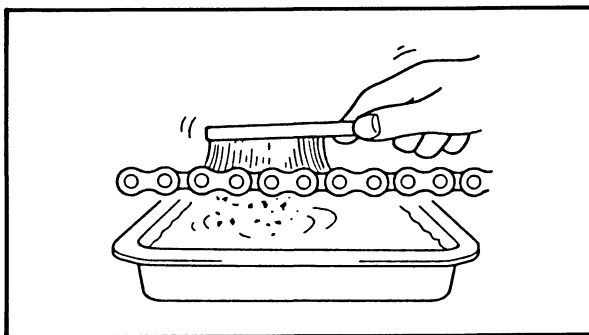
INSPECTION AND CLEANING

1. Check:

- Drive chain stretch

Pull ② the chain away from the driven sprocket.

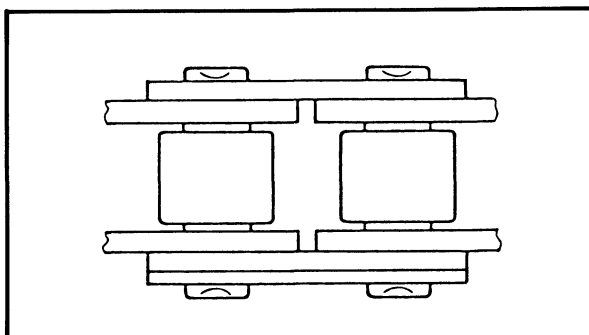
Distance chain/sprocket higher than 1/2 tooth ① → Replace drive chain.



2. Clean:

- Drive chain

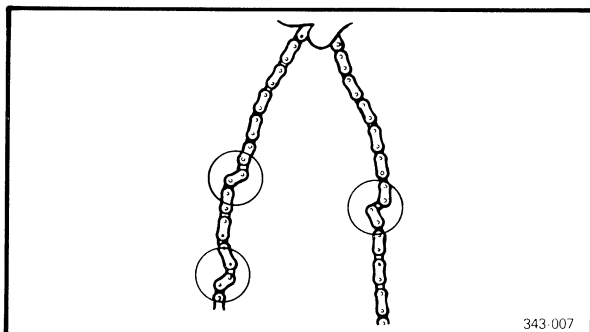
Place it in solvent, and brush off as much dirt as possible. Then remove the chain from the solvent and dry the chain.



3. Inspect:

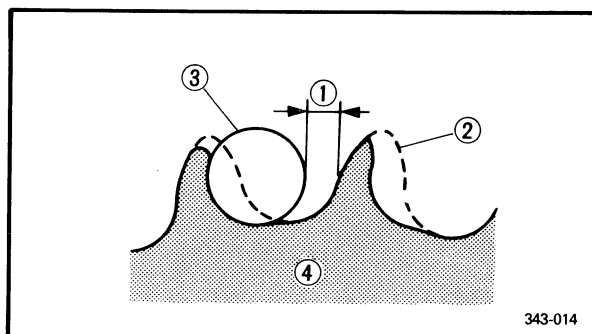
- Rollers
- Side plates

Damage/Wear → Replace drive chain.



4. Check:

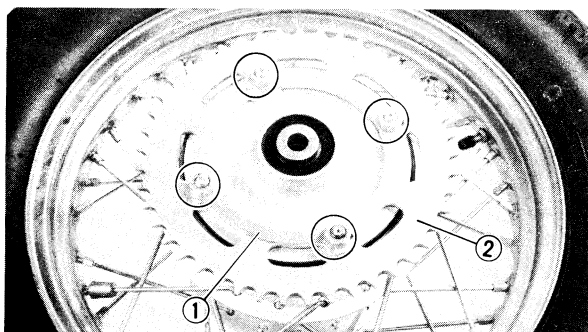
- Drive chain stiffness
Clean and oil the chain and hold as illustrated.
Stiff → Replace drive chain.



5. Inspect:

- Drive sprocket
More than 1/2 teeth ① wear → Replace sprocket.

- ② Correct
- ③ Roller
- ④ Sprocket



Drive sprocket replacement steps:

- Straighten the lock washer ① tabs and remove the driven sprocket ②.
- Install a new driven sprocket and lock washers.

⚠ WARNING:

Always use new lock washers.



Bolt (Driven Sprocket):
55 Nm (5.5 m·kg, 40 ft·lb)

- Bend the lock washer tabs along the nut flats.



INSTALLATION

Reverse the "REMOVAL" procedure.

Note the following points.

1. Install:

- Drive sprocket
- Sprocket holder
- Cover (Drive sprocket)



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

2. Install:

- Drive chain
- Rear wheel

Rear to "REAR WHEEL – INSTALLATION and REAR SHOCK ABSORBER AND SWING ARM – INSTALLATION".

3. Install:

- Rear shock absorber
- Chain case
- Cover (Drive sprocket)
- Shift pedal link



Bolt (Rear Shock Absorber – Lower):
20 Nm (2.0 m·kg, 14 ft·lb)

Screws (Drive Sprocket Cover):
7 Nm (0.7 m·kg, 5.1 ft·lb)

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

4. Lubricate:

- Drive chain

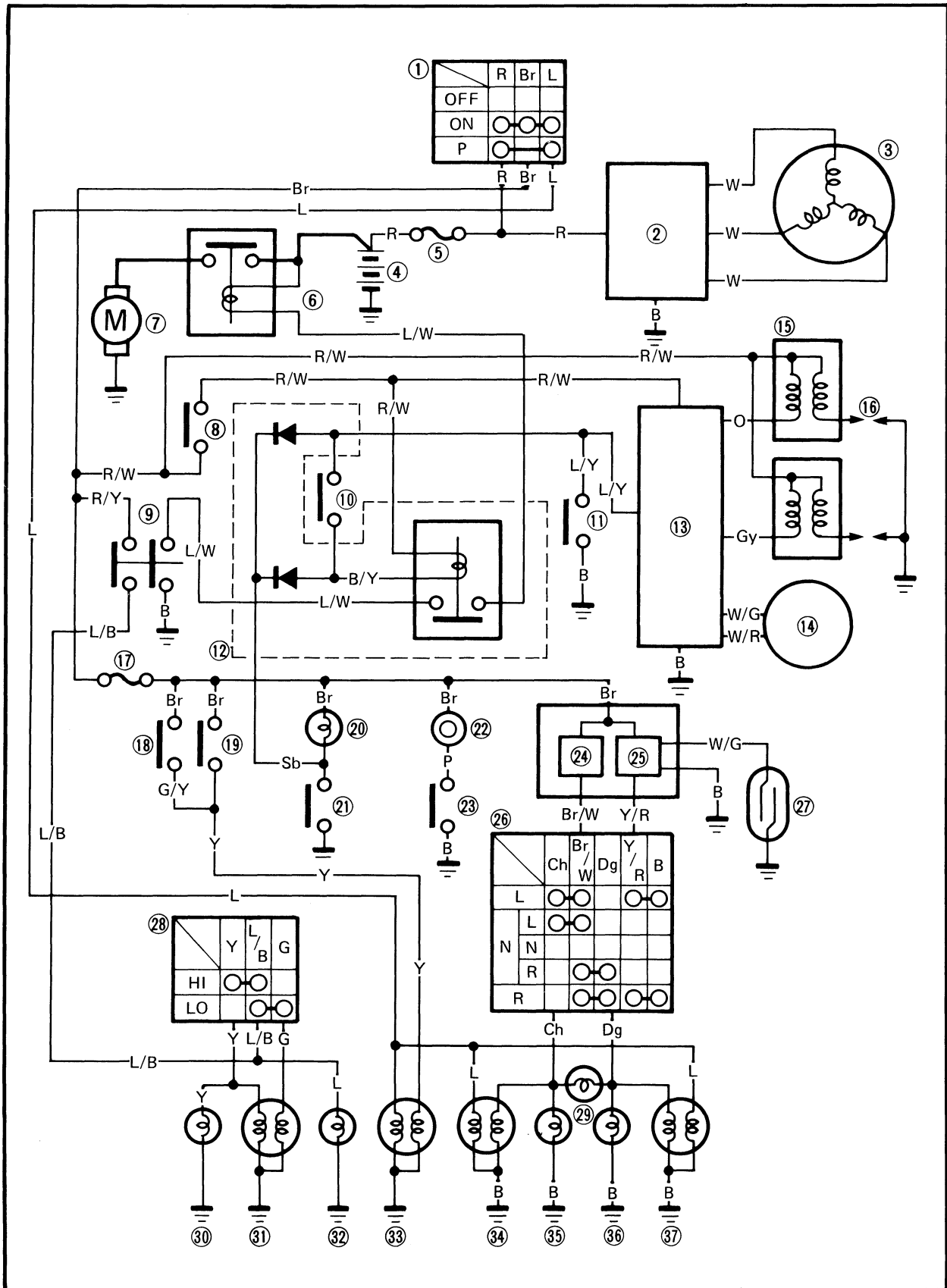


SAE 10W/30 Type SE Motor Oil



ELECTRICAL

XV250U/UC CIRCUIT DIAGRAM





- | | |
|-----------------------------|---|
| ① Main switch | ②① Neutral switch |
| ② Rectifier/Regulator | ②② Horn |
| ③ A.C. Magneto | ②③ "HORN" switch |
| ④ Battery | ②④ Flasher relay |
| ⑤ Fuse "MAIN" | ②⑤ Cancelling unit |
| ⑥ Starter switch | ②⑥ "TURN" switch |
| ⑦ Starter motor | ②⑦ Reed switch |
| ⑧ "ENGINE STOP" switch | ②⑧ "LIGHTS" (Dimmer) switch |
| ⑨ "START" switch | ②⑨ "TURN" indicator light |
| ⑩ Clutch switch | ③⑩ "HIGH BEAM" indicator light |
| ⑪ Sidestand switch | ③① Headlight |
| ⑫ Relay assembly | ③② Meter light |
| ⑬ Ignitor unit (Digital) | ③③ Tail/Brake light |
| ⑭ Pickup coil | ③④ Front position light/
Front flasher light (Left) |
| ⑮ Ignition coil | ③⑤ Rear flasher light (Left) |
| ⑯ Spark plug | ③⑥ Rear flasher light (Right) |
| ⑰ Fuse "SIGNAL" | ③⑦ Front position light/
Front flasher light (Right) |
| ⑱ Front brake switch | |
| ⑲ Rear brake switch | |
| ⑳ "NEUTRAL" indicator light | |

COLOR CODE

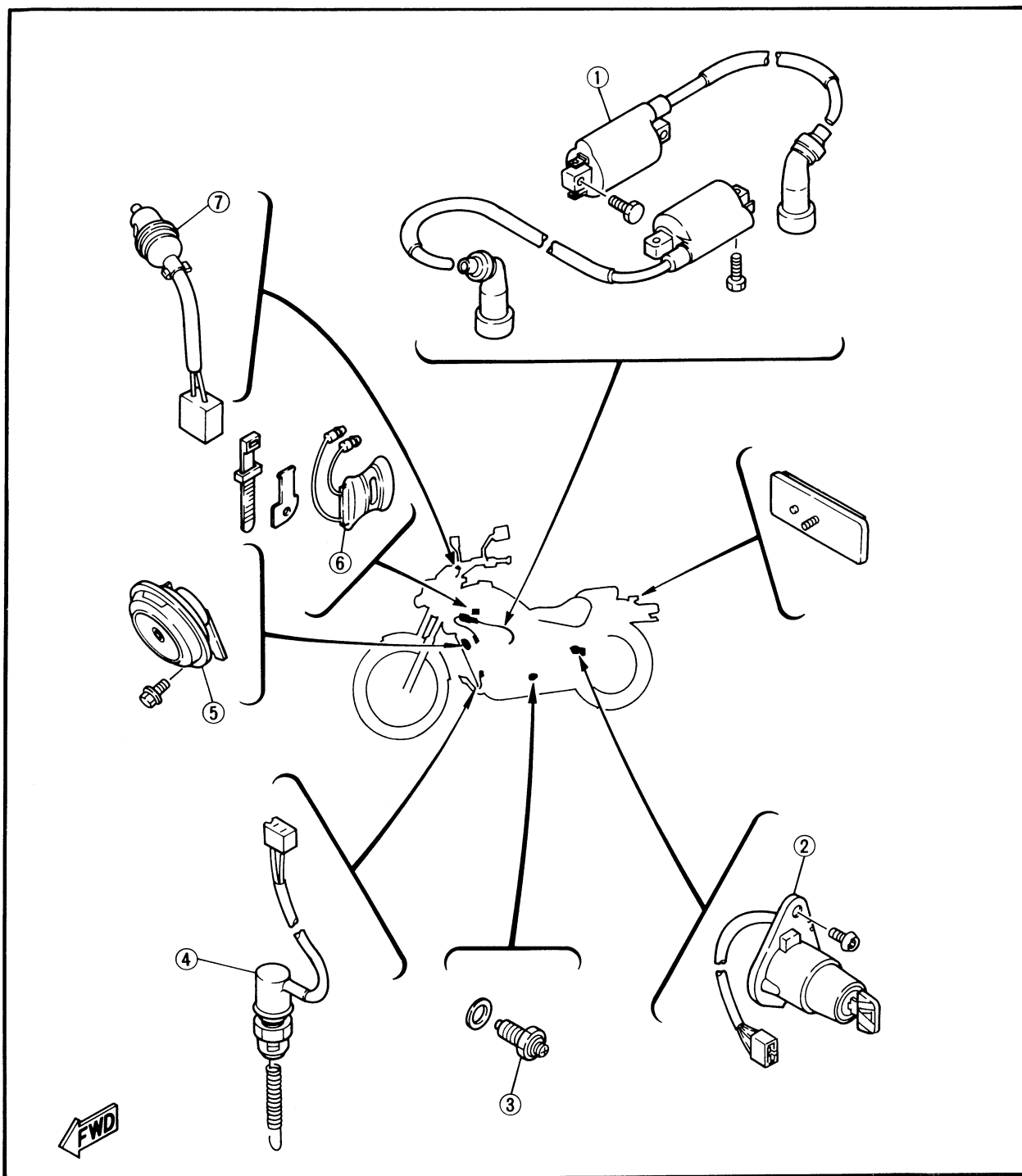
O	Orange	Gy	Gray
R	Red	Sb	Sky blue
L	Blue	Y/R	Yellow/Red
Br	Brown	Br/W	Brown/White
B	Black	R/W	Red/White
Y	Yellow	B/W	Black/White
W	White	B/Y	Black/Yellow
G	Green	L/W	Blue/White
P	Pink	L/B	Blue/Black
Dg	Dark green	L/Y	Blue/Yellow
Ch	Chocolate	G/Y	Green/Yellow



ELECTRICAL COMPONENTS (1)

- ① Ignition coil
- ② "MAIN" switch
- ③ Neutral switch
- ④ Rear brake switch
- ⑤ Horn
- ⑥ Thermo switch
- ⑦ Front brake switch

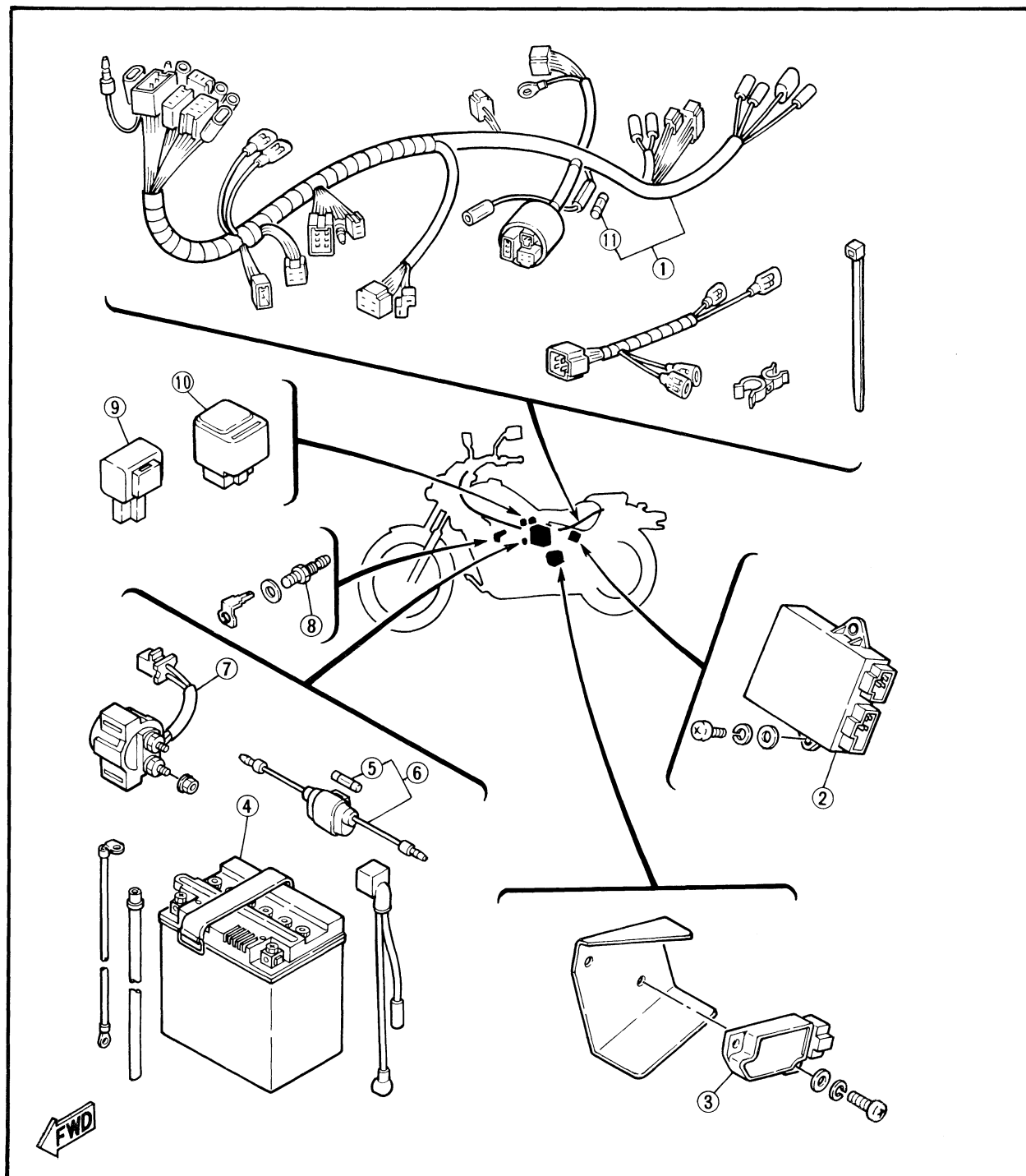
SPECIFICATIONS	RESISTANCE
IGNITION COIL:	
PRIMARY	3.2 ~ 4.8Ω
SECONDARY	10.4 ~ 15.6 kΩ
PICKUP COIL	178 ~ 266Ω
STARTOR COIL	0.19 ~ 0.29Ω





ELECTRICAL COMPONENTS (2)

