XT 600 A/AC
SERVICE MANUAL
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permission of Yamaha Motor Corporation,
U.S.A. is expressly prohibited.
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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 XT600EA/EAC. Please read this material carefully.

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

PARTICULARLY IMPORTANT ANT 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

CONSTRACTION OF THIS MANUAL

This manual consists of chapters for the main categories of subjects. (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

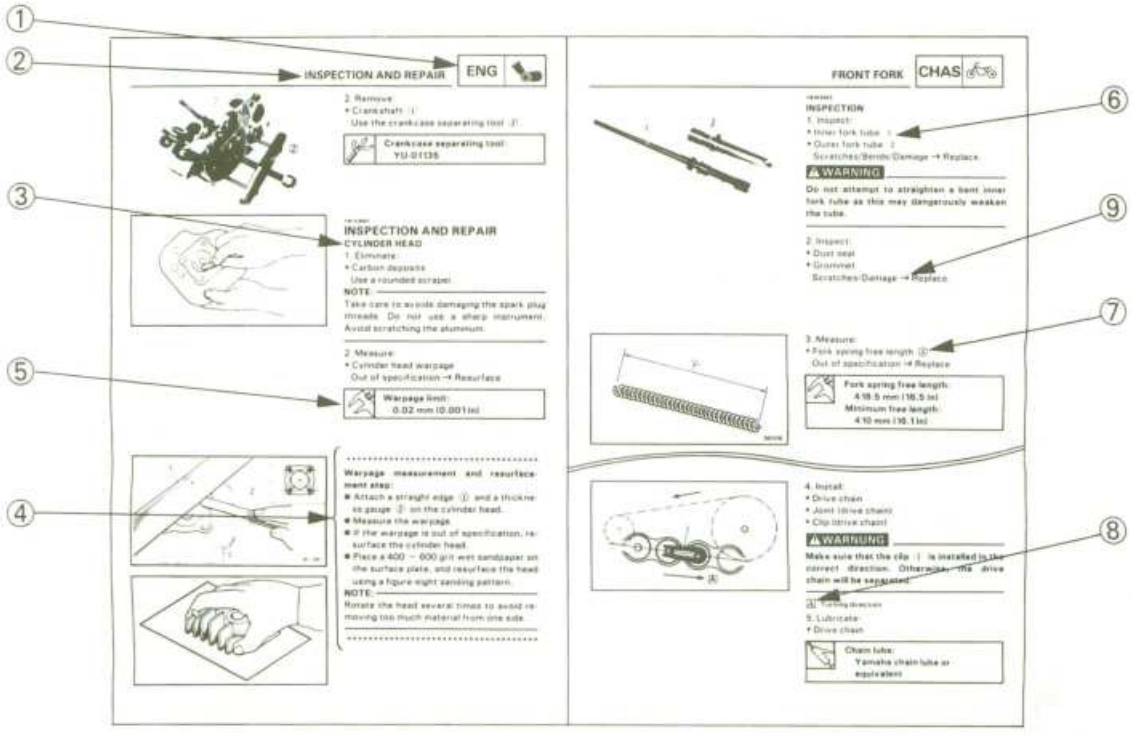
All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspections.
A set of particularly 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 ⑧ 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 Carburetion
⑥ Chassis
⑦ Electrical
⑧ Troubleshooting

Illustrated symbols ⑨ to ⑮ are used to identify the specifications appearing in the text.

⑨ Filling fluid
⑩ Lubricant
⑪ Special tool
⑫ Tightening
⑬ Wear limit, clearance
⑭ Engine speed
⑮ Ω, V, A

Illustrated symbols ⑯ to ㉒ in the exploded diagram indicate grade of lubricant and location of lubrication point.

⑯ Apply engine oil
⑰ Apply gear oil
⑱ Apply molybdenum disulfide oil
⑲ Apply wheel bearing grease
⑳ Apply lightweight lithium-soap base grease
㉑ Apply molybdenum disulfide grease
㉒ Apply locking agent (LOCTITE®)

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GENERAL INFORMATION



MOTORCYCLE IDENTIFICATION

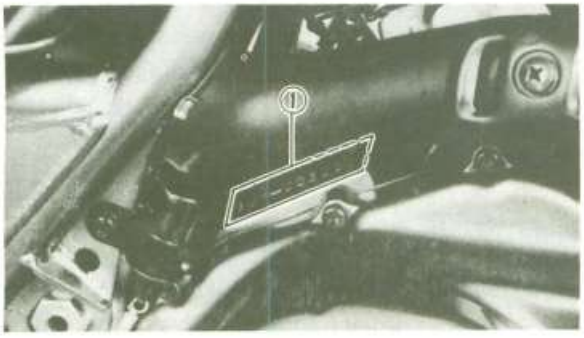
VEHICLE IDENTIFICATION NUMBER

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

XT600EA (Except for California)
JYA3UYEO * LA000101
XT600EAC (For California)
JYA3UYCO * LA005101

NOTE:

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



ENGINE SERIAL NUMBER

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

Starting serial number:
XT600EA (Except for California)
3UY-000101
XT600EAC (For California)
3UY-005101

NOTE:

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





IMPORTANT INFORMATION









PREPARATION FOR REMOVAL AND DISASSEMBLY

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

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

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

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

5. Keep away from fire.

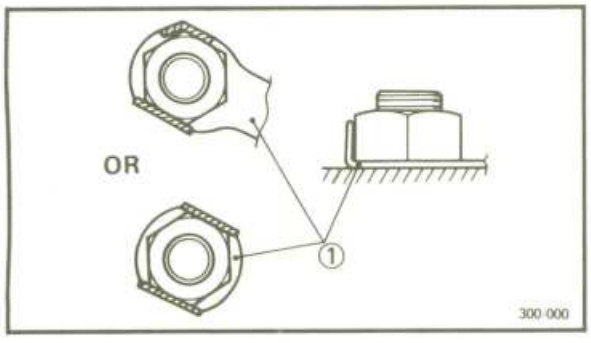
ALL REPLACEMENT PARTS

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

GASKETS, OIL SEALS, AND O-RINGS

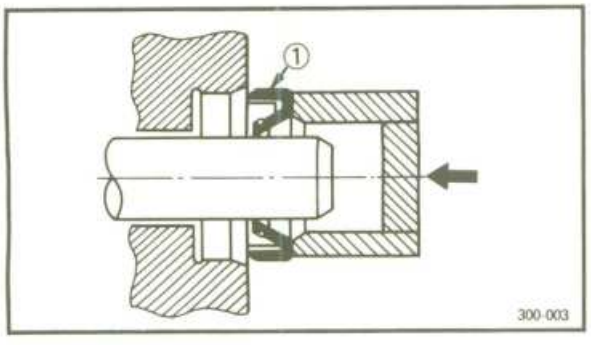
1. All gaskets, seals and O-rings should be replaced when an engine is overhauled. All gasket surfaces, oil seal lips and O-rings must be cleaned.

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



LOCK WASHERS/PLATES AND COTTER PINS

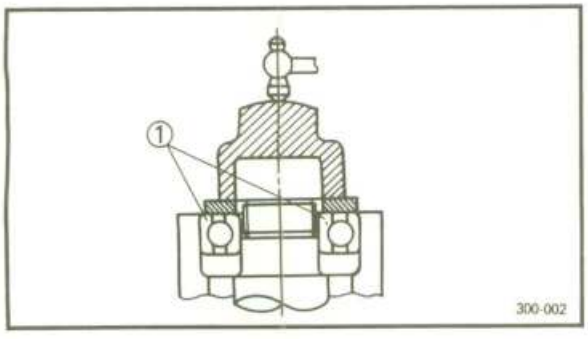
1. All lock washers/plates ① and cotter pins must be replaced when they are removed. Lock tab(s) should be bent along the bolt or nut flat(s) after the bolt or nut has been properly tightened.



BEARINGS AND OIL SEALS

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

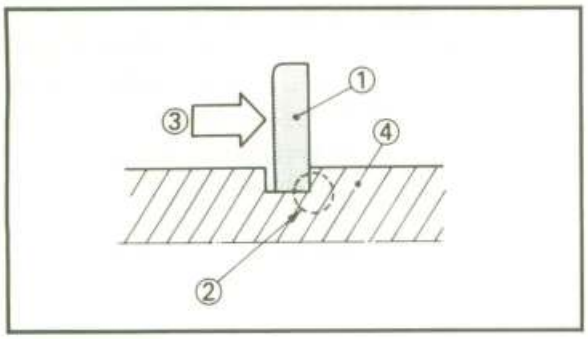
① Oil seal



CAUTION:

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

① Bearing



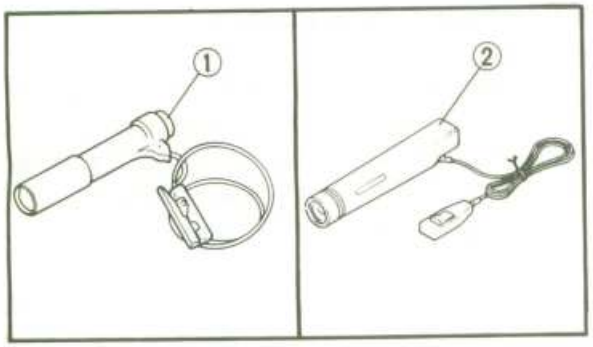
CIRCLIPS

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

④ Shaft

SPECIAL TOOLS

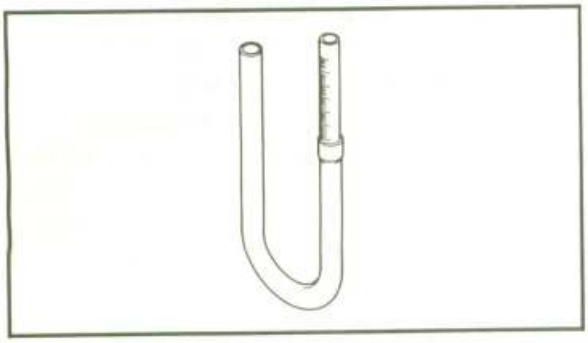
The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques.



FOR TUNE UP

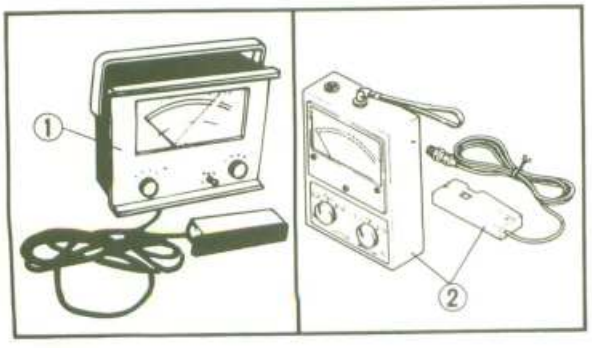
1. Inductive timing light
   P/N. YM-33277-A-①
   P/N. 90890-03109-②

This tool is necessary for adjusting ignition timing.



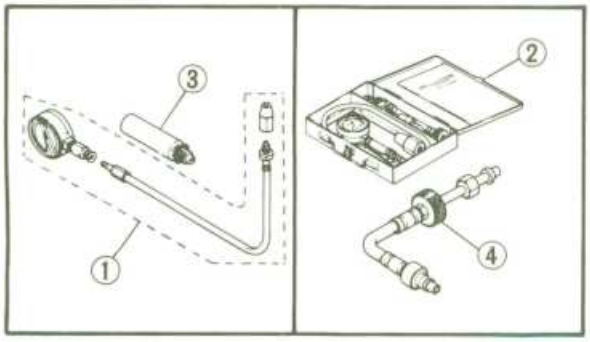
2. Fuel levle gauge
   P/N. YM-01312-A
   P/N. 90890-01312

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



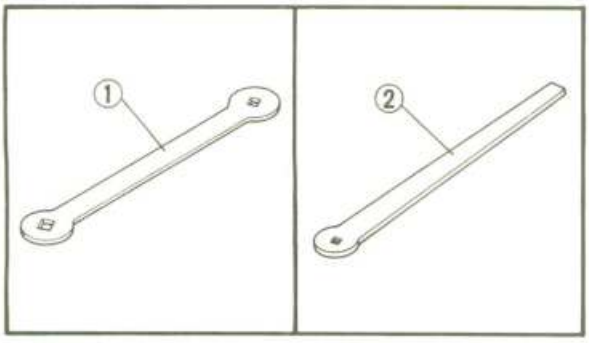
3. Inductive tachometer
   P/N. YU-08036-A-①
   P/N. 90890-03113-②

This tool is needed for detecting engine rpm.



4. Compression gauge
   P/N. YU-33223-①
   P/N. 90890-03081-②
   Adapter (M12)
   P/N. YU-33223-3-③
   Extension
   P/N. 90890-04082-④

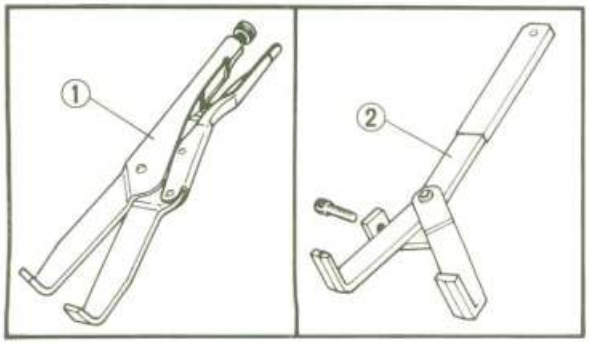
These gauges are used to measure the engine compression.



5. Valve adjusting tool
   P/N. YM-08035-①
   P/N. 90890-01311-②

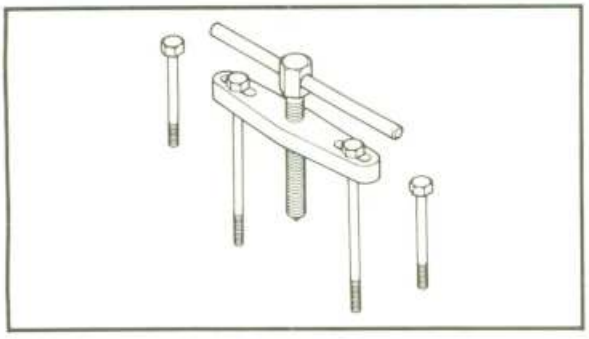
This tool is necessary for adjusting the valve clearance.

FOR ENGINE SERVICE



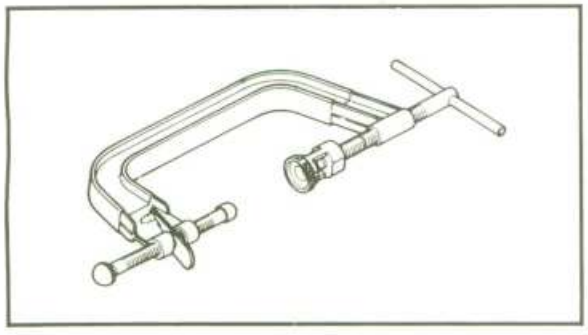
1. Universal clutch holder
   P/N. YM-91042-①
   P/N. 90890-04086-②

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



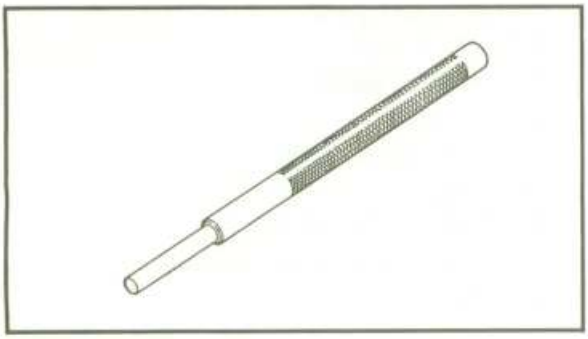
2. Crankcase separator
   P/N. YU-01135-A
   P/N. 90890-01135

This tool is necessary to separate the crankcase.



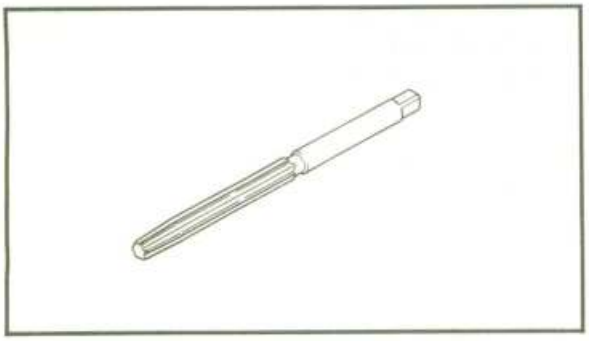
3. Valve spring compressor
   P/N. YM-04019
   P/N. 90890-04019

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



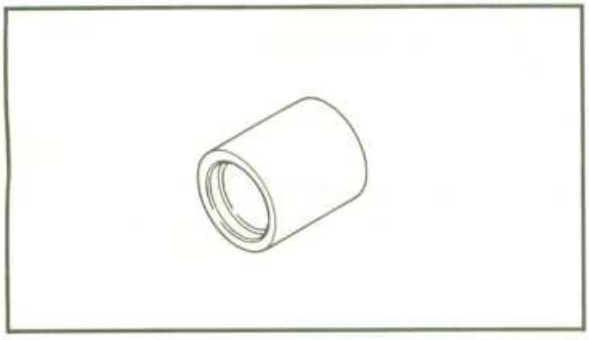
4. Valve guide remover 7 mm (0.28in)
   P/N. YM-01225-A
   P/N. 90890-01225

This tool is used to remove the valve guides.



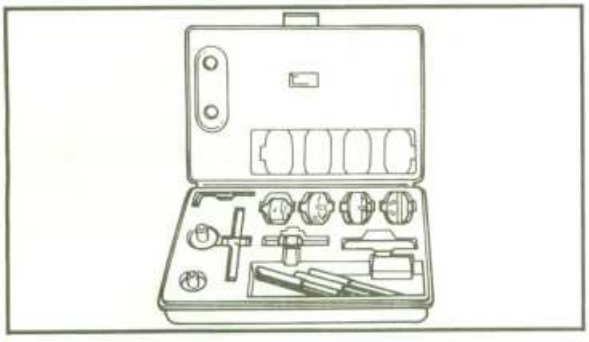
5. Valve guide reamer 7 mm (0.28in)
   P/N. YM-01227
   P/N. 90890-01227

This tool is used to rebore the new valve guide.



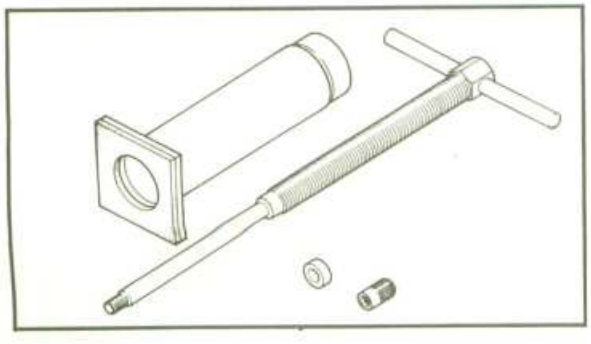
6. Valve guide installer 7 mm (0.28in)
   P/N. YM-04017
   P/N. 90890-04017

This tool is needed to install the valve guides properly.



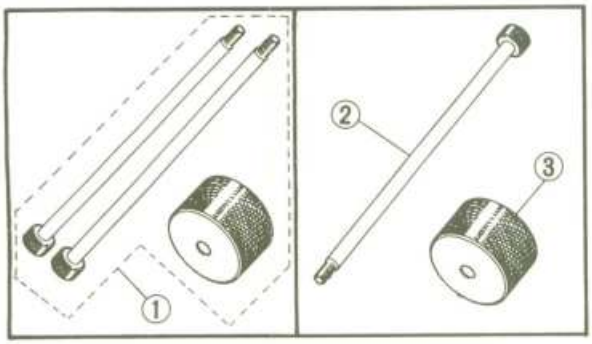
7. Valve seat cutter set
   P/N. YM-91043

This tool is needed to resurface the valve seat.

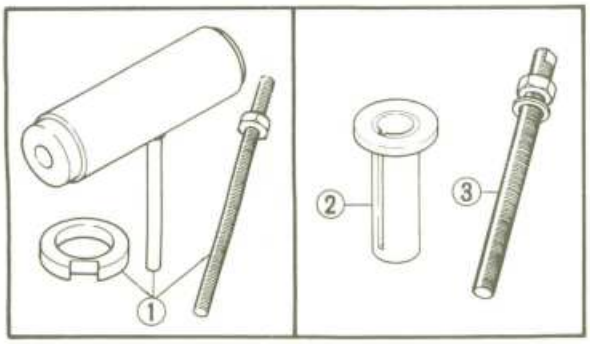


8. Piston pin puller
   P/N. YU-01304
   P/N. 90890-01304

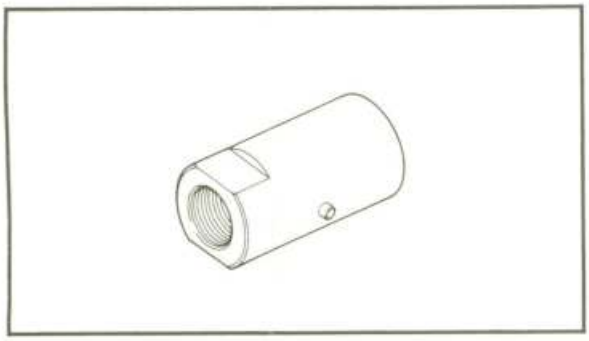
This tool is used to remove the piston pin.



9. Slide hammer set
   P/N. YU-01083-A–①
   Slide hammer bolt
   P/N. 90890-01083–②
   Weight
   P/N. 90890-01084–③

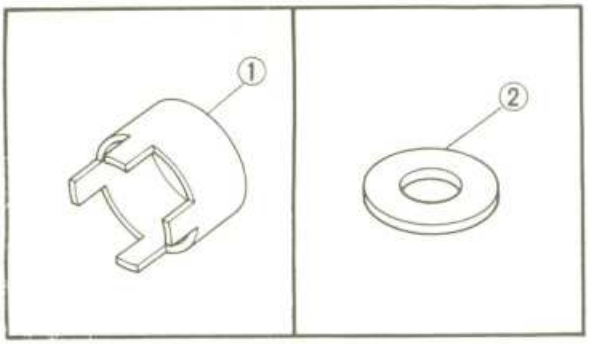


10. Crankshaft installer set
    P/N. YU-90050–①
    Crankshaft installer pot
    P/N. 90890-01274–②
    Crankshaft installer bolt
    P/N. 90890-01275–③



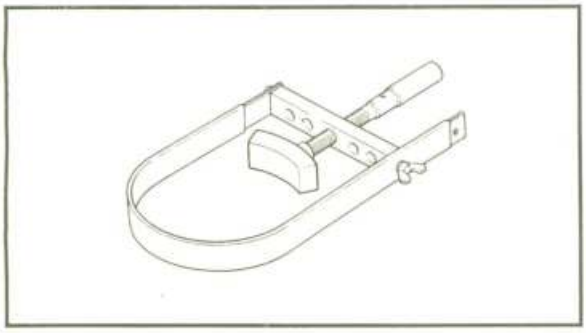
11. Adapter # 10 (M14)
    P/N. YM-90069
    P/N. 90890-04059

This tool is used to install the crankshaft.



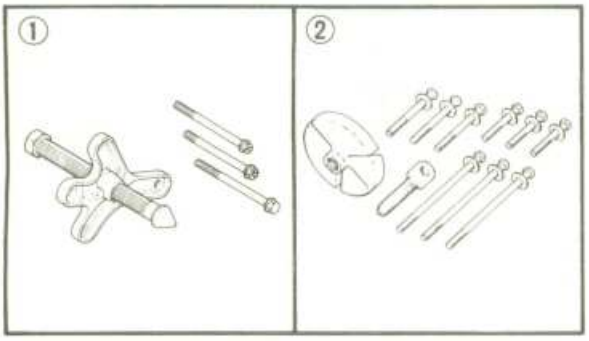
12. Crank pot spacer
    P/N. YM-91044
    P/N. 90890-04081–①
    Spacer
    P/N. 90890-01016–②

This tool is used to install the crankshaft.



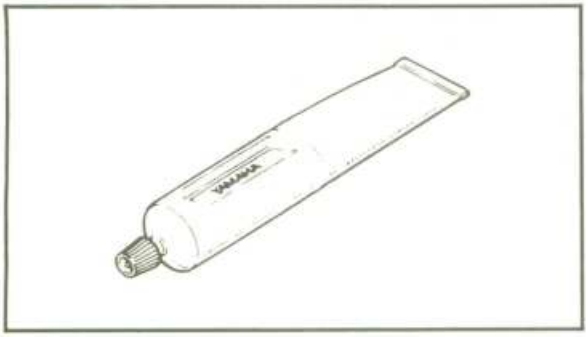
13. Rotor holder
    P/N. YS-01880
    P/N. 90890-01701

This tool is used to hold the *rotor when* removing or installing the rotor securing nut.



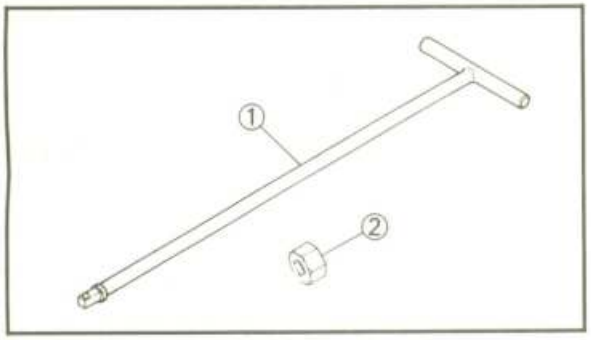
14. Rotor puller
    P/N. YU-33270-①
    P/N. 90890-01362-②

This tool is used to remove the A.C.magneto rotor.



15. Apply
    Sealant (quick gasket)®
    P/N. ACC-11001-01
    Yamaha Bond No. 1215®
    P/N. 90890-85505

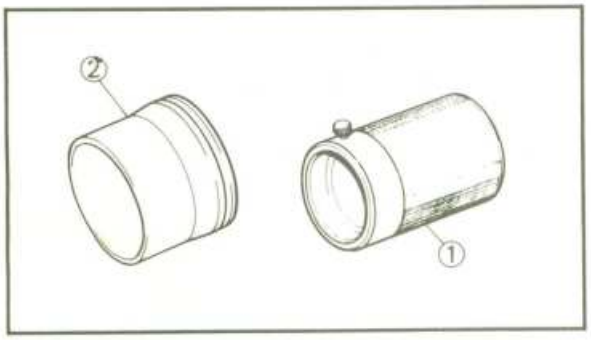
This sealant (bond) is used for crankcase mating surfaces, etc.



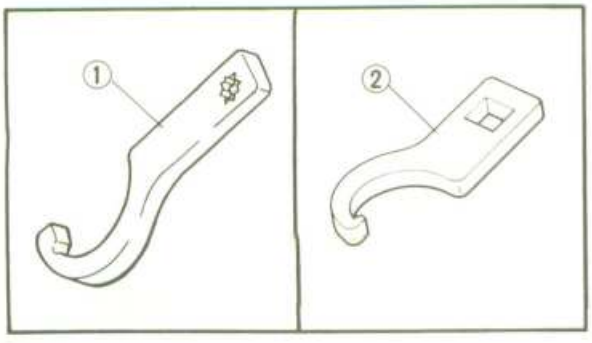
FOR CHASSIS SERVICE

1. T-Handle
    P/N. YM-01326
    P/N. 90890-01326-①
    Damper rod holder 27 mm (1.06in)
    P/N. YM-01388
    P/N. 90890-01388-②

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

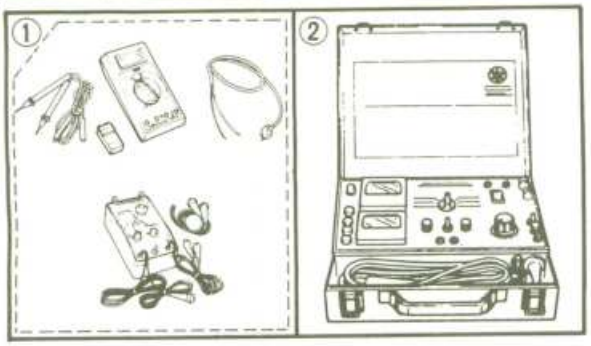


2. Front fork seal drive weight
    P/N. YM-33963
    P/N. 90890-01367-①
    Adapter 41 mm (1.61in)
    P/N. YM-33968
    P/N. 90890-01381-②



3. Ring nut wrench
    P/N. YU-33975-①
    P/N. 90890-01403-②

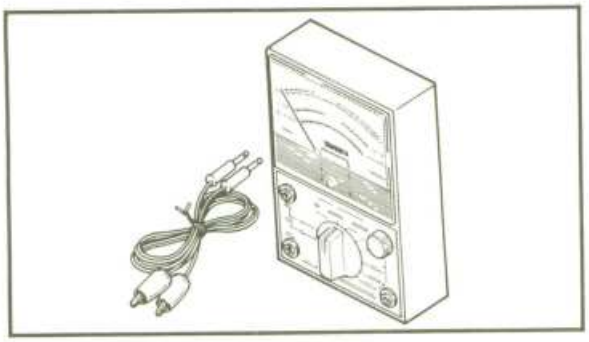
This tool is used to loosen and tighten the steering ring nut.



FOR ELECTRICAL COMPONENTS

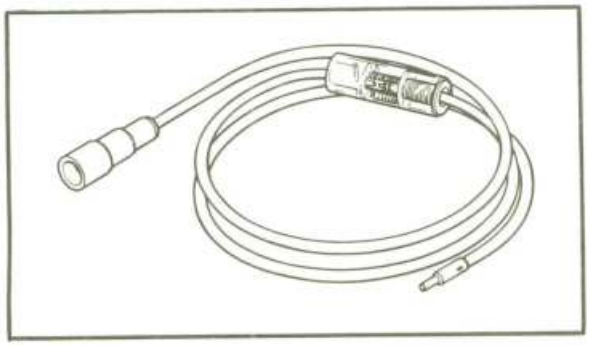
1. Electro tester
   P/N. YU-33260-A-①
   P/N. 90890-03021-②

This instrument is necessary for checking the ignition system components.



2. Pocket tester
   P/N. YU-03112
   P/N. 90890-03112

This instrument is available for checking the electrical system.



3. Dynamic spark tester
   R/N. YM-34487
   P/N. 90890-03144

This instrument is necessary for checking the ignition system components.

SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	XT600EA/EAC
Model code number:	3UY2 (XT600EA) 3UY1 (XT600EAC)
Vehicle identification number:	JYA3UYE0✻LA000101 (XT600EA) JYA3UYC0✻LA005101 (XT600EAC)
Engine starting number:	3UY-000101 (XT600EA) 3UY-005101 (XT600EAC)
Dimensions: Overall length Overall width Overall height Seat height Wheelbase Minimum ground clearance	 2,200 mm (87.4 in) 820 mm (32.3 in) 1,245 mm (49.0 in) 855 mm (33.7 in) 1,445 mm (56.9 in) 235 mm (9.3 in)
Basic weight: With oil and full fuel tank	 168 kg (370 lb)
Minimum turning radius:	2,200 mm (86.6 in)
Engine: Engine type Cylinder arrangement Displacement Bore × Stroke Compression ratio Compression pressure standard Starting system:	 Air cooled 4-stroke, SOHC Forward inclined single cylinder 595 cm^3 95 x 84 mm (3.74 x 3.31 in) 8.5 : 1 1,100 kPa (11 kg/cm^2, 156 psi) Electric
Lubrication system: Type Engine oil type Oil capacity: Periodic oil change With oil filter replacement Total amount	 Dry sump Yamalube 4, SAE 20W40 type SE/SF motor oil or SAE 10W30 type SE/SF motor oil 2.7 L (2.4 Imp qt, 2.9 US qt) 2.8 L (2.5 Imp qt, 3.0 US qt) 3.3 L (2.9 Imp qt, 3.5 US qt)
Air filter: Type	 Dry type element
Fuel: Type Fuel tank capacity Fuel reserve amount	 Unleaded fuel recomended 13.0 L (2.9 Imp gal, 3.4 US gal) 2.0 L (0.4 Imp gal, 0.5 US gal)
Carburetor: Type/Quantity Manufacturer	 V26PV/1pc. TEIKEI
Spark plug: Type/Plug gap/Manufacturer	 DPR8EA -9/0.8 ~ 0.9 mm (0.031 ~ 0.035 in) N.G.K. X24EPR -U9/0.8 ~ 0.9 mm (0.031 ~ 0.035 in) N.D.
Clutch: Type	 Wet, multiple-disc

Model		XT600EA/EAC	
Transmission:			
Type		Constant-mesh 5-speed	
Operation		Left foot operation	
Primary reduction system		Spur gear	
Primary reduction ratio		71/34 (2.088)	
Secondary reduction system		Chain drive	
Secondary reduction ratio		45/15 (3.000)	
Gear ratio:	1st	31/12 (2.583)	
	2nd	27/17 (1.588)	
	3rd	24/20 (1.200)	
	4th	21/22 (0.954)	
	5th	19/24 (0.792)	
Chassis:			
Frame type		Diamond	
Caster angle		27.75°	
Trail		116 mm (4.57 in)	
Tire:		Front	Rear
Type		With tube	With tube
Size		90/90-21 54S	120/90-17 64S
Manufacture (type)		BRIDGESTONE (TW41) DUNLOP (TRAIL MAX)	BRIDGESTONE (TW42B) DUNLOP (TRAIL MAX)

Tire Pressure (cold tire):

Maximum load *	202 kg (445 lb)	
Cold tire pressure	Front	Rear
Up to 90 kg (198 lb) load *	150 kPa (1.5 kg/cm², 21 psi)	150 kPa (1.5 kg/cm², 21 psi)
90 kg (198 lb) ~ Maximum load *	150 kPa (1.5 kg/cm², 21 psi)	200 kPa (2.0 kg/cm², 28 psi)
Off-road riding	125 kPa (1.25 kg/cm², 18 psi)	125 kPa (1.25 kg/cm², 18 psi)
High speed riding	150 kPa (1.5 kg/cm², 21 psi)	150 kPa (1.5 kg/cm², 21 psi)

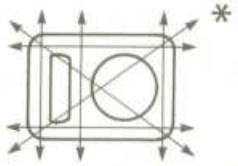
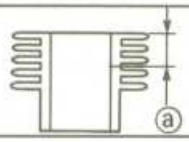
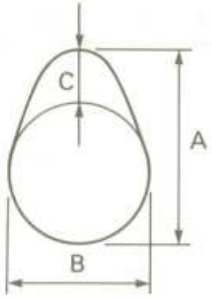
* Load is total weight of cargo, rider, passenger, and accessories.

Brake:	
Front brake type	Single disc brake
Front brake operation	Right hand operation
Rear brake type	Single disc brake
Rear brake operation	Right foot operation
Suspension:	
Front	Telescopic fork
Rear	Swingarm (newmonocross)
Shock absorber:	
Front	Coil – Air spring/Oil damper
Rear	Coil – Gas spring/Oil damper
Wheel travel:	
Front	225 mm (8.9 in)
Rear	200 mm (7.9 in)

Model	XT600EA/EAC
Electrical:	
Ignition system	T.C.I. (digital)
Generator system	A.C. magneto generator
Battery type	YTX9-BS
Battery capacity	12V, 8AH
Headlight type	Quartz bulb (halogen)
Bulb wattage (quantity):	
Headlight	12V 60W/55W (1 pc.)
Tail/Brake light	12V 8W/27W (1 pc.)
Flasher light:	12V 27W (4 pc.)
Front position light	12V 8W (2 pc.)
Meter light	12V 3.4W (1 pc.)
"NEUTRAL" indicator light	12V 3.4W (1 pc.)
"HIGH BEAM" indicator light	12V 3.4W (1 pc.)
"TURN" indicator light	12V 3.4W (1 pc.)
Over "REV." indicator light	12V 3.4W (1 pc.)

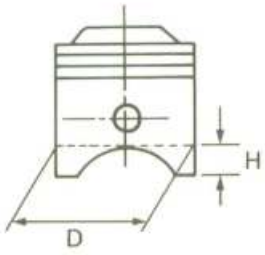
MAINTENANCE SPECIFICATIONS

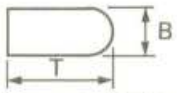
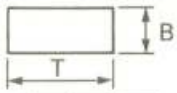
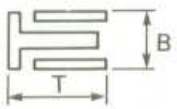
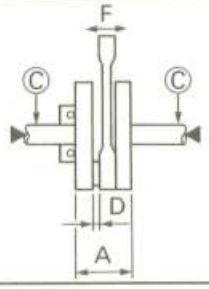
ENGINE

Model	XT600EA/EAC
Cylinder head: <Warp limit > 	<0.03 mm (0.0012 in)> * Lines indicate straightedge measurement.
Cylinder: Bore size <Warp limit > Measuring point ⓐ 	94.97 ~ 95.02 mm (3.739 ~ 3.741 in) <95.1 mm (3.744 in)> 50 mm (1.97 in)
Camshaft: Drive method Camshaft outside diameter Shaft-to-cap clearance Cam dimensions Intake "A" "B" "C" Exhaust"A" "B" "C" <Camshaft runout limit> 	Chain drive (left) 22.967 ~ 22.980 mm (0.904 ~ 0.905 in) 0.020 ~ 0.054 mm (0.0008 ~ 0.0021 in) 36.47 ~ 36.57 mm (1.436 ~ 1.440 in) 30.06 ~ 30.16 mm (1.183 ~ 1.187 in) 6.41 mm (0.252 in) 36.62 ~ 36.72 mm (1.442 ~ 1.446 in) 30.11 ~ 30.21 mm (1.185 ~ 1.189 in) 6.51 mm (0.256 in) <0.03 mm (0.0012 in)>
Cam chain: Cam chain type Number of links Cam chain adjustment method	75-010 126 Links Automatic
Rocker arm/Rocker arm shaft: Rocker arm inside diameter Shaft outside diameter Arm-to-shaft clearance	12.000 ~ 12.018 mm (0.472 ~ 0.473 in) 11.976 ~ 11.991 mm (0.471 ~ 0.472 in) 0.009 ~ 0.042 mm (0.0003 ~ 0.002 in)
Valve, valve seat, valve guide: Valve clearance (cold): Intake Exhaust Valve dimensions: Intake "A" head diameter "B" face width "C" seat width "D" margin thickness Exhaust "A" head diameter "B" face width "C" seat width "D" margin thickness	 0.05 ~ 0.10 mm (0.002 ~ 0.004 in) 0.12 ~ 0.17 mm (0.005 ~ 0.007 in) 36.9 ~ 37.1 mm (1.45 ~ 1.46 in) 2.26 mm (0.09 in) 1.0 ~ 1.2 mm (0.04 ~ 0.05 in) 1.0 ~ 1.4 mm (0.04 ~ 0.06 in) 31.9 ~ 32.1 mm (1.25 ~ 1.26 in) 2.26 mm (0.09 in) 1.0 ~ 1.2 mm (0.04 ~ 0.05 in) 0.8 ~ 1.2 mm (0.031 ~ 0.050 in)



Model	XT600EA/EAC	
Stem outside diameter		
Intake	6.975 ~ 6.990 mm (0.274 ~ 0.275 in)	
Exhaust	6.955 ~ 6.970 mm (0.273 ~ 0.274 in)	
Guide inside diameter		
Intake	7.000 ~ 7.012 mm (0.275 ~ 0.276 in)	
Exhaust	7.000 ~ 7.012 mm (0.275 ~ 0.276 in)	
Stem-to-guide clearance		
Intake	0.010 ~ 0.037 mm (0.0004 ~ 0.001 in)	
Exhaust	0.030 ~ 0.057 mm (0.001 ~ 0.002 in)	
<Stem runout limit>	<0.01 mm (0.0004 in)>	
Valve seat width		
Intake	1.1 mm (0.043 in)	
Exhaust	1.1 mm (0.043 in)	
Valve spring:	Inner spring	Outer spring
Free length:		
Intake	40.1 mm (1.58 in)	43.8 mm (1.72 in)
Exhaust	40.1 mm (1.58 in)	43.8 mm (1.72 in)
Set length (valve closed)		
Intake	22.7 mm (0.89 in)	34.2 mm (1.35 in)
Exhaust	22.7 mm (0.89 in)	34.2 mm (1.35 in)
Direction of winding		
(Top view)	Clockwise 	Counterclockwise 
<Tilt limit>:		
Intake	<2.5°/1.7 mm (0.067 in)>	<2.5°/1.9 mm (0.075 in)>
Exhaust	<2.5°/1.7 mm (0.067 in)>	<2.5°/1.9 mm (0.075 in)>
Piston:		
Piston size "D"	94.915 ~ 94.965 mm (3.737 ~ 3.739 in)	
Measuring point "H"	5.0 mm (0.20 in)	
Oversize 2nd	95.5 mm (3.760 in)	
Oversize 4th	96.0 mm (3.780 in)	
Piston off-set	2.0 mm (0.08 in)	
Piston off-set direction	Intake side	
Piston-to-cylinder clearance	0.045 ~ 0.065 mm (0.002 ~ 0.003 in)	
<Limit>	<0.1 mm (0.004 in)>	



Model	XT600EA/EAC
Piston ring:	
Type:	
Top ring	Barrel
2nd ring	Plain
Dimensions (B x T):	
Top ring 	B = 1.2 mm (0.047 in) T = 3.8 mm (0.150 in)
2nd ring 	B = 1.2 mm (0.047 in) T = 3.8 mm (0.150 in)
Oil ring 	B = 2.5 mm (0.098 in) T = 3.4 mm (0.134 in)
End gap (installed):	
Top ring	0.30 ~ 0.45 mm (0.012 ~ 0.018 in)
2nd ring	0.30 ~ 0.45 mm (0.012 ~ 0.018 in)
Oil ring	0.20 ~ 0.70 mm (0.008 ~ 0.028 in)
Side clearance (installed):	
Top ring	0.04 ~ 0.08 mm (0.002 ~ 0.003 in)
2nd ring	0.03 ~ 0.07 mm (0.001 ~ 0.003 in)
Oil ring	0.02 ~ 0.06 mm (0.0008 ~ 0.002 in)
Crankshaft: 	
Crank width "A"	74.95 ~ 75.00 mm (2.950 ~ 2.953 in)
<Runout limit "C">	<0.03 mm (0.0012 in>
Big end side	
Clearance "D"	0.35 ~ 0.65 mm (0.013 ~ 0.026 in)
Small end	
Free play "F"	0.8 mm (0.031 in)
Balancer:	
Drive method	Gear
Clutch:	
Friction plate	
Thickness	2.72 ~ 2.88 mm (0.107 ~ 0.113 in)
Quantity	6 pcs.
< Wear limit >	<2.6 mm (0.102 in)>
Friction plate	
Thickness	2.94 ~ 3.06 mm (0.116 ~ 0.120 in)
Quantity	2 pcs.
< Wear limit >	<2.8 mm (0.110 in)>
Clutch plate	
Thickness	1.2 mm (0.047 in)
Quantity	7 pcs.
< Warp limit >	<0.2 mm (0.008 in)>
Clutch spring	
Free length	42.8 mm (1.685 in)
Quantity	5 pcs.
Minimum free length	40.8 mm (1.606 in)
Clutch housing:	
Thrust clearance	0.070 ~ 0.071 mm (0.003 in)
Clutch release method	Inner push, cam push

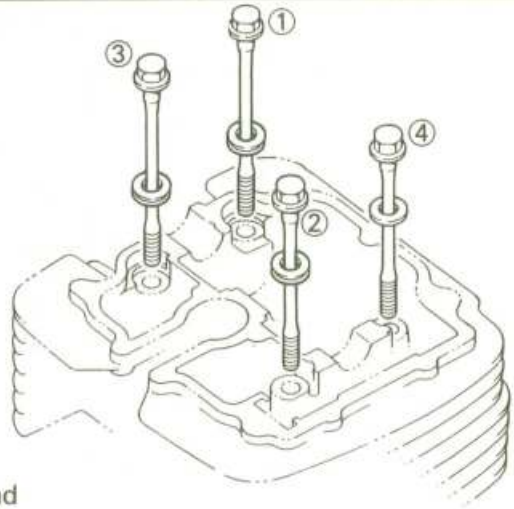
Model		XT600EA/EAC	
Transmission:			
<Main axle runout limit>		<0.08 mm (0.003 in)>	
<Drive axle runout limit>		<0.08 mm (0.003 in)>	
Shifter:			
Type		Cam drum and guide bar	
		XT600EA	XT600EAC
Carburetor:			
I.D. Mark		3UY 10	3UY 00
Main jet	(M.J.)		
Primary carburetor		#130	←
Secondary carburetor		#104	←
Main air jet size	(M.A.J.)		
Primary carburetor		φ1.0	←
Secondary carburetor		φ0.9	←
Jet needle	(J.N.)		
Primary carburetor		5D93-1/1	←
Secondary carburetor		5X7B-1/1	←
Needle jet	(N.J.)		
Primary carburetor		V-00	←
Secondary carburetor		00	←
Cut away	(C.A.)	5.5	←
Pilot air jet size	(P.A.J.)	φ1.0	←
Pilot jet	(P.J.)	#48	←
Enricher air jet size	(E.A.J.)	φ1.1	←
Pilot screw	(P.S.)	Preset	←
Valve seat size	(V.S.)	φ2.5	←
Starter jet	(G.S.)	#76	←
Fuel level (with special tool)	(F.L.)	6.0 ~ 8.0 mm (0.24 ~ 0.31 in)	←
Float height	(F.H.)	25.0 ~ 27.0 mm (0.98 ~ 1.06 in)	←
Engine idle speed		1,300 ~ 1,400 r/min	←
Lubrication systsem:			
Oil filter:			
Type		Paper type	
Oil pump:			
Type		Trochoid type	
Tip clearance		0.12 mm (0.005 in)	
Side clearance		0.03 ~ 0.08 mm (0.001 ~ 0.003 in)	
Bypass valve setting pressure		80 ~ 120 kPa (0.8 ~ 1.2 kg/cm², 11 ~ 17 psi)	
Relief valve operating pressure		80 ~ 120 kPa (0.8 ~ 1.2 kg/cm², 11 ~ 17 psi)	
Oil pressure		13 kPa (0.13 kg/cm², 1.8 psi) at 1,300 r/min	
Pressure checking location		Oil filter chamber	

Model	XT600EA/EAC				
Tightening Torque:					
Part to be tightened	Thread size	Tightening torque			Remarks
		Nm	m·kg	ft·lb	
Cylinder head					
Flange bolt	M8 x 1.25	29	2.9	21	
Stud bolt	M10 x 1.25	20	2.0	14	
Hexagon socket head bolt	M6 x 1.0	10	1.0	7.2	
Stud bolt	M6 x 1.0	7	0.7	5.1	
Spark plug	M12 x 1.25	18	1.8	13	
Cylinder head cover					
Hexagon socket head bolt	M6 x 1.0	10	1.0	7.2	
Tappet cover (intake)					
Hexagon socket head bolt	M6 x 1.0	10	1.0	7.2	
Tappet cover (exhaust)	M32 x 1.5	12	1.2	8.7	
Cylinder					
Cap nut	M8 x 1.25	22	2.2	16	
Nut	M10 x 1.25	42	4.2	30	
Hexagon nut	M10 x 1.25	42	4.2	30	
Hexagon socket head bolt	M6 x 1.0	10	1.0	7.2	
Balancer gear					
Hexagon nut	M16 x 1.0	60	6.0	43	
Rotor (A.C.magneto)					
Hexagon nut	M14 x 1.5	120	12.0	85	
Locknut (valve clearance adjuster)					
Hexagon nut	M6 x 1.0	14	1.4	10	
Cam sprocket					
Flange bolt	M7 x 1.0	20	2.0	14	
Cam chain tensioner					
Hexagon socket head bolt	M6 x 1.0	10	1.0	7.2	
Flange bolt	M16 x 1.0	20	2.0	14	
Rocker arm shaft					
Hexagon socket head bolt	M6 x 1.0	10	1.0	7.2	
Oil pump					
Hexagon socet head bolt	M6 x 1.0	10	1.0	7.2	
Oil strainer					
Panhead screw	M6 x 1.0	7	0.7	5.1	
Drain plug (crankcase)	M14 x 1.5	30	3.0	22	
Oil filter cover					
Hexagon socket head bolt	M6 x 1.0	10	1.0	7.2	
Air bleed screw	M5 x 0.8	5	0.5	3.6	
Oil hose					
Hexagon socket head bolt	M6 x 1.0	10	1.0	7.2	
Engine oil delivery pipe					
Union bolt	M8 x 1.25	18	1.8	13	
Carburetor joint					
Bolt	M6 x 1.0	10	1.0	7.2	
Clamp (carburetor joint)					
Screw	M4 x 0.7	2	0.2	1.4	
Air filter case					
Flange bolt	M6 x 1.0	10	1.0	7.2	
Exhaust pipe					
Flange nut	M6 x 1.0	10	1.0	7.2	
Exhaust pipe protector					
Bind head screw	M6 x 1.0	7	07	5.1	LT

Model	XT600EA/EAC				
Part to be tightened	Thread size	Tightening torque			Remarks
		Nm	m·kg	ft·lb	
Muffler protector					
Bind head screw	M6 x 1.0	7	0.7	5.1	LT
Band (exhaust pipe and muffler)					
Flange bolt	M8 x 1.25	20	2.0	14	
Muffler					
Flange bolt	M8 x 1.25	40	4.0	29	
Crankcase					
Hexagon socket head bolt	M6 x 1.0	10	1.0	7.2	
Stud bolt	M10 x 1.25	20	2.0	14	
Crankcase cover (right)					
Hexagon socket head bolt	M6 x 1.0	10	1.0	7.2	
Crankcase cover (left)					
Hexagon socket head bolt	M6 x 1.0	10	1.0	7.2	
Stopper plate (bearing)					
Flat head screw	M6 x 1.0	7	0.7	5.1	LT
Pressure plate					
Flange bolt	M6 x 1.0	8	0.8	5.8	
Clutch boss					
Hexagon nut	M20 x 1.0	90	9.0	65	
Primary drive gear					
Hexagon nut	M20 x 1.0	120	12.0	85	
Push lever					
Panhead screw	M8 x 1.0	12	1.2	8.7	
Push rod					
Hexagon nut	M6 x 1.0	8	0.8	5.8	
Drive sprocket					
Hexagon bolt	M18 x 1.0	110	11.0	80	
Stopper plate (oil seal)					
Hexagon bolt	M6 x 1.0	10	1.0	7.2	
Stopper lever					
Bolt	M6 x 1.0	10	1.0	7.2	
Change pedal					
Hexagon bolt	M6 x 1.0	10	1.0	7.2	
Stator coil					
Panhead screw	M6 x 1.0	7	0.7	5.1	LT
Pickup coil					
Panhead screw	M6 x 1.0	7	0.7	5.1	LT
Neutral switch	M10 x 1.25	20	2.0	14	
Starter motor					
Flange bolt	M6 x 1.0	10	1.0	7.2	
Starter oneway					
Hexagon socket head bolt	M8 x 1.25	30	3.0	22	LT

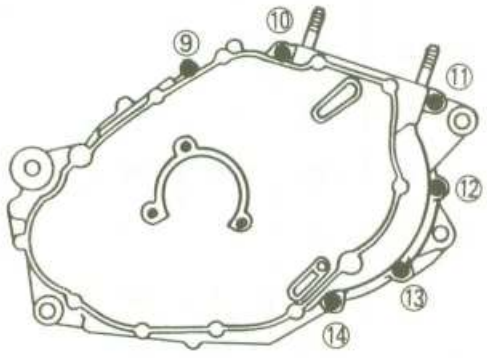
Tightening sequence:

Cylinder head

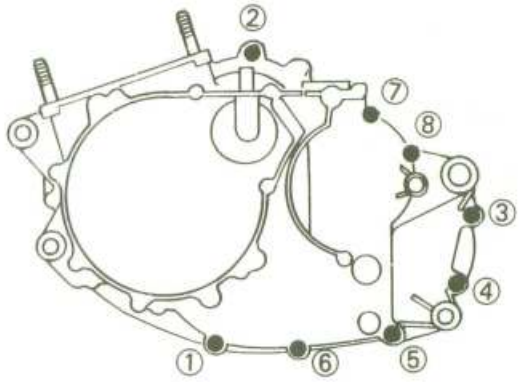


Crankcase

Right-head



Left-hand



CHASSIS

Model		XT600EA/EAC
Steering System:		
Bearing type		Taper roller bearing
Front suspension:		
Front fork travel		225 mm (8.9 in)
Front spring free length		478.0 mm (18.8 in)
< Minimum free length >		468.4 mm (18.4 in)
Spring rate:	(K1)	4.25 N/mm (0.425 kg/mm, 23.8 lb/in)
	(K2)	5.0 N/mm (0.50 kg/mm, 28.0 lb/in)
Stroke	(K1)	Zero ~ 225.0 mm(Zero ~ 8.9 in)
Optional spring		No
Oil capacity		538 cm^3 (18.9 Imp oz, 18.1 US oz)
Oil level		155 mm (6.1 in) From top of inner tube fully compressed without spring
Oil grade		Fork oil 10W or equivalent
Enclosed air pressure:		
Standard		Zero kPa (Zero kg/cm^2 , Zero psi)
Rear suspension:		
Shock absorber travel		71 mm (2.8 in)
Spring free length		255 mm (10.0 in)
Fitting length		243.5 mm (9.6 in)
Spring-rate	(K1)	95 N/mm (9.5 kg/mm,532 ib/in)
Stroke	(K1)	Zero ~ 71.0 mm (Zero ~ 2.8 in)
Optional spring		No
Enclosed gas pressure		2,000 kPa (20 kg/cm^2, 284 psi)
Swingarm:		
<Free play limit>		<1.0 mm (0.039 in)> at swingarm end Move swingarm end side to side.
Side clearance		0.4 ~ 0.7 mm (0.016 ~ 0.027 in) at swingarm pivot
<Free play limit>		<0.3 mm (0.012 in)> at swingarm pivot
Front wheel:		
Type		Spoke wheel
Rim size		1.85 x 21
Rim material		Steel
<Rim runout limit>		
Vertical		<2.0 mm (0.079 in)>
Lateral		<2.0 mm (0.079 in)>
Rear Wheel:		
Type		Spoke wheel
Rim size		MT2.50 x 17
Rim material		Steel
<Rim runout limit>		
Vertical		<2.0 mm (0.079 in)>
Lateral		<2.0 mm (0.079 in)>
Drive Chain:		
Type/Manufacturer		520V2/DAIDO
Number of links		106
Chain slack		30 ~ 40mm (1.18 ~ 1.57 in)

Model	XT600EA/EAC
Front disc brake:	
Type	Single
Disc outside diameter	267 mm (10.5 in)
Disc thickness	4.5 mm (0.18 in)
Pad thickness	6.0 mm (0.24 in)
<Wear limit>	<1.0 mm (0.04 in)>
Master cylinder inside diameter	12.7 mm (0.5 in)
Caliper cylinder inside diameter/ Quantity	32.03 mm (1.26 in)/ 2 pc.
Brake fluid type	DOT No. 4 or DOT No.3
Rear disc brake	
Type	Single
Disc outside diameter	220 mm (8.66 in)
Disc thickness	5.0 mm (0.20 in)
Pad thickness	6.0 mm (0.24 in)
<Wear limit>	<0.8 mm (0.03 in)>
Master cylinder inside diameter	12.7 mm (0.5 in)
Caliper cylinder inside diameter	34.9 mm (1.37 in)
Brake fluid type	DOT No.4
Brake lever and pedal:	
Brake lever free play	2.0 ~ 5.0 mm (0.08 ~ 0.20 in) at end of brake lever.
Brake pedal position	15 mm (0.59 in) below top of footrest.
Clutch lever and throttle grip:	
Clutch lever free play	2.0 ~ 3.0 mm (0.08 ~ 0.12 in) at pivot of clutch lever.
Throttle cable free play	3.0 ~ 5.0 mm (0.12 ~ 0.20 in) at grip flange.

Model	XT600EA/EAC				
Tightening torque:					
Part to be tightened	Thread size	Tightening torque			Remarks
		Nm	m•kg	ft•lb	
Front fork/Handlebar:					
Handle crown and inner tube	M8 ×1.25	23	2.3	17	
Handle crown and steering shaft	M14×1.25	72	7.2	52	
Lower bracket and inner tube	M8 ×1.25	23	2.3	17	
Handlebar	M8 ×1.25	20	2.0	14	
Steering shaft and ring nut	M25×1.0	6	0.6	4.3	Refer to "NOTE"
Clamp (front brake hose)	M6 ×1.0	7	0.7	5.1	
Master cylinder cap (front brake)	M4 ×0.7	2	0.2	1.4	
Master cylinder and handle	M6 ×1.0	7	0.7	5.1	
Headlight stay and lower bracket	M6 ×1.0	7	0.7	5.1	
Headlight stay and headlight	M8 ×1.25	16	1.6	12	
Headlight stay and headlight	M6 ×1.0	7	0.7	5.1	
Handlebar holder (lower) and nut	M10×1.25	30	3.0	22	
Cable band (speedometer cable)	M5 ×0.8	1	0.1	0.7	
Engine mount:					
Engine stay (front) and frame	M10×1.25	64	6.4	46	
Engine stay (front) and engine	M10×1.25	64	6.4	46	
Engine stay (upper) and frame	M10×1.25	64	6.4	46	
Engine stay (upper) and engine	M10×1.25	64	6.4	46	
Engine (rear) and frame	M10×1.25	64	6.4	46	
Engine protector and frame	M6 ×1.0	10	1.0	7.2	
Rear shock absorber/Swingarm:					
Pivot shaft	M14×1.5	85	8.5	61	
Swingarm and relay arm	M12×1.25	59	5.9	43	
Relay arm and connecting rod	M10×1.25	32	3.2	23	
Connecting rod and frame	M10×1.25	32	3.2	23	
Rear shock absorber and frame	M12×1.25	59	5.9	43	
Chain tensioner	M8 ×1.25	23	2.3	17	
Chain case and swingarm	M6 ×1.0	4	0.4	2.9	
Chain protector and swingarm	M6 ×1.0	7	0.7	5.1	
Chain guide and swingarm	M6 ×1.0	7	0.7	5.1	
Bolt (at swingarm end)	M6 ×1.0	3	0.3	2.2	
Front wheel/Rear wheel:					
Front wheel axle and front fork	M14×1.5	58	5.8	42	
Rear wheel axle and nut	M16×1.5	90	9.0	65	
Front axle holder	M6 ×1.0	9	0.9	6.5	
Brake caliper (front) and front fork	M10×1.25	35	3.5	25	
Brake caliper (rear) and bracket	M10×1.25	35	3.5	25	
Union bolt (brake)	M8 ×1.25	26	2.6	19	
Brake caliper and bleed screw	M7 ×1.0	6	0.6	4.3	
Bracket and swingarm	M10×1.25	45	4.5	32	
Brake disk and front wheel	M6 ×1.0	12	1.2	8.7	
Brake disk and rear wheel	M6 ×1.0	10	1.0	7.2	

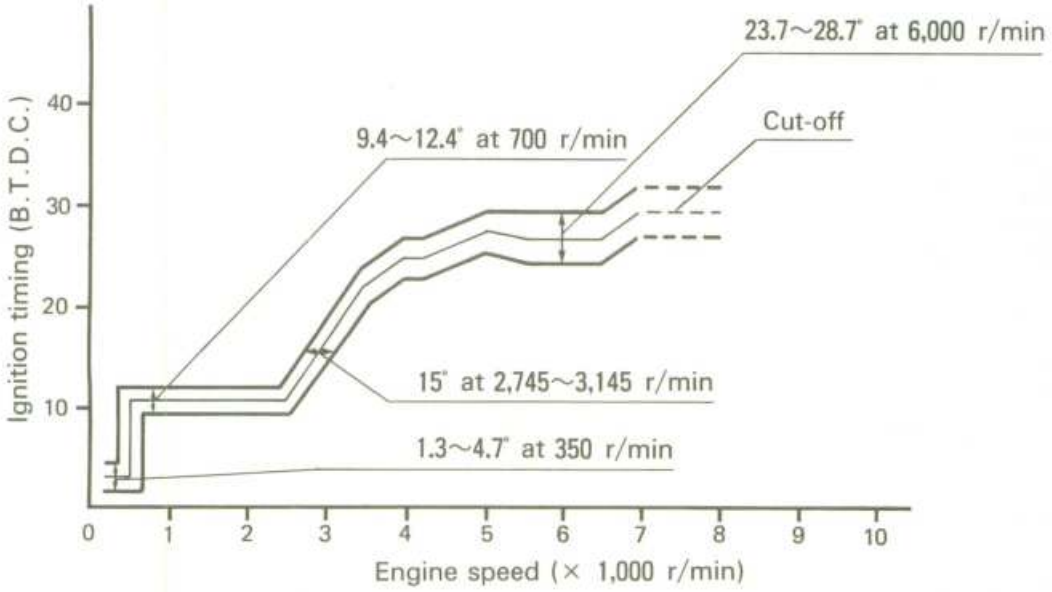
Model	XT600EA/EAC				
Part to be tightened	Thread size	Tightening torque			Remarks
		Nm	m·kg	f·lb	
Footrest/Pedal/Stand					
Sidestand and frame	M10 × 1.25	40	4.0	29	
Rear brake switch and frame	M6 × 1.0	4	0.4	2.9	
Footrest (for rider) and frame	M10 × 1.25	45	4.5	32	
Footrest (for passenger) and frame	M8 × 1.25	20	2.0	14	
Master cylinder (rear brake) and frame	M8 × 1.25	20	2.0	14	
Reservoir tank (rear brake) and frame	M6 × 1.0	4	0.4	2.9	
Tank/Seat/Cover/Fender:					
Cowling and cowling stay	M6 × 1.0	7	0.7	5.1	
License bracket and stay	M6 × 1.0	5	0.5	3.6	
License bracket and flap	M4 × 0.7	2	0.2	1.4	
Rear reflector and stay	M5 × 0.8	4	0.4	2.9	
Fuel tank and fuel cock	M6 × 1.0	7	0.7	5.1	
Fuel tank stay and frame	M6 × 1.0	7	0.7	5.1	
Helmet holder and frame	M6 × 1.0	7	0.7	5.1	
Clutch cable and crankcase cover	M6 × 1.0	10	1.0	7.2	
License bracket and tail lamp	M6 × 1.0	7	0.7	5.1	
Starter switch and lead	M6 × 1.0	3	0.3	2.2	
Regulator and frame	M6 × 1.0	7	0.7	5.1	
Meter/Horn:					
Meter and handle crown	M6 × 1.0	7	0.7	5.1	
Horn and frame	M6 × 1.0	7	0.7	5.1	

NOTE:

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

ELECTRICAL

Model	XT600EA/EAC
Voltage:	12V
Ignition system: Ignition timing (B.T.D.C.) Cut-off timing Advancer type	 10 ~ 14° at 1,350 r/min 6,900 ~ 7,100 r/min Electrical type



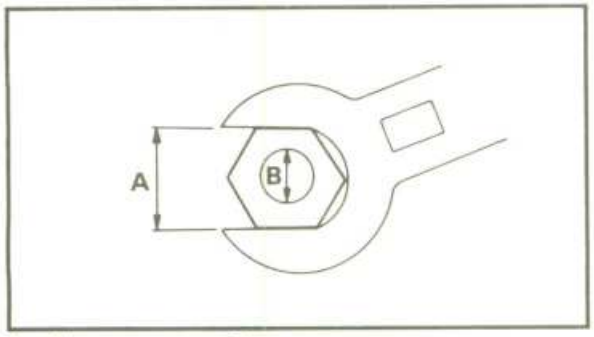
Ignitor Unit model/Manufacturer Pickup coil resistance (color)	 TNDF09/NIPPON DENSO 184 ~ 276 Ω at 20°C (68°F) (Green/White-Blue/Yellow)
Ignition coil: Model/Manufacturer Primary coil resistance Secondary coil resistance	 JO268/NIPPON DENSO 3.4 ~ 4.6 Ω at 20°C (68°F) 10.4 ~ 15.6 kΩ at 20°C (68°F)
Spark plug cap: Type Resistance	 Resin type 10 kΩ at 20°C (68°F)
Charging system: Type	 A.C. magneto generator
A.C. generator: Model/Manufacturer Charging output Armature (stator coil) resistance (color)	 LMZ48/NIPPON DENSO 14V, 13.5A at 5,000 r/min 0.52 ~ 0.78 Ω at 20°C (68°F) (White - White)

Model	XT600EA/EAC
Voltage regulator/Rectifier:	
Model/Manufacturer	SH569/SHINDENGEN
Voltage regulator:	
Type	Semi conductor - Short circuit type
No load regulated voltage	14.3 ~ 15.3V
Rectifier:	
Capacity	25A
Withstand voltage	240V
Battery:	
Specific gravity	1.320
Electric starter system:	
Type	Constant mesh type
Starter motor:	
Model/Manufacturer	SM-13/MITSUBA
Output	0.8 kw
Brush overall length	12 mm (0.47 in)
< limit >	<5 mm (0.20 in)>
Commutator diameter	28 mm (1.10 in)
< limit >	<27 mm (1.06 in)>
Mica undercut (depth)	0.7 mm (0.03 in)
Starter switch:	
Model/Manufacturer	MS5D - 191/HITACHI
Amperage rating	100A
Horn:	
Type	Plane type
Quantity	1 pc.
Model/Manufacturer	YF-12/NIKKO
Maximum amperage	2.5A
Flasher relay:	
Type	Condenser type
Model/Manufacturer	FZ257SD/NIPPON DENSO
Self cancelling device	No
Flasher frequency	75 ~ 95 cycles/min
Wattage	27WX2 + 3.4W
Circuit breaker:	
Type	Fuse
Quantity	1 pc.
Amperage for individual	20A

GENERAL TORQUE SPECIFICATIONS

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

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



A: Distance across flats
B: Outside thred diameter

DEFINITION OF UNITS

Unit	Read	Definition	Measure
mm cm	millimeter centimeter	10^{-3} meter 10^{-2} meter	Length Length
kg	kilogram	10^{3} gram	Weight
N	Newton	1 kg × m/sec^2	Force
Nm m•kg	Newton meter Meter kilogram	N × m m × kg	Torque Torque
Pa N/mm	Pascal Newton per millimeter	N/m^2 N/mm	Pressure Spring rate
L cm^3	Liter Cubic centimeter	—	Volume or capacity
r/min	Revolution per minute	—	Engine speed

LUBRICATION POINTS AND LUBRICANT TYPE

ENGINE

Lubrication points (part name)	Lubricant type
Oil seal lips (all)	LS
Bearing retainer	E
Crank pin	E
Connecting rod (big end)	E
Piston and piston ring	E
Boss (balancer drive gear)	E
Piston pin	E
Valve stem and valve guide	M
Oil seal (valve stem end)	M
Rocker arm shaft and rocker arm	E
Cam and bearing (camshaft)	E
Rotor and rotor housing (oil pump)	E
Push rod	LS
Primary driven gear and main axle	E
Sliding gear (transmission)	M
Free movement gear (transmission)	M
Shift fork and guide bar	E
Shift cam and bearing (shift cam)	E
Shift shaft	E
Crankcase mating surfaces	Sealant (quick gasket)® Yamaha Bond No. 1215®
Mating surfaces (cylinder head and cylinder head cover)	Sealant (quick gasket)® Yamaha Bond No. 1215®

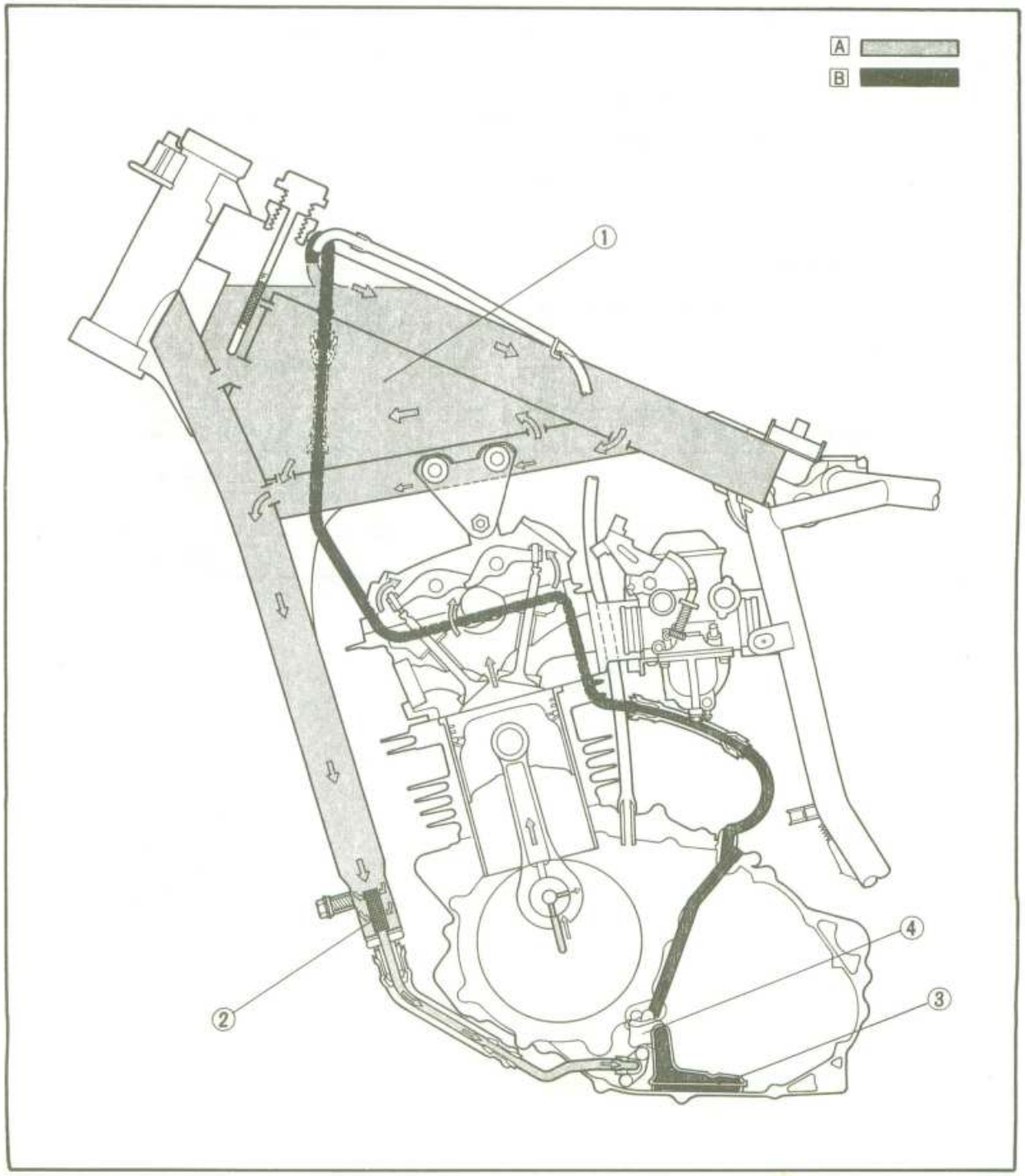
CHASSIS

Lubrication points (part name)	Lubricant type
Gear unit (speedometer)	LS
Oil seal lips (all)	LS
Wheel axle (front wheel and rear wheel)	LS
Rear wheel hub and clutch hub	LS
Bush (swingarm) and thrust cover	LS
Pivot shaft (swingarm)	LS
Bushes (rear shock absorber)	LS
Bushes (relay arm and connecting rod)	LS
Bearings (relay arm and connecting rod)	LS
Pivoting points (brake pedal and change pedal)	LS
Bearings (steering head)	LS
Right handlebar end	LS
Pivoting points (brake lever and clutch lever)	LS
Clutch cable end	LS
Pivoting point (sidestand)	LS
Bushes (chain tensioner)	LS
Grease nipple (swingarm)	LS
Grease nipple (relay arm)	LS
Grease nipple (connecting rod)	LS

LUBRICATION DIAGRAM

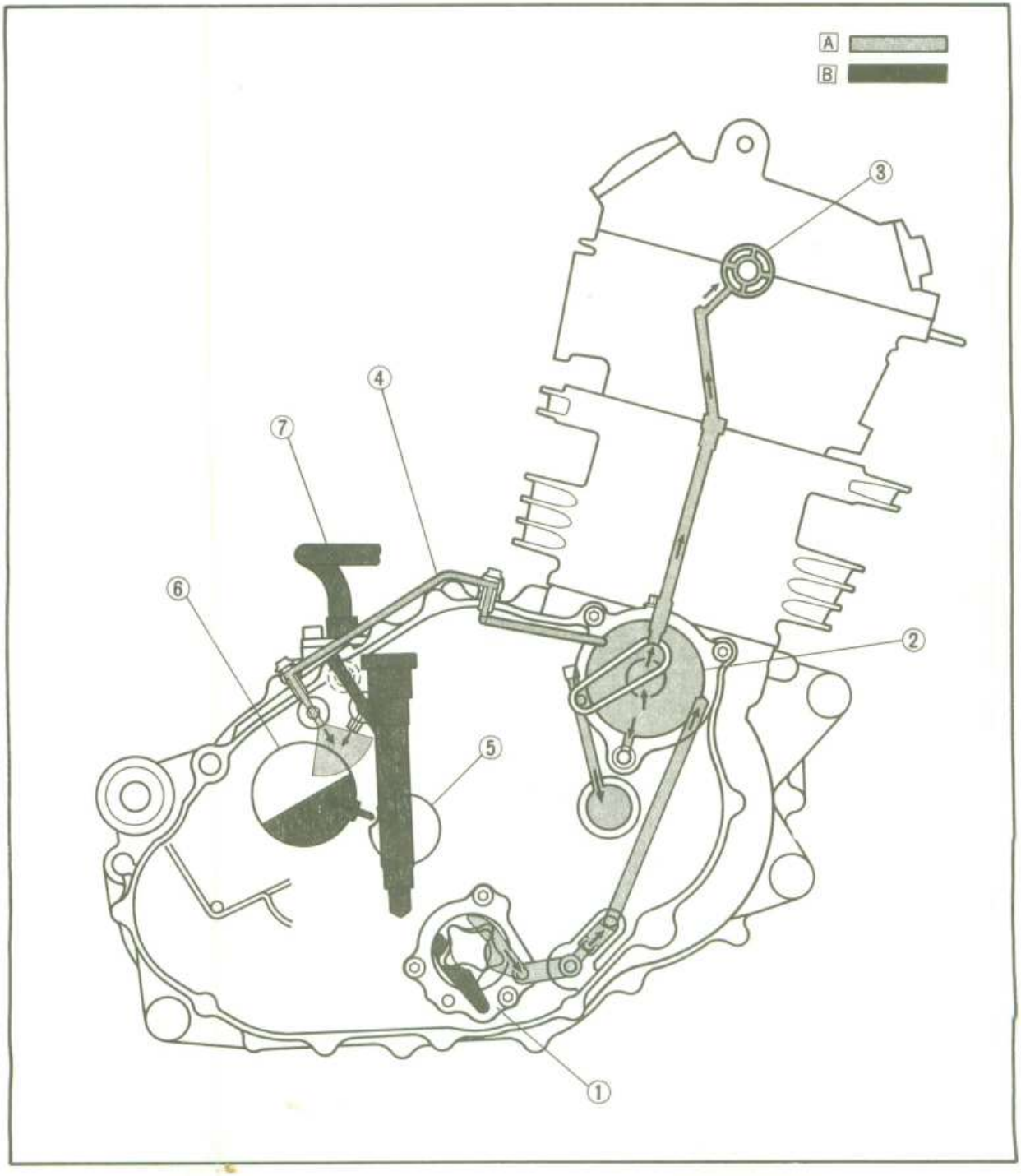
① Oil tank
② Oil strainer (oil tank)
③ Oil strainer (engine)
④ Oil pump

A Feed
B Scavenge



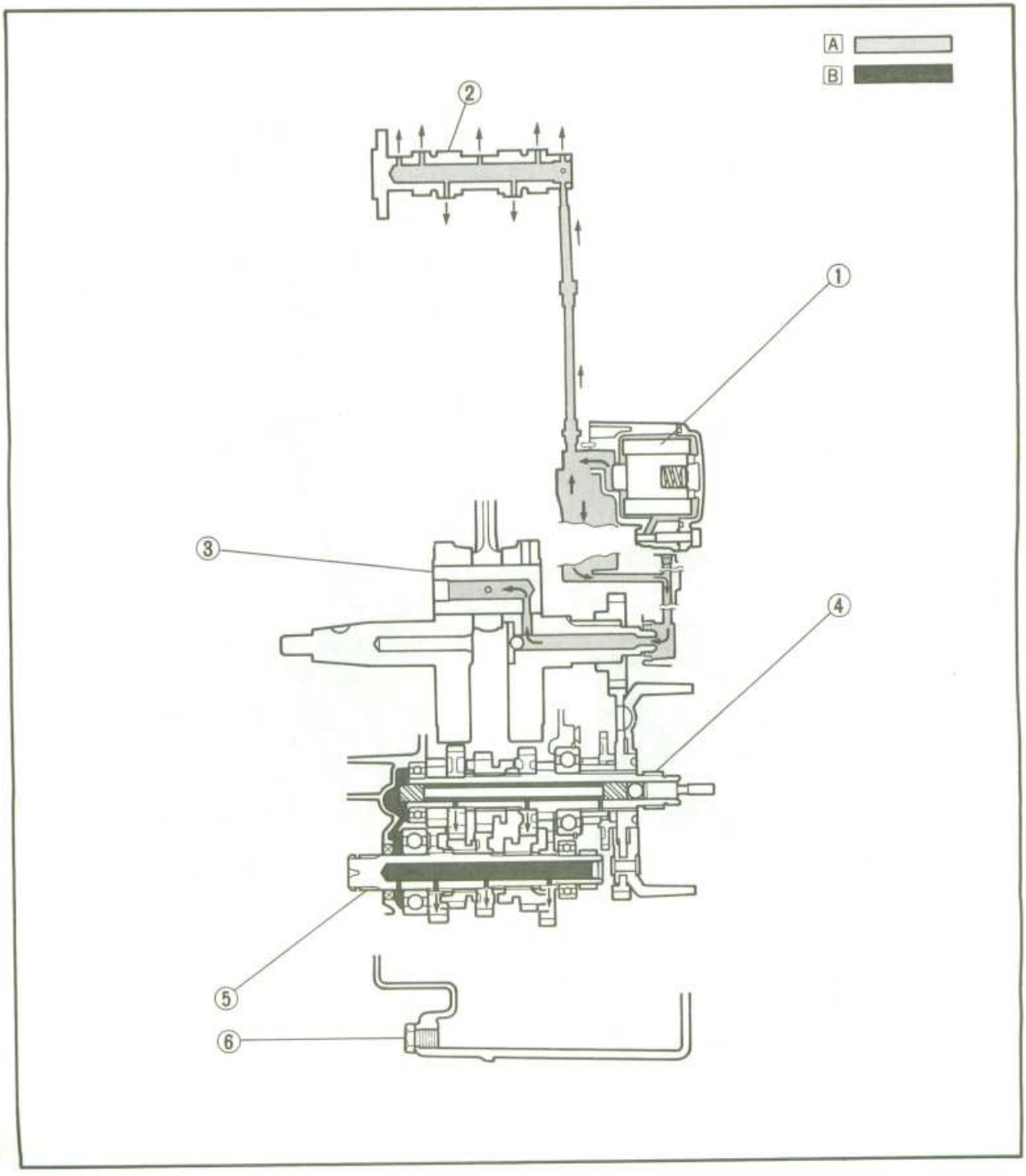
① Oil pump
② Oil filter
③ Cam shaft
④ Oil delivery pipe
⑤ Main axle
⑥ Drive axle
⑦ Oil hose

[A] Feed
[B] Scavenge



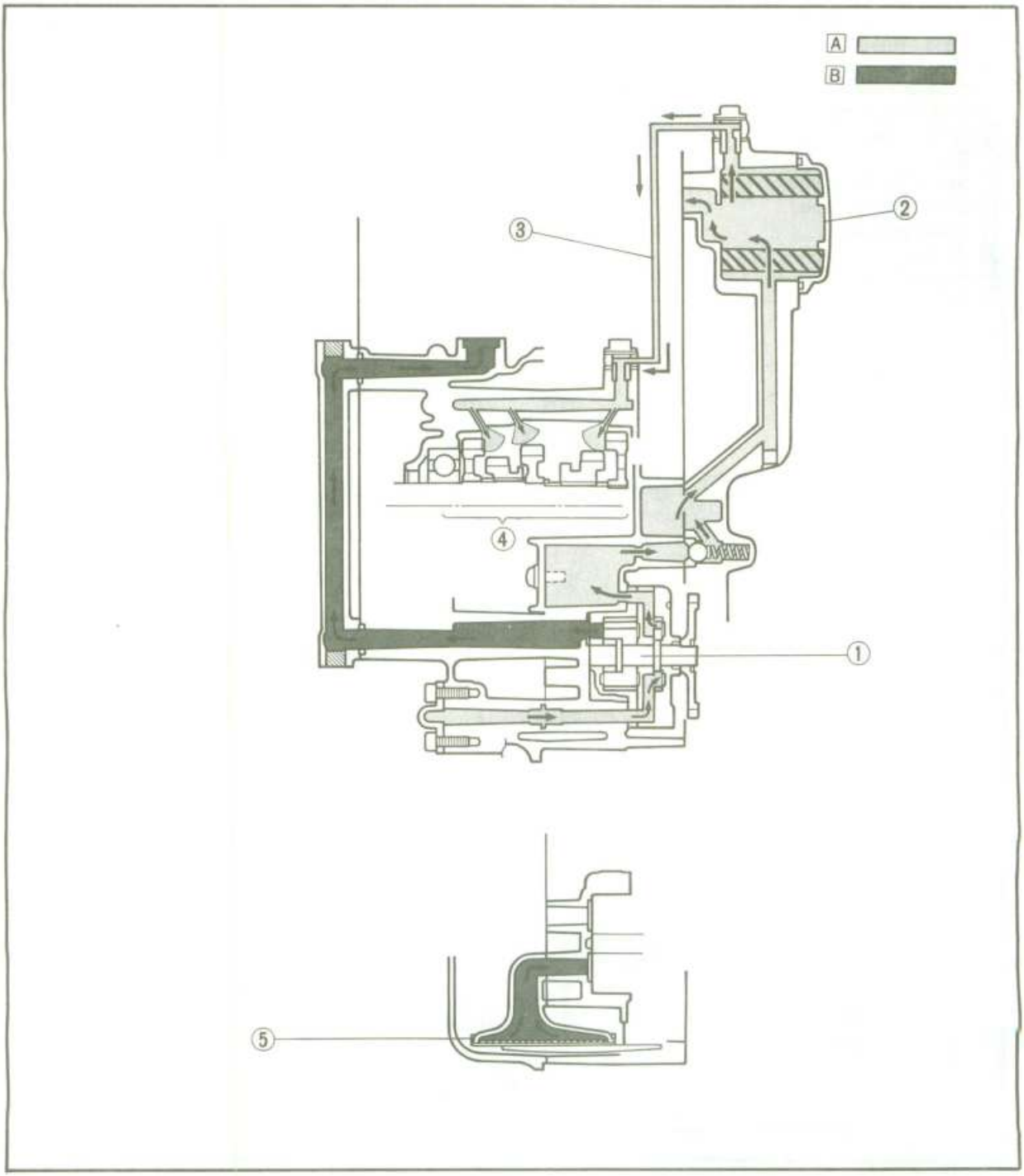
① Oil filter
② Cam shaft
③ Crank pin
④ Main axle
⑤ Drive axle
⑥ Drain bolt

Ⓐ Feed
Ⓑ Scavenge



① Oil pump
② Oil filter
③ Oil delivery pipe
④ Transmission
⑤ Oil strainer

[A] Feed
[B] Scavenge

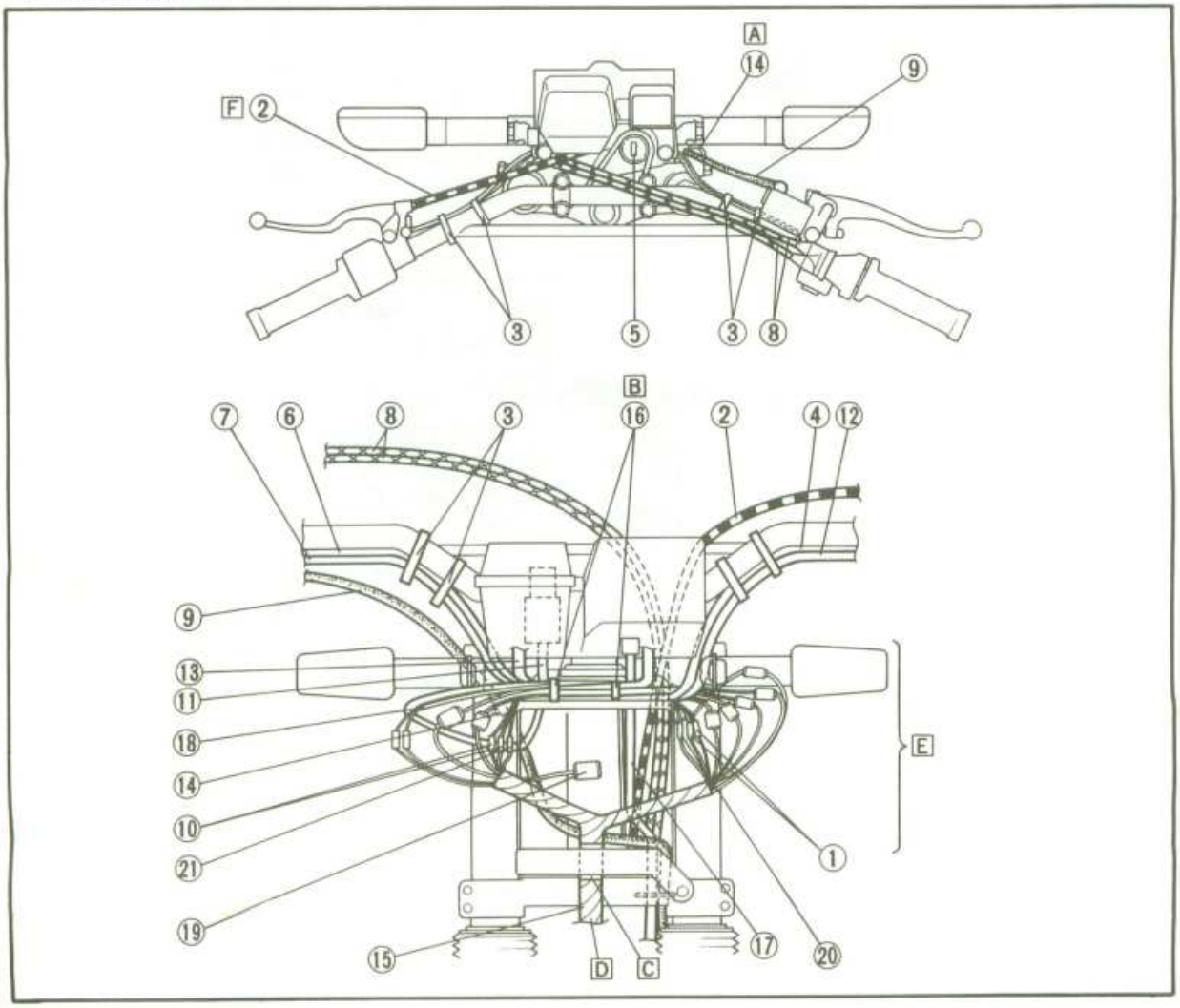


CABLE ROUTING

① Flasher light lead (right)
② Clutch cable
③ Band
④ Handlebar switch lead (left)
⑤ Main switch
⑥ Handlebar switch lead (right)
⑦ Front brake switch lead
⑧ Throttle cable
⑨ Brake hose
⑩ Flasher light lead (left)
⑪ Main switch lead
⑫ Clutch switch lead
⑬ Pilot box lead
⑭ Brake hose guide
⑮ Wireharness
⑯ Clamp
⑰ Speedometer cable
⑱ Speedometer lead
⑲ Headlight lead
⑳ Position light lead (right)
㉑ Position light lead (left)

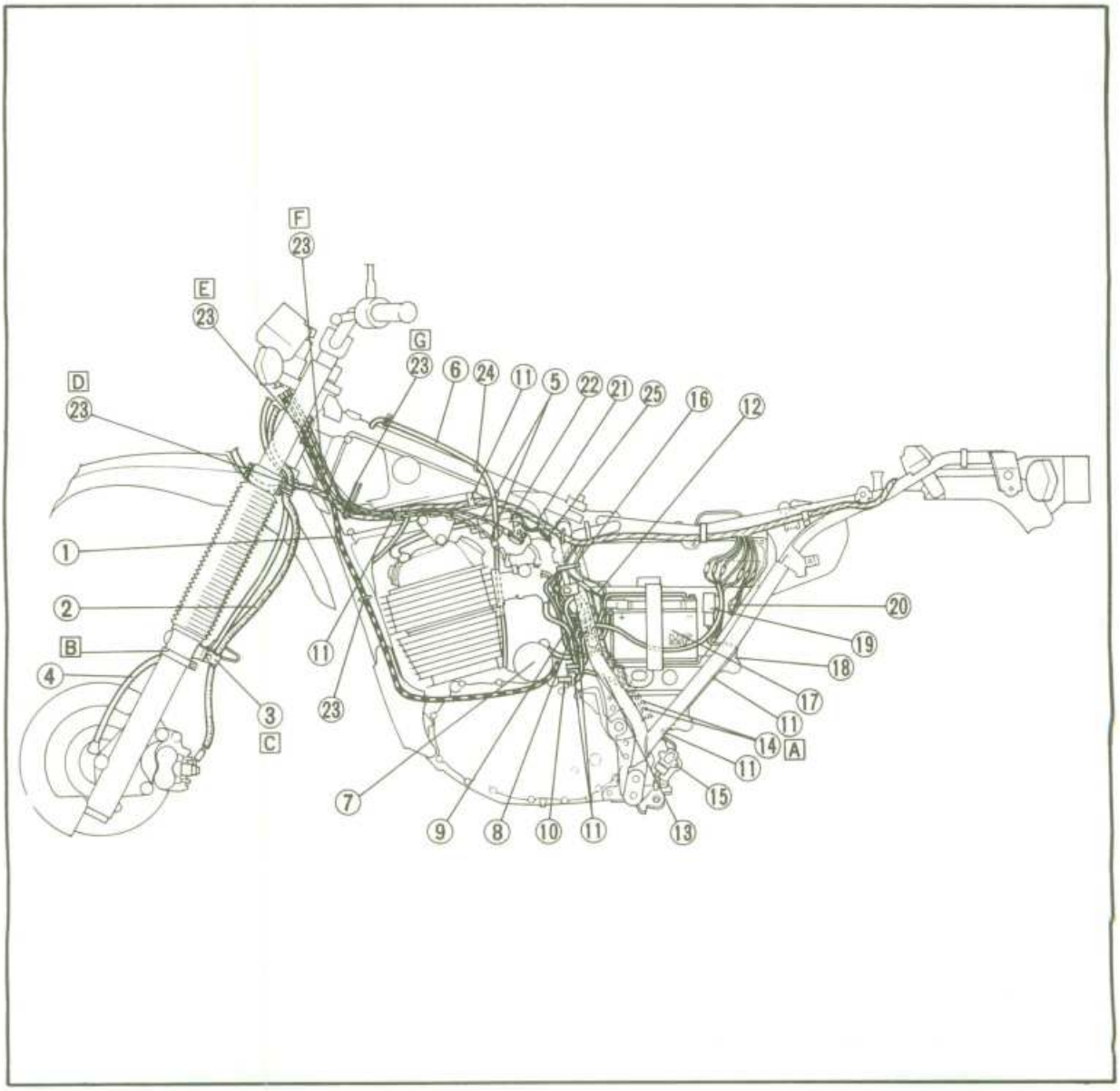
[A] Pass the brake hose through the guide.
[B] Clamp the handlebar switch lead (left), clutch switch lead and speedometer lead, above the handlebar switch lead (right), front brake switch lead(right) and main switch lead.
[C] Align the white tape on the wireharness with the Headlightstay.
[D] Pass the wireharness between the under bracket and front fender.
[E] Procedure
1. Connect the wires to the flasher light (right), pilot box, front brake switch, handlebar switch (right) and main switch.
2. Connect the wires to the clutch switch, handlebar switch(left), meters and flasher light (left), crossing the wires over the wires used in step 1.
3. After the wiring is completed, put the couper underneath the meter and pilot box.
4. Clamp the wires at the point where taping will stop near the wireharness.
(Locate the protection taped portion above the headlight rim.)