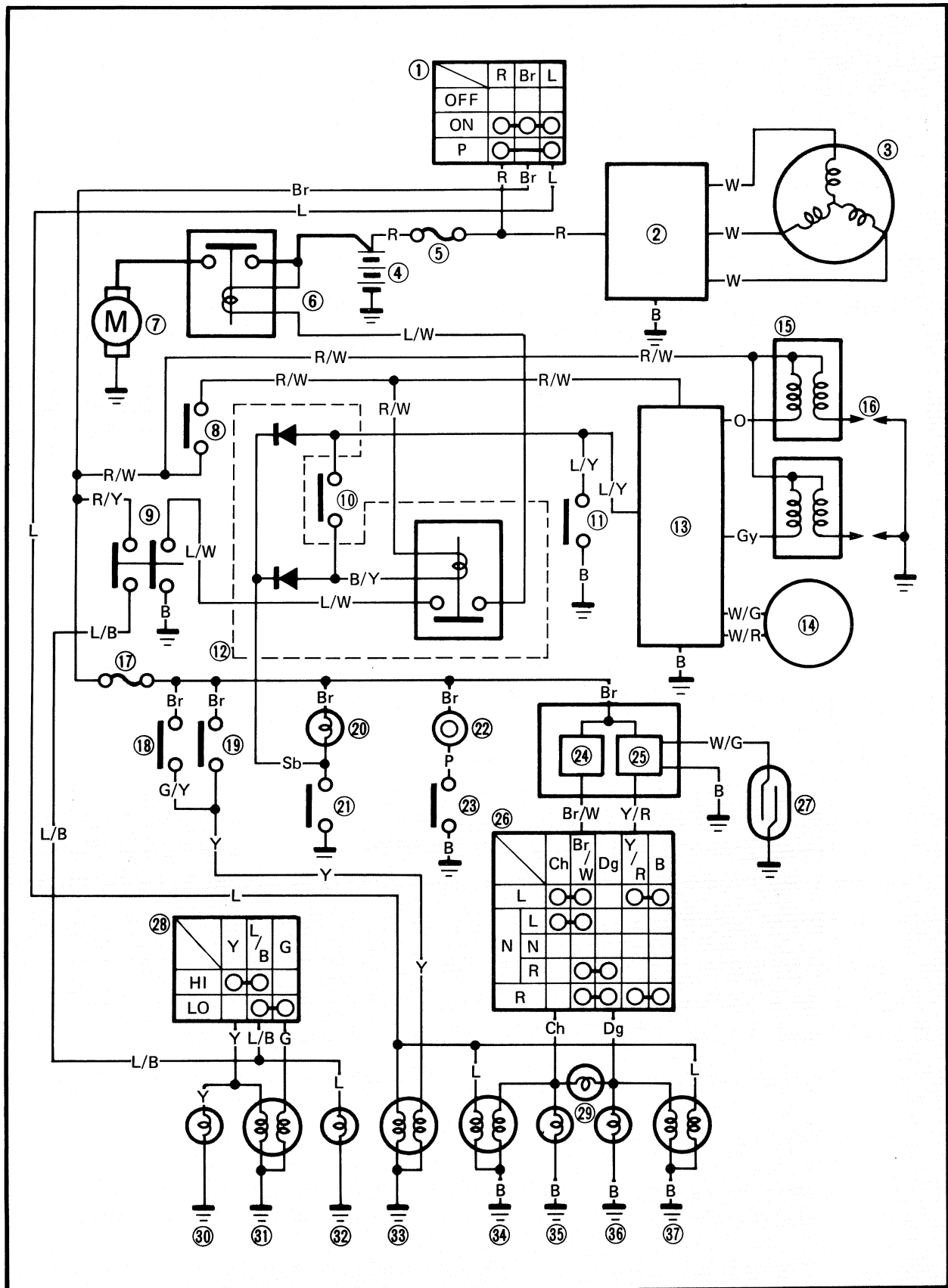
- | | |
|--------------------------|---------------------|
| ① Wire harness | ⑦ Starter relay |
| ② Ignitor unit (Digital) | ⑧ Carburetor heater |
| ③ Rectifier/Regulator | ⑨ Relay assembly |
| ④ Battery | ⑩ Flasher relay |
| ⑤ Fuse "MAIN" | ⑪ Fuse "SIGNAL" |
| ⑥ Fuse holder | |





IGNITION SYSTEM

CIRCUIT DIAGRAM



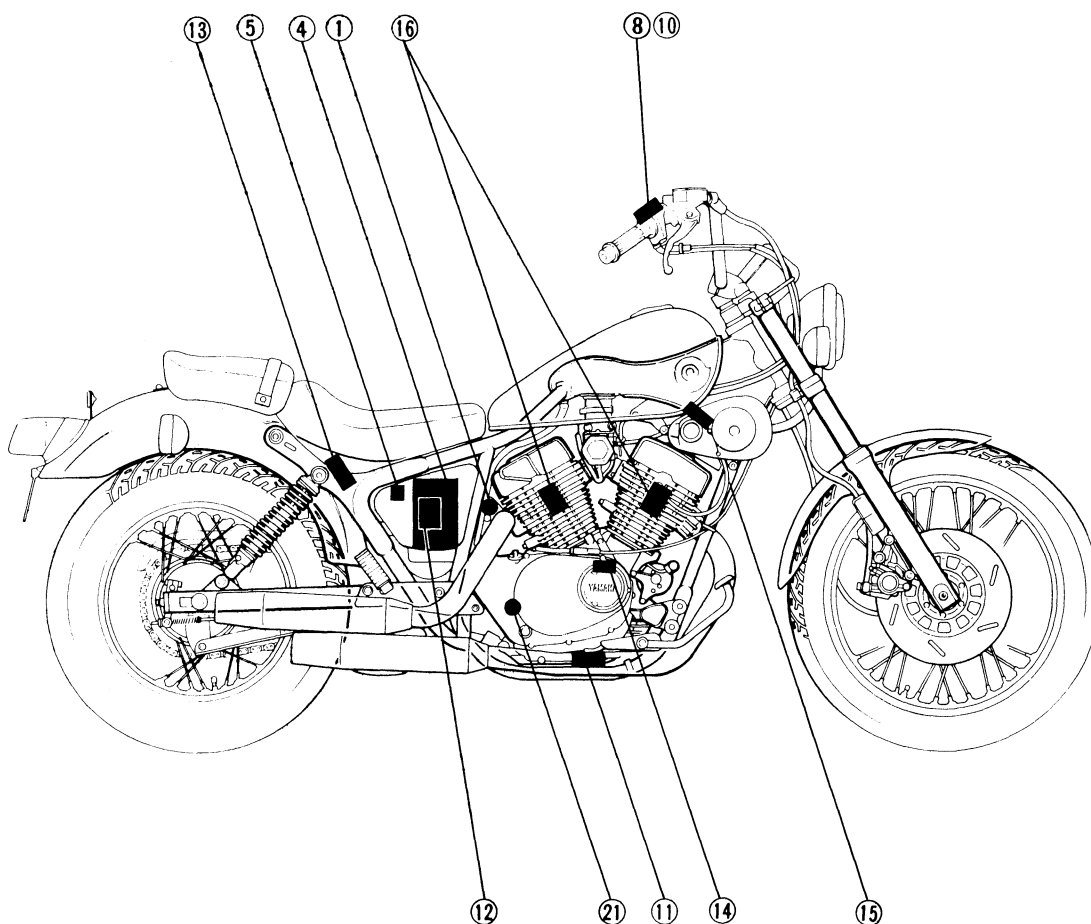


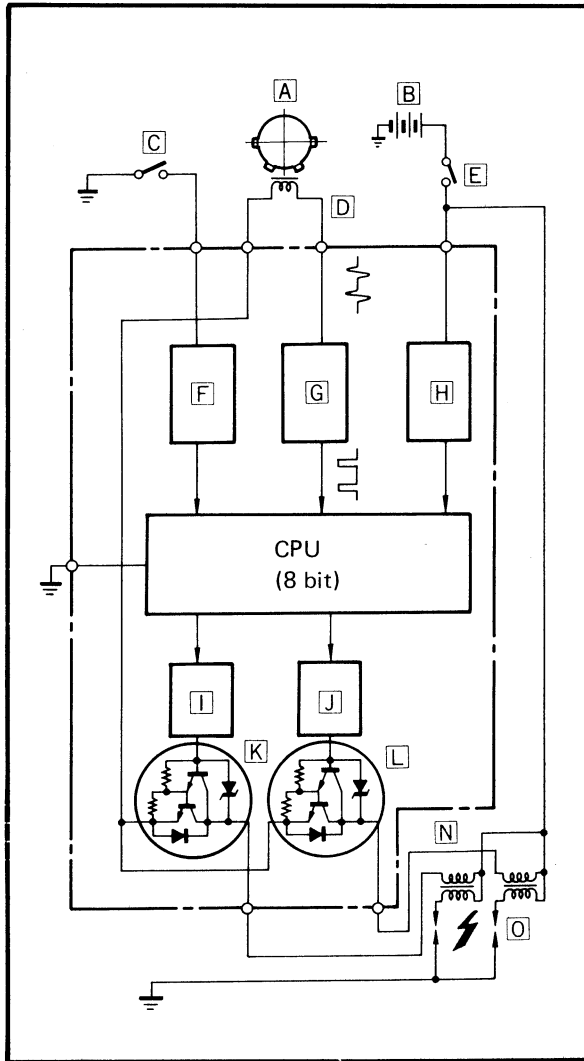
Aforementioned circuit diagram shows ignition circuit in circuit diagram.

NOTE:

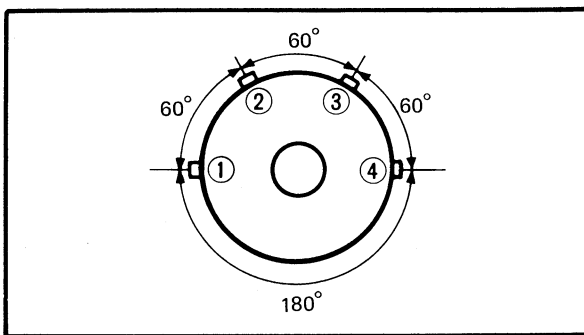
For the color codes, see page 7-2.

- ① Main switch
- ④ Battery
- ⑤ Fuse "MAIN"
- ⑧ "ENGINE STOP" switch
- ⑩ Clutch switch
- ⑪ Sidestand switch
- ⑫ Relay assembly
- ⑬ Ignitor unit (Digital)
- ⑭ Pickup coil
- ⑮ Ignition coil
- ⑯ Spark plug
- ⑰ Neutral switch





- [A] Flywheel
- [B] Battery
- [C] "ENGINE STOP" switch
- [D] Pickup coil
- [E] Main switch
- [F] Ignition stop circuit
- [G] Wave-shape shaping circuit
- [H] Source circuit
- [I] Amplification circuit for #1 (Front) cylinder
- [J] Amplification circuit for #2 (Rear) cylinder
- [K] Power transistor for #1 (Front) cylinder
- [L] Power transistor for #2 (Rear) cylinder
- [M] Ignitor unit (Digital)
- [N] Ignition coil
- [O] Spark plug



FLYWHEEL

The flywheel has on one semicircle four (4) projections (① ~ ④) every 60° apart, ① and ④ of which are 180° apart on the other semicircle.

No projections on the other semicircle so as to provide the pickup trigger with a 180° non-signal range.

The CPU thus senses this range to determine the starting position of ignition timing.



TROUBLESHOOTING

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

Procedure

Check;

- | | |
|-----------------------------|---|
| 1. Battery | 7. Main switch |
| 2. Fuse "MAIN" | 8. "ENGINE STOP" switch |
| 3. Spark plug | 9. Clutch switch (Relay assembly) |
| 4. Ignition spark gap | 10. Sidestand switch |
| 5. Spark plug cap | 11. Pickup coil resistance |
| 6. Ignition coil resistance | 12. Wiring connection (Ignition system) |

NOTE:

- Remove the following parts before troubleshooting.

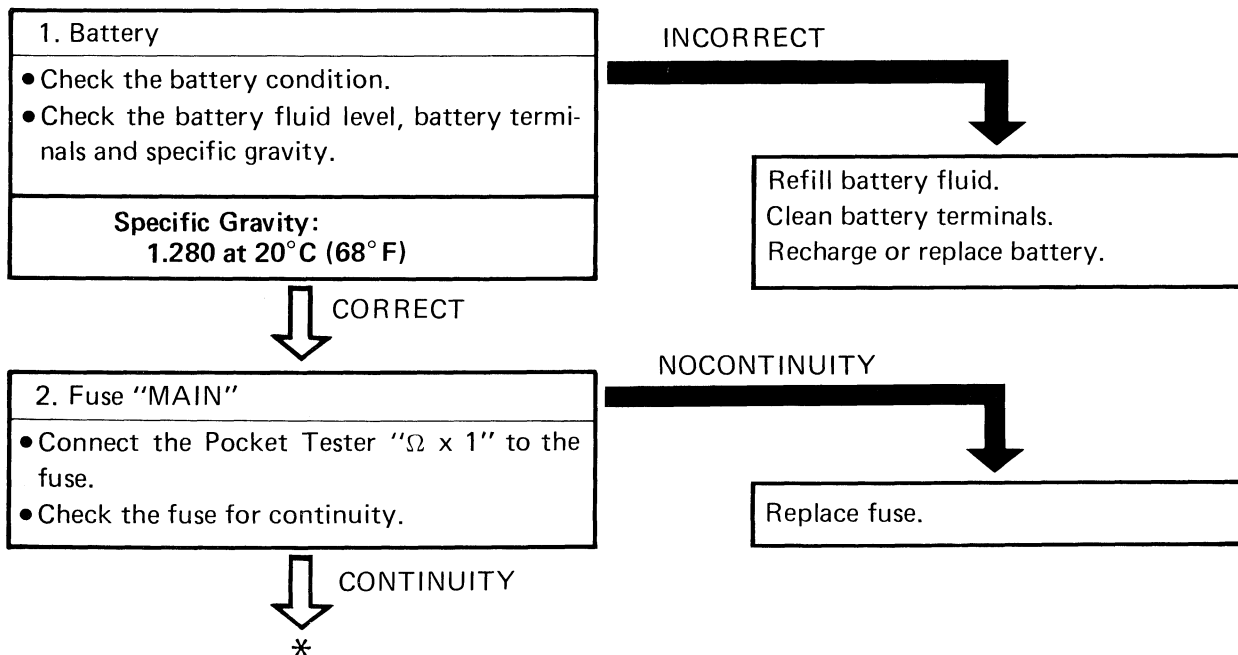
1) Seat	3) Side cover (Right)
2) Fuel tank	
- Use the following special tools in this troubleshooting.



Dynamic Spark Tester:
YM-34487



Pocket Tester:
YU-03112





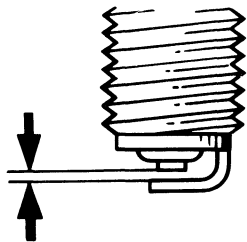
3. Spark plug

- Check the spark plug type.
- Check the spark plug gap.

Standard Spark Plug:
C6HSA (NGK)
U20FS-U (N.D.)



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



377-000

OUT OF SPECIFICATION

Regap or replace spark plug.



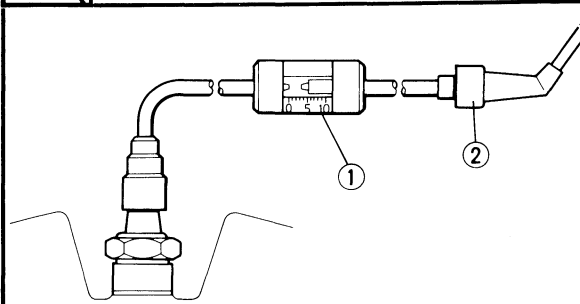
MEETS
SPECIFICATION

4. Ignition spark test

- Disconnect the spark plug cap from the spark plug.
- Connect the Dynamic Spark Tester to the spark plug and spark plug cap, and set the specified spark gap.
- Turn the main switch to "ON" and "ENGINE STOP" switch to "RUN" then, shift the gear in neutral.
- Start the engine.
- Check the ignition spark condition.



Minimum Spark Gap:
6 mm (0.24 in)



- ① Dynamic spark tester
- ② Spark plug cap

SPARK

Ignition circuit is good.

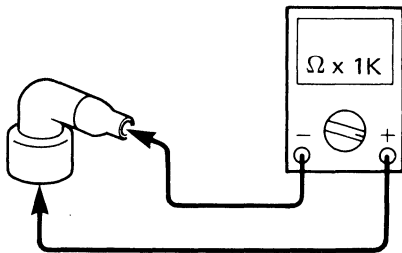


OUT OF SPECIFICATION



5. Spark plug cap resistance

- Remove the spark plug cap.
- Connect the Pocket Tester ($\Omega \times 1k$) to the spark plug cap.



OUT OF SPECIFICATION

Replace spark plug cap.

- Check the spark plug cap for specified resistance.



Spark Plug Cap Resistance:
8 ~ 12 k Ω at 20°C (68°F)

MEETS SPECIFICATION

6. Ignition coil resistance

- Disconnect the ignition coil leads (Orange, Red/White, Gray and Red/White) from the ignition coils.
- Connect the Pocket Tester to the ignition coils.
- Measure the primary and secondary winding resistances.

Primary Winding: ($\Omega \times 1$)

Tester (+) Lead →

Ignition Coil Terminal ①

Tester (−) Lead →

Ignition Coil Terminal ②

Secondary Winding: ($\Omega \times 1K$)

Tester (+) Lead →

Spark Plug Lead ③

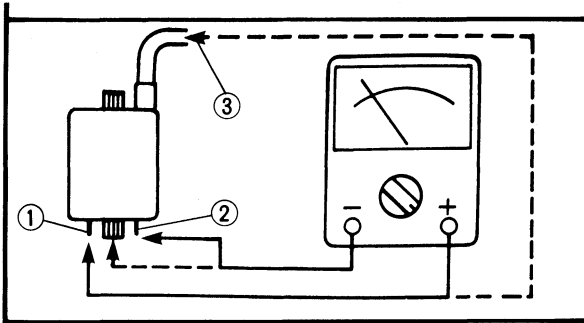
Tester (−) Lead →

Ignition Coil Base



Primary Winding Resistance [A] :
3.4 ~ 4.6 Ω at 20°C (68°F)

Secondary Winding Resistance [B] :
10.4 ~ 15.6 k Ω at 20°C (68°F)



OUT OF SPECIFICATION

Replace ignition coil(s).

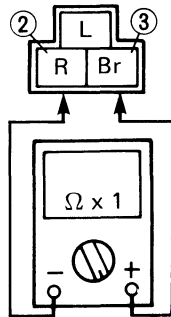
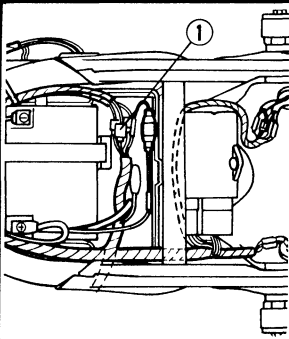
BOTH RESISTANCES
MEET SPECIFICATION

7. Main switch

- Disconnect the main switch coupler ① from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) to the main switch.

Tester (+) Lead → Red ② Terminal

Tester (−) Lead → Brown ③ Terminal



- Turn the main switch to "ON" and "OFF".
- Check the main switch for continuity.

Switch position	Good condition	Bad condition		
OFF	○	X	X	○
ON	X	○	X	○

○: Continuity X: Nocontinuity

BAD CONDITION

Replace main switch.

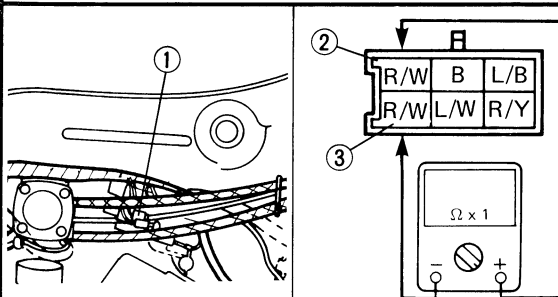
GOOD CONDITION

8. "ENGINE STOP" switch

- Disconnect the "ENGINE STOP" switch (Right handlebar switch) coupler ① from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) to the "ENGINE STOP" switch.



Tester (+) Lead → Red/White ② Terminal
Tester (–) Lead → Red/White ③ Terminal



- Turn the “ENGINE STOP” switch to “OFF” and “RUN”.
- Check the “ENGINE STOP” switch for continuity.

Switch position	Good condition	Bad condition		
RUN	○	X	X	○
OFF	X	○	X	○

○: Continuity X: Nocontinuity

BAD CONDITION

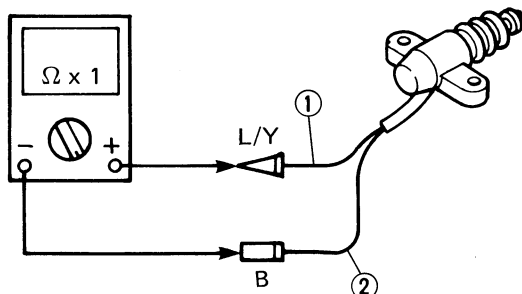
Replace handlebar switch (Right).

GOOD
CONDITION

9. “SIDE STAND” switch

- Disconnect the “SIDE STAND” switch leads from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) to the “SIDE STAND” switch.

Tester (+) Lead → Blue/Yellow ① Lead
Tester (–) Lead → Black ② Lead





- Move the sidestand to up position and down position.
- Check the "SIDE STAND" switch for continuity.

Sidestand position	Good condition	Bad condition		
Up	○	X	X	○
Down	X	○	X	○

○: Continuity X: Nocontinuity

BAD CONDITION

Replace "SIDE STAND" switch.

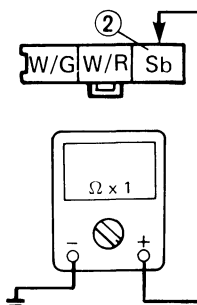
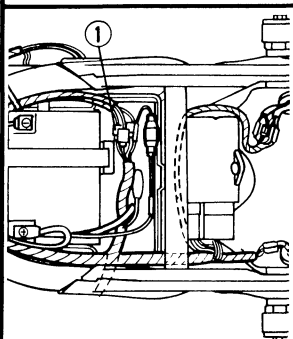


GOOD
CONDITION

10. "NEUTRAL" switch

- Disconnect the neutral switch/pickup coil coupler ① from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) to the "NEUTRAL" switch.

Tester (+) Lead → Sky blue ② Terminal
Tester (–) Lead → Ground



- Shift the transmission in neutral and gear.
- Check the "NEUTRAL" switch for continuity.

Transmission position	Good condition	Bad condition		
Neutral	○	X	X	○
Gear	X	○	X	○

○: Continuity X: Nocontinuity

BAD CONDITION

Replace "NEUTRAL" switch.



GOOD
CONDITION

*



11. Clutch switch

- Disconnect the clutch switch coupler ① from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) to the clutch switch.

Tester (+) Lead → Black/Yellow ② Terminal
Tester (–) Lead → Blue/Yellow ③ Terminal

- Hold and release the clutch lever.
- Check the clutch switch for continuity.

Clutch lever position	Good condition	Bad condition		
Held	○	X	X	○
Released	X	○	X	○

○: Continuity X: Nocontinuity

BAD CONDITION

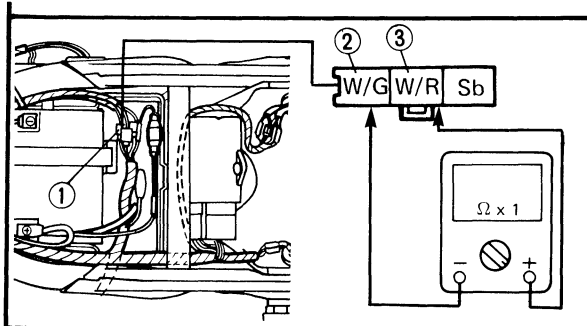
Replace clutch switch.

GOOD
CONDITION

12. Pickup coil resistance

- Disconnect the pickup coil/neutral switch coupler ① from the wire harness.
- Connect the Pocket Tester ($\Omega \times 100$) to the pickup coil.

Tester (+) Lead → White/Green ② Terminal
Tester (–) Lead → White/Red ③ Terminal



- Check the pickup coil for specified resistance.



Pickup Coil Resistance:
178 ~ 266Ω at 20°C (68°F)
(White/Green – White/Red)

MEETS
SPECIFICATION

13. Wiring connection

Check the entire ignition system for connections.
 Refer to the "WIRING DIAGRAM" section.

CORRECT

Replace ignitor unit (Digital).

OUT OF SPECIFICATION

Replace pickup coil.

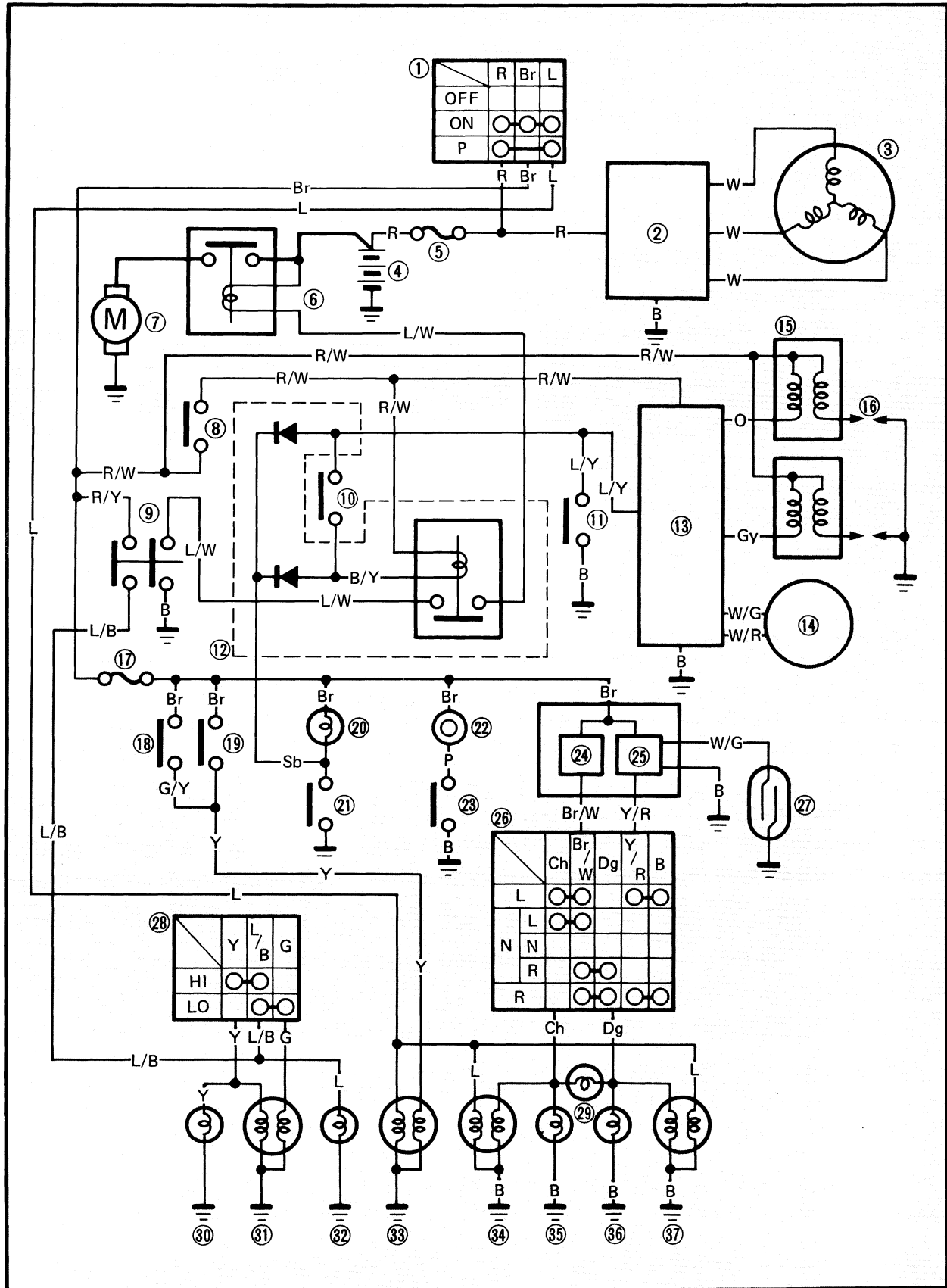
POOR CONNECTION

Correct.



ELECTRIC STARTING SYSTEM

CIRCUIT DIAGRAM



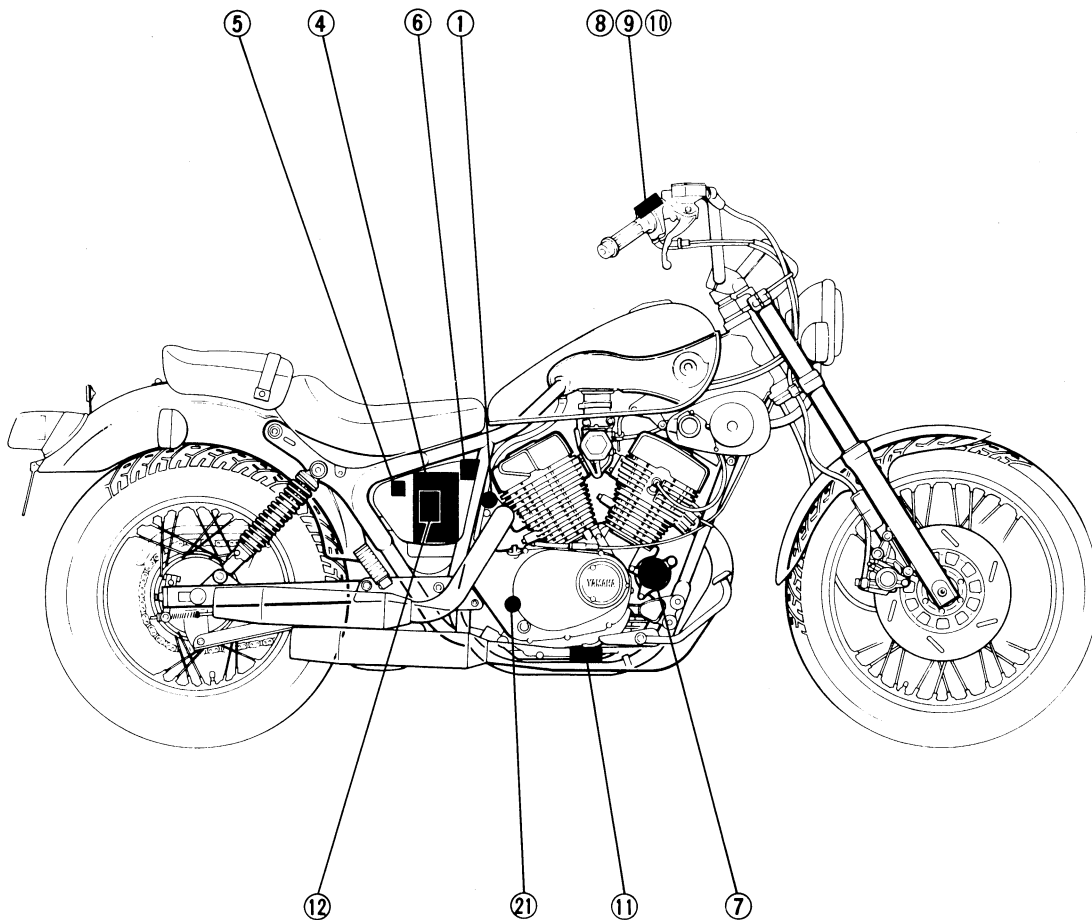


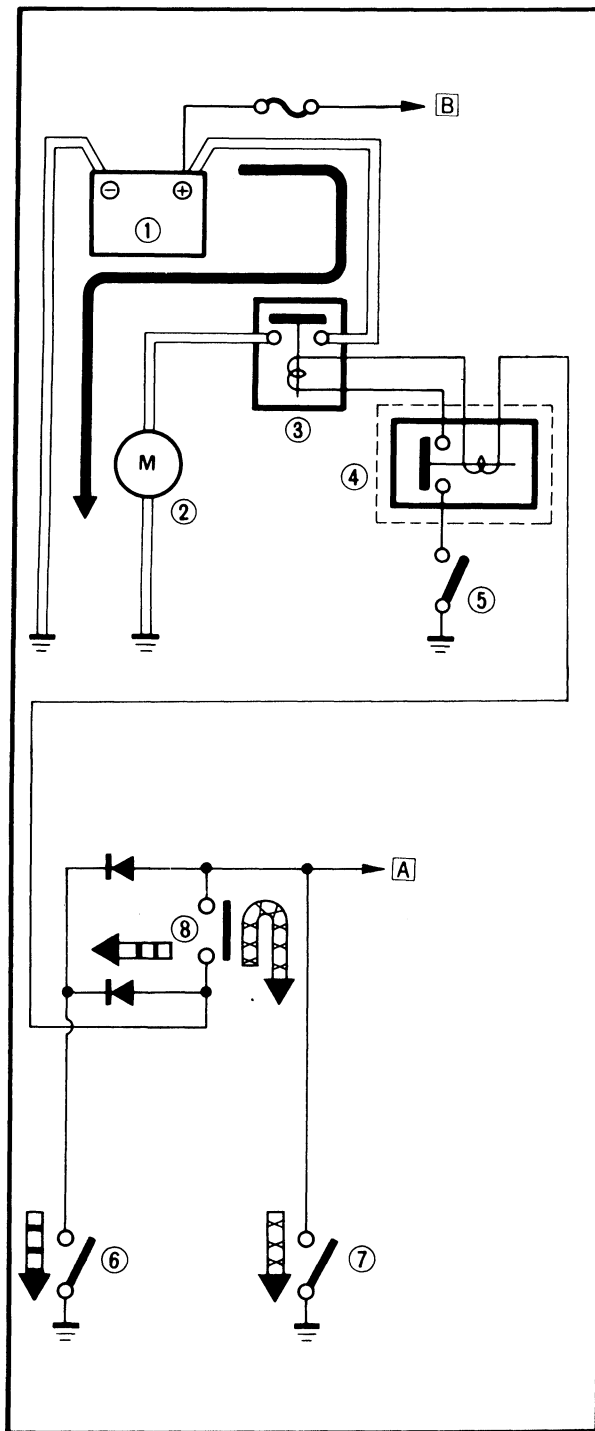
Aforementioned circuit diagram shows electrical starting circuit in wiring diagram.

NOTE:

For the color codes, see page 7-2.

- ① Main switch
- ④ Battery
- ⑤ Fuse "MAIN"
- ⑥ Starter relay
- ⑦ Starter motor
- ⑧ "ENGINE STOP" switch
- ⑨ "START" switch
- ⑩ Clutch switch
- ⑪ Sidestand switch
- ⑫ Relay assembly
- ⑰ Neutral switch





STARTING CIRCUIT OPERATION

The starting circuit on this model consist of the starter motor, starter relay, and the relay unit (starting circuit cut-off relay). If the engine stop switch and the main switch are both closed, the starter motor can operate only if:

The transmission is in neutral (the neutral switch is closed).

or if

The clutch lever is pulled to the handlebar (the clutch switch is closed) and the sidestand is up (the sidestand switch is closed.)

The starting circuit cut-off relay prevents the starter from operating when neither of these conditions has been met. In this instance, the starting circuit cut-off relay is open so current cannot reach the starter motor.

When one of both of the above conditions have been met, however, the starting circuit cut-off relay is closed, and the engine can be started by pressing the starter switch.

WHEN THE TRANSMISSION IS IN NEUTRAL
 WHEN THE SIDESTAND IS UP AND THE CLUTCH LEVER IS PULLED IN

- ① Battery
- ② Starter motor
- ③ Starter relay
- ④ Starting circuit cut-off relay (Relay assembly)
- ⑤ Engine stop switch
- ⑥ Neutral switch
- ⑦ Sidestand switch
- ⑧ Clutch switch

[A] To sidestand relay

[B] To main switch



TROUBLESHOOTING

STARTER MOTOR DOES NOT OPERATE.

Procedure

Check;

- | | |
|---|---|
| 1. Battery inspection | 6. "ENGINE STOP" switch |
| 2. Fuse "MAIN" | 7. Sidestand switch |
| 3. Starter motor | 8. Neutral switch |
| 4. Starting circuit cut-off relay
(Relay assembly) | 9. Clutch switch |
| 5. Main switch | 10. Wiring connection
(Electric starting system) |

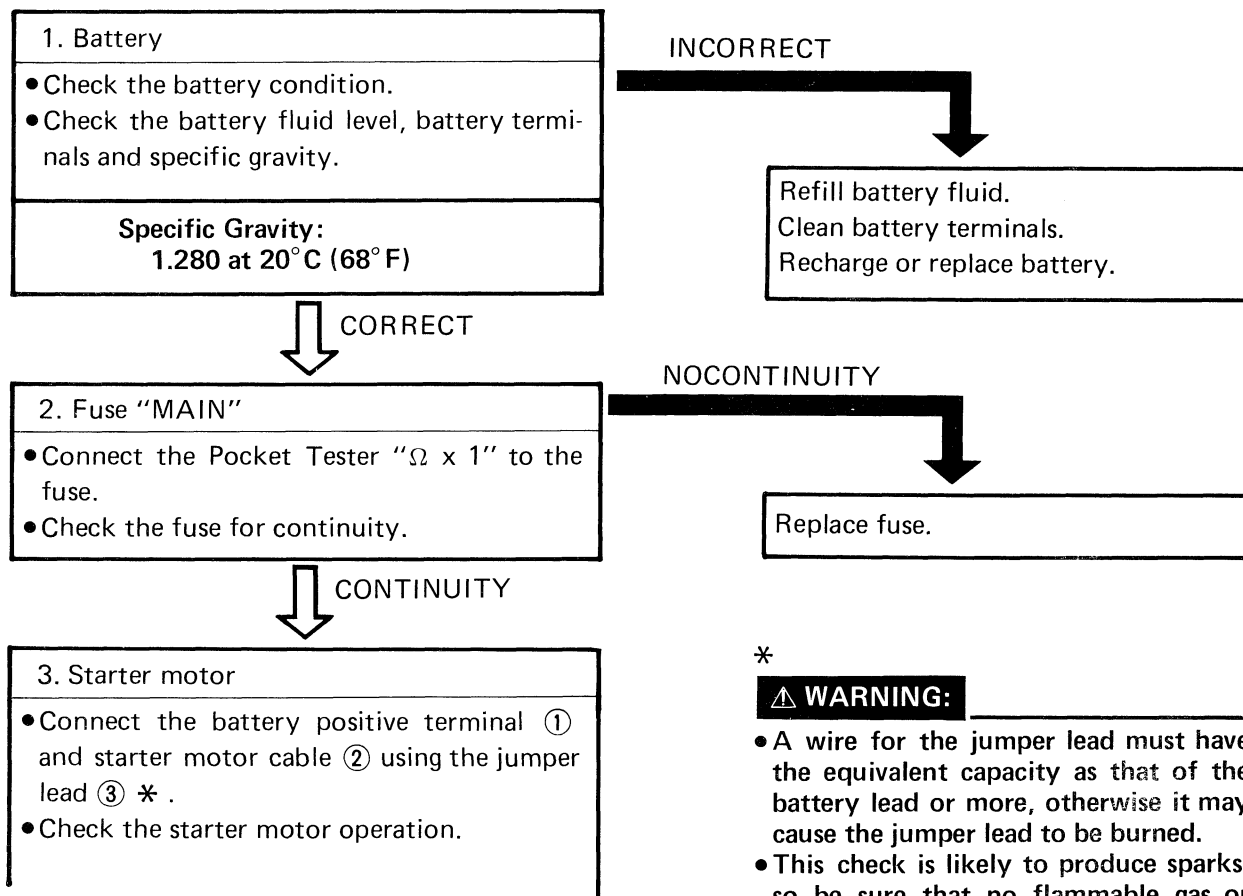
NOTE:

- Remove the following parts before troubleshooting.

1) Seat	3) Side cover (Right)
2) Fuel tank	
- Use the following special tool in this troubleshooting.



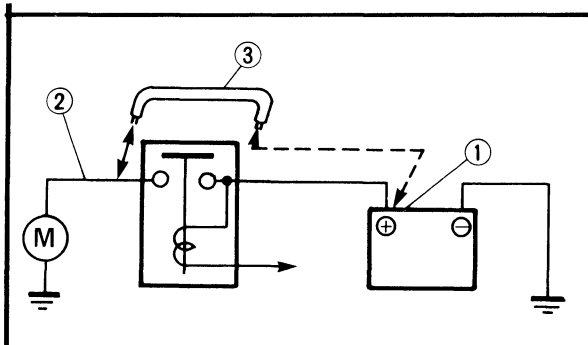
Pocket Tester:
YU-03112



*

⚠ WARNING:

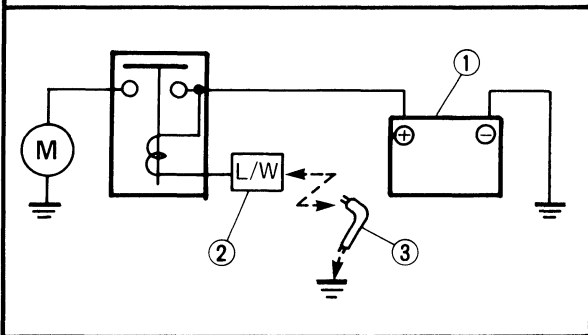
- A wire for the jumper lead must have the equivalent capacity as that of the battery lead or more, otherwise it may cause the jumper lead to be burned.
- This check is likely to produce sparks, so be sure that no flammable gas or fluid is in the vicinity.



- If the starter motor is operated, go to the next steps. If not, repair and/or replace the starter motor.
- Disconnect the starter relay lead (Blue/ White).
- Ground the starter relay coupler (Blue/ White) (2) to the frame using the jumper lead (3).
- Check the starter motor operation.

INOPERATIVE

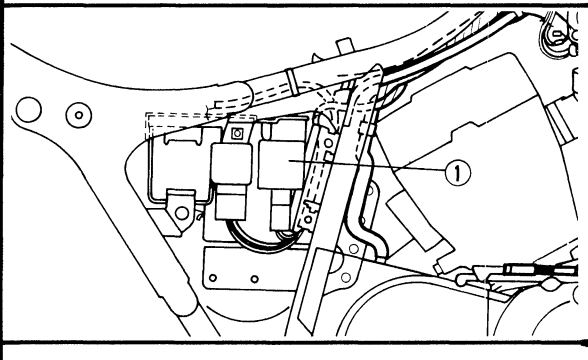
Repair or replace starter motor.



OK

4. Starting circuit cut-off relay (Relay assembly)

- Disconnect the relay assembly (1) coupler from the wire harness.