[F] Pass the clutch cable to the front of the throttle cable.



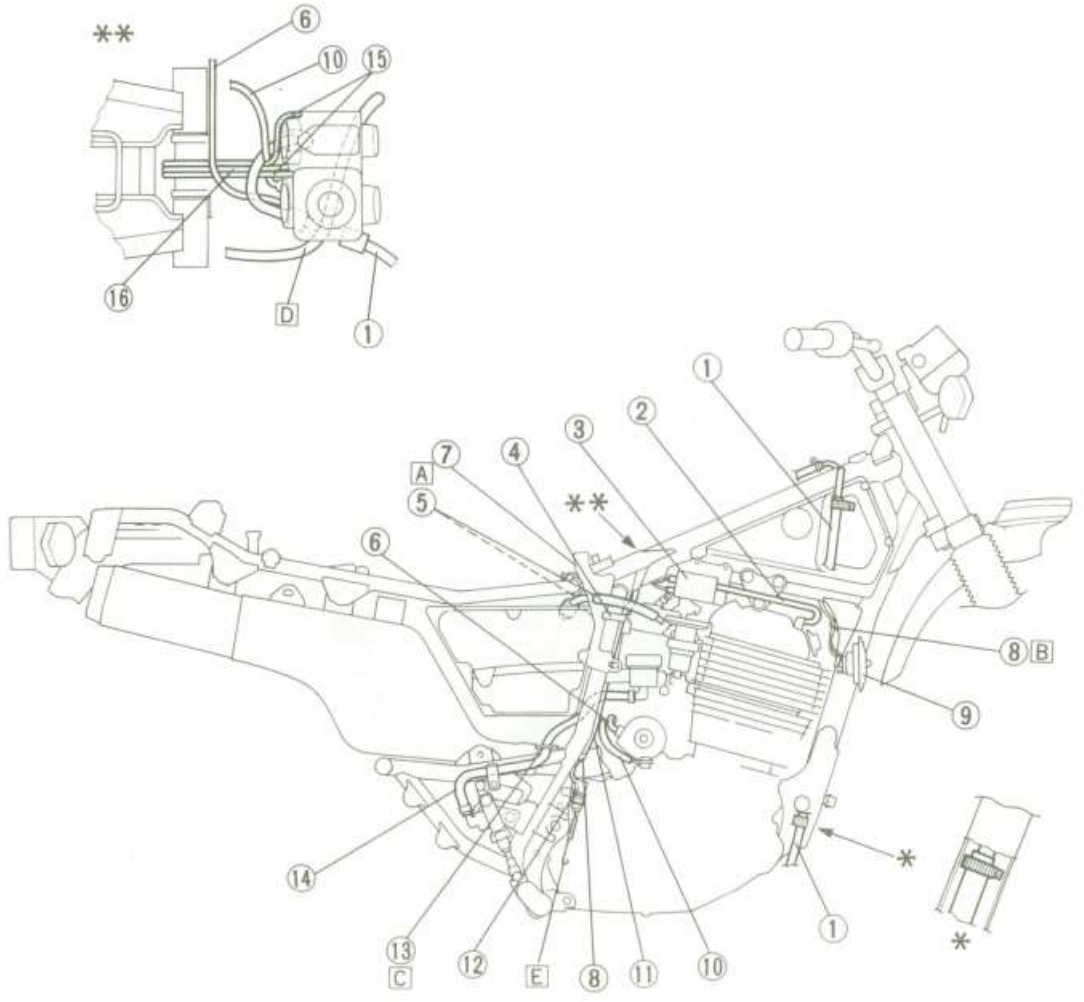
① Clutch cable
② Brake hose
③ Holder
④ Speedometer cable
⑤ Throttle cable
⑥ Breather hose (oil tank)
⑦ Starter motor
⑧ Starter relay
⑨ Starting circuit cut-off relay lead
⑩ A.C. magneto lead
⑪ Clamp
⑫ Battery ⊖ lead
⑬ Breather hose (carburetor)
⑭ Overflow hose (carburetor)
⑮ Sidestand switch
⑯ Band
⑰ Battery ⊕ lead
⑱ Sidestand switch lead
⑲ Flasher relay
⑳ Fuse
㉑ Wireharness
㉒ Ignition coil
㉓ Cable guide
㉔ Breather hose guide
㉕ Rear brake switch lead

[A] Pass the overflow hose (carburetor) and air vent hose (carburetor) between the relayarm and swing arms.
[B] Fit the hole of the meter cable band to the projection of the outer tube.
[C] Clamp the brake hose.
[D] Secure the brake hose outside and the meter cable inside with cable guides.
[E] Hook throttle cables 1, 2 and the clutch wire.
[F] Hook throttle cables 1, 2, clutch cable and wire harness.
[G] Hook throttle cables 1, 2 and wire harness.



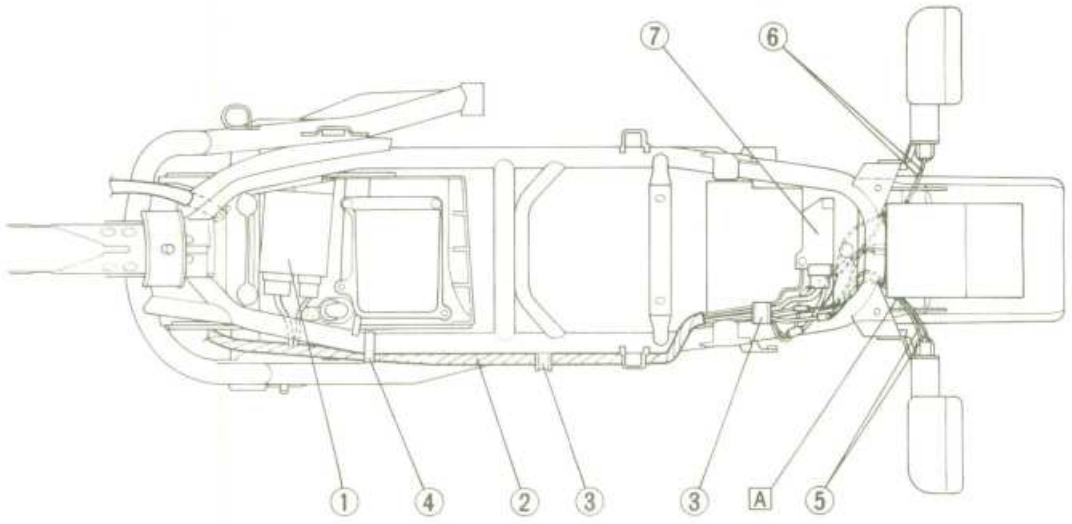
① Oil hose
② High tention code
③ Ignition coil
④ Band
⑤ Vacuum hose
⑥ Starter relay lead
⑦ Flap
⑧ Clamp
⑨ Horn
⑩ Battery ⊖ lead
⑪ Rear brake switch lead
⑫ Rear brake switch
⑬ Reservoir hose guide
⑭ Reservoir hose
⑮ Air vent hose
⑯ Overflow hose

A Pass the vacuum hose through the hole on the flap.
B Clamp the horn lead.
C Pass the reservoir hose through the reservoir hose guide.
D Pass the breather hose over the oil hose.
E Hook the brake switch spring to the inside of the brake pedal return spring to prevent crossing.



① Ignitor unit
② Wireharness
③ Clamp
④ Band
⑤ Flasher light lead (left)
⑥ Flasher light lead (right)
⑦ Rectifier/Regulator

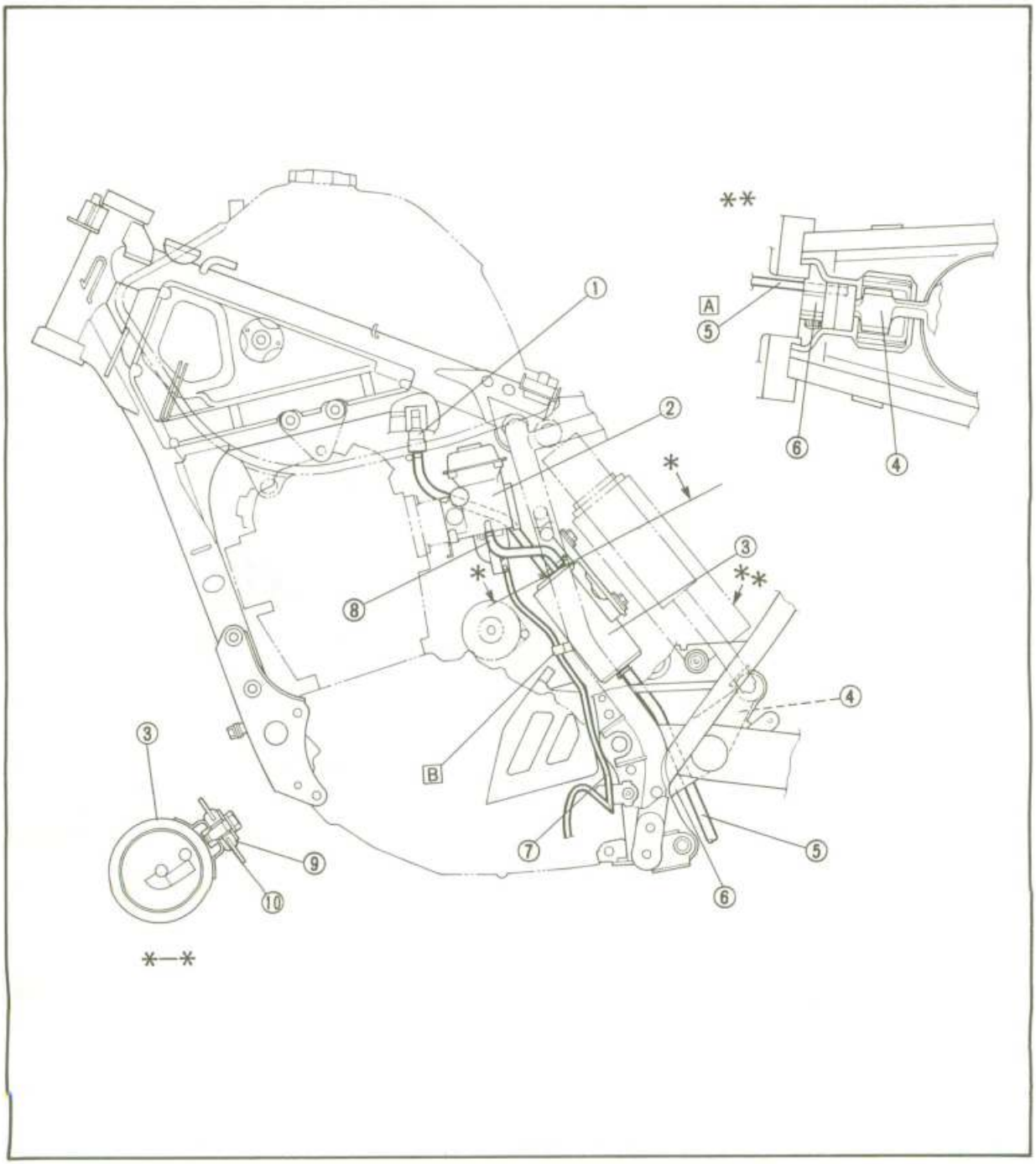
Ⓐ Pass the rear flasher light lead through the guide.



EMISSION HOSE ROUTING (XT600EAC ONLY)

① Roll over valve
② Carburetor
③ Canister
④ Relay arm
⑤ Hose (to atmosphere)
⑥ Connecting rod
⑦ Over flow hose
⑧ Hose (to carburetor)
⑨ Grommet
⑩ Collar

[A] Pass the hose to the right hand side of the relay arm and connecting rod.
[B] Pass the over flow hose through the clamp.





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.

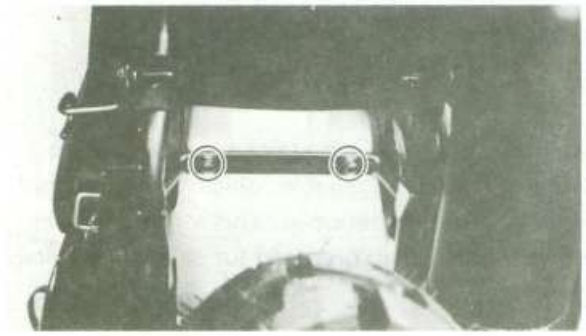
GENERAL MAINTENANCE LUBRICATION

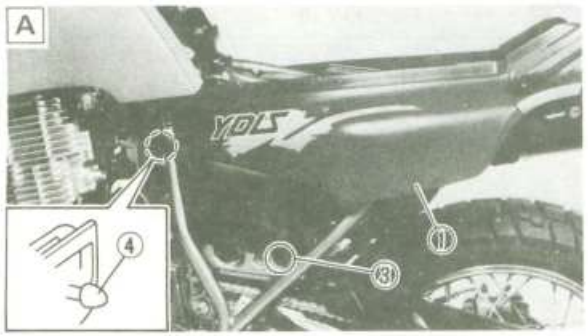
No.	ITEM	REMARKS	TYPE	INITIAL	ODOMETER REAGINGS				
				1,000 km or 1 month (600 mi)	**1 7,000 km or 7 months (4,400 mi)	**2 13,000 km or 13 months (8,200 mi)	19,000 km or 19 months (12,000 mi)	25,000 km or 25 months (15,800 mi)	31,000 km or 31 months (19,600 mi)
1.	Engine oil	Warm-up engine before draining.	*1) Yamalube 4 (20W40) or SAE 20W40 type "SE" motor oil. *2) Yamalube 4 (10W30) or SAE 10W30 type "SE" motor oil.	O	O	O	O	O	O
2.	Oil filter/*Strainer	Replace filter element and clean oil strainer. Replace oil strainer if damage.	–	O		O		O	
3*	Air filter	Clean with compressed air. Replace if necessary.	–		O	O	O	O	O
4*	Brake system	Adjust free play. Replace pads if necessary.	–	O	O	O	O	O	O
5*	Clutch	Adjust free play.	–	O	O	O	O	O	O
6.	Drive chain	Check chain condition. Adjust and lubricate chain tholoughly. rou	SAE 30W~50W motor oil.	Every 500 km (300 mi)					
7*	Control and meter cable	Apply chain lube thoroughly.	Yamaha chain and cable lube or SAE 10W30 motor oil.	O	O	O	O	O	O
8*	Rear arm pivot shaft and rear suspention link pivots.	Apply untile new grease shows.	Lithium soap base grease.		O	O	O	O	O
9.	Brake/Clutch lever pivot shaft	Apply chain lube lightly.	Yamaha chain and cable lube or SAE 10W30 motor oil.		O	O	O	O	O
10.	Brake pedal and shift pedal shaft	Lubricate. Apply chain lube lightly.	Yamaha chain and cable lube or SAE 10W30 motor oil.		O	O	O	O	O
11*	Sidestand pivot	Check operation and lubricate. Apply chain lube lightly.	Yamaha chain and cable lube or SAE 10W30 motor oil.		O	O	O	O	O
12*	Front fork	Check operation and leakage.	–		O	O	O	O	O
13*	Steering bearings	Check bearings assembly for looseness. Moderately repack every 24,000 km (15,200 mi).	Medium weight wheel bearing grease.		O	O	O	O	O
14*	Wheel bearings	Check bearings for smooth rotation.	–		O	O	O	O	O
15*	Sidestand switch	Check and clean or replace if necessary.	–	O	O	O	O	O	O

*1) If ambient temperature does not go below 5°C.
*2) If ambient temperature does not go above 15°C.
* It is recommended that these items by serviced by a Yamaha dealer or other qualitied mechanic.

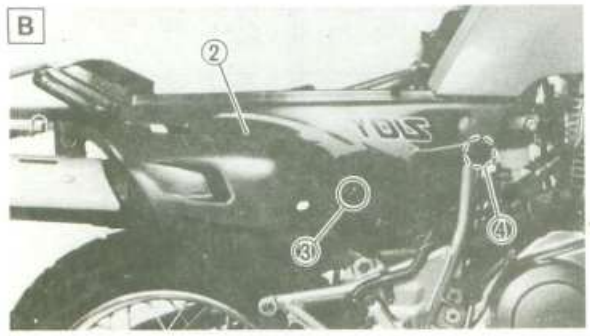
NOTE:

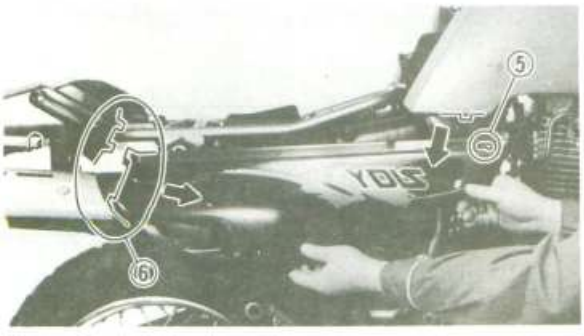
For farther odometer reading, repeat the above maintenance at the period established; **1: Every 6,000 km (3,800 mi), **2: Every 12,000 km (7,600 mi), and **3: Every 24,000 km (15,200 mi) intervals.











SEAT, FUEL TANK AND COVER
REMOVAL

⚠ WARNING

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

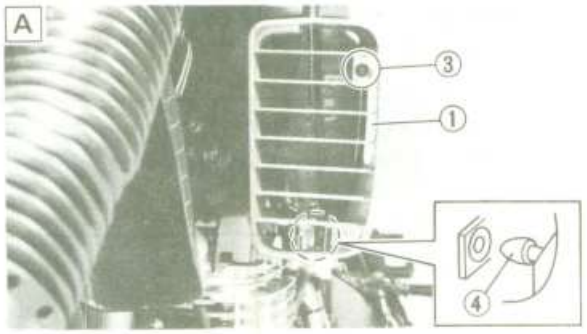
1. Remove:
   - Seat

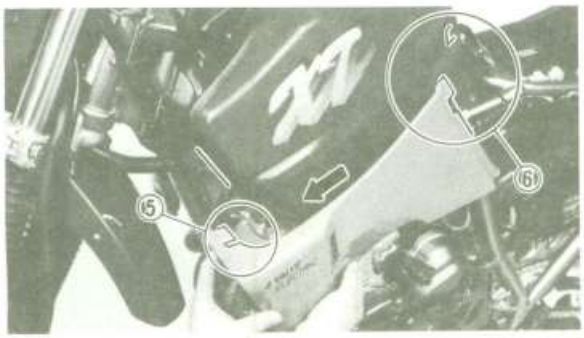
2. Remove:
   - Side cover(left) ①
   - Sidecover(right) ②

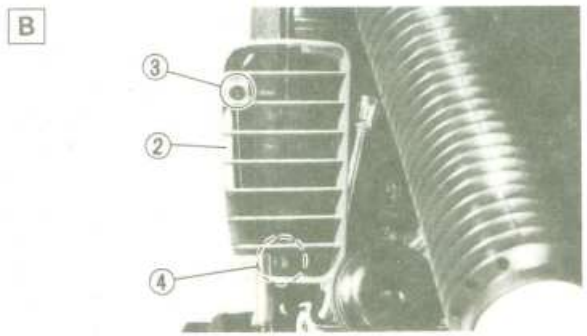
NOTE:

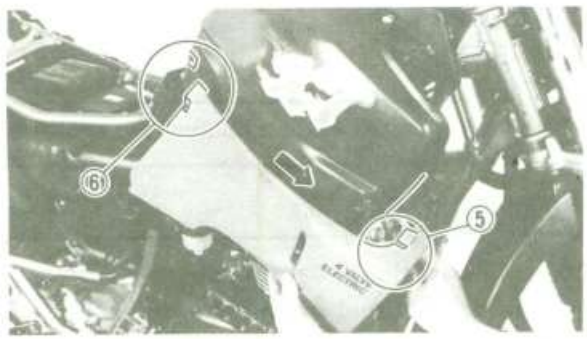
When removing the side covers, remove the bolt ③. Then pull the front portion of the side cover outward to remove the projection ④ from the grommet. Then pull the front portion ⑤ of the side cover downward, then pull forward to remove from the tail cover ⑥.

A Side cover(left)
B Side cover(right)









3. Remove:
   - Air scoop(left) ①
   - Air scoop(right) ②

NOTE:

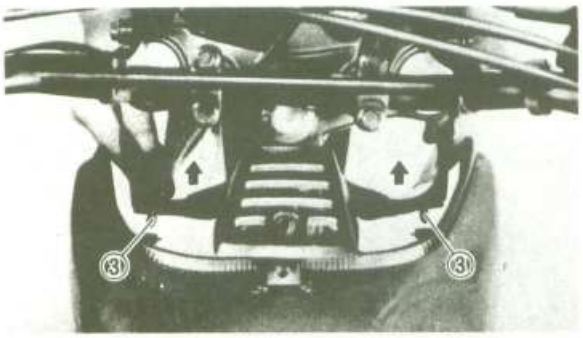
When removing the air scoops, remove the bolt ③. Then pull the bottom portion of the air scoop outward to remove the projection ④ from the grommet. Then pull the front portion ⑤ of the air scoop forward, then pull forward to remove from the fuel tunk ⑥.

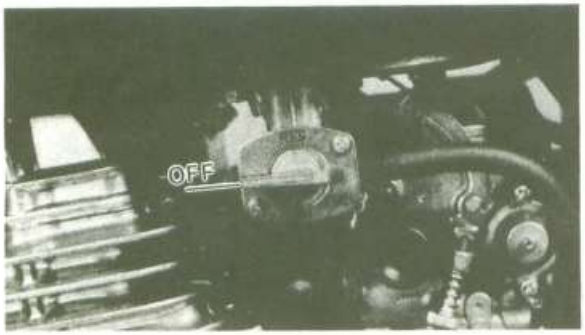
A Air scoop(left)
B Air scoop(right)



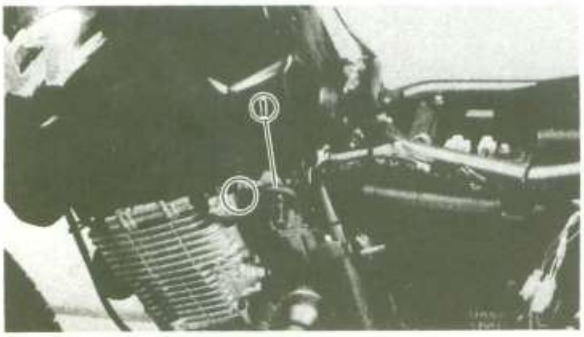
4. Remove:
   • Cover (fuel tank) ①

NOTE:
When removing the cover ①, remove the bolt ②. Then pull the projections ③ from the grommets.





5. Turn the fuel cock to "OFF".

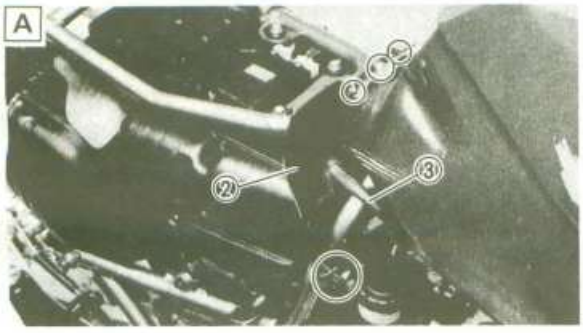


6. Disconnect:
   • Fuel hose ①

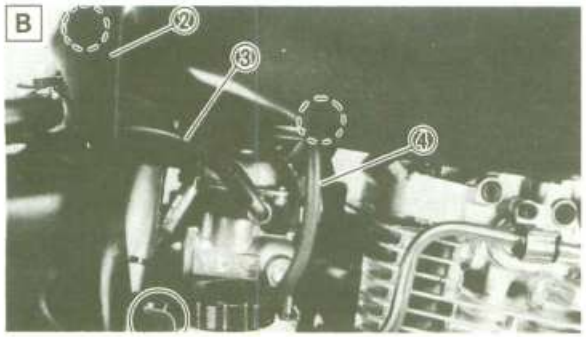
NOTE:
Place a rug on the engine to absorb a spilt fuel.

⚠ WARNING

Gasoline is highly flammable.
Aboid spilling fuel on the hot engine.



7. Disconnect:
   • Flap ②
   • Vacuum hose ③
   • Roll over valve hose ④
   (XT600EAC)
8. Remove:
   • Fuel tank







A Except for XT600EAC
B For XT600EAC

INSTALLATION

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

1. Install:
   - Flap
   - Side covers
   - Seat

Bolt (side cover):
7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (seat):
10 Nm(1.0 m·kg, 7.2 ft·lb)

ENGINE

VALVE CLEARANCE ADJUSTMENT

NOTE:

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

CAUTION:

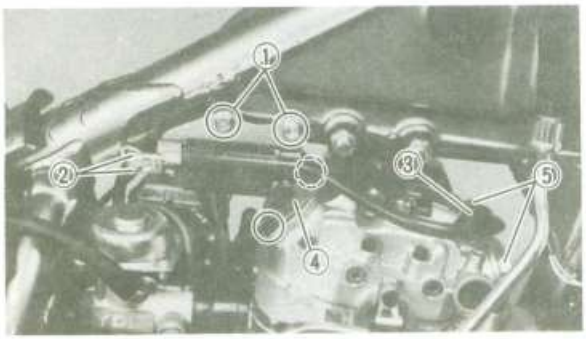
When removing the spark plug and tappet covers, use caution to prevent an object from falling into the engine.

⚠WARNING

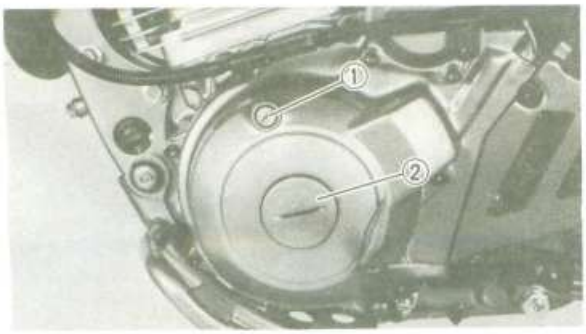
Securely support the motorcycle so there is no danger of it falling over.

1. Remove:
   - Seat
   - Side covers
   - Air scoops
   - Cover(fuel tank)
   - Fuel tank

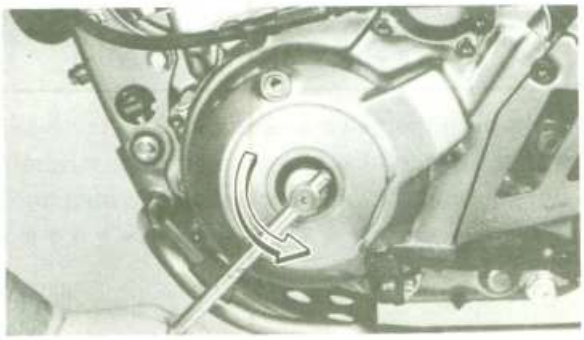
   Refer to the "SEAT,FUEL TANK AND COVER"section.



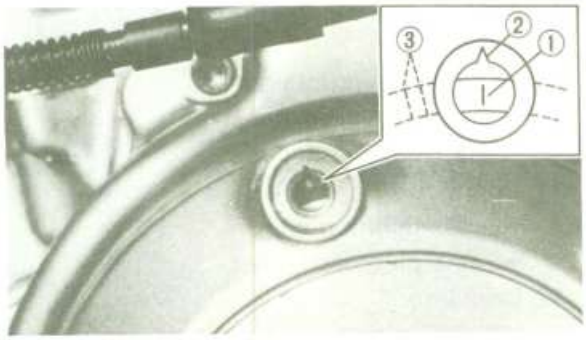
2. Remove:
   - Bolts(ignition coil bracket) ①
3. Disconnect:
   - Leads(ignition coil) ②
   - Plug cap ③
4. Remove:
   - Spark plug
   - Tappet cover ④(intake)
   - Tappet cover ⑤(exhaust)



5. Remove:
   - Plug ①
   - Plug ②



6. Turn the crankshaft counterclockwise with a wrench.



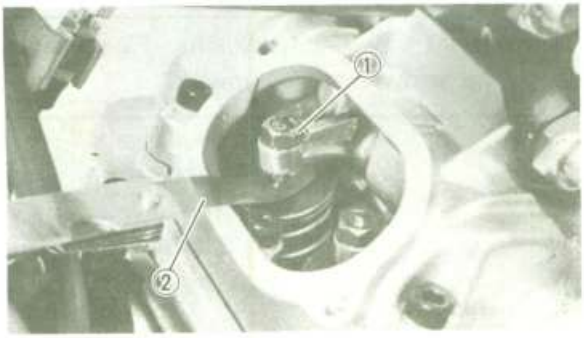
7. Align:
   - "T" mark ①
     With stationary pointer ②.

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

③ Ignition timing mark.

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

Valve clearance (cold):
Intake:
0.05~0.10mm(0.002~0.004 in)
Exhaust:
0.12~0.17mm(0.005~0.007 in)

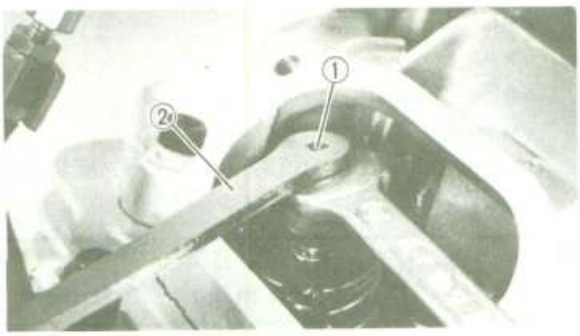


9. Adjust:
   - Valve clearance

* *

Adjustment steps:

- Loosen the locknut ①.
- Insert a Feeler Gauge ② between the adjuster end and the valve end.
- Turn the adjuster ① clockwise or counterclockwise with the valve adjusting tool ② until proper clearance is obtained.



Valve adjusting tool:
P/N.YM-08035
P/N.90890-01311

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

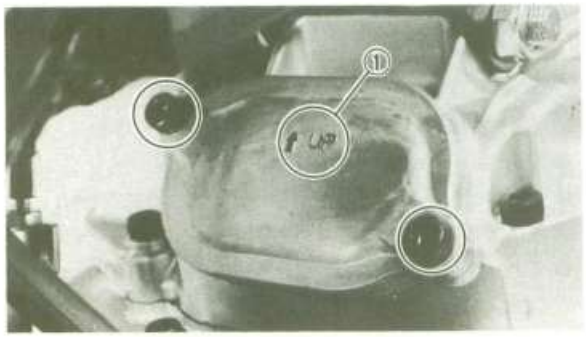
Locknut:
14 Nm(1.4 m·kg, 10 ft·lb)

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

* *

10. Install:
    - Plugs
    - Tappet cover(intake)
    - Tappet cover (exhaust)
    - Spark plug
11. Connect:
    - Leads (ignition coil)
    - Spark plug cap
12. Install:
    - Bolts(ignition coil bracket)

Tappet cover(exhaust):
12 Nm (1.2 m·kg,8.7 ft·lb)
Bolt(tappet cover-intake):
10 Nm (1.0 m·kg, 7.2 ft·lb)
Spark plug:
18 Nm (1.8 m·kg,13 ft·lb)

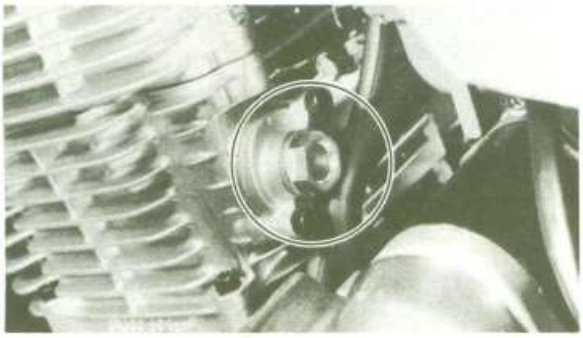


NOTE:
The tappet cover (intake) should be installed with the arrow mark ① upward.

13. Install:
    - Fuel tank
    - Cover
    - Air scoops
    - Side covers
    - Seat

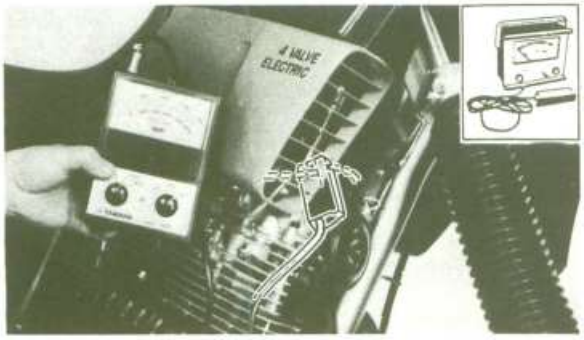
    Refer to the "SEAT, FUEL TANK AND COVER"section.

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



CAM CHAIN ADJUSTMENT

Adjustment free.



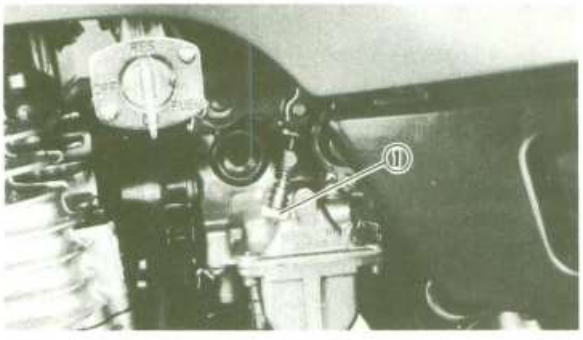
IDLE SPEED ADJUSTMENT

1. Start the engine and let it warm up.
2. Attach:
   - Inductive tachometer
     to spark plug lead.

Inductive tachometer
P/N/ YU-08036-A
P/N.90890-03113

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

Engine idle speed:
1,300~1,400 r/min



4. Adjust:
   - Engine idle speed

* *

Adjustment steps:

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

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

* *

NOTE:

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

5. Remove:
   - Inductive tachometer

INSP ADJ

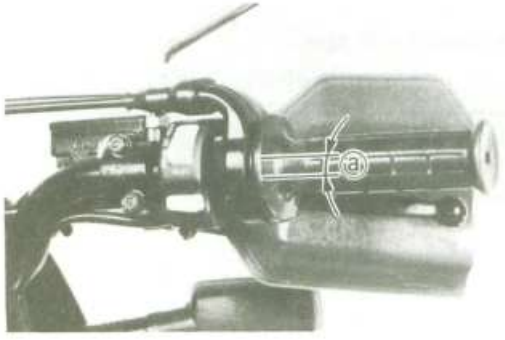
THROTTLE CABLE FREE PLAY ADJUSTMNT

NOTE:

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

1. Remove:
   - Seat
   - Side covers
   - Air scoops
   - Cover (fuel tank)
   - Fuel tank

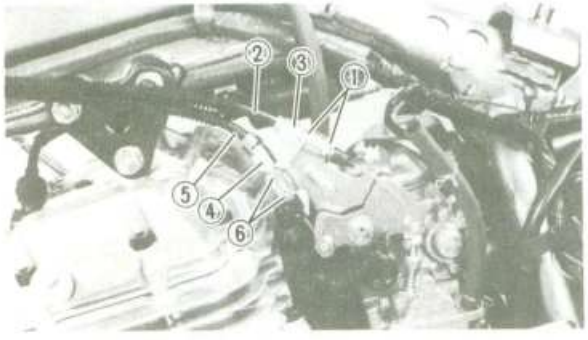
   Refer to the "SEAT, FUEL TANK AND COVER" section.



2. Check:
   - Throttle cable free play ⓐ

   Out of specification→Adjust.

Throttle cable free play:
3~5mm (0.12~0.20 in)



3. Adjust:
   - Throttle cable free play

* *

Adjustment steps:

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

⑥ Locknuts

- Tighten the locknuts.

* *

4. Install:
   - Fuel tank
   - Cover
   - Air scoops
   - Side covers
   - Seat

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

SPARK PLUG INSPECTION

1. Remove:
   - Seat
   - Side covers
   - Air scoops
   - Cover (fuel tank)
   - Fuel tank

   Refer to the "SEAT, FUEL TANK AND COVER" section.
2. Disconnect:
   - Spark plug cap
3. Remove:
   - Spark plug



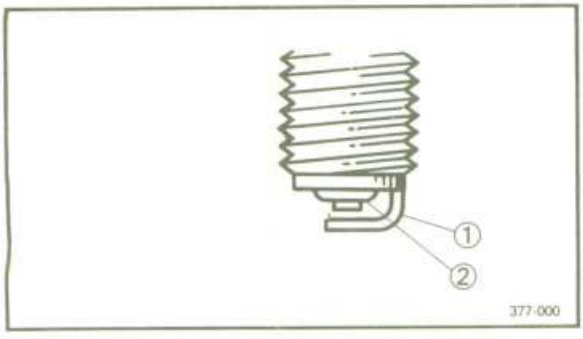
CAUTION:

When removing the spark plug, use caution to prevent an object from falling into the engine.

4. Inspect:
   - Spark plug type

   Incorrect→Replace.

Standard spark plug:
DPR8EA-9 (N.G.K), X24EPR-U9 (N.D.)

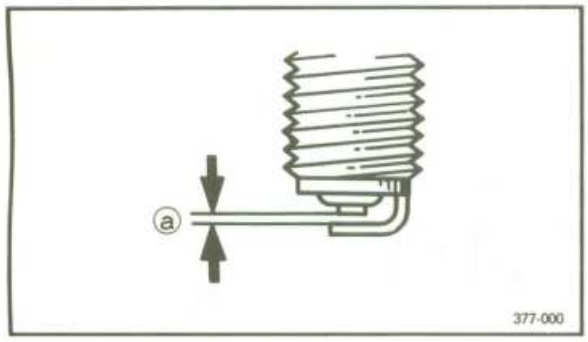


5. Inspect:
   - Electrode ①

   Wear/Damage→Replace.
   - Insulator ②

   Abnormal color→Replace.

   Normal color is a medium-to-light tan color.



6. Clean the spark plug with a spark plug cleaner or wire brush.
7. Measure:
   - Plug gap ⓐ

   Use a wire gauge or feeler gauge.
   Out of specification→Regap.

Spark plug gap:
DPR8EA-9, X24EPR-U9
0.8 ~ 0.9 mm (0.031 ~ 0.035 in)

8. Tighten:
   - Spark plug

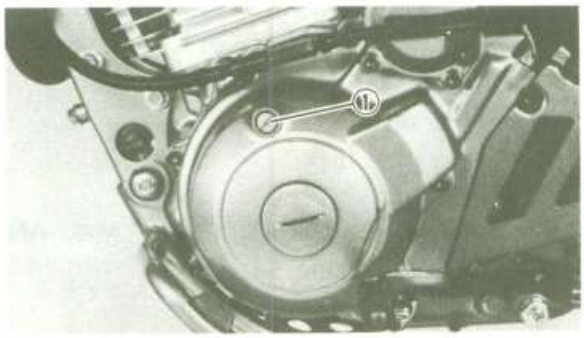
   Before installing a spark plug, clean the gasket and plug surfaces.

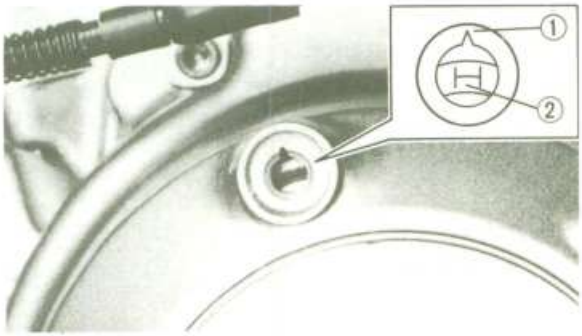
Spark plug:
18 Nm (1.8 m.kg,13 ft·lb)

NOTE:
Finger-tighten the spark plug before torquing to specification.

9. Connect:
   - Spark plug cap
10. Install:
   - Fuel tank
   - Cover
   - Air scoops
   - Side covers
   - Seat

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





IGNITION TIMING CHECK

1. Start the engine and let it warm up.
2. Attach:
   - Inductive tachometer
   - Timing light

   to spark plug lead.

Inductive tachometer:
P/N. YU-08036-A
P/N. 90890-03113
Timing light:
P/N. YM-33277-A
P/N. 90890-03109

3. Remove:
   - Plug ①

CAUTION:

Under extreme conditions, the oil may spurt out when removing the plug. Therefore care should be used when removing.

4. Check:
   - Ignition timing

* *

Checking steps:

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

Engine speed:
1,350 r/min

- Visually check the stationary pointer ① to verify it is within the required firing range ② indicated on the flywheel.
  Incorrect firing range→Check pickup assembly.

NOTE:

Ignition timing is not adjustable.

* *

5. Install:
   - Plug
6. Remove:
   - Timing light
   - Inductive tachometer

INSP ADJ

COMPRESSION PRESSURE MEASUREMENT

NOTE:

Insufficient compression pressure will result in performance loss.

1. Remove:
   - Seat
   - Side covers
   - Air scoops
   - Cover (fuel tank)
   - Fuel tank

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

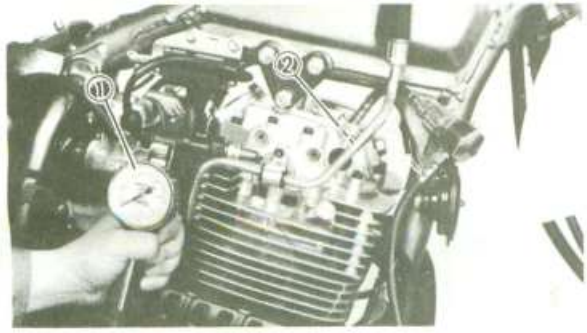
2. Check:
   - Valve clearance

   Out of specification→Adjust.
   Refer to the "VALVE CLEARANCE ADJUSTMENT" section.

3. Install:
   - Sub tank (fuel)

4. Start the engine and let it warm up.
   Then stop the engine.

5. Remove:
   - Spark plug



6. Install:
   - Compression gauge ①
   - Adapter ②

Compression gauge:
P/N.YU-33223
P/N.90890-03081
Adapter:
P/N.YU-33223-3
Extension
P/N.90890-04082



7. Check:
   - Compression pressure

* *

Checking steps:

- 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.

⚠ WARNING

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

- Check reading with specified levels (see chart).

Compression pressure (at sea level):
Standard:
1,100 kPa (11kg/cm², 156 psi)
Minimum:
900 kpa (9kg/cm², 128 psi)
Maximum:
1,200 kPa (12kg/cm², 171 psi)

- If pressure falls below the minimum level:

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

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

* *

8. Remove:
   - Sub tank (fuel)
   - Compression gauge (with an adapter)

9. Install:
   - Spark plug

Spark plug:
18Nm (1.8m · kg, 13ft · lb)

Refer to the "SPARK PLUG INSPECTION" section.

10. Connect:
    - Spark plug cap
11. Install:
    - Fuel tank
    - Cover
    - Air scoops
    - Side covers
    - Seat

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

ENGINE OIL LEVEL INSPECTION

CAUTION:

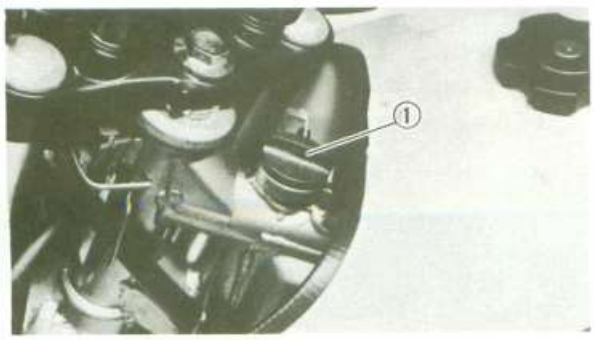
Do not add any chemical additives. Engine oil also lubricates the clutch and additives could cause clutch slippage.

⚠ WARNING

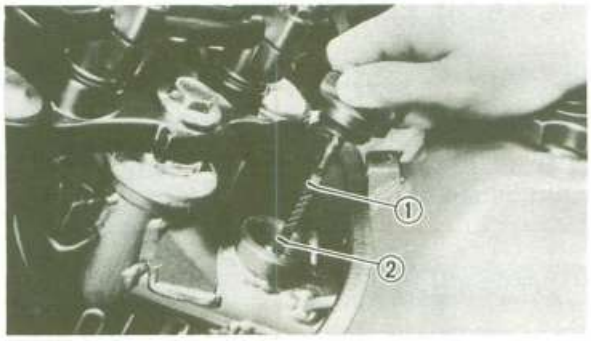
Never remove the oil tank cap just after high speed operation. The heated oil could spurt out, causing danger. Wait until the oil cools down to approximately 60°C (140°F).

1. Place the motorcycle on a level place.
2. Remove:
   - Cover (fuel tank)

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



3. Remove:
   - Oil tank cap ①



4. Inspect:
   • Oil level
   Oil level should be between the maximum level ① and minimum level ②.

NOTE:

- Be sure the motorcycle is positioned *straight* up when checking the oil level.
- When inspecting the oil level, do not screw the oil level gauge into the oil tank. Insert the gauge lightly.

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

Recommended oil:
SAE 20W40 type SE motor oil or
SAE 10W30 type SE motor oil

5. Install:
   • Oil tank cap
6. Start the engine and warm up until the oil temperature rises to aporoximately 60°C (140°F).

CAUTION:

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

7. Idle the engine more than 10 seconds while keeping the motorcycle upright. Then stop the engine and add the oil to the maximum level.
8. Install:
   • Oil tank cap
   • Cover

Oil quantity:
Periodic oil change
2.7 L (2.4 Imp qt, 2.9 US qt)
With oil filter replacement
2.8 L (2.5 Imp qt, 3.0 US qt)
Total amount
3.3 L (2.9 Imp qt, 3.5 US qt)

ENGINE OIL REPLACEMENT

CAUTION:

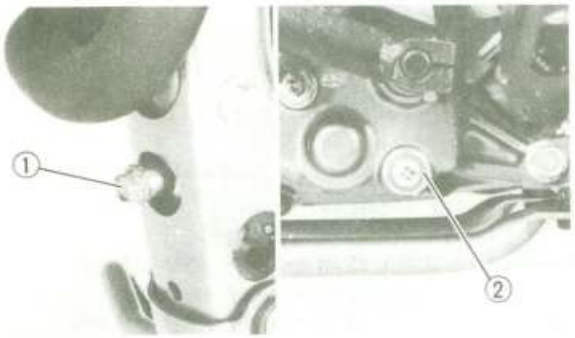
Do not add any chemical additives. Engine oil also lubricates the clutch and additives could cause clutch slippage.

⚠WARNING

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

Engine oil replacement (without oil filter)

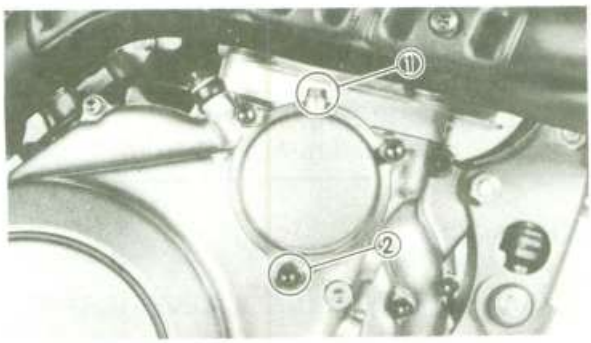
1. Place the motorcycle on a level place.
2. Remove:
   - Cover (fuel tank)
     Refer to the "SEAT, FUEL TANK AND COVER" section.
3. Warm up the engine for several minutes, then stop the engine. Then place a receptacle under the drain bolt.



4. Remove:
   - Oil tank cap
   - Drain bolt (oil tank) ①
   - Drain bolt(crankcase)②
5. Drain:
   - Engine oil

NOTE:

When the drain bolt ① is removed, the oil will not drain directly downward. Therefore a receptacle should be placed slightly in front of the drain bolt.



6. Remove:
   - Air bleed screw ①
   - Bolt ② (oil filter cover)

NOTE:

The oil filter cover is secured by three screws. The lower one should be removed so that the filter cavity will drain.

7. Inspect:
   - Gasket (each)

   Damage→Replace.
8. Install:
   - Bolt (oil filter cover)
   - Drain bolt (oil tank)
   - Drain bolt (crankcase)

Bolt (oil filter cover):
10 Nm (1.0m · kg,7.2 ft · lb)
Drain bolt (oil tank):
18 Nm (1.8 m · kg, 13 ft · lb)
Drain bolt (crankcase):
30 Nm (3.0 m · kg, 22 ft · lb)

9. Fill:
   - Oil tank (to frame)
   - Oil filter Chamber

Recommended oil:
SAE 20W40 type SE/SF motor oil
or SAE 10W30 type SE/SF motor oil
Oil quantity:
Oil tank
2.7 L (2.4 Imp qt, 2.9 US qt)
Oil filter room
0.06 L (0.05 Imp qt , 0.06 US qt)

CAUTION:

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

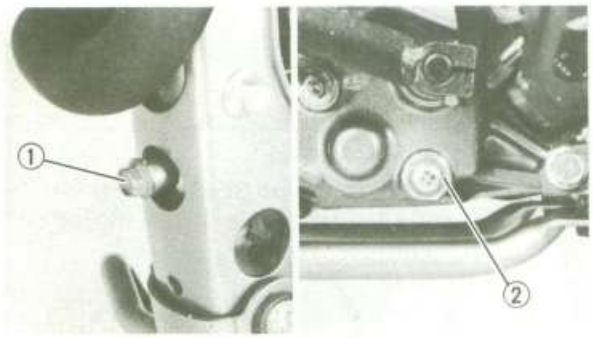
10. Install:
    - Air bleed screw

	Air bleed screw: **5 Nm (0.5 m·kg, 3.6 ft·lb)**

11. Inspect:
    - Oil level
      Refer to the "ENGINE OIL LEVEL INSPECTION" section.
    - Oil pressure
      Refer to the "OIL PRESSURE INSPECTION" section.
    - Oil leaks
12. Install:
    - Oil tank cap
    - Cover

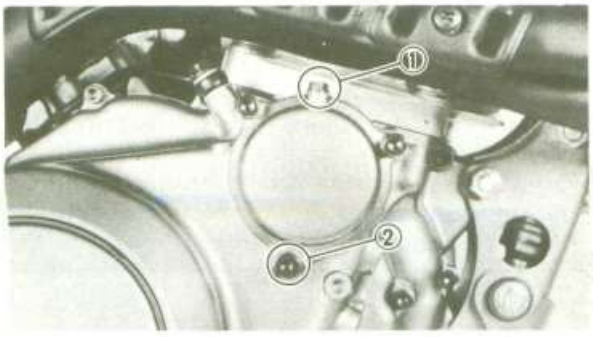
Engine oil replacement (with oil filter)

1. Place the motorcycle on a level place.
2. Remove:
    - Cover (fuel tank)
      Refer to the "SEAT, FUEL TANK AND COVER" section.
3. Warm up the engine for several minutes, then stop the engine. Then place a receptacle under the drain bolts.



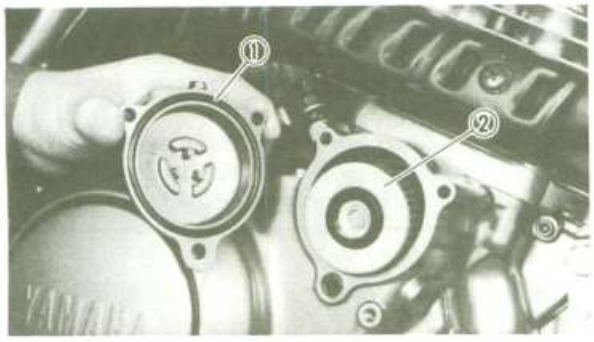
4. Remove:
    - Oil tank cap
    - Drain bolt ① (oil tank)
    - Drain bolt ② (crankcase)
5. Drain:
    - Engine oil

NOTE:
When the drain bolt ① is removed, the oil will not drain directly downward. Therefore a receptacle should be placed slightly in front of the drain bolt.

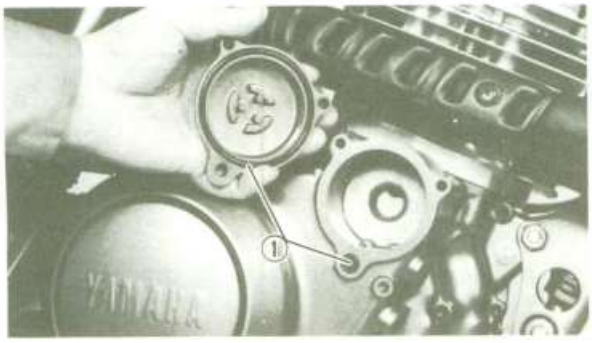


6. Remove:
    - Air bleed screw ①
    - Bolt ②

NOTE:
The oil filter cover is secured by three screws. The lower one should be removed so that the filter cavity will drain.

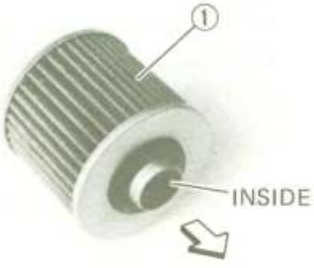


7. Remove:
   - Oil filter cover ①
   - Oil filter ②



8. Inspect:
   - Gasket (each)
   - O-ring ①
     Damage→Replace.





9. Install:
   - Oil filter (new) ①

CAUTION:

Install the oil filter as shown.

   - Oil filter cover
   - Drain bolt (crankcase)
   - Drain bolt (oil tank)

Bolt (oil filter cover):
10 Nm (1.0 m · kg, 7.2 ft · lb)
Drain bolt (oil tank):
18 Nm (1.8 m · kg, 13 ft · lb)
Drain bolt (crankcase):
30 Nm (3.0 m · kg, 22 ft · lb)

10. Fill:
    - Oil tank (to frame)
    - Oil filter chamber

Recommended oil:
SAE 20W40 type SE/SF motor oil
or SAE 10W30 type SE/SF motor oil
Oil quantity:
Oil tank
2.8 L (2.5 Imp qt, 3.0 US qt)
Oil filter room
0.06 L (0.05 Imp qt , 0.06 US qt)

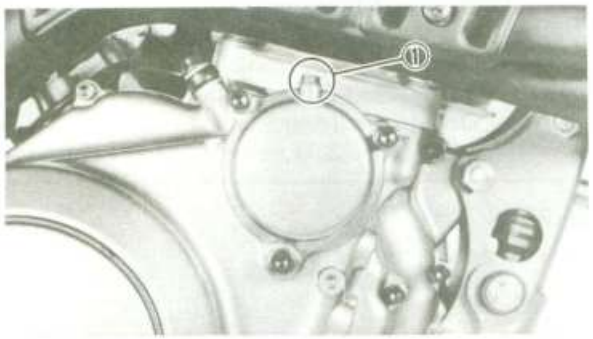
CAUTION:

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

11. Install:
    - Air bleed screw

	Air bleed screw: 5 Nm (0.5 m·kg, 3.6 ft·lb)

12. Inspect:
    - Oil level
      Refer to the "ENGINE OIL LEVEL INSPECTION" section.
    - Oil pressure
      Refer to the "OIL PRESSURE INSPECTION" section.
    - Oil leaks
13. Install:
    - Oil tank cap
    - Cover



OIL PRESSURE INSPECTION

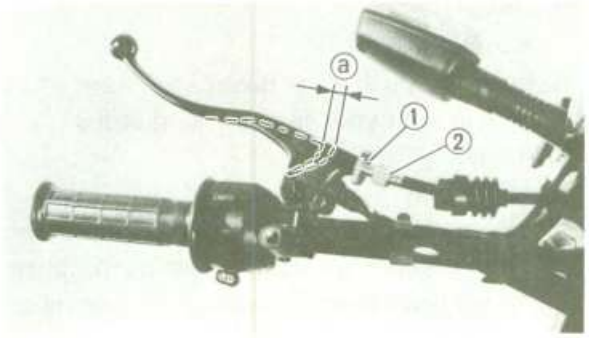
1. Remove:
   - Air bleed screw ①
2. Start the engine and keep it idling for several minutes.
3. Inspect:
   - Oil condition of the bleed hole
     Oil flows out→Oil pressure is good.
     No oil comes out→Oil pressure is bad.

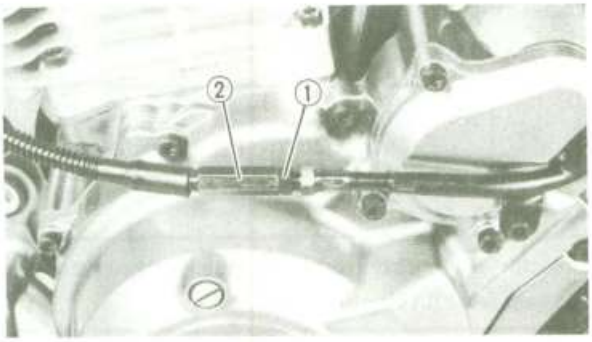
CAUTION:

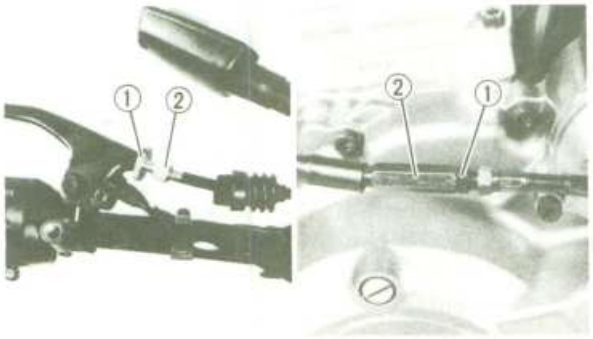
If no oil comes out after a lapse of one minute, turn off the engine immediately so it will not seize.

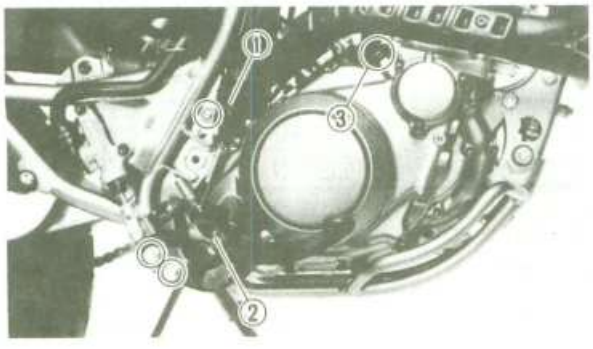
4. Tighten:
   - Air bleed screw

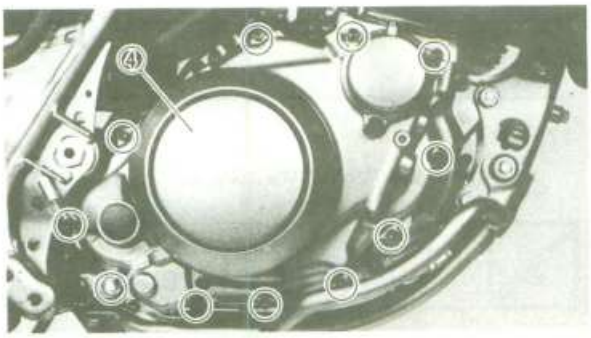
	Air bleed screw: 5 Nm (0.5 m · kg, 3.6 ft · lb)











CLUTCH ADJUSTMENT

Cavle free play adjustment

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

Free play:
2~3 mm (0.08~0.12 in)

2. Adjust:
   - Clutch cable free play

* *

Adjustment steps:

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

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

- Tighten the locknuts.

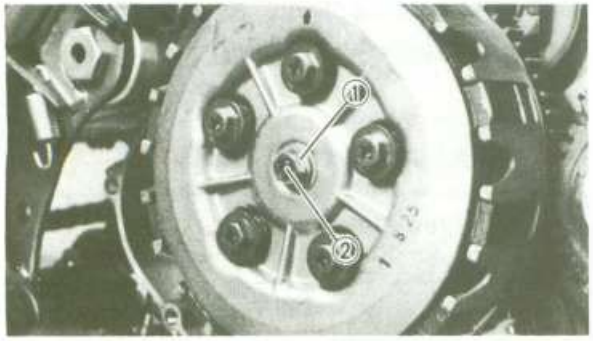
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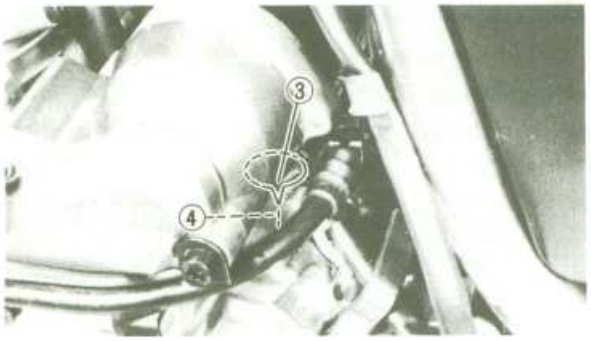
NOTE:

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

Mechanism adjustment

1. Loosen:
   - Locknut ①
2. Tighten:
   - Adjuster ②
3. Drain:
   - Engine oil
     Refer to the "ENGINE OIL REPLACEMENT" section.
4. Remove:
   - Rear brake switch ①
5. Disconnect:
   - Spring (rear brake switch)
6. Remove:
   - Footrest (right) ②
7. Disconnect:
   - Return spring (brake pedal)
8. Remove:
   - Union bolt (engine oil delivery) ③
   - Crankcase cover ④





9. Loosen:
   - Locknut①
10. Push the push lever toward the front of the engine with your finger until it stops.
11. Adjust:
   - Free play

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

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

CAUTION:

Proper push rod free play is essential to avoid excessive clutch slippage.

13. Install:
   - Crankcase cover (right)
   - Union bolt

Bolt (crankcase cover):
10 Nm (1.0 mkg, 7.2 ft·lb)
Union bolt (engine oil delivery):
18 Nm (1.8 m·kg, 13 ft·lb)

14. Connect:
   - Return Spring (brake pedal)
15. Install:
   - Footrest (right)

Bolt (footrest):
45 Nm (4.5 mkg, 32 ft·lb)

16. Connect:
   - Spring (rear brake switch)

NOTE:

Hook the brake switch spring to the inside of the brake pedal return spring to prevent crossing.

17. Install:
   - Rear brake switch

Bolt (rear brake switch):
4 Nm (0.4 mkg, 2.9ft·lb)

NOTE:

After installing the footrest and rear brake switch, check the rear brake and rear brake light.

18. Fill:
    - Oil tank (to frame)
      Refer to the "ENGINE OIL REPLACEMENT" section.
19. Adjust:
    - Clutch cable free play

Free play:
2~3mm (0.08~0.12 in)

Refer to the "Cable free play adjustment" section.

ENGINE OIL TANK STRAINER CLEANING

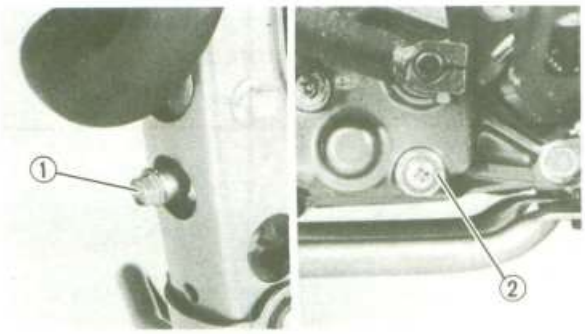
CAUTION:

Components are firmly fixed in place. Attention should be paid when removing them.

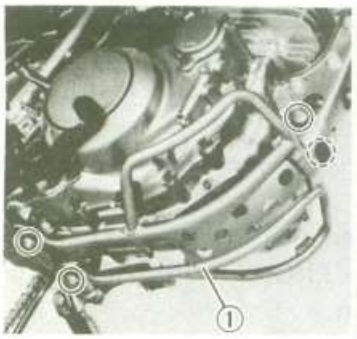
⚠ WARNING

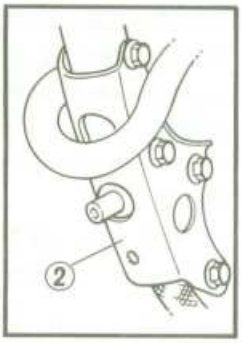
Securely support the motorcycle so there is no danger of it falling over.

1. Place the motorcycle on a level place.
2. Remove:
    - Cover (fuel tank)
      Refer to the "SEAT, FUEL TANK AND COVER" section.
3. Warm up the engine for several minutes, then stop the engine. Then place a receptacle under the drain bolt.

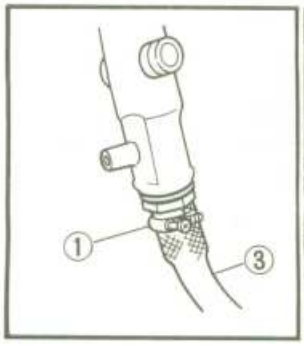


4. Remove:
    - Oil tank cap
      Drain bolt (oil tank) ①
    - Drain bolt (crank case) ②
5. Drain:
    - Engine oil
      Refer to the "ENGINE OIL REPLACEMENT" section.





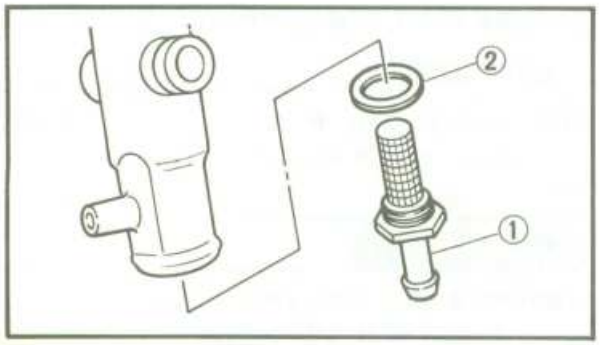
6. Remove:
   - Engine protector ①
   - Engine stay ② (front)





7. Loosen:
   - Band ①
8. Remove:
   - Oil pipe ②
   - Oil hose ③

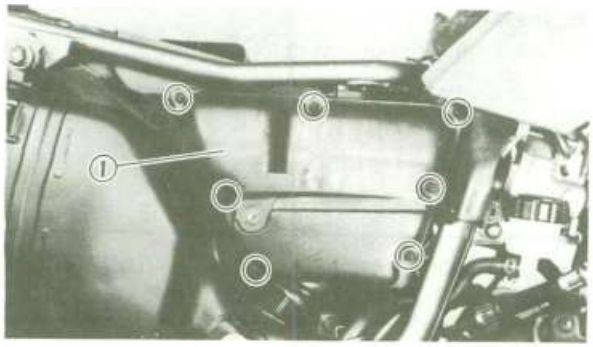
NOTE:
Remove the hose by twisting and pulling downward.



9. Remove:
   - Oil strainer ①
   - Gasket ②
10. Clean:
   - Oil strainer
     Blow out the oil strainer with compressor air.
11. Insect
   - Oil hose
   - Gasket (oil strainer)
   - Gasket (drain plug)
     Damage → Replace.
12. Install:
   Reverse the removal procedure.

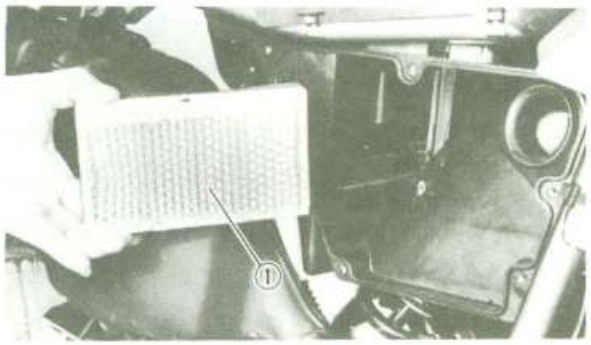
Bolt (oil strainer):
90Nm (9.0m·kg,65ft·lb)
Bolt (oil pipe):
10Nm (1.0m·kg,7.2ft·lb)
Nut (engine stay front):
64Nm (6.4m·kg,46ft·lb)
Bolt (engine protector):
10Nm (1.0m·kg,7.2ft·lb)

13. Fill:
    - Oil tank (to frame)
      Refer to the "ENGINE OIL REPLACEMENT" section.
14. Check:
    - Oil pressure
      Refer to the "OIL PRESSURE INSPECTION" section.



AIR FILTER CLEANING

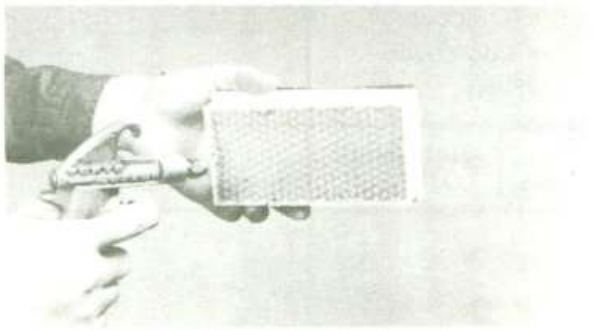
1. Remove:
    - Seat
    - Side cover (right)
      Refer to the "SEAT, FUEL TANK AND COVER" section.
    - Filter case cover ①



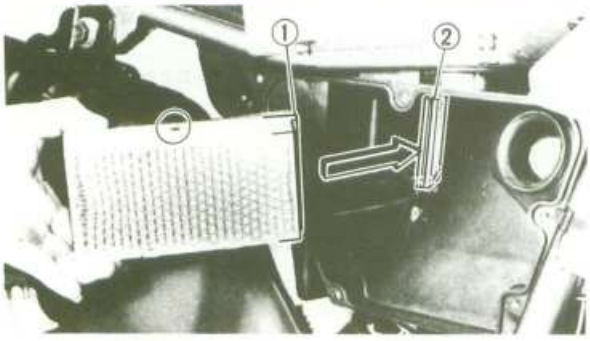
2. Remove:
    - Air filter element ①

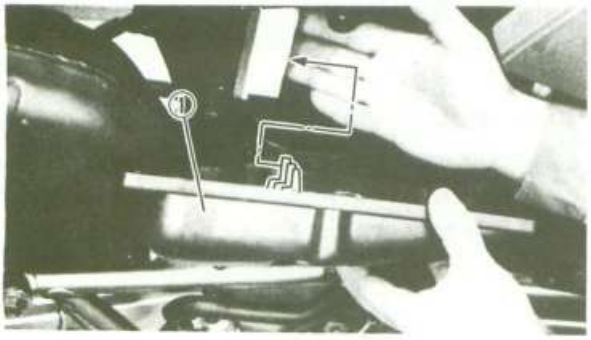
CAUTION:

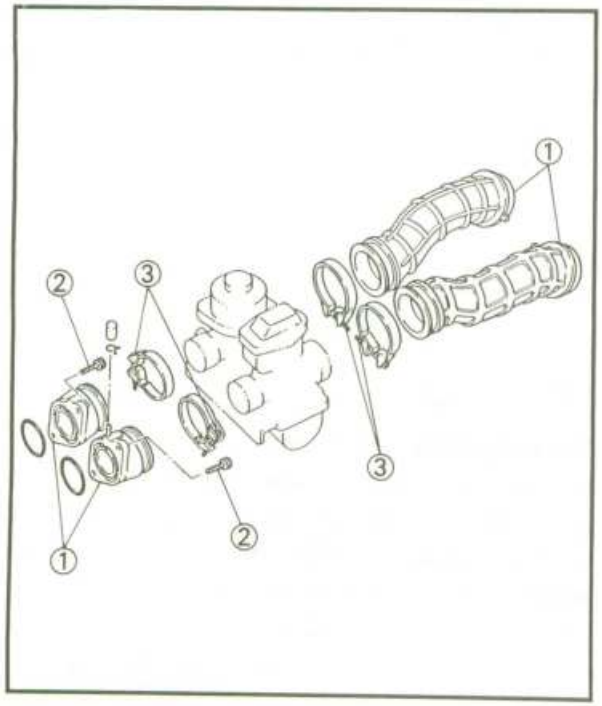
Never operate the engine with the air filter element removed. This will allow unfiltered air to enter, causing rapid wear and possible engine damage. Additionally, operation without the filter element will affect carburetor tuning with subsequent poor performance and possible engine overheating.



3. Clean:
    - Air filter element
      Blow out dust in the element from the cuter surface using compressed air.
4. Inspect:
    - Air filter element
      Damage → Replace.







5. Install:
   - Air filter element

NOTE:
- Install the air filter element with the arrow mark on the top pointing inward.
- When installing the air filter element in its case, fit section ① into the slot ② of air filter case.

6. Install:
   - Air filter case cover ①

   as shown.
7. Install:
   - Side cover (right)
   - Seat

Bolt (seat):
10Nm (1.0m·kg,7.2ft·lb)

CARBURETOR JOINT INSPECTION

1. Remove:
   - Seat
   - Side covers
   - Air scoops
   - Cover (fuel tank)
   - Fuel tank

   Refer to the "SET,FUEL TANK AND COVER"section.
2. Inspect:
   - Carburetor joint ①

   Crack/Damage→Replace.