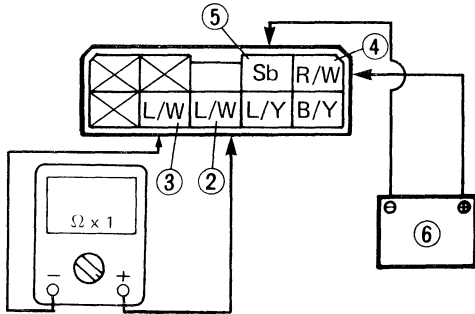




- Connect the Pocket Tester ($\Omega \times 1$) and battery (12V) ⑥ to the relay terminals.

Tester (+) Lead → Blue/White ② Terminal
 Tester (–) Lead → Blue/White ③ Terminal

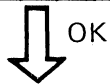
Battery (+) Lead → Red/White ④ Terminal
 Battery (–) Lead → Sky blue ⑤ Terminal



	Good Condition	Bad Condition
Battery Connected	○	○ X X
Battery Disconnected	X	○ X ○
○: Continuity X: Nocontinuity		
• Check the relay for continuity.		

BAD CONDITION

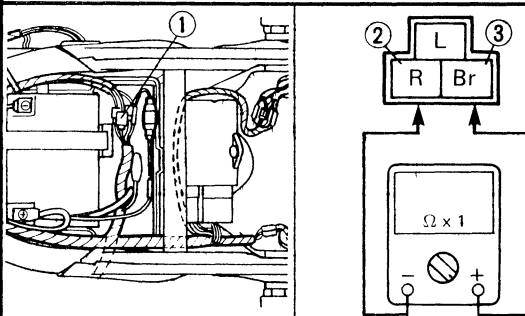
Replace relay assembly.



5. Main switch

- Disconnect the main switch coupler ① from the wire harness,
- Connect the Pocket Tester ($\Omega \times 1$) to the main switch.

Tester (+) Lead → Red ② Terminal
 Tester (–) Lead → Brown ③ Terminal





- Turn the main switch to "ON" and "OFF".
- Check the main switch for continuity.

Switch position	Good condition	Bad condition		
OFF	○	X	X	○
ON	X	○	X	○

○: Continuity X: Nocontinuity

BAD CONDITION

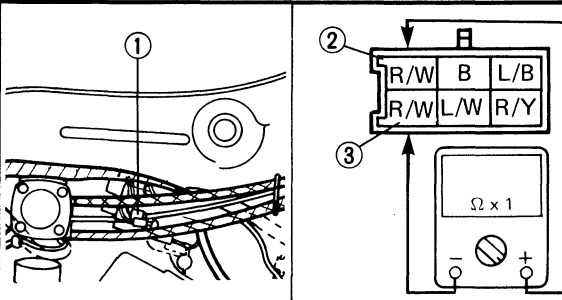
Replace main switch.

GOOD CONDITION

6. "ENGINE STOP" switch

- Disconnect the "ENGINE STOP" switch (Right handlebar switch) coupler ① from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) to the "ENGINE STOP" switch.

Tester (+) Lead → Red/White ② Terminal
 Tester (–) Lead → Red/White ③ Terminal



- Turn the "ENGINE STOP" switch to "OFF" and "RUN".
- Check the "ENGINE STOP" switch for continuity.

Switch position	Good condition	Bad condition		
RUN	○	X	X	○
OFF	X	○	X	○

○: Continuity X: Nocontinuity

BAD CONDITION

Replace handlebar switch (Right).

GOOD CONDITION

7. "SIDE STAND" switch

- Disconnect the "SIDE STAND" switch coupler from the wireharness.
- Connect the Pocket Tester ($\Omega \times 1$) to the "SIDE STAND" switch.

Tester (+) Lead → Blue/Yellow ① Lead
Tester (−) Lead → Black ② Lead

- Move the sidestand to up position and down.
- Check the “SIDE STAND” switch for continuity.

Sidestand position	Good condition	Bad condition		
Up	○	X	X	○
Down	X	○	X	○

○: Continuity X: Nocontinuity

BAD CONDITION

Replace “SIDE STAND” switch.

GOOD
CONDITION

8. “NEUTRAL” switch

- Disconnect the neutral switch/pickup coil coupler ① from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) to the “NEUTRAL” switch.

Tester (+) Lead → Sky blue ① Terminal
Tester (−) Lead → Frame ground



- Shift the transmission in neutral and gear.
- Check the "NEUTRAL" switch for continuity.

Transmission position	Good condition	Bad condition		
Neutral	○	X	X	○
Gear	X	○	X	○

○: Continuity X: Nocontinuity

BAD CONDITION

Replace "NEUTRAL" switch.

GOOD
CONDITION

9. Clutch switch

- Disconnect the clutch switch coupler ① from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) to the clutch switch.

Tester (+) Lead → Black/Yellow ② Terminal.
Tester (−) Lead → Blue/Yellow ③ Terminal

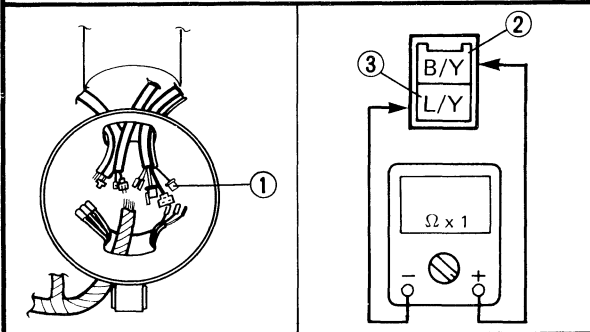
- Hold and release the clutch lever.
- Check the clutch switch for continuity.

Clutch lever position	Good condition	Bad condition		
Held	○	X	X	○
Released	X	○	X	○

○: Continuity X: Nocontinuity

BAD CONDITION

Replace clutch switch.

GOOD
CONDITION

10. Wiring connection

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

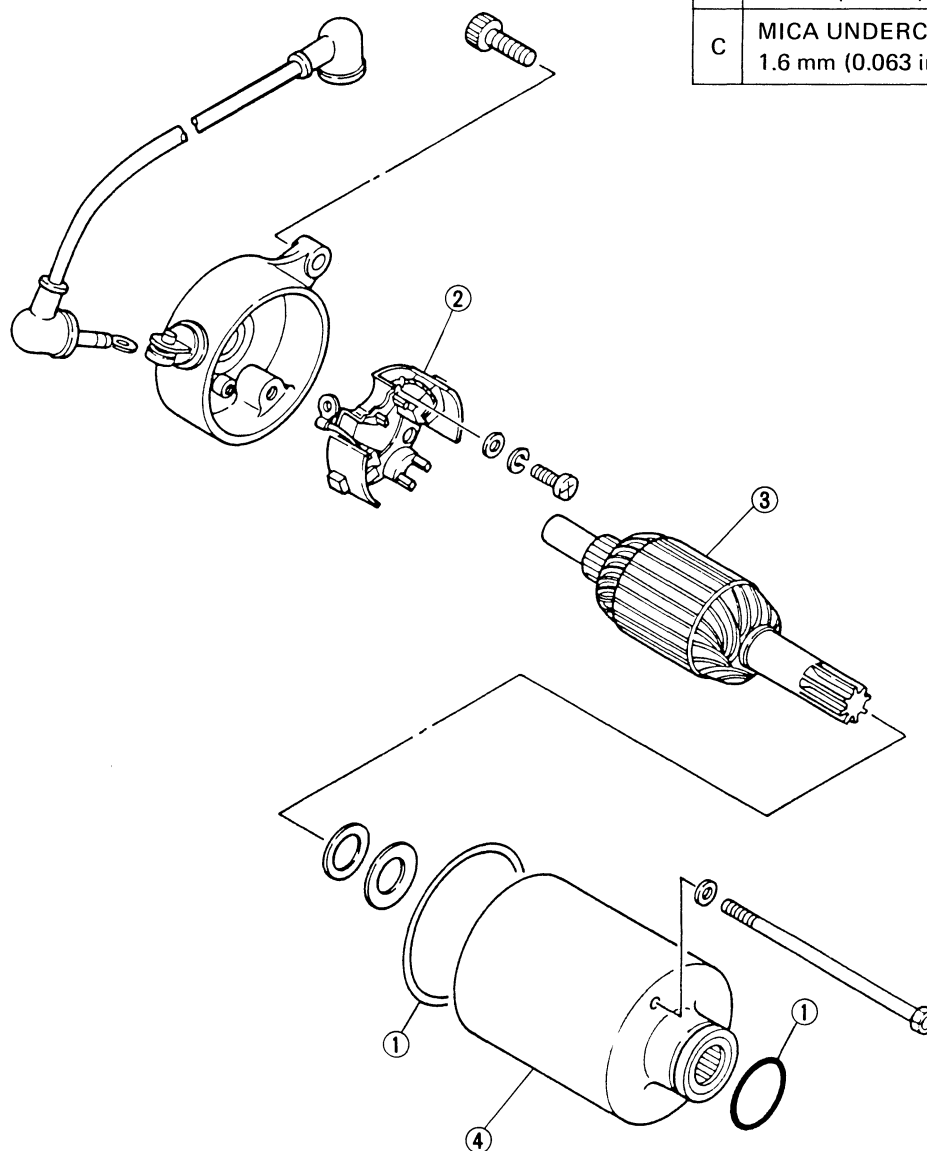
POOR CONNECTION

Correct.



STARTER MOTOR TEST

- ① O-ring
- ② Brush set
- ③ Armature
- ④ Stator



A	BRUSH WEAR LIMIT: 3.5 mm (0.14 in)
B	COMMUTATOR WEAR LIMIT: 21 mm (0.83 in)
C	MICA UNDERCUT: 1.6 mm (0.063 in)

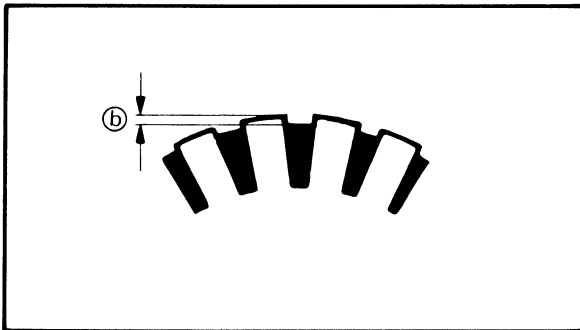
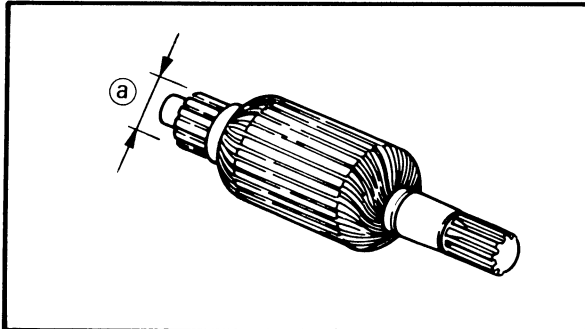


**Removal**

1. Remove:

- Starter motor

Refer to "CHAPTER 3. ENGINE OVERHAUL – ENGINE REMOVAL" section.

**Inspection and Repair**

1. Inspect:

- Commutator

Dirty → Clean it with #600 grit sandpaper.

2. Measure:

- Commutator diameter (a)

Out of specification → Replace starter motor.



Commutator Wear Limit:
21 mm (0.83 in)

3. Measure:

- Mica undercut (b)

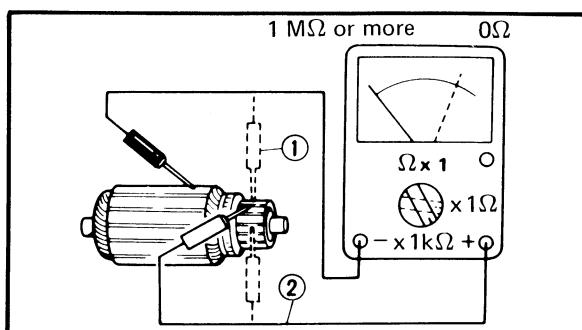
Out of specification → Scrape the mica to proper value use a hacksaw blade can be ground to fit.



Mica Undercut (b) :
1.5 mm (0.059 in)

NOTE:

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



4. Inspect:

- Armature coil (insulation/continuity)

Defects(s) → Replace starter motor.

Armature coil inspecting steps:

- Connect the Pocket Tester (YU-03112) for continuity check ① and insulation check ②.



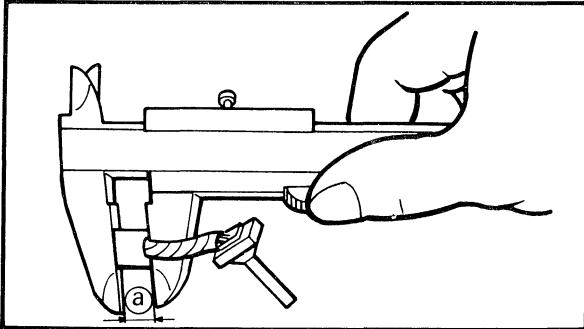
Pocket Tester:
YU-03112



- Measure the armature coil resistances.

**Armature Coil Resistance:****Continuity Check ① :****0Ω at 20°C (68°F)****Insulation Check ② :****More than 1MΩ at 20°C (68°F)**

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



5. Measure:

- Brush length ①

Out of specification → Replace.

**Brush Length Limit:****3.5 mm (0.14 in)**

6. Measure:

- Brush spring pressure

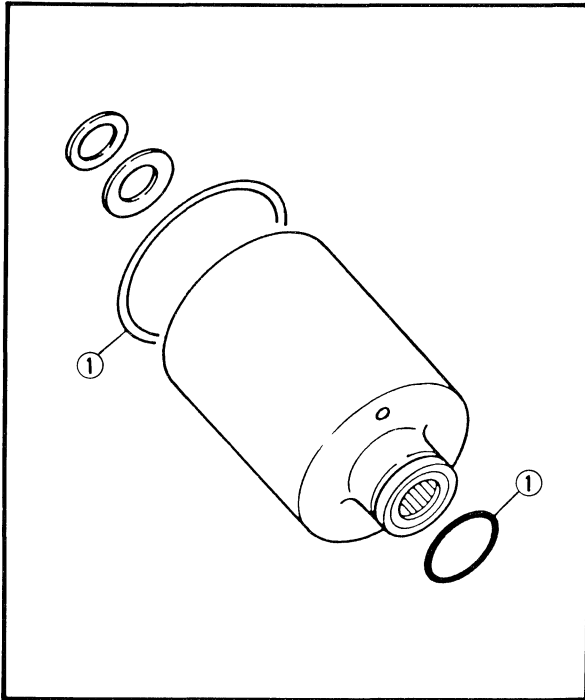
Fatigue/Out of specification → Replace as a set.

**Brush Spring Pressure:****560 ~ 840 g (19.8 ~ 29.7 oz)**

7. Inspect:

- Bearing
- Oil seal
- O-rings ①

Wear/Damage → Replace.

**Installation**

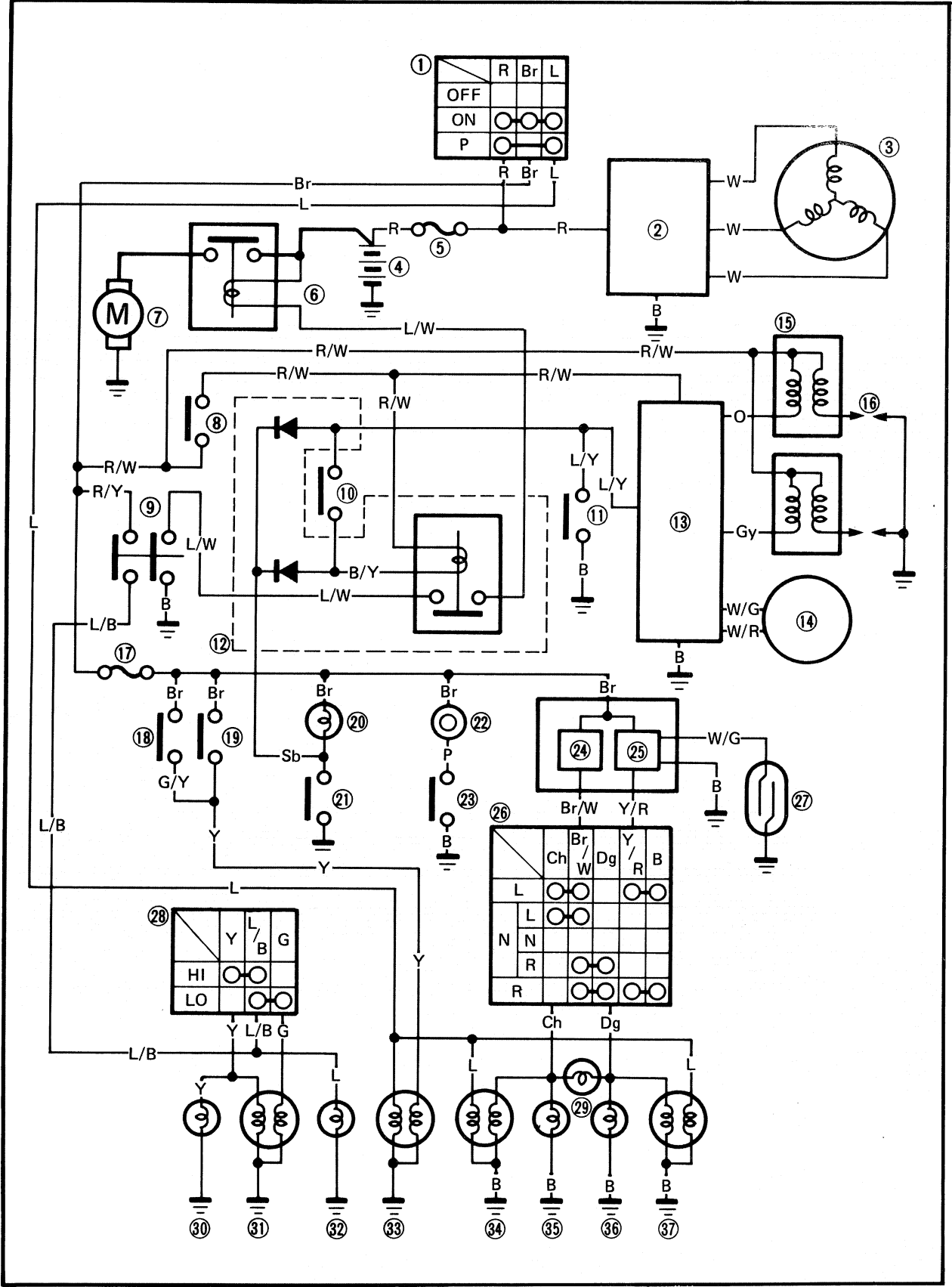
1. Install:

- Starter motor

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

CHARGING SYSTEM

CIRCUIT DIAGRAM



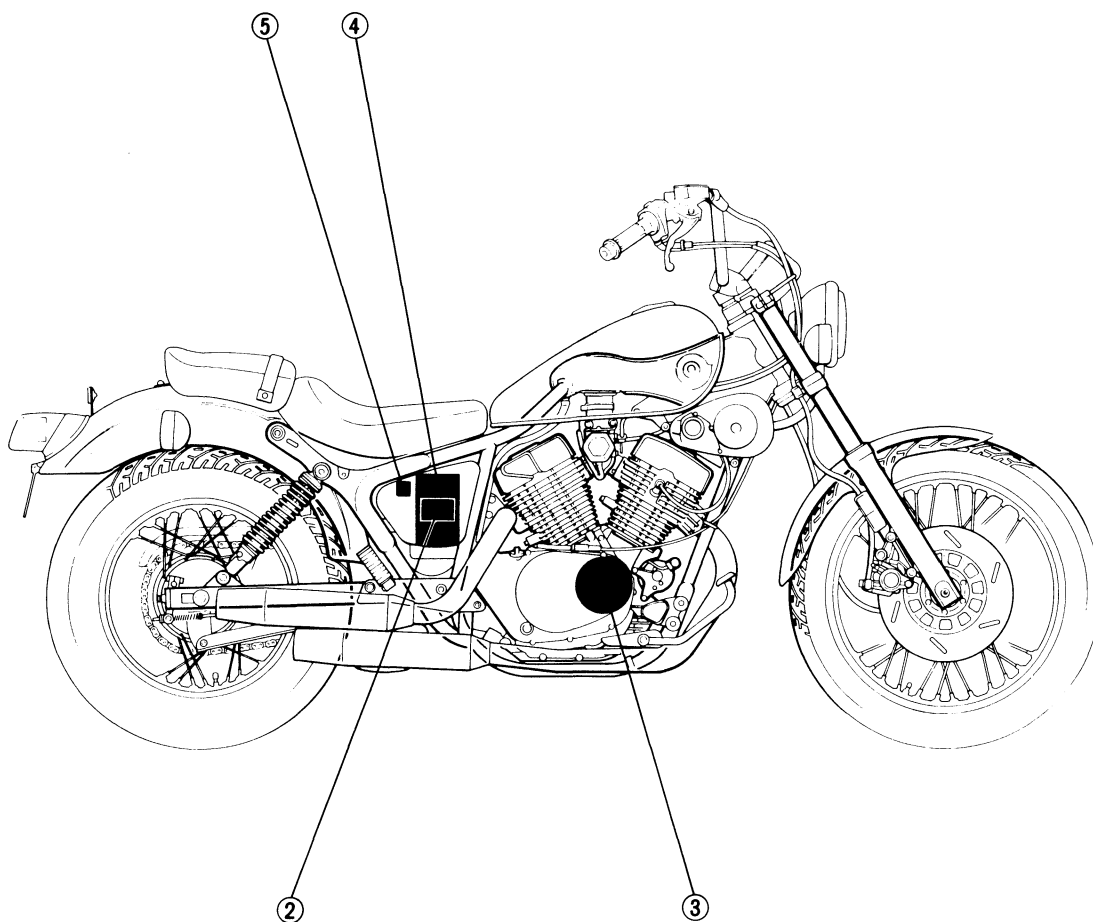


Aforementioned circuit diagram shows charging circuit in circuit diagram.