Bolt ② (carburetor joint):
10 Nm (1.0 m · kg, 7.2 ft · lb)
Screw ③ (clamp):
2 Nm (0.2 m · kg, 1.4 ft · lb)

3. Install:
   - Fuel tank
   - Cover
   - Air scoops
   - Side cover
   - Seat

Bolt (seat):
10Nm (1.0m·kg,7.2ft·lb)

FUEL LINE INSPECTION

1. Remove:
   - Seat
   - Side cover(left)
   - Air scoop(left)

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



2. Inspect:
   - Fuel hose ①

   Crack/Damage→Replace.
3. Install:
   - Air scoop(left)
   - Side cover(left)
   - Seat

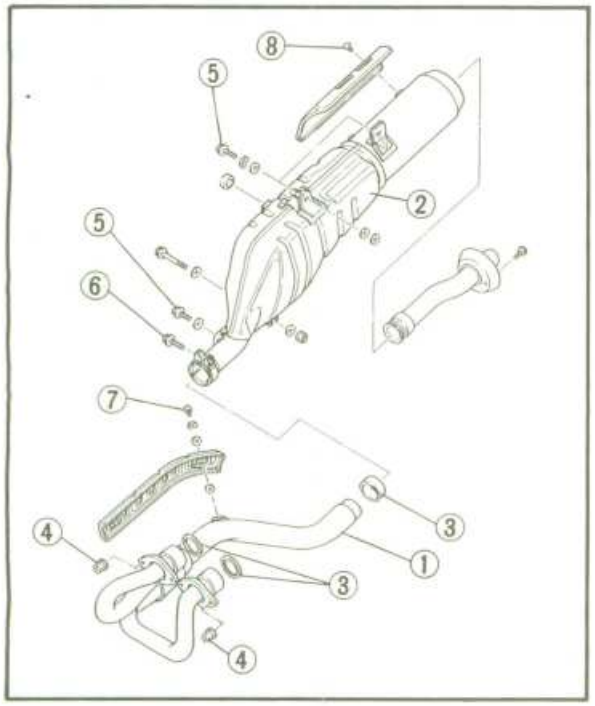
	Bolt (seat): **10Nm (1.0m·kg,7.2ft·lb)**



CRANKCASE VENTILATION HOSE INSPECTION

1. Inspect:
   - Crankcase ventilation hose ①

   Crack/Damage→Replace.



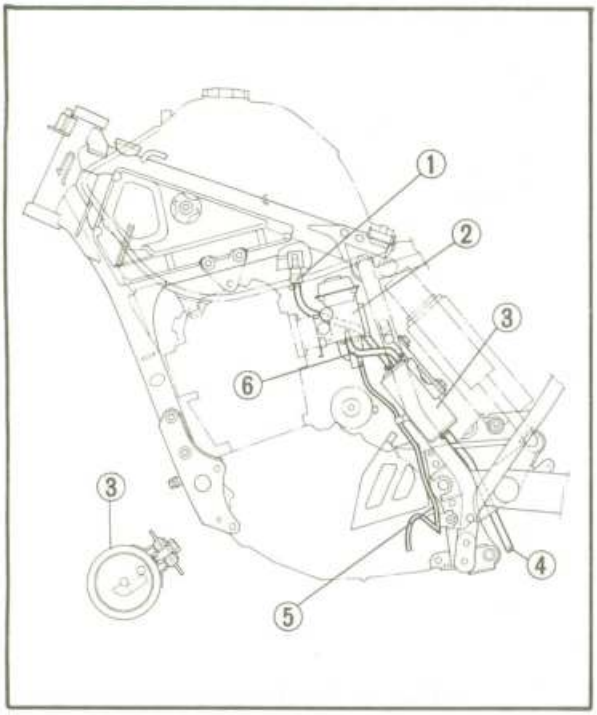
EXHAUST SYSTEM INSPECTION

1. Inspect:
   - Exhaust pipe ①
   - Muffler ②

   Crack/Damage→Replace.
   - Gasket ③

   Exhaust gas leaks→Replace.

	Nut ④ (exhaust pipe): **10 Nm (1.0 m · kg, 7.2 ft · lb)** **Bolt ⑤ (muffler):** **40 Nm (4.0 m · kg, 29 ft · lb)** **Bolt ⑥ (clamp):** **20 Nm (2.0 m · kg, 14 ft · lb)** **Screw ⑦ (protector):** **7 Nm (0.7 m · kg, 5.1 ft · lb)** **Use LOCTITE®.** **Screw ⑧ (protector):** **7 Nm (0.7 m · kg, 5.1 ft · lb)** **Use LOCTITE®.**



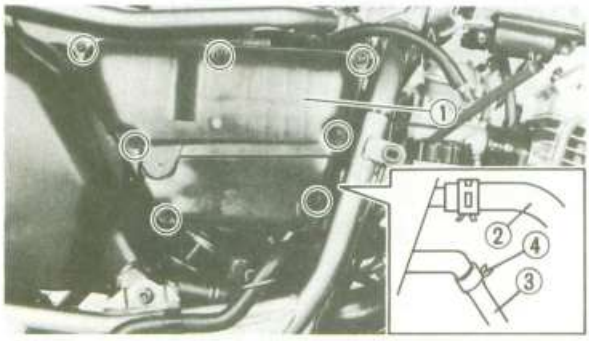
CANISTER INSPECTION (XT600EAC ONLY)

1. Inspect:
   - Hose connection
     Poor condition → Correct.
   - Hoses
   - Canister
     Cracks/Damage → Replace.
     Clogs → Clean.

① Roll over valve
② Carburetor
③ Canister
④ Hose (to atmosphere)
⑤ Over flow hose
⑥ Hose (to carburetor)

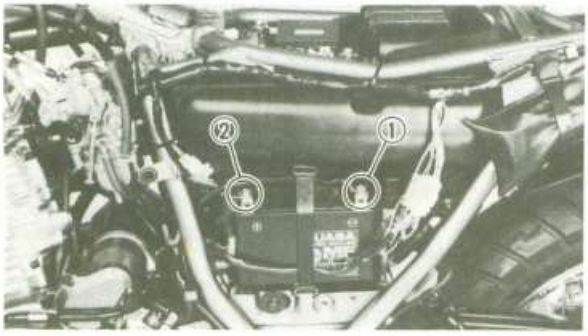
Canister removal

1. Remove:
   - Seat
   - Side covers
   - Air scoops
   - Cover (fuel tank)
   - Fuel tank
     Refer to the "SEAT, FUEL TANK AND COVER" section.



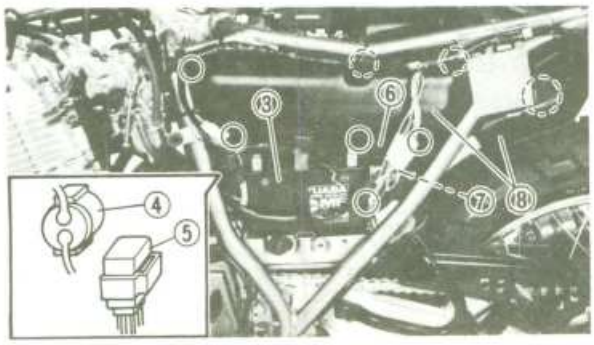
2. Remove:
   - Filter case cover (right) ①
   - Breather hose (from crankcase) ②
   - Breather hose (filtercase) ③

NOTE:
When removing the breather hose (filter case), take care so that the clamp ④ dose not slide down the hose.

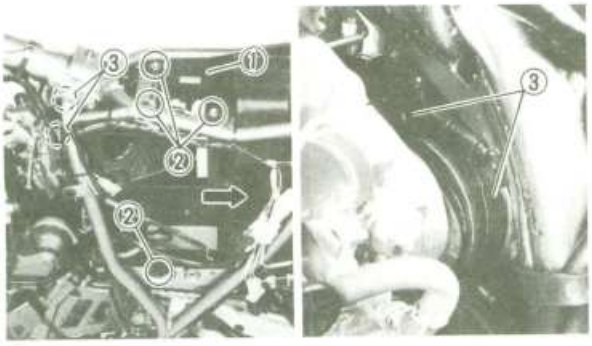


3. Disconnect:
   - Battery lead

NOTE:
Disconnect the negative lead ① first, and then disconnect the positive lead ②.



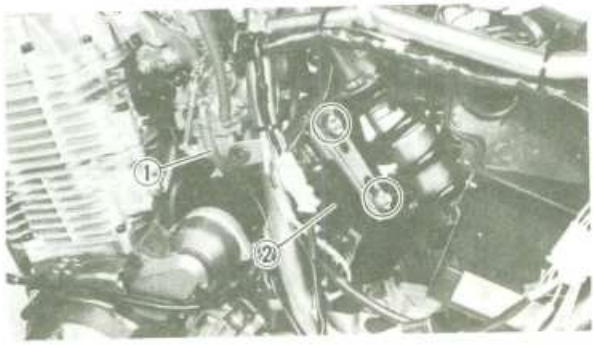
4. Remove:
   - Battery ③
   - Starter relay ④ (from filter case projection)
   - Starting circuit cut-off relay ⑤ (from filter case projection)
   - Flasher relay ⑥ (from filter case projection)
   - Fuse box ⑦ (from filter case projection)
   - Filter case cover ⑧



5. Disconnect:
   - Ignitor unit ①
6. Remove:
   - Bolts (air filter case) ②
   - Joint bands ③
   - Move airfilter case to the rear of shock absorber as shown so that the canister can be seen.

CAUTION:

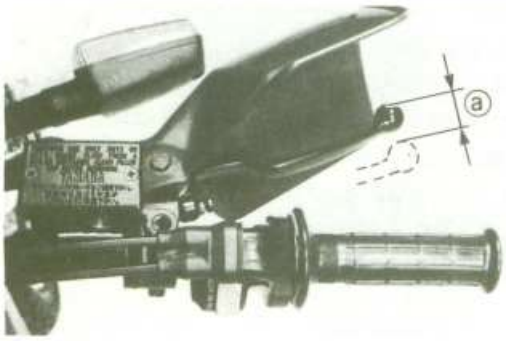
Do not pinch ignitor leads when removing air filter case.



7. Disconnect:
   - Hose (to carburetor) ①
8. Remove:
   - Canister ②

Canister installation

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

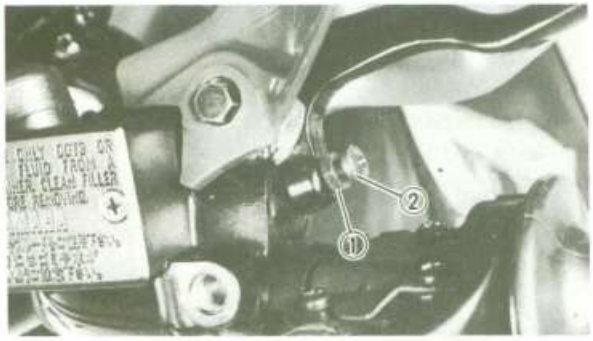


CHASSIS

FRONT BRAKE ADJUSTMENT

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

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



2. Adjust:
   - Brake lever free play

* *

Adjustment steps:

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

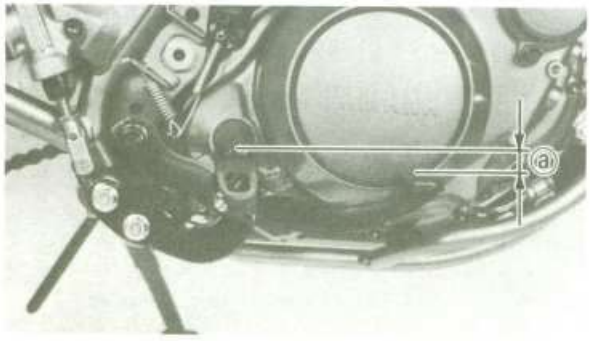
Turn in	Free play is decreased.
Turn out	Free play is increased.

- Tighten the locknut.

* *

CAUTION:

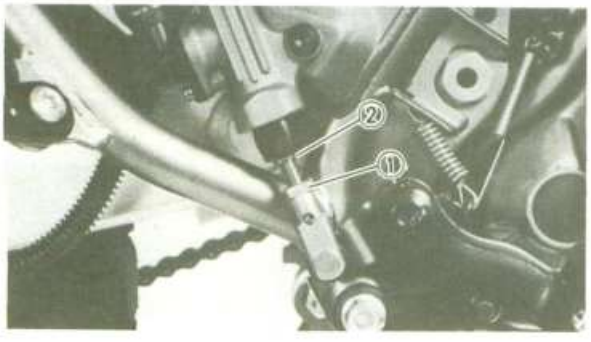
Proper lever free play is essential to avoid excessive brake drag.



REAR BRAKE ADJUSTMENT

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

Brake pedal height:
15 mm (0.59 in)
Below top of footrest.

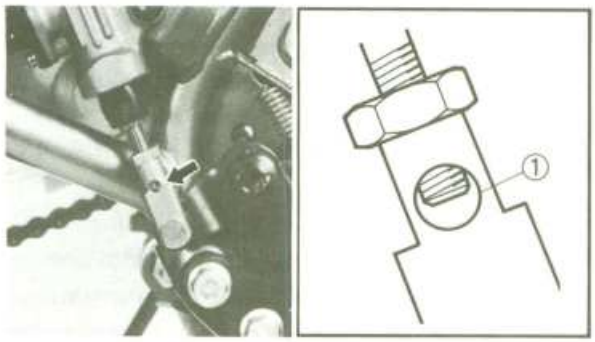


2. Adjust:
   - Brake pedal height

* *

Adjustment steps:

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



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

⚠ WARNING

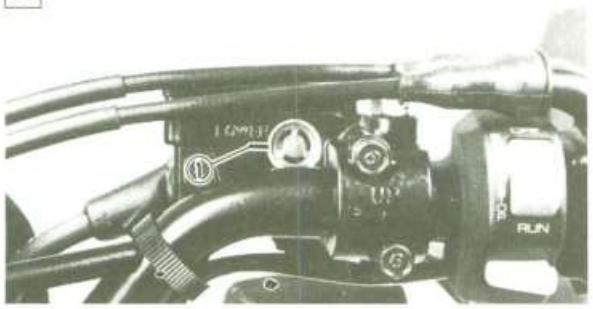
After adjusting the brake pedal height, visually check the adjuster end through the hole ① of the joint holder. The adjuster end must appear within this hole.

●Tighten the locknut.

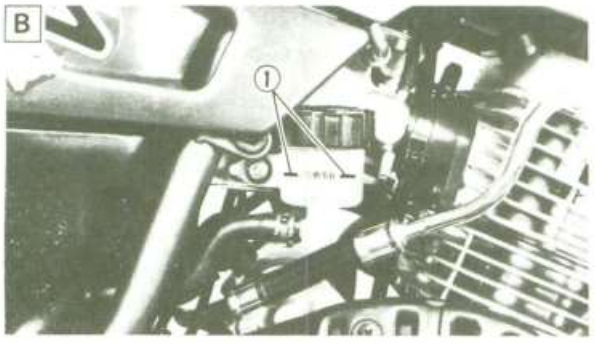
Locknut:
26 Nm (2.6 m · kg, 19 ft · lb)

* *

A



B



BRAKE FLUID INSPECTION

1. Place the motorcycle on a level place.

NOTE:

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

2. Inspect:
   - Brake fluid level
     Fluid level is under "LOWER" level line ①
     →Fill up.

Recommended brake fluid:
Front: DOT No.4 or DOT No.3
Rear: DOT No.4

A Front
B Rear

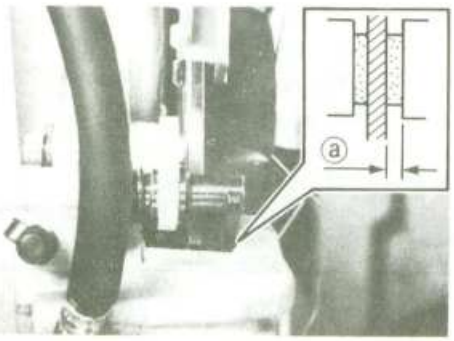
CAUTION:

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

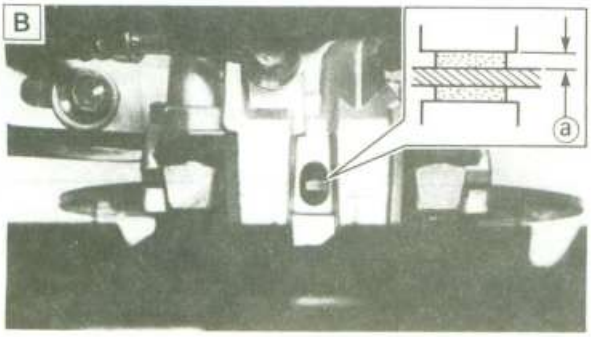
⚠WARNING

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

A



B



BAKE PAD INSPECTION

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

Wear limit ⓐ:
Front: 1.0 mm (0.04 in)
Rear: 0.8 mm (0.03 in)

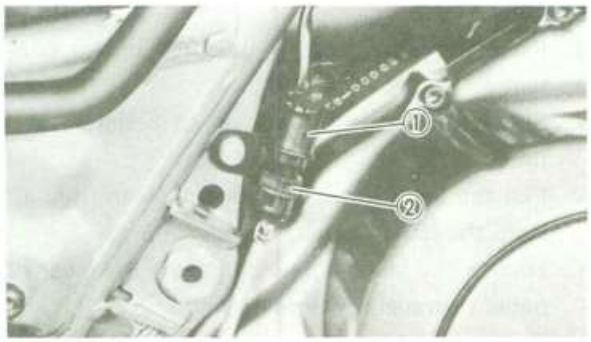
Refer to the "BRAKE PAD REPLACEMENT" section in the CHAPTER 6 for replacement.

A Front brake
B Rear brake

BRAKE LIGHT SWITCH ADJUSTMENT

NOTE:

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

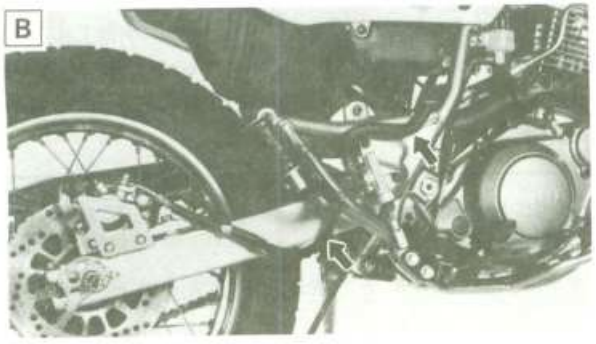


1. Hold the switch body ① with your hand so that it does not rotate and turn the adjusting nut ②.



BRAKE HOSE INSPECTION

1. Inspect:
   - Brake hose
     Crack/Damage→Replace.
     Refer to the "FRONT AND REAR BRAKE" section in the CHAPTER 6 for replacement.



A Front
B Rear

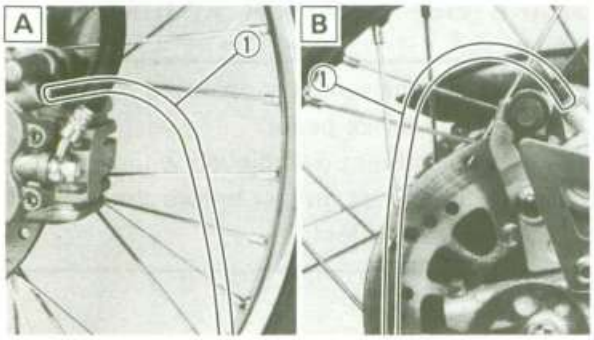
AIR BLEEDING

⚠WARNING

Bleed the brake system if:

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

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



1. Bleed:
   - Brake system

* *

Air bleeding steps:

a. Add proper brake fluid to the reservoir.
b. Install the diaphragm. Be careful not to spill any fluid or allow the reservoir to overflow.
c. Connect the clear plastic tube ① tightly to the caliper bleed screw.

[A] Front
[B] Rear

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



Bleed screw:
6 Nm (0.6 m · kg, 4.3 ft · lb)

i. Repeat steps (e) to (h) until all of the air bubbles have been removed from the system.

NOTE:

If the 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.

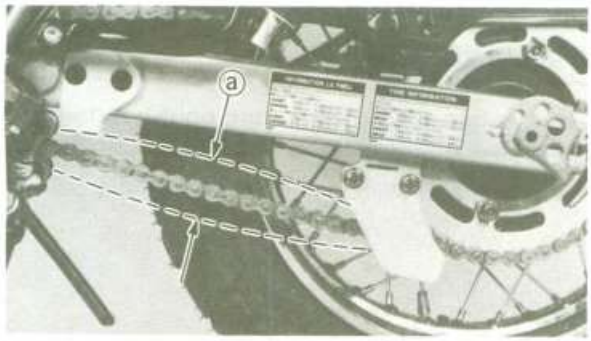
j. Add brake fluid to the level line on the reservoir.

* *

DRIVE CHAIN SLACK ADJUSTMENT

NOTE:

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



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

Drive chain slack:
30~40 mm (1.18~1.57 in)

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

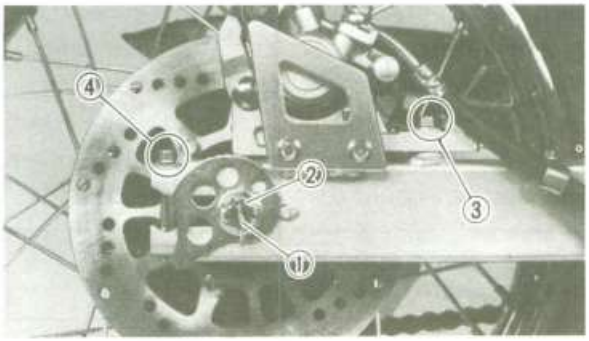
2. Adjust:
   - Drive chain slack

* *

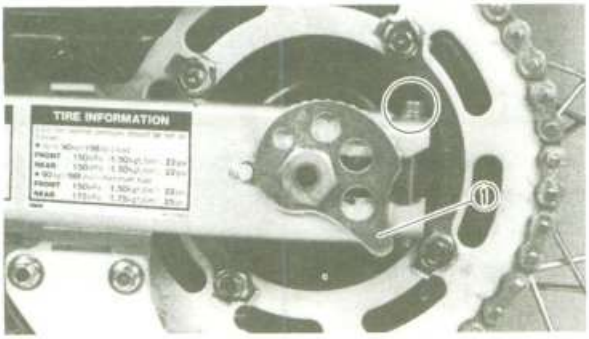
Adjustment steps:

CAUTION:

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



- Remove the cotter pin ① and loosen the axle nut ②.
- Loosen the bolt ③ (caliper bracket).
- Loosen the bolts ④ (swingarm end)

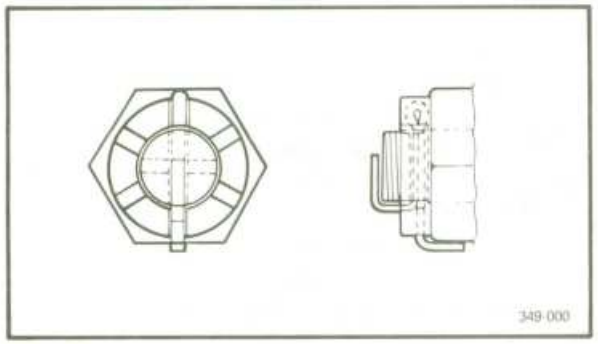


- Turn the chain puller ① clockwise or counterclockwise until the specified slack is obtained.

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

- Tighten the axle nut and bolt (caliper bracket), bolts (swingarm end).

Axle nut:
90 Nm (9.0 m · kg, 65 ft · lb)
Bolt (caliper bracket):
45 Nm (4.5 m · kg, 32 ft · lb)
Bolt (swingarm end):
3 Nm (0.3 m·kg, 2.2 ft·lb)



● Install the cotter pin

⚠WARNING

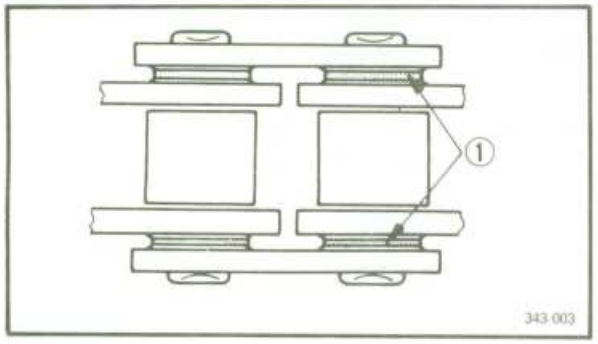
Always use a new cotter pin on the axle nut.

* *

DRIVE CHAIN LUBRICATION

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

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



**Recommended lubricant:
SAE 30~50 motor oil**

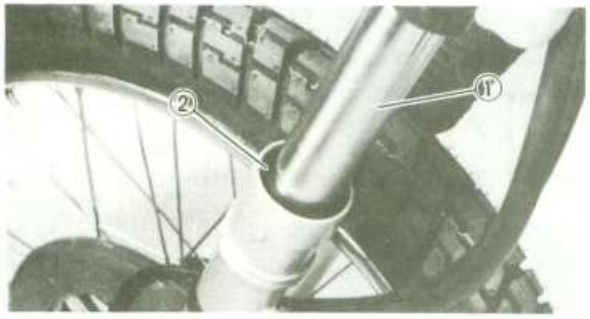
① O-ring

FRONT FORK INSPECTION

⚠WARNING

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

1. Place the motorcycle on a level place.



2. Check:
   - Inner tube ①
     Scratch/Damage→Replace.
   - Oil seal ②
     Excessive oil leakage→Replace.
3. Hold the motorcycle in an upright position and apply the front brake.



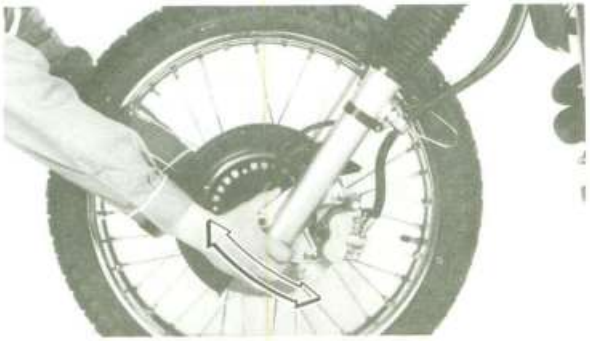
4. Check:
   - Operation
     Pump the front fork up and down for several times.
     Unsmooth operation→Repair.

STEERING HEAD ADJUSTMENT

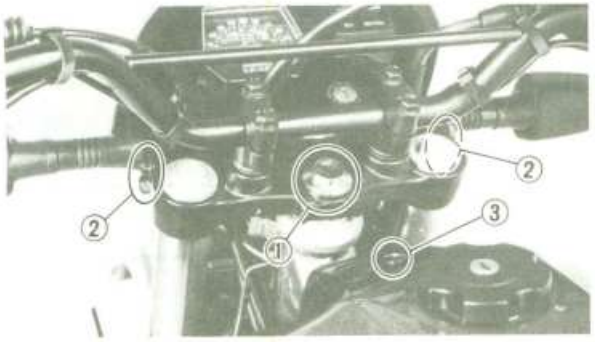
⚠ WARNING

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 bearings
     Grasp the bottom of the forks and gently rock the fork assembly back and forth.
     Looseness→Adjust steering head.

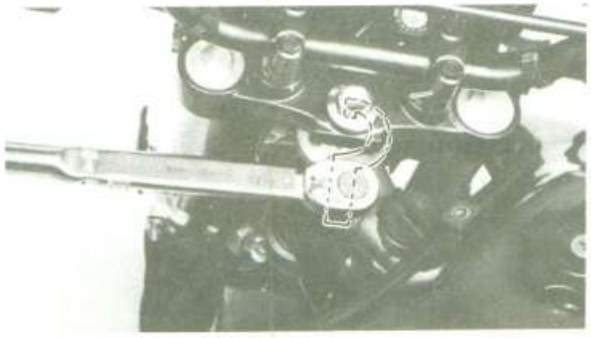


4. Adjust:
   - Steering head

* *

Adjustment steps:

- Loosen the bolt ① (steering shaft) and bolt ② (handle crown).
- Remove the cover (fuel tank) ③



- Tighten the ring nut using the ring nut wrench.

Ring nut wrench:
P/N.YU-33975
P/N.90890-01403

NOTE:

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

Ring nut (initial tightening):
38 Nm (3.8 m·kg, 27 ft·lb)

- Loosen the ring nut one turn.
- Retighten the ring nut using the ring nut wrench.

⚠ WARNING

Avoid over-tightening.

Ring nut (final tightening):
6 Nm (0.6 m·kg, 4.3 ft·lb)

- Tighten the bolts (steering shaft and handle crown).

Bolt (steering shaft):
72 Nm (7.2 m·kg, 52 ft·lb)
Bolt (handle crown):
23 Nm (2.3 m·kg, 17 ft·lb)

- Install the cover (fuel tank)

* *

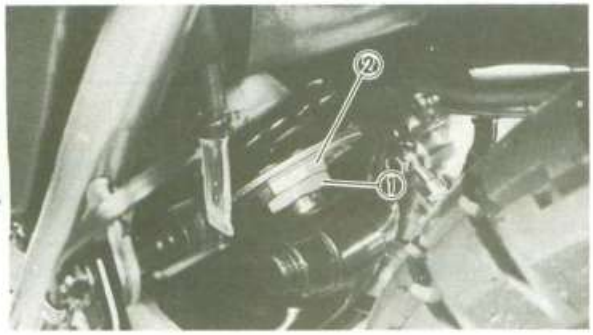
REAR SHOCK ABSORBER ADJUSTMENT

NOTE:

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

⚠ WARNING

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



1. Adjust:
   - Spring preload

* *

Adjustment steps:

Spring preload

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

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



Standard length:
243.5 mm (9.6 in)
Minimum length:
237.5 mm (9.4 in)
Maximum length:
248.5 mm (9.8 in)

NOTE:

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

CAUTION:

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

- Tighten the locknut.



Locknut:
42 Nm (4.2 m·kg, 30 ft·lb)

CAUTION:

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

* *

TIRE INSPECTION

⚠WARNING

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

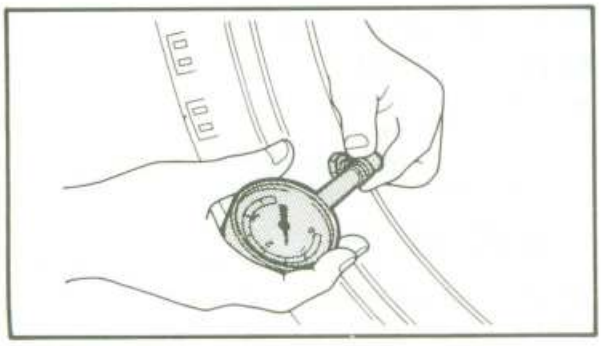
FRONT:

Manufacture	Size	Type
Bridgestone	90/90-21 54S	TW41
Dunlop	90/90-21 54S	TRAIL MAX

REAR:

Manufacture	Size	Type
Bridgestone	120/90-17 64S	TW42B
Dunlop	120/90-17 64S	TRAIL MAX

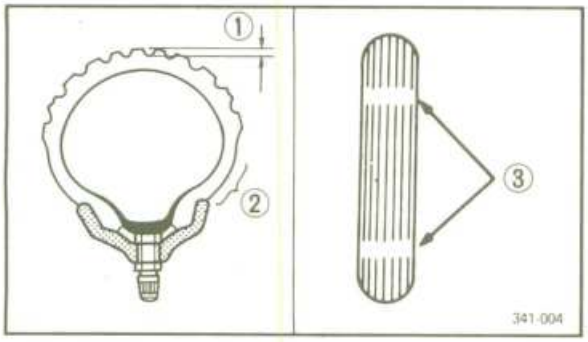
- **After extensive tests, the tires mentioned have been approved by Yamaha motor Co., Ltd. for this model. No guarantee for handling characteristics can be given if tire combinations other than what is approved are used on this motorcycle.**
  The front and rear tires should be of the same manufacture and design.
- **The use of tire valves and valve cores other than listed could cause tire deflation during extreme high speed riding. Always use genuine parts or their equivalent for replacement.**
- **Be sure to install the valve caps securely, as these are important to prevent air pressure leakage during extreme high speed riding.**



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

Basic weight: With oil and full fuel tank	168 kg (370 lb)	
Maximum load *	182 kg (401 lb)	
Cold tire pressure	Front	Rear
Up to 90 kg (198 lb) load *	150 kPa (1.5 kg/cm², 21 psi)	150 kPa (1.5 kg/cm², 21 psi)
90kg (198 lb)~ Maximum load *	150 kPa (1.5 kg/cm², 21 psi)	200 kPa (2.0 kg/cm², 28 psi)
High speed riding	150 kPa (1.5 kg/cm², 21 psi)	150 kPa (1.5 kg/cm², 21 psi)
Off-road riding	125 kPa (1.25 kg/cm², 18 psi)	125 kPa (1.25 kg/cm², 18 psi)

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



2. Adjust:
   • Air pressure

* *

Adjustment steps:

● Remove the valve cap.

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

● Install the valve cap securely.

* *

3. 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 worn out 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.**

4. Tighten:
   • Valve stem locknut

1.5 Nm (0.15 m·kg, 1.1 ft·lb)

⚠ WARNING

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



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.

CABLE INSPECTION AND LUBRICATION

⚠WARNING

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

1. Inspect:
   - Cable sheath
     Damage→Replace.
2. Check:
   - Cable operation
     Unsmooth operation→Lubricate.



Recommended lubricant:
SAE 10W30 motor oil.

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

INSP ADJ

LEVER AND PEDAL LUBRICATION

Lubricate pivoting parts of each lever and pedal.

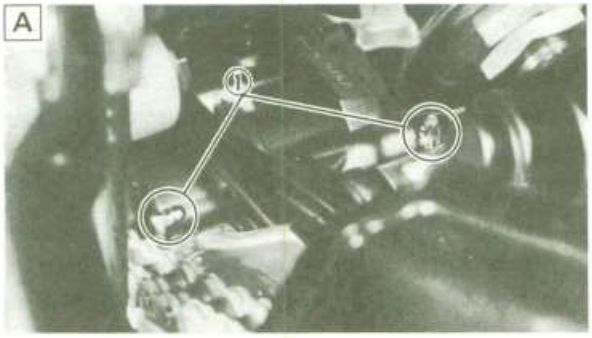
Recommended lubricant:
SAE 10W30 motor oil

SIDESTAND LUBRICATION

Lubricate the sidestand at pivot points.

Recommended lubricant:
SAE 10W30 motor oil

A



B



SWINGARM AND RELAY ARM LUBRICATION

Lubricate the swingarm and relay arms at their pivoting points.

Light weight lithium soap base grease

① Grease nipple

A Swingarm
B Relayarm

ELECTRICAL

BATTERY INSPECTION



NOTE:

Since the MF battery is of a sealed-type construction, it is impossible to measure the specific gravity of the electrolyte in order to check the state of charge in the battery. Therefore, to check the state of charge in the battery, voltage must be measured at the battery terminals.

CAUTION:

CHARGING METHOD

- **This battery is sealed type. Never remove sealing caps even when charging. With the sealing cap removed, this balancing will not be maintained, and battery performance will lower gradually.**
- **Never add water. If distilled water is added, chemical reaction in the battery will not proceed in the normal way, thus making it impossible for the battery to operate regularly.**
- **The charging time, charging current and charging voltage for the MF battery is different than general type batteries.**
  The MF battery should be charged as instructed in the "Charging method."Should the battery be overcharged, the electrolyte level will lower extremely. Therefore, use special care when charging the battery.
  (Distilled water cannot be added)
- **Avoid using any electrolyte other than specified. The specific gravity of the MF battery electrolyte is 1.32 at 20°C (68°F). (The specific gravity of the general type battery electrolyte is 1.28.) If the electrolyte whose specific gravity is less than 1.32, the sulfuric acid will decrease and thus low battery performance will result. Should any electrolyte, whose specific gravity is 1.32 or more, be used, the battery plates will corrode and battery life will shorten.**



⚠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 elecrolyte as it can cause severe burns or permanent eye injury.
- Wear protective eye gear when handling or working near batteries.

Antidote (EXTERNAL):

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

Antidote (INTERNAL):

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

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

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

KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.



1. Remove:
   - Seat
   - Side cover (left)

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

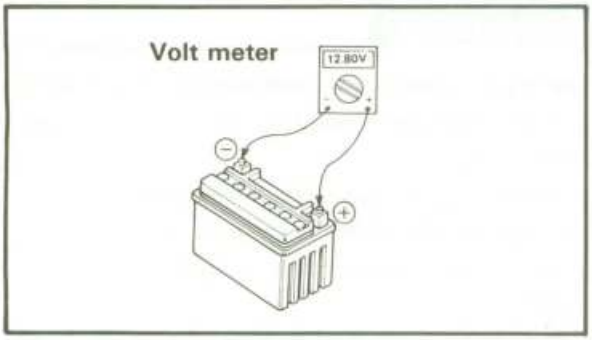


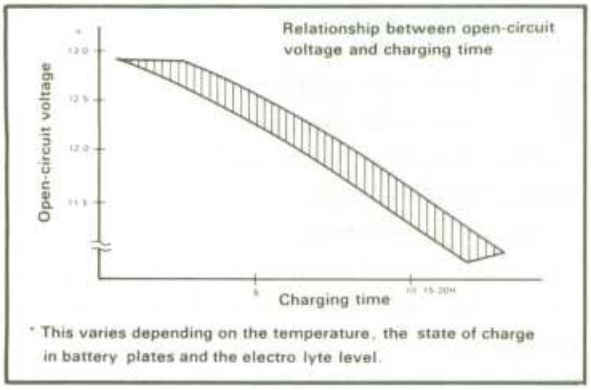
2. Disconnect:
   - Battery leads

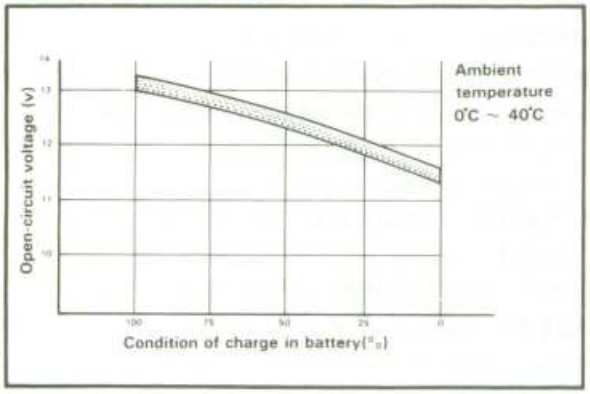
CAUTION:

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

3. Remove:
   - Battery







4. Check:
   - Battery condition

* *

Battery condition checking steps:

- Connect the pocket tester to the battery terminals.

Tester (+) lead → Battery (+) terminal.
Tester (−) lead → Battery (−) terminal.

NOTE:

The state of a discharged MF battery can be checked by measuring open circuit voltage (the voltage measured with the positive terminals being disconnected).

Open-circuit voltage	Charging time
12.8 v or higher	No charging is necessary.
12.7 v - 11.5 v	5 - 10 hours
Less than 11.5 v	15 - 20 hours

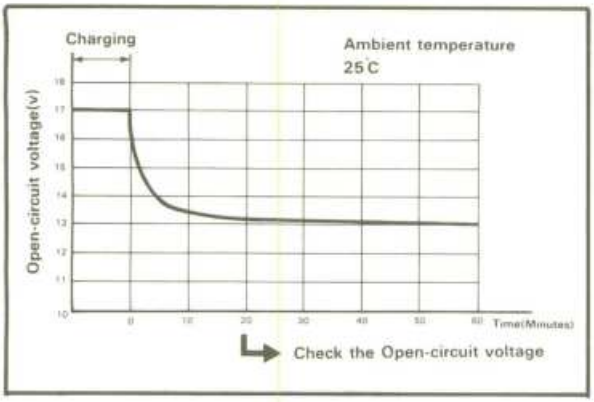
- Battery condition chart as shown.

* *

5. Charging method of MF battery

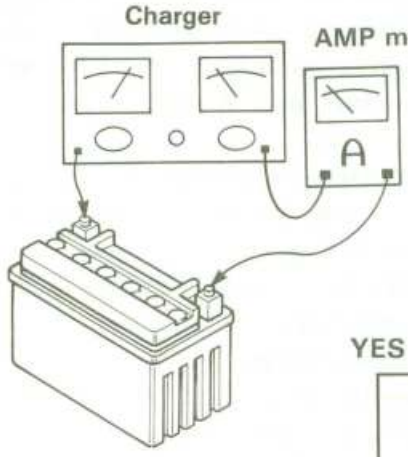
CAUTION:

- **If it is impossible to set the standard charging current, be careful not to overcharge.**
- **When charging the battery, be sure to remove it from the machine. (If charging has to be done with the battery mounted on the machine for some reason, be sure to disconnect the wire at the negative terminal.)**
- **Never remove the sealing plug from the MF battery.**



- Use special care so that charging clips are in a full contact with the terminal and that they are not shorted. (A corroded clip of the charger may cause the battery to generate heat at the contact area. A weak clip spring may cause sparks.)
- Before removing the clips from the battery terminals, be sure to turn off the power switch of the charger.
- Change in the open-circuit voltage of the MF battery after being charged is shown below. As shown in the figure, the open-circuit voltage is stabilized 30 minutes after charging has been completed.
  Therefore, to check the condition of the battery, measure the open-circuit voltage 30 minutes after charging has been completed.

Charging method using a variable-current (voltage) type charger



Measure the open-circuit voltage prior to charging.

NOTE: Voltage should be measured 30 minutes after the machine is stopped.

Connect a charger and AMP meter to the battery and start charging.

NOTE: Set the changing voltage at 16-17v. (If the setting is lower, charging will be insufficient. If too high, the battery will be over-charged.)

Make sure the current is higher than the standard charging current written on the battery.

YES

NO

Adjust the voltage so that current is at standard charging level.

By turning the charging voltage adjust dial, set the charging voltage at 20 - 25 v.

Monitor the amperage for 3-5 minutes to check if the standard charging current is reached.

1A or less

1A or more

NO

If the current is more than 1 amp, adjust the voltage to 16 - 17 v and continue charging.

Set the timer according to the charging time suitable for the open-circuit voltage.

After 5 minutes, adjust the voltage to 16 - 17 v, and continue charging.

If current does not exceed standard charging current after 5 minutes, replace the battery.

In case that charging requires more than 5 hours, it is advisable to check the charging current after a lapse of 5 hours. If there is any change in the amperage, readjust the voltage to obtain the standard charging current.

Measure the battery open-circuit voltage after having left the battery unused for more than 30 minutes.
12.8 v or more --- Charging is complete.
12.7 v or less --- Recharging is required.
Under 12.0 v --- Replace the battery.

Charging method using a constant-voltage type charger

Measure the open-circuit voltage prior to charging.

NOTE:
Voltage should be measured 30 minutes after the machine is stopped.

Connect a charger and AMP meter to the battery, and start charging.

Make sure the current is higher than the standard charging current written on the battery.

YES

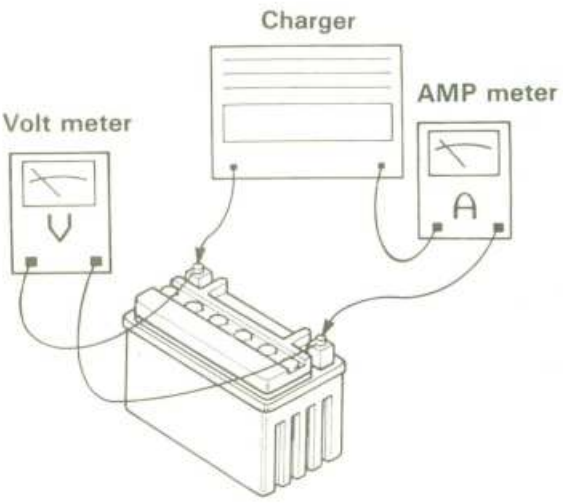
Charge the battery until the battery's charging voltage is 16 volts or more

NOTE:
Set the charging time at 20 hours (maximum).

Check the open-circuit voltage after having left the battery for 30 minutes after charging.
12.8 v or more---Charging is complete.
12.7 v or less---Recharging is necessary.
Under 12 v---Replace the battery.

NO

This type of battery charger cannot charge the MF battery. A variable voltage charger or a constant current charger is recommended.



Charging method using a constant current type charger (Exclusive for MF Battery)

Measure the open-circuit voltage prior to charging.

NOTE:
Voltage should be measured 30 minutes after the machine is stopped.

Connect a charger and AMP meter to the battery, and start charging.

After one hour of charging, make sure the rated charging current of the charger is flowing by checking AMP meter.

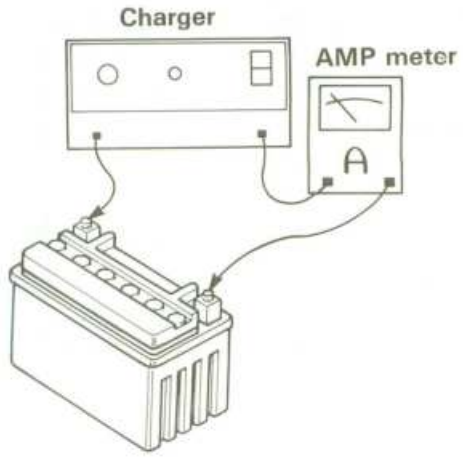
YES

Since the charging current is constant, the charging time varies depending on the battery capacity.
Set the charging time according to the instructions specified for the charger.

Measure the battery open-circuit voltage after having left the
battery unused for more than 30 minutes.
12.8 v or more---Charging is complete.
12.7 v or less---Recharging is required.
Under 12.0 v---Replace the battery.

NO

If rated current is not flowing, replace the battery.



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

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

7. Install
   - Battery
8. Connect
   - Battery leads

NOTE:
Connect the positive lead first and then connect the negative lead.

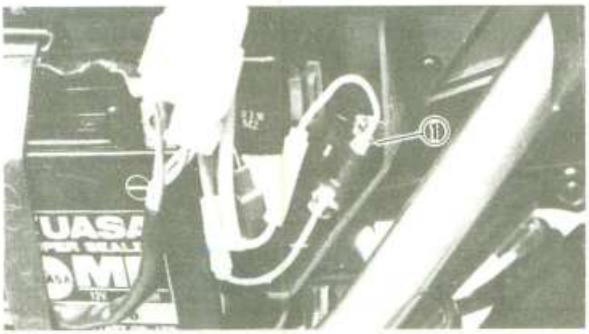
9. Install
   - Side cover (left)
   - Seat



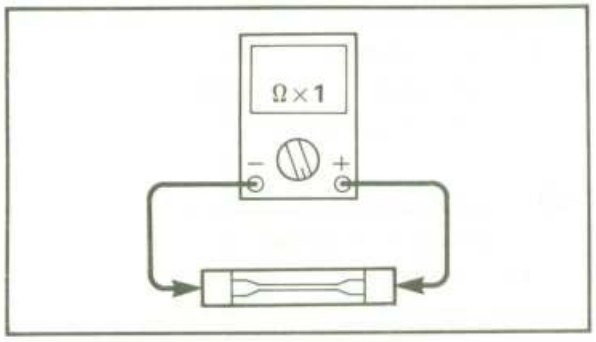
	Bolt (seat): **10 Nm (1.0 m · Kg, 7.2 ft · lb)**

FUSE INSPECTION

1. Remove:
   - Seat
   - Side cover (left)
     Refer to the "SEAT, FUEL TANK AND COVER " section.



2. Remove:
   - Fuse ①



3. Inspect:
   • Fuse

* *

Inspection steps:

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

NOTE:

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

Pocket tester:
P/N. YU-03112
P/N. 90890-03112

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

* *

4. Replace:
   • Blown fuse

* *

Blown fuse replacement steps:

● Turn off ignition and the circuit.

● Install a new fuse of proper amperage.

Fuse:
20 amps×1pc.

● Turn on switches to verify operation of electrical device.

● If fuse blows immediately again, check circuit in question.

* *

⚠ WARNING

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

5. Install:
   • Side cover (left)
   • Seat

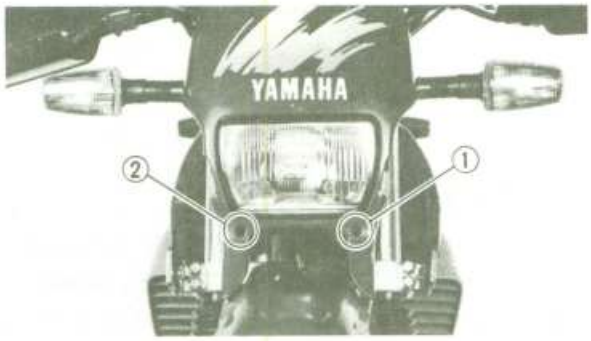
Bolt (seat):
10Nm (1.0m·kg, 7.2ft·lb)



HEADLIGHT BEAM ADJUSTMENT

1. Adjust:
   - Headlight beam (vertical)

To raise the beam	Turn both adjuster ① clockwise at the same time.
To lower the beam	Turn both adjuster ① counterclockwise at the same time.



2. Adjust:
   - Headlight beam (horizontal)

To right the beam	Turn the adjuster ① clockwise whill turning adjuster ② counterclockwise at the same time.
To left the beam	Turn the adjuster ② clockwise whill turning adjuster ① counterclockwise at the same time.

HEADLIGHT BULB REPLACEMENT

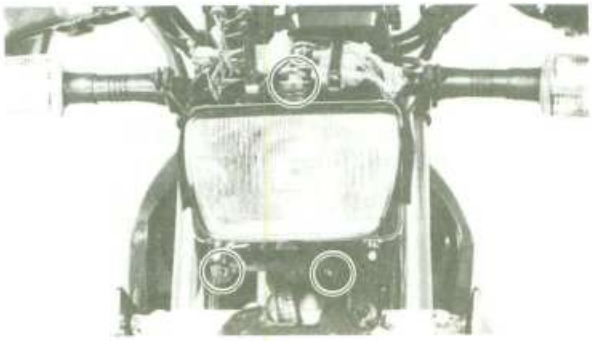
1. Remove:
   - Cowling (headlight)

NOTE:

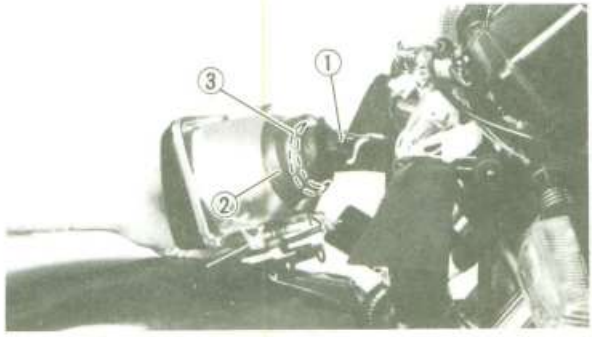
When removing the cowling, remove the bolt ① pull out the projections ② from the gromets to remove the cowling.

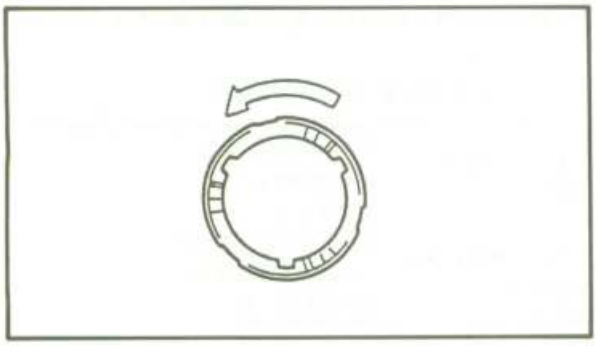


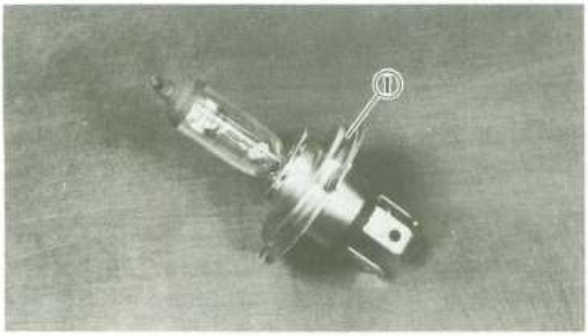
2. Remove:
   - Headlight lens unit

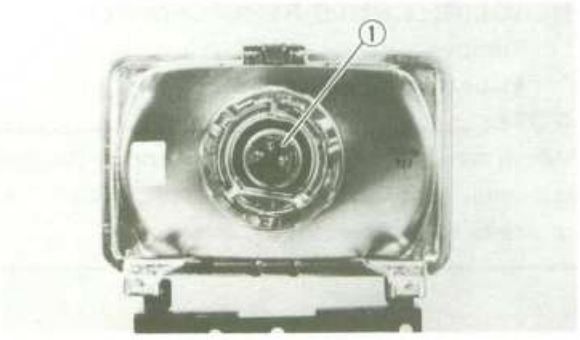


3. Disconnect:
   - Headlight leads ①
   - Bulb cover ②
4. Remove:
   - Bulb holder ③
   - Bulb









NOTE:

Turn the bulb holder counterclockwise and remove the defective bulb.

⚠ WARNING

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

5. Install:
   - Bulb (new) ①

   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.

6. Connect
   - Bulb cover
   - Headlight leads
7. Install
   - Headlight lens unit
   - Cowling (headlight)

Bolt (headlight upper):
16 Nm (1.6 m·kg, 12 ft·lb)
Bolt (headlight lower):
7 Nm (0.7 Nm·kg, 5.1 ft·lb)
Bolt (cowling):
7 Nm (0.7 m·kg, 5.1 ft·lb)

ENGINE OVERHAUL

ENGINE REMOVAL

NOTE:

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

- Cylinder head
- Cylinder
- Piston/Piston ring
- Camshaft/Rocker arm/Valve
- Clutch
- Primary drive gear
- Oil pump
- Shift shaft
- A.C. magneto

⚠WARNING

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

ENGINE OIL

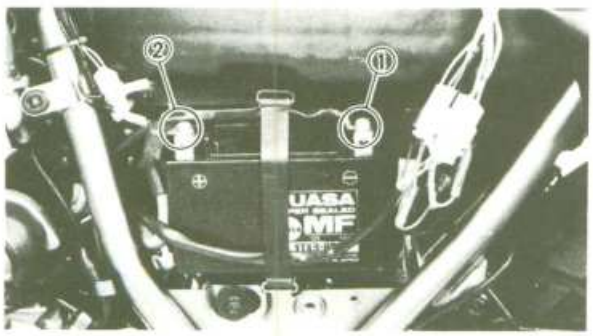
1. Drain:
   - Engine oil

   Refer to the "ENGINE OIL REPLACEMENT" section in the CHAPTER 3.

SEAT AND FUEL TANK

1. Remove:
   - Seat
   - Side covers
   - Air scoops
   - Cover (fuel tank)
   - Fuel tank

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



BATTERY LEAD

1. Disconnect:
   - Battery lead

NOTE:

Disconnect the negative lead ① first, and then disconnect the positive lead ②.

2. Remove:
   - Battery

CARBURETOR

1. Remove:
   - Carburetor

   Refer to the "CARBURETOR—REMOVAL" section in the CHAPTER 5.



CLUTCH CABLE

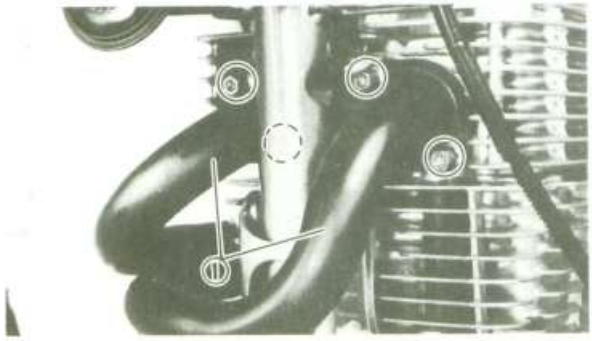
1. Remove:
   - Clutch cable ①



2. Disconnect:
   - Clutch cable end ①

NOTE:

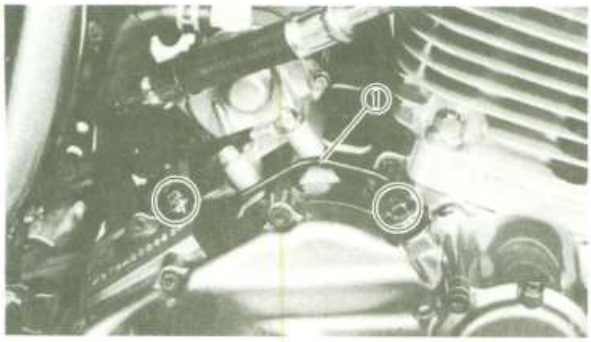
Remove the cable end while pushing it toward holder ②.



EXHAUST PIPE

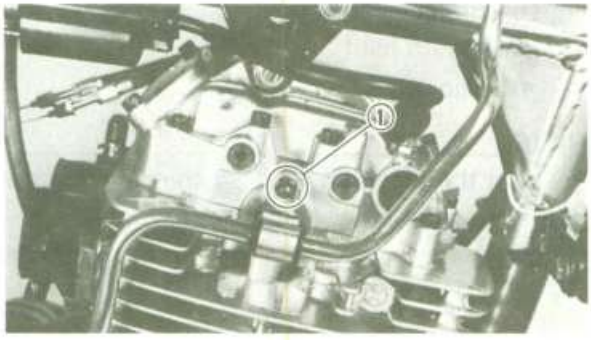
1. Remove:
   - Exhaust pipe ①



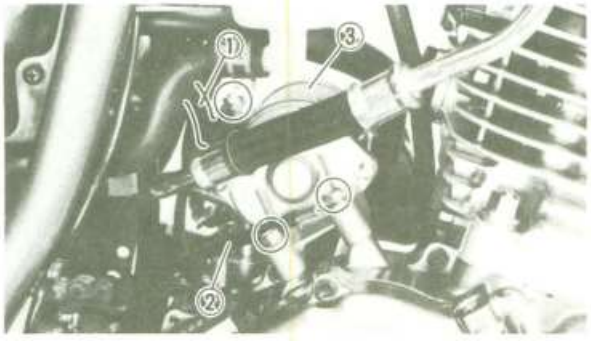


STARTER MOTOR

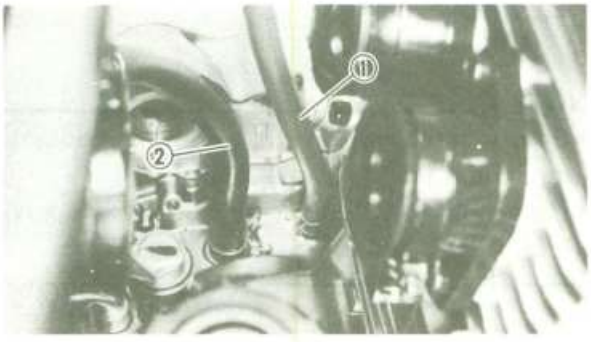
1. Remove:
   - Oil delivery pipe ①



2. Remove:
   - Bolt ① (oil hose clamp)

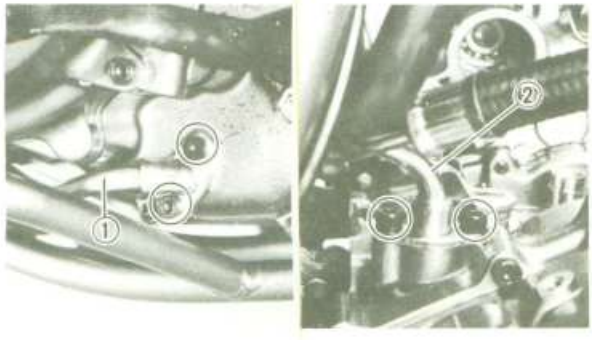


3. Disconnect:
   - Starter motor lead ①
   - Ground lead ②
4. Remove:
   - Starter motor ③



HOSE AND LEAD

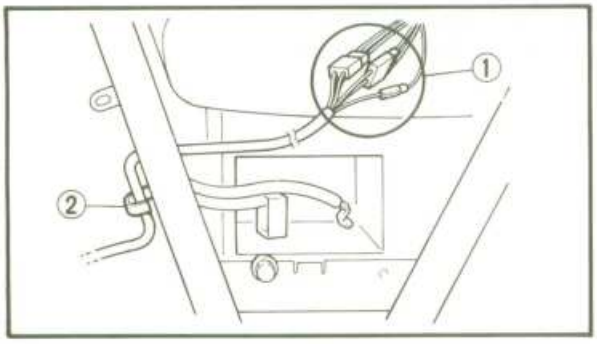
1. Remove:
   - Breather hose ① (oil tank)
   - Breather hose ② (crankcase)



2. Remove:
   - Oil hose ① (inlet)
   - Oil hose ② (outlet)



3. Remove:
   - Spark plug lead ①

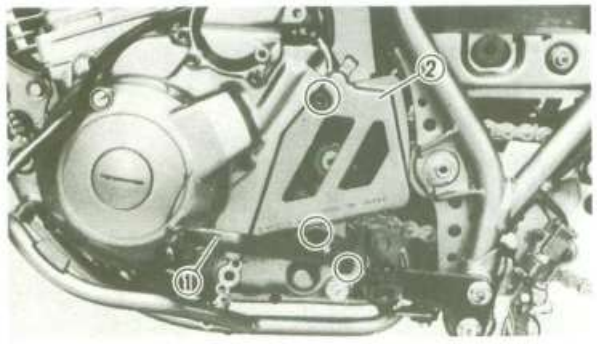


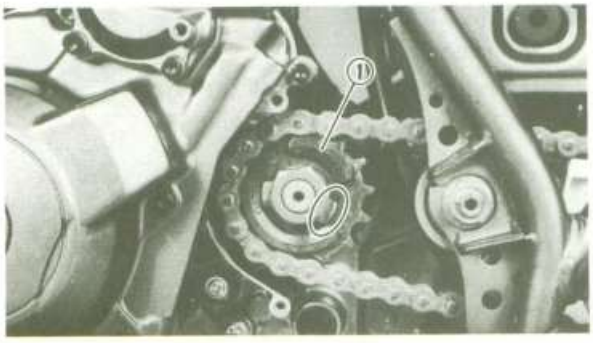
4. Disconnect:
   - Magneto lead ①
   - Clamp ②

NOTE:
Position the magneto lead so that it does not interfere with engine removal.

DRIVE CHAIN

1. Remove:
   - Change pedal ①
   - Cover ② (drive sprocket)



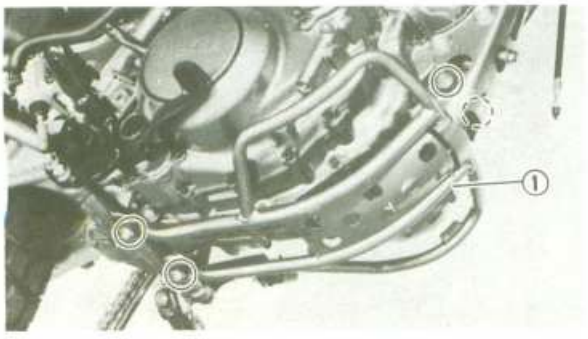


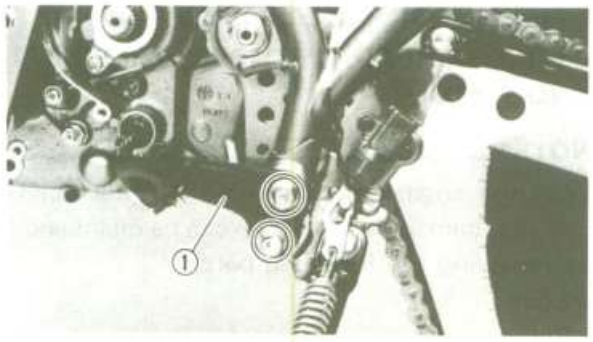
2. Remove:
   - Drive sprocket ①

NOTE:
- Before removing the nut (drive sprocket), straighten the lock washer tab.
- Loosen the nut (drive sprocket) while applying the rear brake.

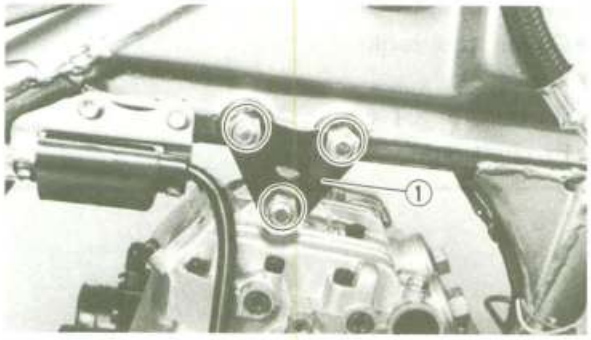
ENGINE PROTECTOR

1. Remove:
   - Engine protector ①





2. Remove:
   - Footrest ① (left)

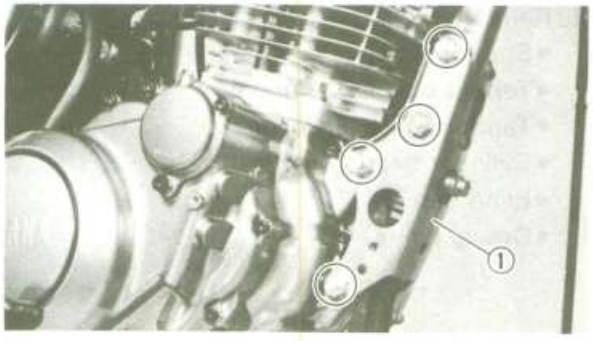


ENGINE REMOVAL

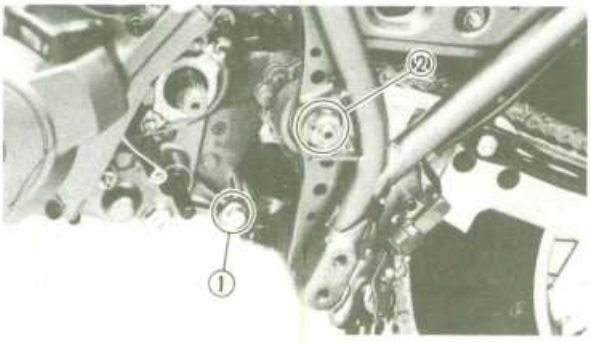
⚠WARNING

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

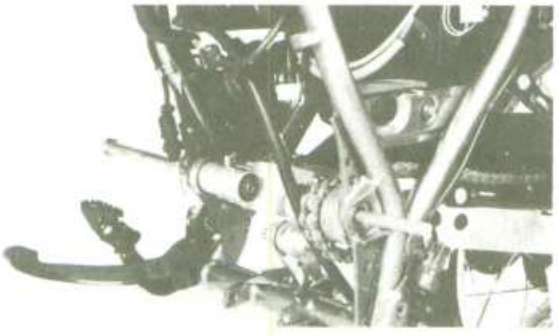
1. Place a suitable stand under the engine.
2. Remove:
   - Engine stay ① (upper)



3. Remove:
   - Engine stay ① (front)



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



NOTE:

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

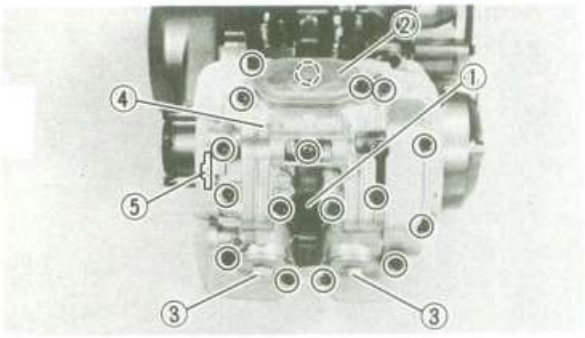
ENGINE DISASSEMBLY

CYLINDER HEAD, CYLINDER, CAMSHAFT AND PISTON

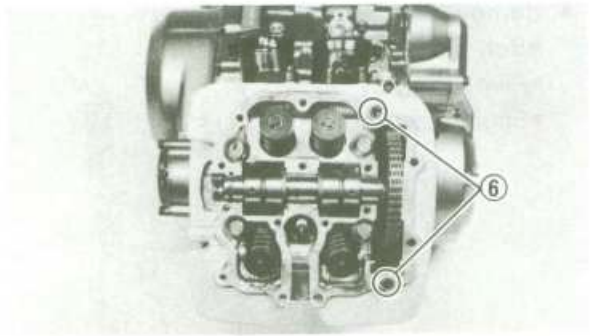
NOTE:

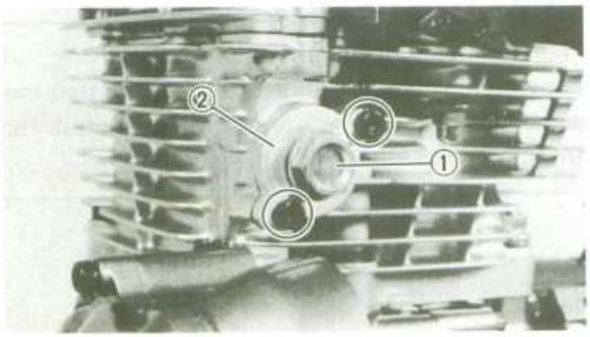
With the engine mounted, the cylinder head, cylinder, camshaft and piston can be maintained by removing the following parts.

- Seat
- Side covers
- Air scoops
- Cover (fuel tank)
- Fuel tank
- Carburetor
- Exhaust pipe



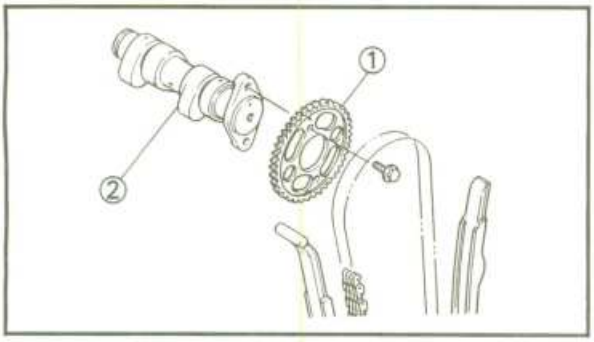
1. Remove:
   - Spark plug ①
   - Tappet cover ② (intake)
   - Tappet cover ③ (exhaust)
   - Cylinder head cover ④
   - Blind cap ⑤
   - Dowel pin ⑥



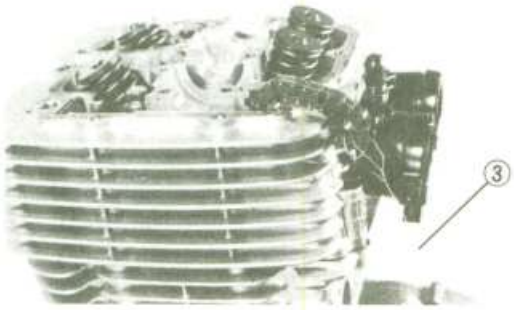


2. Loosen:
   - Bolt ① (chain tensioner)

3. Remove:
   - Chain tensioner ②

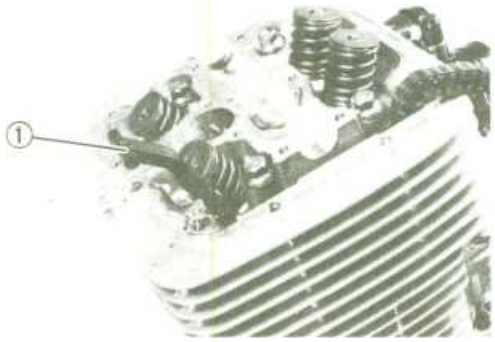


4. Remove:
   - Cam sprocket ①
   - Camshaft ②
   - Plugs (crankcase cover left)

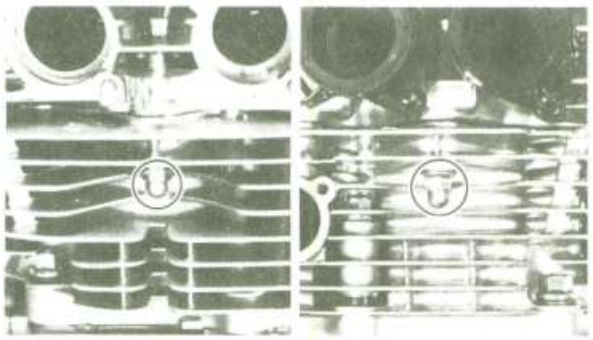


NOTE:

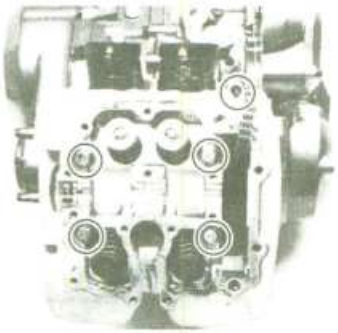
Fasten safety wire ③ to the cam chain to prevent it from falling into the crankcase.



5. Remove:
   - Chain guide ①

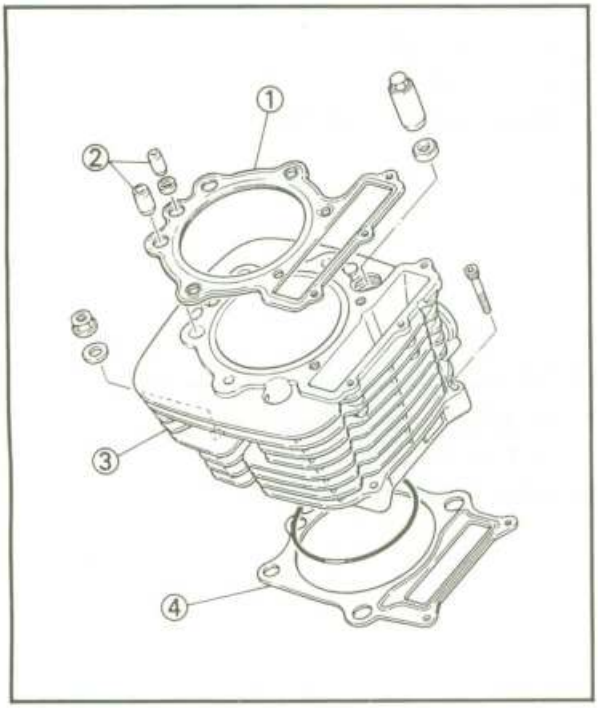


6. Remove:
   - Cylinder head

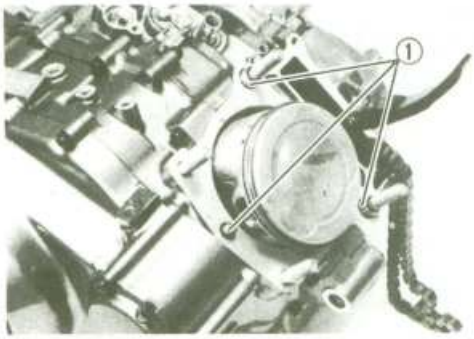


NOTE:

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



7. Remove:
   - Gasket ① (cylinder head)
   - Dowel pin ②
   - Cylinder ③
   - Gasket ④ (cylinder)



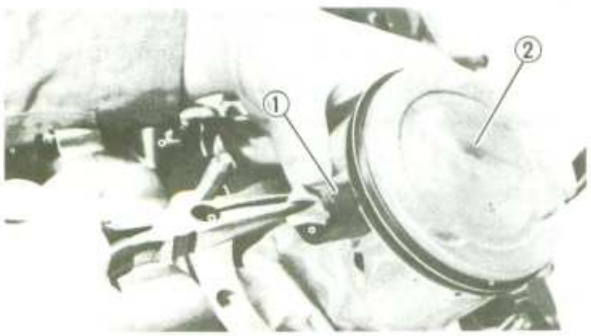
8. Remove:
   - Dowel pin ①



9. Remove:
   - Piston pin clip ①

NOTE:

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



10. Remove:
    - Piston pin ①
    - Piston ②

NOTE:

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

Piston pin puller:
P/N. YU-01304
P/N. 90890-01304

CAUTION:

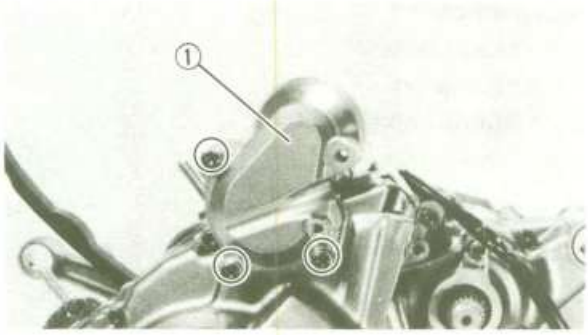
Do not use a hammer to drive the piston pin out.

STARTER IDLE GEAR AND CRANKCASE COVER (LEFT)

NOTE:

With the engine mounted, the starter idle gear and crankcase cover(left) can be maintained by removing the following parts.

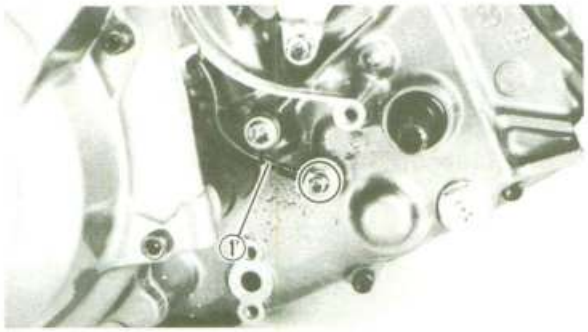
- Starter motor
- Drive sprocket cover



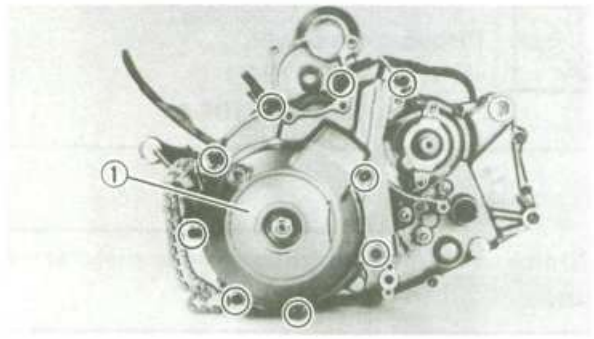
1. Remove:
   - Cover ① (starter idle gear)
   - Dowel pin
   - Gasket



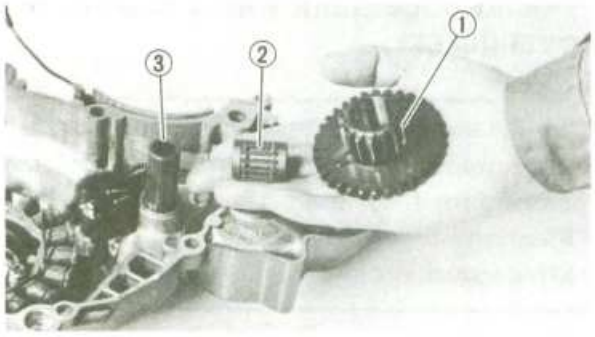
2. Remove:
   - Starter idle gear 1 ①
   - Bearing ②
   - Shaft ③



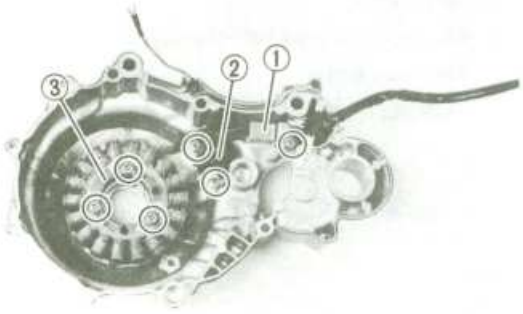
3. Remove:
   - Neutral switch lead ①



4. Remove:
   - Crankcase cover ① (left)
   - Dowel pin
   - O-ring
   - Gasket



5. Remove:
   - Starter idle gear 2 ①
   - Bearing ②
   - Shaft ③



6. Remove:
   - Lead holder ①
   - Pickup coil ②
   - Stator coil ③

CLUTCH, PRIMARY DRIVE GEAR AND BALANCER GEAR

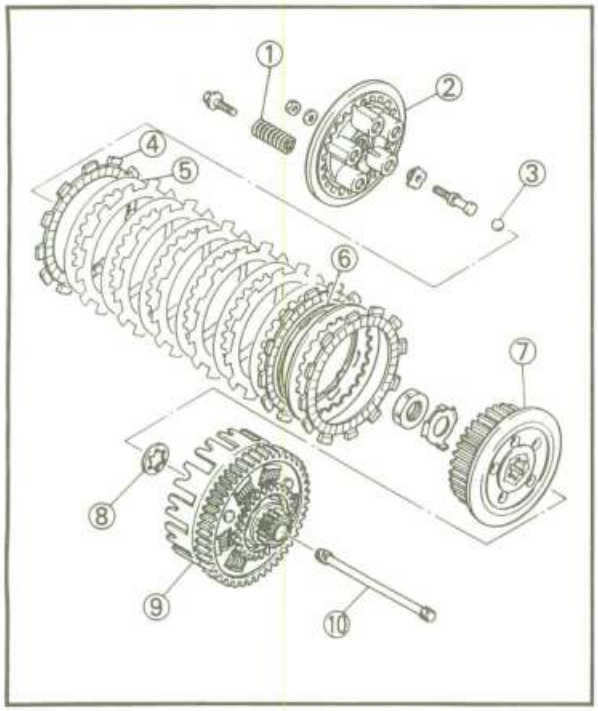
NOTE:

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

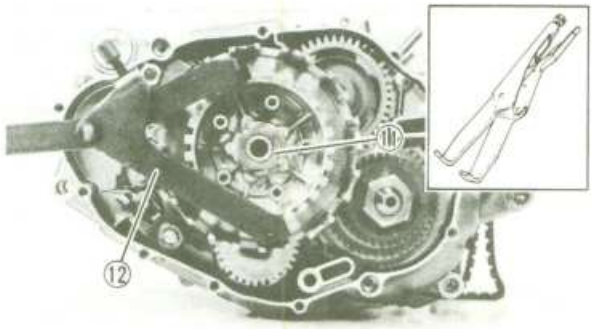
- Footrest (right)
- Union bolt (oil delivery pipe)



1. Remove:
   - Oil filter cover ①
   - Oil filter
   - O-ring
   - Crankcase cover ② (right)

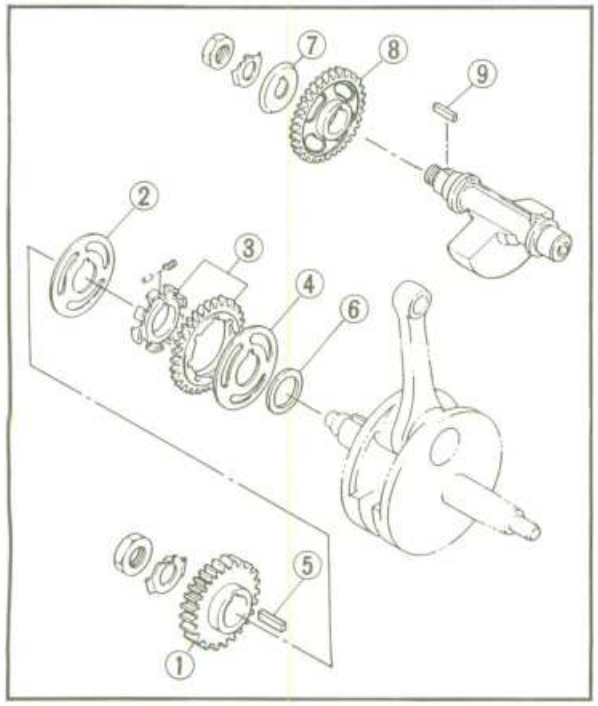


2. Remove:
   - Clutch spring ①
   - Pressure plate ②
   - Ball ③
   - Friction plate ④
   - Clutch plate ⑤
   - Wave plate ⑥
   - Clutch boss ⑦
   - Thrust washer ⑧
   - Clutch housing ⑨
   - Push rod ⑩

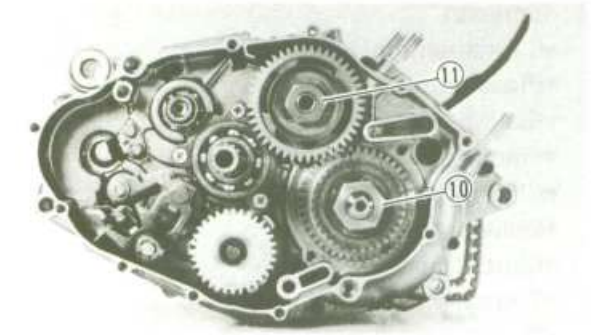


NOTE:
- Before loosening the nut ⑪ (clutch boss), straighten the lock washer tab.
- Hold the clutch boss to loosen the nut (clutch boss) by the universal clutch holder ⑫.

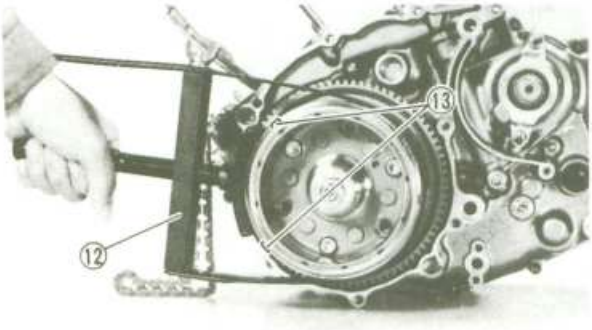
Universal clutch holder:
P/N. YM-91042
P/N. 90890-04086



3. Remove:
   - Primary drive gear ①
   - Plate ②
   - Balancer drive gear ③
   - Plate ④
   - Key ⑤
   - Plate washer ⑥
   - Plate ⑦
   - Balancer gear ⑧
   - Key ⑨



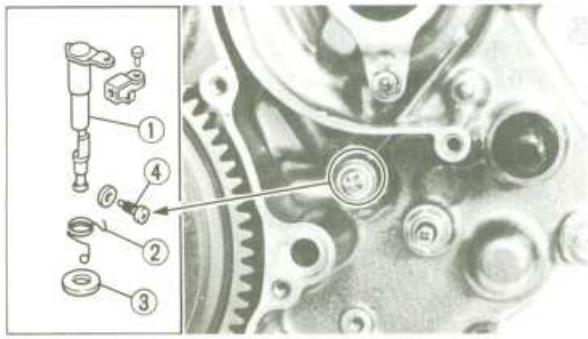
NOTE:
Before loosening the nut ⑩ (primary drive gear) and nut ⑪ (balancer gear), straighten the lock washer tab.



NOTE:
Hold the rotor (A.C. magneto) to loosen the nut ⑩ and ⑪ by the rotor holder ⑫.

Rotor holder:
P/N. YS-01880
P/N. 90890-01701

CAUTION:
Do not allow the rotor holder to touch the projections ⑬ on the rotor.

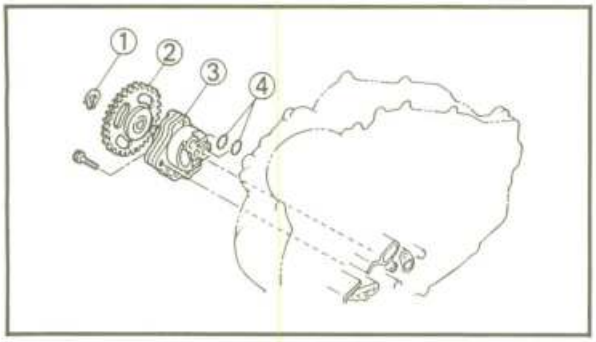


4. Remove:
   - Push lever ①
   - Spring ②
   - Plain washer ③

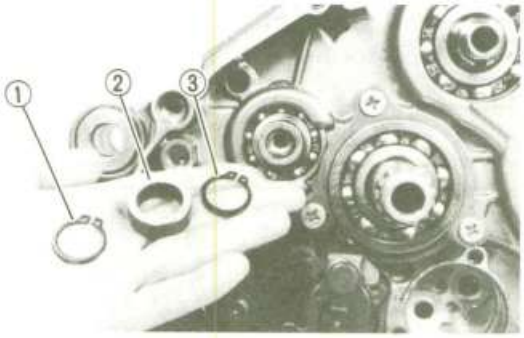
NOTE:
Loosen the screw ④ to remove the push lever.

OIL PUMP AND SHIFT LEVER

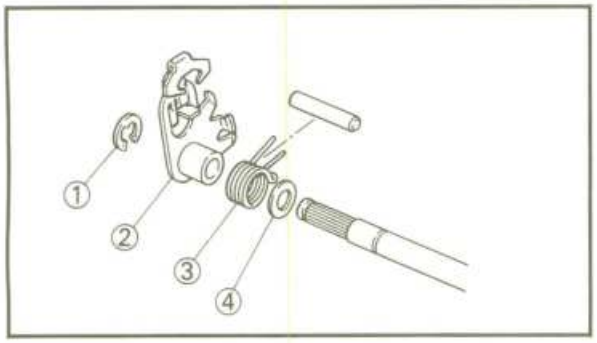
NOTE:
With the engine mounted, the oil pump and shift lever can be maintained by removing the following parts:
- Footrest (right)
- Union bolt (oil delivery pipe)
- Crankcase cover (right)
- Clutch



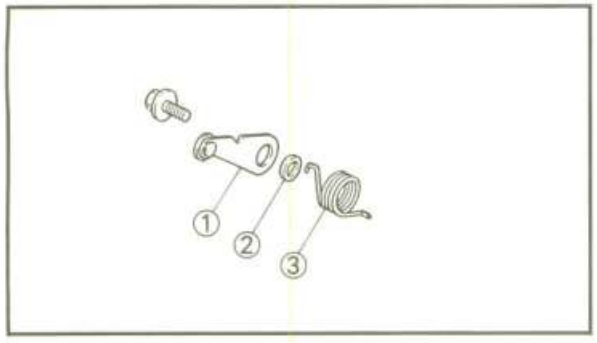
1. Remove:
   - Circlip ①
   - Oil pump gear ②
   - Oil pump ③
   - O-ring ④



2. Remove:
   - Circlip ① (from drive axle)
   - Collar ②
   - Circlip ③



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



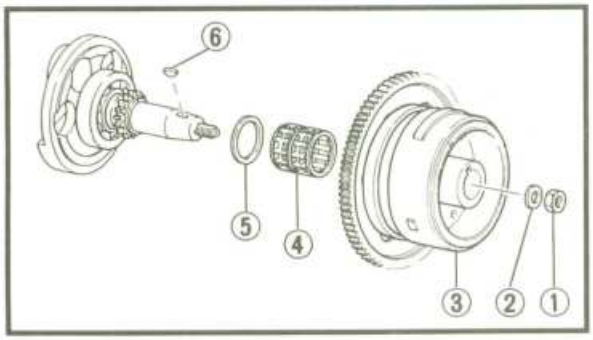
4. Remove:
   - Stopper lever ①
   - Collar ②
   - Spring ③

A.C. MAGNETO AND CAM CHAIN

NOTE:

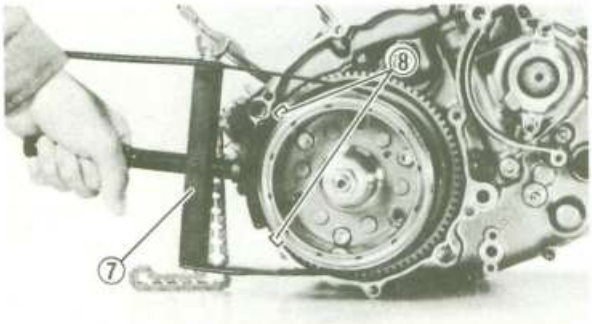
With the engine mounted, the A.C. magneto can be maintained by removing the following parts.

- Seat
- Side cover (left)
- Crankcase cover (left)



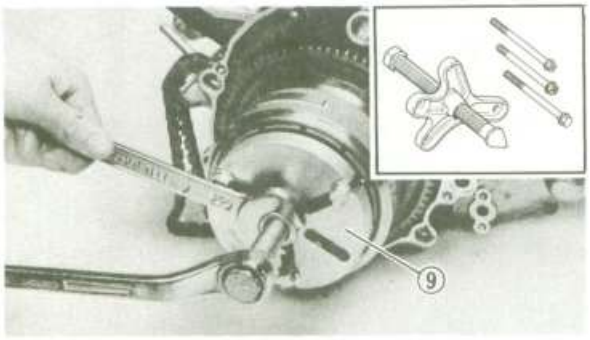
1. Remove:
   - Nut ①
   - Washer ②
   - Rotor ③ (with starter wheel gear)
   - Bearing ④
   - Plate washer ⑤
   - Key ⑥

NOTE:
Hold the rotor to loosen the nut (rotor) by the rotor holder ⑦.



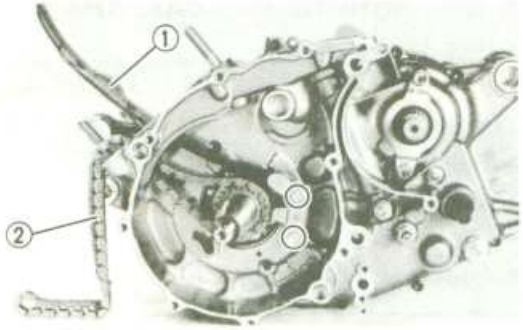
Rotor holder:
P/N. YS-01880
P/N. 90890-01701

CAUTION:
Do not allow the special tool to touch the projections ⑧ on the rotor.

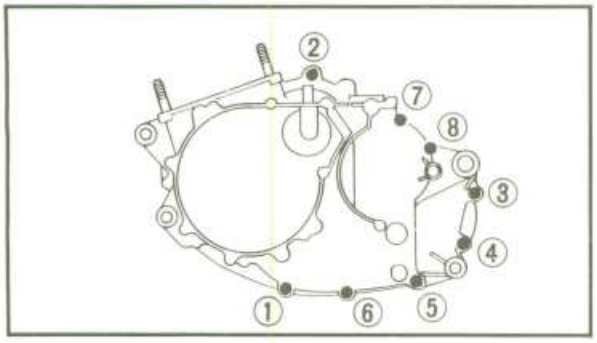


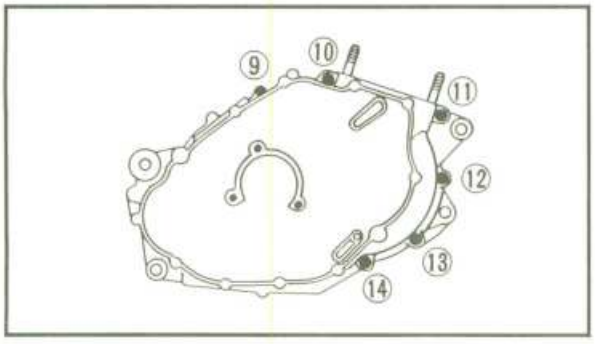
NOTE:
Remove the rotor by the rotor puller ⑨.

Rotor puller:
P/N. YU-33270
P/N. 90890-01362



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





CRANKCASE (RIGHT)

1. Remove:
   - Crankcase (right)

NOTE:

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

* *

Removal steps:

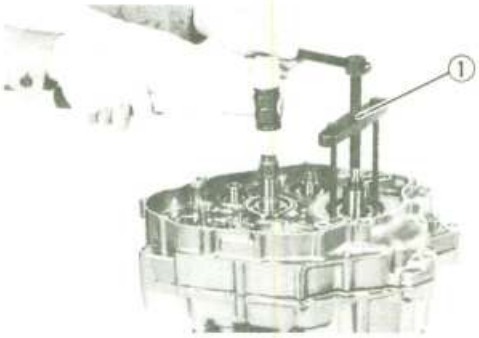
- Attach the crankcase separating tool ①.

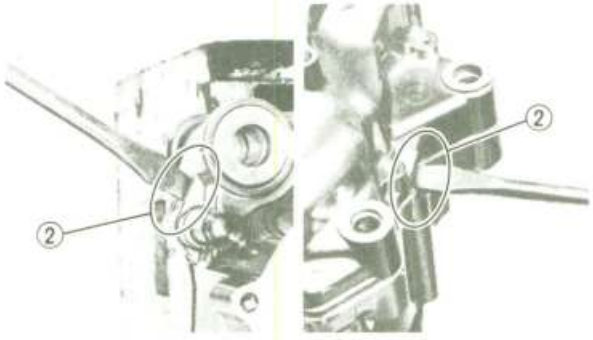


Crankcase separating tool:
P/N. YU-01135-A
P/N. 90890-01135

NOTE:

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





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

NOTE:

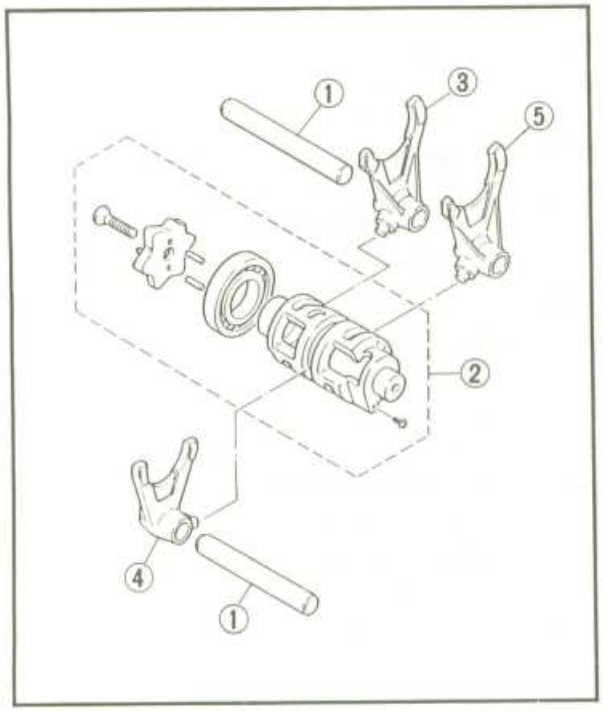
- If the crankcase will not come off, use the lever guides ② for removal.
- Turn the shift cam to the position shown in the figure so that it does not contact the crankcase.



CAUTION:

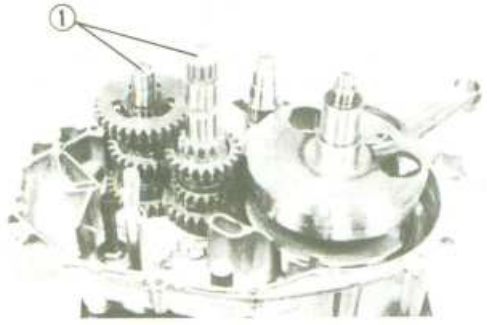
- Be sure not to give damages to the mating surface.
- Use soft hammer to tap on the case half. Tap only on reinforced portions of case. Do not tap on gasket mating surface. Work slowly and carefully. Make sure the case halves separate evenly. If one end " hangs", take pressure off the push screw, realign,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

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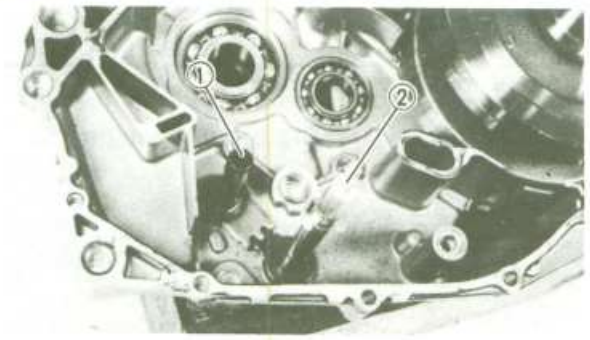


SHIFTER AND TRANSMISSION

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

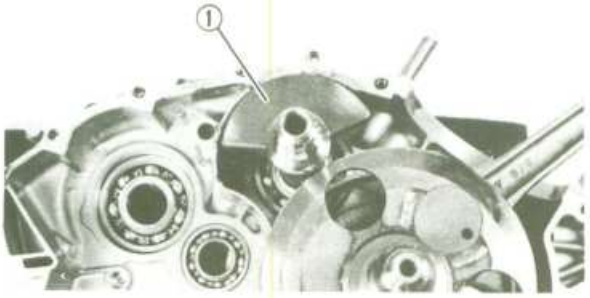


2. Remove:
   - Transmission assembly ①

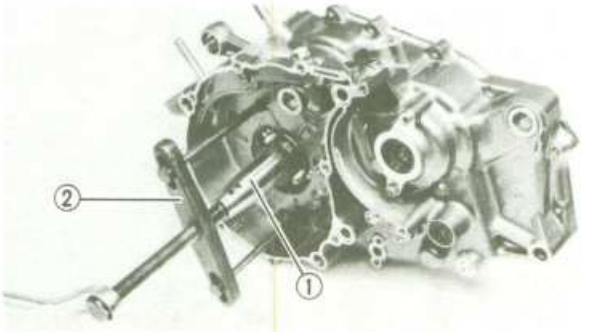


3. Remove:
   - Shift shaft #1 ①
   - Shift shaft #2 ②

BALANCER AND CRANKSHAFT



1. Remove:
   - Balancer ①



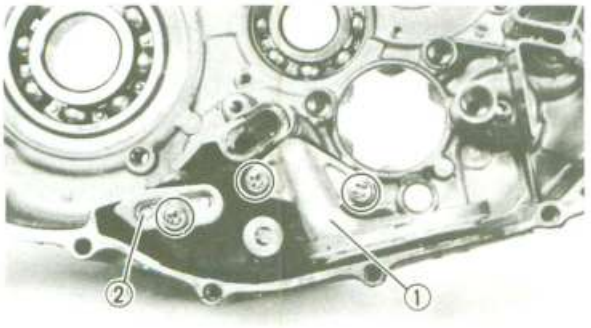
2. Remove:
   - Crankshaft ①

NOTE:

- Remove the crankshaft by the crankcase separating tool ②.

Crankcase separating tool:
P/N. YU-01135-A
P/N. 90890-01135

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



OIL STRAINER

NOTE:

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

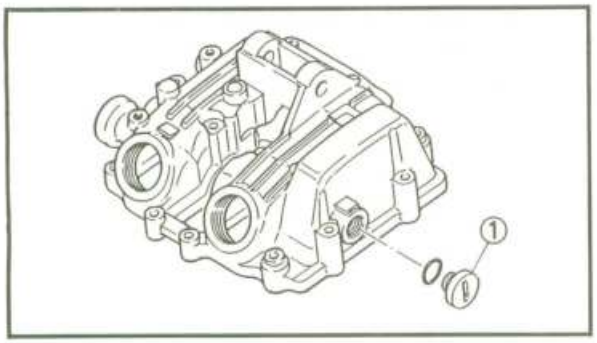
1. Remove:
   - Oil strainer ①
   - Oil passage cover ②
   - Gasket

ROCKER ARM

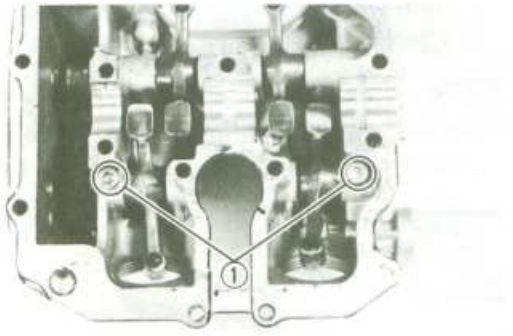
NOTE:

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

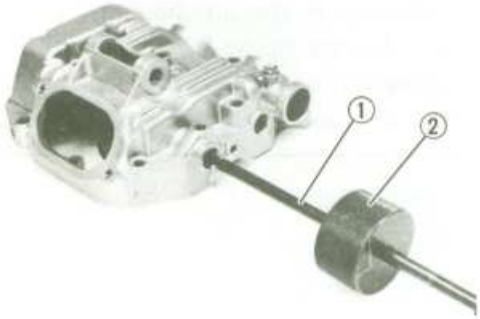
- Seat
- Side covers
- Air scoops
- Cover (fuel tank)
- Fuel tank
- Cylinder head cover



1. Remove:
   - Plug ①



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



3. Remove:
   - Rocker arm shaft
   - Rocker arm

NOTE:

Remove the rocker arm shaft by the slide hammer bolt ① and weight ②.

Slide hammer set:
P/N. YU-01083-A
Slide hammer bolt:
P/N. 90890-01083
Weight:
P/N. 90890-01084

VALVE

NOTE:

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

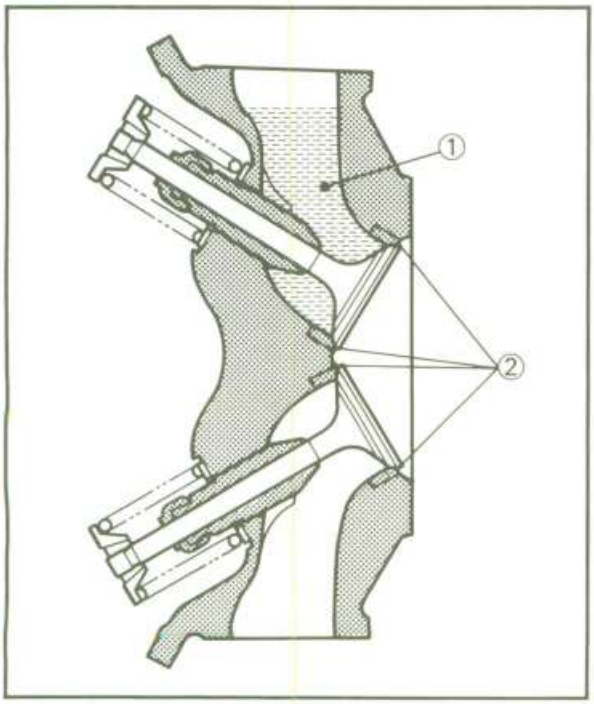
- Seat
- Side covers
- Air scoops
- Cover (fuel tank)
- Fuel tank
- Exhaust pipe
- Carburetor
- Cylinder head cover
- Cylinder head

1. Check:
   - Valve sealing

   Leakage at valve seat→Inspect the valve face, valve seat and valve seat width.
   Refer to the "INSPECTION AND REPAIR—VALVE SEAT" section.

NOTE:

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

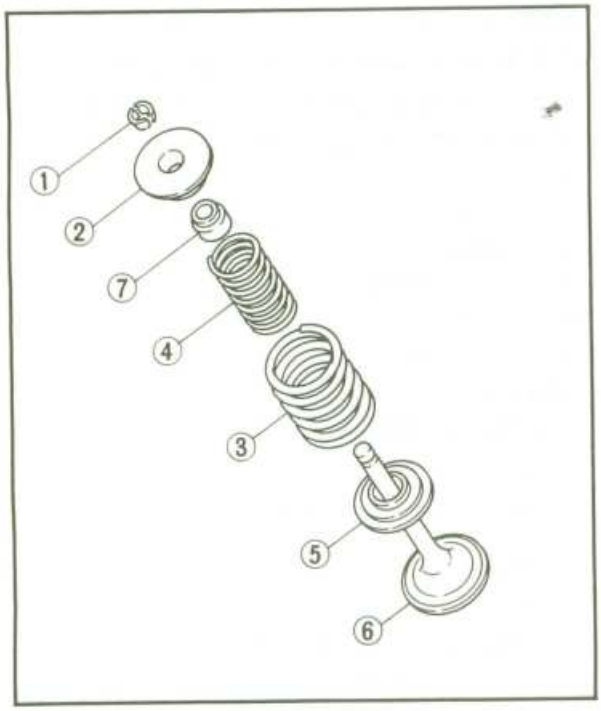


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Checking steps:

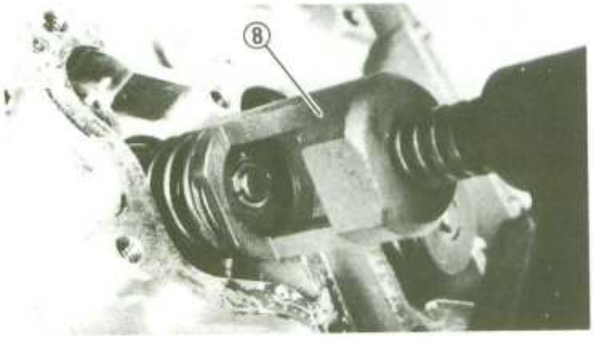
- Supply a clean solvent ① into the intake and exhaust ports.
- Check the valve sealing. There should be no leakage at the valve seats ②.

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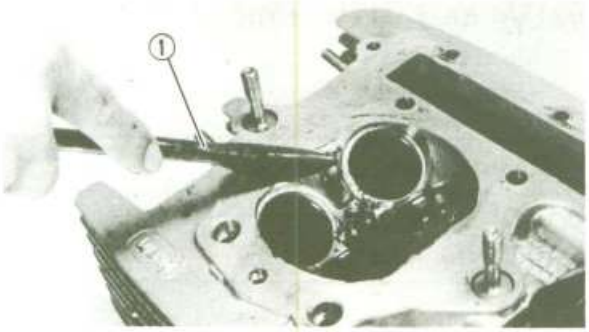
2. Remove:
   - Valve cotter ①
   - Valve retainer ②
   - Outer spring ③
   - Inner spring ④
   - Spring retainer ⑤
   - Valve ⑥
   - Oil seal ⑦

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



NOTE:
Compress the valve spring to remove the valve cotter by the valve spring compressor ⑧.

Valve spring compressor:
P/N. YM-04019
P/N. 90890-04019



INSPECTION AND REPAIR

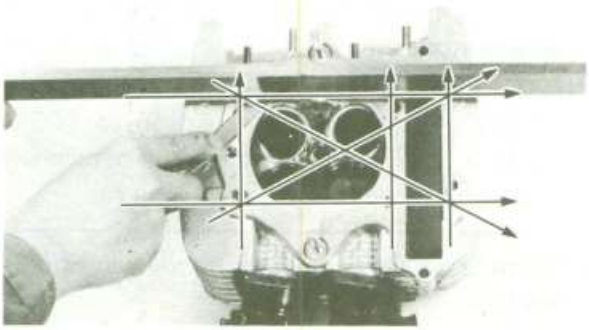
CYLINDER HEAD

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

NOTE:

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

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



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

Cylinder head warpage:
Less than 0.03 mm (0.0012 in)



4. Resurface:
   - Cylinder head

* *

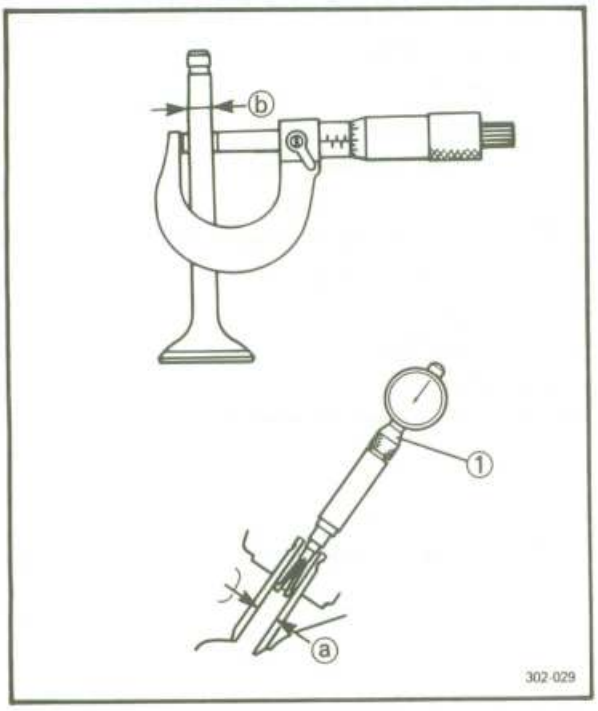
Resurfacement steps:

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

NOTE:

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

* *



VALVE AND VALVE GUIDE

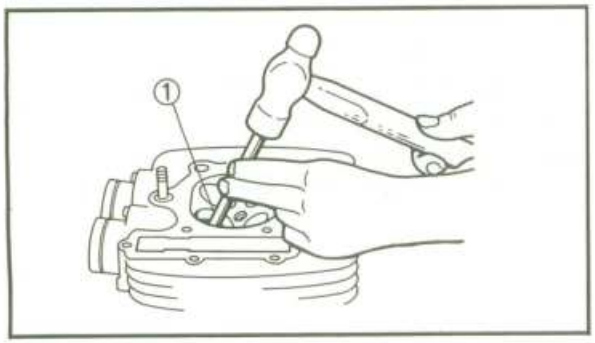
1. Measure:
   - Stem-to-guide clearance

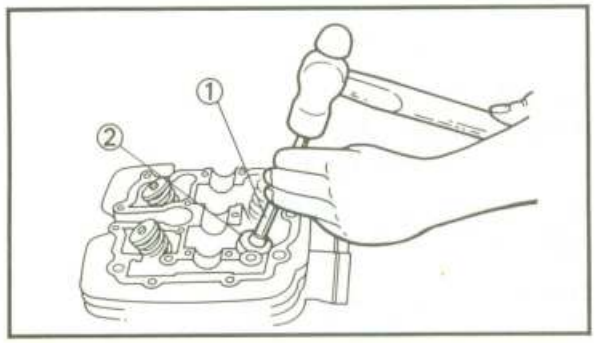
Stem-to-guide clearance =
Valve guide inside diameter ⓐ − Valve stem diameter ⓑ

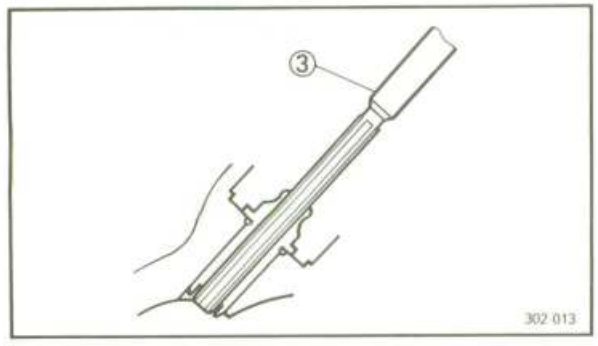
Out of specification → Replace valve guide.

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

① Bore gauge







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Replacement steps:

NOTE:

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

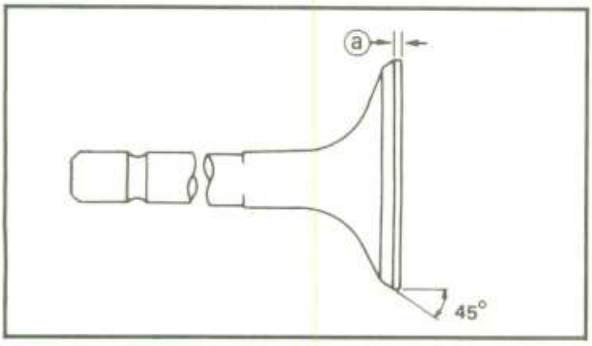
- Remove the valve guide using the valve guide remover ①.
- Install the valve guide (new) using the valve guide installer ② and valve guide remover ①.
- After installing the valve guide, bore the valve guide using the valve guide reamer ③ to obtain proper stem-to-guide clearance.

Valve guide remover 7mm(0.28in):
P/N. YM-01225-A
P/N. 90890-01225
Valve guide installer:
P/N. YM-04017
P/N. 90890-04017
Valve guide reamer 7mm (0.28in):
P/N. YM-01227
P/N. 90890-01227

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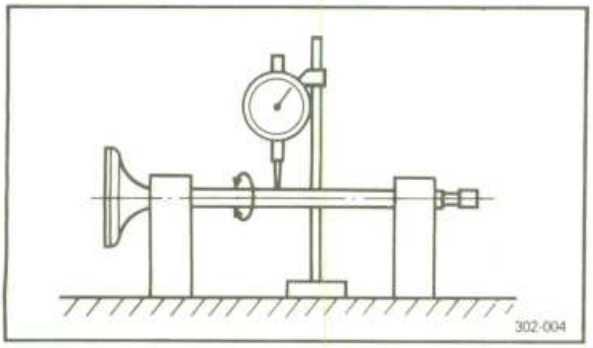
2. Clean the valve face to remove carbon deposits.

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



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

Margin thickness limit:
0.7 mm (0.028 in)



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

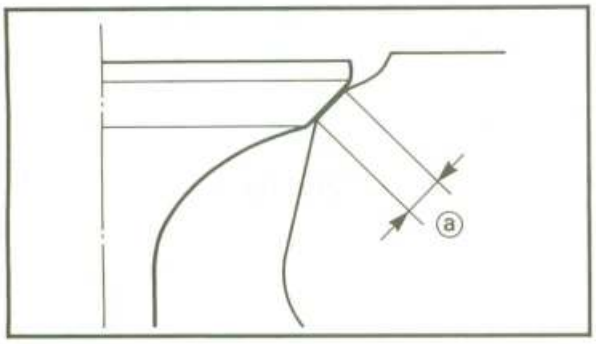
Stem runout limit:
0.01 mm (0.0004 in)

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

VALVE SEAT

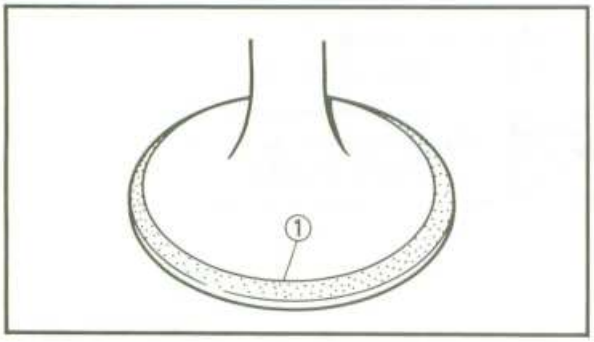
1. Clean the valve face and valve seat to remove carbon deposits.

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



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

Valve seat width:	
Intake	1.0~1.2 mm (0.04~0.05 in)
Exhaust	1.0~1.2 mm (0.04~0.05 in)



* *

Measurement steps:

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

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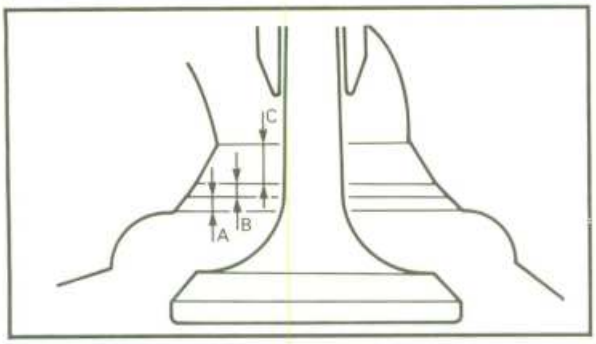
4. Reface:
   • Valve seat
   Use a 30°, 45° and 60° valve seat cutter ①.



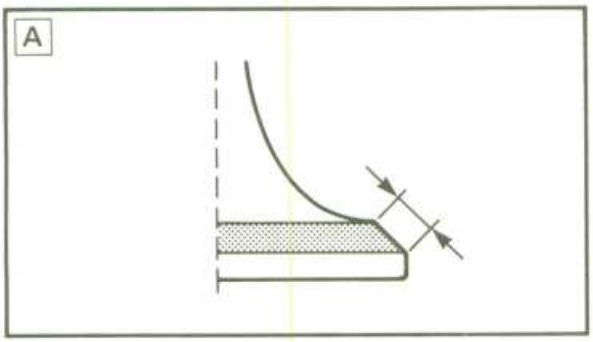
Valve seat cutter: P/N. YM-91043

CAUTION:

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



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

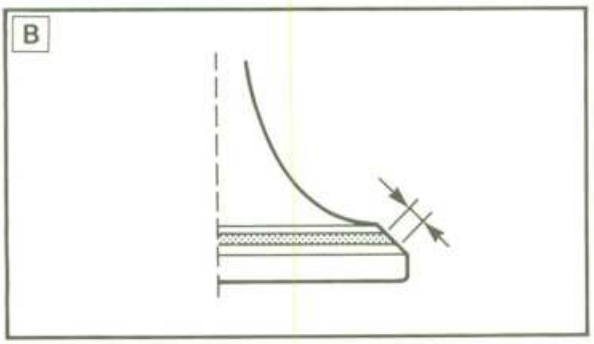


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Valve seat refacing steps:

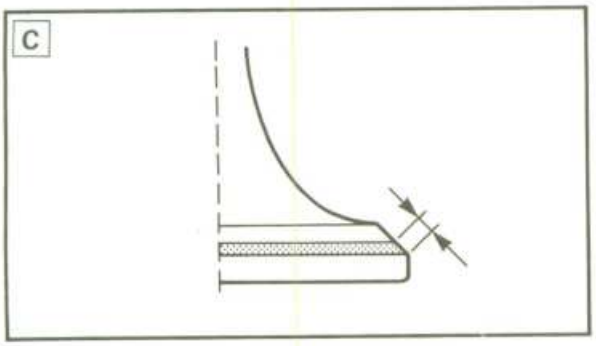
A Valve face indicates that valve seat is centered on valve face but is too wide.

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



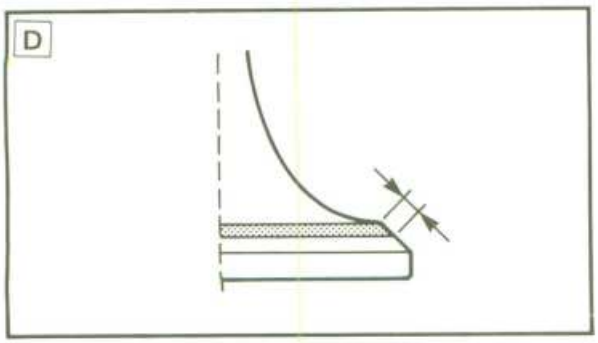
B Valve seat is in the middle of the valve face but too narrow.

Valve seat cutter set		Desired result
Use	45° cutter	To achieve a uniform valve seat width of 1.0 mm(0.039 in).



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

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



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

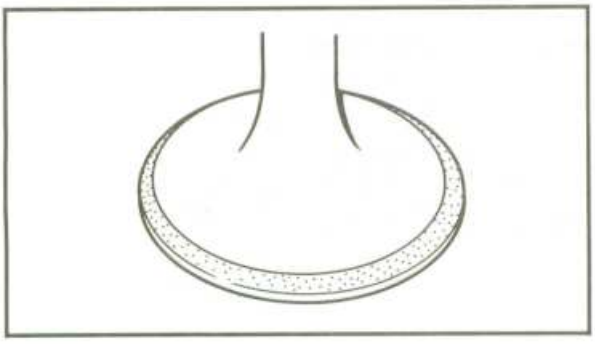
Valve seat cutter set		Desired result
Use	60° cutter, first	To center the seat and increase its width.
	45° cutter	

* *

5. Lap:
   - Valve face
   - Valve seat

NOTE:

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



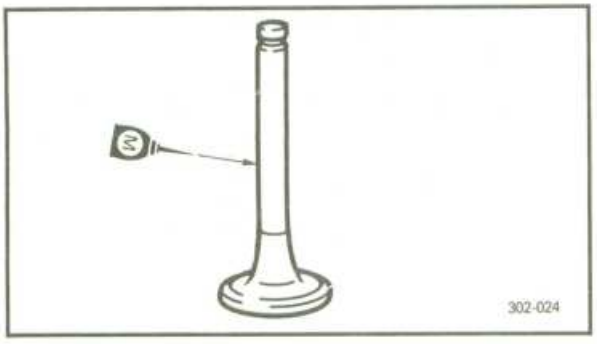
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Lapping steps:

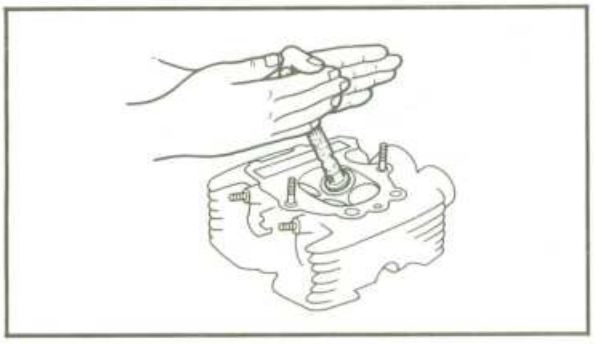
- Apply a coarse lapping compound to the valve face.

CAUTION:

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



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



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

NOTE:

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

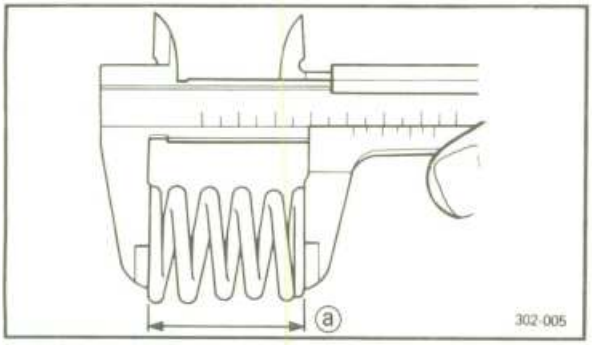
- Apply a fine lapping compound to the valve face and repeat the above steps.

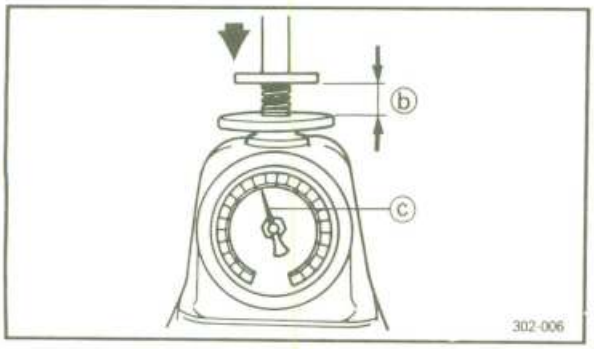
NOTE:

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

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

* *





VALVE SPRING

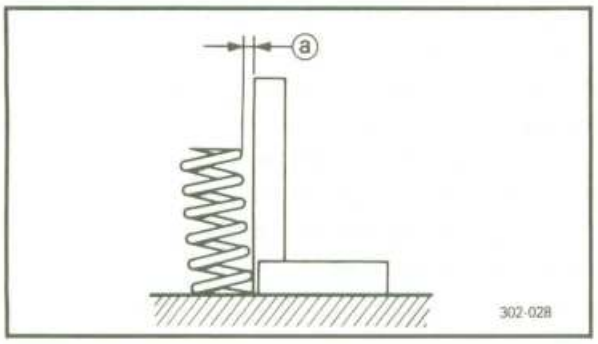
1. Measure:
   - Valve spring free length ⓐ
     Out of specification → Replace.

Valve spring free length:	
Inner spring	Outer spring
40.1 mm (1.58 in)	43.8 mm (1.72 in)

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

ⓑ Installed length

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

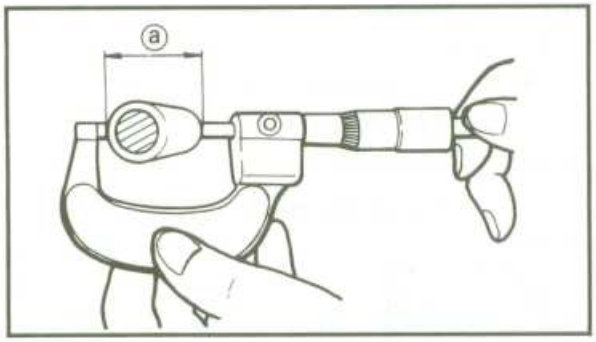


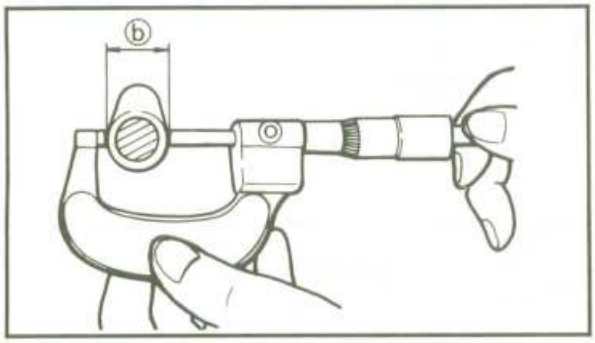
3. Measure:
   • Spring tilt ⓐ
   Out of specification→Replace.

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

CAMSHAFT

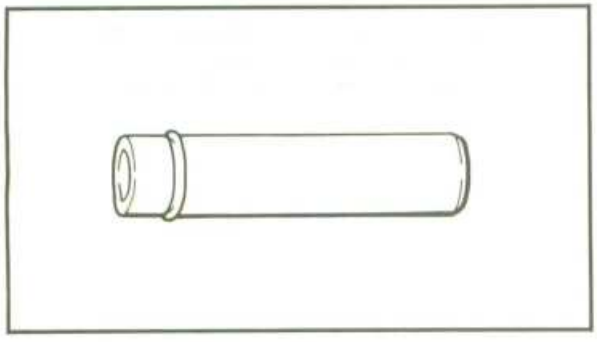
1. Inspect:
   • Cam lobes
   Pitting/Scratches/Blue discoloration→Replace.





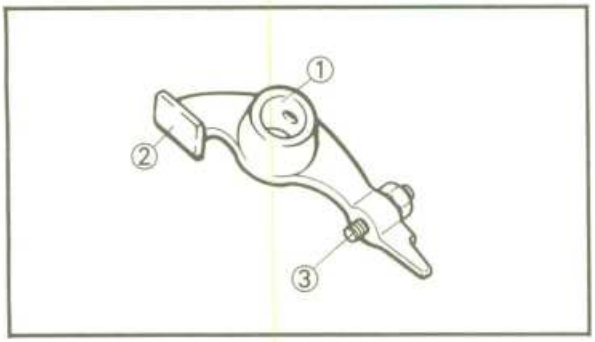
2. Measure:
   • Cam lobes
   Out of specification→Replace.

	ⓐ	ⓑ
Intake	36.47~36.57 mm (1.436~1.440 in)	30.06~30.16 mm (1.183~1.187 in)
Exhaust	36.62~36.72 mm (1.442~1.446 in)	30.11~30.21 mm (1.185~1.189 in)



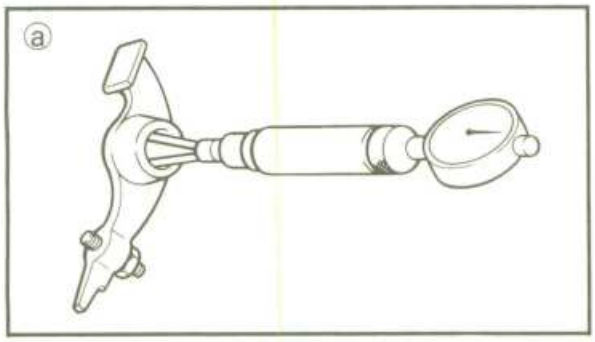
ROCKER ARM AND ROCKER ARM SHAFT

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



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

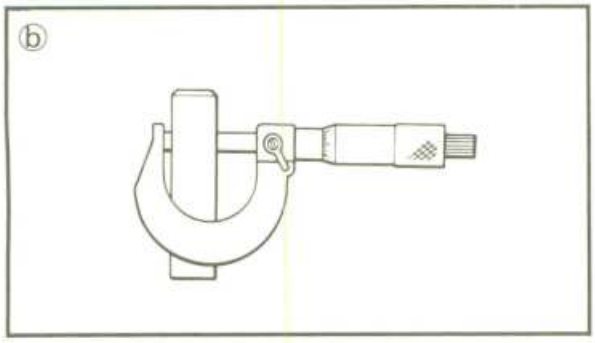
   Wear/Pitting/Scratches/Blue discoloration
   → Replace, then inspect lubrication system.



3. Measure:
   - Arm-to-shaft clearance

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

Out of specification → Replace as a set.

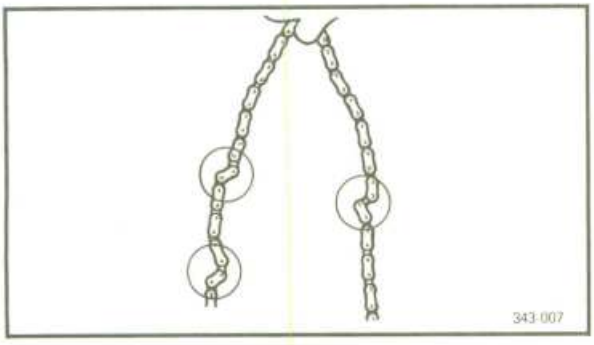


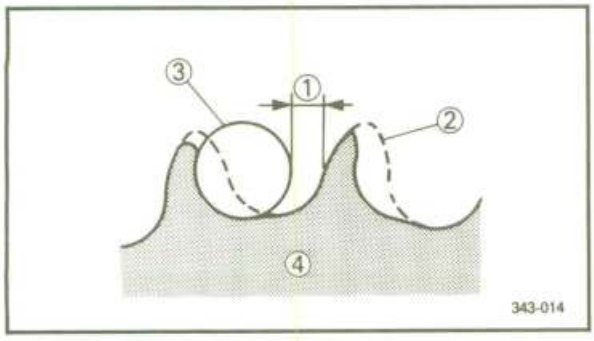
Arm-to-shaft clearance:
0.009~0.042 mm
(0.0003~0.0020 in)

CAM CHAIN AND CAM SPROCKET

1. Inspect:
   - Cam chain

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

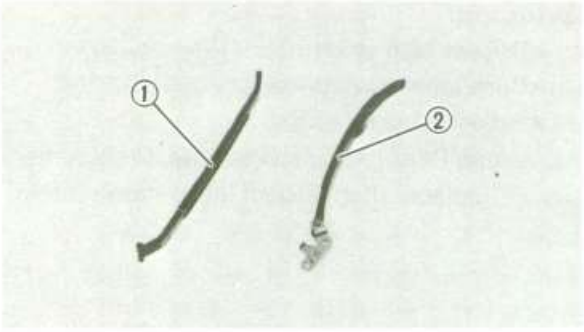




2. Inspect:
   - Cam sprocket

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

① 1/4 tooth
② Correct
③ Roller
④ Sprocket



CAM CHAIN GUIDE

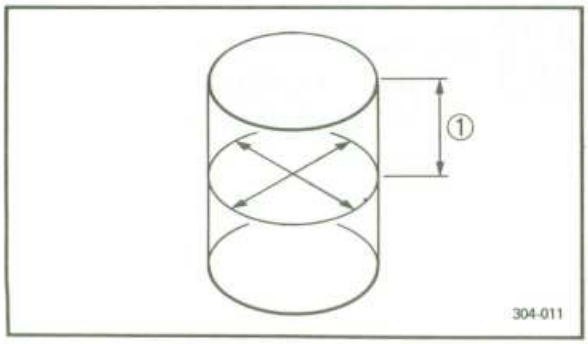
1. Inspect:
   - Exhaust side chain guide ①
   - Intake side chain guide ②

   Wear/Damage→Replace.

CYLINDER AND PISTON

1. Inspect:
   - Cylinder and piston walls

   Vertical scratches→Rebore or replace cylinder and piston.



2. Measure:
   - Piston-to-cylinder clearance

* *

Measurement steps:

First steps

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

① 50 mm (1.97 in) from the cylinder top

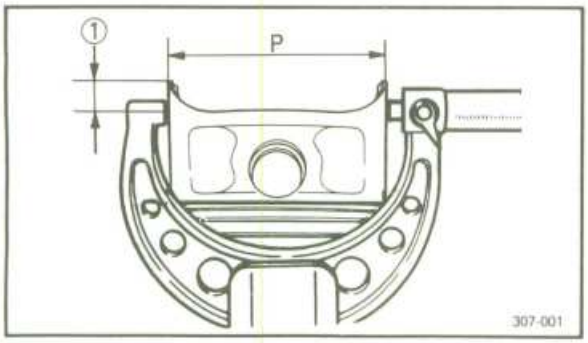
NOTE:

Measure the cylinder bore "C" in parallel to and at right angles to the crankshaft.

Then, find the average of the measurements.

	Standard	Wesr limit
Cylinder bore "C":	94.97~95.02 mm (3.739~3.741 in)	95.1 mm (3.744 in)
$C=\frac{X+Y}{2}$		

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



2nd steps

● Measure the piston skirt diameter "P" with a micrometer.
① 5.0 mm (0.20 in) from the piston bottom edge

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

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

3rd steps

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

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

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

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

* *



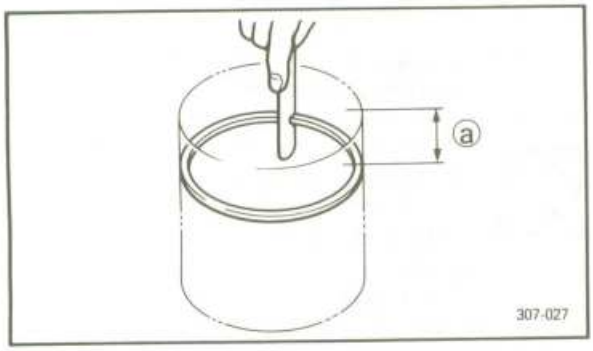
PISTON RING

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

NOTE:

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

Piston ring side clearance:	
Top	0.04 ~ 0.08 mm (0.001 ~ 0.003 in)
2nd	0.03 ~ 0.07 mm (0.001 ~ 0.003 in)
Oil	0.02~0.06 mm (0.0008~0.002 in)



2. Position:
   - Piston ring
     (in cylinder)

NOTE:

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

ⓐ 20 mm (0.8 in)

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

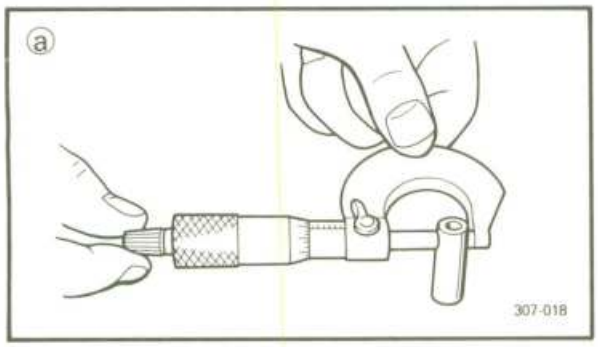
NOTE:

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

Piston ring end gap (installed):	
Top ring	0.30~0.45 mm (0.012~0.018 in)
2nd ring	0.30~0.45 mm (0.012~0.018 in)
Oil ring	0.20~0.70 mm (0.008~0.028 in)

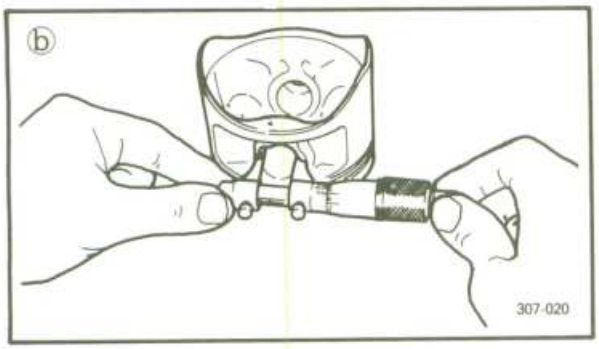
PISTON PIN

1. Inspect:
   - Piston pin
     Blue discoloration/Grooves → Replace then inspect lubrication system.



2. Measure:
   - Outside diameter ⓐ (piston pin)
     Out of specification → Replace.

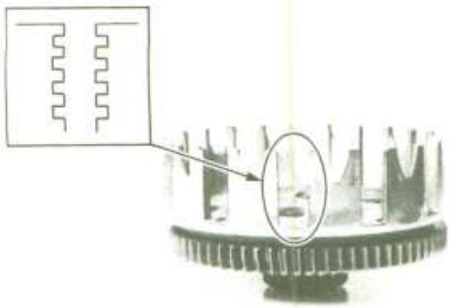
Outside diameter (piston pin):
21.991~22.000 mm
(0.8658~0.8661 in)



3. Measure:
   - Piston pin-to-piston clearance
     Out of specification → Replace piston.

Piston pin-to-piston clearance =
Bore size (piston pin) ⓑ -
Outside diameter (piston pin) ⓐ

Piston pin-to-piston clearance:
0.004~0.024 mm
(0.0002~0.0009 in)
Limit: 0.07 mm (0.003 in)



CLUTCH

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

NOTE:

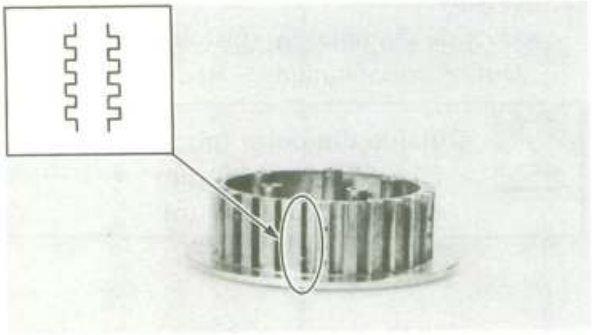
Pitting on friction plate *dogs of clutch* housing will cause erratic operation.

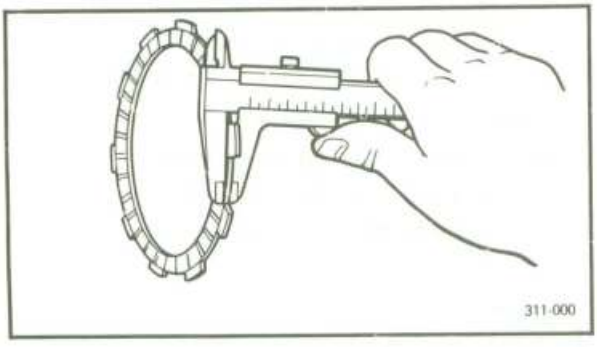
2. Inspect:
   • Clutch housing bearing
   Damage → Replace.

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

NOTE:

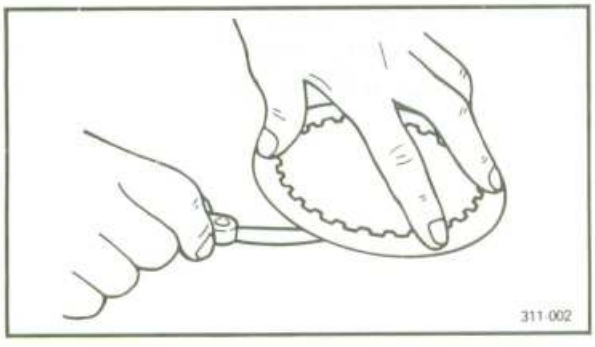
Pitting on clutch plate splines of clutch boss will cause erratic operation.





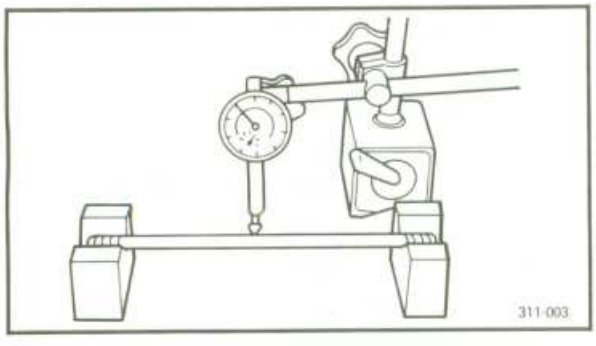
4. Measure:
   • Friction plate thickness
   Out of specification → Replace as a set.

	Thickness	Wear limit
Type "A" (2 pcs.)	2.94~3.06 mm (0.116~0.120 in)	2.8mm (0.11in)
Type "B" (6 pcs.)	2.72~2.88 mm (0.107~0.113 in)	2.6mm (0.10 in)



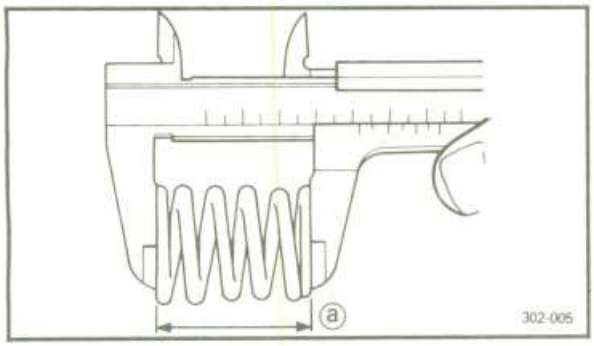
5. Measure:
   • Clutch plate warpage
   Out of specification → Replace as a set.

Clutch plate warpage limit:
0.2 mm (0.008 in)



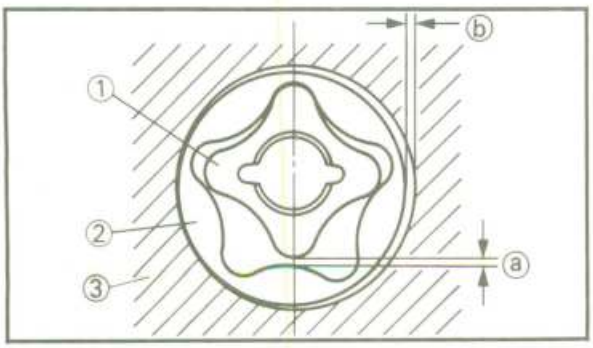
6. Measure:
   • Push rod runout
   Roll the push rod on a V-block.
   Ouf of specification → Replace.

Runout limit:
0.2 mm (0.00ℰ in)



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

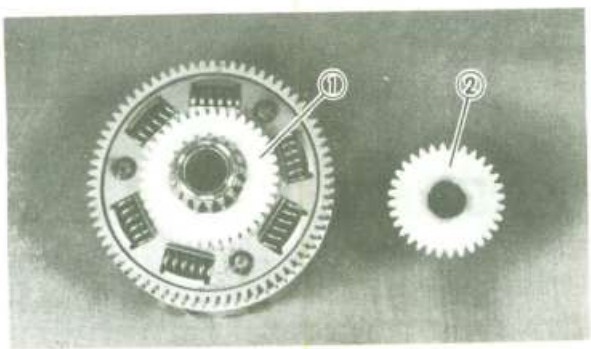
Clutch spring minimum free length ⓐ: 40.8 mm (1.606 in)



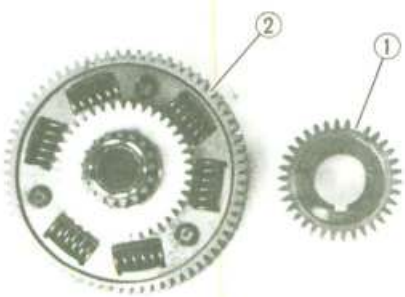
OIL PUMP

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

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



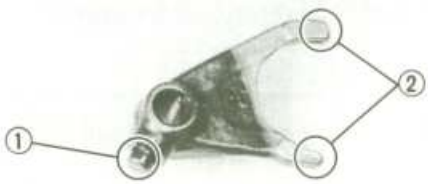
2. Inspect:
   - Oil pump drive gear ①
   - Oil pump driven gear ②
     Wear/Cracks/Damage → Replace.



PRIMARY DRIVE

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

TRANSMISSION AND SHIFTER



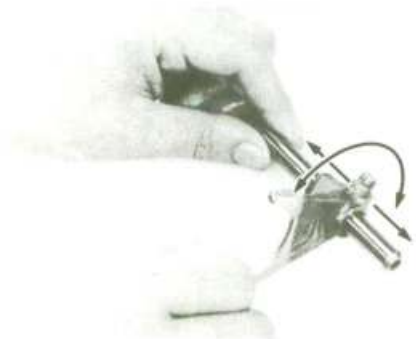
1. Inspect:
   - Shift fork cam follower ①
   - Shift fork pawl ②

   Scoring/Bends/Wear→Replace.



2. Inspect:
   - Shift cam groove ①
   - Shift cam segment ②

   Wear/Damage→Replace.



3. Check:
   - Shift fork movement

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



4. Inspect:
   - Guide bar

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

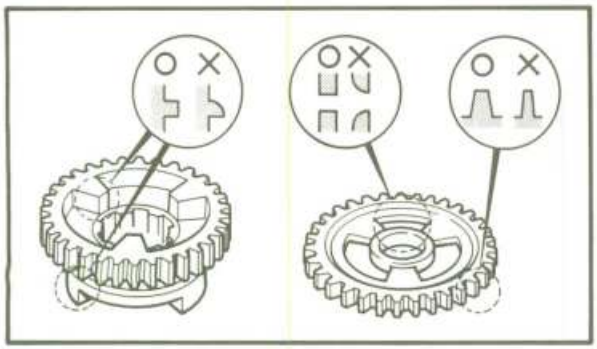
⚠WARNING

Do not attempt to straighten a bent guide bar.

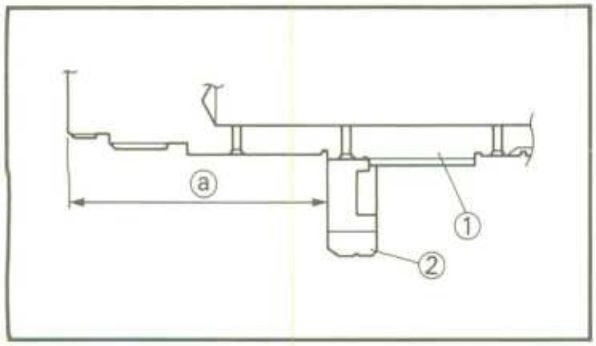
5. Measure:
   - Transmission shaft runout

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

Maximum runout:
0.08 mm (0.003 in)



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



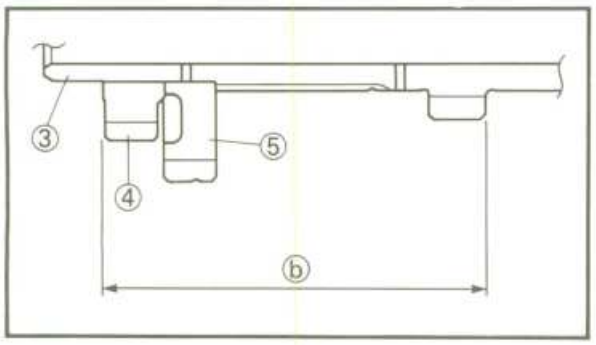
7. Check:
   - Proper gear engagement (each gear) (to its counter part)
   - Gear movement
     Roughness → Replace.

* *

Transmission gear reassembling points:

- Press the 2nd wheel gear ② in the drive axle ① as shown.
  ⓐ 60.0 mm (2.36 in)
- Press the 2nd pinion gear ④ and 5th pinion gear ⑤ in the main axle ③.
  ⓑ 90.5 mm (3.56 in)

* *

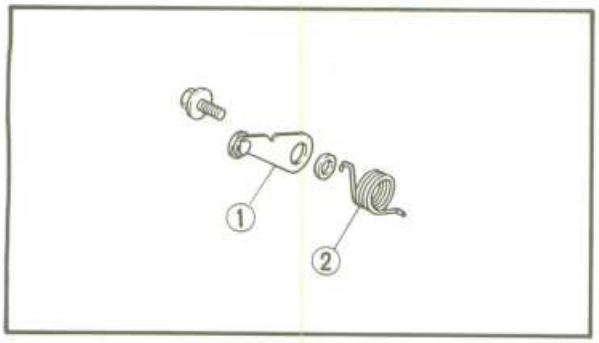


8. Inspect:
   - Circlip
     Damage/Looseness/Bends → Replace.

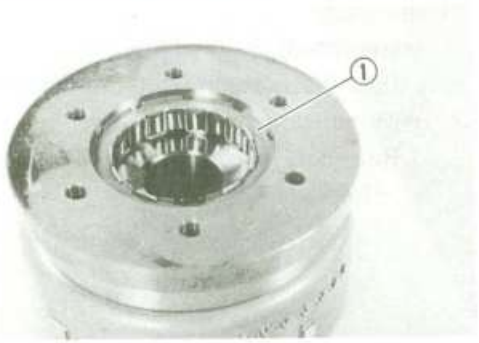
SHIFT SHAFT AND STOPPER LEVER

1. Inspect:
   - Shift shaft
     Bends/Wear/Damage → Replace.



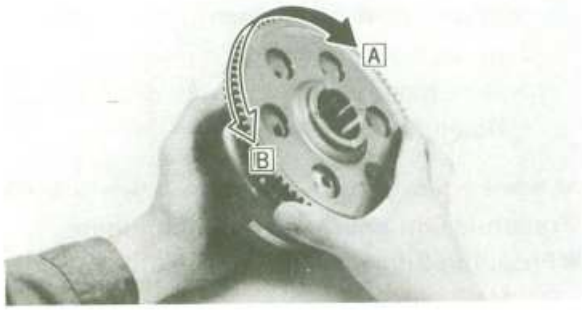


2. Inspect:
   - Stopper lever ①
     Roller turns roughly → Replace.
     Bends/Damage → Replace.
3. Inspect:
   - Return spring ②
     Damage/Cracks → Replace.



STARTER DRIVE

1. Inspect:
   - Starter one-way ①
     Cracks/Damage → Replace.

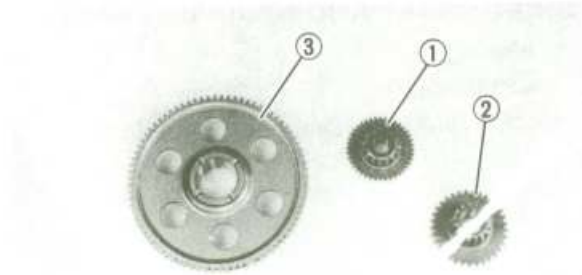


* *

Starter clutch operation

- Install the starter wheel gear to the starter clutch, and hold the starter clutch.
- When turning the starter wheel gear clockwise [A], the starter clutch and the wheel gear should be engaged.
  If not, the starter clutch is faulty. Replace it.
- When turning the starter wheel gear counterclockwise [B], the starter wheel gear should turn freely.
  If not, the starter clutch is faulty. Replace it.

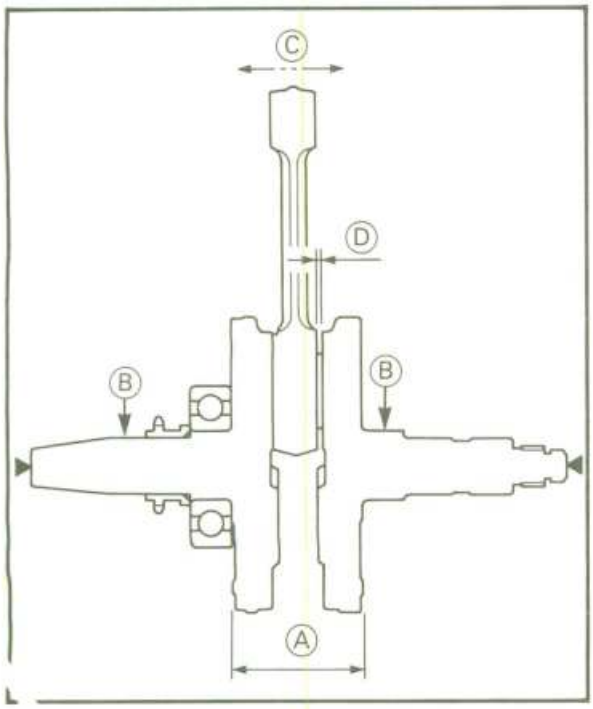
* *



2. Inspect:
   - Starter idle gear 1 teeth ①
   - Starter idle gear 2 teeth ②
   - Starter wheel gear teeth ③
     Burrs/Chips/Roughness/Wear Replace.



3. Inspect:
   - Starter wheel gear
     (contacting surfaces)
     Pitting/Wear/Damage → Replace.



CRANKSHAFT

1. Measure:
   - Crank width Ⓐ
     Out of specification → Replace crankshaft.

Crank width:
74.95~75.00 mm
(2.950~2.953 in)

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

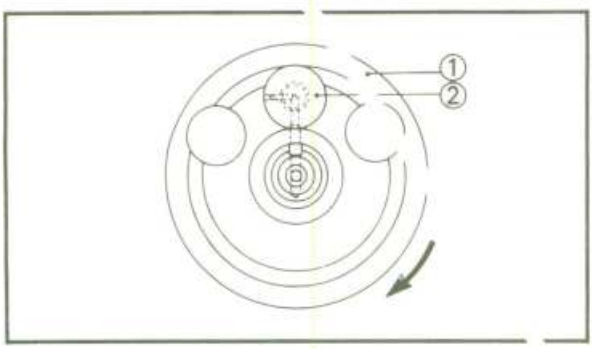
Runout limit:
0.03 mm (0.001 in)

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

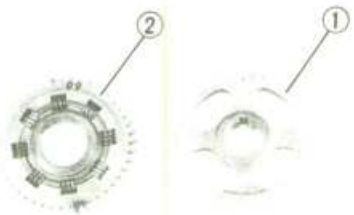
Small end free play:
0.8 mm (0.031 in)

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

Big end side clearance:
0.35~0.65 mm (0.014~0.026 in)

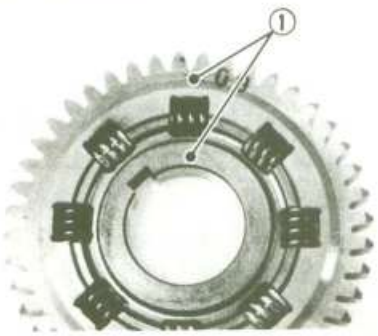


Crankshaft reassembling point:
The crankshaft ① and the crank pin ② oil passages must be properly interconnected with a tolerance of less than 1 mm (0.04 in).



BALANCER DRIVE GEAR AND BALANCER GEAR

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



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

CRANKCASE

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

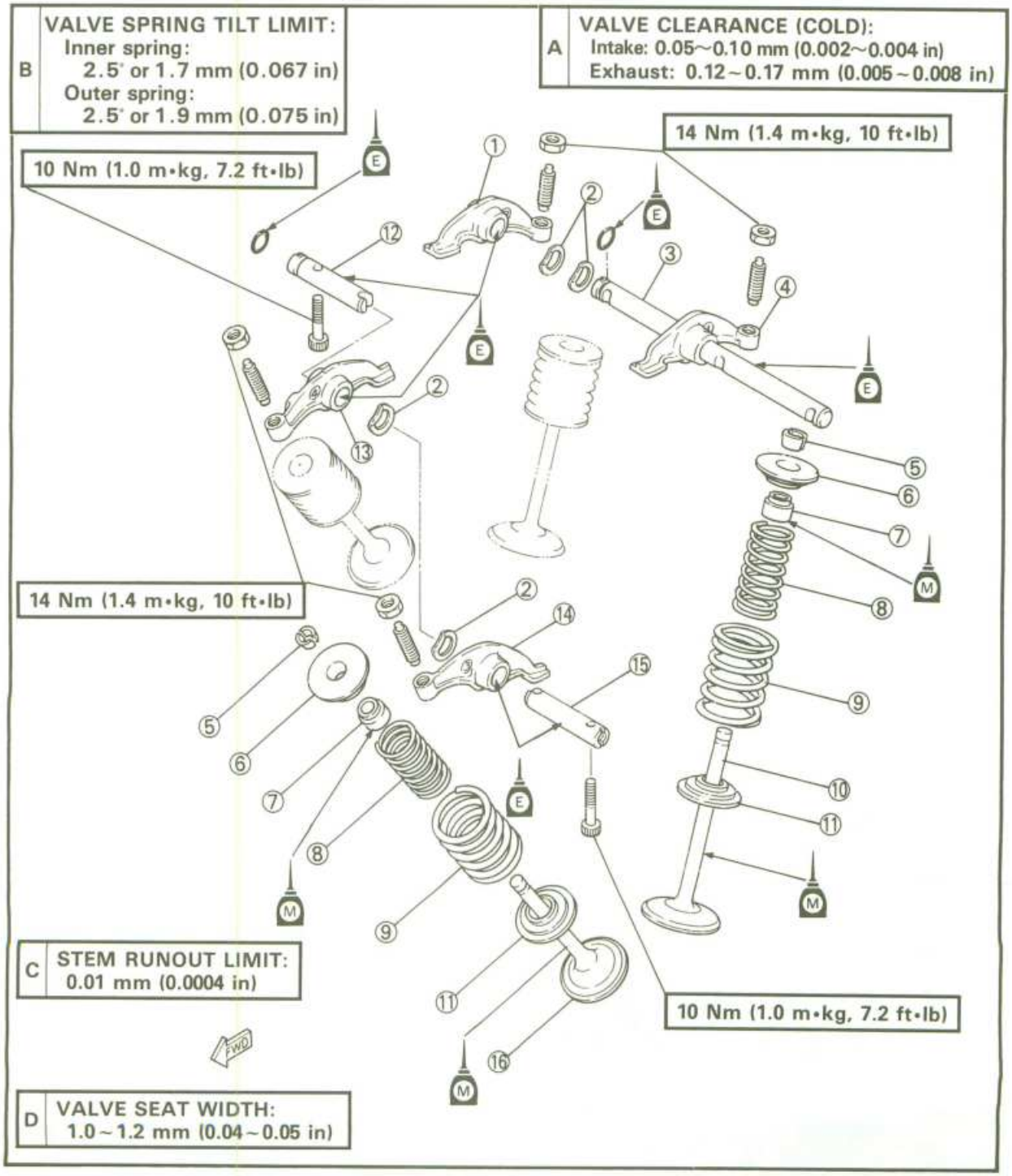
BEARING AND OIL SEAL

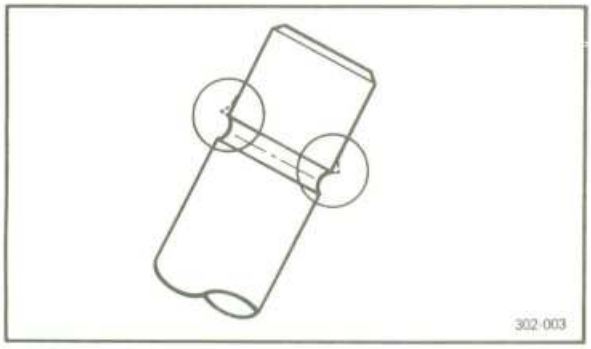
1. Inspect:
   • Bearing
   Roughness / Pitting / Damage → Replace.
   • Oil seal lip
   Damage / Wear → Replace.

ENGINE ASSEMBLY AND ADJUSTMENT

VALVE AND ROCKER ARM

① Rocker arm #2
② Wave washer
③ Rocker arm shaft (intake)
④ Rocker arm #1
⑤ Valve cotter
⑥ Valve retainer
⑦ Oil seal
⑧ Inner spring
⑨ Outer spring
⑩ Valve (intake)
⑪ Valve retainer
⑫ Rocker arm shaft (exhaust)
⑬ Rocker arm #4
⑭ Rocker arm #3
⑮ Rocker arm shaft (exhaust)
⑯ Valve (exhaust)

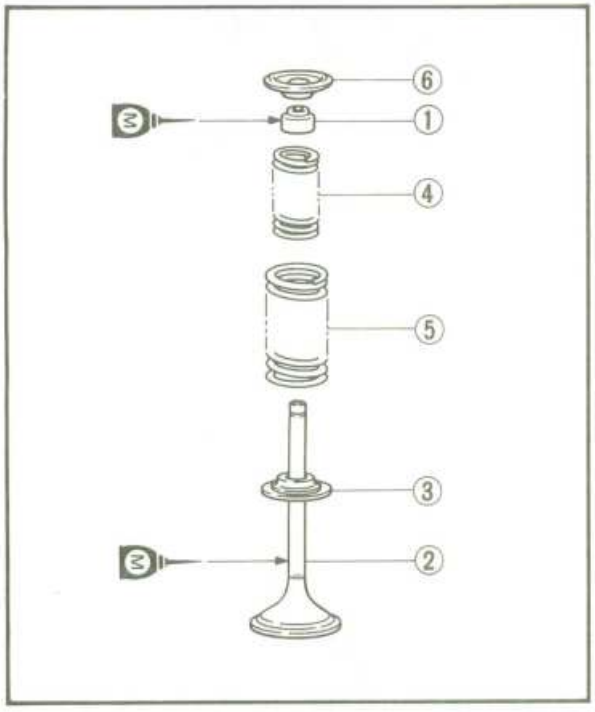




VALVE

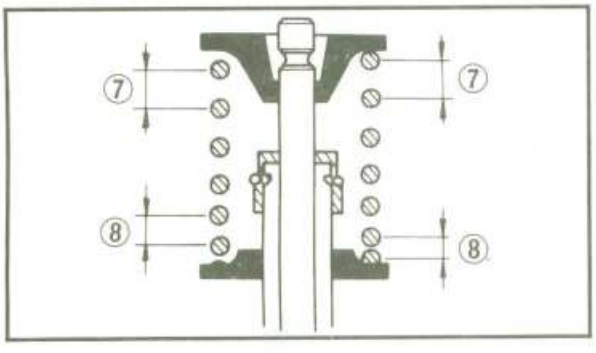
1. Deburr:
   - Valve stem end

   Use an oil stone to smooth the stem end.



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

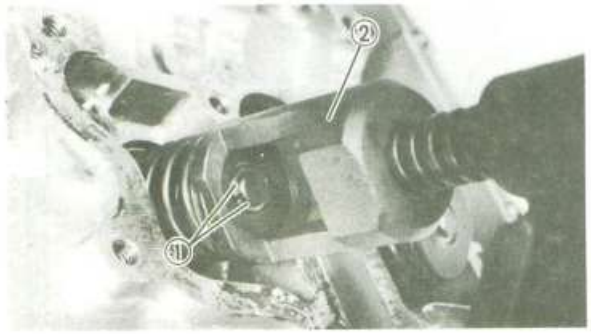
3. Install:
   - Oil seal ①
   - Valve ②
   - Valve retainer ③
   - Inner spring ④
   - Outer spring ⑤
   - Valve retainer ⑥



NOTE:

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

⑦ Larger pitch
⑧ Smaller pitch

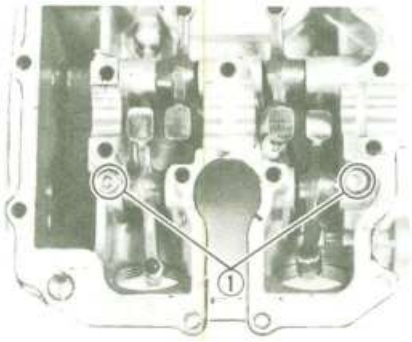


4. Install:
   - Valve cotter ①

NOTE:

Compress the valve spring to install the valve cotter by the valve spring compressor ②.

Valve spring compressor:
P/N. YM-04019
P/N. 90890-04019



ROCKER ARM

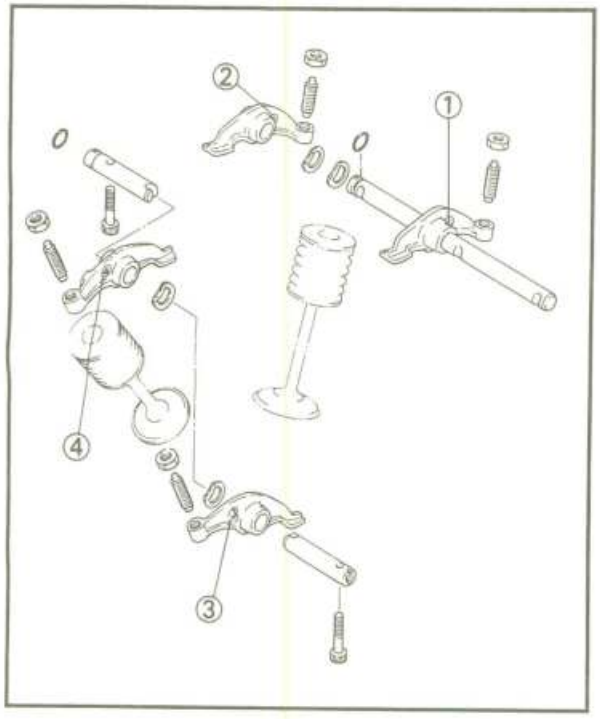
1. Lubricate:
   - Engine oil
     (to the rocker arm shaft)

2. Install:
   - Rocker arm
   - Rocker arm shaft

	Bolt ① (rocker arm shaft): **10 Nm (1.0 m·kg, 7.2 ft·lb)**

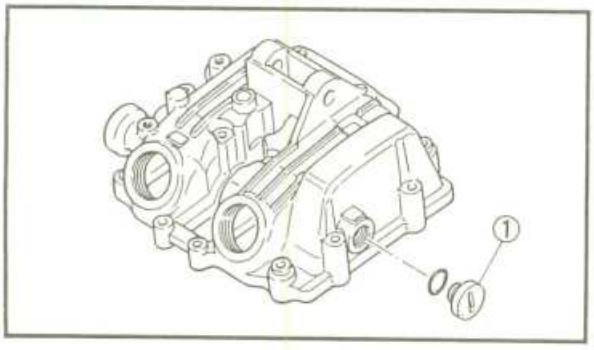
NOTE:

Numeral is stamped on the rocker arm.