NOTE:

For the color codes, see page 7-2.

- ② Rectifier with regulator
- ③ A.C. magneto
- ④ Battery
- ⑤ Fuse "MAIN"





TROUBLESHOOTING

BATTERY IS NOT CHARGED

Procedure

Check;

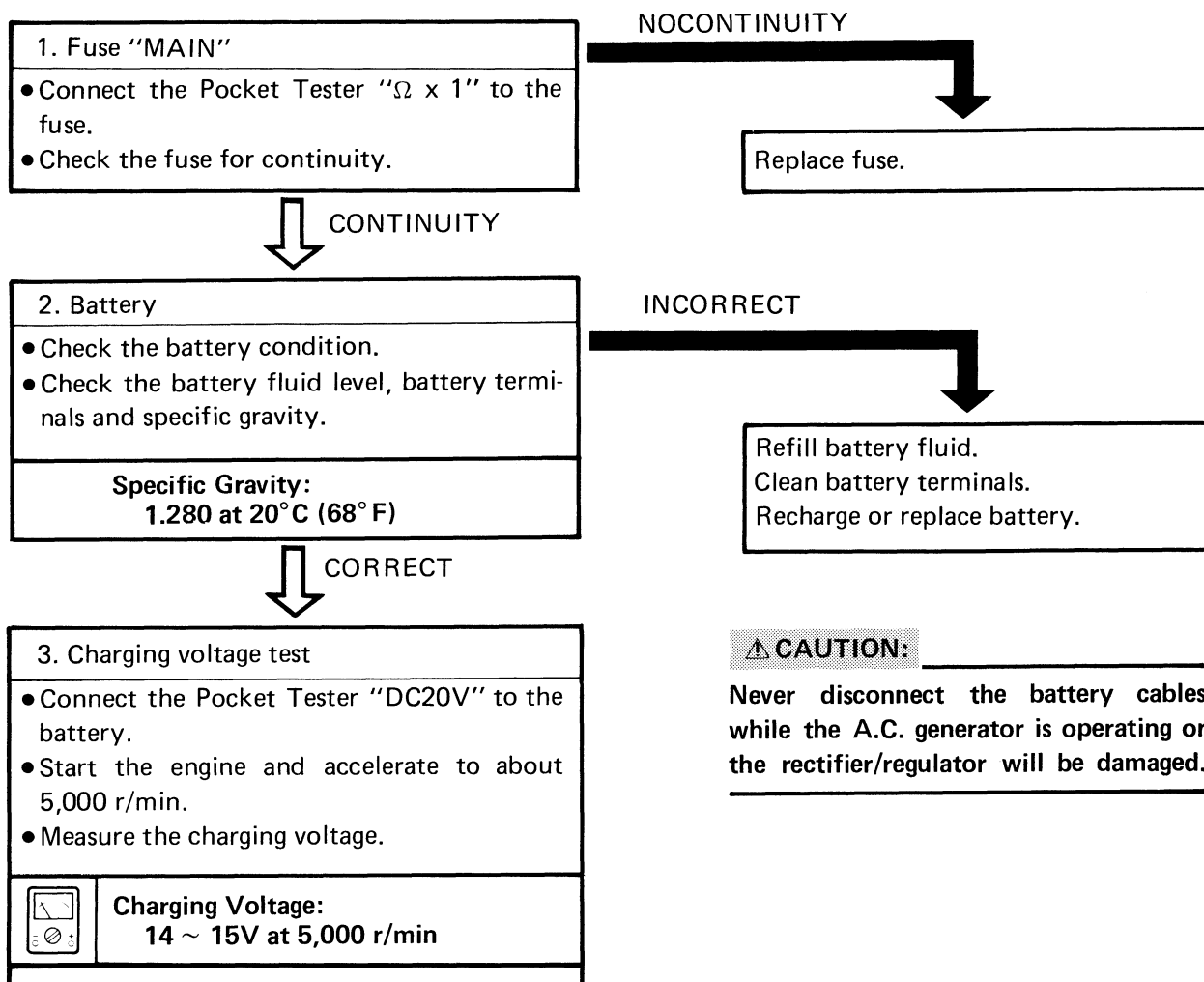
1. Fuse "MAIN"
2. Battery
3. Charging voltage
4. Stator coil resistance
5. Wiring connection (Charging system)

NOTE:

- Remove the following before troubleshooting.
 - 1) Seat
 - 2) Side cover (Left)
- Use the following special tool in this troubleshooting.

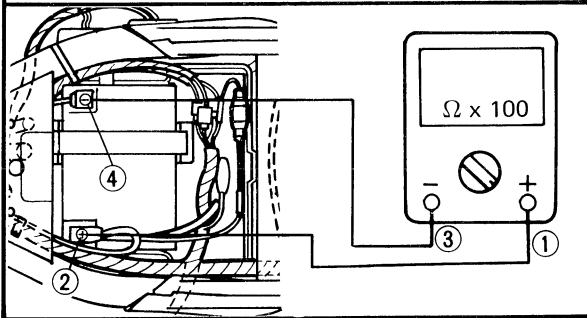


Pocket Tester:
YU-03112





- ① Positive lead (Pocket Tester)
- ② Positive terminal (Battery)
- ③ Negative lead (Pocket Tester)
- ④ Negative terminal (Battery)



CHARGING VOLTAGE
MEETS SPECIFICATION

Replace battery.

LESS THAN 13V

MORE THAN 15V

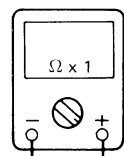
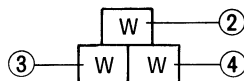
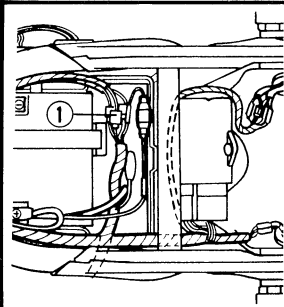
4. Stator coil resistance test

- Disconnect the A.C. Magneto coupler ① from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) to the stator coil.
- Measure the stator coil resistances.



Stator Coil Resistance:

(White ② – White ③, White ② –
White ④, White ③ – White ④)
0.19 ~ 0.29 Ω at 20°C (68°F)



OUT OF SPECIFICATION

Replace stator assembly.

RESISTANCE MEETS
SPECIFICATION

5. Check entire charging system for connections.

- Refer to "WIRING DIAGRAM" section.

POOR
CONNECTION

Correct.

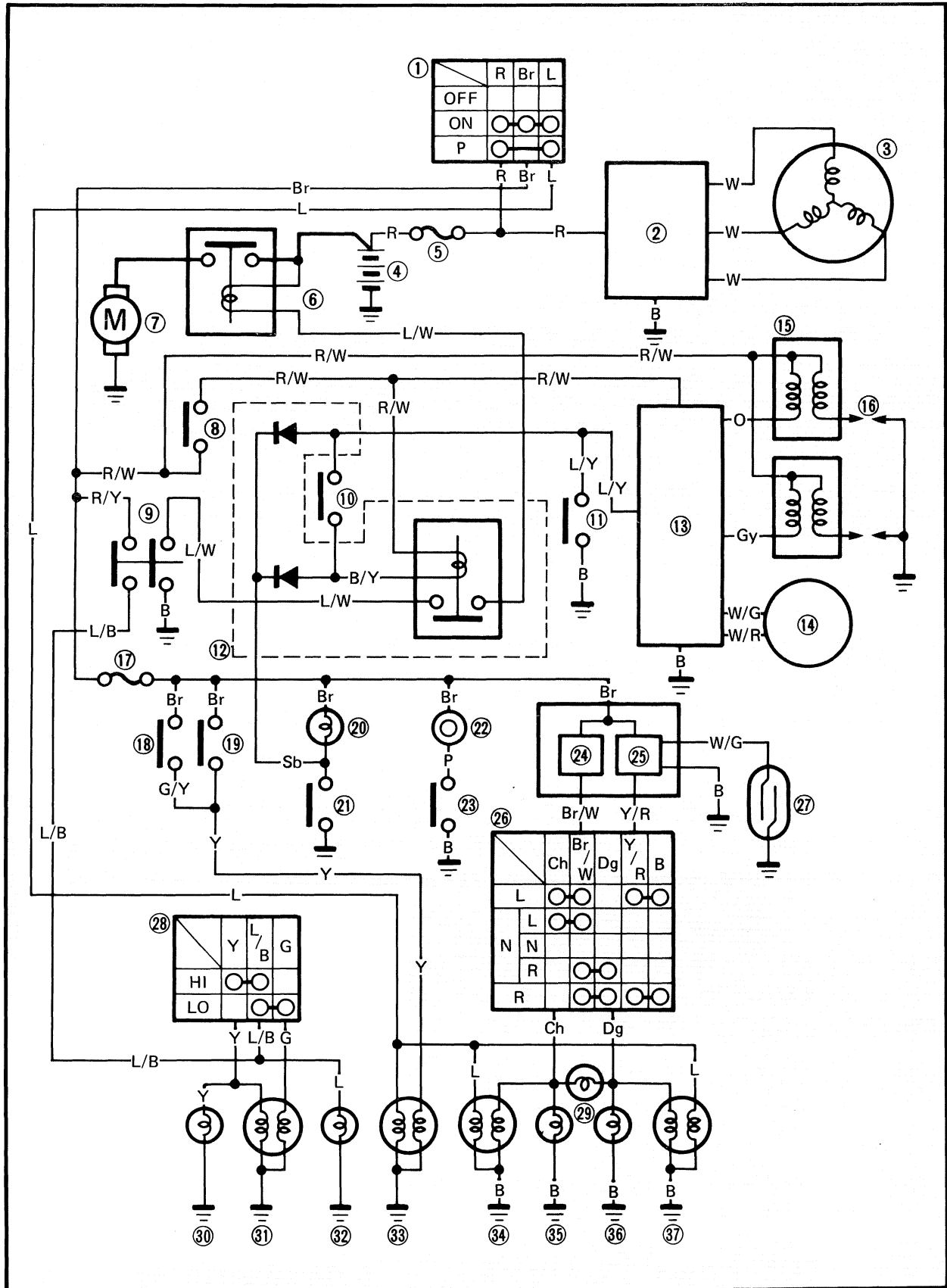
OK

Rectifier/Regulator is faulty. Replace it.



LIGHTING SYSTEM

CIRCUIT DIAGRAM



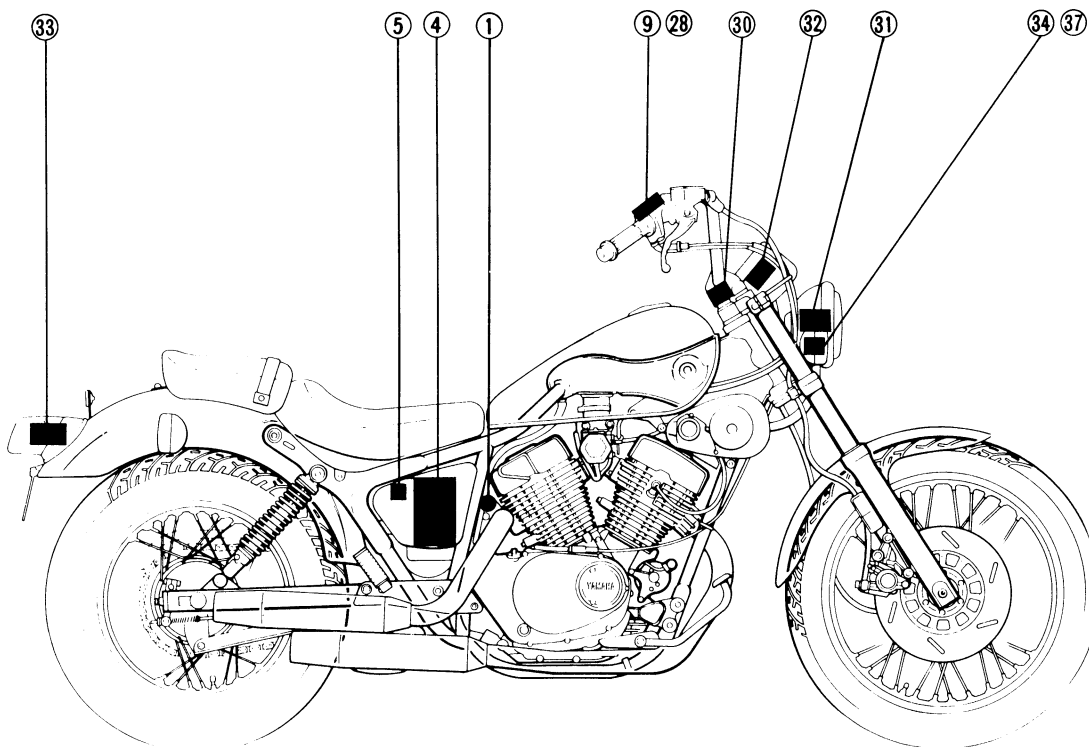


Aforementioned circuit diagram shows lighting circuit in circuit diagram.

NOTE:

For the color codes, see page 7-2.

- ① Main switch
- ④ Battery
- ⑤ Fuse "MAIN"
- ⑨ "START" switch
- ⑳ "LIGHTS" (Dimmer) switch
- ③① "HIGH BEAM" indicator light
- ③① Headlight
- ③② Meter light
- ③③ Taillight
- ③④ Front position light (Left)
- ③⑦ Front position light (Right)





TROUBLESHOOTING

HEADLIGHT/"HI BEAM" INDICATOR LIGHT DO NOT COME ON

Procedure

Check;

1. Headlight bulb/"HI BEAM" indicator light bulb
2. Headlight bulb socket/"HIGH BEAM" indicator light bulb socket
3. Battery
4. Fuse "MAIN"
5. "LIGHTS" (Dimmer) switch
6. Main switch
7. Wiring connection (Lighting system)

NOTE:

- Remove the following parts before troubleshooting.
 - 1) Seat
 - 2) Headlight
 - 3) Handlebar
 - 4) Indicator lights box
- Use the following special tool in this troubleshooting.



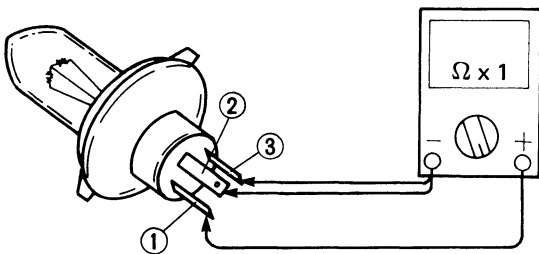
Pocket Tester:
YU-03112

1. Bulb

- Remove the bulb.
Refer to "CHAPTER 3. HEADLIGHT BULB REPLACEMENT".
- Connect the Pocket Tester ($\Omega \times 1$) to the bulb terminals.

Tester (+) Lead → Terminal ①
Tester (−) Lead → Terminal ②

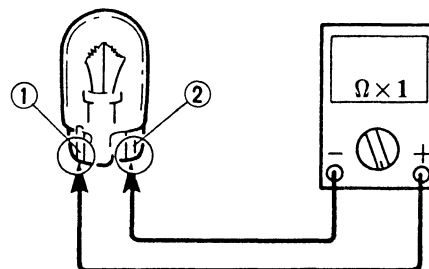
Tester (+) Lead → Terminal ①
Tester (−) Lead → Terminal ③



- Check the bulb for continuity.



CONTINUITY



NOCONTINUITY



Replace bulb.

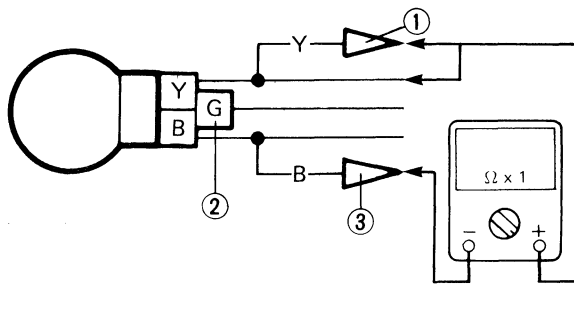


2. Bulb socket

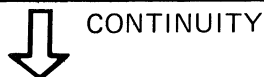
- Disconnect the bulb socket leads from the wire harness.
- Install the bulb to the bulb socket.
- Connect the Pocket Tester ($\Omega \times 1$) to the bulb socket leads.

Tester (+) Lead → Yellow ① Lead
Tester (–) Lead → Black ③ Lead

Tester (+) Lead → Green ② Terminal
Tester (–) Lead → Black ③ Lead



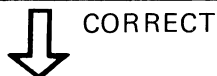
- Check the bulb socket for continuity.



3. Battery

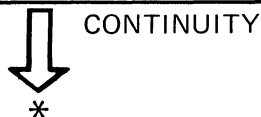
- Check the battery condition.
- Check the battery fluid level, battery terminals and specific gravity.

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

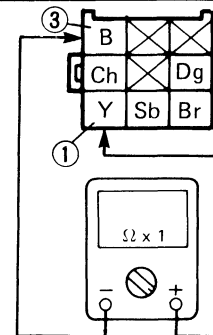
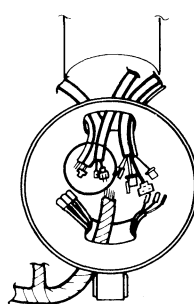


4. Fuse "MAIN"

- Connect the Pocket Tester " $\Omega \times 1$ " to the fuse.
- Check the fuse for continuity.



Tester (+) Lead → Yellow ① Terminal
Tester (–) Lead → Black ③ Terminal



NOCONTINUITY

Replace bulb socket.

INCORRECT

Refill battery fluid.
Clean battery terminals.
Recharge or replace battery.

NOCONTINUITY

Replace fuse.



5. "LIGHTS" (Dimmer) switch

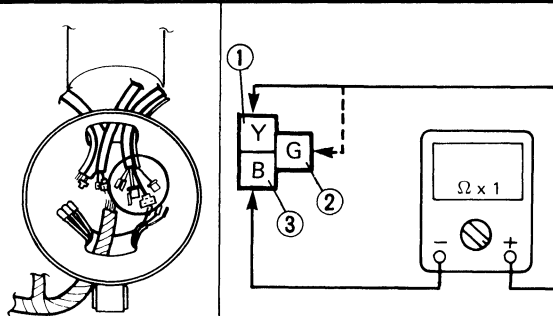
- Connect the Pocket Tester ($\Omega \times 1$) to the headlight bulb socket.

When turning "LIGHTS" (Dimmer) switch to "HI".

Tester (+) Lead → Yellow ① Terminal
Tester (–) Lead → Black ③ Terminal

When turning "LIGHTS" (Dimmer) switch to "LO".

Tester (+) Lead → Green ② Terminal
Tester (–) Lead → Black ③ Terminal



- Turn the "LIGHTS" (Dimmer) switch to the "HI" and "LO".
- Check the "LIGHTS" (Dimmer) switch for continuity.

Switch position	Good condition	Bad condition		
HI	○	X	○	X
LO	○	○	X	X

○: Continuity X: Nocontinuity



GOOD CONDITION

6. Main switch

- Disconnect the main switch coupler ① from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) to the main switch.