① #1
② #2
③ #3
④ #4

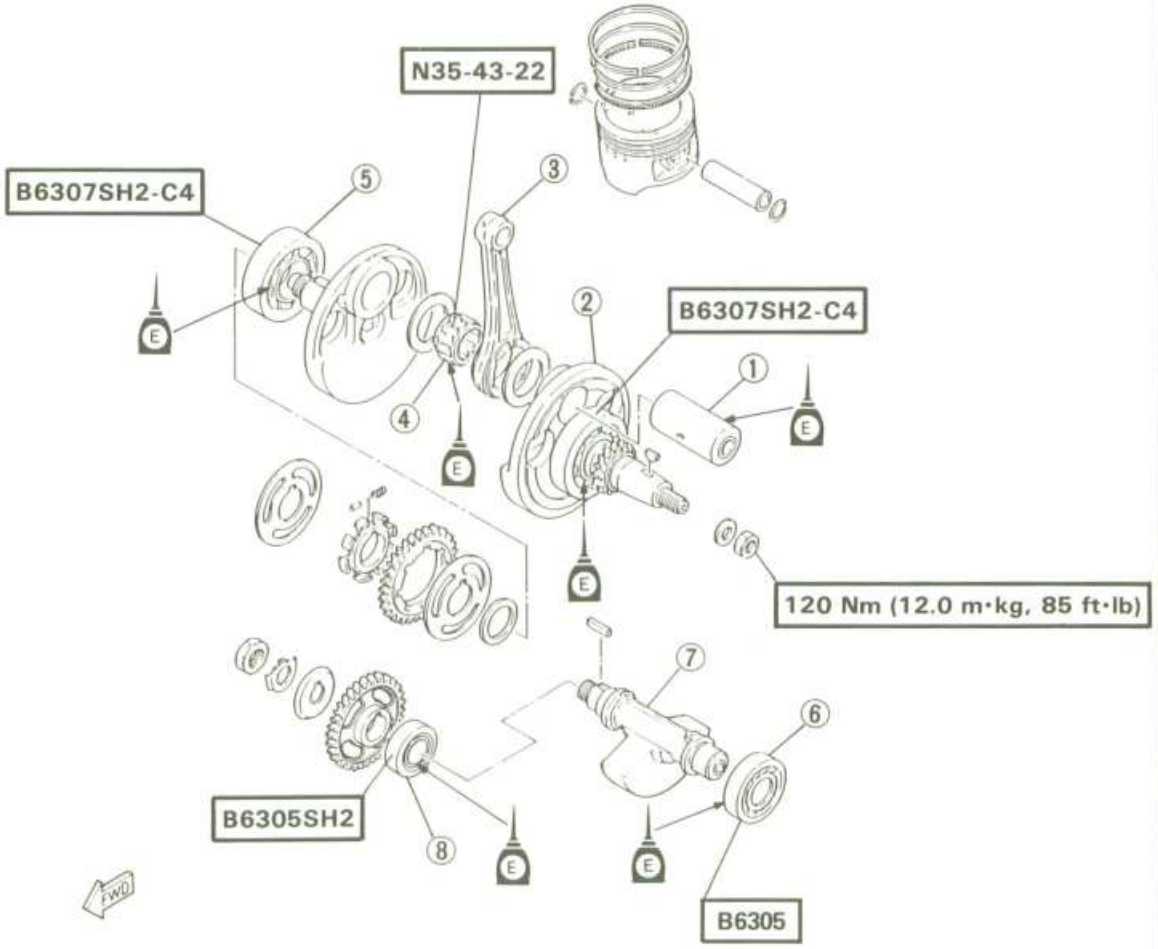
3. Install:
   - Plug ①



CRANKSHAFT, AND BALANCER

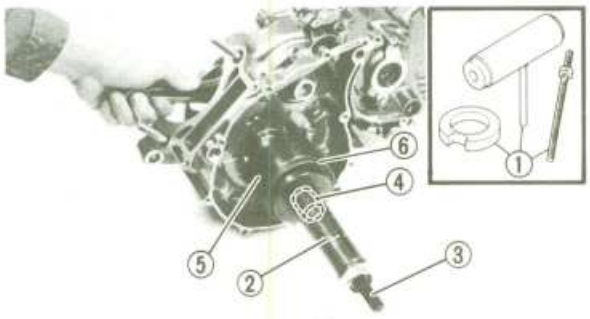
① Crank pin
② Crank (left)
③ Connecting rod
④ Bearing
⑤ Bearing
⑥ Bearing
⑦ Balancer
⑧ Bearing

A	CRANK WIDTH: 74.95 ~ 75.00 mm (2.950 ~ 2.953 in)
B	RUNOUT LIMIT: 0.03 mm (0.0012 in)
C	SMALL END FREE PLAY: 0.8 mm (0.031 in)
D	BIG END SIDE CLEARANCE: 0.35~0.65 mm (0.013~0.026 in)



CRANKSHAFT AND BALANCER

1. Install:
   - Crankshaft



Crankshaft installer set ①:
P/N. YU-90050
Crankshaft installer pot ②:
P/N. 90890-01274
Crankshaft installer bolt ③:
P/N. 90890-01275
Adapter #10 ④:
P/N. YM-90069
P/N. 90890-04059
Crank pot spacer ⑤:
P/N. YM-91044
P/N. 90890-04081
Spacer ⑥:
P/N. 90890-01016

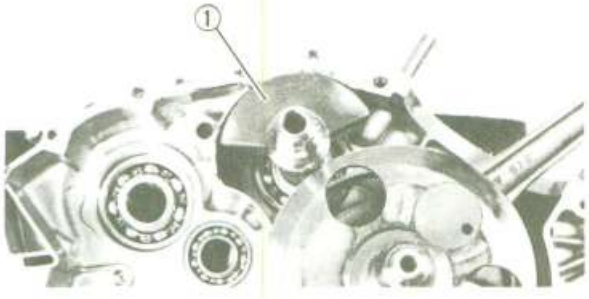
NOTE:

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

CAUTION:

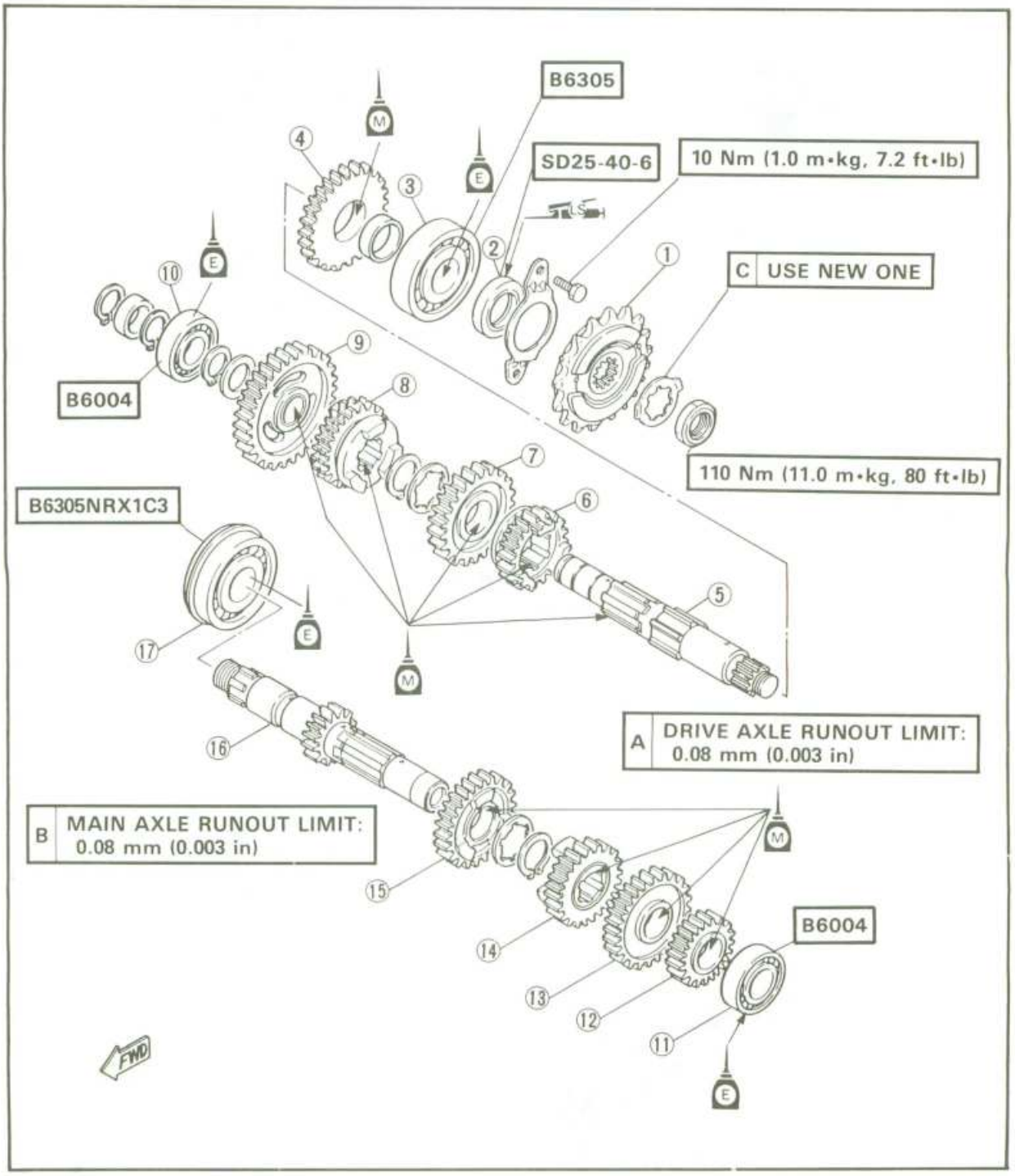
To protect the crankshaft against scratches or to facilitate the operation of the installation.
Apply the grease to the oil seal lips, and apply the engine oil to each bearing.

2. Install:
   - Balancer ①



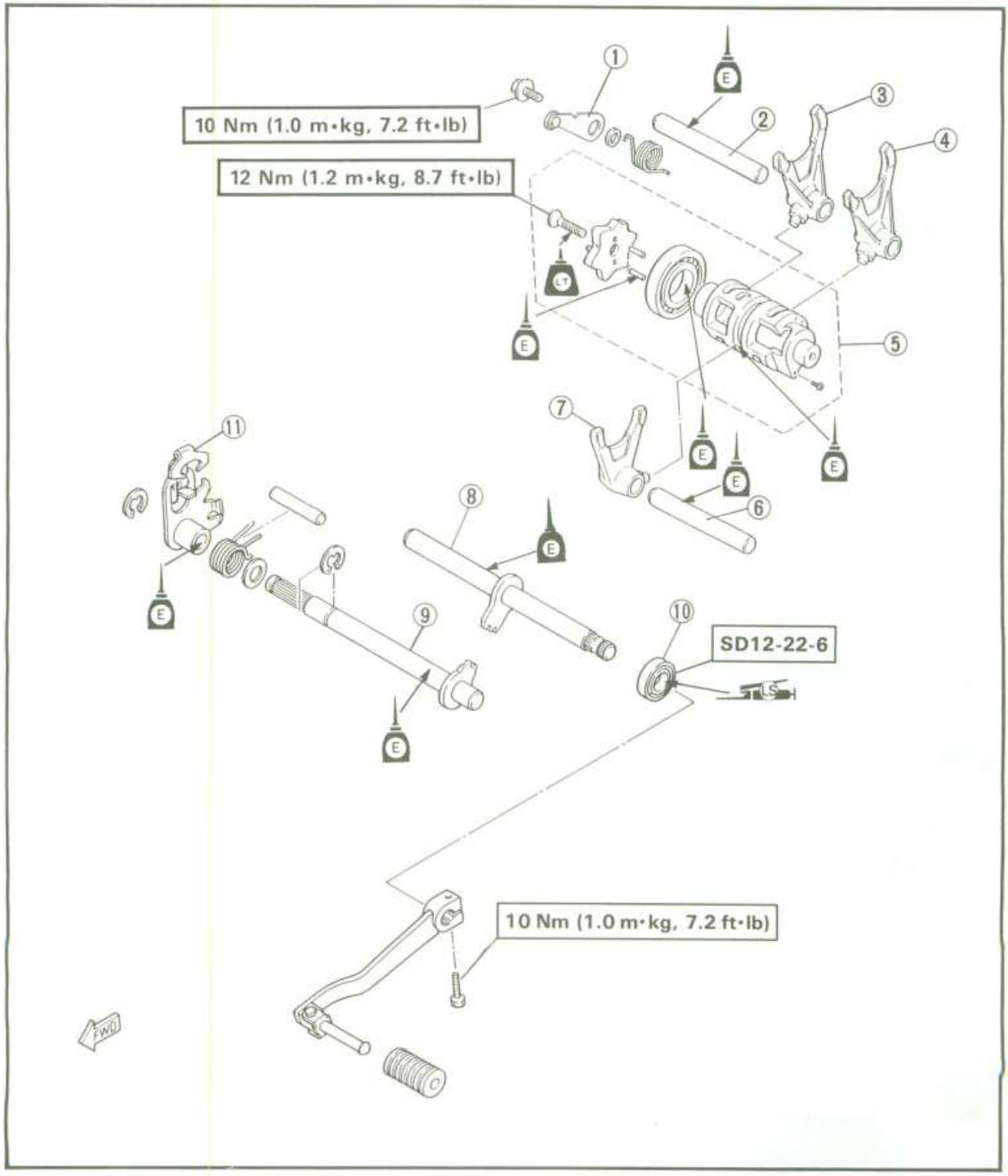
TRANSMISSION

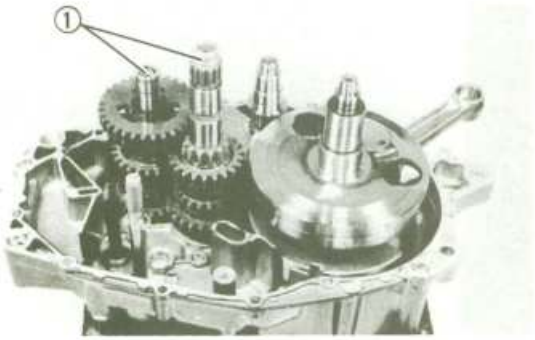
① Drive sprocket
② Oil seal
③ Bearing
④ 2nd wheel gear
⑤ Drive axle
⑥ 5th wheel gear
⑦ 3rd wheel gear
⑧ 4th wheel gear
⑨ 1st wheel gear
⑩ Bearing
⑪ Bearing
⑫ 2nd pinion gear
⑬ 5th pinion gear
⑭ 3rd pinion gear
⑮ 4th pinion gear
⑯ Main axle
⑰ Bearing



SHIFTER

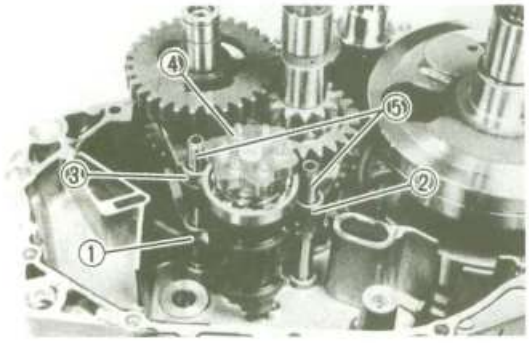
① Stopper lever
② Guide bar
③ Shift fork #3
④ Shift fork #1
⑤ Shift cam
⑥ Guide bar
⑦ Shift fork #2
⑧ Shift shaft #1
⑨ Shift shaft #2
⑩ Oil seal
⑪ Shift lever





TRANSMISSION AND SHIFTER

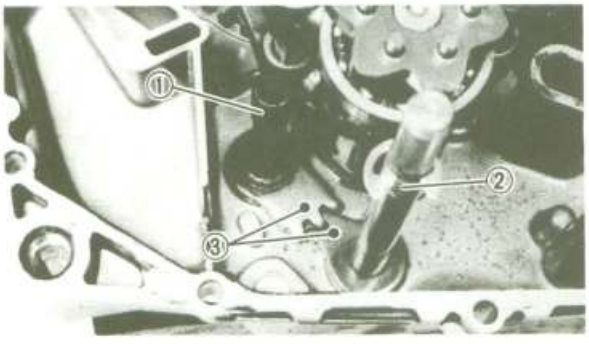
1. Install:
   - Transmission assembly ①



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

NOTE:

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



3. Install:
   - Shift shaft #1 ①
   - Shift shaft #2 ②

NOTE:

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

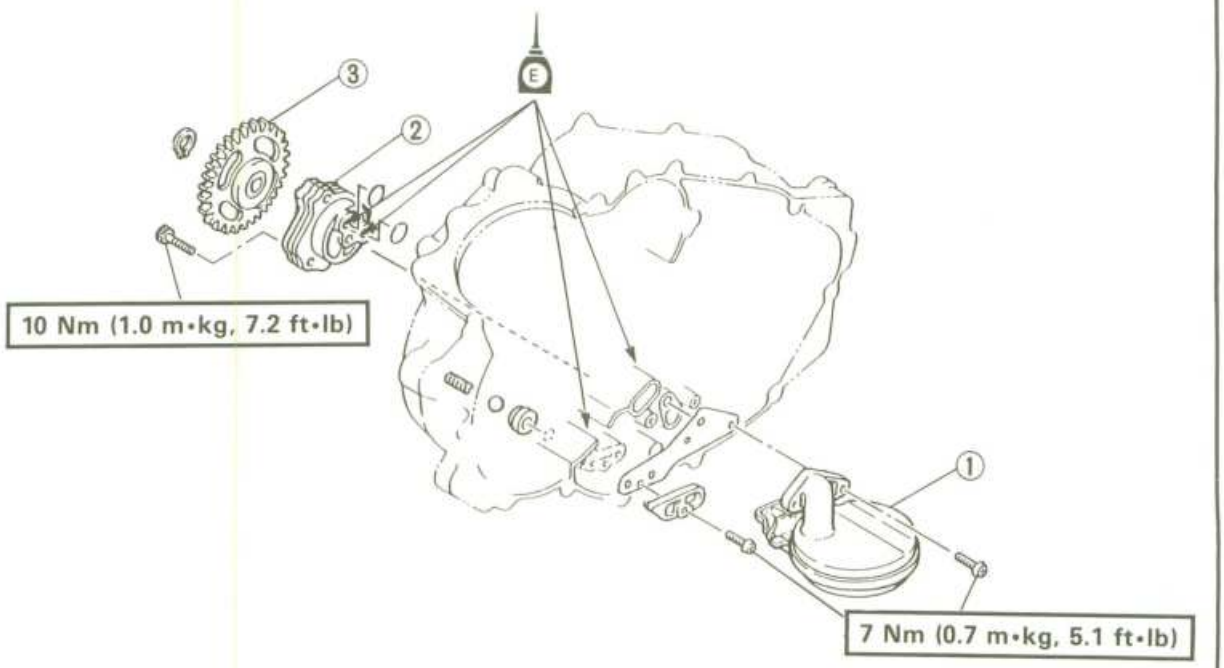


4. Check:
   - Transmission operation
     Unsmooth operation → Repair.

OIL STRAINER AND OIL PUMP

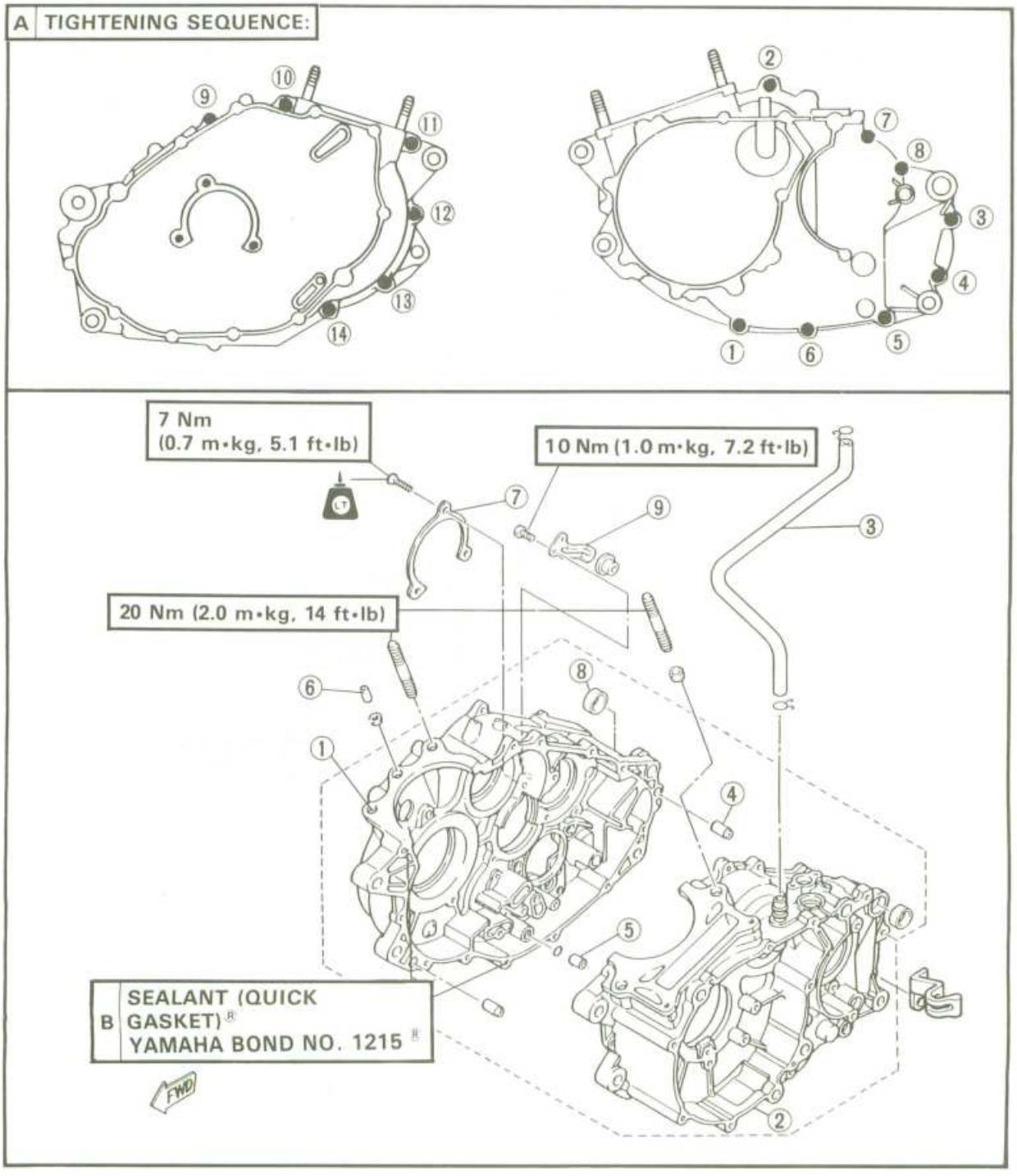
① Oil strainer
② Oil pump
③ Oil pump gear

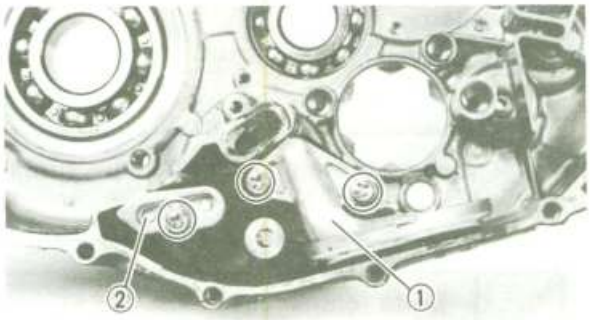
A	OIL PUMP: TIP CLEARANCE: 0.12 mm (0.005 in) SIDE CLEARANCE: 0.03 ~ 0.08 mm (0.001 ~ 0.003 in)



CRANKCASE

① Crankcase (right)
② Crankcase (left)
③ Crankcase ventilation hose
④ Dowel pin
⑤ Dowel pin
⑥ Dowel pin
⑦ Stopper plate
⑧ Collar
⑨ Lock plate





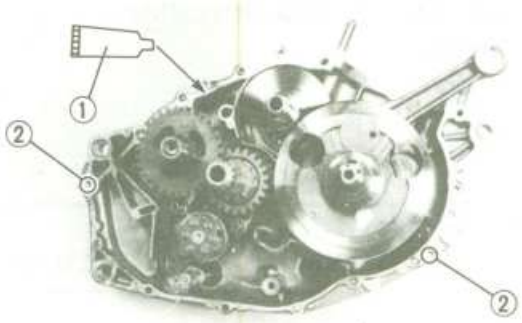
OIL STRAINER

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

Bolt (oil strainer):
7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (oil passage cover):
7 Nm (0.7 m·kg, 5.1 ft·lb)

⚠ WARNING

Always use a new gasket.



CRANKCASE

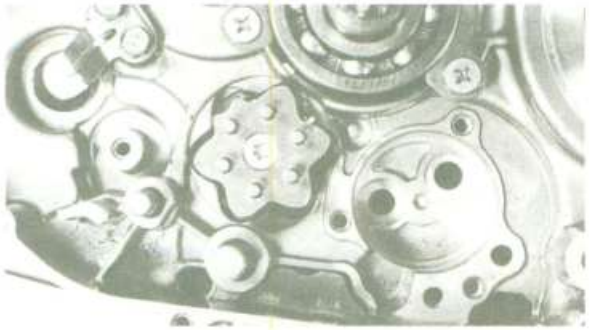
1. Apply:
   - Yamaha Bond No. 1215 ® ①
     (to the mating surfaces of both case halves)

Sealant (quick gasket)®
P/N. ACC-11001-01
Yamaha Bond No. 1215®:
P/N. 90890-85505

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

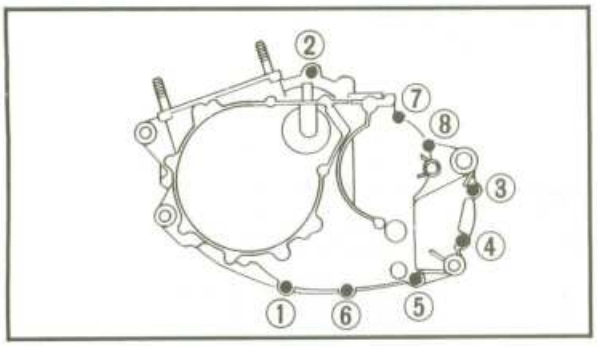
NOTE:

Turn the shift cam to the position shown in the figure so that it does not contact the crankcase when installing the crankcase.



CAUTION:

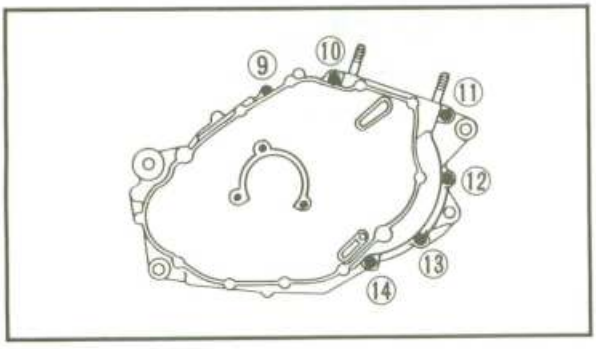
Before installing and torquing the crankcase holding screws, be sure to check whether the transmission is functioning properly by manually rotating the shift cam either way.



4. Tighten:
   • Bolt(crankcase) ①~⑭

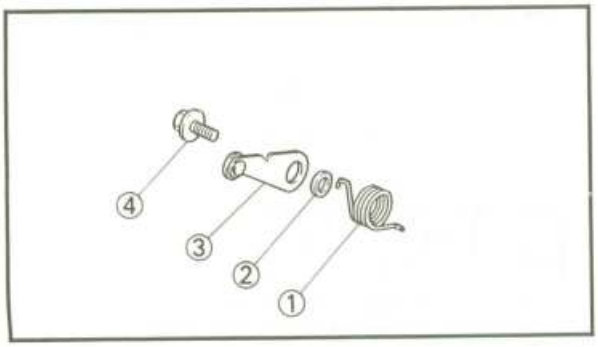
NOTE:
Tighten the bolts starting with the lowest numbered one.

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



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

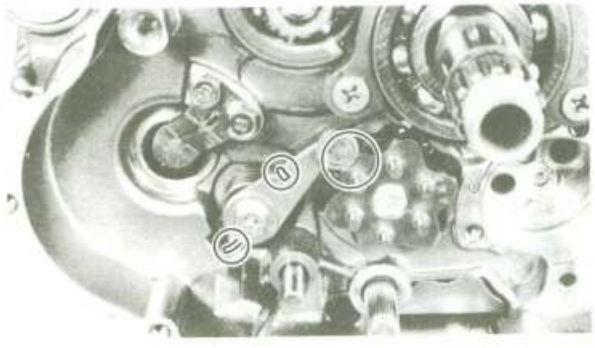
SHIFT LEVER AND OIL PUMP

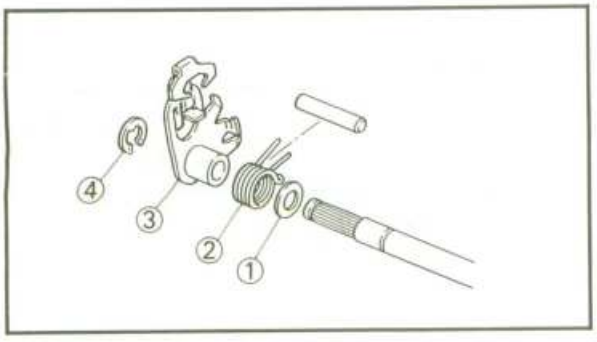


1. Install:
   • Spring ①
   • Collar ②
   • Stopper lever ③

Bolt ④ (stopper lever):
10 Nm (1.0 m·kg, 7.2 ft·lb)

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

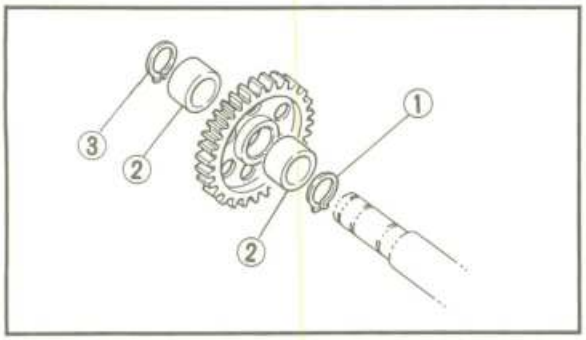




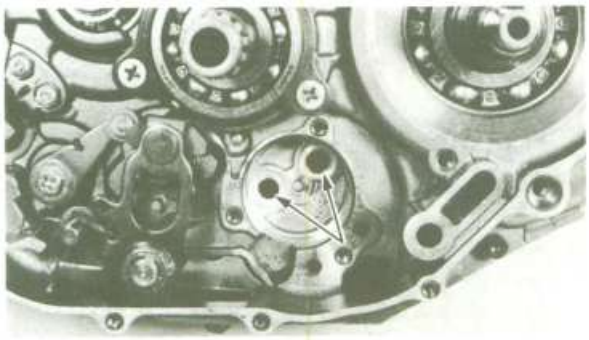
2. Install:
   • Plain washer ①
   • Spring ②
   • Shift lever ③
   • Circlip ④



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



3. Install:
   - Circlip ① (to drive axle)
   - Collar ②
   - Circlip ③

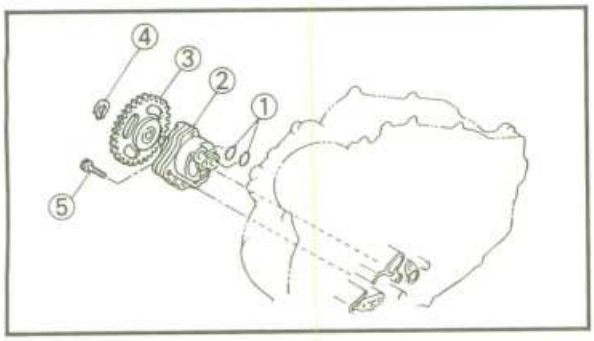


4. Apply:
   - 4 stroke engine oil
     (to the oil passages in the crankcase)

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

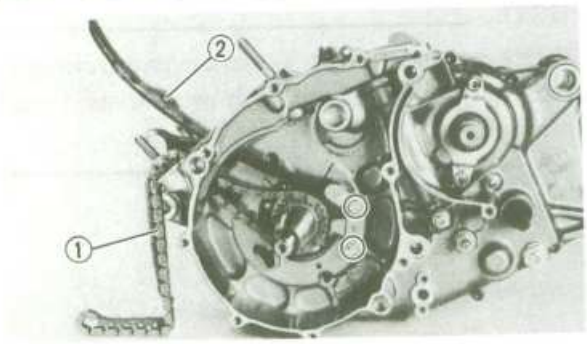


5. Apply:
   - 4 stroke engine oil
     (to the oil passages in the oil pump)



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

Bolt ⑤ (oil pump):
10 Nm (1.0 m·kg, 7.2 ft·lb)



CAM CHAIN

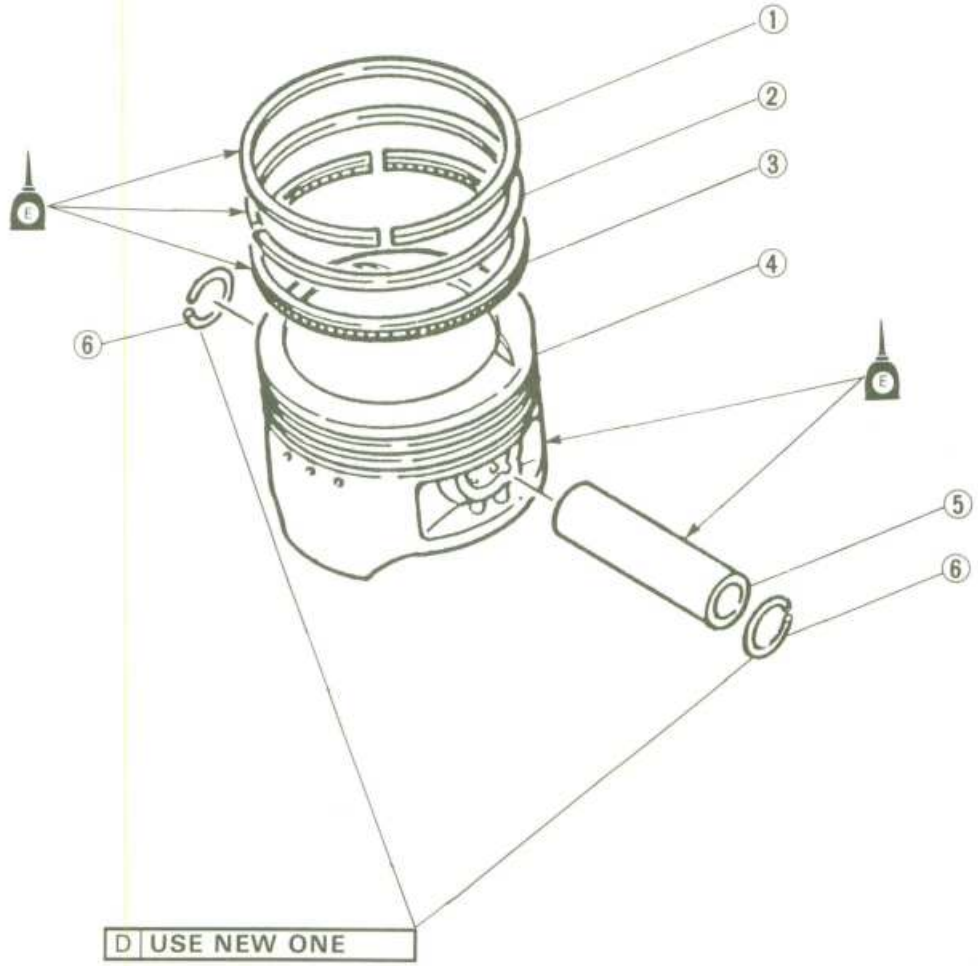
1. Install:
   - Cam chain ①
   - Chain guide ②

PISTON AND PISTON RING

① Piston ring (top)
② Piston ring (2nd)
③ Piston ring (oil)
④ Piston
⑤ Piston pin
⑥ Piston pin clip

A	PISTON SIZE: 94.915~94.965 mm (3.737~3.739 in)

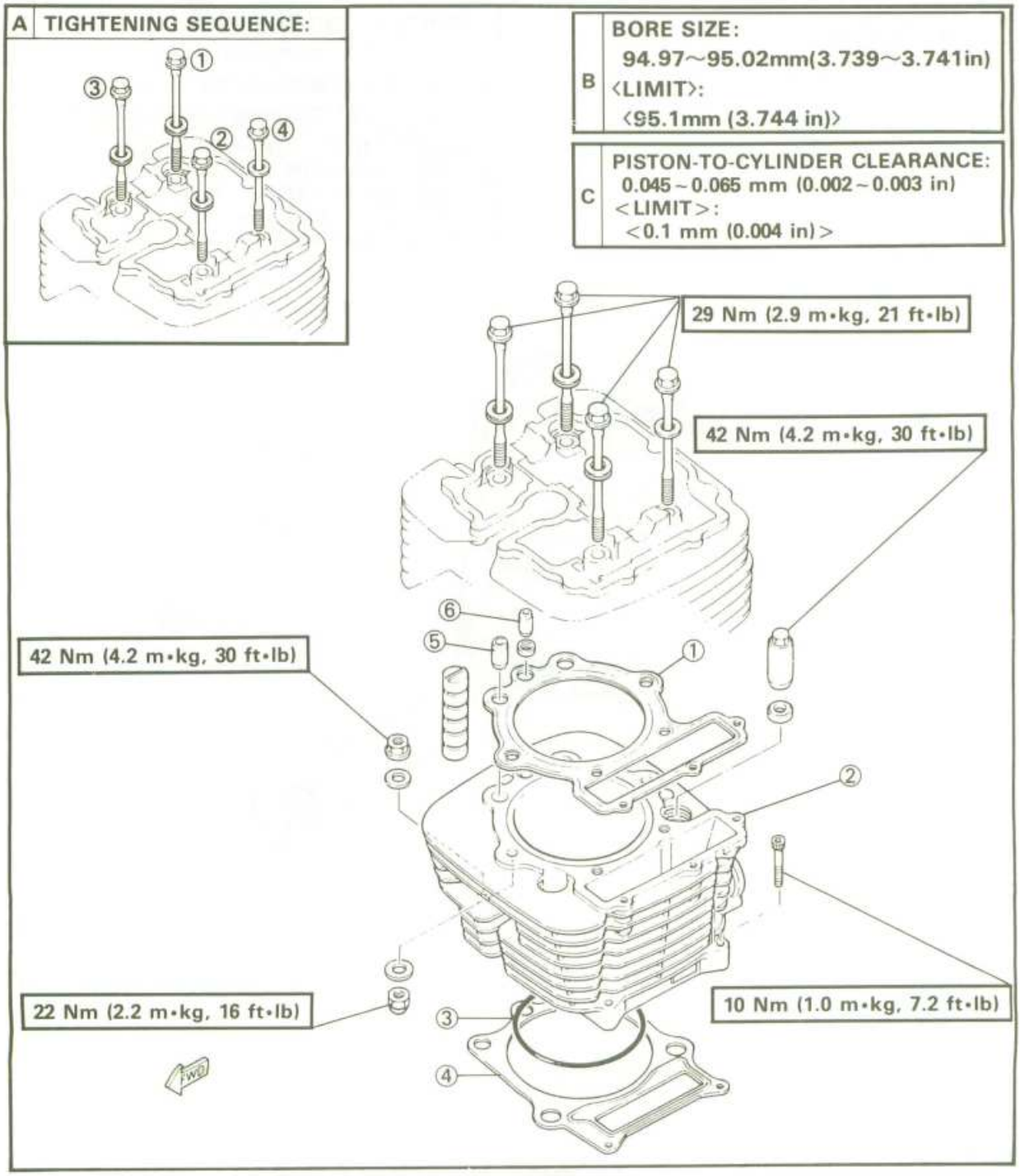
B	PISTON RING END GAP: Top: 0.30~0.45mm(0.012~0.018in) 2nd: 0.30~0.45mm(0.012~0.018in) Oil 0.20~0.70mm(0.008~0.028in)
C	PISTON RING SIDE CLEARANCE: Top: 0.04~0.08 mm (0.002~0.003in) 2nd: 0.03~0.07 mm (0.001~0.003in) Oil: 0.02~0.06 mm (0.008~0.002in)



D USE NEW ONE

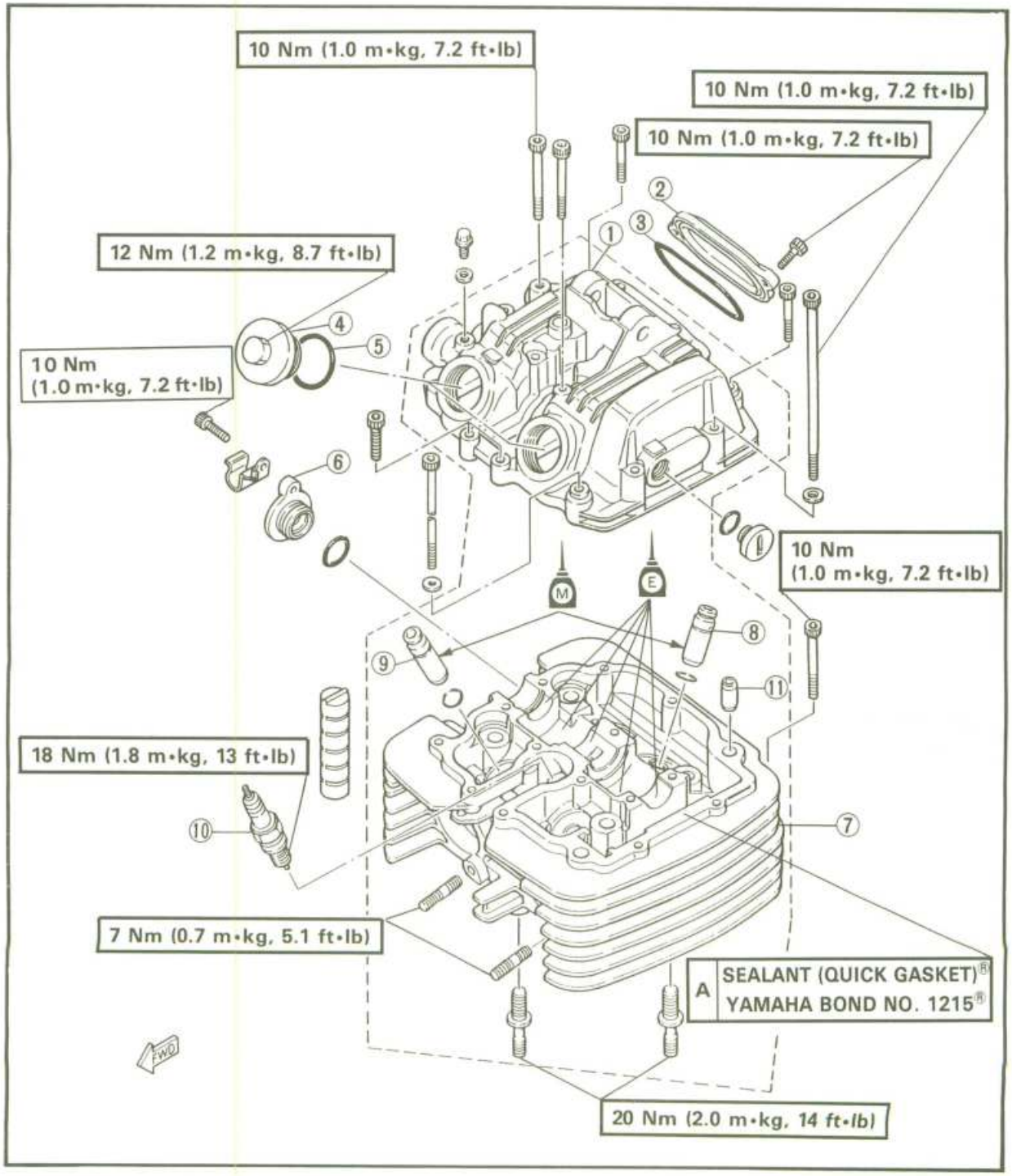
CYLINDER

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



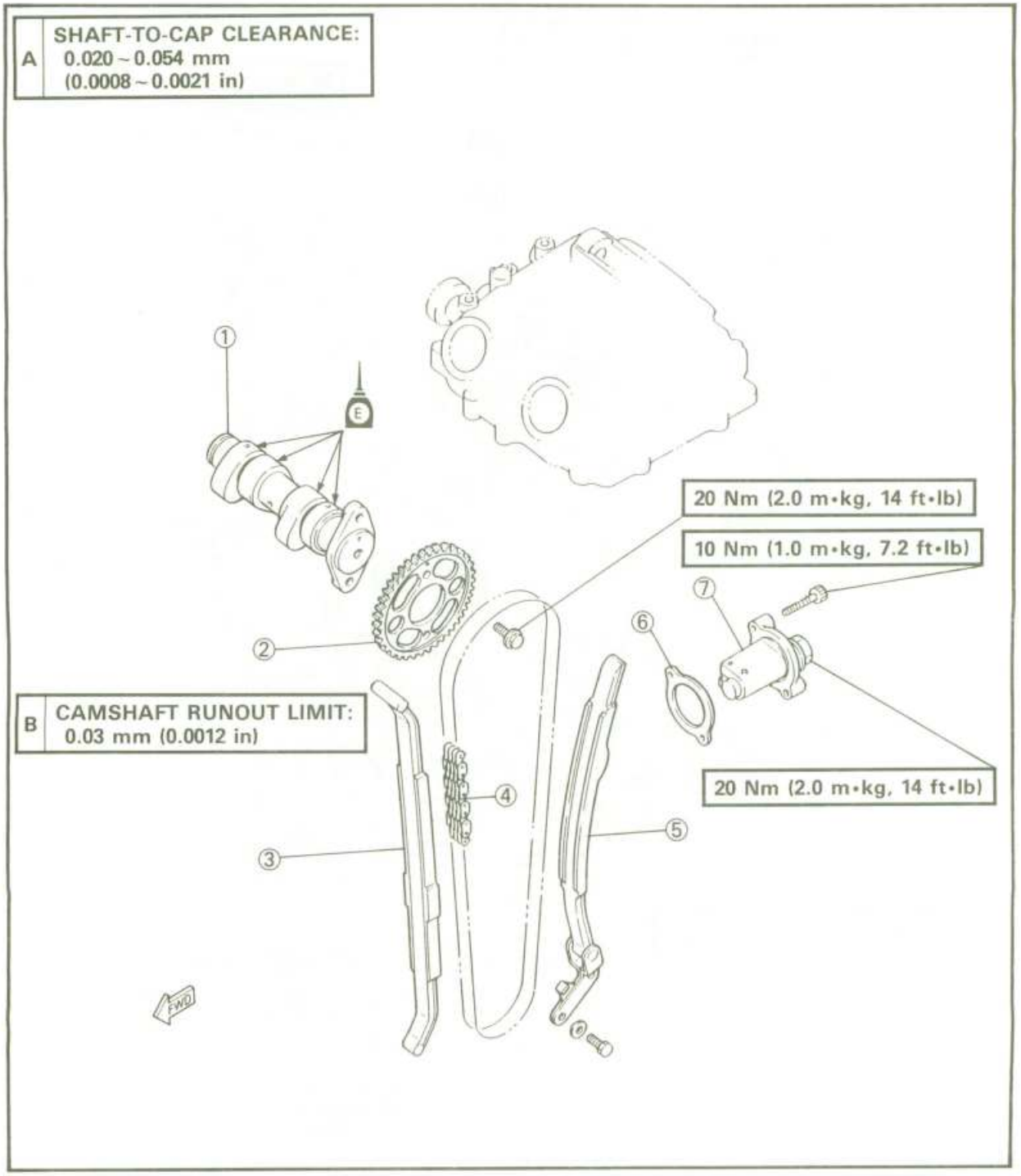
CYLINDER HEAD

① Cylinder head cover
② Tappet cover (intake)
③ O-ring
④ Tappet cover (exhaust)
⑤ O-ring
⑥ Blind cap
⑦ Cylinder head
⑧ Valve guide (intake valve)
⑨ Valve guide (exhaust valve)
⑩ Spark plug
⑪ Dowel pin



CAMSHAFT AND CAM CHAIN

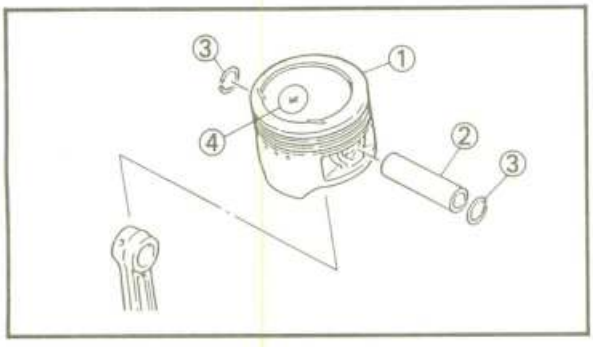
① Camshaft
② Cam sprocket
③ Chain guide
④ Cam chain
⑤ Chain guide
⑥ Gasket
⑦ Chain tensioner



PISTON, CYLINDER, CYLINDER HEAD AND CAMSHAFT

1. Apply:
   - 4 stroke engine oil

   To the piston pin.



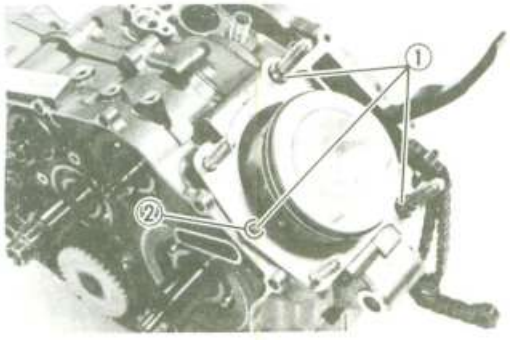
2. Install:
   - Piston ①
   - Piston pin ②
   - Circlip ③

NOTE:

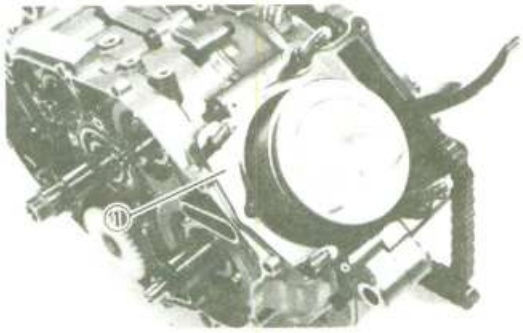
- The arrow ④ on the piston must point to the front of the engine.
- Before installing the piston pin clip, cover the crankcase with a clean towel or rag so you will not accidentally drop the pin clip and material into the crankcase.

⚠ WARNING

Always use a new piston pin clip.



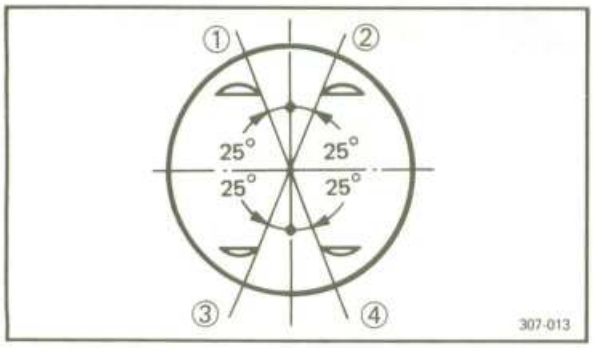
3. Install:
   - Dowel pin ①
   - O-ring ②



4. Install:
   - Gasket ① (cylinder)

NOTE:

Install the gasket (cylinder) as shown.

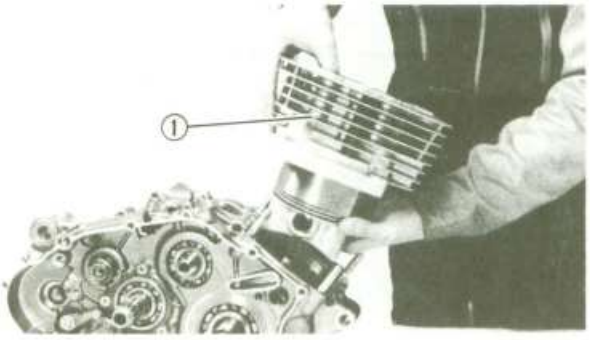


5. Offset the piston ring end gaps as shown.

NOTE:

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

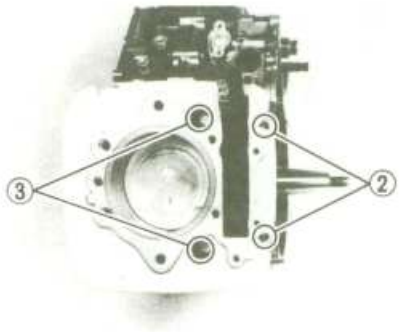
① Top ring
② Oil ring (Lower rail)
③ Oil ring (Upper rail)
④ 2nd ring



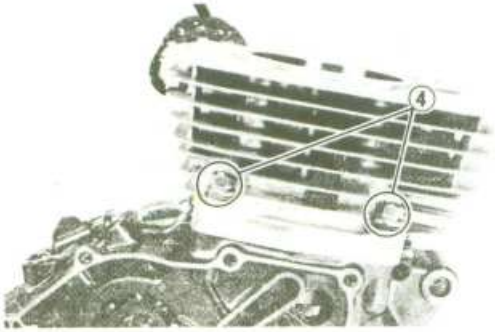
6. Install:
   - Cylinder ①

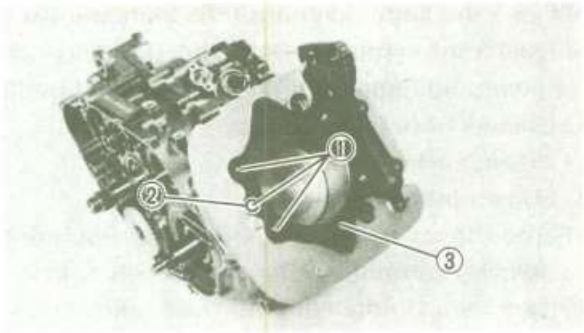
NOTE:

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

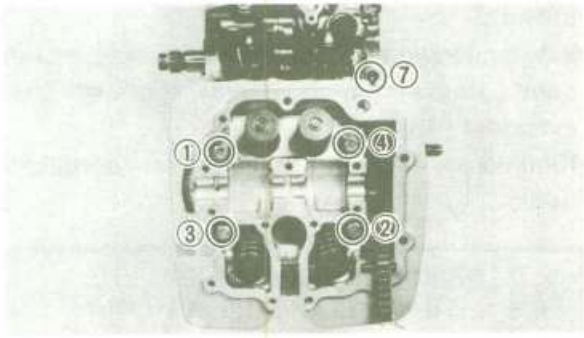


Bolts ②:
10 Nm (1.0 m·kg, 7.2 ft·lb)
Cap nut ③:
42 Nm (4.2 m·kg, 30 ft·lb)
Nut ④:
42 Nm (4.2 m·kg, 30 ft·lb)





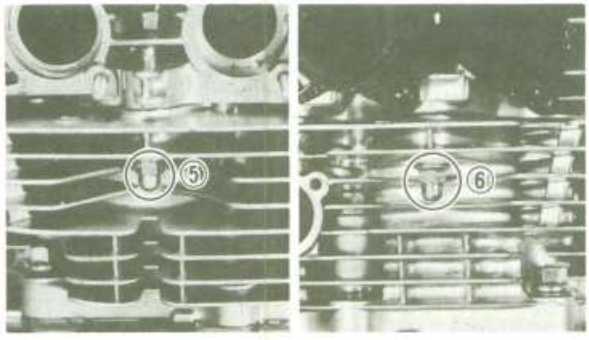
7. Install:
   - Dowel pin ①
   - O-ring ②
   - Gasket ③ (cylinder head)



8. Install:
   - Cylinder head

NOTE:

Tighten the bolts starting with the lowest numbered one.



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

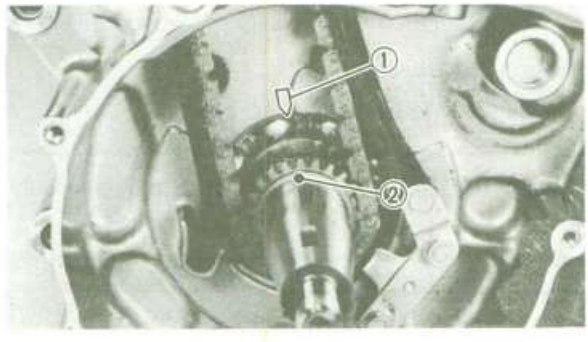


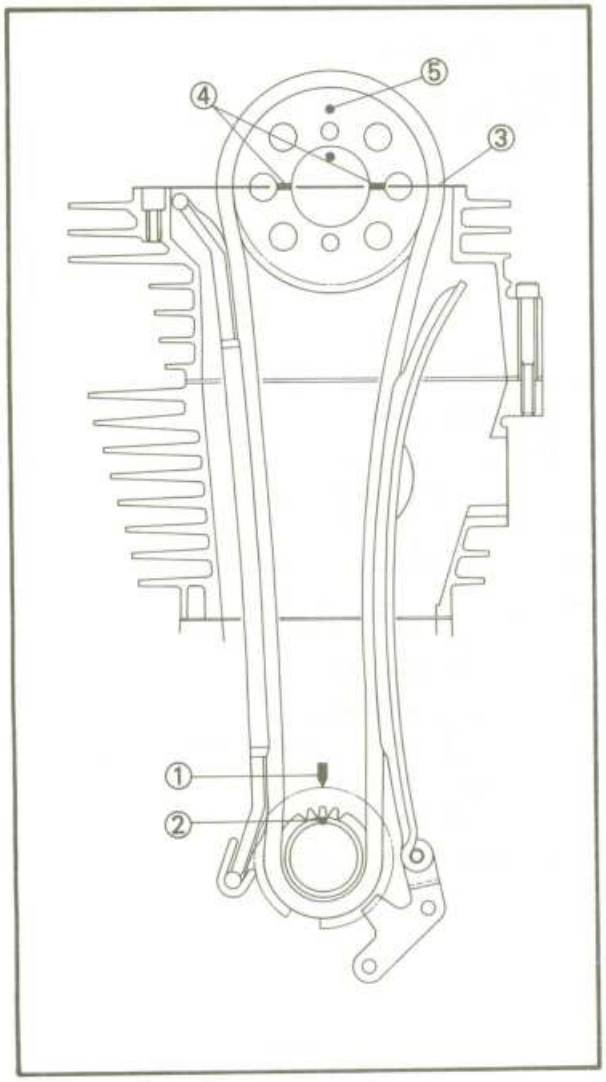
9. Install:
   - Chain guide
   - Camshaft
   - Cam sprocket

* *

Installing steps:

- Install the camshaft onto the cylinder head as shown(compression stroke).
- Rotate the crankshaft counterclockwise direction until the crankcase pointer ① and a dot ② on the cam chain drive sprocket are aligned.



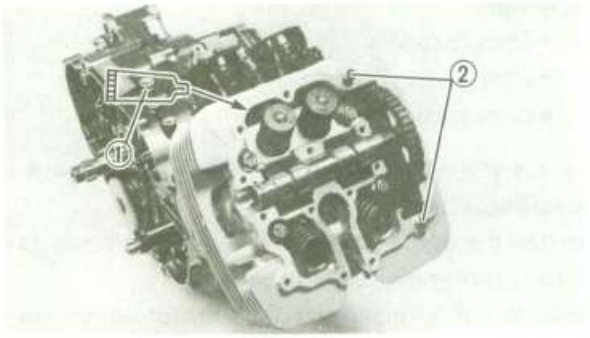


●Place the cam chain onto the cam sprocket.
●Install the sprocket with timing marks as shown, and finger tighten the sprocket bolts.
③ Cylinder head upper surface
④ Timing marks
⑤ Upper position mark
●Force the camshaft clockwise and counter-clockwise to remove the cam chain slack.
●Insert your finger into the cam chain tensioner hole, and push the cam chain damper inward.
●While pushing the cam chain damper, be sure cam sprocket timing marks align with the cylinder head upper surface.
●If marks are aligned, tighten the cam sprocket bolts.

Bolt (cam sprocket):
20 Nm (2.0 m·kg, 14 ft·lb)

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

* *



10. Apply:
- Yamaha bond No. 1215® ①
(to the mating surfaces)

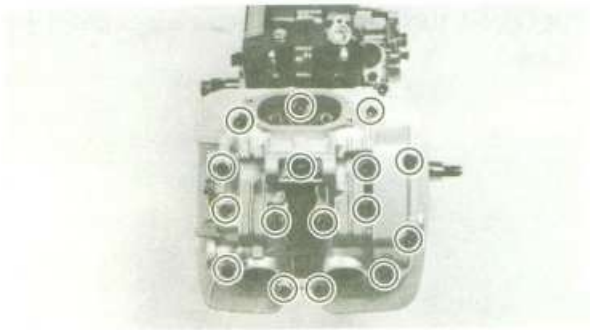
Sealant (quick gasket)®
P/N. ACC-11001-01
Yamaha Bond No. 1215®:
P/N. 90890-85505

11. Install:
- Dowel pin ②

12. Install
- Blind cap
- Clinder head cover

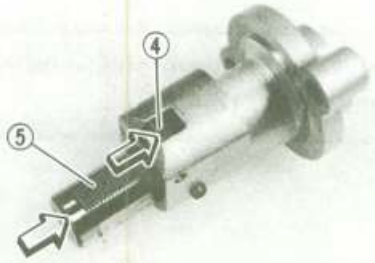
NOTE:

Tighten the bolts in stage, using a crisscross pattern.



Bolt (cylinder head cover):
10 Nm (1.0 m·kg, 7.2 ft·lb)





13. Install:
    • Chain tensioner

* *

Installation steps:

- Remove the tensioner cap bolt ①, washer ② and spring ③.
- Release the chain tensioner one-way cam ④ and push the tension rod ⑤.
- Install the tensioner with a new gasket into the cylinder.

Bolt (tensioner body):
10 Nm (1.0 m·kg, 7.2 ft·lb)

⚠ WARNING

Always use a new gasket.

- Install the spring, washer and tensioner cap bolt.

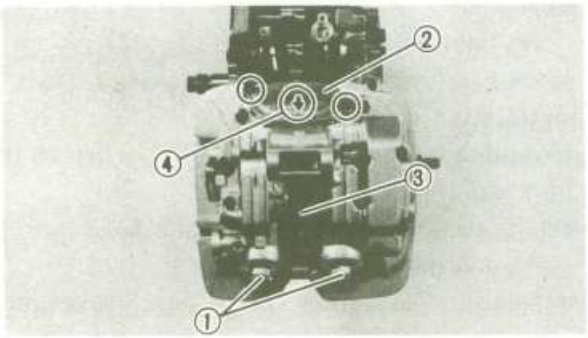
Tensioner cap bolt:
20 Nm (2.0 m·kg, 14 ft·lb)

* *

14. Adjust:
    • Valve clearance

Valve clearance (cold):
Intake:
0.05~0.10 mm (0.002~0.004 in)
Exhaust:
0.12~0.17 mm (0.005~0.007 in)

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



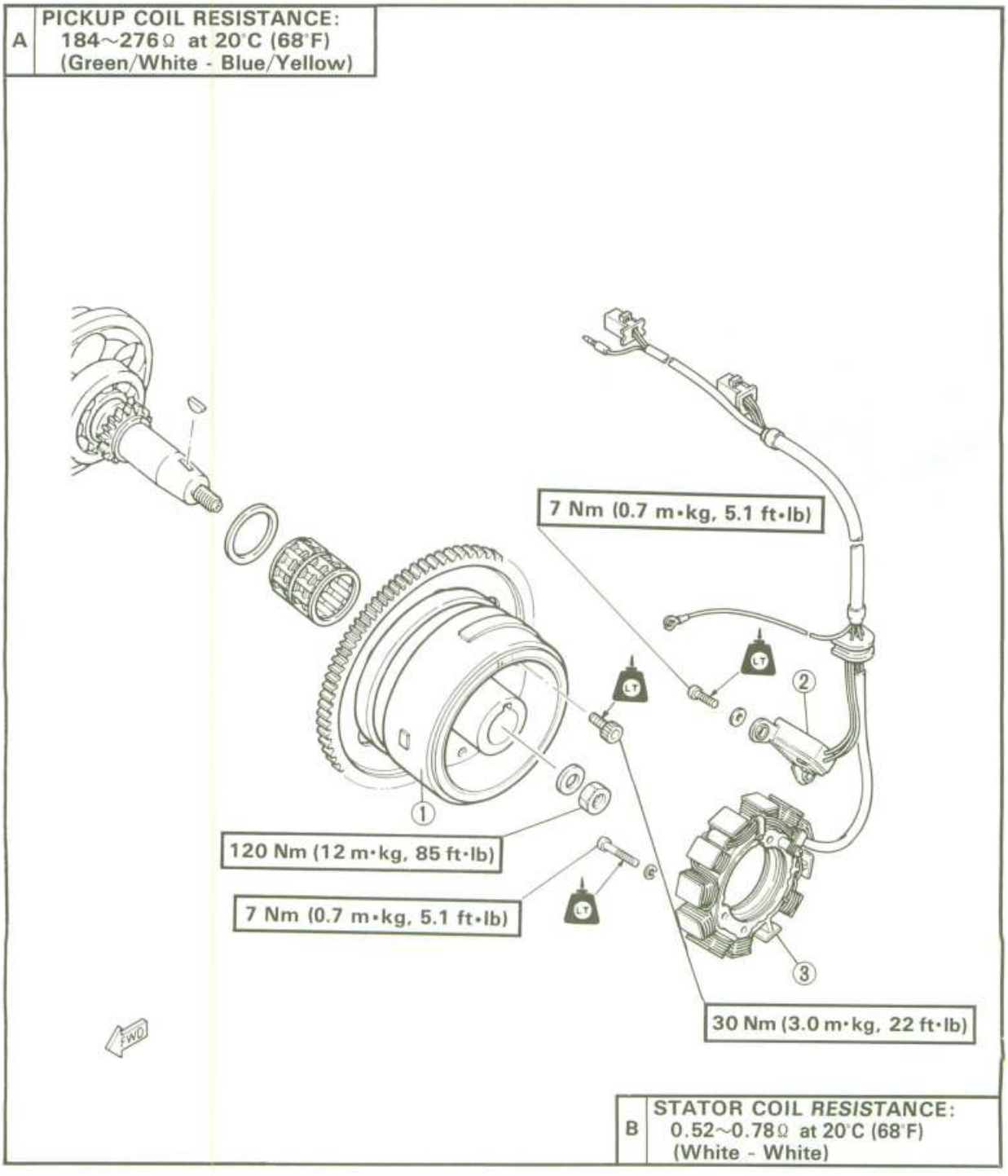
15. Install:
    - Tappet cover ① (exhaust)
    - Tappet cover ② (intake)
    - Spark plug ③

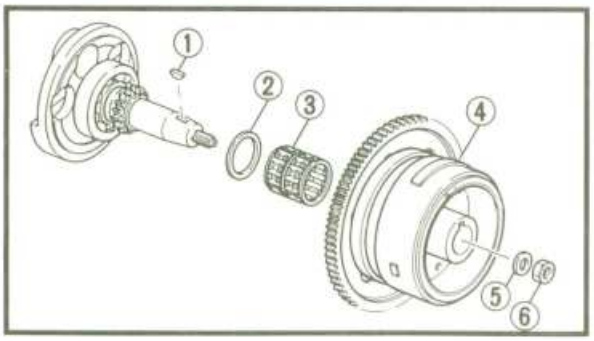
Tappet cover (exhaust):
12 Nm (1.2 m·kg, 8.7 ft·lb)
Bolt (tappet cover - intake):
10 Nm (1.0 m·kg, 7.2 ft·lb)
Spark plug:
18 Nm (1.8 m·kg, 13 ft·lb)

NOTE:
The intake tappet cover should be installed with the arrow mark ④ upward.

A.C.MAGNETO

① Rotor
② Pickup coil
③ Stator coil



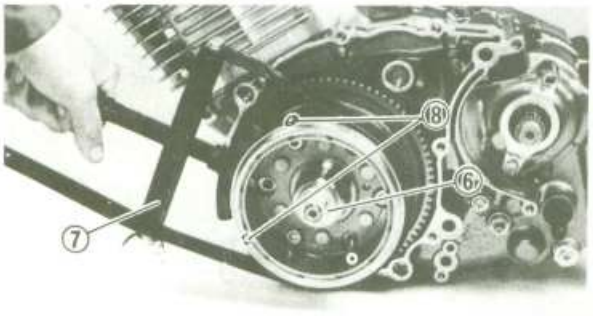


A.C.MAGNETO

1. Install:
   - Key ①
   - Plate washer ②
   - Bearing ③
   - Rotor ④ (with starter wheel gear)
   - Washer ⑤
   - Nut ⑥

NOTE:

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



2. Tighten:
   - Nut (rotor) ⑥

Nut (rotor):
120 Nm (12.0 m·kg, 85 ft·lb)

NOTE:

Hold the rotor to tighten the nut (rotor) by the rotor holder ⑦.

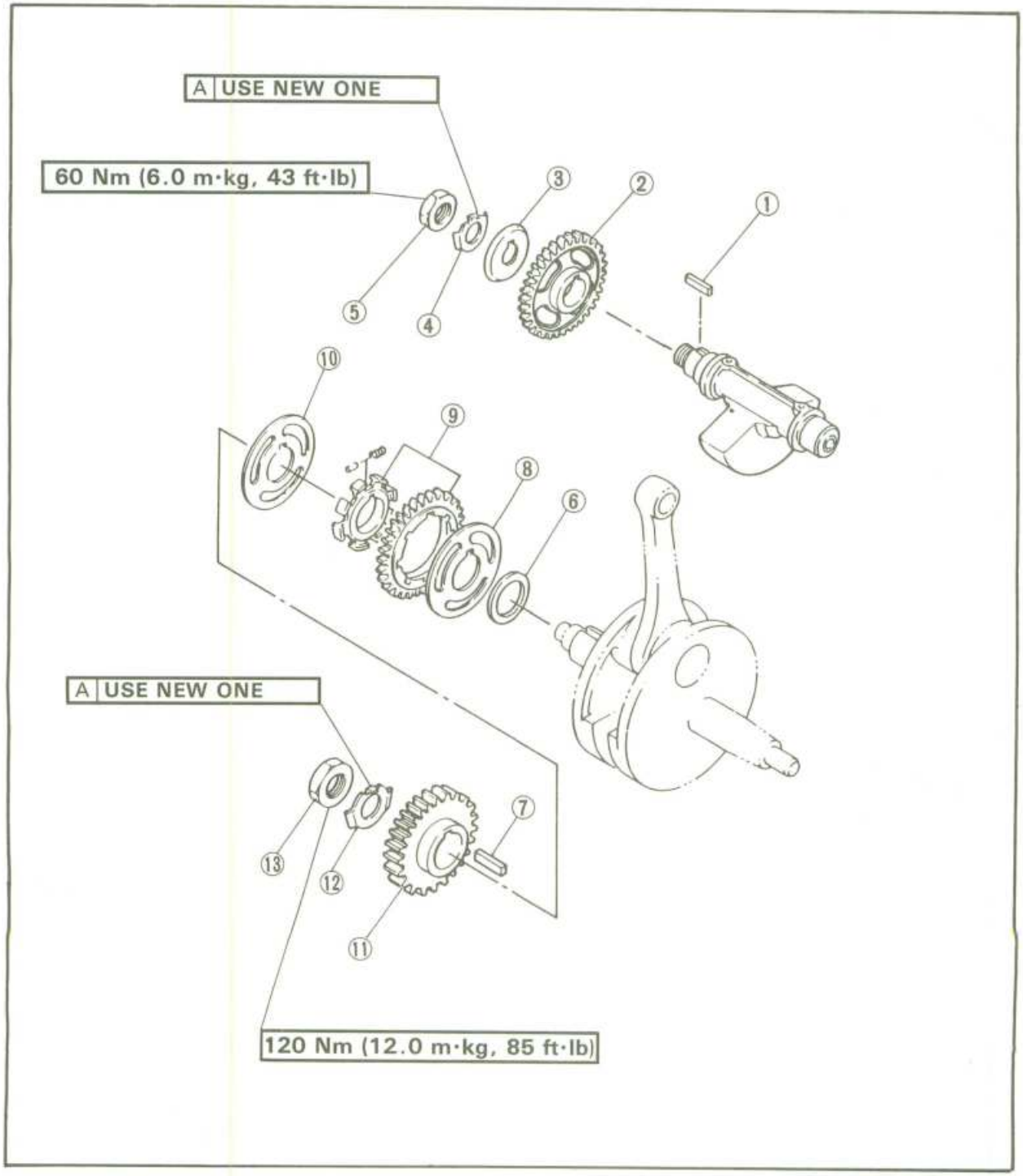
Rotor holder:
P/N. YS-01880
P/N. 90890-01701

CAUTION:

Do not allow the rotor holder to touch the projections ⑧ on the rotor.

BALANCER GEAR AND PRIMARY DRIVE GEAR

① Key
② Balancer gear
③ Plate
④ Lock washer
⑤ Nut
⑥ Plate washer
⑦ Key
⑧ Plate
⑨ Balancer drive gear
⑩ Plate
⑪ Primary drive gear
⑫ Lock washer
⑬ Nut



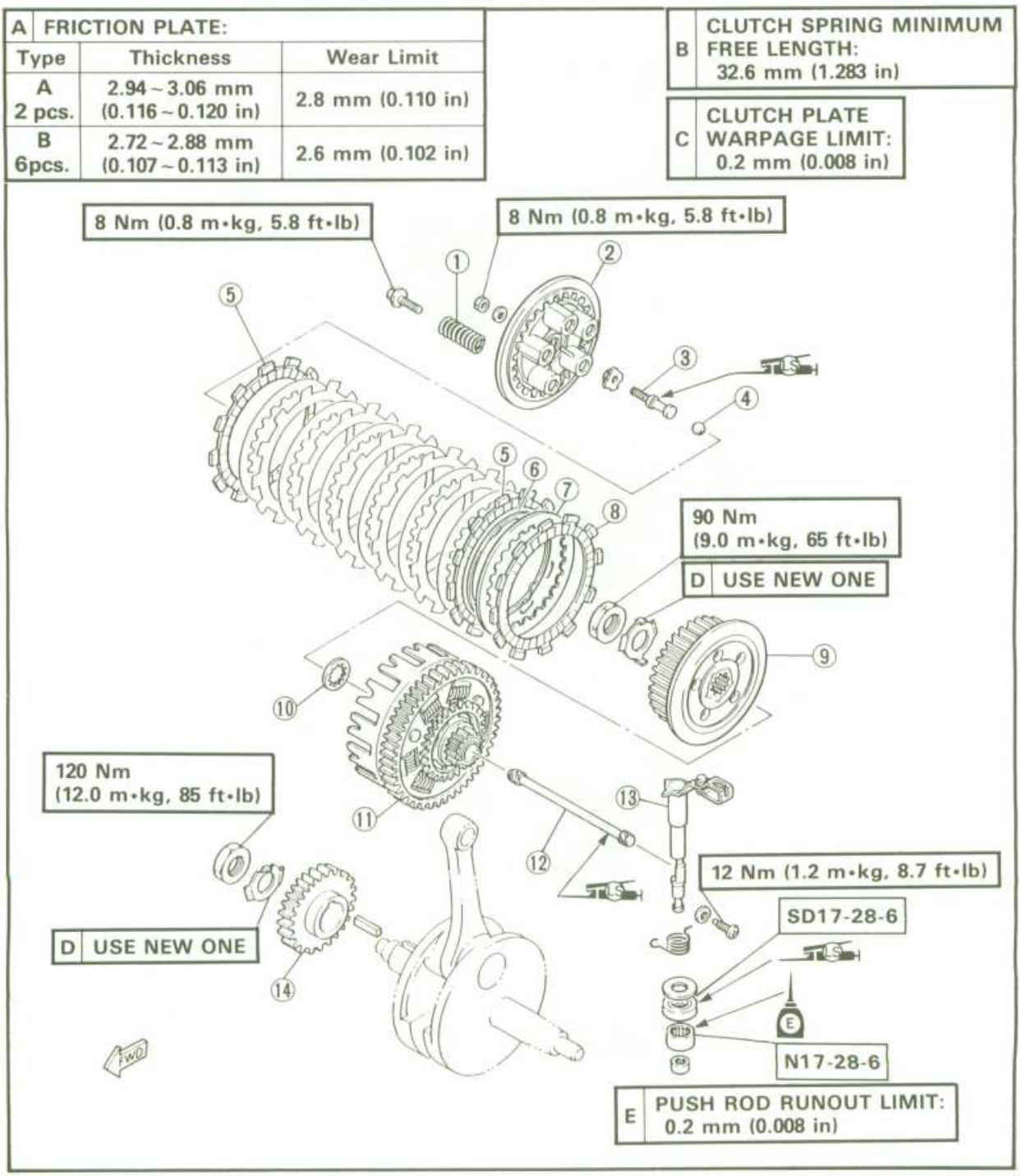
CLUTCH

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

A	FRICTION PLATE:		
Type	Thickness	Wear Limit
A 2 pcs.	2.94 ~ 3.06 mm (0.116 ~ 0.120 in)	2.8 mm (0.110 in)
B 6pcs.	2.72 ~ 2.88 mm (0.107 ~ 0.113 in)	2.6 mm (0.102 in)

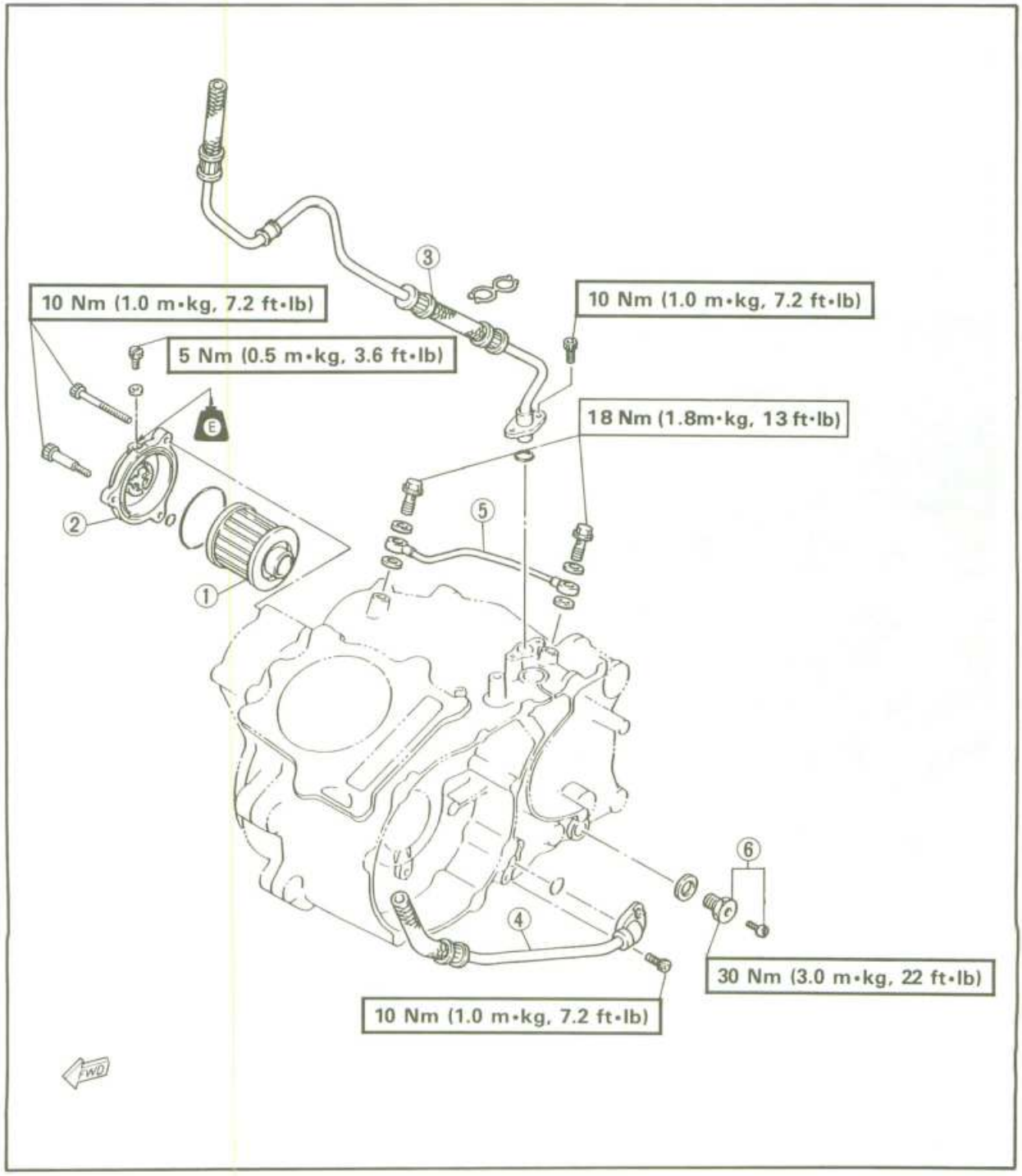
B CLUTCH SPRING MINIMUM FREE LENGTH: 32.6 mm (1.283 in)

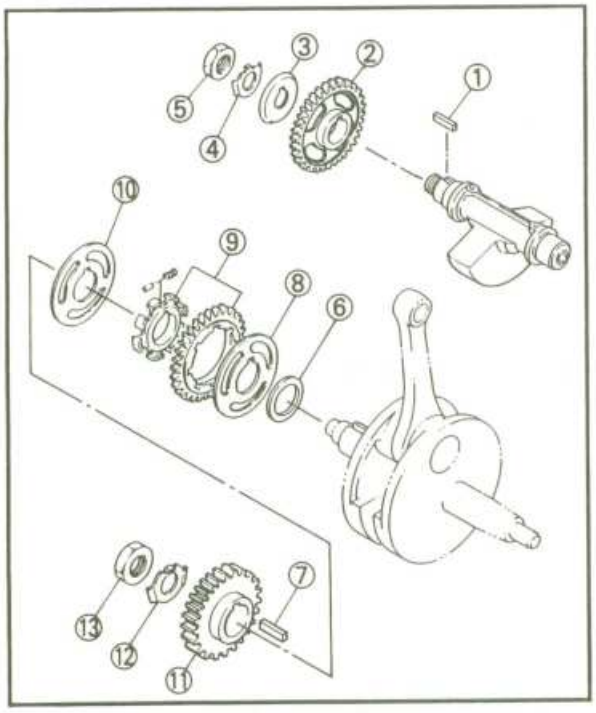
C CLUTCH PLATE WARPAGE LIMIT: 0.2 mm (0.008 in)

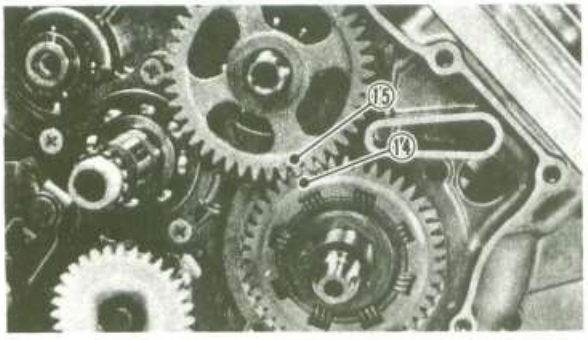


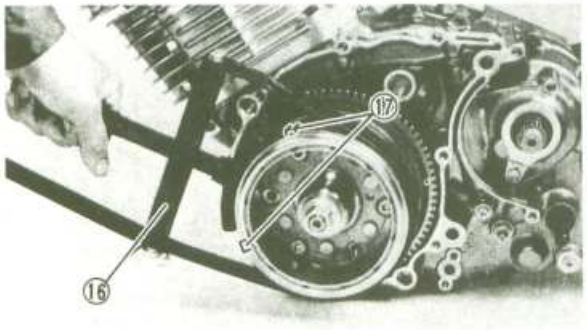
OIL FILTER AND OIL DELIVERY LINE

① Oil filter
② Oil filter cover
③ Oil hose
④ Oil hose
⑤ Oil delivery pipe
⑥ Oil drain bolt









BALANCER GEAR, PRIMARY DRIVE GEAR, CLUTCH AND OIL FILTER

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

Nut (balancer gear):
60 Nm (6.0 m·kg, 43 ft·lb)
Nut (primary drive gear):
120 Nm (12.0 m·kg, 85 ft·lb)

NOTE:

When installing the drive gear, align the punched mark ⑭ on the drive gear with the punched mark ⑮ on the balancer gear.

⚠WARNING

Always use a new lock washer.

NOTE:

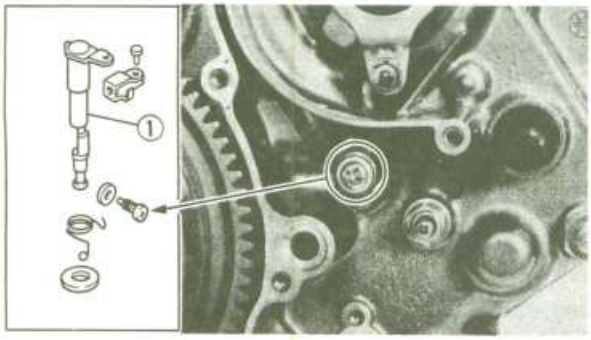
Hold the rotor (A.C. magneto) to tighten the nut ⑤ and ⑬ by the rotor holder ⑯.

Rotor holder:
P/N. YS-01880
P/N. 90890-01701

CAUTION:

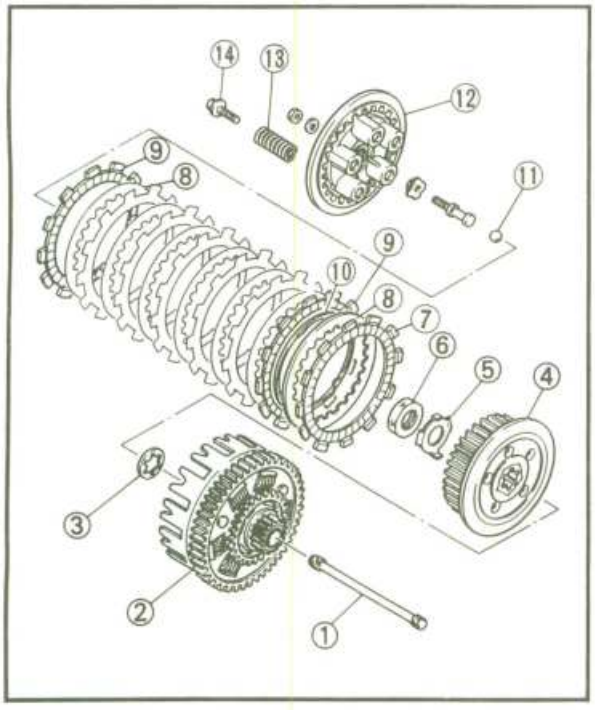
Do not allow the Rotor Holder to touch the projections ⑰ on the rotor.

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



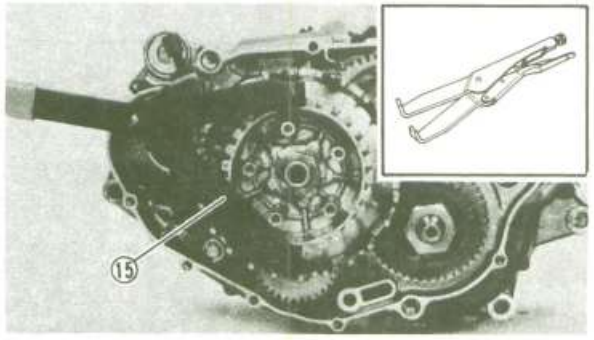
3. Install:
   - Plain washer
   - Spring
   - Push lever ①

	Screw (push lever): **12 Nm (1.2 m·kg, 8.7 ft·lb)**



4. Install:
   - Push rod ①
   - Clutch housing ②
   - Thrust washer ③
   - Clutch boss ④
   - Lock washer ⑤
   - Nut ⑥ (clutch boss)
   - Friction plate (type B) ⑦
   - Clutch plate ⑧
   - Friction plate (type A) ⑨
   - Wave plate ⑩
   - Ball ⑪
   - Pressure plate ⑫
   - Clutch spring ⑬
   - Bolt (pressure plate) ⑭

	Nut (clutch boss): **90 Nm (9.0 m·kg, 65 ft·lb)** **Bolt (pressure plate)** **8 Nm (0.8 m·kg, 5.8 ft·lb)**



NOTE:

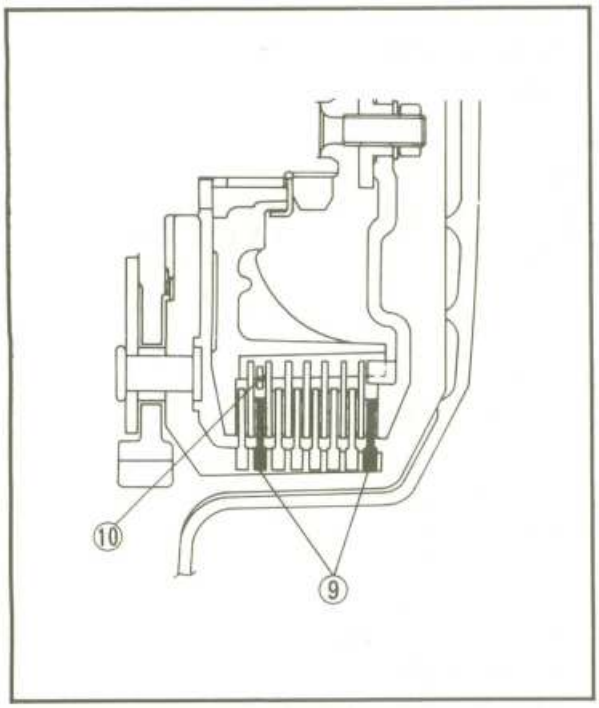
- Hold the clutch boss to tighten the nut (clutch boss) by the universal clutch holder ⑮.

	Universal clutch holder: **P/N. YM-91042** **P/N. 90890-04086**

- Bend the lock washer tab along the nut flats.

⚠ WARNING

Always use a new lock washer.

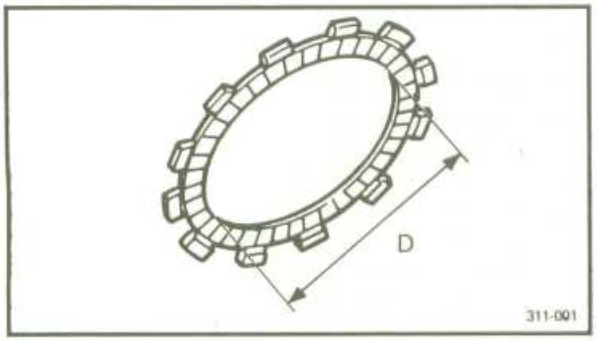


NOTE:

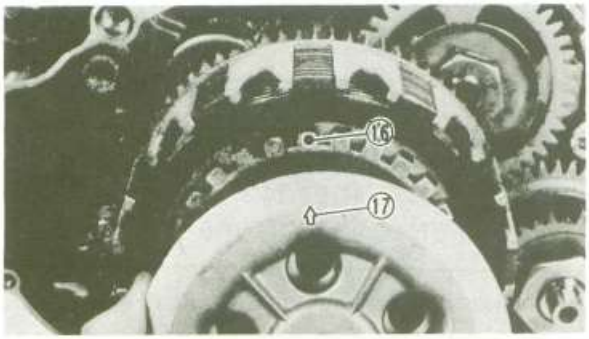
Install the clutch plates and friction plates alternately on the clutch boss, starting with a friction plate and ending with a friction plate.

CAUTION:

- **The friction plates (type A) ⑨ with the larger of the inside diameter must be installed in the second and last places.**
- **The wave plate ⑩ must be placed on the inside of the second friction plate.**

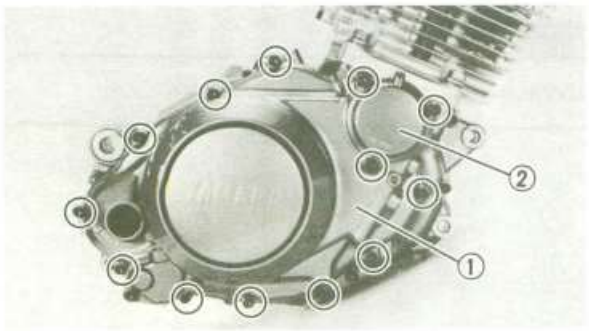


	Friction Plate	
	Type "A"	Type "B"
Quantity	2 pcs.	6 pcs.
Inside Diameter "D"	116 mm (4.57 in)	113 mm (4.45 in)



NOTE:

Align the punched mark ⑯ on the clutch boss with the arrow mark on the clutch pressure plate ⑰.

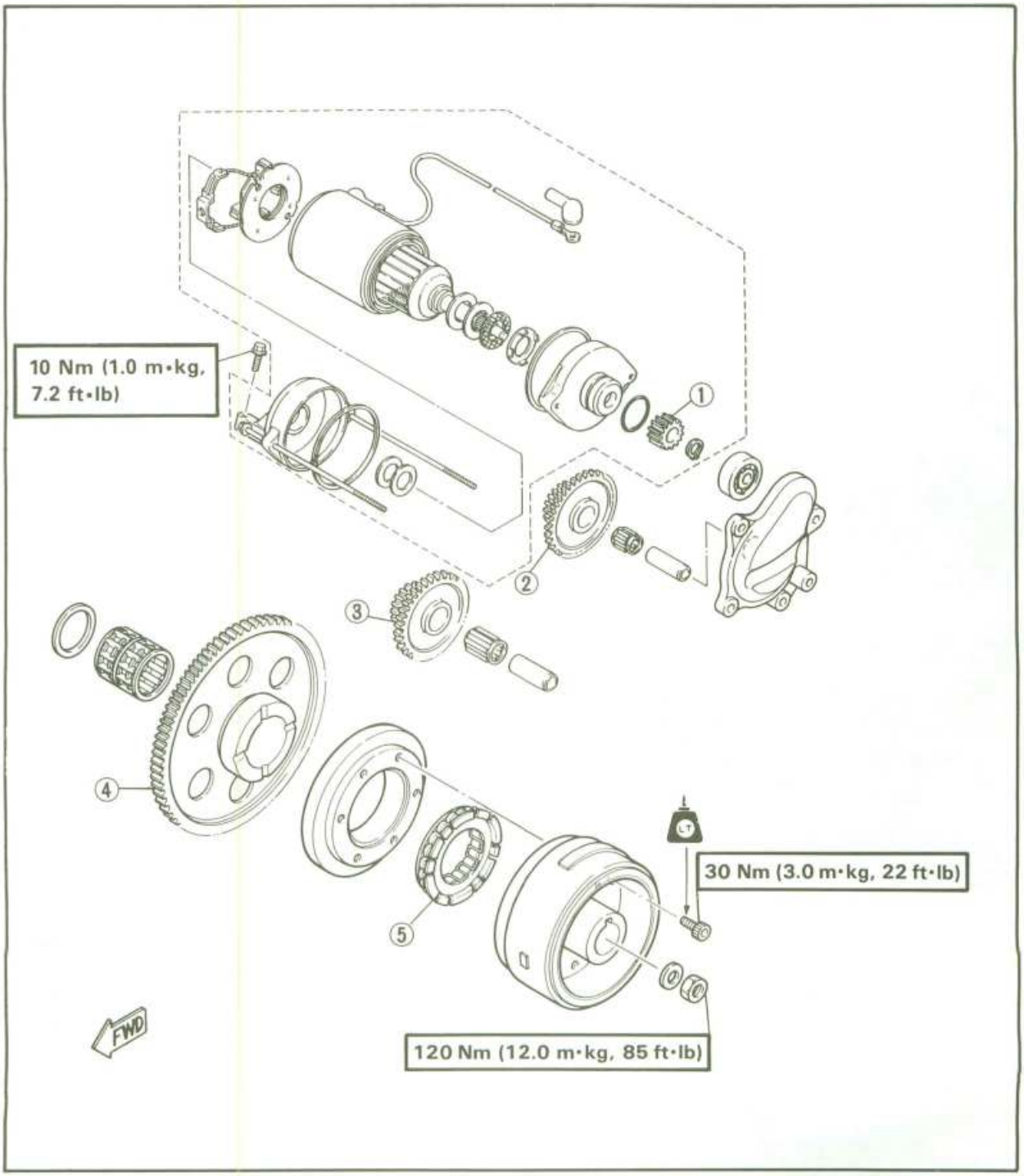


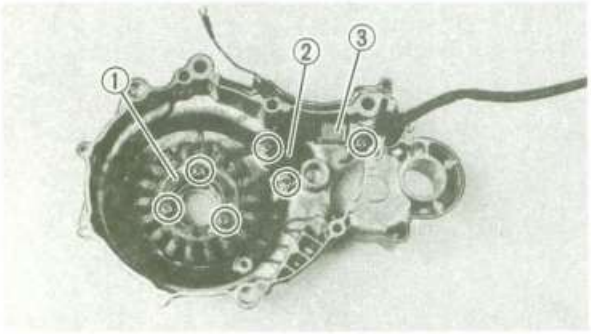
5. Adjust:
   - Clutch (mechanism free play)
     Refer to the "CLUTCH ADJUSTMENT" section in the CHAPTER 3.
6. Install:
   - Dowel pin
   - Gasket
   - Crankcase cover (right) ①
   - O-ring
   - Oil filter
   - Oil filter cover ② (with O-ring)
     Refer to the "Engine oil replacement (with oil filter)" section in the CHAPTER 3.

Bolt (crankcase cover): 10 Nm (1.0 m·kg, 7.2 ft·lb)

STARTER GEAR

① Starter gear
② Starter idle gear 1
③ Starter idle gear 2
④ Starter wheel gear
⑤ Starter one-way

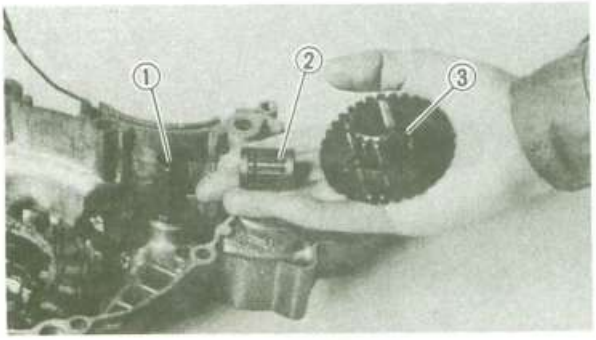




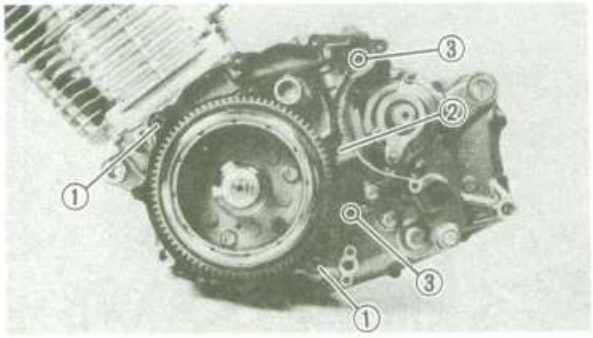
STARTER IDLE GEAR AND CRANKCASE COVER (LEFT)

1. Install:
   - Stator coil ①
   - Pickup coil ②
   - Lead holder ③

Screws (stator and pickup coil):
7 Nm (0.7 m·kg, 5.1 ft·lb)
Use LOCTITE ®
Screw (lead holder):
7 Nm (0.7 m·kg, 5.1 ft·lb)

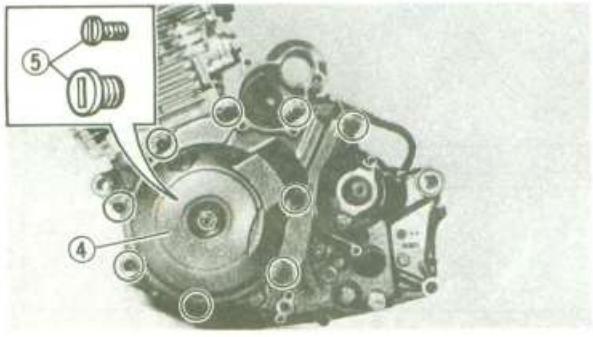


2. Install:
   - Shaft ①
   - Bearing ②
   - Starter idle gear 2 ③



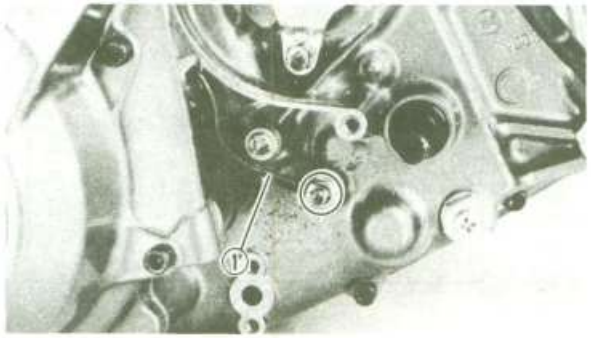
3. Install:
   - Dowel pin ①
   - Gasket ②
   - O-ring ③
   - Crankcase cover ④ (left)
   - Plugs ⑤

Bolt (crankcase cover):
10 Nm (1.0 m·kg, 7.2 ft·lb)



⚠ WARNING

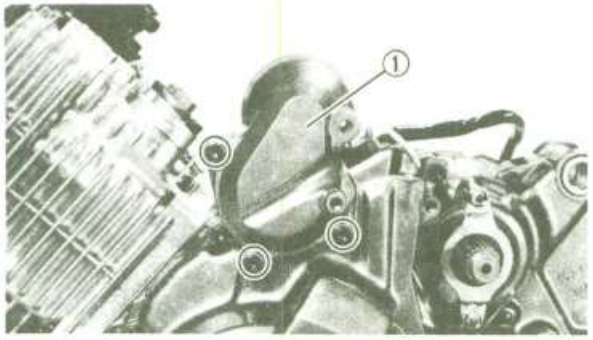
Always use a new gasket.



4. Install:
   - Neutral switch lead ①



5. Install:
   - Shaft ①
   - Bearing ②
   - Starter idle gear 1 ③



6. Install:
   - Dowel pin
   - Gasket
   - Cover ① (starter idle gear)

	Bolts (starter idle gear cover): 10 Nm (1.0 m·kg, 7.2 ft·lb)

REMOUNTING ENGINE

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

⚠ WARNING

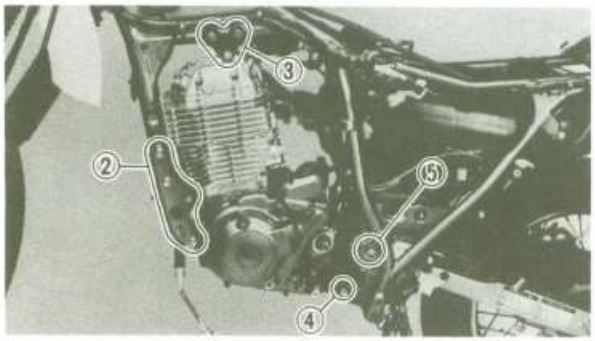
Securely support the motorcycle so there is no danger of it falling over.



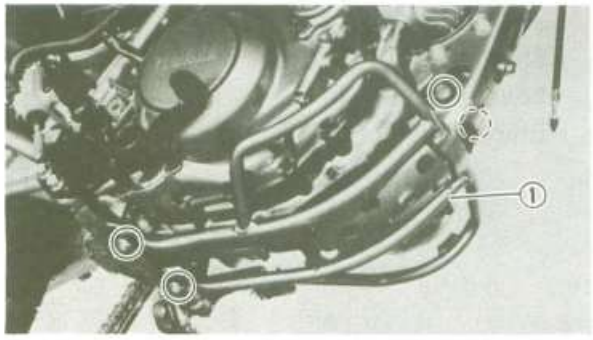
1. Install:
   - Engine
   - Pivot shaft ①

NOTE:

Apply the grease to the pivot shaft.

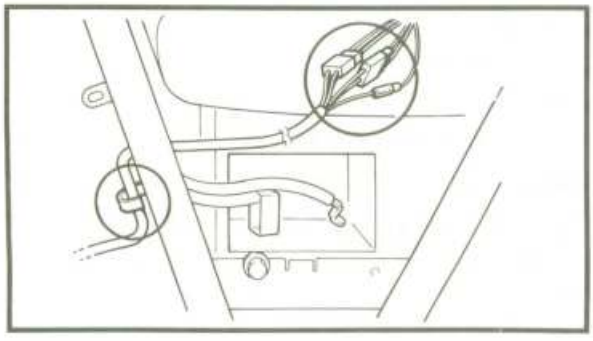


Nut ② (front):
64 Nm (6.4 m·kg, 46 ft·lb)
Nut ③ (upper):
64 Nm (6.4 m·kg, 46 ft·lb)
Nut ④ (lower):
64 Nm (6.4 m·kg, 46 ft·lb)
Nut ⑤ (pivot shaft):
85 Nm (8.5 m·kg, 61 ft·lb)

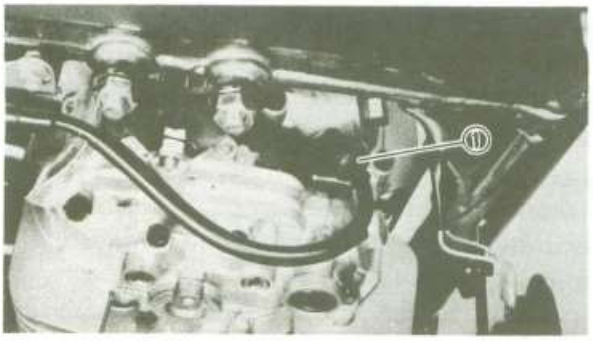


2. Install:
   - Engine protector ①

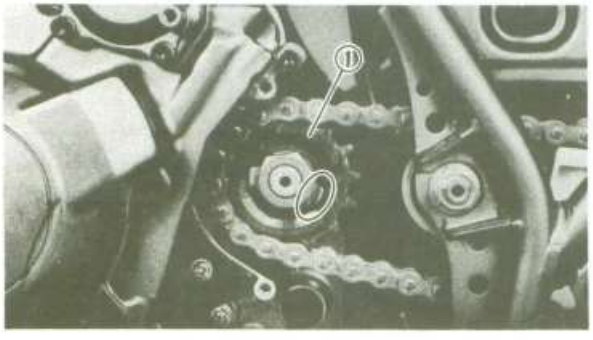
Bolt (engine protector):
10 Nm (1.0 m·kg, 7.2 ft·lb)



3. Connect:
   - Magneto lead



4. Install:
   - Spark plug lead ①

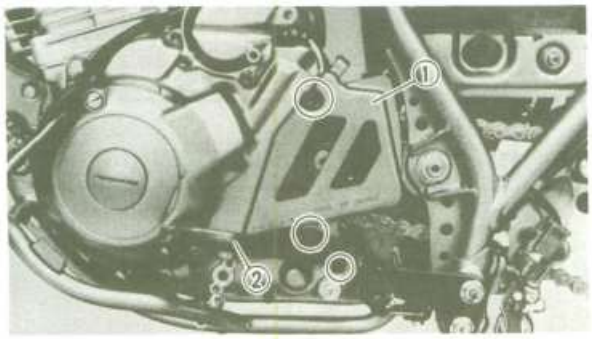


5. Install:
   - Drive sprocket ①
   - Drive chain

Nut (drive sprocket):
110 Nm (11.0 m·kg, 80 ft·lb)

NOTE:
Bend the lock washer tab along the nut flats.

⚠WARNING
Always use a new lock washer.



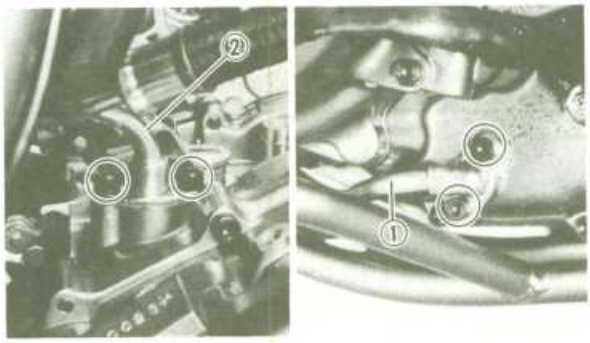
6. Install:
- Cover ① (drive sprocket)
- Change pedal ②
- Footrest (left)

Bolt (cover):
10 Nm (1.0 m·kg, 7.2 ft·lb)
Bolt (change pedal):
10 Nm (1.0 m·kg, 7.2 ft·lb)
Bolt (footrest):
45 Nm (4.5 m·kg, 32ft·lb)

7. Adjust:

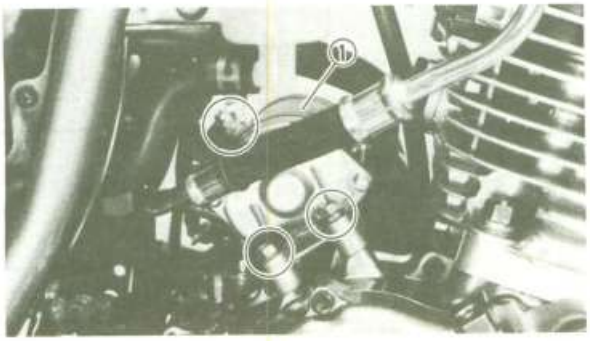
Drive chain slack:
30~40 mm (1.18~1.57 in)

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



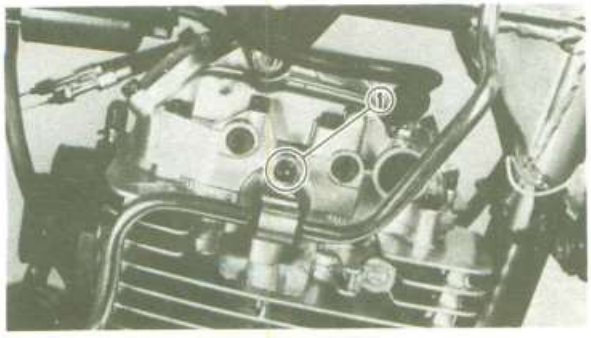
8. Install:
- Oil hose ① (inlet)
- Oil hose ② (outlet)

Bolt (oil hose):
10Nm (1.0 m·kg, 7.2 ft·lb)



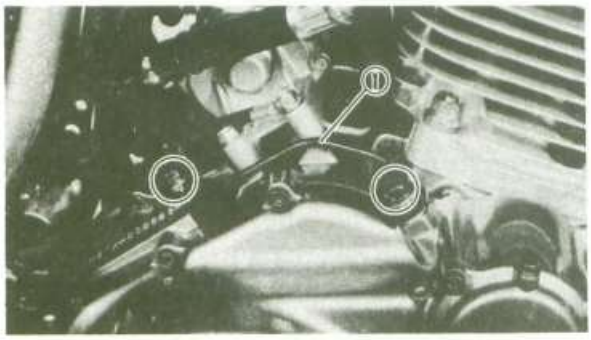
9. Install:
- Starter motor ①

Bolts (starter motor):
10 Nm (1.0 m·kg, 7.2 ft·lb)



10. Install:
- Bolt ① (oil hose clamp)

Bolt (oil hose clamp):
10 Nm (1.0 m·kg, 7.2 ft·lb)



11. Install:
    - Oil delivery pipe ①

Union bolts:
18 Nm (1.8 m·kg, 13 ft·lb)



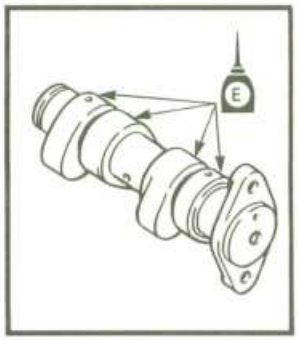


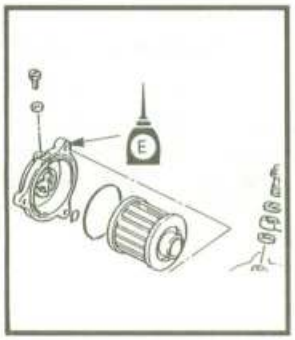
12. Remove:
    - Tappet cover (exhaust)
    - Air bleed screw (oil filter cover)

13. Apply:
    - 4-stroke engine oil
      (to the cam shaft upper side and into the oil filter room)

CAUTION:

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

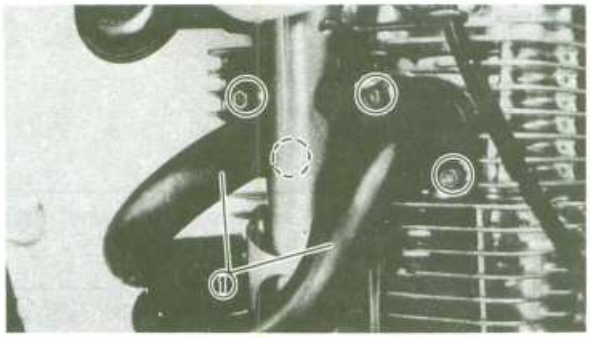


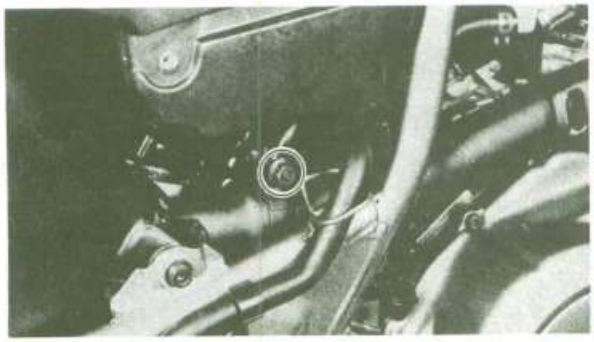


Oil quantity:
Cam shaft
0.1 L (0.09 Imp qt, 0.11 US qt)
Oil filter room
0.06 L (0.05 Imp qt, 0.06 US qt)

14. Install:
    - Tappet cover (exhaust)
    - Air bleed screw (oil filter cover)

Bolt (tappet cover):
10 Nm (1.0 m·kg, 7.2 ft·lb)
Bolt (air bleed screw):
5 Nm (0.5 m·kg, 3.6 ft·lb)





15. Install:
- Exhaust pipe ①

Nut (exhaust pipe):
10 Nm (1.0 m·kg, 7.2 ft·lb)
Bolt (exhaust pipe-rear):
20 Nm (2.0 m·kg, 14 ft·lb)

16. Install:
- Clutch cable

17. Adjust:
- Clutch cable free play

Free play:
2~3 mm (0.08~0.12 in)

Refer to the "CLUTCH ADJUSTMENT" section in the CHAPTER 3.

18. Install:
- Carburetor

Screw (clamp):
2 Nm (0.2 m·kg, 1.4 ft·lb)

Refer to the "CARBURETOR-INSTALLATION" section in the CHAPTER 5.

19. Adjust:
- Throttle cable free play

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

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

20. Install:
    - Battery
21. Connect:
    - Battery leads

CAUTION:

Connect the positive lead first and then connect the negative lead.

Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

22. Install:
    - Fuel tank

CAUTION:

Never start the engine when the oil is drained.

23. Apply:
    - Engine oil

Oil quantity:
3.3 L (2.9 Imp qt, 3.5 US qt)

Refer to the "ENGINE OIL REPLACEMENT" section in the CHAPTER 3.

24. Check:
    - Engine idle speed

Engine idle speed:
1,300~1,400 r/min

Refer to the "IDLE SPEED ADJUSTMENT" section in the CHAPTER 3.

25. Install
    - Cover (fuel tank)
    - Air scoops
    - Side covers
    - Seat

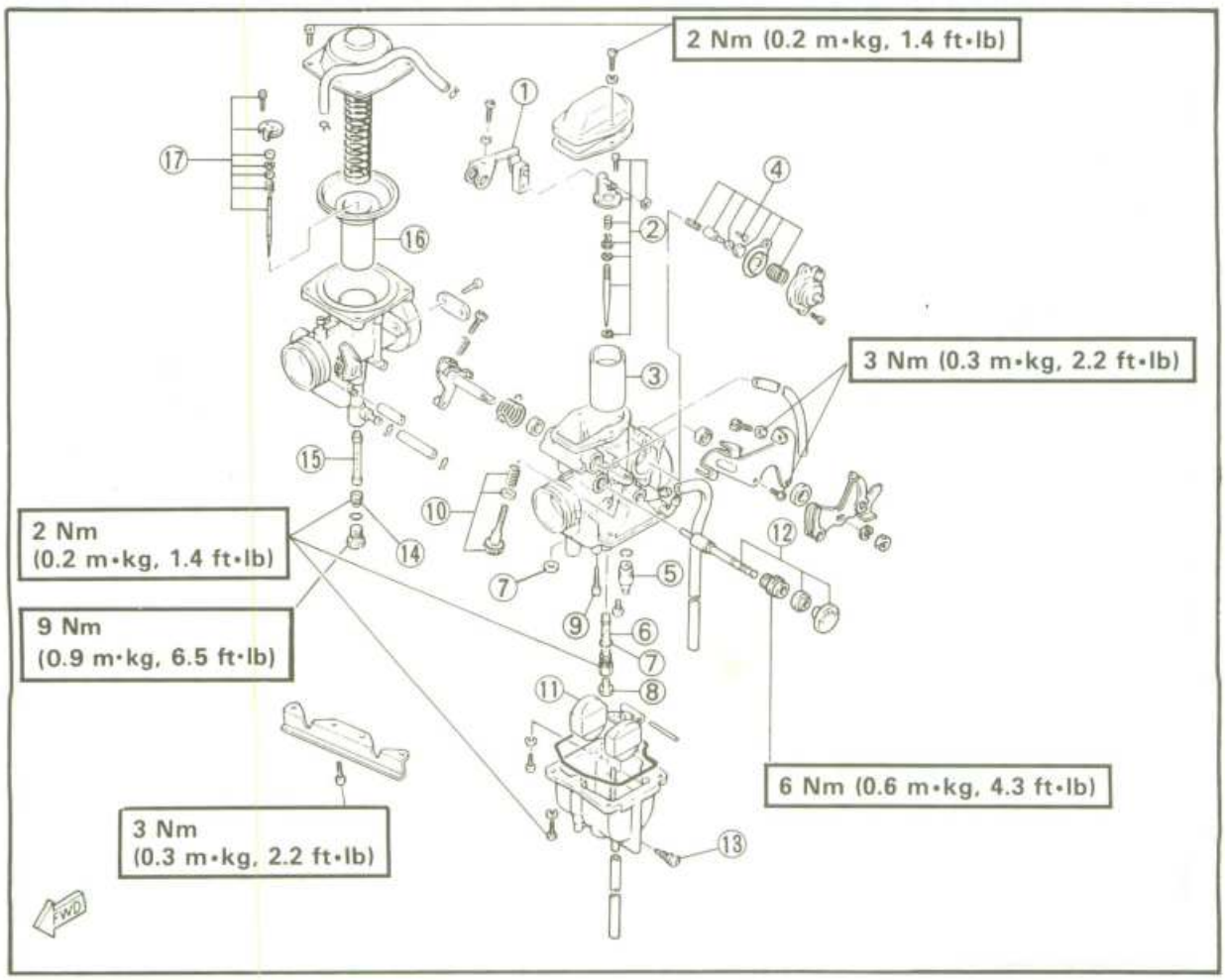
Bolt (seat):
10 Nm (1.0 m·kg, 7.2 ft·lb)

CARBURETION

CARBURETOR

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

SPECIFICATIONS		
Model	XT600EA	XT600EAC
Carburetor:		
I.D.mark	3UY10	3UY00
Main jet (M.J.)		
Primary	#130	←
Secondary	#104	←
Pilot jet (P.J.)	#48	←
Jet needle (J.N.)		
Primary	5D93-1/1	←
Secondary	5X7B-1/1	←
Pilot screw (P.S)	Preset	←
Float height(F.H.)	25.0~27.0 mm (0.98~1.06 in)	←
Fuel level	6.0~8.0 mm (0.24~0.31 in)	

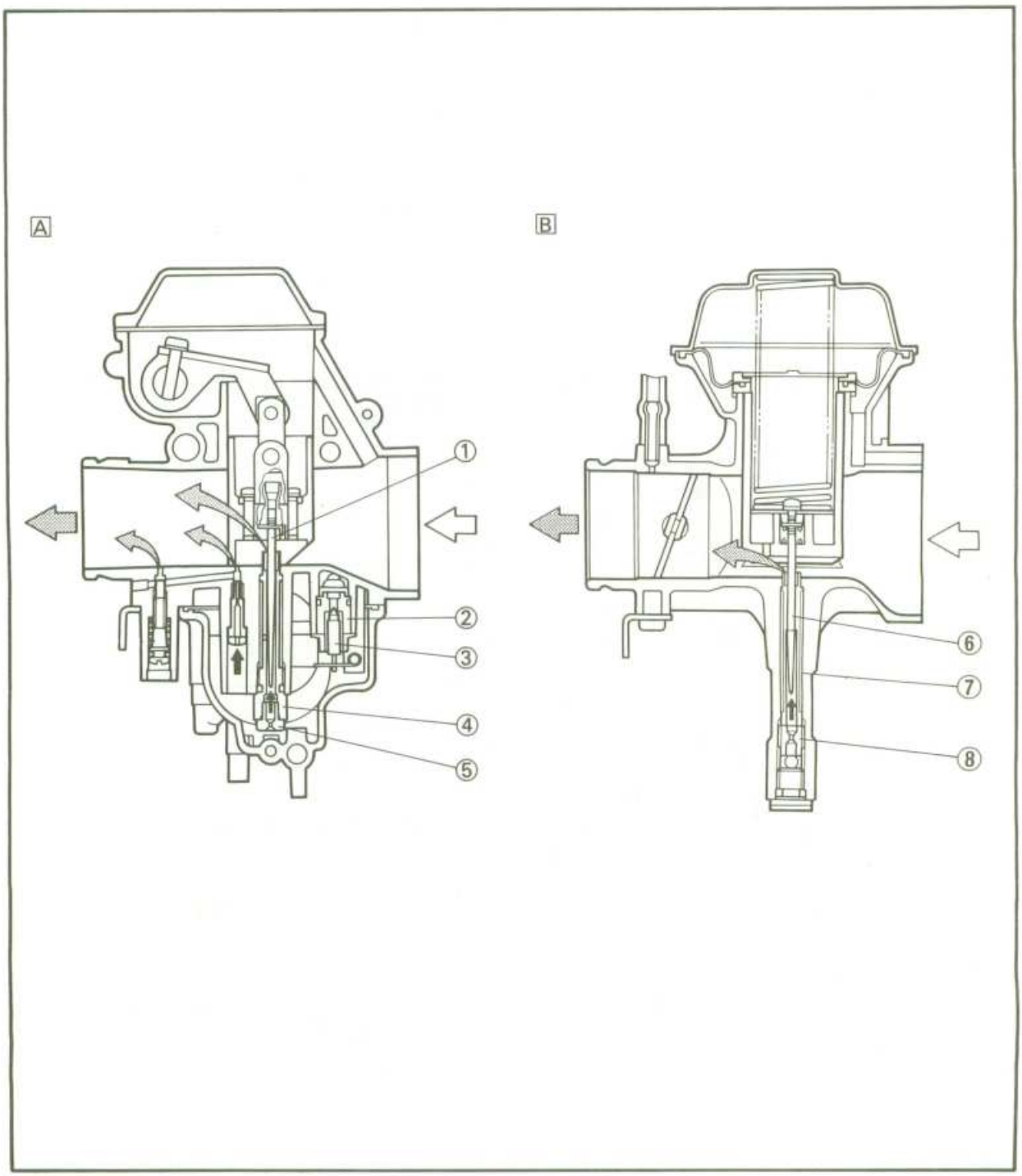


SECTIONAL VIEW

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

[A] Primary carburetor
[B] Secondary carburetor

Air
Fuel
Mixture



REMOVAL

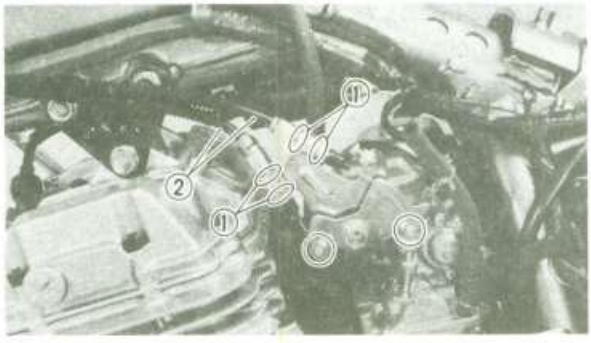
NOTE:

The following parts can be cleaned and inspected without disassembly.

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

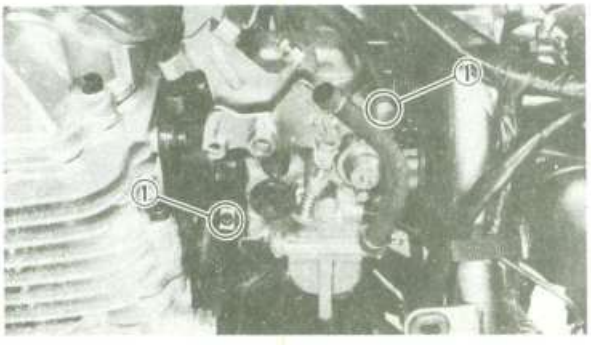
1. Remove:
   - Seat
   - Side covers
   - Air scoops
   - Cover (fuel tank)
   - Fuel tank

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



2. Loosen:
   - Locknut ①

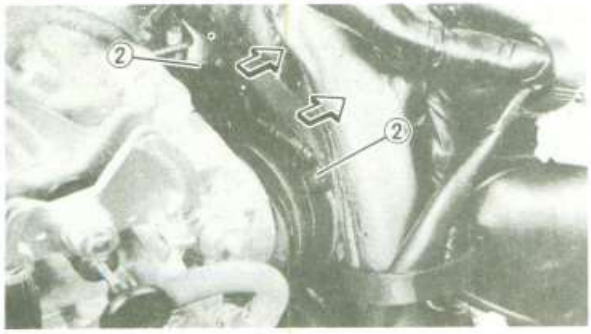
3. Remove:
   - Throttle cable ②

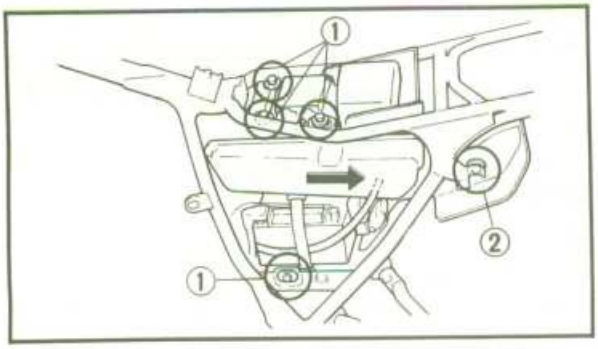


4. Loosen:
   - Screw (clamp) ①

NOTE:

Move carburetor joint bands ② to the rear.

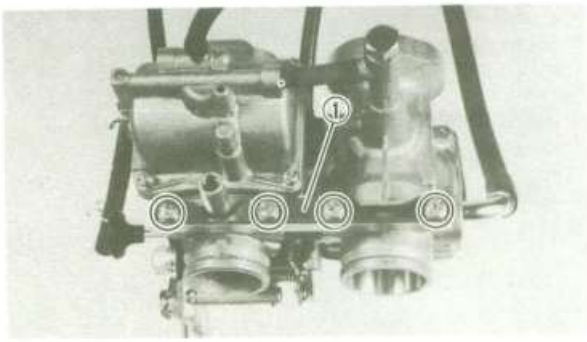




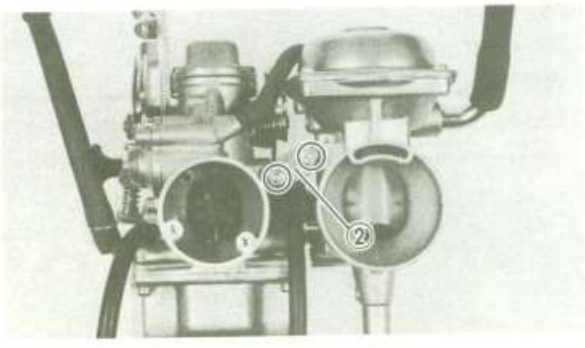
5. Remove:
   - Bolts (air filter case) ①
   - Air filter case (from projection ②)
   - Carburetor joint from carburetor by moving air filter case to the rear.

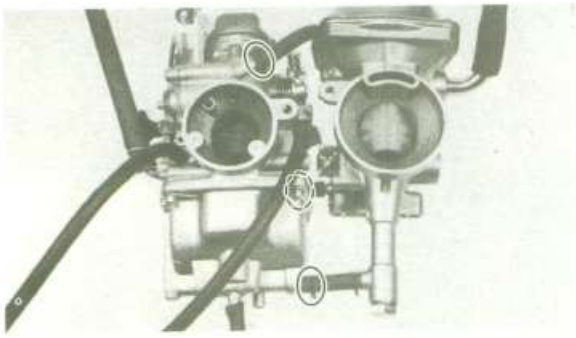
6. Remove:
   - Carburetor

DISASSEMBLY

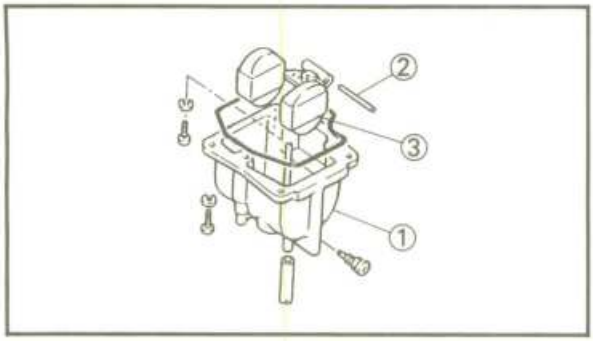


1. Remove:
   - Stay plate ① (front)
   - Stay plate ② (rear)



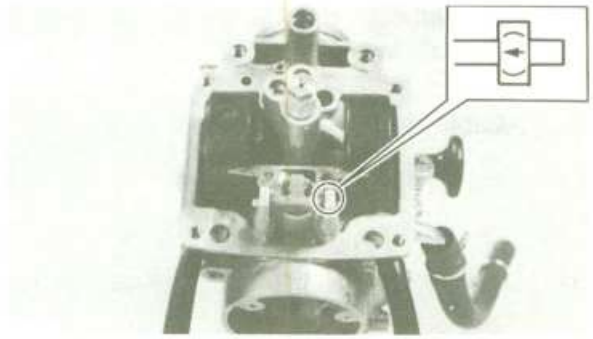


2. Separate:
   - Primary carburetor
   - Secondary carburetor



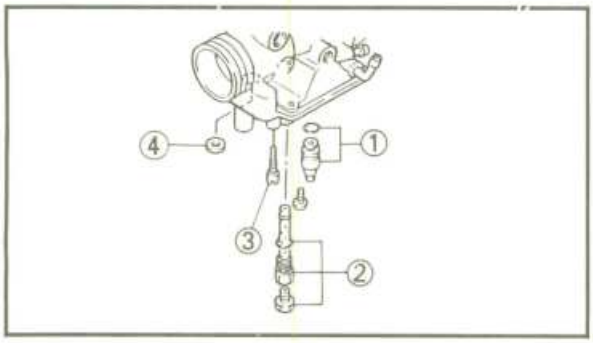
Primary carburetor

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

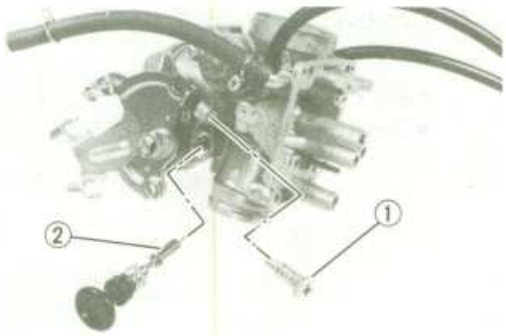


NOTE:

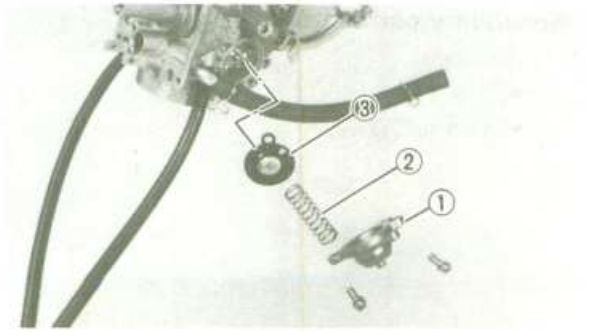
Remove the float pin in the arrow direction.



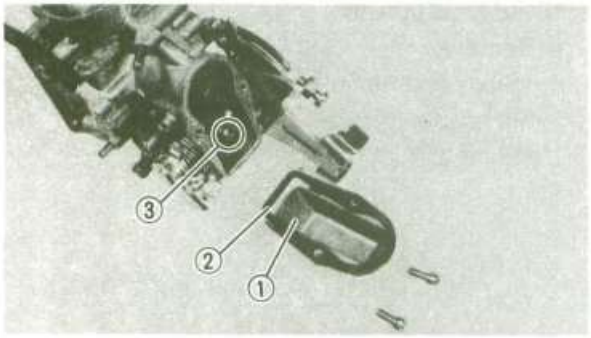
2. Remove:
   - Needle valve/Valve seat ①
   - Main jet/Main nozzle ②
   - Pilot jet ③
   - O-ring ④



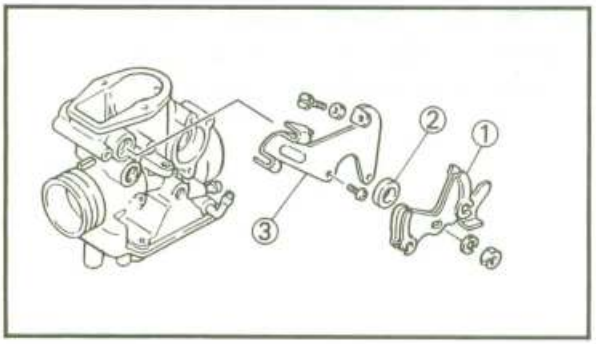
3. Remove:
   - Throttle stop screw ①
   - Starter plunger ②



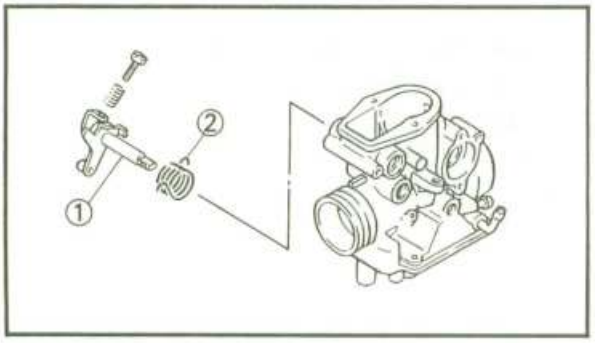
4. Remove:
   - Cover ① (coasting enricher)
   - Spring ②
   - Diaphragm ③



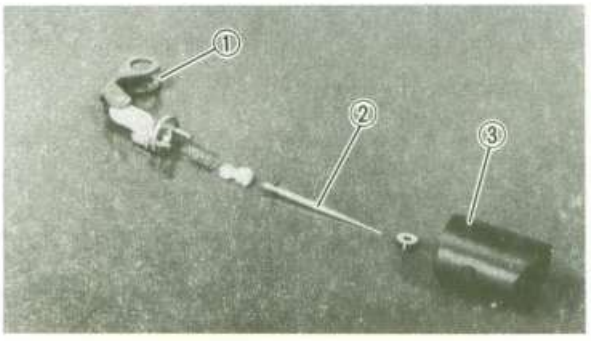
5. Remove:
   - Top cover ①
   - Gasket ②
   - Screw ③ (connecting arm)



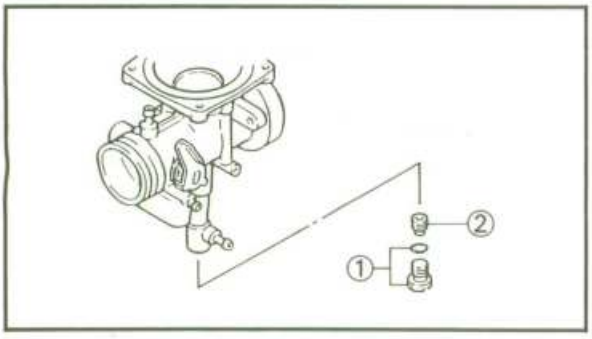
6. Remove:
   - Throttle lever ①
   - Collar ②
   - Cable holder ③



7. Remove:
   - Throttle shaft ①
   - Spring ②

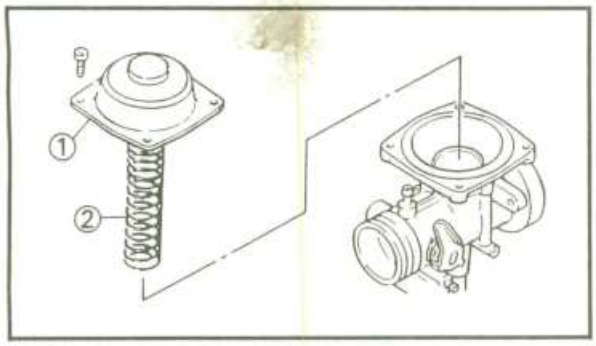


8. Remove:
   - Connecting arm ①
   - Jet needle ②
   - Throttle valve ③

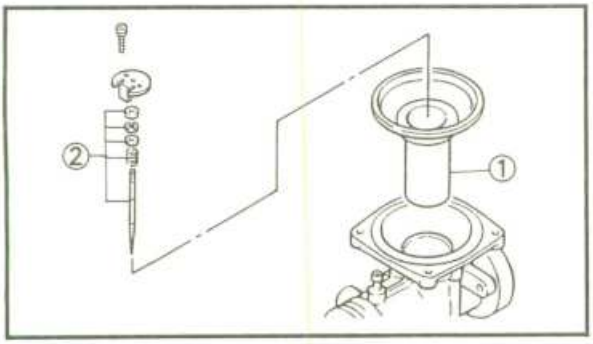


Secondary carburetor

1. Remove:
   - Plug ①
   - Main jet ②



2. Remove:
   - Top cover ①
   - Spring ②



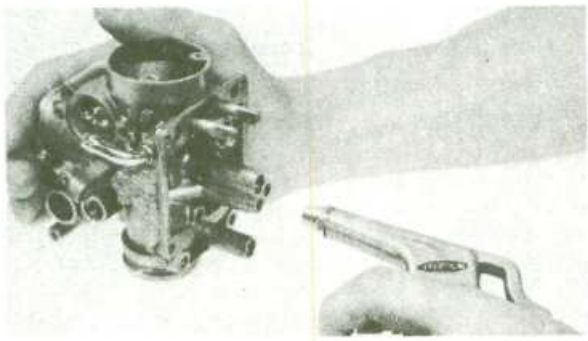
3. Remove:
   - Piston valve ①
   - Jet needle ②

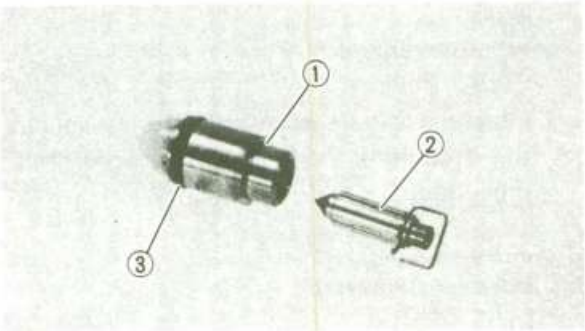
INSPECTION

1. Inspect:
   - Carburetor body
     Contamination → Clean.

NOTE:

Use a petroleum based solvent for cleaning. Blow out all passages and jets with compressed air.

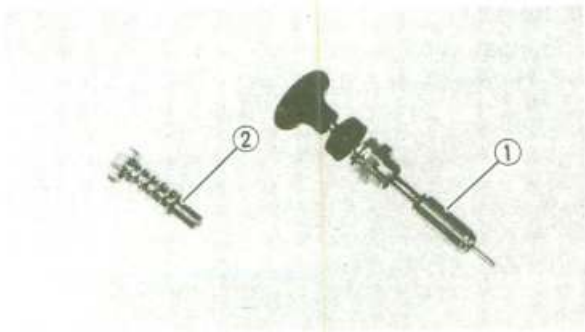




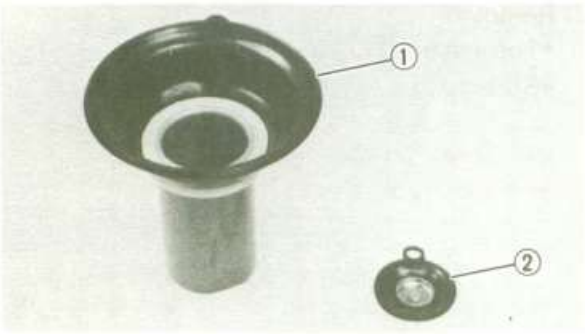
2. Inspect:
   - Valve seat ①
   - Needle valve ②
     Wear/Contamination → Replace.
   - O-ring ③
     Damage → Replace.

NOTE:

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

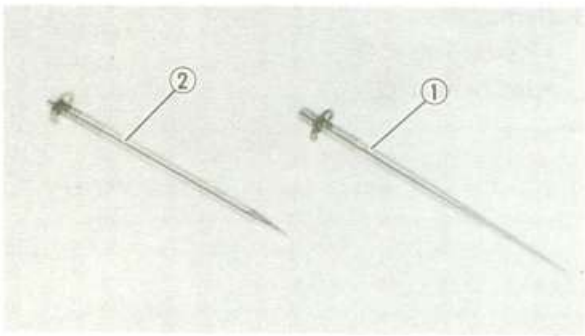


3. Inspect:
   - Starter plunger ①
     Wear/Damage → Replace.
   - Throttle stop screw ②
     Damage → Replace.



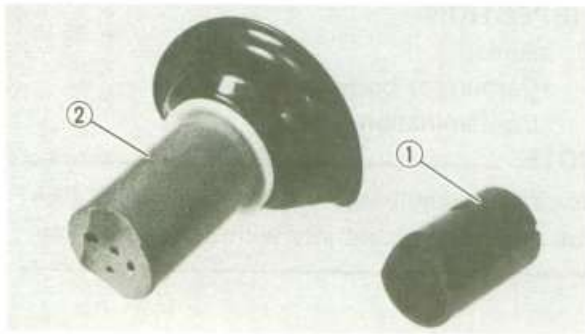
4. Inspect:
   - Diaphragm ① (piston valve)
   - Diaphragm ② (coasting enricher)

   Damage → Replace.



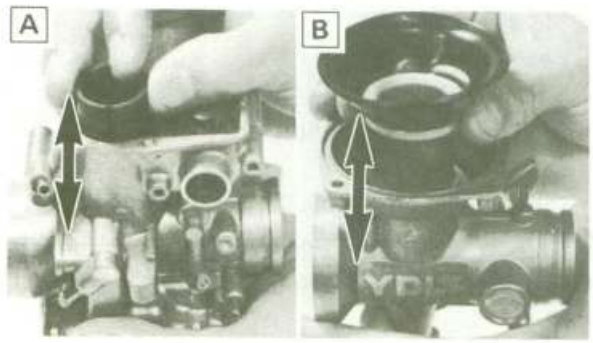
5. Inspect:
   - Jet needle ① (primary)
   - Jet needle ② (secondary)

   Bends/Wear → Replace.



6. Inspect:
   - Throttle valve ① (primary)
   - Piston valve ② (secondary)

   Wear/Damage → Replace.

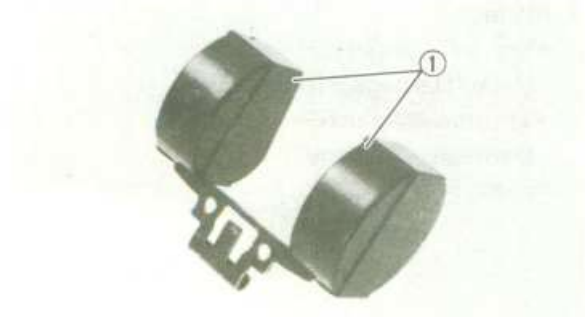


7. Check:
   - Free movement

   Stick → Replace.

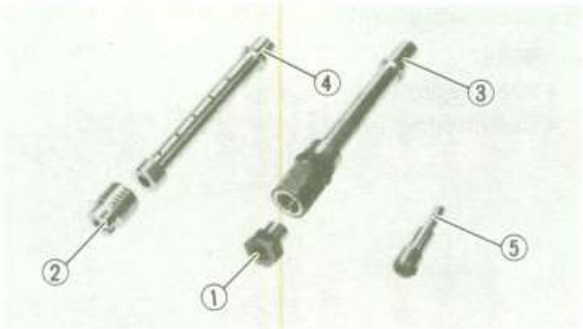
   Insert the throttle valve and piston valve into the carburetor body, and check for free movement.

A Primary carburetor
B Secondary carburetor



8. Inspect:
   - Float ①

   Damage → Replace.



9. Inspect:
   - Main jet ① (primary)
   - Main jet ② (secondary)
   - Main nozzle ③ (primary)
   - Main nozzle ④ (secondary)
   - Pilot jet ⑤

NOTE:

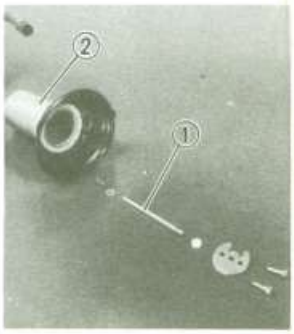
Blow out the jets with compressed air.

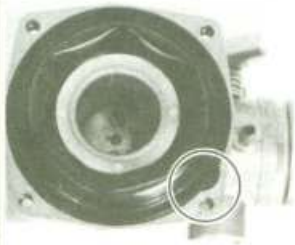
ASSEMBLY

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

CAUTION:

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



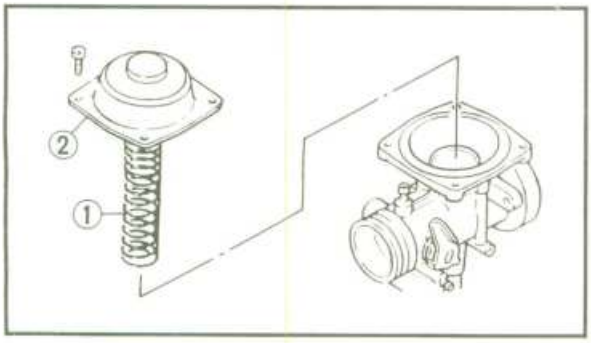


Secondary carburetor

1. Install:
   - Jet needle ①
   - Piston valve ②

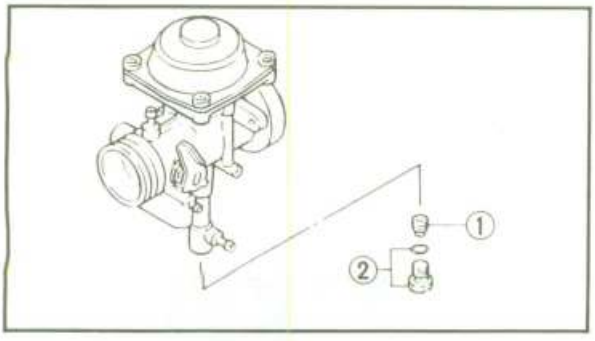
NOTE:

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



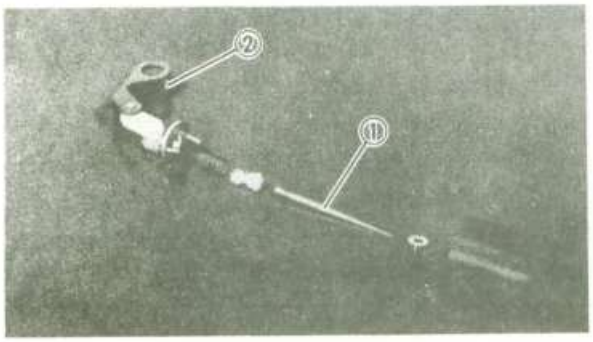
2. Install:
   - Spring ①
   - Top cover ②

	Screw (top cover): **2 Nm (0.2 m•kg, 1.4 ft•lb)**



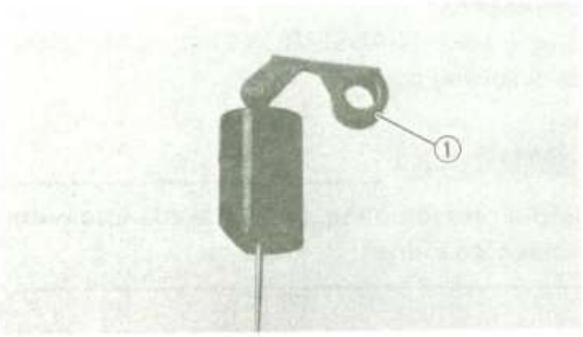
3. Install:
   - Main jet ①
   - Plug ②

	Main jet: **2 Nm (0.2 m•kg, 1.4 ft•lb)** **Plug:** **9 Nm (0.9 m • kg, 6.5 ft • lb)**



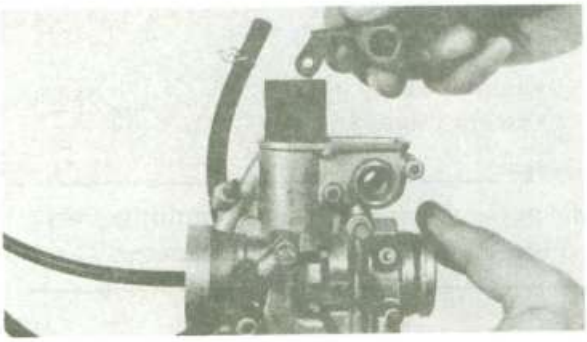
Primary carburetor

1. Install:
   - Jet needle ①
   - Connecting arm ②

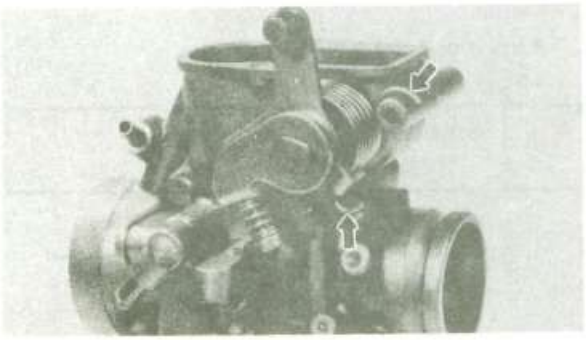


NOTE:

Make sure that the connecting arm assembly ① is at the illustrated position.



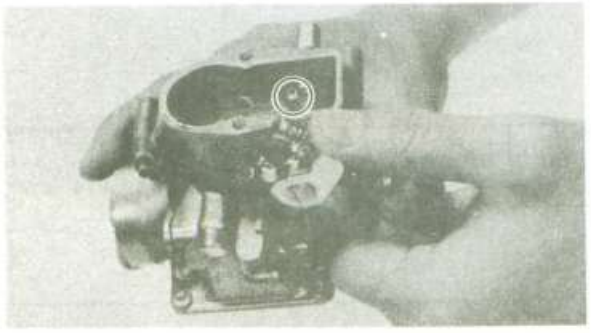
2. Install:
   - Throttle valve



3. Install:
   - Spring
   - Throttle shaft

NOTE:

Set the spring as shown.

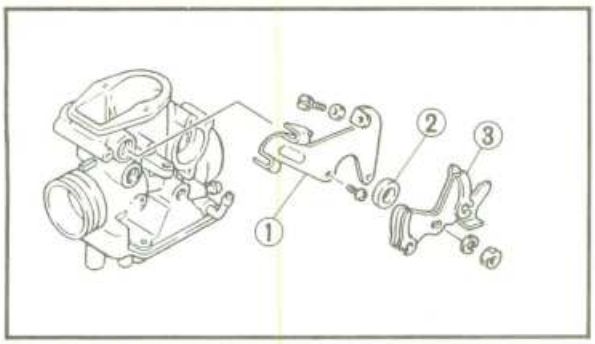


4. Install:
   - Screw (connecting arm)

NOTE:

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

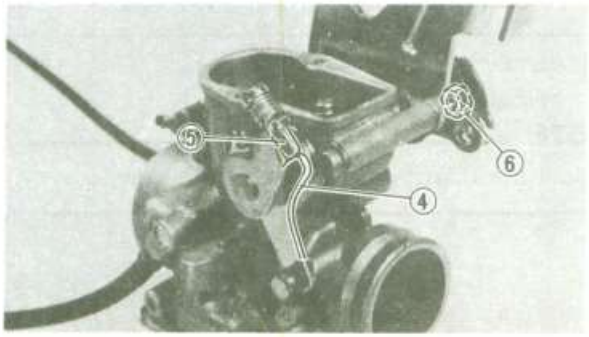
	Screw (connecting arm): **2 Nm (0.2 m·kg, 1.4 ft·lb)**

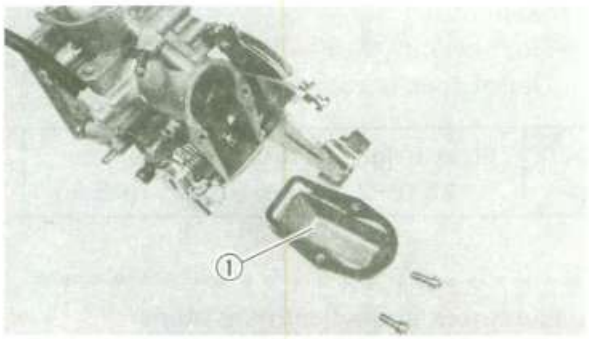


5. Install:
   - Cable holder ①
   - Collar ②
   - Throttle lever ③

NOTE:
Be sure throttle shaft lever ④ and adjusting bolt ⑤ are aligned when tightening throttle lever nut ⑥.

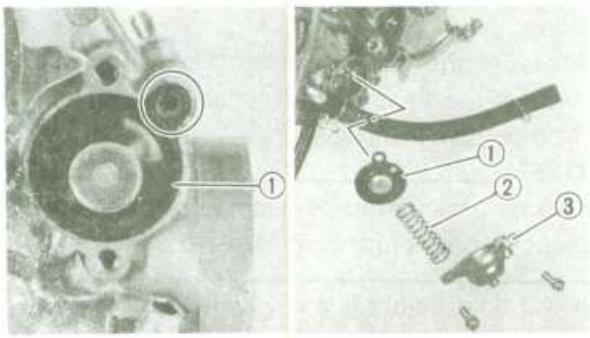
	Screw (cable holder) ①: **3 Nm (0.3 m • kg, 2.2 ft • lb)**





6. Install:
   - Top cover ①

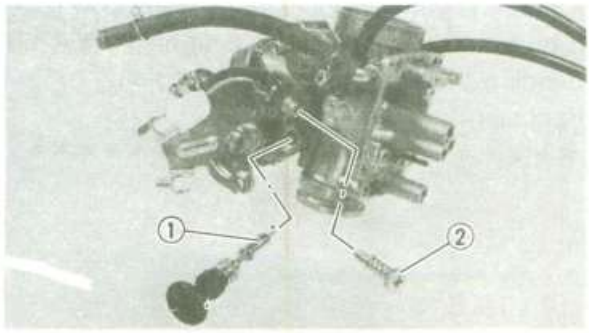
	Screw (top cover): **2 Nm (0.2 m•kg, 1.4 ft•lb)**



7. Install:
   - Diaphragm ① (coasting enricher)

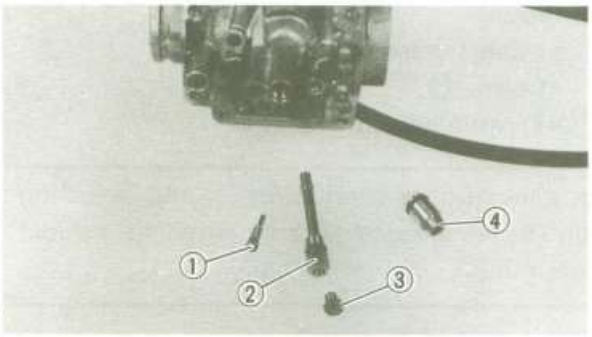
NOTE:
Match the tab on the diaphragm to the matching recess in the coasting enricher.

   - Spring ②
   - Cover ③



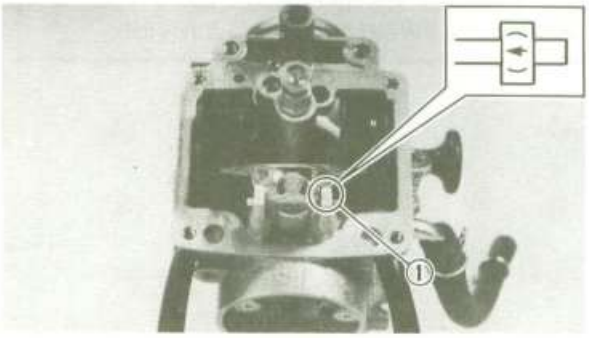
8. Install:
   - Starter plunger ①
   - Throttle stop screw ②

	Starter plunger : **6 Nm (0.6 m•kg, 4.3 ft•lb)**



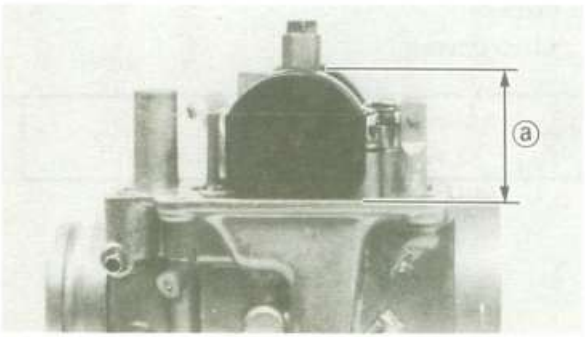
9. Install:
   - Pilot jet ①
   - Main nozzle ②
   - Main jet ③
   - Valve seat ④

Main nozzle:
2 Nm (0.2 m·kg, 1.4 ft·lb)
Main jet :
2 Nm (0.2 m · kg, 1.4 ft · lb)
Screw (valve seat):
2 Nm (0.2 m·kg, 1.4 ft·lb)



10. Install:
    - Float pin ①

NOTE:
Install the float pin reverse to the arrow.



11. Measure:
    - Float height ⓐ

    Out of specification → Adjust.

Float height (F.H.):
25.0~27.0 mm (0.98~1.06 in)

* *

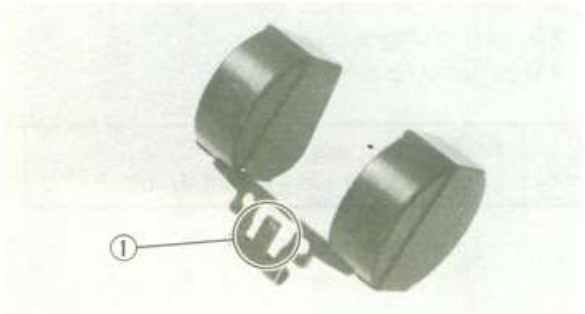
Measurement and adjustment steps:

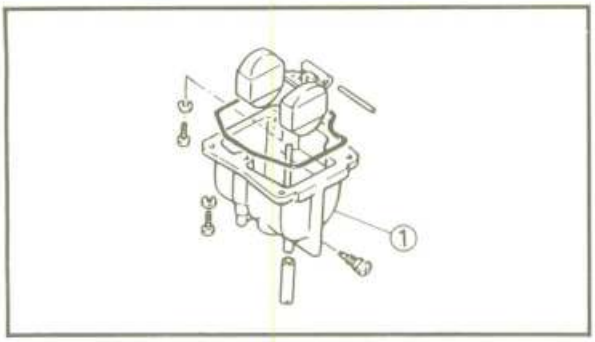
- Hold the carburetor in an upside down position.
- Measure the distance from the mating surface of the float chamber (gasket removed) to the top of the float.

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

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

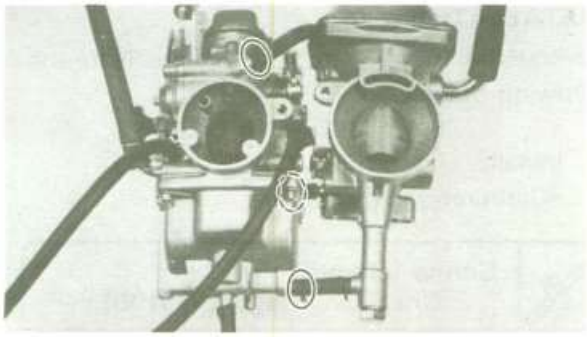
* *



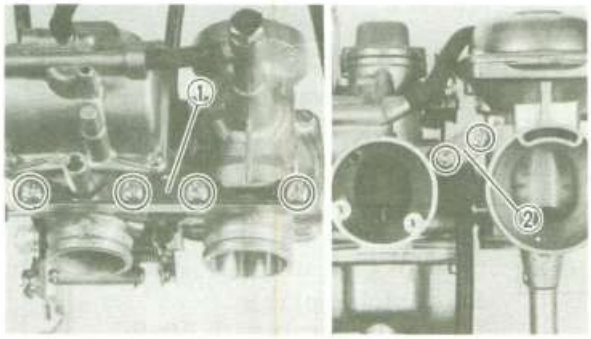


12. Install:
- Float chamber ①

	Screw (float chamber): 2 Nm (0.2 m·kg, 1.4 ft·lb)

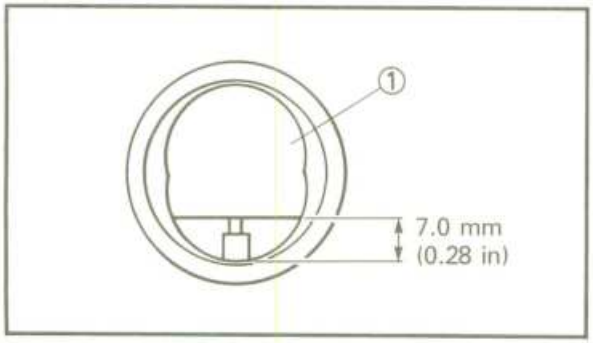


13. Install:
- Primary carburetor
- Secondary carburetor



14. Install:
- Stay plate (front) ①
- Stay plate (rear) ②

	Screw (stay plate): 3 Nm (0.3 m·kg, 2.2 ft·lb)

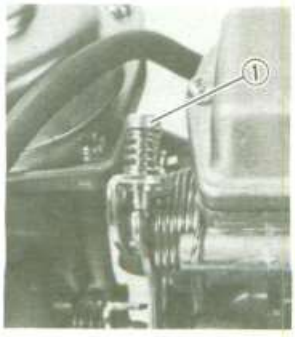


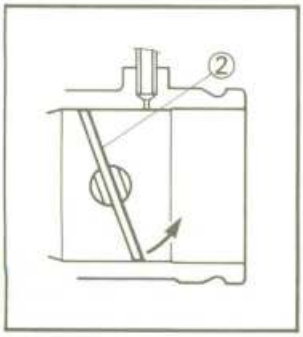
15. Adjust:
- Secondary carburetor synchronization

* *

Adjustment steps:

●Raise the primary throttle valve ① to a height of 7.0 mm (0.28 in) as indicated.

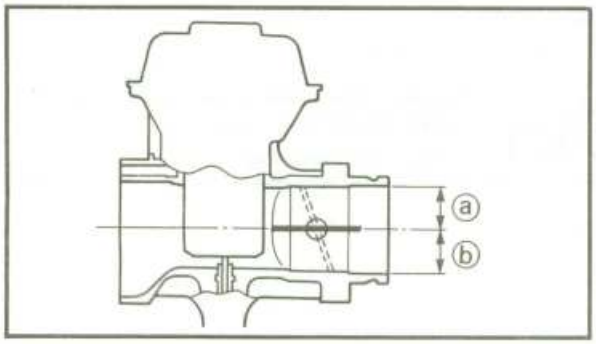




●Turn the synchronizing screw ① in or out so that secondary throttle valve ② is begun to open.

●Make sure that the secondary valve is opened horizontally (ⓐ = ⓑ) when the primary carburetor valve is fully opened.