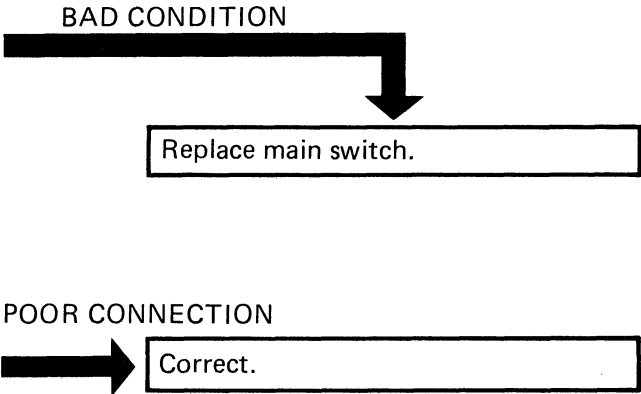
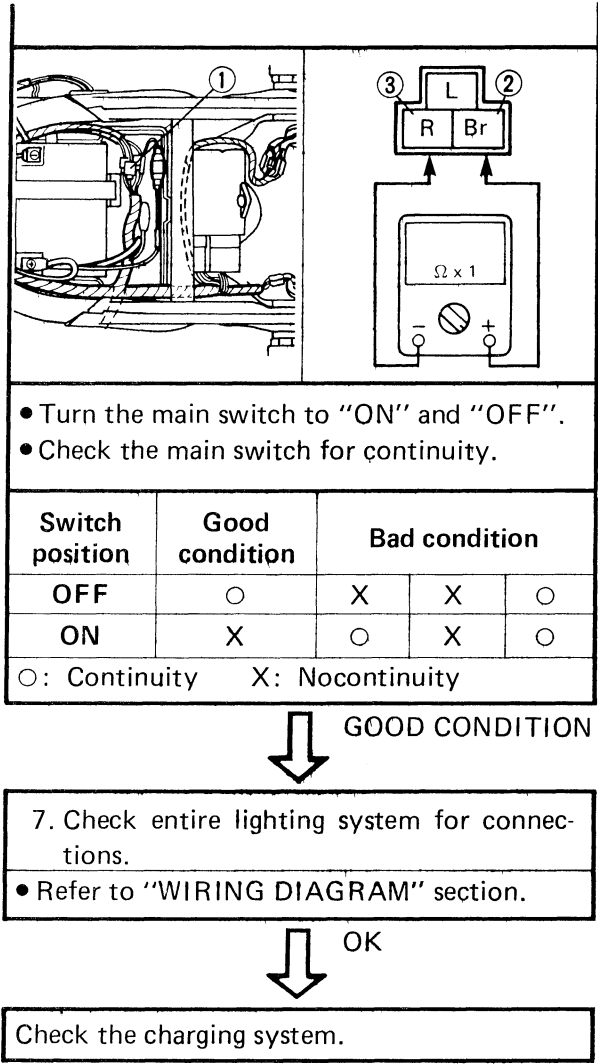
Tester (+) Lead → Brown ② Terminal
Tester (–) Lead → Red ③ Terminal

NOTE:

The "LIGHTS" (Dimmer) switch is connected with the headlight bulb socket.

BAD CONDITION

Replace handlebar switch (Left).





TAILLIGHT/FRONT POSITION LIGHT/METER LIGHT DO NOT COME ON.

Procedure

1. Taillight bulb/Front position light bulb/
Meter light bulb.
2. Taillight bulb socket/Front position light
bulb socket/Meter light bulb socket.
3. Battery
4. Fuse "MAIN"
5. Main switch
6. Wiring connection (Lighting system)

NOTE:

- Remove the following parts before troubleshooting.
 - 1) Seat
 - 2) Lense (Taillight)
 - 3) Lense (Front flasher/Front position light)
 - 4) Headlight
- Use the following special tool in this troubleshooting.



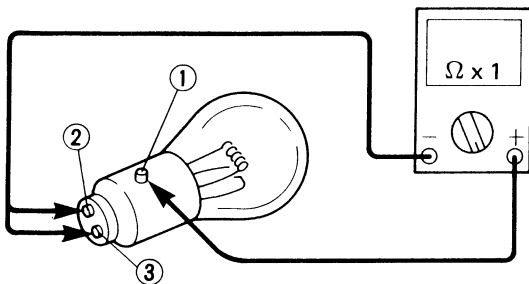
Pocket Tester:
YU-03112

1. Bulb

- Remove the bulb.
- Connect the Pocket Tester ($\Omega \times 1$) to the bulb.

Tester (+) Lead → Terminal ①
Tester (−) Lead → Terminal ②

Tester (+) Lead → Terminal ①
Tester (−) Lead → Terminal ③



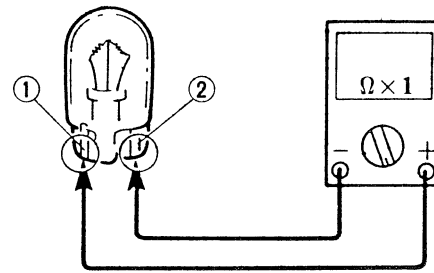
- Check the bulb for continuity.



CONTINUITY

2. Bulb socket

- Disconnect the bulb socket leads from the wireharness.
- Connect the Pocket Tester ($\Omega \times 1$) to the bulb socket leads.



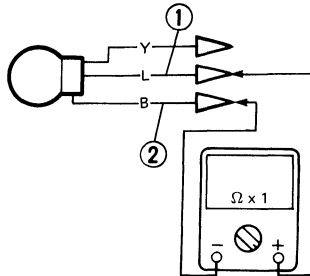
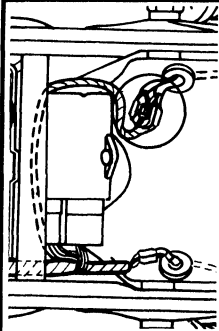
NOCONTINUITY



Replace bulb.



Tester (+) Lead → Blue ① Lead
Tester (–) Lead → Black ② Lead



- Check the bulb socket for continuity.



CONTINUITY

3. Battery

- Check the battery condition.
- Check the battery fluid level, battery terminals and specific gravity.

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



CORRECT

4. Fuse "MAIN"

- Connect the Pocket Tester "Ω x 1" to the fuse.
- Check the fuse for continuity.



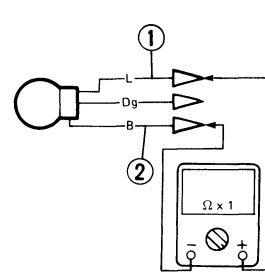
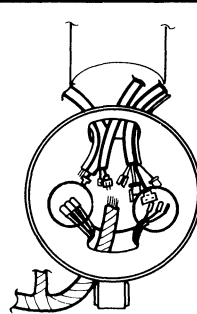
CONTINUITY

5. Main switch

- Disconnect the main switch coupler ① from the wire harness.
- Connect the Pocket Tester (Ω x 1) to the main switch.

Tester (+) Lead → Brown ② Terminal
Tester (–) Lead → Red ③ Terminal

Tester (+) Lead → Blue ④ Terminal
Tester (–) Lead → Red ③ Terminal



NOCONTINUITY



Replace bulb.

INCORRECT

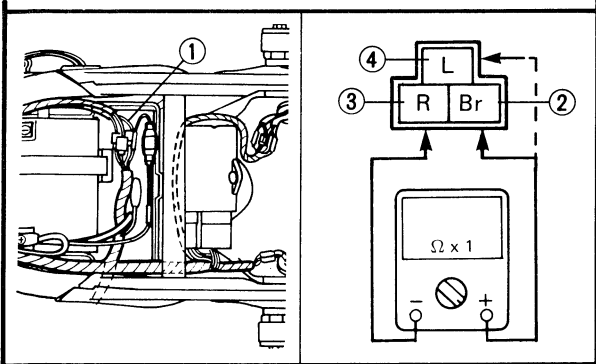


Refill battery fluid.
Clean battery terminals.
Recharge or replace battery.

NOCONTINUITY



Replace fuse.



- Turn the main switch to "OFF", "ON" and "P".
- Check the main switch for continuity.

Switch position	Good condition	Bad condition		
OFF	○	X	X	○
ON	X	○	X	○
P	○	X	X	○
○: Continuity X: Nocontinuity				



GOOD CONDITION

6. Check entire lighting system for connections.
- Refer to "WIRING DIAGRAM" section.



OK

Check the charging system.

BAD CONDITION



Replace main switch.

POOR CONNECTION



Correct.

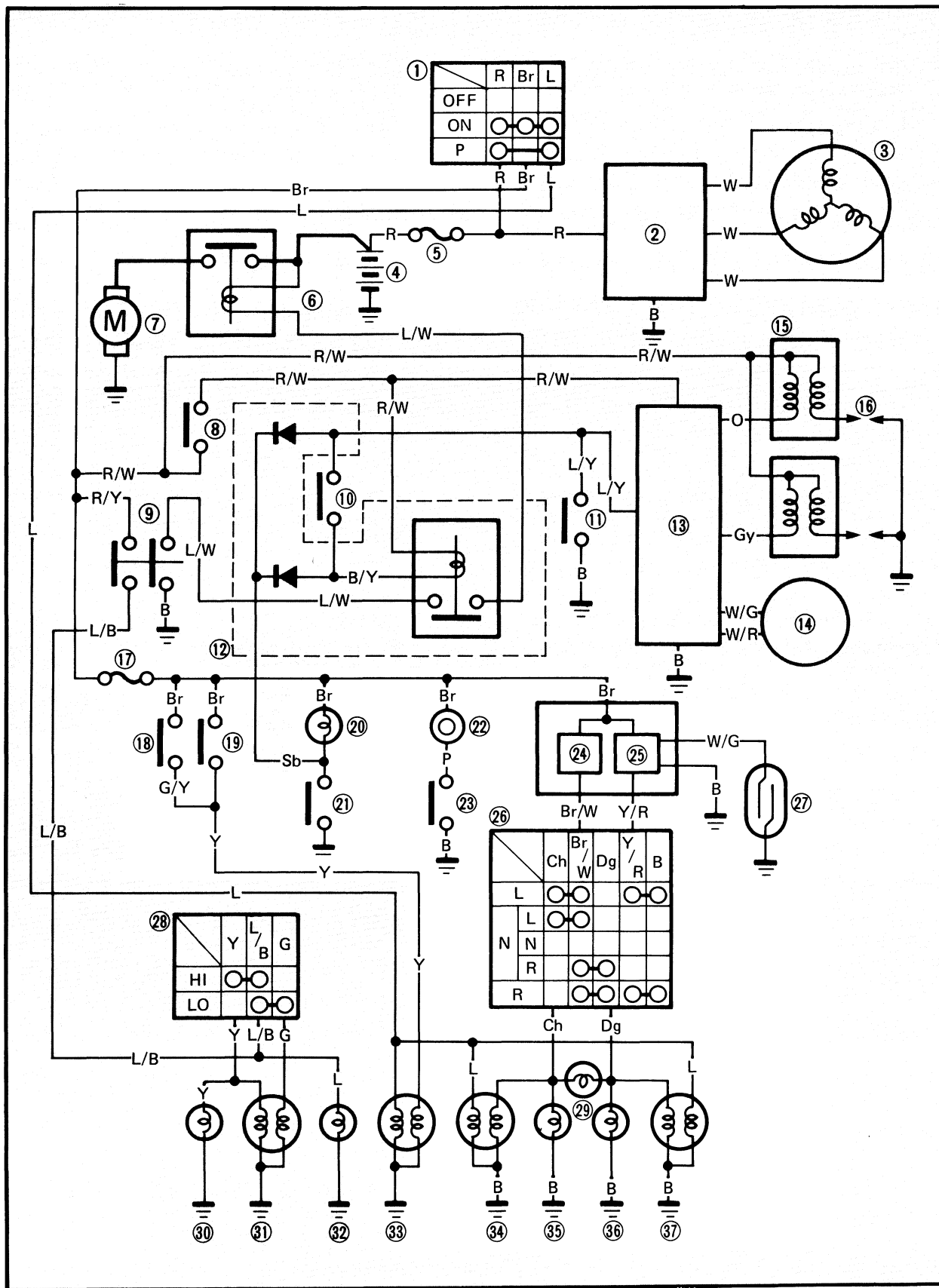
— MEMO —

This image shows a full page of a handwriting practice worksheet. It consists of multiple sets of three horizontal dashed lines spaced evenly down the page, providing a guide for letter height and placement. The background is plain white, and there are no other markings or text present.



SIGNAL SYSTEM

CIRCUIT DIAGRAM



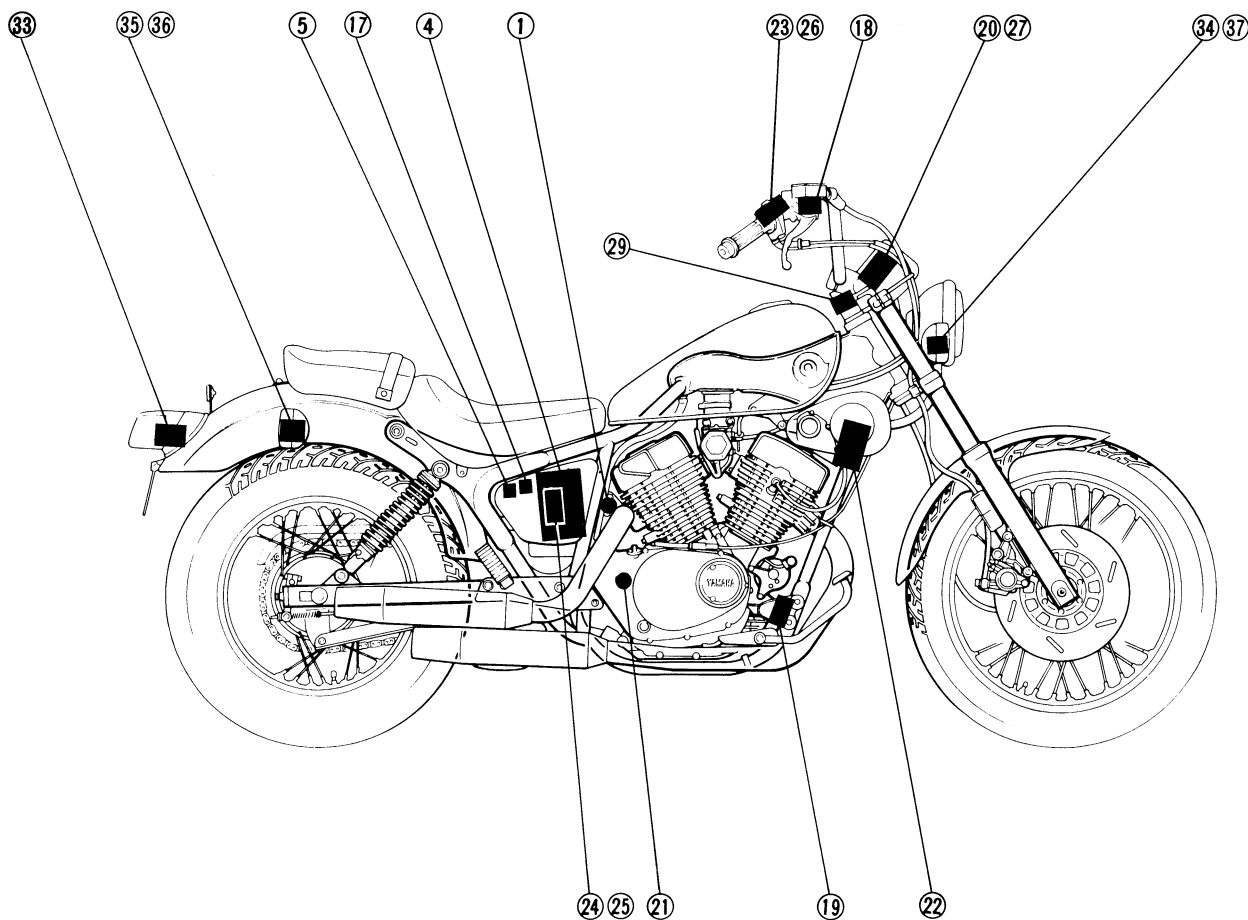


Aforementioned circuit diagram shows signal circuit in circuit diagram.

NOTE:

For the color codes, see page 7-2.

- | | |
|------------------------------|--------------------------------|
| ① Main switch | ②⑤ Cancelling unit |
| ④ Battery | ②⑥ "TURN" switch |
| ⑤ Fuse "MAIN" | ②⑦ Reed switch |
| ①⑦ Fuse "SIGNAL" | ②⑨ "TURN" indicator light |
| ①⑧ Front brake switch | ③③ Brake light |
| ①⑨ Rear brake switch | ③④ Front flasher light (Left) |
| ②⑩ "NEUTRAL" indicator light | ③⑤ Rear flasher light (Left) |
| ②① Neutral switch | ③⑥ Rear flasher light (Right) |
| ②② Horn | ③⑦ Front flasher light (Right) |
| ②③ "HORN" switch | |
| ②④ Flasher relay | |



TROUBLESHOOTING

FLASHER LIGHT, BRAKE LIGHT, "INDICATOR LIGHT DO NOT COME

Procedure

Check;

1. Fuse "MAIN", "SIGNAL"
2. Battery

NOTE:

- Remove the following parts before troubleshooting:
 - 1) Seat
 - 2) Side cover (Right)
- Use the following special tool in this troubleshooting:



Pocket Tester:
YU-03112

1. Fuse

- Remove the fuse.
- Connect the Pocket Tester ($\Omega \times 1$) to the fuse.
- Check the fuse for continuity.



CONTINUITY

2. Battery

- Check the battery condition.
Refer to the CHAPTER 3. "BATTERY INSPECTION" section.

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

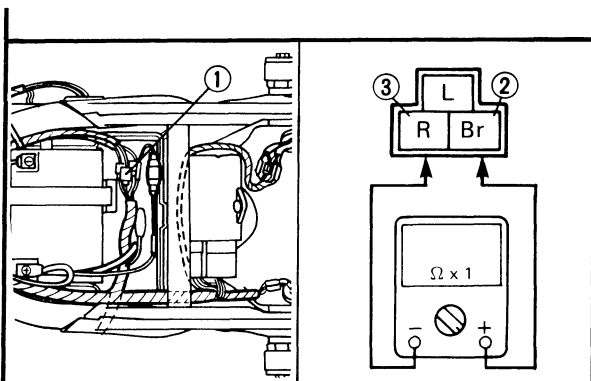


CORRECT

3. Main switch

- Disconnect the main switch coupler ① from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) to the main switch.

Tester (+) Lead → Brown ② Terminal
Tester (−) Lead → Red ③ Terminal



- Turn the main switch to "ON" and "OFF".
- Check the main switch for continuity.

Switch position	Good condition	Bad condition		
OFF	○	X	X	○
ON	X	○	X	○

○ : Continuity X : Nocontinuity

GOOD CONDITION

4. Wiring connection

Check the entire signal system for connections. Refer to the "WIRING DIAGRAM" section.

CORRECT

Go to the "SIGNAL SYSTEM TEST AND CHECK" section.

BAD CONDITION

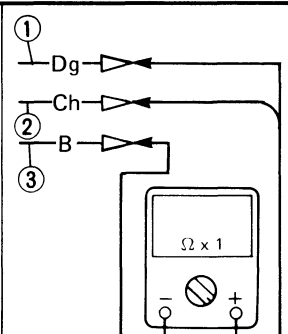
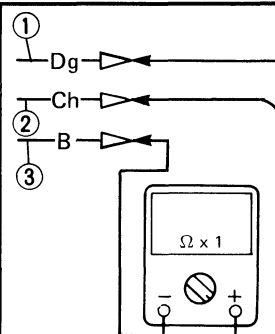
Replace main switch.

POOR CONNECTION

Correct.

FLASHER LIGHT DOES NOT BRINK.

CONTINUITY



Replace bulb.



- Check the flasher light bulb socket for continuity.

NOCONTINUITY

Replace flasher light bulb socket.

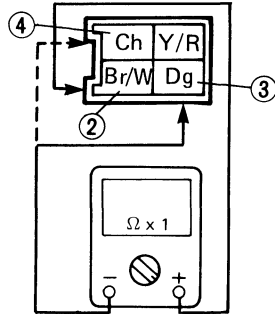
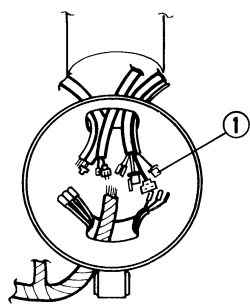
CONTINUITY

3. "TURN" switch

- Disconnect the "TURN" switch (Left handlebar switch) coupler ① from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) to the "TURN" switch

When turning "TURN" switch to "R":
Tester (+) Lead → Brown/White ② Lead
Tester (–) Lead → Dark green ③ Lead

When turning "TURN" switch to "L":
Tester (+) Lead → Brown/White ② Lead
Tester (–) Lead → Chocolate ④ Lead



- Turn the "TURN" switch to the "R" and "L".
- Check the "TURN" switch for continuity.

Switch position	Good condition	Bad condition		
R	○	X	○	X
L	○	○	X	X

○: Continuity X: No continuity

BAD CONDITION

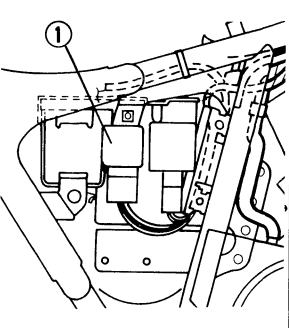
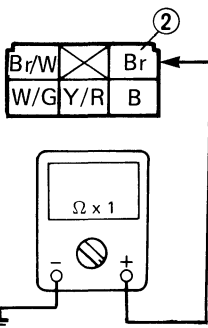
Replace handlebar switch (Left).

GOOD CONDITION

4. Voltage

- Disconnect the flasher relay ① coupler from the wire harness.
- Turn the main switch to "ON".
- Turn the "TURN" switch to the "R" or "L".
- Connect the Pocket Tester (DC20V) to the flasher relay coupler.

Tester (+) Lead → Brown ② Terminal
Tester (–) Lead → Ground

- Check the flasher voltage.



Flasher Voltage:
12.0V

↓ MEET SPECIFICATION

Replace flasher relay.

OUT OF SPECIFICATION

5. Wiring connection

Check the entire signal system for connections. Refer to the "WIRING DIAGRAM" section.

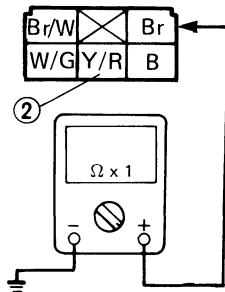
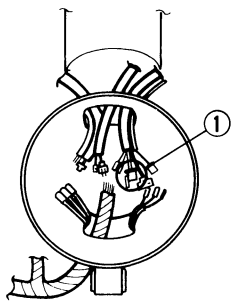


FLASHER LIGHT DOES NOT CANCEL.

1. "TURN" switch

- Disconnect the "TURN" switch (Left handlebar switch) coupler ① from the wire harness.
- Connect the Pocket Tester to the switch to coupler.

Tester (+) Lead → Yellow/Red ② Terminal
Tester (–) Lead → Ground



- Check the following for continuity.
- Push the "TURN" switch to left or right. Once the switch is released it will return to the center position. To cancel the signal, push the switch in after it has returned to the center position.

"TURN" Switch Position	Good Condition	Bad Condition		
"L" and "R"	○	○	X	X
"N" (Cancel)	X	○	X	○
○: Continuity X: No continuity				

↓ GOOD CONDITION

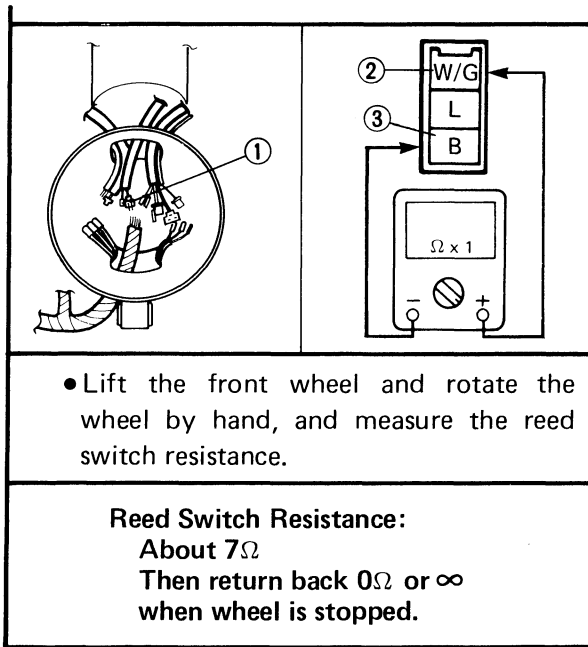
2. Reed switch

- Disconnect the speedometer coupler ① from the wire harness.
- Connect the Pocket Tester to the speedometer coupler.

Tester (+) Lead → White/Green ② Terminal
Tester (–) Lead → Black ③ Terminal.

BAD CONDITION

"TURN" switch is faulty.
Replace handlebar switch (Left).

**⚠ WARNING:**

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

BOTH RESISTANCES
MEET SPECIFICATION

3. Wiring connection check

- Entire signal system
Refer to "WIRING DIAGRAM".

OK

Replace the flasher relay.

POOR CONNECTION

Correct connection(s).



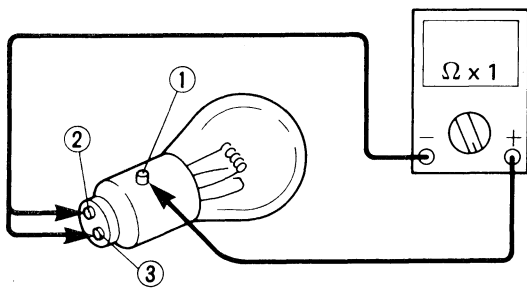
BRAKE LIGHT DOES NOT COME ON.

1. Bulb

- Remove the bulb.
- Connect the Pocket Tester ($\Omega \times 1$) to the bulb.

Tester (+) Lead $\rightarrow$ Terminal ①
 Tester (–) Lead $\rightarrow$ Terminal ②

Tester (+) Lead $\rightarrow$ Terminal ①
 Tester (–) Lead $\rightarrow$ Terminal ③



- Check the bulb for continuity.

NOCONTINUITY

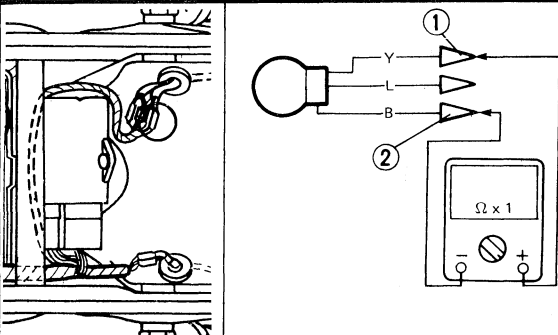
Replace bulb.

CONTINUITY

2. Bulb socket

- Disconnect the bulb socket leads from the wireharness.
- Connect the Pocket Tester ($\Omega \times 1$) to the bulb socket leads.

Tester (+) Lead $\rightarrow$ Yellow ① Lead
 Tester (–) Lead $\rightarrow$ Black ② Lead



- Check the bulb socket for continuity.

NOCONTINUITY

Replace bulb socket.

CONTINUITY

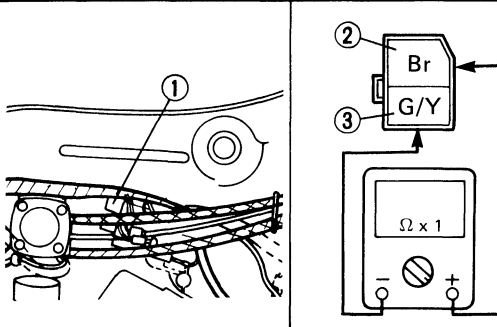
*



3. Front brake switch

- Disconnect the front brake switch coupler ① from the wireharness.
- Connect the Pocket Tester ($\Omega \times 1$) to the brake switch coupler.

Tester (+) Lead → Brown ② Terminal
Tester (–) Lead → Green/Yellow ③ Terminal



- Check the brake switch for continuity.

Switch position	Good condition	Bad condition		
Front brake is applied.	○	X	X	○
Front brake is not applied.	X	○	X	○
○: Continuity X: Nocontinuity				

BAD CONDITION

Replace front brake switch.

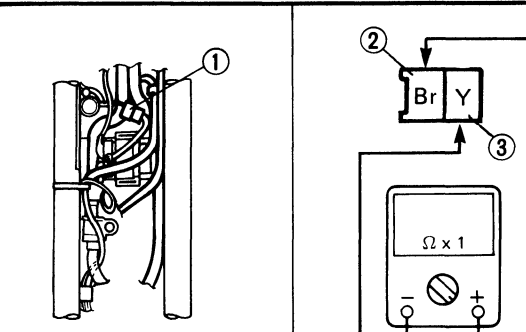


GOOD
CONDITION

4. Rear brake switch

- Disconnect the rear brake switch coupler ① from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) to the brake switch coupler.

Tester (+) Lead → Brown ② Terminal
Tester (–) Lead → Yellow ③ Terminal





- Check the brake switch for continuity.

Switch position	Good condition	Bad condition		
Rear brake is applied.	○	X	X	○
Rear brake is not applied.	X	○	X	○
○: Continuity X: Nocontinuity				

BAD CONDITION

Replace rear brake switch.

GOOD
CONDITION

5. Wiring connection

Check the entire signal system for connections. Refer to the "WIRING DIAGRAM" section.

POOR CONNECTION

Correct.

CORRECT

Replace tail/brake light bulb socket.

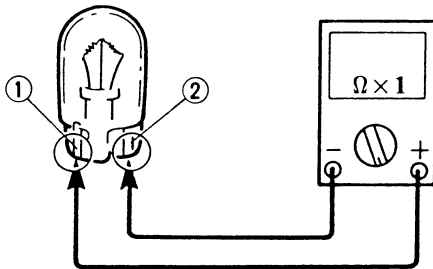


"NEUTRAL" INDICATOR LIGHT DOES NOT COME ON.

1. Bulb

- Remove the bulb.
- Connect the Pocket Tester ($\Omega \times 1$) to the bulb.

Tester (+) Lead → Terminal ①
Tester (−) Lead → Terminal ②



- Check the bulb for continuity.

NOTE:

Remove the handlebar and indicator lights box.

NOCONTINUITY

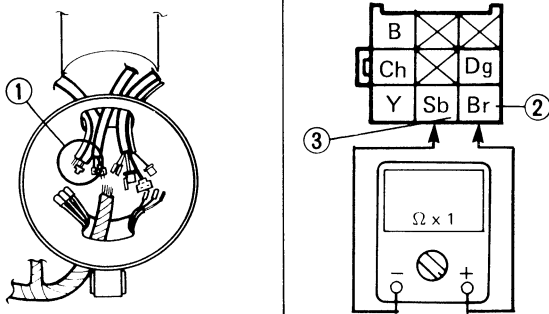
Replace bulb.

CONTINUITY

2. Bulb socket

- Disconnect the indicator lights coupler ① from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) to the coupler.

Tester (+) Lead → Brown ② Terminal
Tester (−) Lead → Sky blue ③ Terminal



- Check the bulb socket for continuity.

NOCONTINUITY

Replace bulb socket.

CONTINUITY

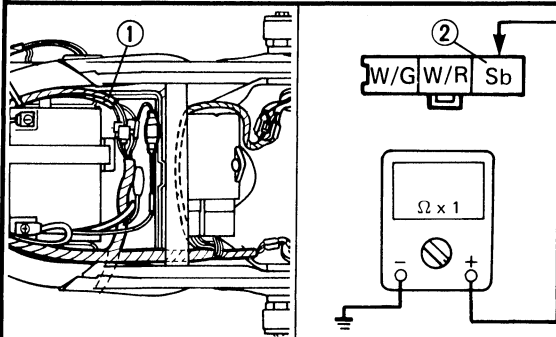
*



3. "NEUTRAL" switch

- Disconnect the neutral switch/pickup coil coupler ① from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) to the "NEUTRAL" switch.

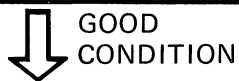
Tester (+) Lead → Sky blue ② Terminal
Tester (−) Lead → Ground



- Shift the transmission in neutral and gear.
- Check the "NEUTRAL" switch for continuity.

Transmission position	Good condition	Bad condition		
Neutral	○	X	X	○
Gear	X	○	X	○

○: Continuity X: Nocontinuity



4. Wiring connection

Check the entire signal system for connections. Refer to the "WIRING DIAGRAM" section.

BAD CONDITION

Replace "NEUTRAL" switch.

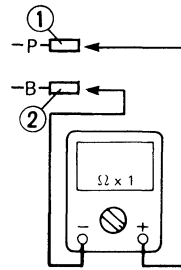
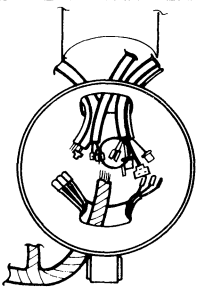


HONE DOES NOT SOUND, WHEN PUSHING "HORN" SWITCH.

1. "HORN" switch

- Disconnect the "HORN" switch leads from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) to the switch leads.

Tester (+) Lead $\rightarrow$ Pink ① Lead
Tester (–) Lead $\rightarrow$ Black ② Lead



- Check the "HORN" switch for continuity.

Switch position	Good condition	Bad condition		
"HORN" switch is pushed	○	X	X	○
"HORN" switch is not pushed.	X	○	X	○

○ : Continuity X : Nocontinuity

BAD CONDITION

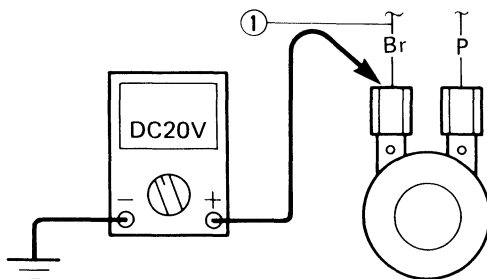
"HORN" switch is faulty.
Replace handlebar switch (Left).

GOOD
CONDITION

2. Voltage

- Connect the Pocket Tester (DC20V) to the horn at the terminal.

Tester (+) Lead $\rightarrow$ Brown ① Terminal
Tester (–) Lead $\rightarrow$ Frame Ground





- Check the horn voltage.



Horn Voltage:
12.0V

MEETS
SPECIFICATION

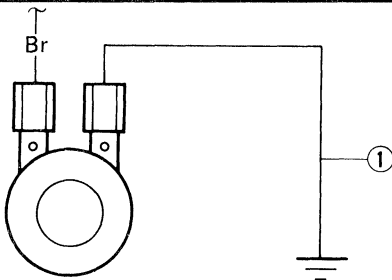
OUT OF SPECIFICATION

3. Wiring connection

Check the entire signal system for connections. Refer to the "WIRING DIAGRAM" section.

4. Horn

- Disconnect the "Pink" lead at the horn terminal.
- Connect a jumper lead ① to the horn terminal and ground the jumper lead.



OUT OF SPECIFICATION

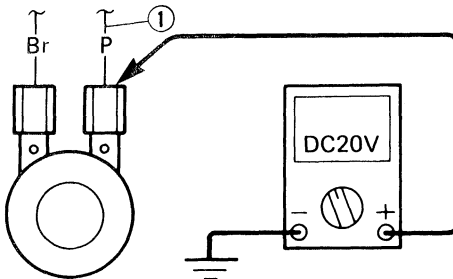
Horn is good.

HORN IS NOT
SOUNDED

5. Voltage

- Connect the Pocket Tester (DC20V) to the horn at the Pink terminal.

Tester (+) Lead → Pink ① Terminal
Tester (−) Lead → Frame Ground



- Check the "Pink" terminal voltage.



"Pink" Terminal Voltage:
12.0V

MEETS
SPECIFICATION

HORN IS SOUNDED

Replace horn.

Adjust or replace horn.

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

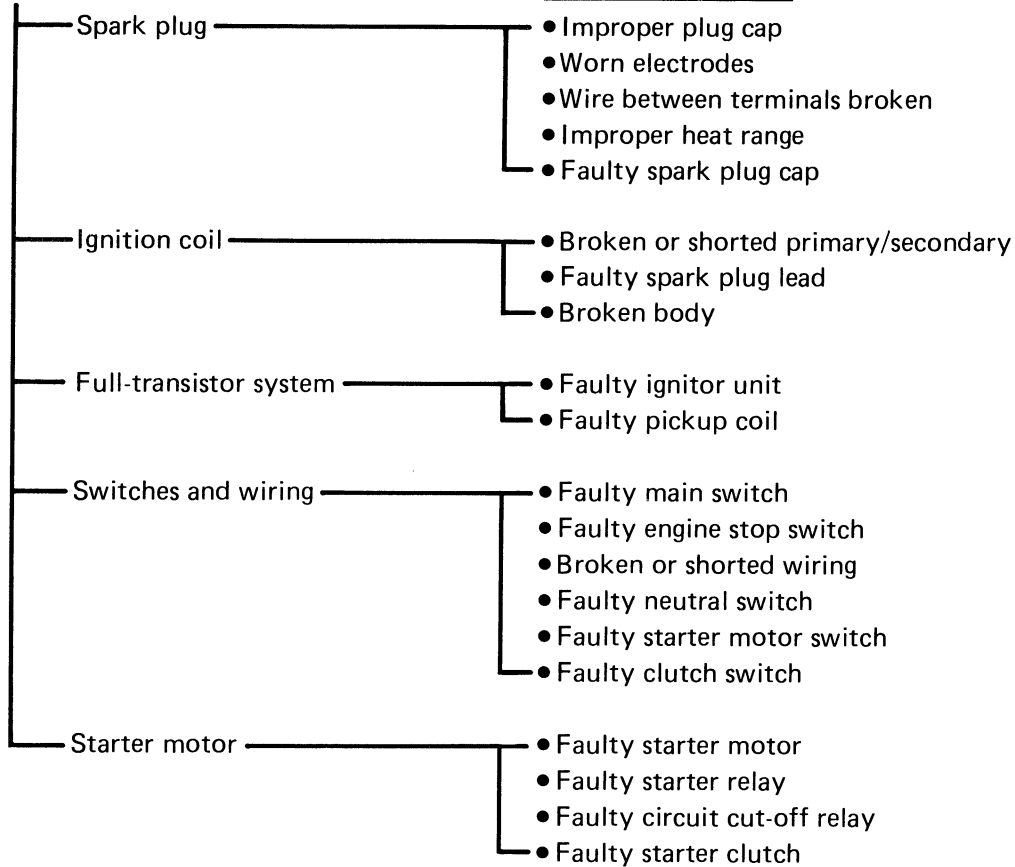
Fuel tank	• Empty • Clogged fuel filter • Clogged fuel breather pipe • Deteriorated fuel or fuel containing water or foreign material
Fuel cock	• Clogged fuel hose
Carburetor	• Deteriorated fuel, fuel containing water or foreign material • Clogged pilot jet • Clogged pilot air passage • Sucked-in air • Deformed float • Groove-worn needle valve • Improperly sealed valve seat • Improperly adjusted fuel level • Improperly set pilot jet • Clogged starter jet • Starter plunger malfunction • Improperly adjusted starter cable
Air cleaner	• Clogged
Fuel pump	• Faulty fuel pump

STARTING FAILURE/HARD STARTING



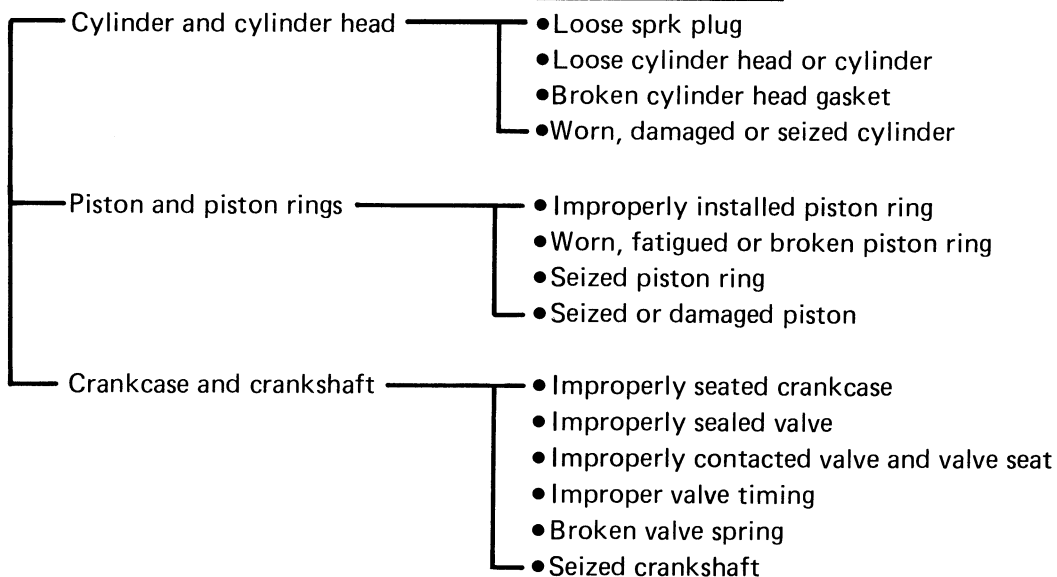
ELECTRICAL SYSTEM

PROBABLE CAUSE



COMPRESSION SYSTEM

PROBABLE CAUSE



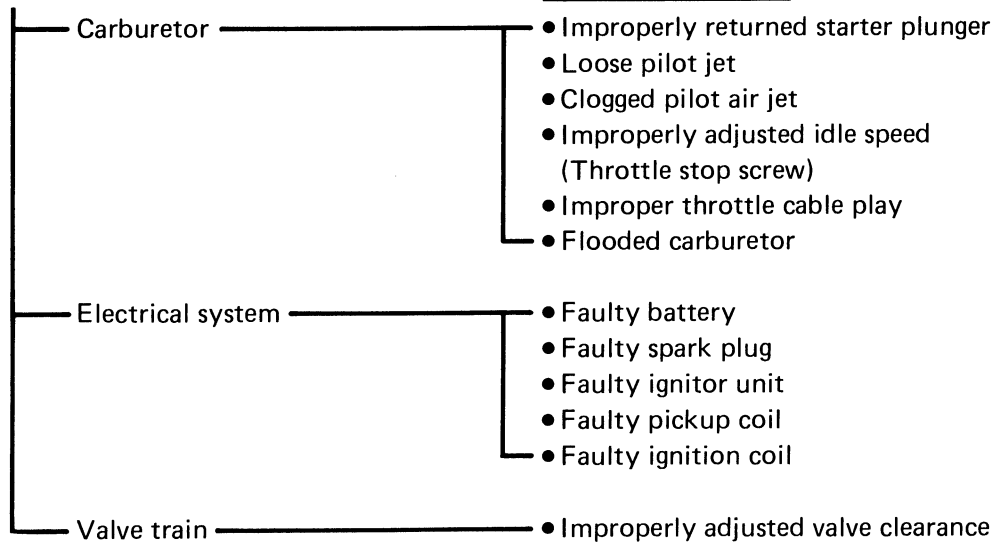
**POOR IDLE SPEED PERFORMANCE/
POOR MEDIUM AND HIGH SPEED PERFORMANCE**



POOR IDLE SPEED PERFORMANCE

POOR IDLE SPEED PERFORMANCE

PROBABLE CAUSE

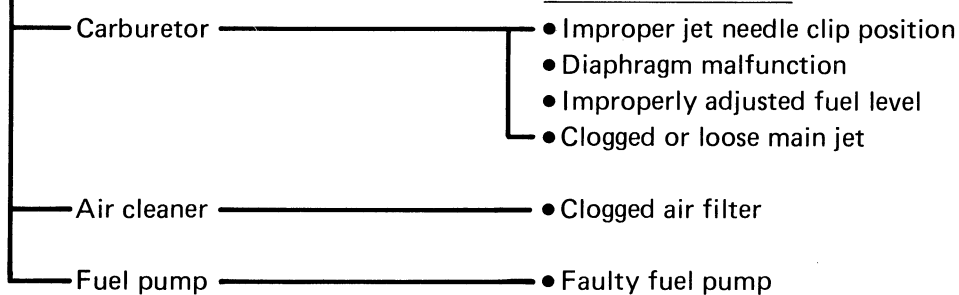


POOR MEDIUM AND HIGH SPEED PERFORMANCE

POOR MEDIUM AND HIGH SPEED PERFORMANCE

Refer to "Starting failure/Hard starting." (Fuel system, electrical system, compression system and valve train)