* *

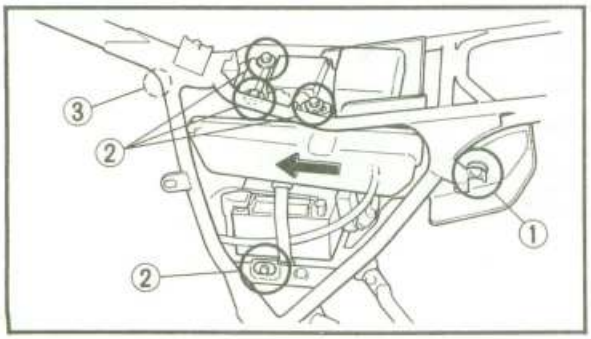


INSTALLATION

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

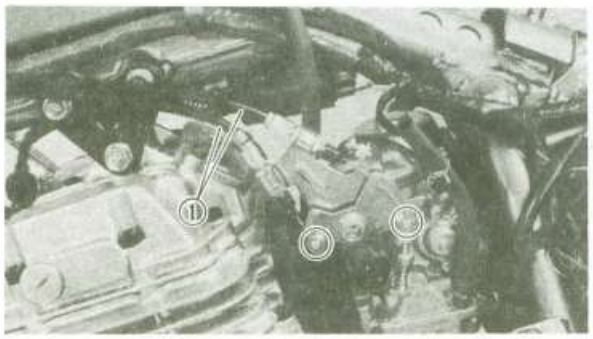
1. Install:
   - Carburetor assembly

	Screw (clamp): **2 Nm (0.2 m·kg, 1.4 ft·lb)**



2. Install:
   - Carburetor joint to carburetor by moving air filter case forward.
   - Air filter case (on to projection ①)
   - Bolts (air filter case) ②

	Bolt (air filter case): **10Nm (1.0 m·kg, 7.2 ft·lb)** **Screw (clamp) ③:** **2Nm (0.2 m·kg, 1.4ft·lb)**



3. Install:
   - Throttle cable ①

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

	Throttle cable free play: **3~5 mm (0.12~0.20 in)**

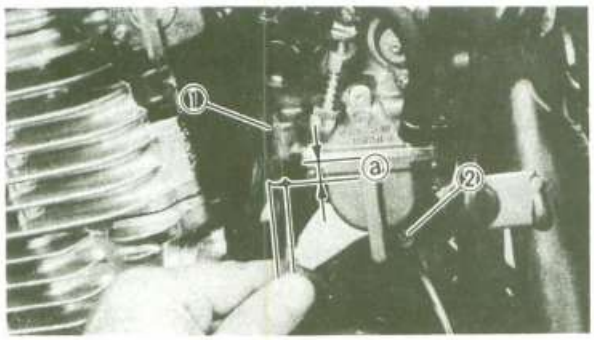
5. Adjust:
   • Idle speed
   Refer to the "IDLE SPEED ADJUSTMENT" section in the CHAPTER 3.

Engine idle speed:
1,300~1,400 r/min

FUEL LEVEL ADJUSTMENT

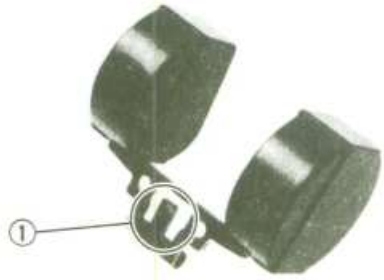
1. Place the motorcycle on a level place.
2. Use a garage jack under the engine to ensure that the carburetor is positioned vertically.
3. Attach the Fuel Level Gauge ① to the float chamber nozzle.

Fuel level gauge:
P/N. YM-01312-A
P/N. 90890-01312



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

Fuel level:
6.0~8.0 mm (0.24~0.31 in)
Below the carburetor body edge.



6. Adjust:
   • Fuel level

* *

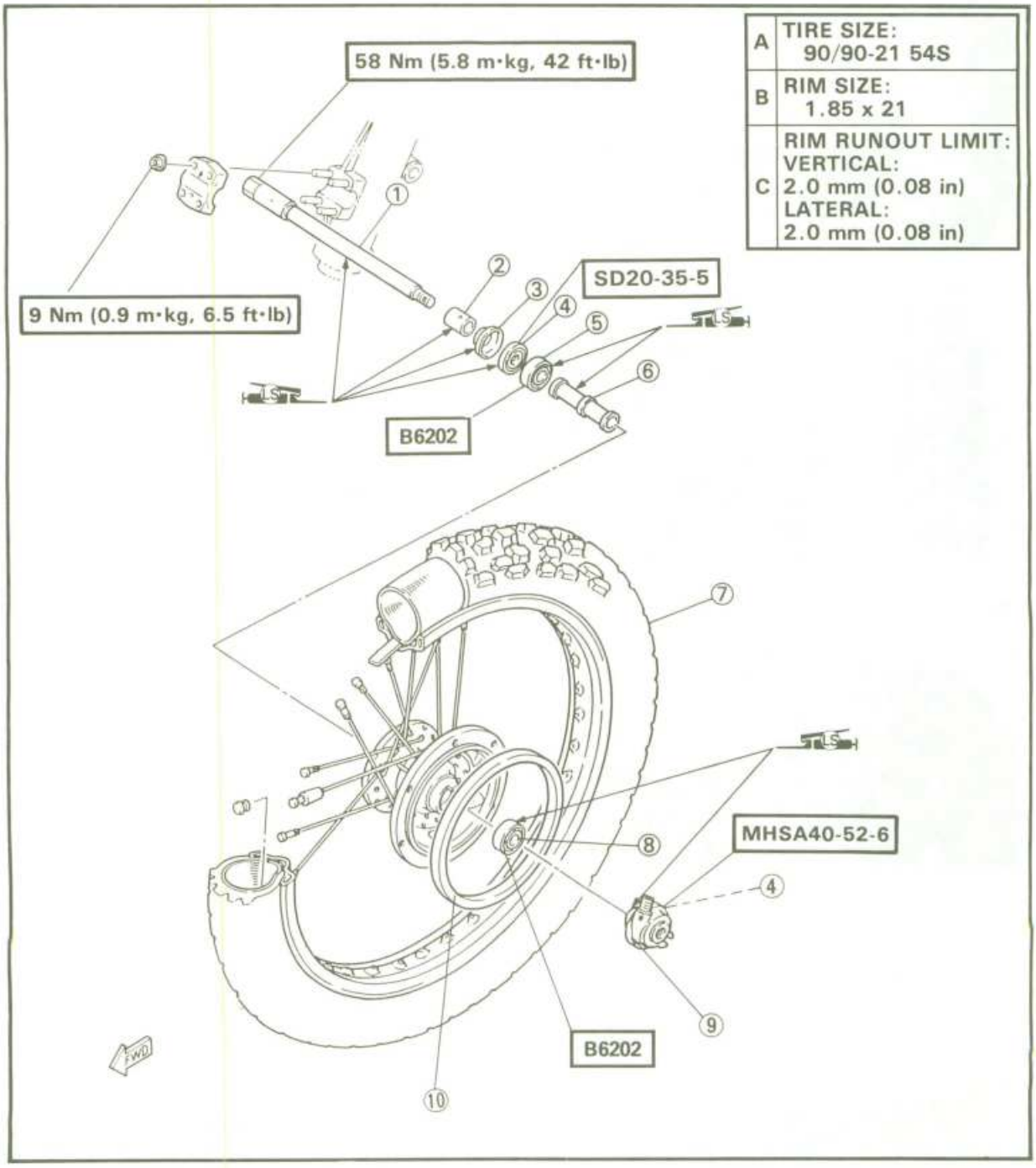
Adjustment steps:

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

* *

FRONT WHEEL

① Wheel axle
② Collar
③ Dust cover
④ Oil seal
⑤ Bearing
⑥ Collar
⑦ Front wheel
⑧ Bearing
⑨ Gear unit (speedometer)
⑩ Damper rubber

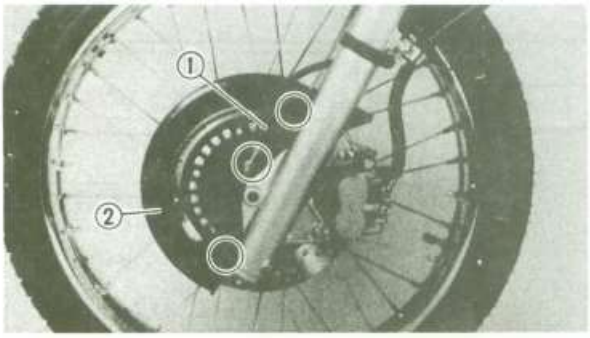


REMOVAL

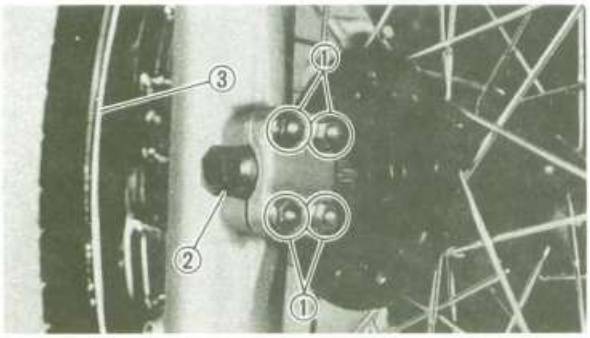
⚠ WARNING

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.



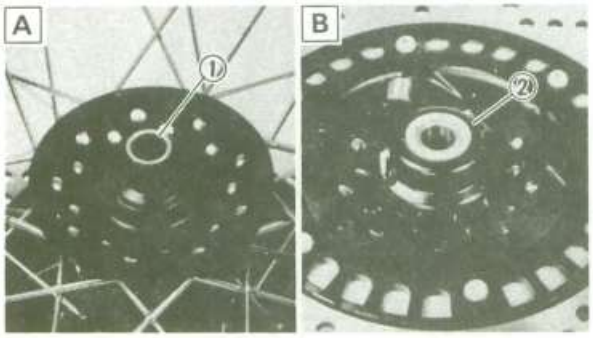
3. Remove:
   - Speedometer cable ①
   - Disc cover ②



4. Loosen:
   - Nut ① (axle holder)
5. Remove:
   - Wheel axle ②
   - Front wheel ③

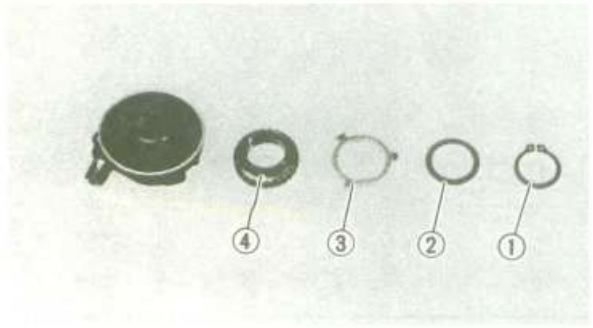
NOTE:

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

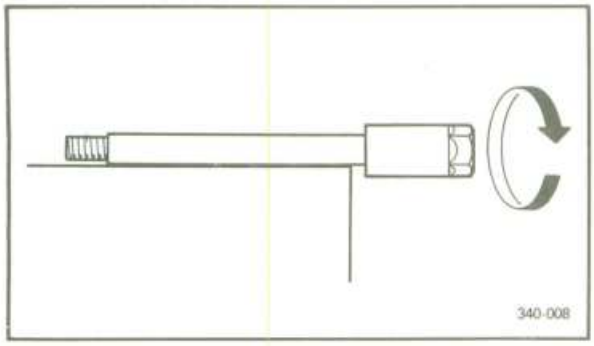


6. Remove:
   - Collar ①
   - Gear unit (speedometer) ②

Ⓐ Right side
Ⓑ Left side



7. Remove:
   - Circlip ①
   - Washer ②
   - Meter clutch ③
   - Driven gear ④



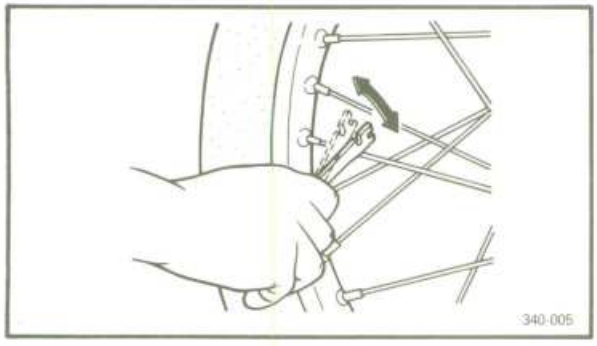
INSPECTION

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

⚠ WARNING

Do not attempt to straighten a bent axle.

3. Inspect:
   - Tire
     Wear/Damage → Replace.
     Refer to the "TIRE INSPECTION" section in the CHAPTER 3.
   - Wheel
     Cracks/Bends/Warpage → Replace.
     Refer to the "WHEEL INSPECTION" section in the CHAPTER 3.



4. Check:
   - Spoke(s)
     Bend/Damage → Replace.
     Loose spoke(s) → Retighten.
     Turn the wheel and tap the spokes with a screw driver.

NOTE:

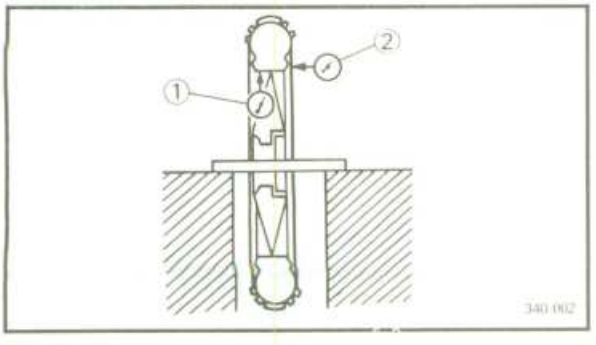
A tight spoke will emit a clear, ringing tone; a loose spoke will sound flat.

5. Tighten:
   - Loose spokes

Spoke:
2 Nm (0.2 m·kg, 1.4 ft·lb)

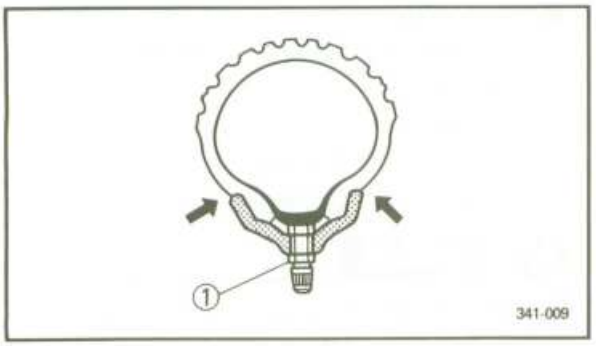
NOTE:

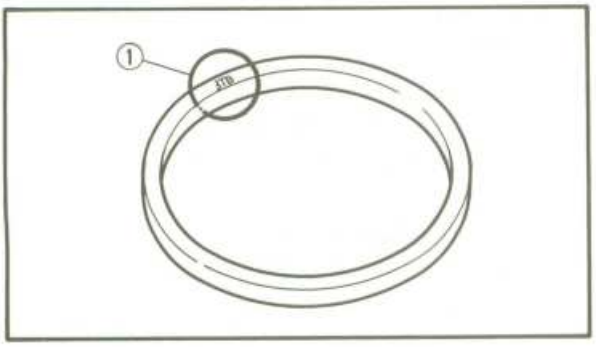
Check the wheel runout after tightening spoke.

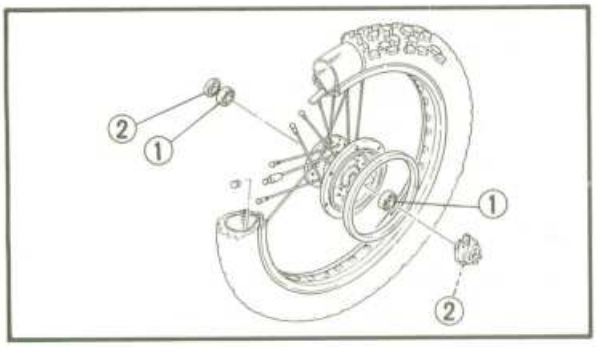


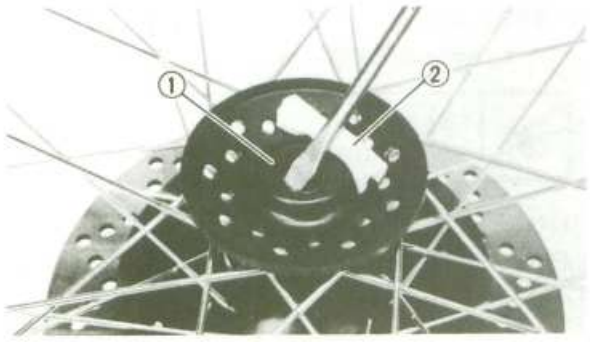
6. Measure:
   - Wheel runout
     Out of specification → Check the wheel and bearing play.

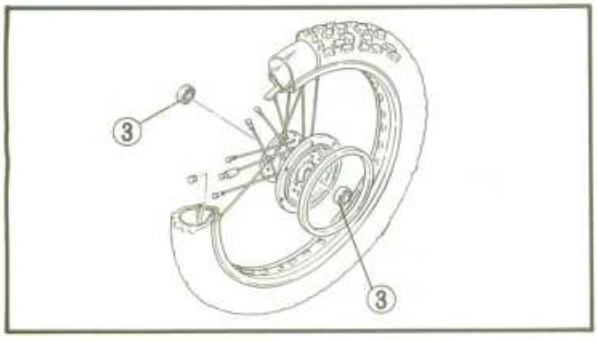
Rim runout limits:
Vertical ①: 2.0 mm (0.08 in)
Lateral ②: 2.0 mm (0.08 in)











⚠WARNING

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

Valve stem locknut:
1.5 Nm (0.15 m · kg, 1.1 ft · lb)

7. Inspect:
   - Damper rubber
     Cracks/Damage→Replace.

NOTE:
The damper rubber should be installed with the 3TB mark ① outside.

8. Inspect:
   - Wheel bearings ①
     Bearings allow play in the wheel hub or wheel turns roughly → Replace.
   - Oil seals ②
     Wear/Damage → Replace.

* *

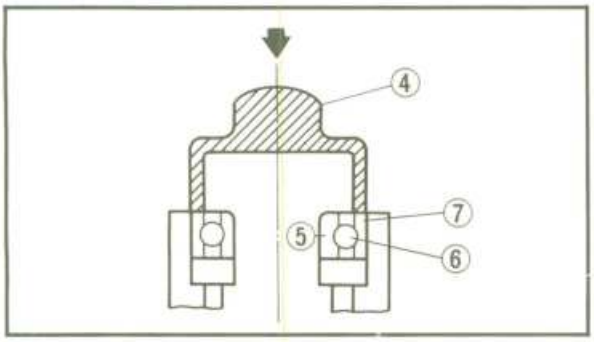
Oil seal and wheel bearing replacement steps:

- Clean the outside of the wheel hub.
- Remove the oil seals ① use a flat-head screw driver.

NOTE:
Place a rag ② on the outer edge to prevent damage.

- Remove the bearings ③ using a general bearing puller.
- Install the new bearing and oil seal by reversing the previous steps.

NOTE:
Use a socket ④ that matches the outside diameter of the race of the bearing and oil seal.



CAUTION:

Do not strike the center race ⑤ or balls ⑥ of the bearing. Contact should be made only with the outer race ⑦.

* *



9. Inspect:
   - Gear unit case (speedometer)①
   - Washer ②
   - Meter clutch ③
   - Drive gear ④
   - Driven gear ⑤

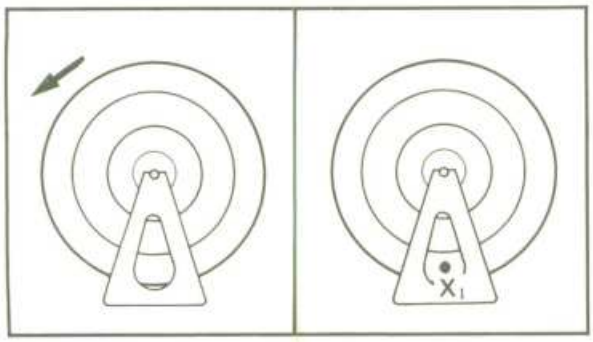
   Wear/Damage → Replace.

STATIC WHEEL BALANCE ADJUSTMENT

NOTE:

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

1. Remove:
   - Balancing weight



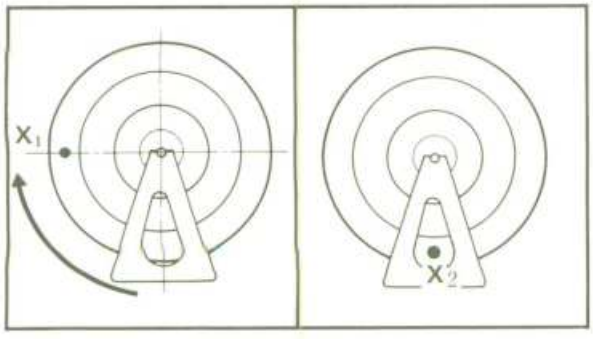
2. Set the wheel on a suitable stand.
3. Find:
   - Heavy spot

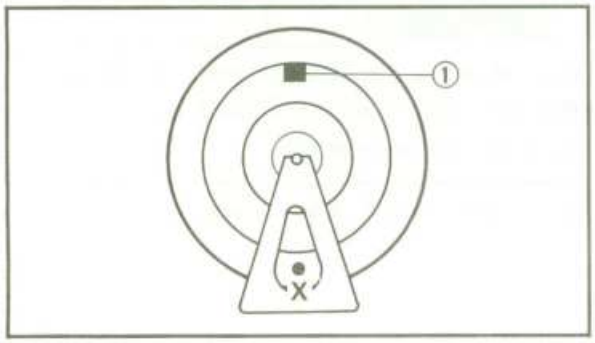
* *

Procedure:

a. Spin the wheel and wait for it to rest.
b. Put an "X_1" mark on the wheel bottom spot.
c. Turn the wheel so that the "X_1" mark is 90° up.
d. Let the wheel fall and wait for it to rest. Put an "X_2" mark on the wheel bottom spot.
e. Repeat the above b., c., and d. several times until these marks come to the same spot.
f. This spot is the heavy spot "X".

* *





4. Adjust:
   - Wheel balance

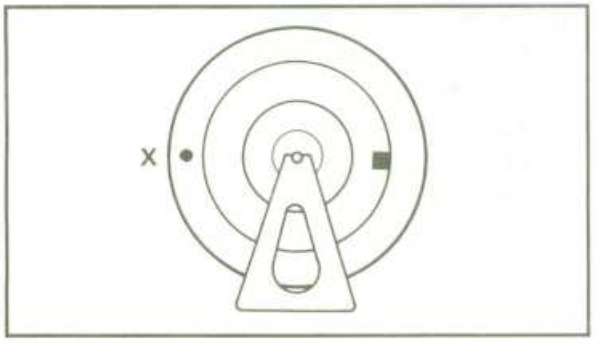
* *

Adjusting steps:

- Install a balancing weight ① on the rim 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.

* *



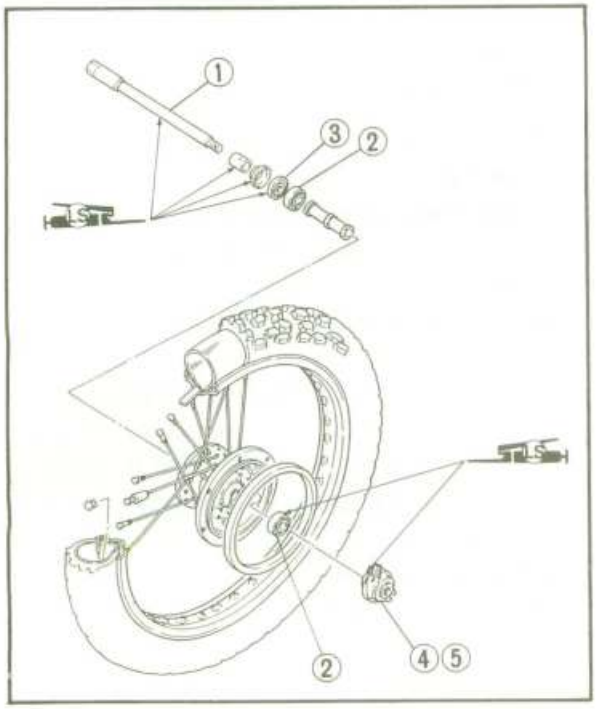
5. Check:
   - Wheel balance

* *

Checking steps:

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

* *



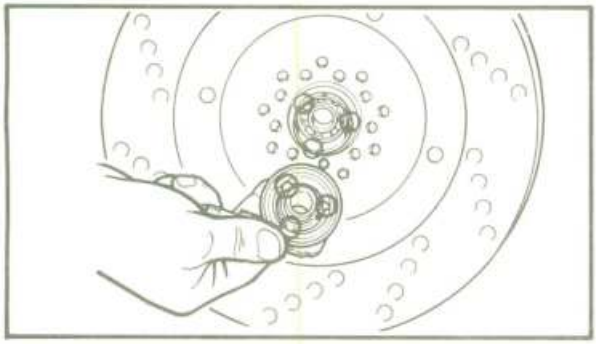
INSTALLATION

Reverse the "Removal" procedure.

Note the following points.

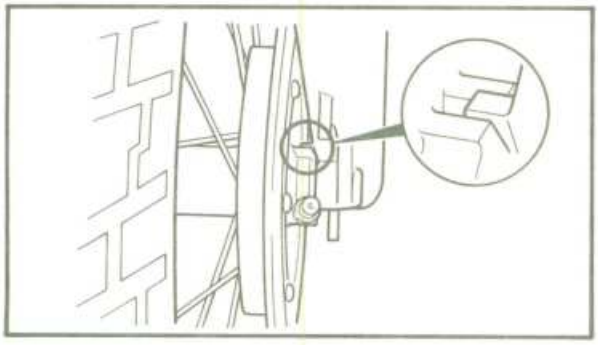
1. Lubricate:
   - Wheel axle ①
   - Bearings ②
   - Oil seal (lip)③
   - Drive ④/Driven gear ⑤ (speedometer)

Lithium soap base grease



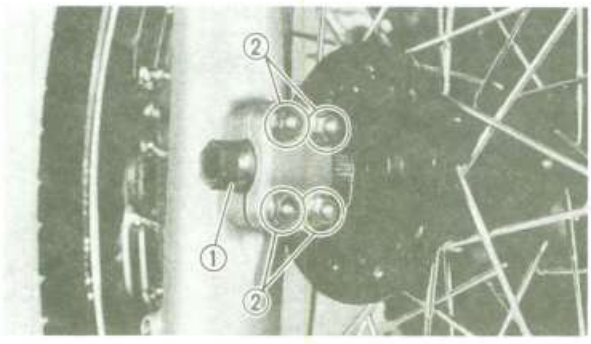
2. Install:
   - Gear unit assembly

NOTE:
Make sure the projections on the meter clutch are meshed with the flats in the wheel hub.



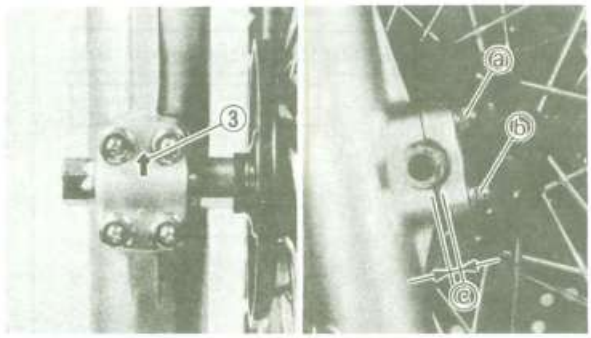
3. Install:
   - Front wheel assembly

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



4. Tighten:
   - Wheel axle ①
   - Nut (axle holder) ②

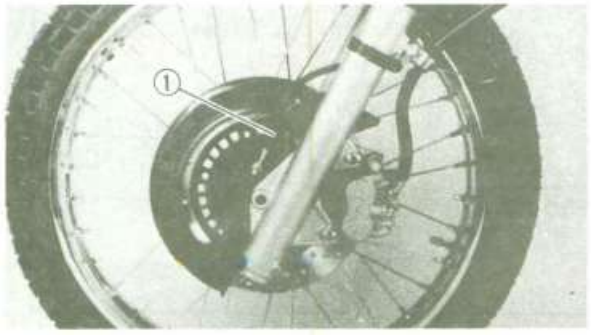
Wheel axle:
58 Nm (5.8 m·kg, 42 ft·lb)
Nut (axle holder):
9 Nm (0.9 m·kg, 6.5 ft·lb)



NOTE:
The axle holder should be installed with the arrow mark ③ facing upward.

CAUTION:
First tighten the nuts on the upper side ⓐ of the axle holder, and then tighten the nuts on the lower side ⓑ.

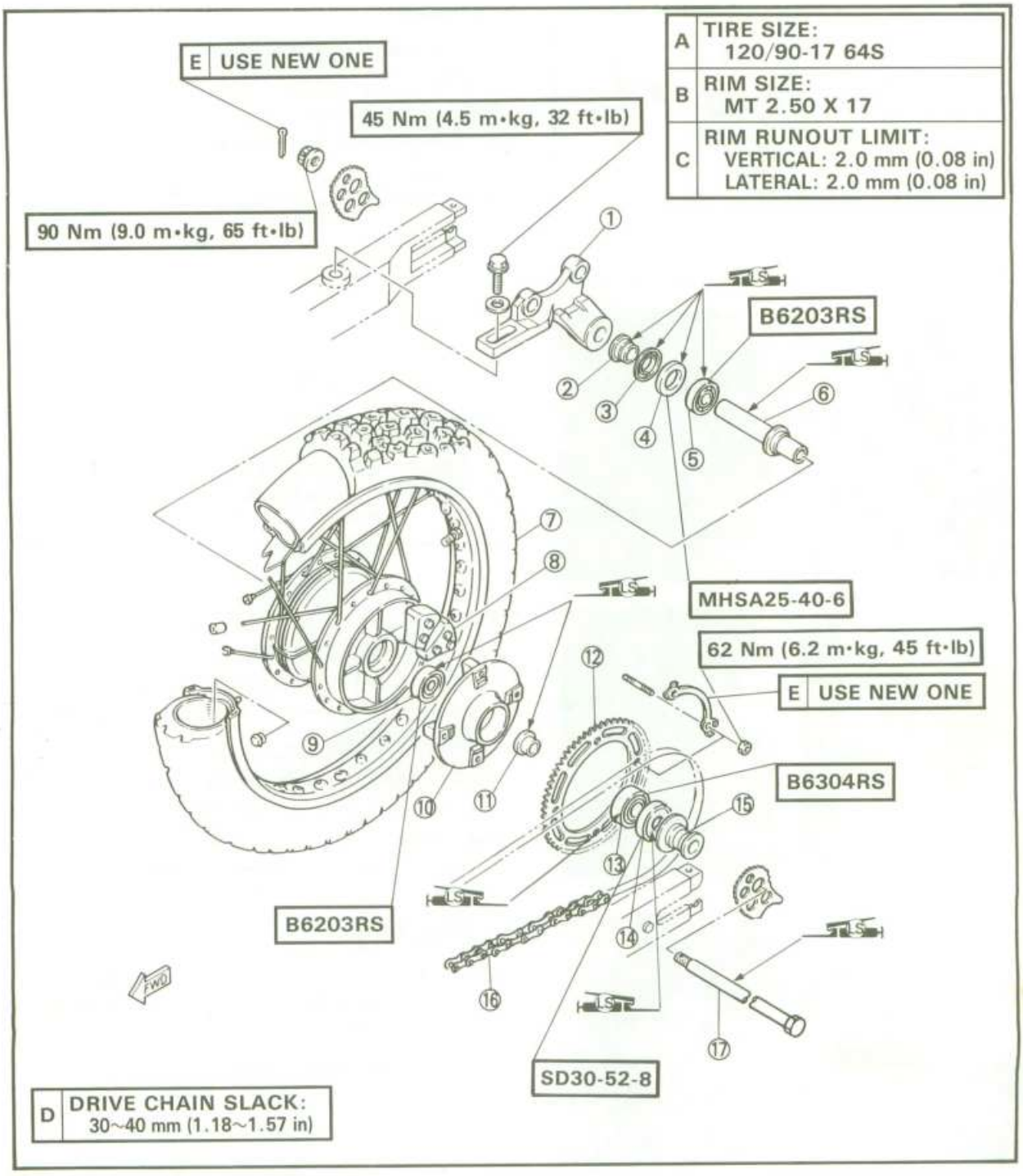
ⓒ Space



CAUTION:
Make sure that the speedometer cable ① are routed properly. Refer to the "CABLE ROUTING" in the CHAPTER 3.

REAR WHEEL

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

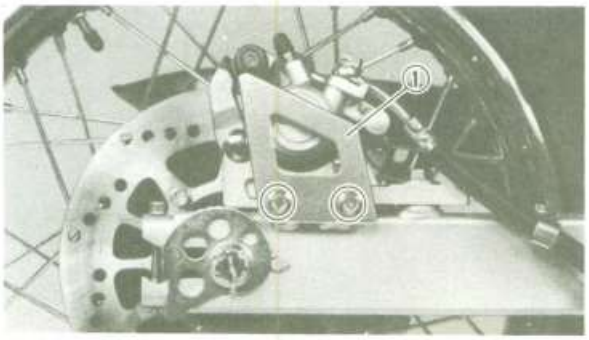


REMOVAL

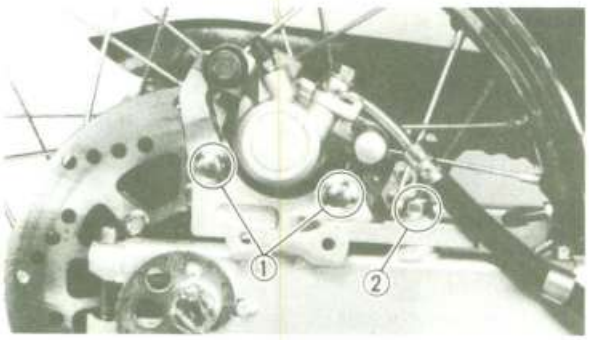
⚠ WARNING

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

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



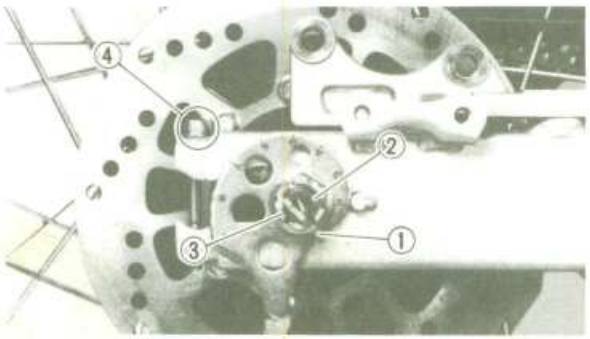
3. Remove:
   - Caliper protector



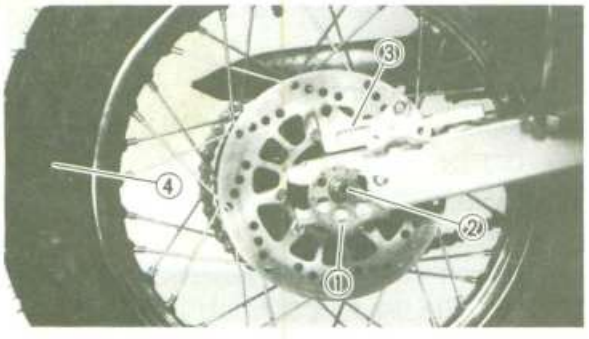
4. Remove:
   - Bolt ① (brake caliper)
   - Bolt ② (caliper bracket)

NOTE:

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



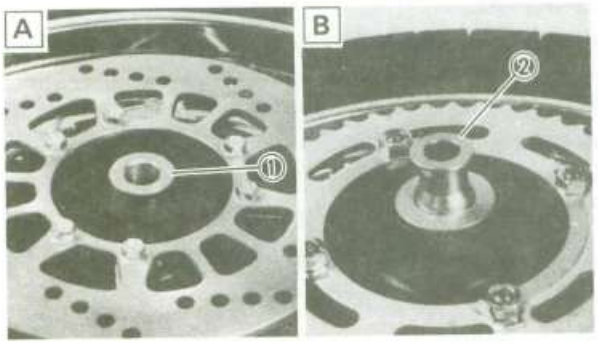
5. Remove:
   - Cotter pin ①
   - Bolt ②
   - Axle nut ③
   - Bolt ④ (swingarm end)



6. Remove:
   - Chain pullers ①
   - Wheel axle ②
   - Caliper bracket ③
   - Rear wheel ④

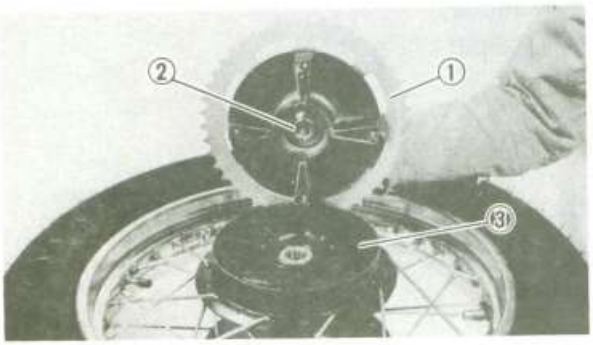
NOTE:

Before removing the rear wheel, *push the* wheel forward and remove the driven chain.



7. Remove:
   - Collar ①
   - Collar ②

A Right side
B Left side



8. Remove:
   - Driven sprocket assembly ①
   - Collar ②
   - Damper rubber ③

INSPECTION

1. Inspect:
   - Wheel axle

   Refer to the "FRONT WHEEL – INSPECTION" section.
2. Inspect:
   - Tire
   - Wheel
   - Damper rubber

   Refer to the "FRONT WHEEL – INSPECTION" section.
3. Inspect:
   - Spoke(s)

   Refer to the "FRONT WHEEL – INSPECTION" section.
4. Measure:
   - Wheel runout

   Refer to the "FRONT WHEEL – INSPECTION" section.
5. Check:
   - Oil seals
   - Wheel bearings

   Refer to the "FRONT WHEEL – INSPECTION" section.
6. Check:
   - Wheel balance

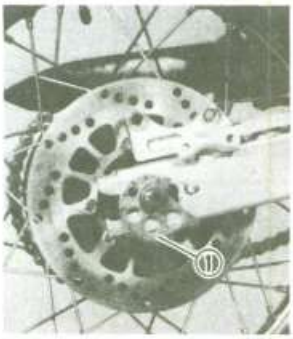
   Refer to the "FRONT WHEEL – STATIC WHEEL BALANCE ADJUSTMENT" section.

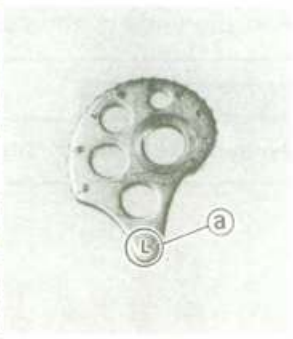
INSTALLATION

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

1. Lubricate:
   - Wheel axle
   - Bearings
   - Oil seals (lip)

Lithium soap base grease





2. Install the chain pullers ① so that the "L" mark ⓐ should be on the left side and the "R" mark on the right side.

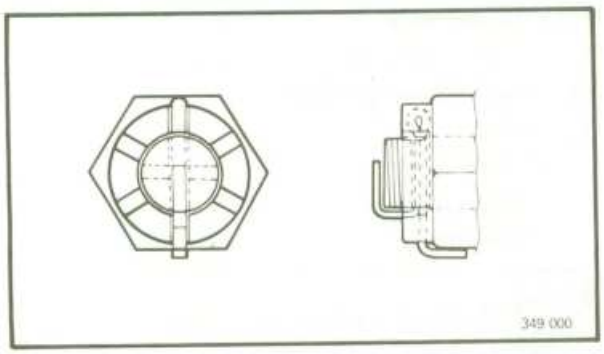
3. Adjust:
   - Drive chain slack

Drive chain slack:
30 ~ 40 mm (1.18 ~ 1.57 in)

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

4. Tighten:
   - Axle nut
   - Bolt (swingarm end)
   - Bolt (caliper bracket)
   - Bolt (brake caliper)

Axle nut:
90 Nm (9.0 m·kg, 65 ft·lb)
Bolt (swingarm end):
3 Nm (0.3 m·kg, 2.2 ft·lb)
Bolt (caliper bracket):
45 Nm (4.5 m·kg, 32 ft·lb)
Bolt (brake caliper):
35 Nm (3.5 m·kg, 25 ft·lb)



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.

5. Install:
   - Cotter pin

NOTE:

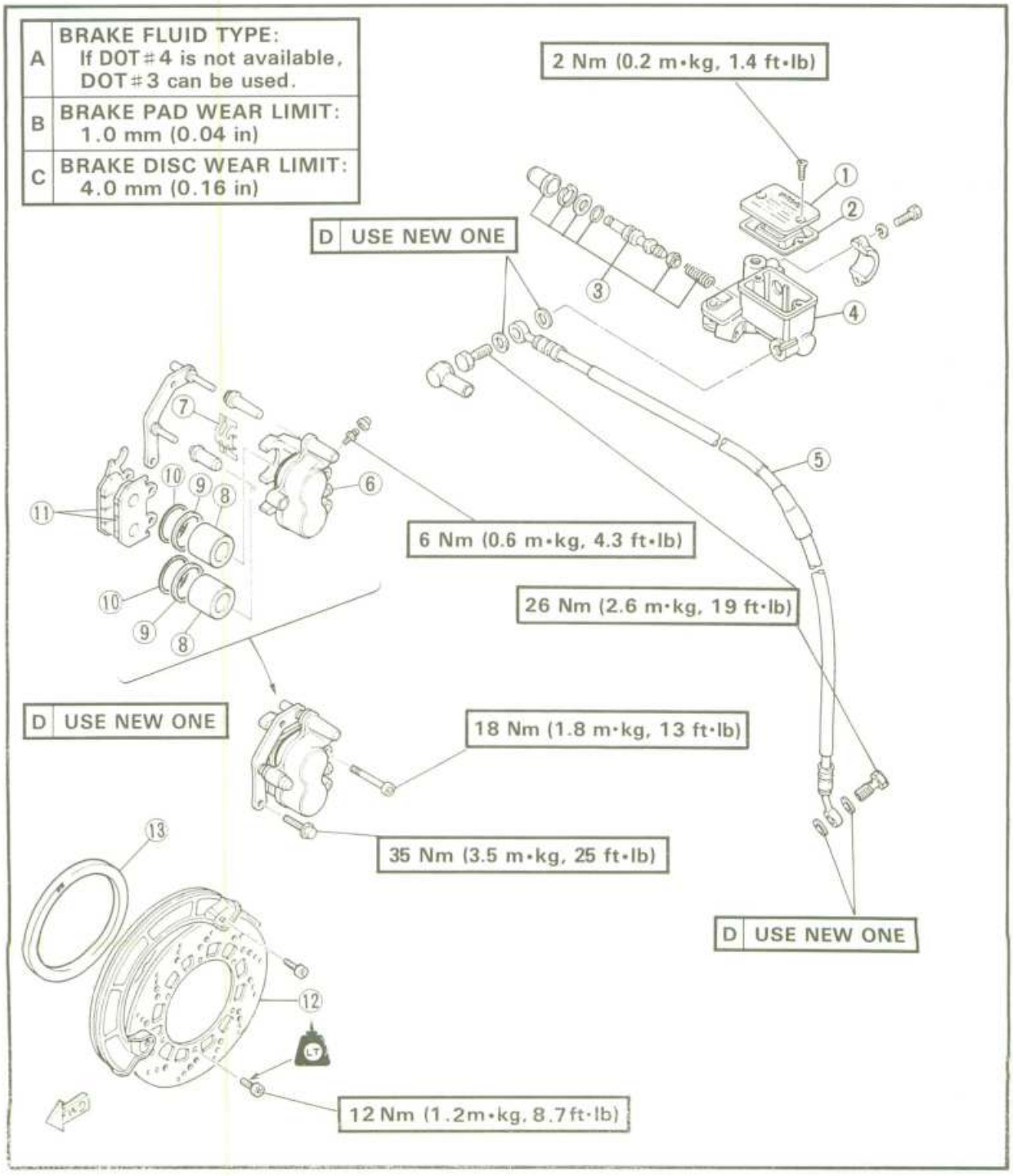
Bend the ends of the cotter pin as illustration.

⚠ WARNING

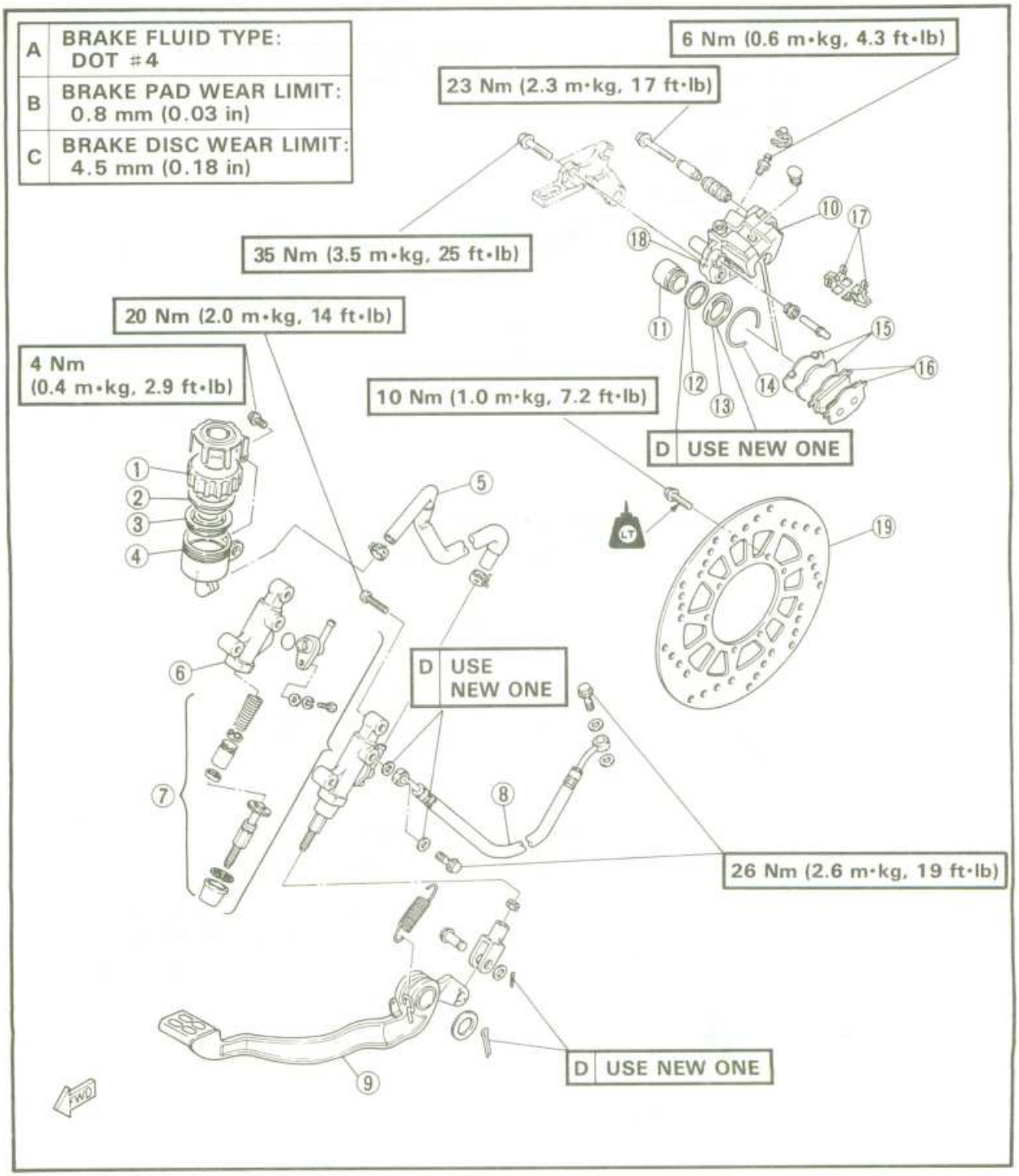
Always use a new cotter pin.

FRONT AND REAR BRAKE

① Master cylinder cap
② Diaphragm
③ Master cylinder kit
④ Master cylinder
⑤ Brake hose
⑥ Brake caliper
⑦ Pad spring
⑧ Piston
⑨ Piston seal
⑩ Dust seal
⑪ Brake pads
⑫ Brake disc
⑬ Damper rubber



① Reservoir tank cap
② Bush
③ Diaphragm
④ Reservoir tank
⑤ Reservoir hose
⑥ Master cylinder
⑦ Master cylinder kit
⑧ Brake hose
⑨ Brake pedal
⑩ Brake caliper
⑪ Piston
⑫ Piston seal
⑬ Dust boot
⑭ Ring (dust boot)
⑮ Shim
⑯ Brake pads
⑰ Pad springs
⑱ Mounting support
⑲ Brake disc



CAUTION:

Disc brake components rarely require disassembly. DO NOT:

- **Disassembly components unless absolutely necessary.**
- **Use solvents on internal brake component.**
- **Use contaminated brake fluid for cleaning. Use only clean brake fluid.**

- **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 disassembly, drained, cleaned, and then properly filled and bled after reassembly.**

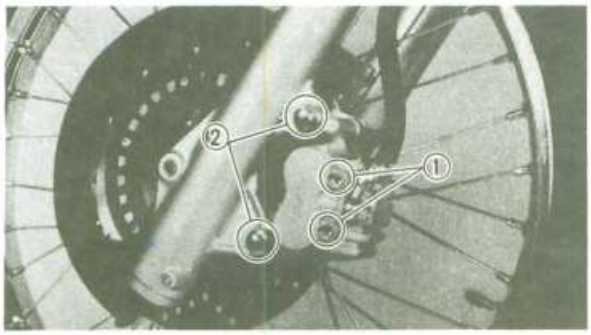
BRAKE PAD REPLACEMENT

NOTE:

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

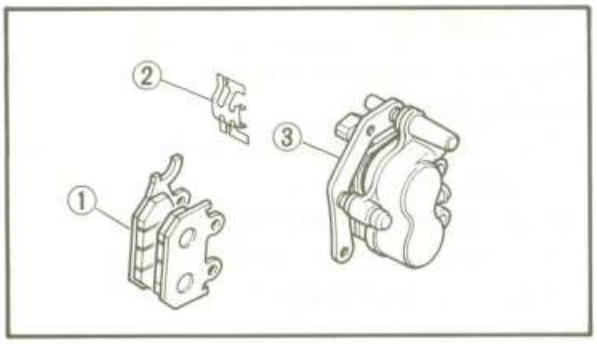
⚠ WARNING

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

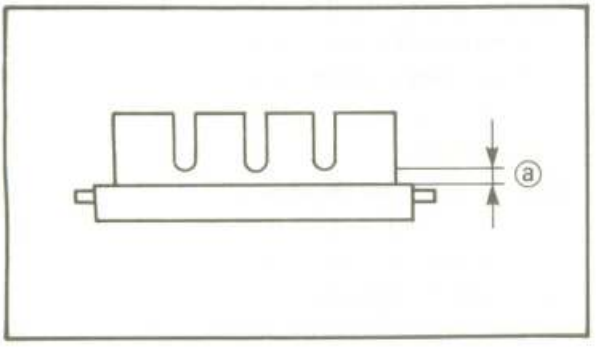


Front Brake

1. Loosen:
   - Retaining bolts ①
2. Remove:
   - Bolts (caliper body)②
   - Retaining bolts ①

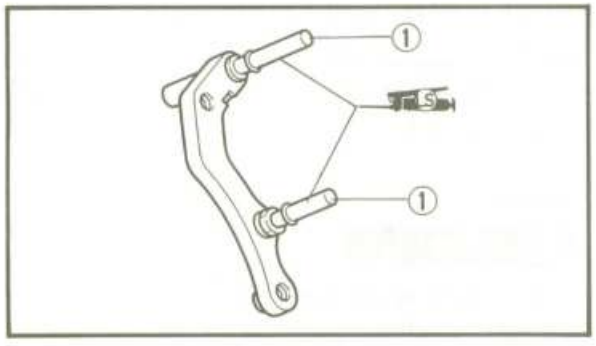


3. Remove:
   - Brake pads ①
   - Pad spring ②
   - Caliper bracket ③



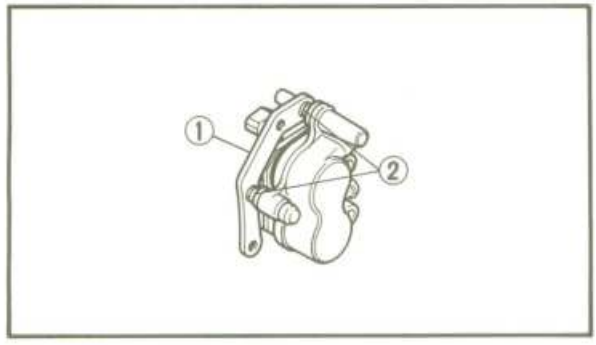
NOTE:
- Replace the pad spring if the pad replacement is required.
- Replace the pads as a set if either is found to be worn to the wear limit.

Wear limit ⓐ :
1.0 mm (0.04 in)



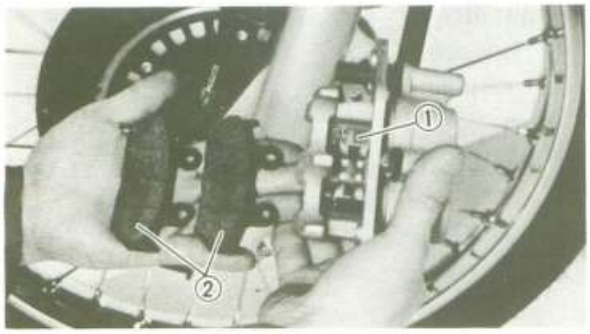
4. Lubricate:
   - Guide pins ①

Lithium soap base grease

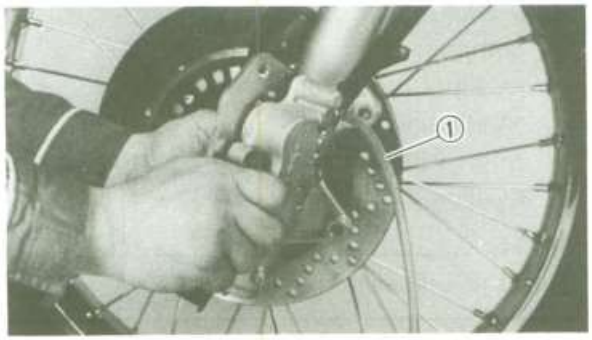


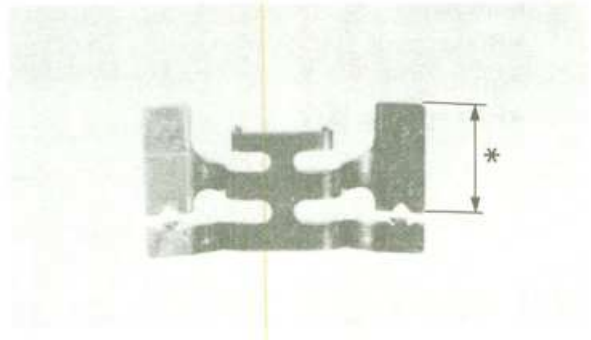
5. Install:
   - Caliper bracket ① (to caliper body)

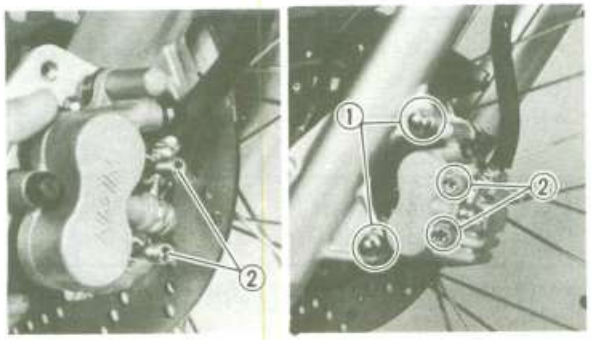
NOTE:
Place the rubber boot ② securely in the groove of guide pin when installing the caliper body.



6. Install:
   - Pad spring ① (new)
   - Brake pad assembly ② (new)









* *

Installation steps:

- Connect a suitable hose ① tightly to the caliper bleedscrew. Then, place the other end of this hose into an open container.
- Loosen the caliper bleed screw and push the piston into the caliper by your finger.
- Tighten the caliper bleed screw.

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

- Install the pad spring (new) and brake pad assembly (new).

NOTE:

The longer tangs (*) of the pad spring must point in the outside direction.

* *

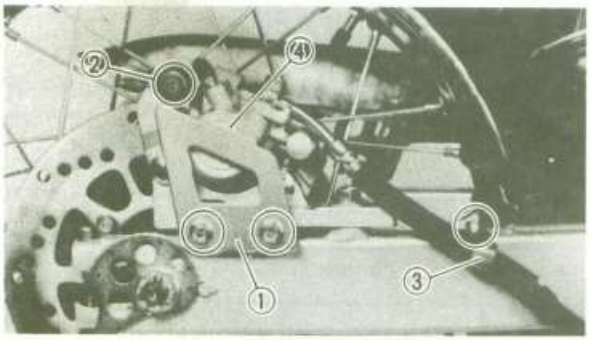
7. Install:
   - Retaining bolts ②
8. Install:
   - Bolts (caliper body) ①
9. Tighten:
   - Bolts (caliper body) ①
   - Retaining bolts ②

Bolt (caliper body):
35 Nm (3.5 m·kg, 25 ft·lb)
Retaining bolt:
18 Nm (1.8 m·kg, 13 ft·lb)

10. Inspect:
    - Brake fluid level
      Refer to the"BRAKE FLUID INSPECTION" section in the CHAPTER 3.

① "LOWER" level line

11. Check:
    - Brake lever operation
      A softy or spongy filling → Bleed brake system.
      Refer to the "AIR BLEEDING" section in the CHAPTER 3.

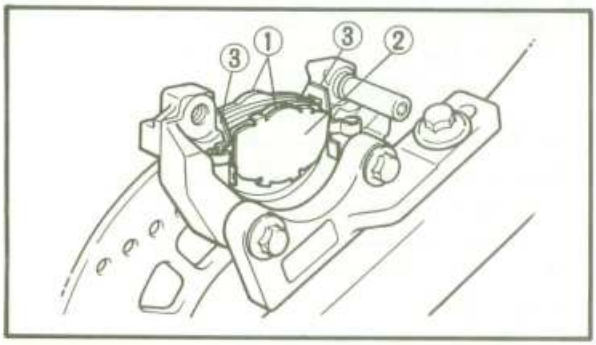


Rear Brake

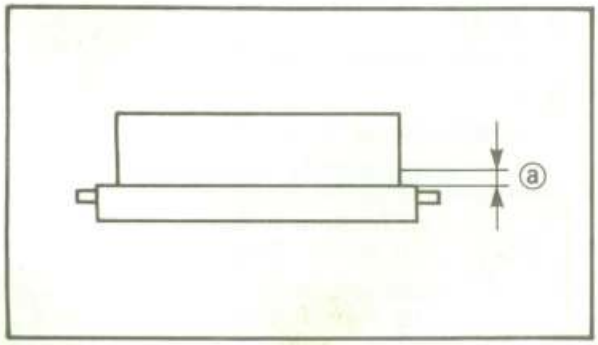
1. Remove:
   - Caliper protecter ①
   - Retaining bolt ②
   - Bolt (brake hose clamp) ③
   - Caliper body ④

NOTE:

Turn the caliper body clockwise.



2. Remove:
   - Brake pads ①
   - Shim ②
   - Pad springs ③

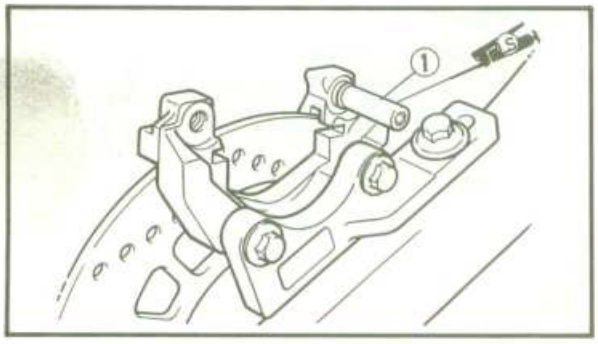


NOTE:

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

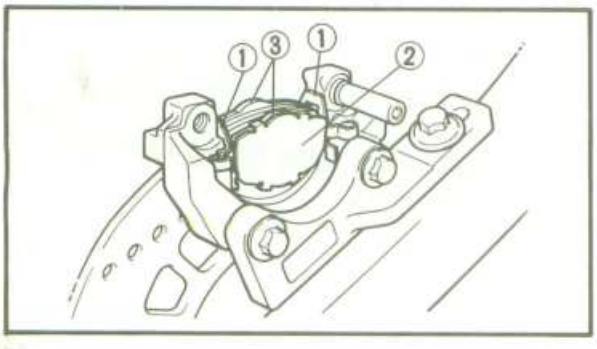
	Wear limit ⓐ : **0.8 mm (0.03 in)**

- Replace the pad shim if the pad replacement is required.

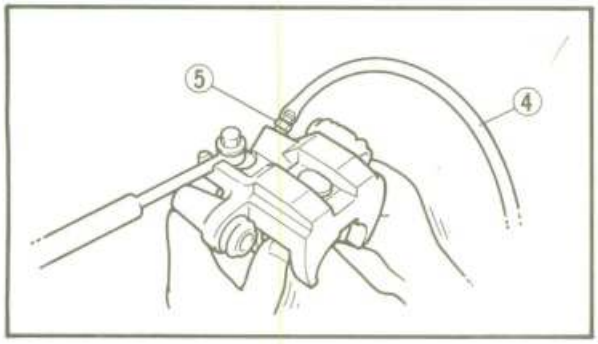


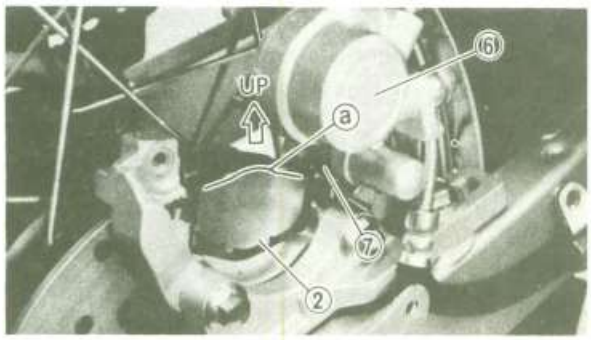
3. Lubricate:
   - Guide pin ①

	Lithium soap base grease



4. Install:
   - Pad springs ①
   - Shim ②
   - Brake pads ③
   - Caliper body





* *

Installation steps:

- Connect a suitable hose ④ tightly to the caliper bleed screw ⑤. Then, place the other end of this hose into an open container.
- Loosen the caliper bleed screw and push the piston into the caliper by your finger.
- Tighten the caliper bleed screw.

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

- Install the pad shim (new) ② to the piston side brake pad.
- Install the pad springs (new) and brake pads (new).

NOTE:

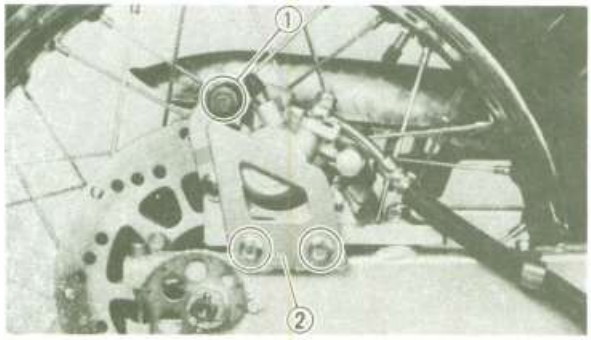
Be sure to position the pad so that its round side ⓐ is upward.

- Install the caliper body ⑥.

NOTE:

Place the rubber boot ⑦ securely in the groove of guide pin when installing the caliper body.

* *



5. Install:
   - Retaining bolt ①

Retaining bolt:
23 Nm (2.3 m·kg, 17 ft·lb)

6. Install:
   - Caliper protector ②



7. Inspect:
   - Brake fluid level
     Refer to the "BRAKE FLUID INSPECTION" section in the CHAPTER 3.

① "LOWER" level line

8. Check:
   - Brake pedal operation
     A softy or spongy filling → Bleed brake system.
     Refer to "AIR BLEEDING" section in the CHAPTER 3.

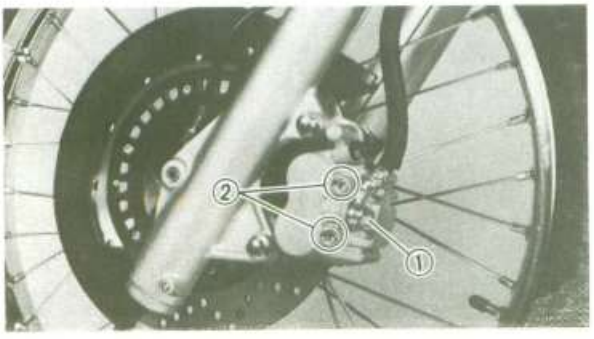
CALIPER DISASSEMBLY

NOTE:

Before disassembling the front brake caliper or rear brake caliper, drain the brake system of its brake fluid.

⚠ WARNING

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



Front Brake

1. Loosen:
   - Union bolt ①

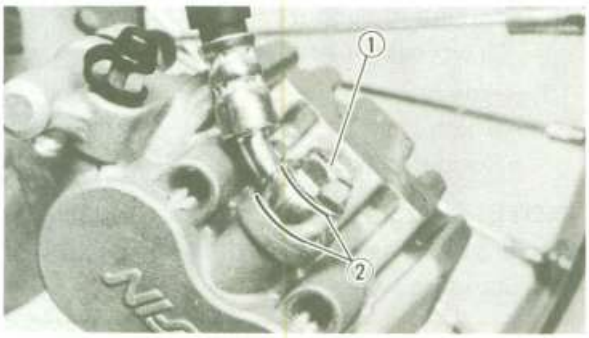
NOTE:

Loosen slightly so that brake fluid does not leak out.

   - Retaining bolts ②

2. Remove:
   - Bolts (caliper body)
   - Retaining bolts
   - Brake pads
   - Pad spring

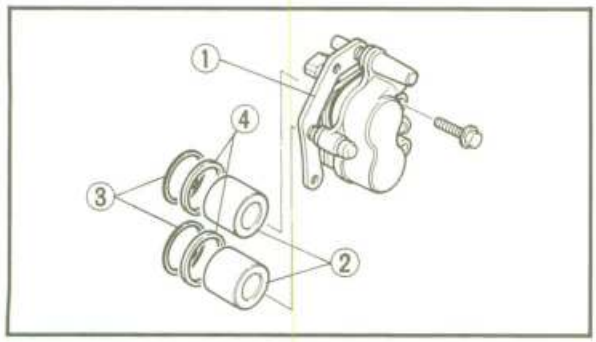
   Refer to the "BRAKE PAD REPLACEMENT" section.



3. Remove:
   - Union bolt ①
   - Copper washers ②

NOTE:

Place the container under the caliper to catch the standing brake fluid.



4. Remove:
   - Caliper bracket ①
   - Piston ②
   - Dust seal ③
   - Piston seal ④

* *

Remove steps:

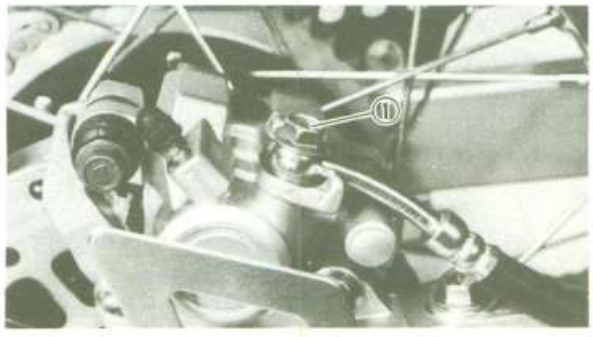
- Blow compressed air into the tube joint opening to force out the piston from the caliper body.

⚠WARNING

- **Never try to pry out the piston.**
- **Cover the piston with a rag. Use care so that piston does not cause injury as it is expelled from the cylinder.**

* *





Rear Brake

1. Loosen:
   - Union bolt ①

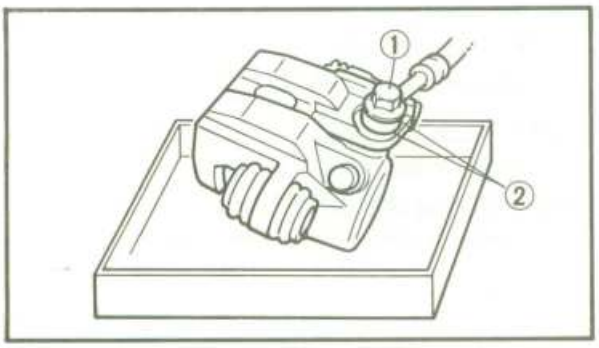
NOTE:

Loosen slightly so that brake fluid does not leak out.

2. Remove:
   - Caliper protector
   - Bolt (brake hose cramp)
   - Retaining bolt
   - Caliper body
   - Brake pads
   - Shim
   - Pad springs

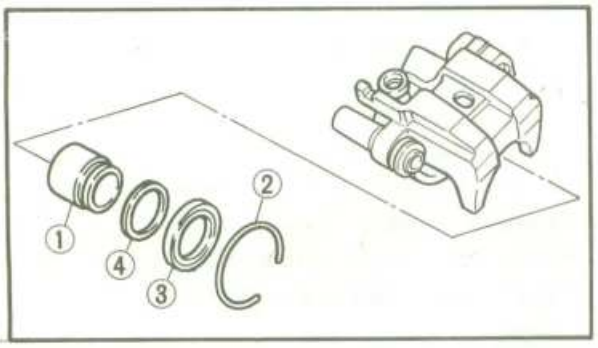
   Refer to the "BRAKE PAD REPLACEMENT" section.
   - Mounting support (from caliper bracket)

3. Remove:
   - Union bolt ①
   - Copper washers ②



NOTE:

Place the container under the caliper to catch the standing brake fluid.



4. Remove:
   - Piston ①
   - Ring ② (dust boot)
   - Dust boot ③
   - Piston seal ④

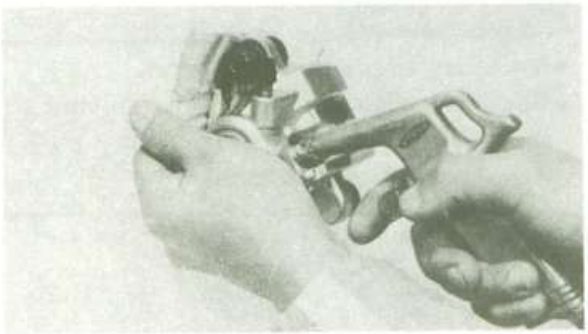
NOTE:

Remove the piston, and then the ring (dust boot) and dust boot.

* *

Removal steps:

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



⚠ WARNING

- **Never try to pry out the piston.**
- **Cover the piston with a rag. Use care so that piston does not cause injury as it is expelled from the cylinder.**

* *

5. Remove:
   - Caliper bracket

   Refer to the "REAR WHEEL-REMOVAL" section.

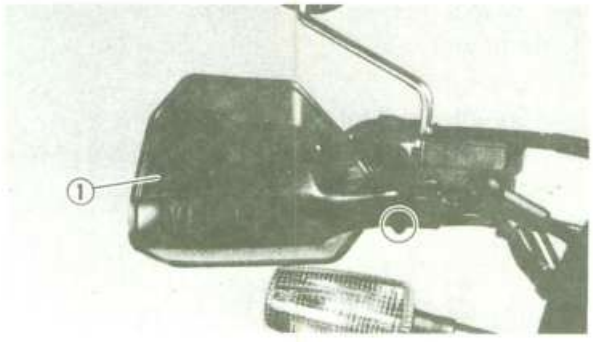
MASTER CYLINDER DISASSEMBLY

NOTE:

Before disassembling the front or rear brake master cylinders, drain the brake system of the brake fluid.

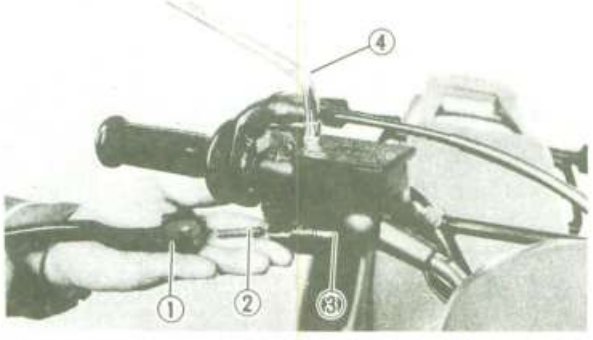
⚠WARNING

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



Front Brake

1. Remove:
   - Protecter (right) ①



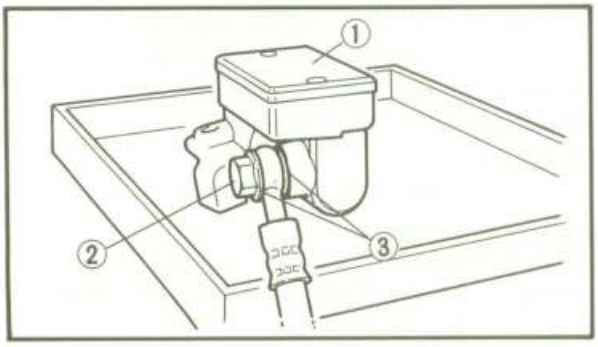
2. Remove:
   - Brake lever ①
   - Return spring ② (brake lever)
   - Brake switch ③
   - Mirror ④ (right)



3. Loosen:
   - Union bolt ①

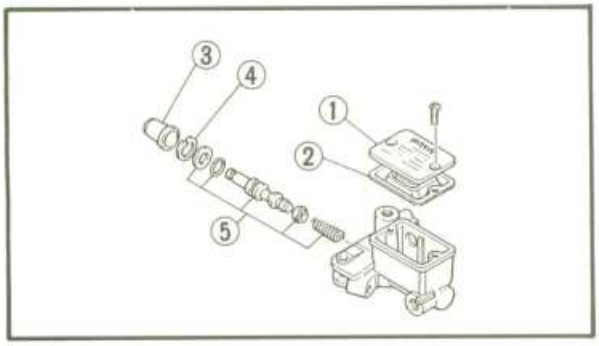
NOTE:

Loosen slightly so that brake fluid does not leak out.



4. Remove:
   - Master cylinder ①
   - Union bolt ②
   - Copper washer ③

NOTE:
Place a container under the master cylinder to catch the standing brake fluid.



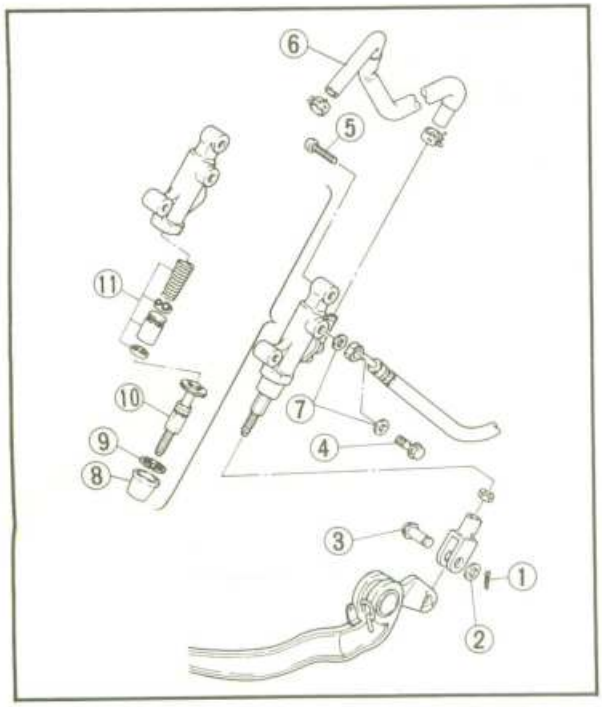
5. Remove:
   - Cap (master cylinder) ①
   - Diaphragm ②
   - Dust boot ③
   - Circlip ④
   - Master cylinder kit ⑤

NOTE:
Place a container under the master cylinder to catch the standing brake fluid

Rear Brake

1. Remove:
   - Seat
   - Side cover (right)

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



2. Remove:
   - Cotter pin ①
   - Plain washer ②
   - Pin ③

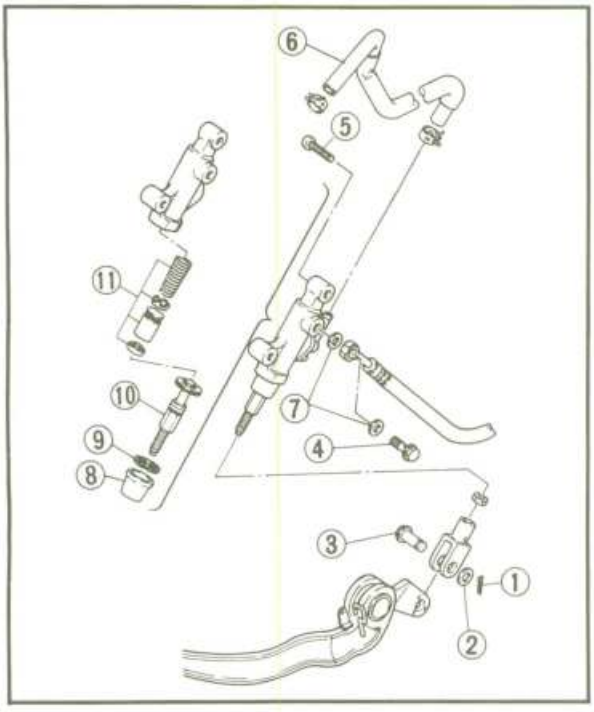
3. Loosen:
   - Union bolt ④

NOTE:
Loosen slightly so that brake fluid does not leak out.

4. Remove:
   - Bolts (master cylinder) ⑤

5. Remove:
   - Union bolt ④
   - Copper washers ⑦

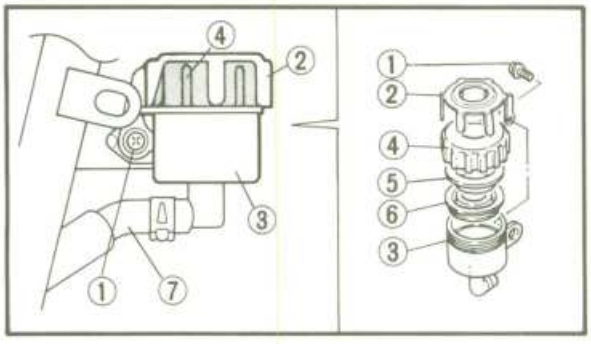
NOTE:
Place the container under the master cylinder to catch the standing brake fluid.



6. Disconnect:
   - Reservoir hose ⑥
     (from master cylinder)

NOTE:
Place the container under the reservoir hose to catch the standing brake fluid.

7. Remove:
   - Dust boot ⑧
   - Circlip ⑨
   - Adjusting rod ⑩
   - Master cylinder kit ⑪



8. Remove:
   - Screw ①
   - Cap cover ②
   - Reservoir tank ③
   - Cap ④
   - Holder ⑤
   - Diaphragm ⑥

NOTE:
Place the container under the reservoir tank to catch the standing brake fluid.

9. Disconnect:
   - Reservoir tank hose ⑦
     (from reservoir tank)

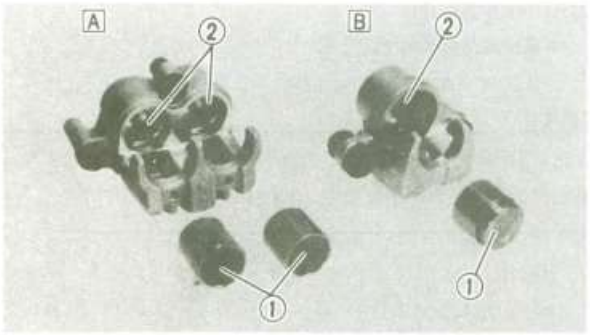
INSPECTION AND REPAIR

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.

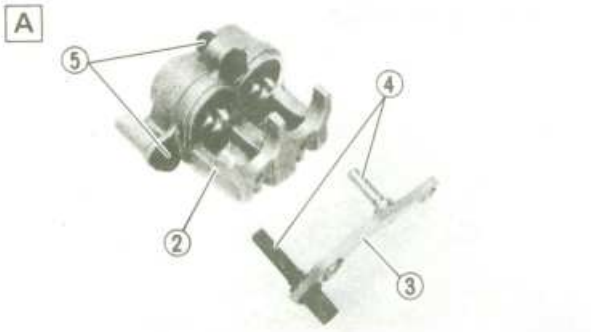
⚠ WARNING

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

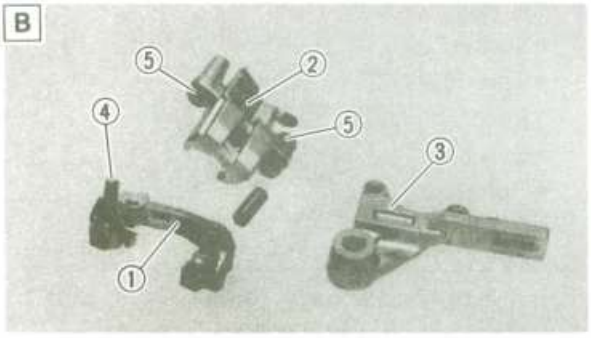


1. Inspect:
   - Caliper piston ①
     Scratches/Rust/Wear → Replace caliper assembly.
   - Caliper cylinder ②
     Wear/Scratches → Replace caliper assembly.

A Front
B Rear



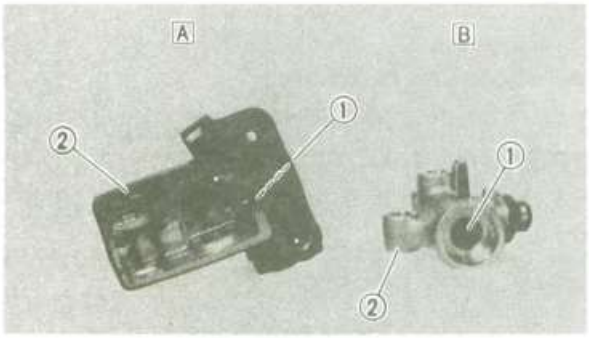
2. Inspect:
   - Mounting support (caliper body) ①
   - Caliper body ②
     Cracks/Damage → Replace.
   - Caliper bracket ③
     Cracks/Damage → Replace.
   - Guide pin ④
     Rust/Damage → Replace.
   - Rubber boots ⑤
     Cracks/Wear/Damage → Replace.
   - Oil delivery passage (caliper body)
     Blow out with compressed air.



⚠ WARNING

Replace the piston seal and dust boot whenever a caliper is disassembled.

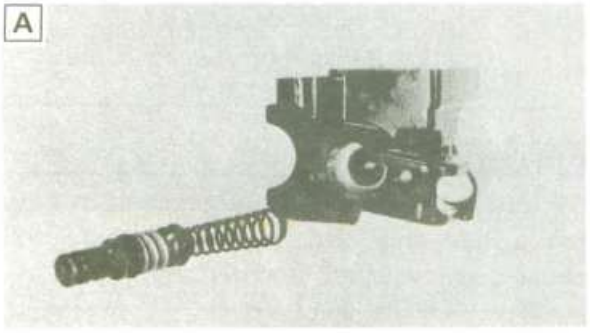
A Front
B Rear



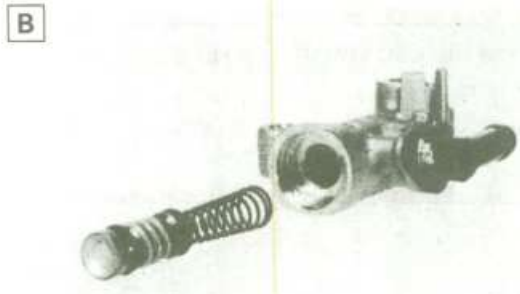
3. Inspect:
   - Master cylinder ①
     Wear/Scratches → Replace master cylinder assembly.
   - Master cylinder body ②
     Cracks/Damage → Replace.
   - Oil delivery passage (master cylinder body) Blow out with compressed air.