PROBABLE CAUSE



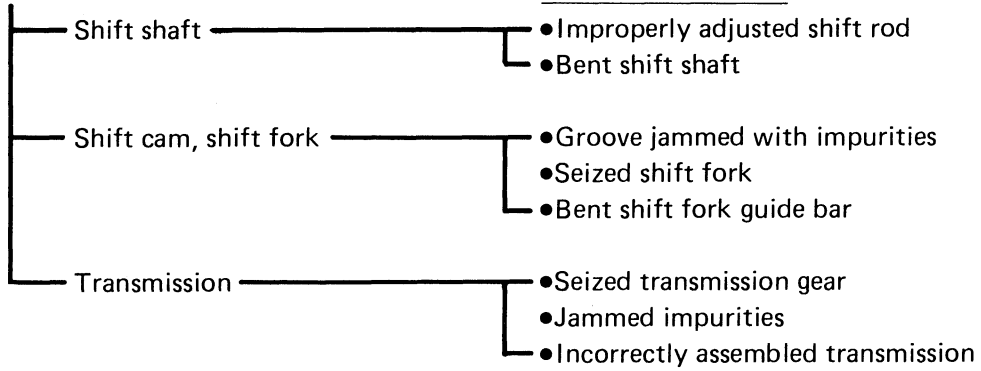
FAULTY GEAR SHIFTING

HARD SHIFTING

Refer to "Clutch dragging."

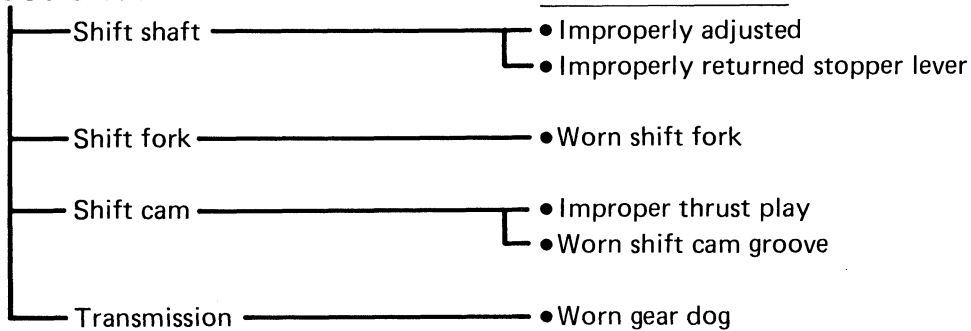
SHIFT PEDAL DOES NOT MOVE

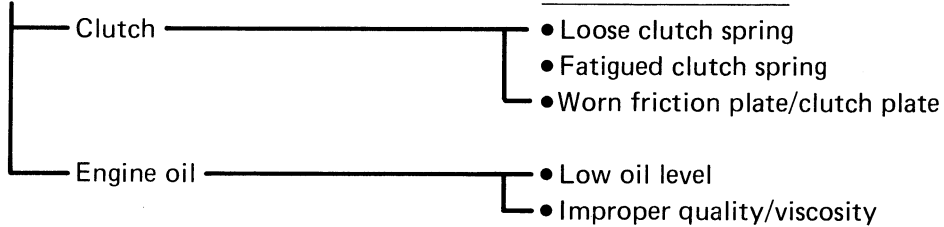
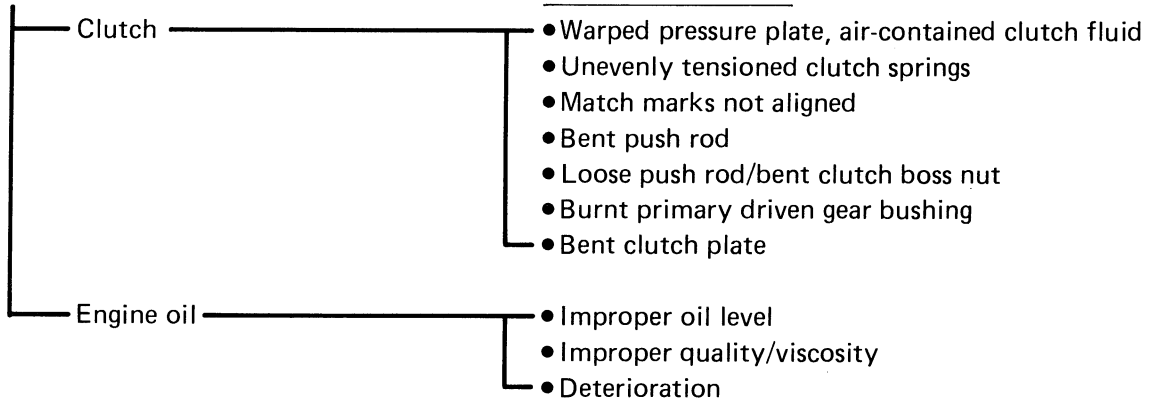
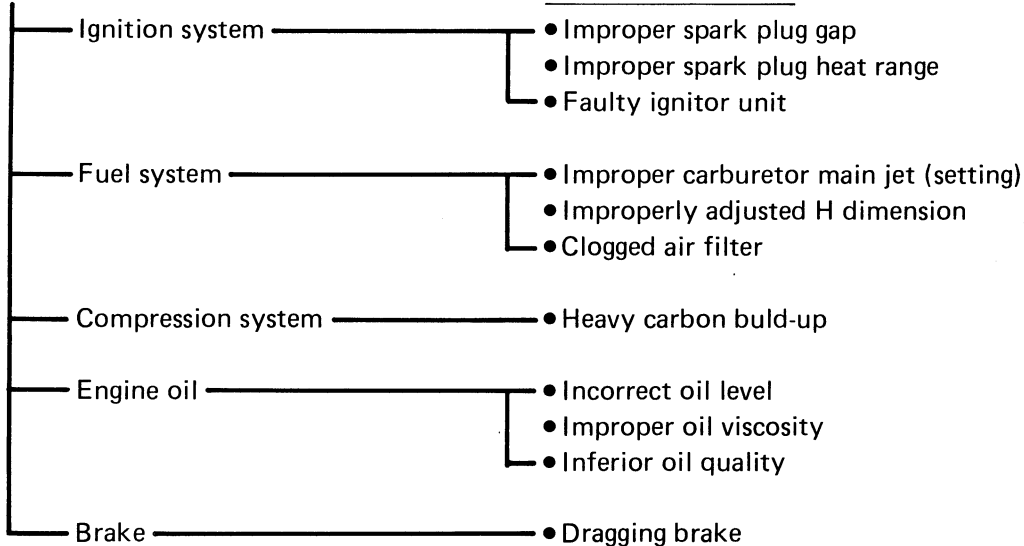
PROBABLE CAUSE



JUMP-OUT GEAR

PROBABLE CAUSE



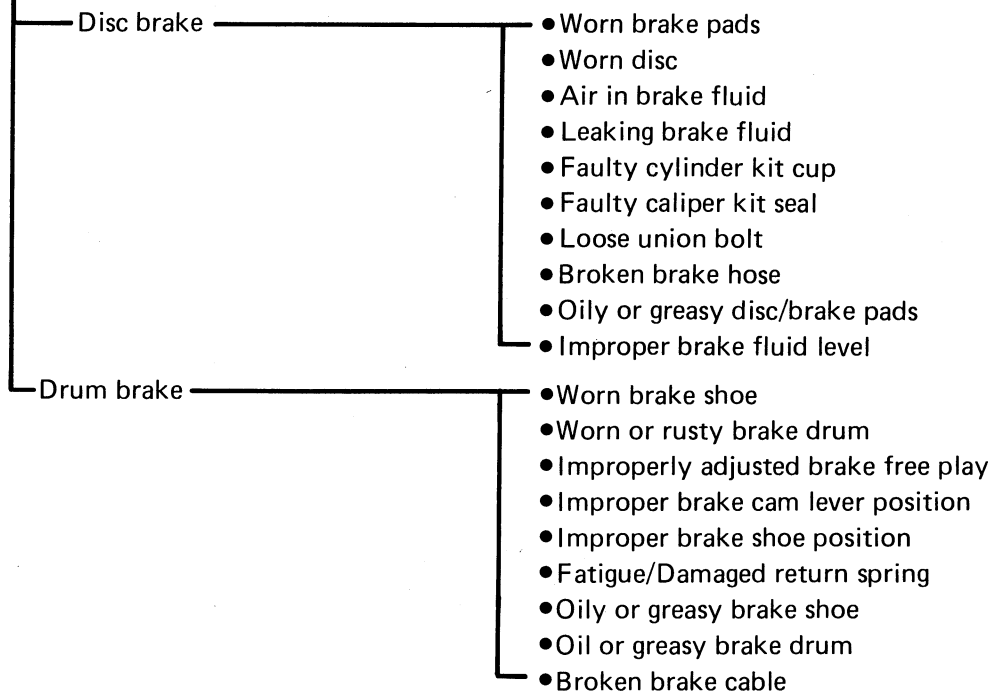
CLUTCH SLIPPING/DRAGGING**CLUTCH SLIPPING****PROBABLE CAUSE****CLUTCH DRAGGING****PROBABLE CAUSE****OVERHEATING****OVERHEATING****PROBABLE CAUSE**

FAULTY BRAKE/FRONT FORK OIL LEAKAGE AND FRONT FORK MALFUNCTION



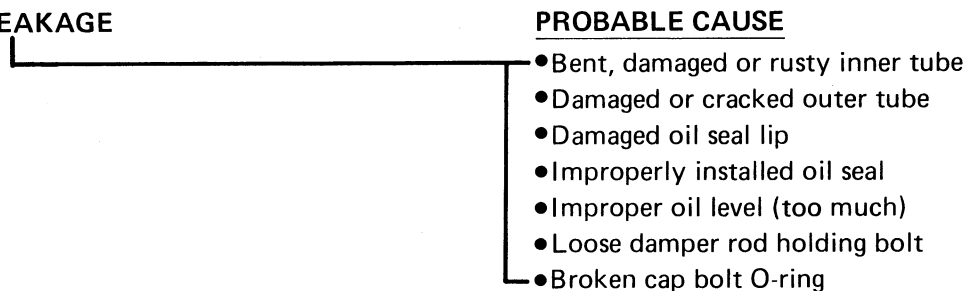
FAULTY BRAKE

POOR BRAKING EFFECT

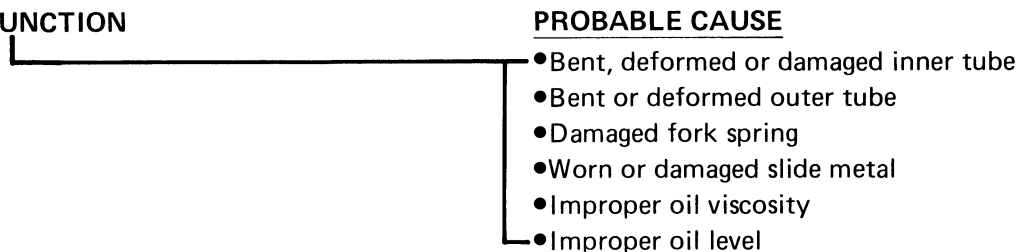


FRONT FORK OIL LEAKAGE AND FRONT FORK MALFUNCTION

OIL LEAKAGE



MALFUNCTION



INSTABLE HANDLING

INSTABLE HANDLING

PROBABLE CAUSE

Handlebar	• Improperly installed or bent
Steering	• Improperly installed handlebar crown • Bent steering stem • Improperly installed steering shaft (Improperly tightened ringnut) • Damaged ball bearing or bearing race
Front forks	• Uneven oil levels on both sides • Broken spring • Twisted front forks
Tires	• Uneven tire pressures on both sides • Incorrect tire pressure • Unevenly worn tires
Wheels	• Incorrect wheel balance • Deformed spoke wheel • Damaged bearing • Bent or loose wheel axle • Excessive wheel run-out • Loosed spoke
Frame	• Twisted • Damaged head pipe • Improperly installed bearing race
Swingarm	• Worn bearing or bush • Bent or damaged
Rear shock absorber	• Fatigued spring • Oil leakage
Drive chain	• Improperly adjusted chain slack

FAULTY SIGNAL AND LIGHTING SYSTEM

HEADLIGHT DARK

PROBABLE CAUSE

- Improper bulb
- Too many electric accessories
- Hard charging (broken stator coil wire, faulty rectifier with regulator)
- Incorrect connection
- Improperly grounded
- Poor contacts (main or light switch)
- Bulb life expires

BULB BURNT OUT

PROBABLE CAUSE

- Improper bulb
- Improperly grounded
- Faulty main and/or light switch
- Bulb life expires

FLASHER DOES NOT LIGHT

PROBABLE CAUSE

- Improperly grounded
- Discharged battery
- Faulty flasher switch
- Faulty flasher relay
- Broken wireharness
- Loosely connected coupler
- Bulb burnt out
- Faulty fuse

FLASHER KEEPS ON

PROBABLE CAUSE

- Faulty flasher relay
- Insufficient battery capacity (nearly discharged)
- Bulb burnt out

OVERHEATING



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 (Except for Holland)

PROBABLE CAUSE

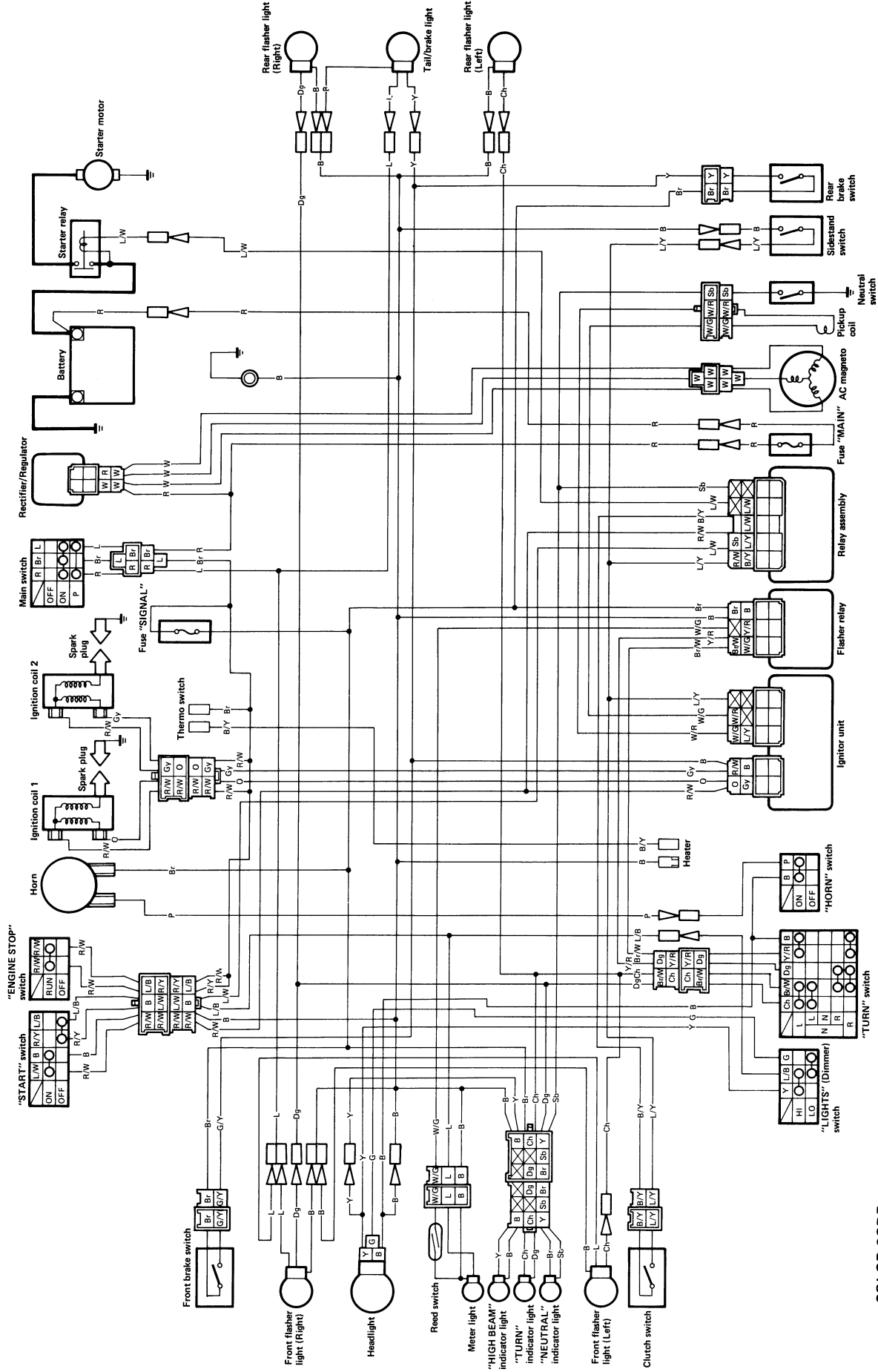
- Faulty battery
- Faulty fuse
- Faulty main and/or horn switch
- Improperly adjusted horn
- Faulty horn
- Broken wireharness

OVERHEATING

PROBABLE CAUSE

- | | |
|------------------------|--|
| — Ignition system — | <ul style="list-style-type: none">• Improper spark plug gap• Improper spark plug heat range• Improper ignition timing |
| — Fuel system — | <ul style="list-style-type: none">• Improper carburetor main jet (Improper setting)• Clogged air cleaner element• Lean mixture (Faulty Autolube pump settings) |
| — Compression system — | <ul style="list-style-type: none">• Heavy carbon build-up |
| — Transmission oil — | <ul style="list-style-type: none">• Incorrect, oil level• Improper oil viscosity• Inferior oil quality |
| — Brake — | <ul style="list-style-type: none">• Dragging brake |

XV250U/XV250UC WIRING DIAGRAM



COLOR CODE

B Black
Br Brown
Ch Chocolate
Dg Dark green
G Green
Gy Gray

L Blue
O Orange
P Pink
R Red
Sb Sky blue
W White

Y Yellow
B/W Black/White
B/Y Red/White
Br/W Brown/White
L/B Blue/Black
L/R Blue/Red

L/W Blue/White
L/Y Blue/Yellow
R/W Red/Yellow
W/G White/Green
W/R White/Red
Y/R Yellow/Red



YAMAHA MOTOR CO.,LTD.

IWATA, JAPAN

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