A Front
B Rear

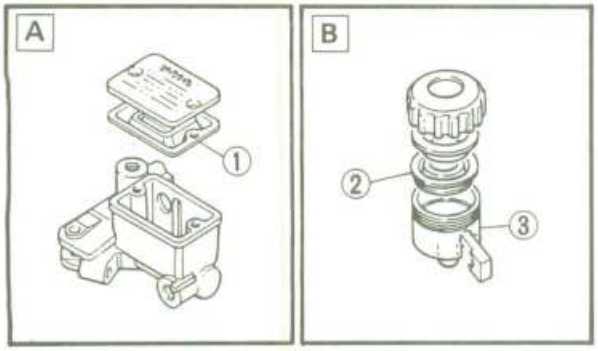
4. Inspect:
   - Master cylinder kit
     Scratches/Wear/Damage → Replace as a set.



A Front brake

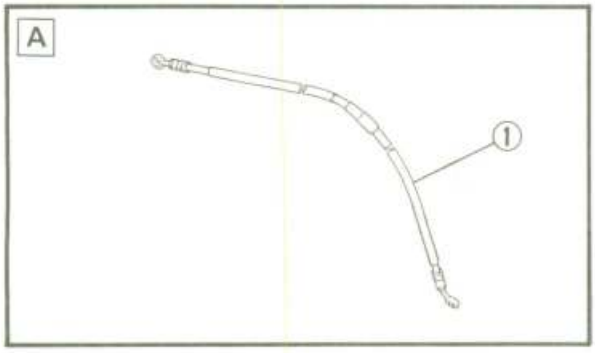


B Rear brake

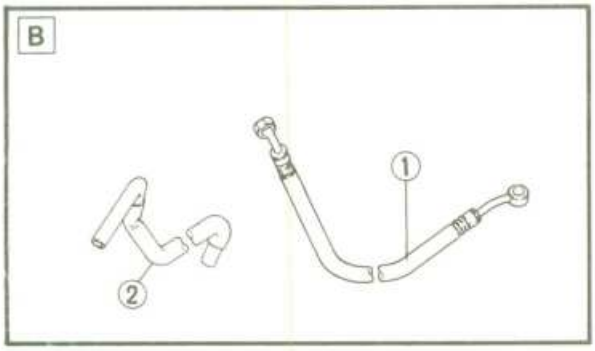


5. Inspect:
   - Diaphragm (front) ①
   - Diaphragm (rear) ②
     Wear/Damage → Replace.
   - Reservoir tank ③
     Cracks/Damage → Replace.

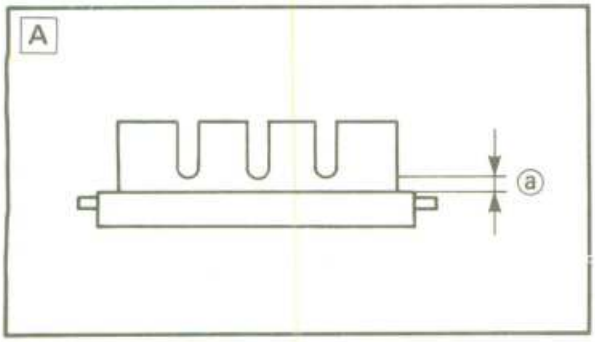
A Front
B Rear



6. Inspect:
   - Brake hoses ①
   - Reservoir hose ②
     Cracks/Wear/Damage → Replace.

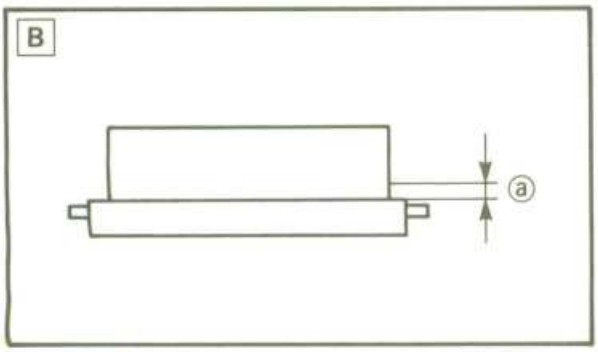


A Front
B Rear

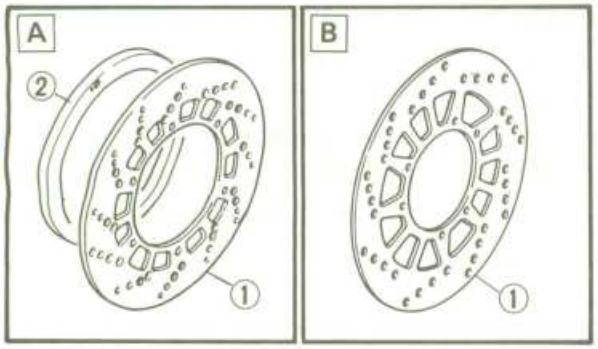


7. Measure:
   - Brake pad thickness
     Out of specification → Replace.

Pad wear limit ⓐ :
Front:
1.0 mm (0.04 in)
Rear:
0.8 mm (*0.03 in*)



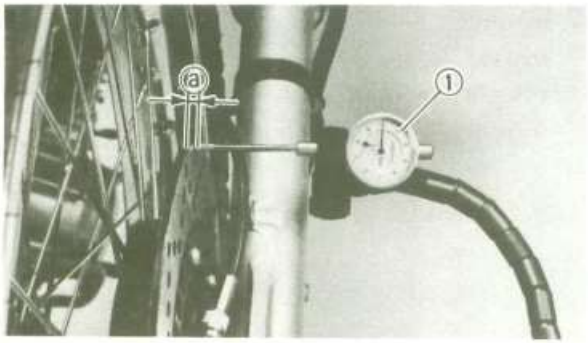
NOTE:
- Replace the pad spring as a set if pad replacement is required.
- Replace the pads as a set if either if found to be worn to the wear limit.



A Front
B Rear

8. Inspect:
   - Brake discs (front and rear) ①
     Galling/Damage → Replace.
   - Damper rubber ② (front)
     Cracks/Damage → Replace.
     Refer to the "FRONT WHEEL-INSPECTION" section.

A Front
B Rear



9. Measure:
   - Brake disc deflection
     Out of specification → Inspect wheel runout.
     If wheel runout is in good condition, replace the brake disc(s).

Maximum deflection:
0.15 mm (0.006 in)

- Brake disc thickness ⓐ
  Out of specification → Replace.

Minimum thickness ⓐ:
Front: 4.0 mm (0.16 in)
Rear: 4.5 mm (0.18 in)

① Dial gauge

NOTE:
Tighten the bolts (brake disk) in stage using a crisscross pattern.

Bolt (brake disk):
Front: 12 Nm (1.2 m·kg, 8.7 ft·lb)
Rear: 10 Nm (1.0 m·kg, 7.2 ft·lb)
LOCTITE ®

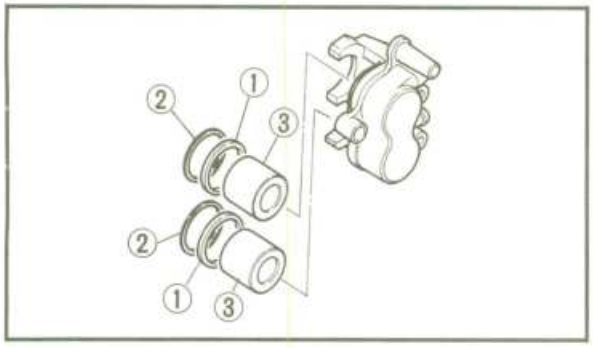
CALIPER ASSEMBLY

⚠ WARNING

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

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

- **Replace the piston seals whenever a caliper is disassembled.**

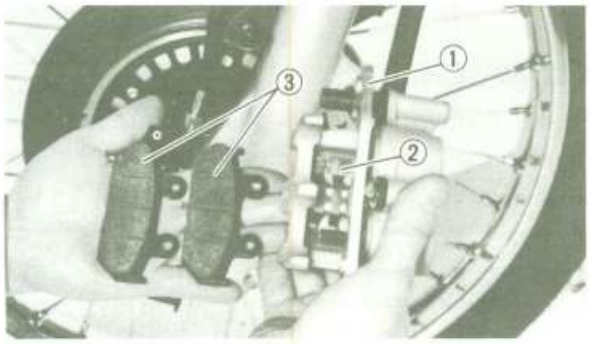


Front Brake

1. Install:
   - Piston seals ①
   - Dust seals ②
   - Pistons ③

⚠ WARNING

Always was new piston seal and dust seal.

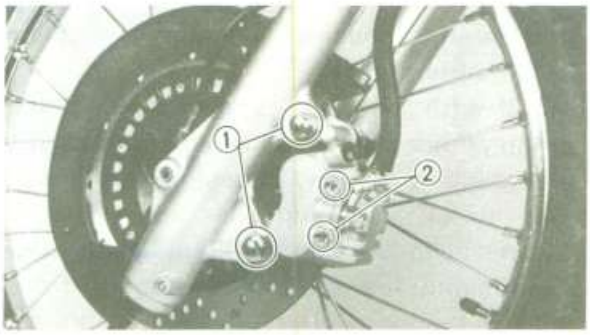


2. Install:
   - Caliper bracket ① (to the caliper body)
   - Pad spring ②
   - Brake pads ③
   - Retaining bolts

   Refer to the "BRAKE PAD REPLACEMENT" section.

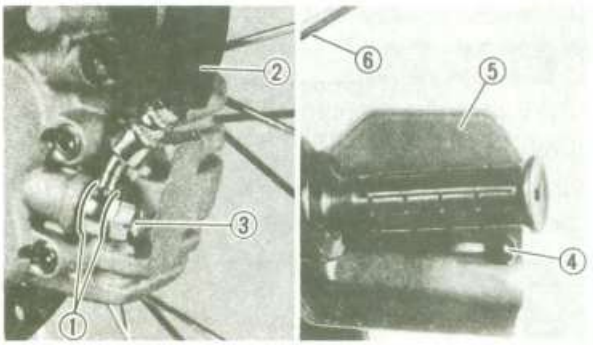
NOTE:

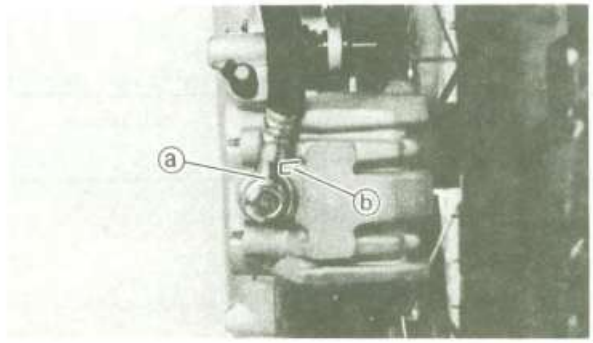
Place the rubber boot securely in the groove of guide pin when installing the caliper body.



3. Tighten:
   - Bolts ① (caliper body)
   - Retaining bolts ②

Bolt (caliper body):
35 Nm (3.5 m · kg, 25 ft · lb)
Retaining bolt:
18 Nm (1.8 m · kg, 13 ft · lb)





4. Install:
   - Copper washers ①
   - Brake hose ②
   - Union bolt ③
   - Brake lever ④
   - Protector (right) ⑤
   - Mirror (right) ⑥

Union bolt:
26 Nm (2.6 m·kg, 19 ft·lb)

CAUTION:

When installing the brake hose, lightly touch the pipe portion ⓐ of the brake hose with the projection ⓑ on brake caliper.

⚠ WARNING

- Proper hose routing is essential to insure safe motorcycle operation.
  Refer to the "CABLE ROUTING" in the CHARTER 2.
- Always use new copper washers.

5. Fill:
   - Brake fluid

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

CAUTION:

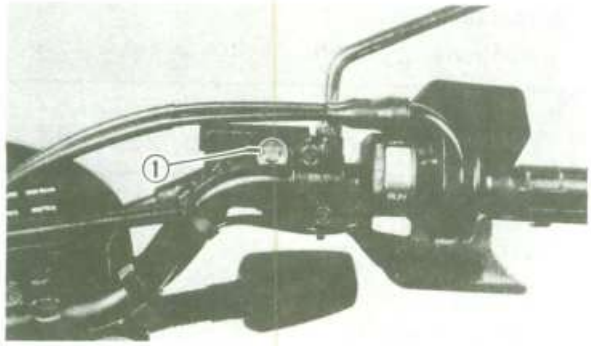
Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

⚠ WARNING

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

6. Air bleed:
   - Brake system

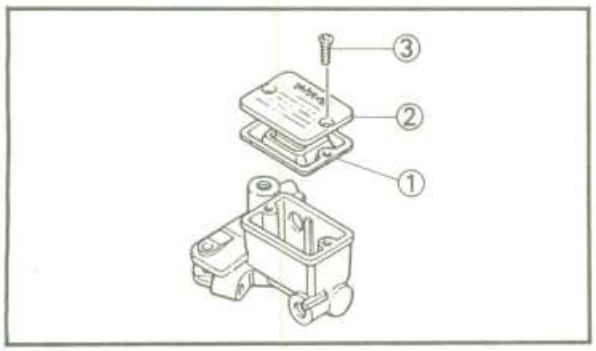
   Refer to the "AIR BLEEDING" section in the CHAPTER 3.



7. Inspect:
   - Brake fluid level

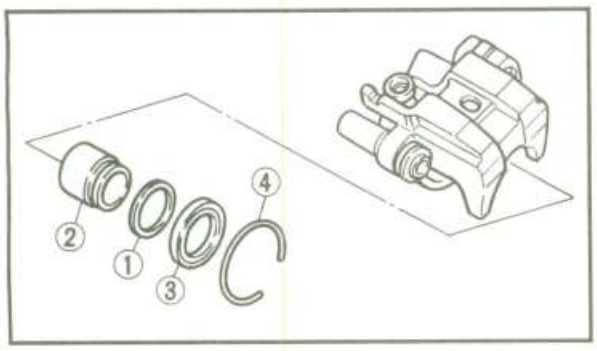
   Fluid level is under "LOWER" level line ① → Fill up.

   Refer to the "BRAKE FLUID INSPECTION" section in the CHAPTER 3.



8. Install:
   - Diaphragm ①
   - Master cylinder cap ②
   - Screws ③

	Screw (master cylinder cap): 2 Nm (0.2 m · kg, 1.4 ft · lb)



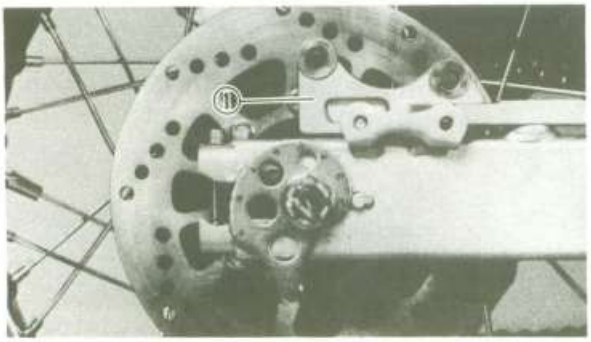
Rear Brake

1. Install:
   - Pistion seal ①
   - Piston ②
   - Rubber boot ③
   - Ring ④ (dust boot)

NOTE:

First, assemble the piston seal, then assemble the piston.

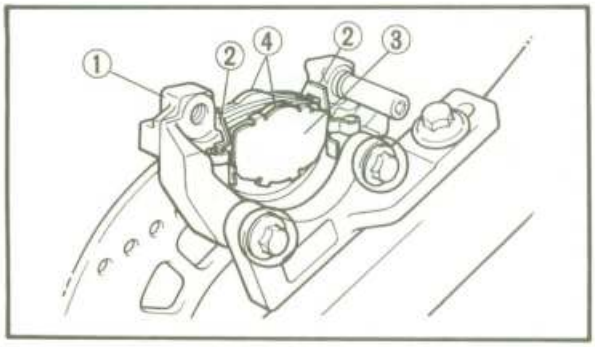
Stop when this is about half finished and attach the dust boot. Then, while moving the piston into position, attach the rubber boot to the main unit as well. Attach the ring (dust boot) last.



2. Install:
   - Caliper bracket ①
     Refer to the "REAR WHEEL INSTALLATION" section.

⚠ WARNING

Always use a new cotter pin of the rear axle nut.



3. Install:
   - Mounting support ① (to caliper bracket)

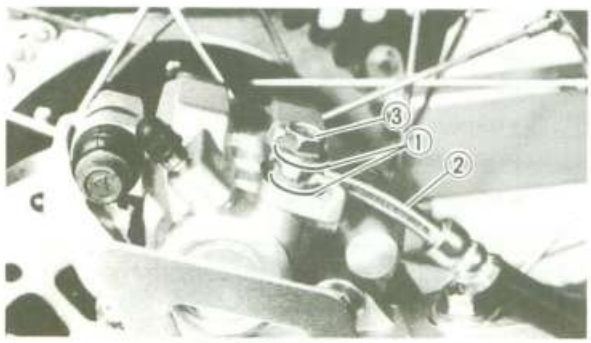
Bolt (mounting support):
35 Nm (3.5 m · kg, 25 ft · lb)

4. Install:
   - Pad springs ②
   - Shim ③ (to piston side pad)
   - Brake pads ④
   - Caliper body
   - Retaining bolt
   - Caliper protector

Retaining bolt:
23 Nm (2.3 m·kg, 17 ft·lb)

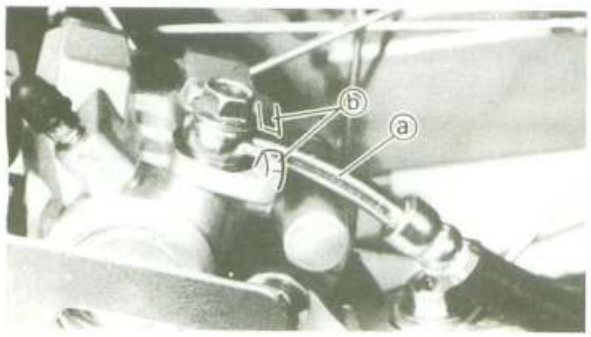
NOTE:

Place the rubber boot securely in the groove of guide pin when installing the caliper body.



5. Install:
   - Copper washers ①
   - Brake hose ②
   - Union bolt ③
   - Bolt (brake hose clamp)

Union bolt:
26 Nm (2.6 m·kg, 19 ft·lb)



CAUTION:

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

⚠ WARNING

- **Proper hose routing is essential to insure sare motorcycle operation.**
  Refer to the "CABLE ROUTING" in the CHARTER 2.
- **Always use new copper washers.**

6. Fill:
   - Brake fluid

Recommended Brake Fluid:
DOT #4

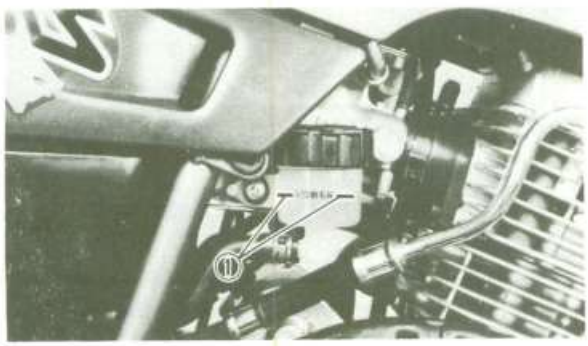
CAUTION:

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

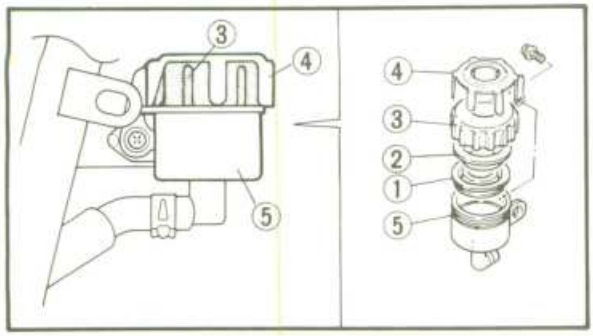
⚠ WARNING

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

7. Air bleed:
   - Brake system
     Refer to the "AIR BLEEDING" section in the CHAPTER 3.



8. Inspect:
   - Brake fluid level
     Fluid level is under "LOWER" level line ①
     → Fill up.
     Refer to the the "BRAKE FLUID INSPECTION" section in the CHAPTER 3.



9. Install:
   - Diaphragm ①
   - Holder (diaphragm) ②
   - Cap ③
   - Cap cover ④
   - Reservoir tank ⑤

Screw (reservoir tank):
4 Nm (0.4 m · kg, 2.9 ft·lb)

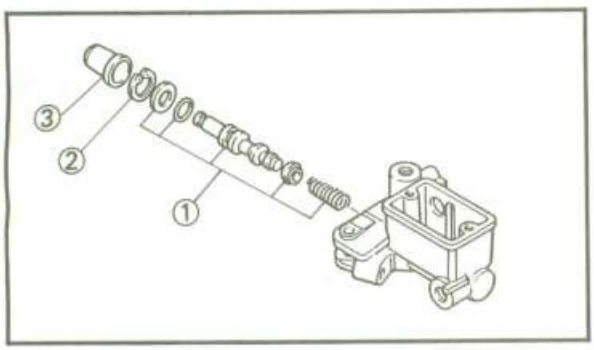
MASTER CYLINDER ASSEMBLY

⚠ WARNING

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

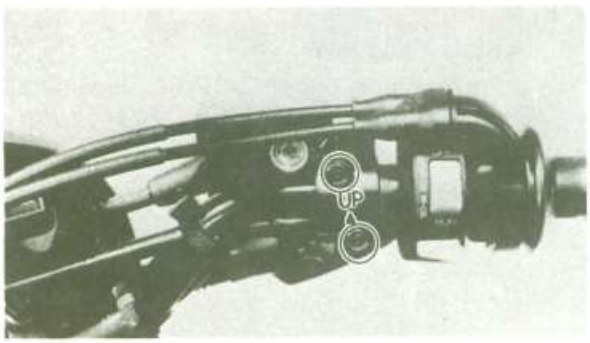
Brake Fluid:
Front Brake
If DOT #4 is not available, DOT #3 can be used.
Rear Brake
DOT #4

- **Replace the master cylinder kit whenever a caliper is disassembled.**



Front Brake

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

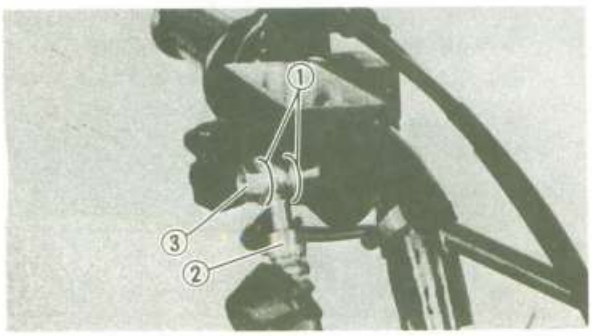


2. Install:
   - Master cylinder

NOTE:

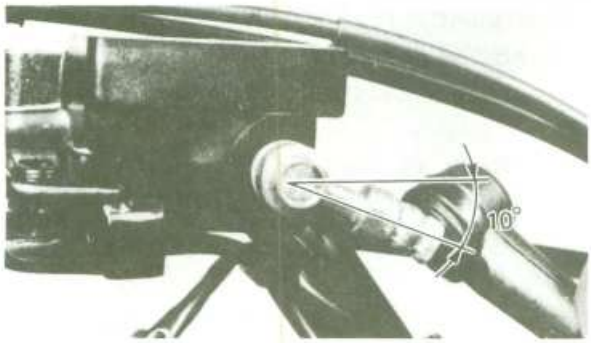
- Install the master cylinder holder with the " UP" mark facing upward.
- Tighten first the upper bolt then the lower bolt.

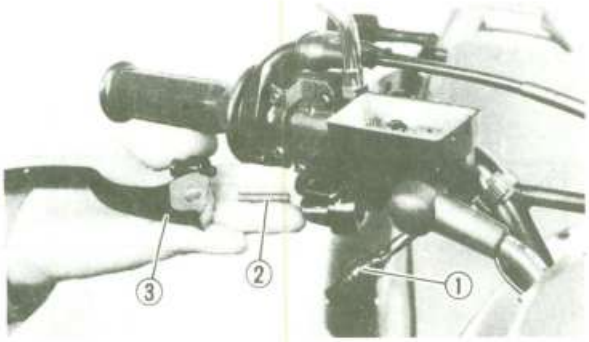
Bolt (master cylinder bracket): 7 Nm (0.7 m·kg, 5.1 ft·lb)



3. Install:
   - Copper washers ①
   - Brake hose ②
   - Union bolt ③

Union bolt: 26 Nm (2.6 m·kg, 19 ft·lb)





NOTE:
Install the brake hose as shown.

⚠ WARNING

- **Proper hose routing is essential to insure safe motorcycle operation.**
  Refer to the "CABLE ROUTING" in the CHAPTER 2.
- **Always use new copper washers.**

4. Install:
   - Brake switch ①
   - Spring ②
   - Brake lever ③
   - Protecter (right)
   - Mirror (right)

NOTE:
Apply lithium soap base grease to pivot shaft of brake lever.

5. Fill:
   - Brake fluid

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

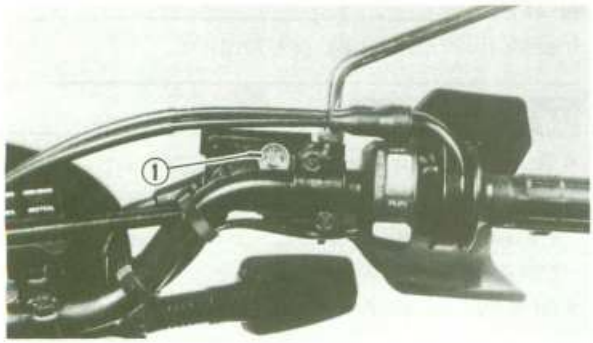
CAUTION:

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

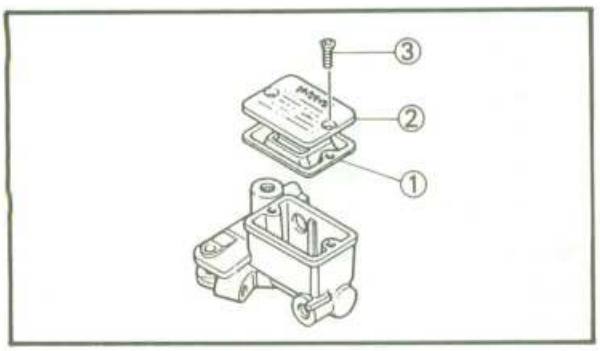
⚠ WARNING

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

6. Air bleed:
   - Brake system
     Refer to the "AIR BLEEDING" section in the CHAPTER 3.



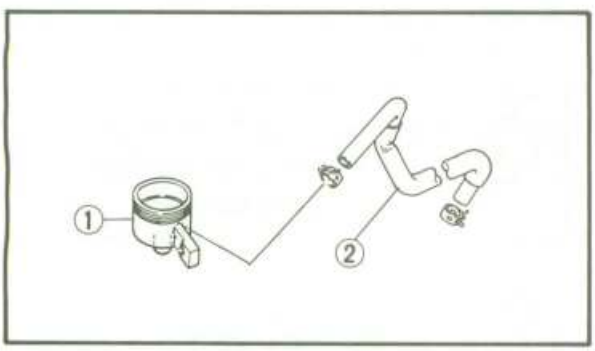
7. Inspect:
   - Brake fluid level
     Fluid level is under "LOWER" level line ①
     → Fill up.
     Refer to the "BRAKE FLUID INSPECTION" section in the CHAPTER 3.



8. Install:
   - Diaphragm ①
   - Master cylinder cap ②
   - Screws ③

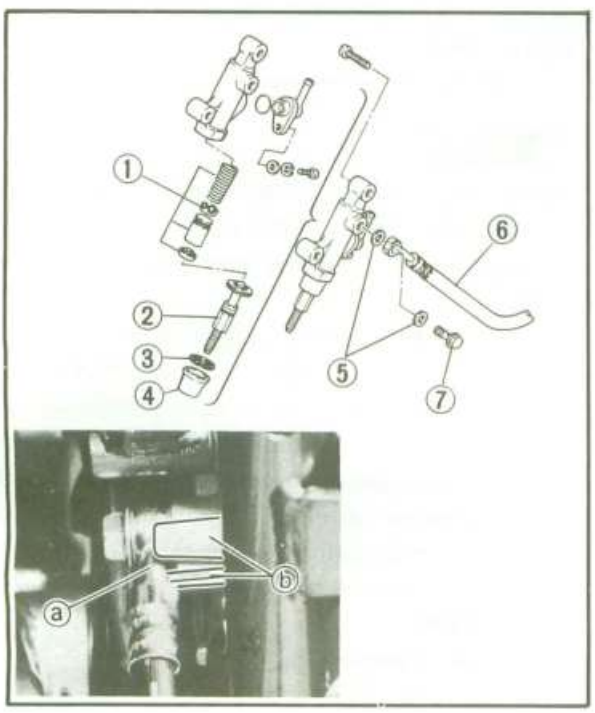


Screw (master cylinder cap):
2 Nm (0.2 m · kg, 1.4 ft · lb)



Rear Brake

1. Install:
   - Reservoir tank ① (temporarily)
2. Connect:
   - Reservoir tank hose ② (to reservoir tank)



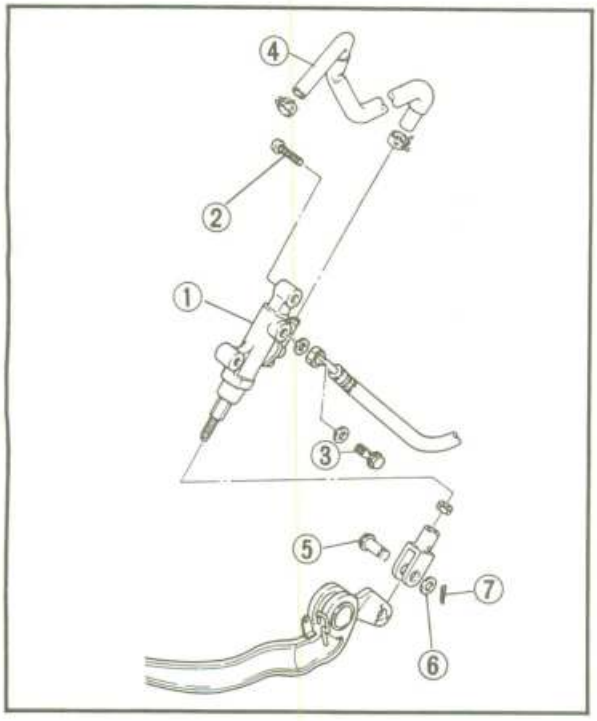
3. Install:
   - Master cylinder kit ①
   - Adjusting rod ②
   - Circlip ③
   - Dust boot ④
4. Install:
   - Copper washers ⑤
   - Brake hose ⑥
   - Union bolt ⑦
     (temporarily tighten)

CAUTION:

When installing the brake hose, lightly touch the pipe portion ⓐ of the brake hose with the projections ⓑ on the master cylinders.

⚠ WARNING

- **Proper hose routing is essential to insure safe motorcycle operation.**
  Refer to the "CABLE ROUTING" in the CHAPTER 2.
- **Always use new copper washers.**



5. Install:
   - Master cylinder ①
   - Bolt ②(master cylinder)

	Bolt (master cylinder): 20 Nm (2.0 m · kg, 14 ft · lb)

6. Tighten:
   - Union bolt ③

	Union bolt 26 Nm (2.6 m·kg, 19 ft·lb)

7. Connect:
   - Reservoir hose ④
     (to master cylinder)

8. Install:
   - Pin ⑤
   - Plain washer ⑥
   - Cotter pin ⑦

⚠ WARNING

Always use a new cotter pin.

9. Fill:
   - Brake fluild

	Recommended brake fluid: DOT #4

CAUTION:

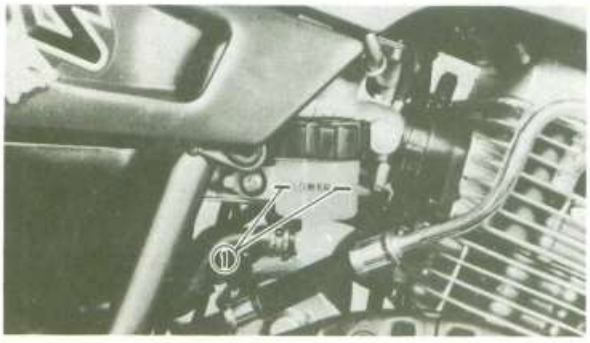
Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

⚠ WARNING

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

10. Air bleed:
    - Brake system

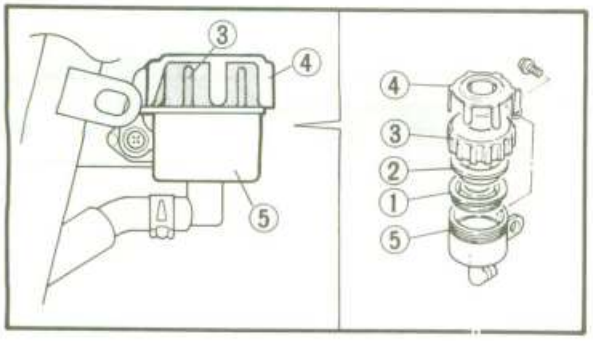
      Refer to the "AIR BLEEDING" section in the CHAPTER 3.



11. Inspect:
    - Brake fluid level

      Fluid level is under "LOWER" level line ①
      → Fill up.

      Refer to the "BRAKE FLUID INSPECTION" section in the CHAPTER 3.

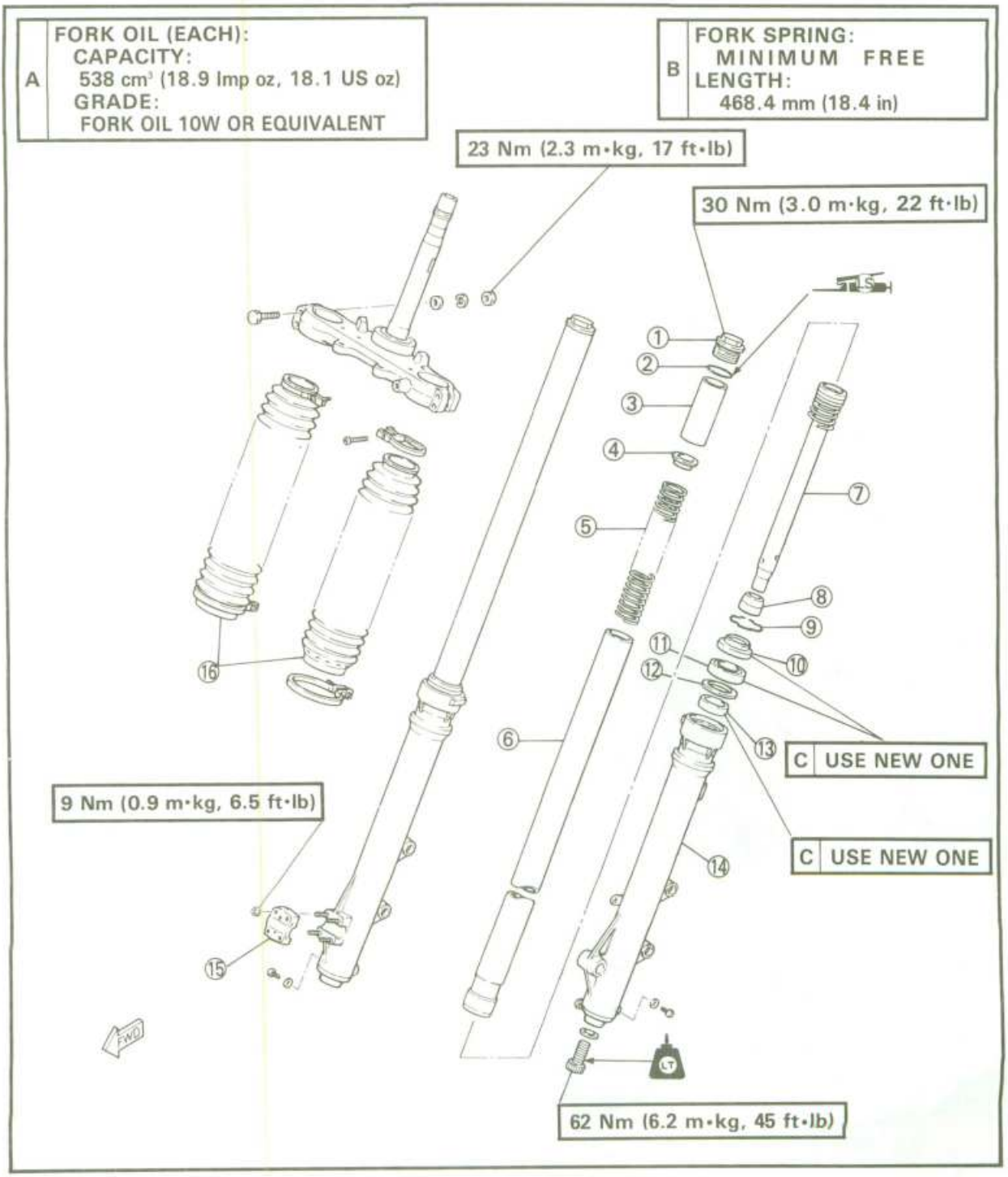


12. Install:
    - Diaphragm ①
    - Holder (diaphragm) ②
    - Cap ③
    - Cap cover ④
    - Reservoir tank ⑤

	Screw (reservoir tank): 4 Nm (0.4 m · kg, 2.9 ft·lb)

FRONT FORK

① Cap bolt
② O-ring
③ Spacer
④ Spring seat
⑤ Fork spring
⑥ Inner fork tube
⑦ Damper rod
⑧ Oil lock pieces
⑨ Snap ring
⑩ Dust seal
⑪ Oil seal
⑫ Washer
⑬ Slide metal
⑭ Outer fork tube
⑮ Axle holder
⑯ Fork boot



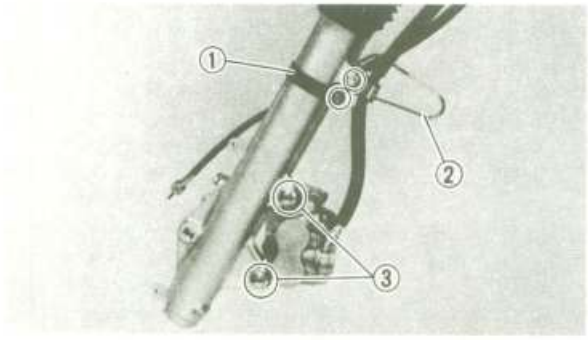
REMOVAL

⚠ WARNING

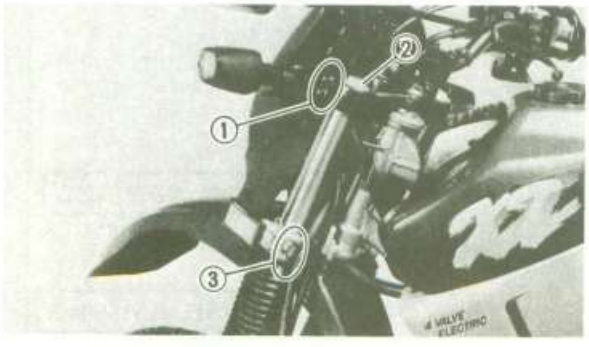
Support the motorcycle securely so there is no danger of it falling over.

1. Place the motorcycle on a level place.
2. Elevate the front wheel by placing a suitable stand under the engine.
3. Remove:
   - Front wheel

   Refer to the "FRONT WHEEL - REMOVAL" section.



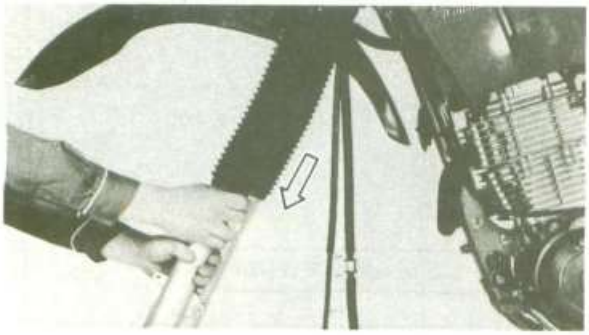
4. Remove (for left-hand front fork):
   - Band ① (speedometer cable)
   - Holder ② (brake hose)
   - Bolt ③ (brake caliper)



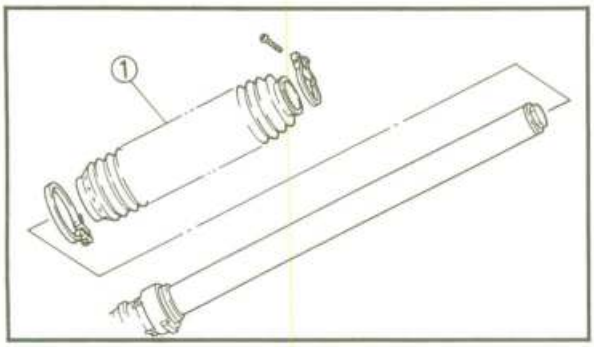
5. Loosen:
   - Pinch bolt ① (handlebar crown)
   - Cap bolt ②
   - Nut ③ (lower bracket)

⚠ WARNING

Support the fork before loosening the pinch bolt.

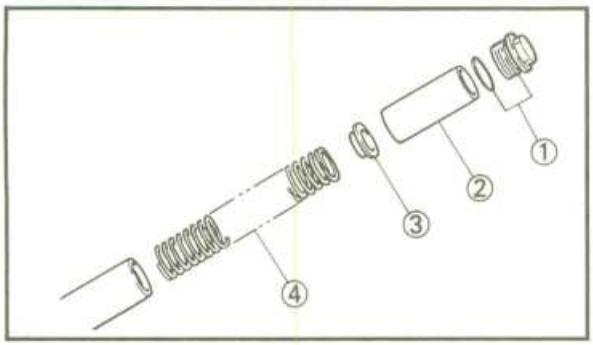


6. Remove:
   - Front fork(s)

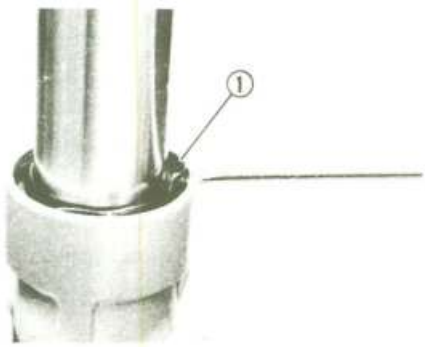


DISASSEMBLY

1. Remove:
   - Fork boot ①



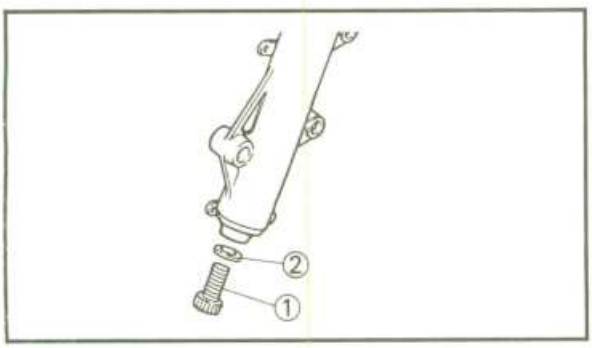
2. Remove:
   - Cap bolt ①
   - Spacer ②
   - Spring seat ③
   - Fork spring ④



3. Drain:
   - Fork oil
4. Remove:
   - Snap ring ①

NOTE:

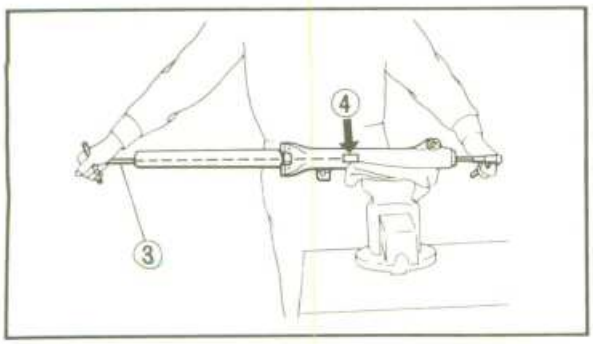
Use a thin screwdriver, and be careful not to scratch the inner fork tube.



5. Remove:
   - Bolt ① (damper rod)
   - Washer ②

NOTE:

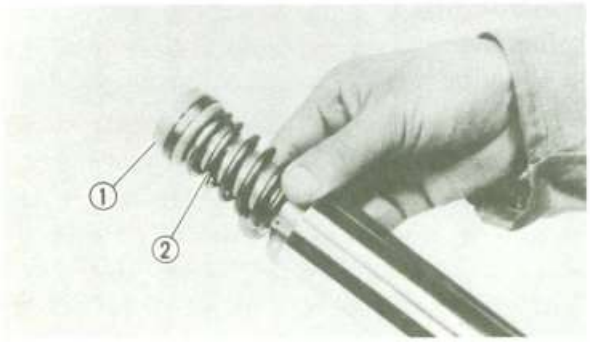
Hold the damper rod to loosen the bolt (damper rod) by the T-handle ③ and holder ④.



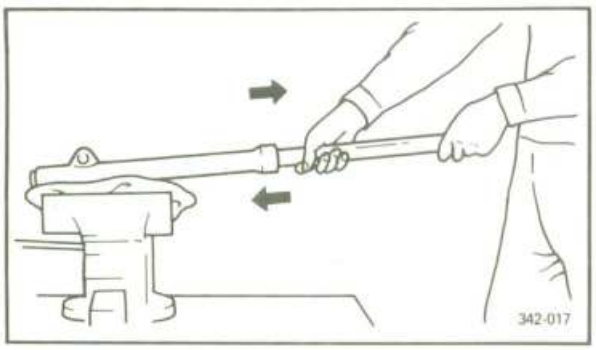


T-handle:
YM-01326
90890-01326

Holder 27 mm (1.06 in):
YM-01388
90890-01388



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



7. Remove:
   - Inner fork tube

* *

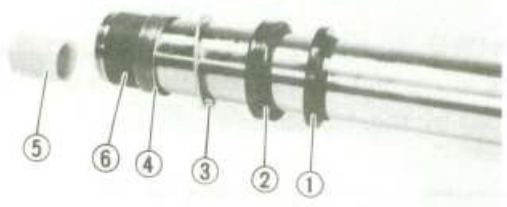
Removal steps:

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

CAUTION:

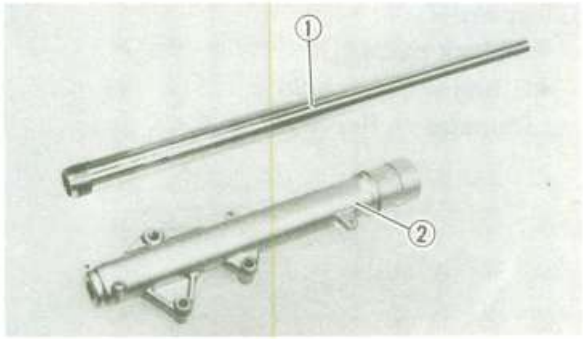
- **Excessive force will damage the oil seal and/or the bushes. Damaged oil seal and bushing must be replaced.**
- **Avoid bottoming the inner tube in the outer tube during the above procedure, as the oil lock piece will be damaged.**

* *



8. Remove:
   - Dust seal ①
   - Oil seal ②
   - Washer ③
   - Slide metal ④
   - Oil lock pieces ⑤

⑥ Slide bush



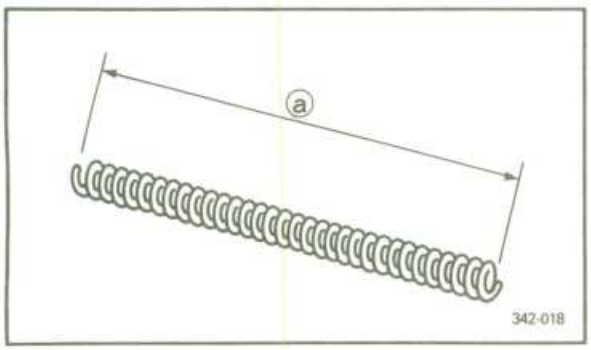
INSPECTION

1. Inspect:
   - Inner fork tube ①
   - Outer fork tube ②

   Scratches/Bends/Damage → Replace.

⚠ WARNING

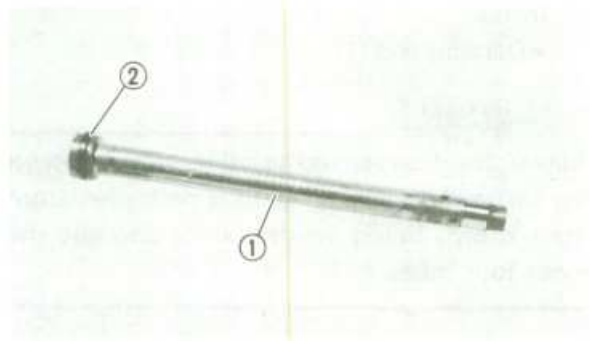
Do not attempt to straighten a bent inner fork tube as this may dangerously weaken the tube.



2. Measure:
   - Fork spring free length ⓐ

   Out of specification → Replace.

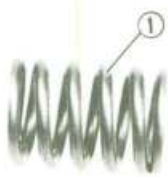
Fork spring free length:
478.0 mm (18.8 in)
Minimum free length:
468.4 mm (18.4 in)



3. Inspect:
   - Damper rod ①

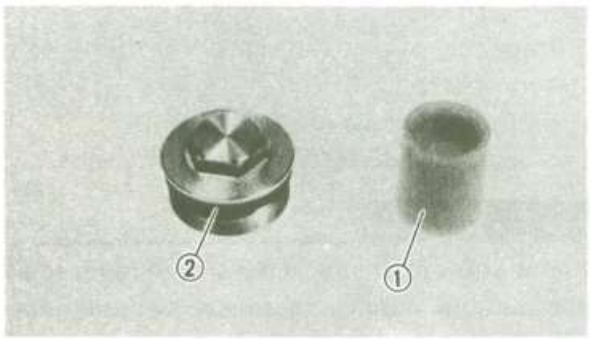
   Wear/Damage → Replace.
   Contamination → Blow out all oil passages with compressed air.
   - Piston ring ②

   Wear/Damage → Replace.



4. Inspect:
   - Rebound spring ①

   Wear/Damage → Replace.



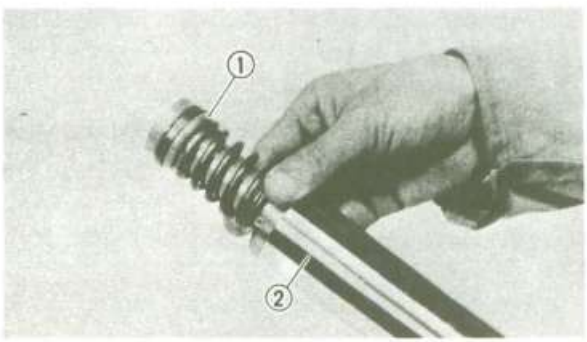
5. Inspect:
   - Oil lock piece ①
   - O-ring ② (cap bolt)
     Damage → Replace.

ASSEMBLY

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

NOTE:

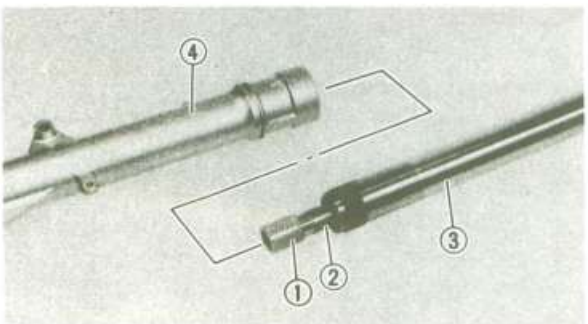
- In front fork reassembly, be sure to use following new parts.
  - ✻Guide bush
  - ✻Oil seal
  - ✻Dust seal
- Make sure all components are clean before reassembly.



1. Install:
   - Damper rod ①

CAUTION:

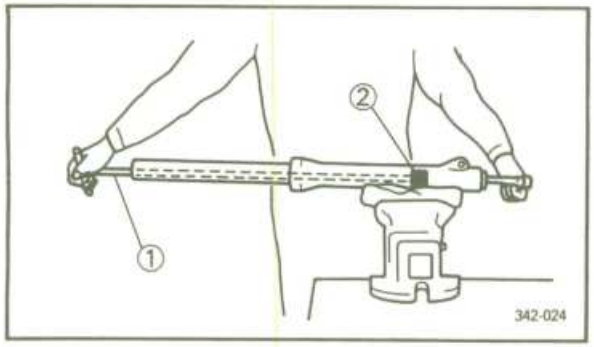
Allow the damper rod to slide slowly down the inner fork tube ② until it protrudes from the bottom, being careful not to damage the inner fork tube.



2. Install:
   - Oil lock piece ①
     (to damper rod ②)
3. Lubricate:
   - Inner fork tube (outer surface) ③

	Fork oil 10W or equivalent

④ Outer fork tube

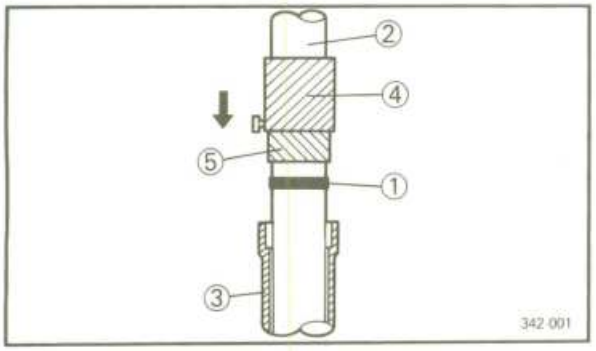


4. Tighten:
   - Bolt (damper rod)

   Use the T-handle ① and holder ② to lock the damper rod.

T-handle:
YM-01326
90890-01326
Holder
27 mm (1.06 in):
YM-01388
90890-01388

Bolt (damper rod):
62 Nm (6.2 m · kg, 45 ft · lb)
LOCTITE®.

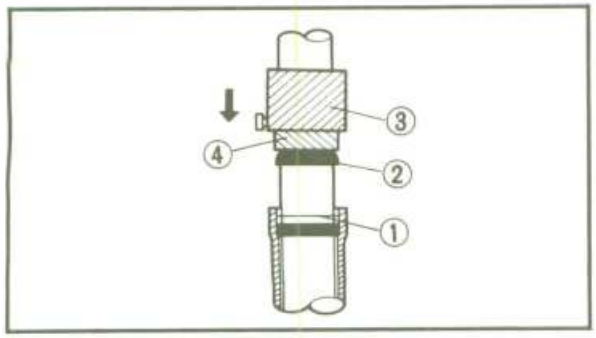


5. Install:
   - Slide metal ①

   Use the fork seal driver weight ④ and adapter ⑤.

② Inner fork tube
③ Outer fork tube

Fork seal driver weight:
YM-33963
90890-01367
Adapter
41 mm (1.61 in):
YM-33968
90890-01381



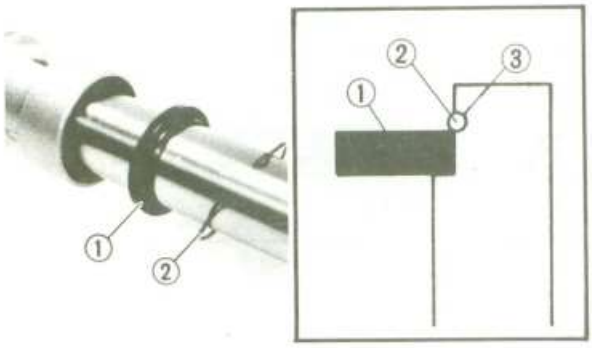
6. Install:
   - Washer ①
   - Oil seal ②

   Use the fork seal driver weight ③ and adapter ④.

Fork seal driver weight:
YM-33963
90890-01367
Adapter
41 mm (1.61 in):
YM-33968
90890-01381

NOTE:
Before installing the oil seal, apply the lithium soap base grease onto the oil seal lips.

CAUTION:
Be sure that the oil seal numbered side face upward.

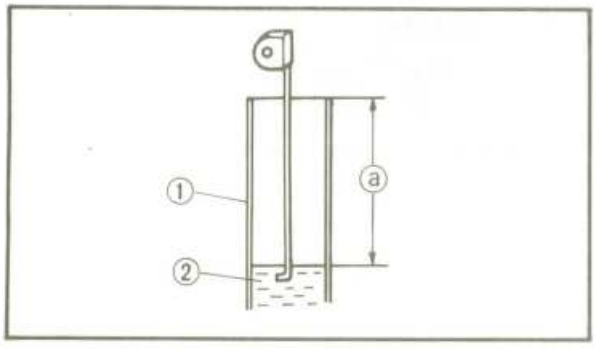


7. Install:
   - Dust seal ①
   - Snap ring ②

NOTE:
Fit the snap ring ② correctly in the groove ③ in the outer tube.

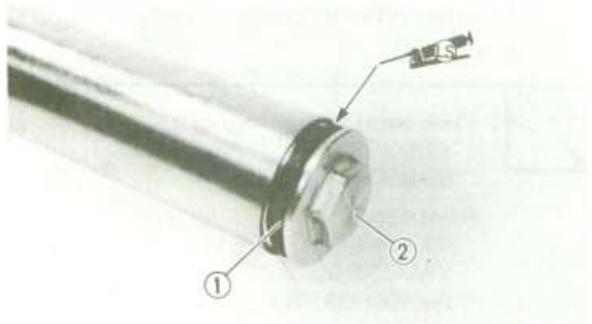
8. Fill:
   - Front fork

Each fork:
538 cm³
(18.9 Imp oz, 18.1 US oz)
Fork Oil 10W or equivalent
After filling, slowly pump the fork up and down to distribute oil.



Oil level ⓐ :
155 mm (6.10 in)
From the top of inner fork tube fully compressed without spring.

① Inner fork tube
② Fork oil



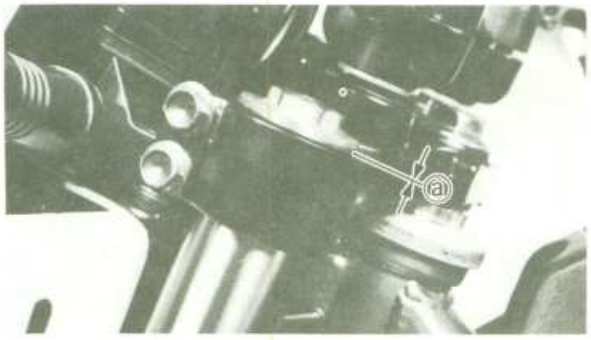
9. Before installing the cap bolt, apply the grease to the O-ring ①.
10. Temporarily tighten the cap bolt ②.

INSTALLATION

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

1. Install:
   - Front fork

     Temporary tighten the pinch bolts.



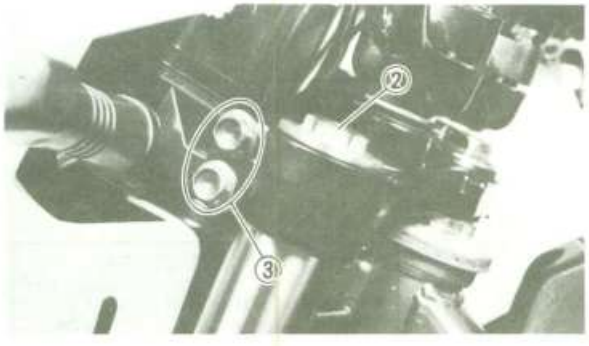
NOTE:

Position the inner fork tube end in such a way that it is flush ⓐ with the top of the handle crown.



2. Tighten:
   - Nut ① (lower bracket)
   - Cap bolt ②
   - Pinch bolt ③ (handlebar crown)

Nut (lower bracket):
23 Nm (2.3 m · kg, 17 ft · lb)
Cap bolt:
30 Nm (3.0 m · kg, 22 ft · lb)
Pinch bolt (handlebar crown):
23 Nm (2.3 m · kg, 17 ft · lb)



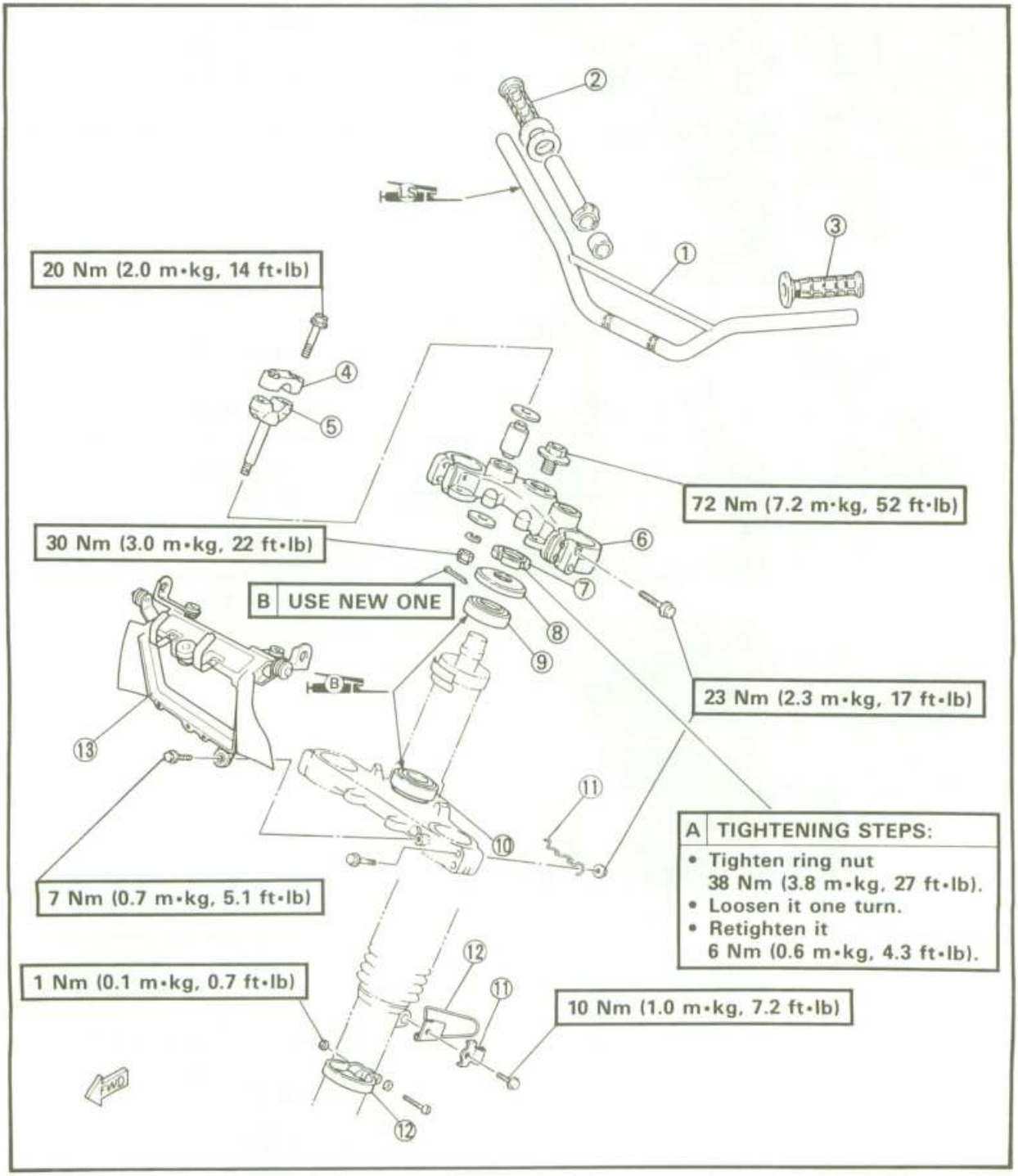
3. Install:
   - Front wheel

Wheel axle:
58 Nm (5.8 m · kg, 42 ft · lb)
Nut (axle holder):
9 Nm (0.9 m · kg, 6.5 ft · lb)
Bolt (brake caliper):
35 Nm (3.5 m · kg, 25 ft · lb)

Refer to "FRONT WHEEL - INSTALLATION " section.

STEERING HEAD AND HANDLEBAR

① Handlebar
② Handlebar grip (right)
③ Handlebar grip (left)
④ Handlebar holer (upper)
⑤ Handlebar holder (lower)
⑥ Handle crown
⑦ Ring nut
⑧ Cover
⑨ Bearing (upper)
⑩ Bearing (lower)
⑪ Clamp (brake hose and speedometer cable)
⑫ Cable holder (speedometer cable)
⑬ Headlight stay

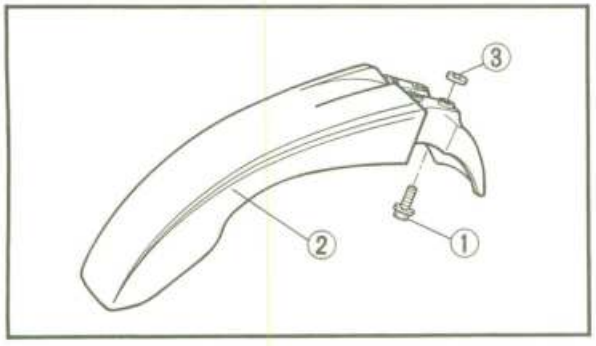


REMOVAL

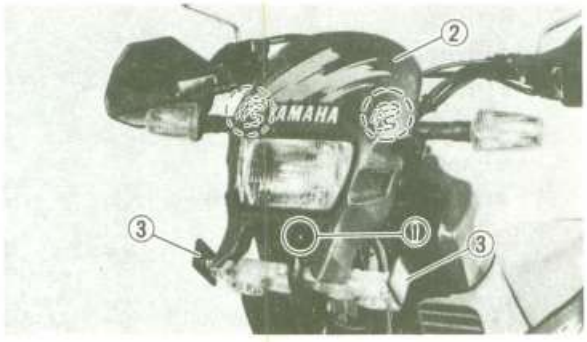
⚠ WARNING

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. Remove:
   - Front wheel
     Refer to the "FRONT WHEEL-REMOVAL" section.
   - Front forks
     Refer to the "FRONT FORK - REMOVAL" section.



4. Remove:
   - Bolts ① (front fender)
   - Front fender ②
   - Washer ③



5. Remove:
   - Screw ① (cowling)
   - Cowling ②
   - Reflector ③

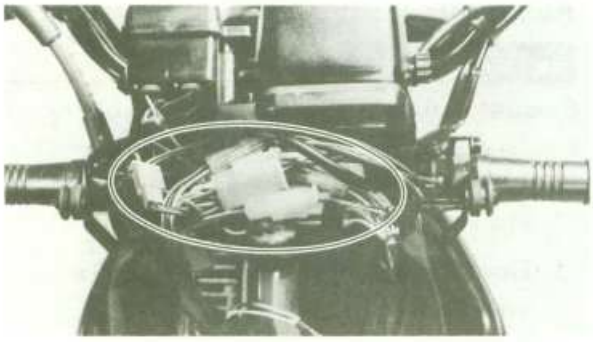
NOTE:

When removing the cowling ②, unhook the snaps on the cowling from the grommets on the headlight stay.





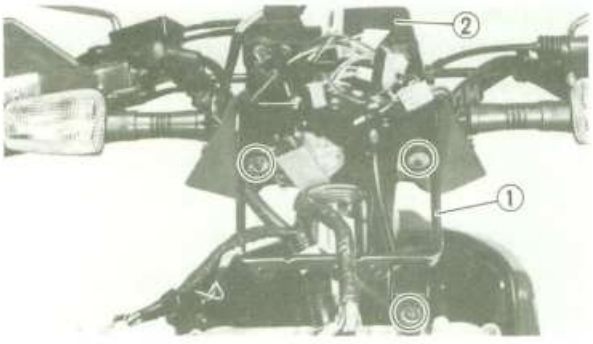
6. Remove:
   - Headlight lens unit ①
7. Disconnect:
   - Headlight coupler ②



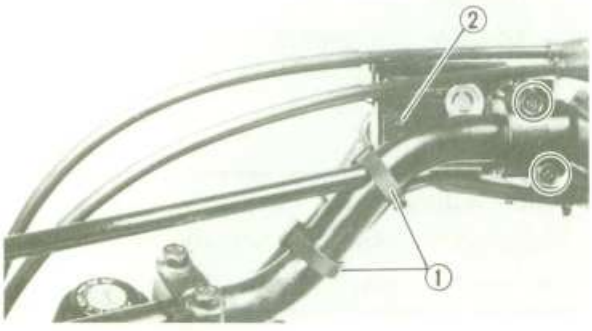
8. Disconnect:
   - Flasher light leads
   - Meter leads/coupler
   - Handlebar switch coupler
   - Main switch coupler
   - Brake switch coupler
   - Clutch switch coupler



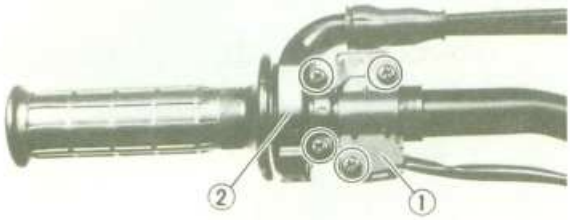
9. Remove:
   - Speedometer cable ①



10. Remove:
    - Headlight stay ①
    - Meter assembly ②

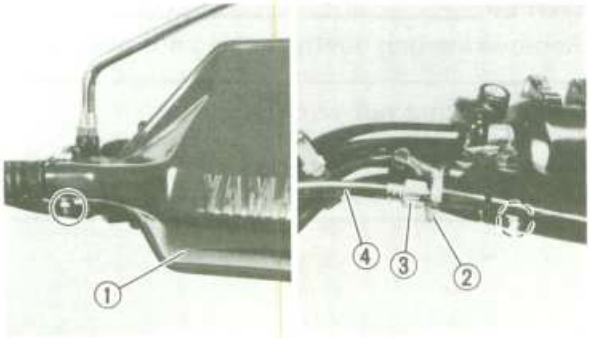


11. Remove:
    - Protecter (right)
    - Brake lever
    - Mirror (right)
    - Bands ①
    - Master cylinder assembly ②

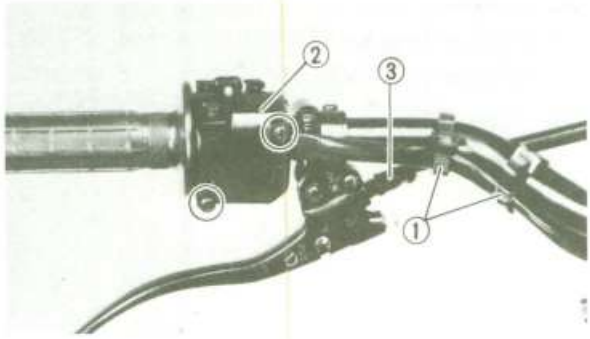


12. Remove:
    - Handlebar switch (right) ①

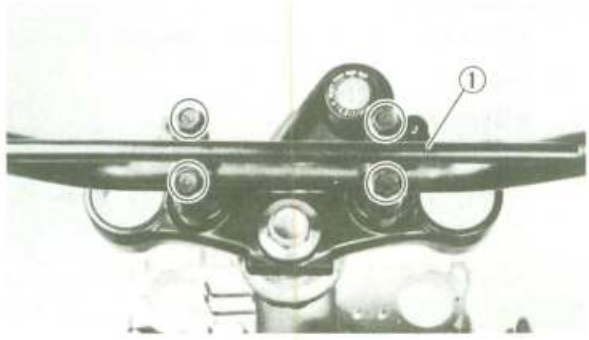
13. Loosen:
    - Throttle holder assembly ②



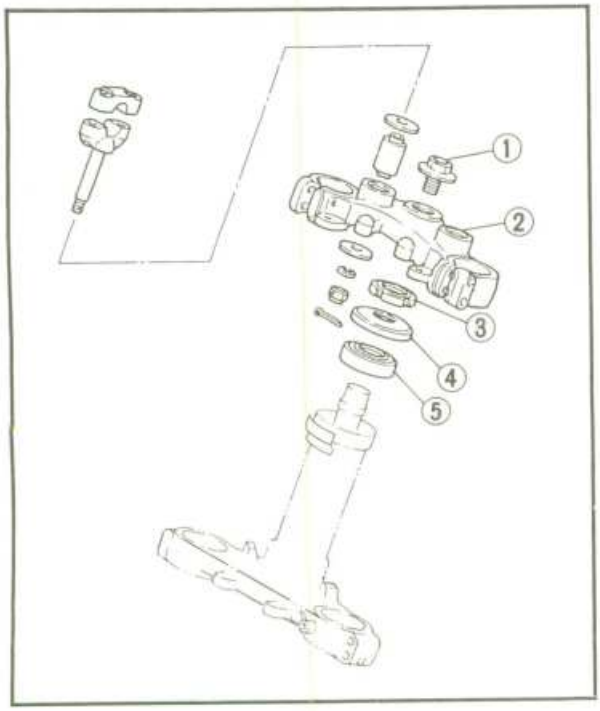
14. Remove:
    - Protector ① (left)
15. Loosen:
    - Locknut ② (Clutch cable)
    - Adjuster ③ (Clutch cable)
16. Remove:
    - Clutch cable ④



17. Remove:
    - Bands ①
    - Handlebar switch (left) ②
    - Clutch switch ③



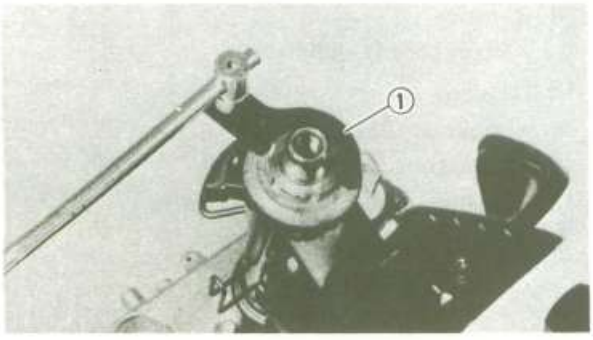
18. Remove:
    - Handlebar ①
    - Throttle holder assembly



19. Remove:
    - Steering shaft bolt ①
    - Handlebar crown ②
    - Ring nut ③
    - Bearing cover ④
    - Bearing (upper) ⑤

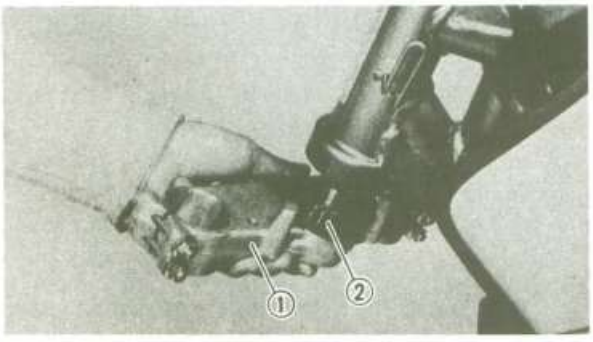
⚠ WARNING

When removing the ring nut, support the lower bracket so that it may not fall down.

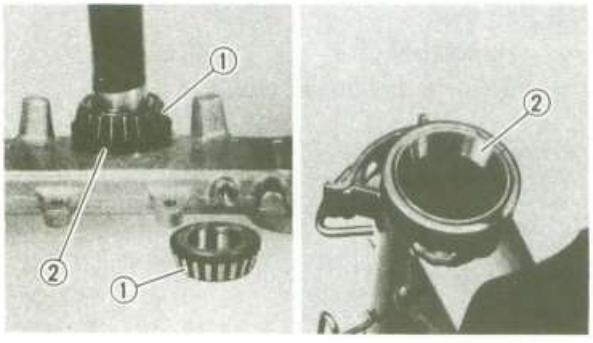


NOTE:
Remove the ring nut by the ring nut wrench ①.

Ring nut wrench:
YU-33975
90890-01403

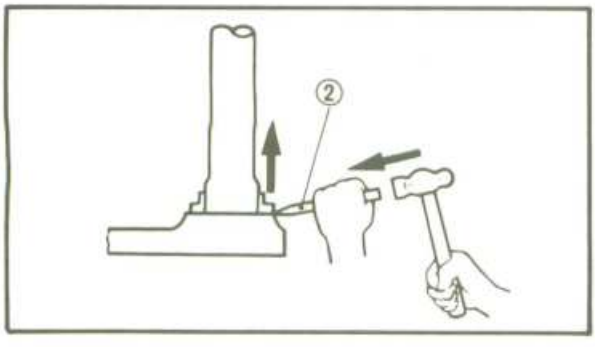


20. Remove:
- Lower bracket ①
- Bearing ② (lower)



INSPECTION
1. Wash the bearings with a solvent.
2. Inspect:
- Bearing ①
- Bearing race ②
  Pitting/Damage → Replace as a set.

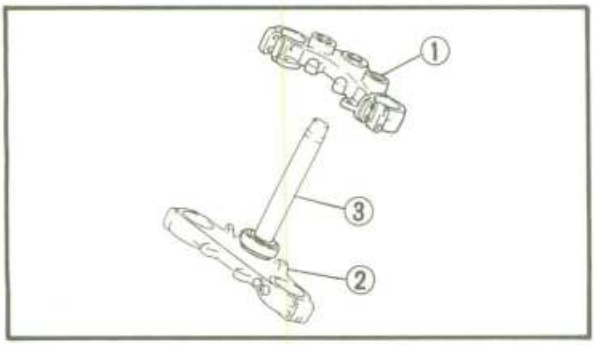




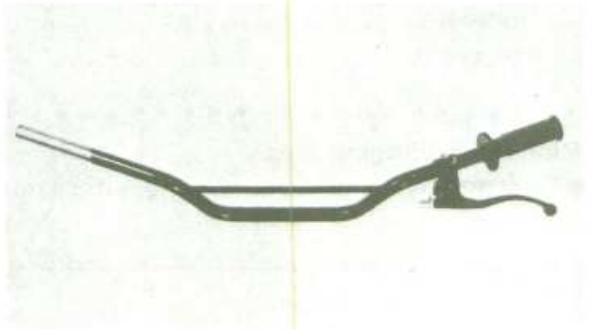
* *
Bearing race replacement steps:
- Remove the bearing races using a long rod ① and hammer as shown.
- Remove the bearing race on the steering stem using the floor chisel ② and the hammer as shown.
- Install the new dust seal and races.

NOTE:
Always replace bearings, races and dust seal as a set.

* *



3. Inspect:
   - Handlebar crown ①
   - Lower bracket ②
     Cracks/Damage → Replace.
   - Steering shaft ③
     Bends/Damage → Replace lower bracket assembly.



4. Inspect:
   - Handlebars
     Bends/Cracks/Damage → Replace.

⚠WARNING

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

* *

Handlebar replacement steps:

- Remove the handlebar grip and lever holder.
- Install the lever holder to a new handlebar.
- Apply a light coat of an adhesive for rubber on the left handlebar end.
- Install the handlebar grip.

NOTE:

Wipe off excess adhesive with a clean rag.

⚠WARNING

Leave the handlebar intact until the adhesive becomes dry enough to make the grip and handlebar stuck securely.

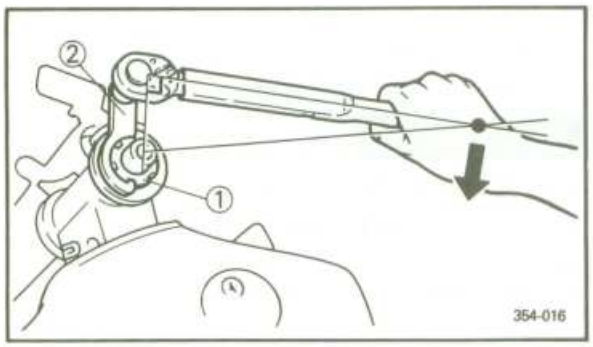
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INSTALLATION

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

1. Lubricate:
   - Bearings (upper and lower)
   - Bearing races

	Wheel bearing grease



2. Install:
   - Bearing (lower) (onto steering shaft)
   - Lower bracket
   - Bearing (upper)
   - Bearing cover

⚠ WARNING

Hold the under bracket until it is secured.

3. Tighten:
   - Ring nut ①

* *

Ring nut tightening steps:

- Tighten the ring nut using the ring nut wrench ②.

Ring nut wrench:
P/N. YU-33975
P/N. 90890-01403

NOTE:

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

Ring nut (initial tightening):
38 Nm (3.8 m · kg, 27 ft · lb)

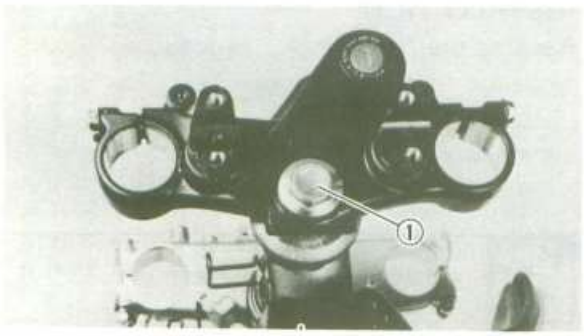
- Loosen the ring nut one turn.
- Retighten the ring nut using the ring nut wrench.

⚠ WARNING

Avoid over-tightening.

Ring nut (final tightening):
6 Nm (0.6 m · kg, 4.3 ft · lb)

* *



4. Install:
   - Handlebar crown

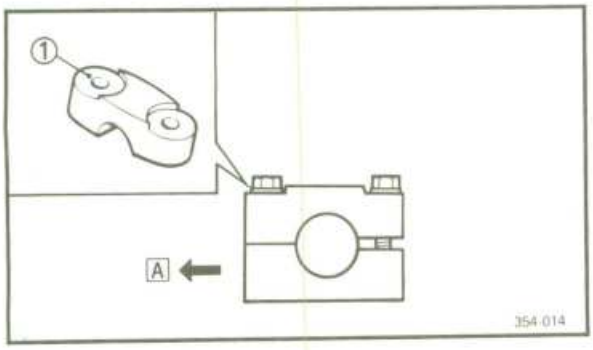
NOTE:

Temporary tighten the steering shaft bolt ①.



5. Install:
   - Throttle holder assembly

NOTE:
Before installing the throttle holder assembly onto the handlebar, apply a light coat of lithium soap base grease onto the handlebar end and install the throttle holder assembly to the handlebar.



6. Install:
   - Handlebar

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

NOTE:
The upper handlebar holder should be installed with the punched mark (1) forward.

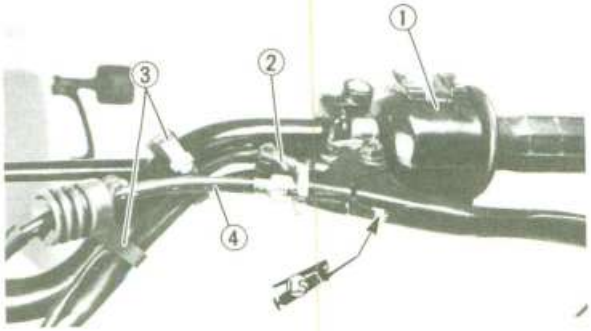
[A] Forward

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



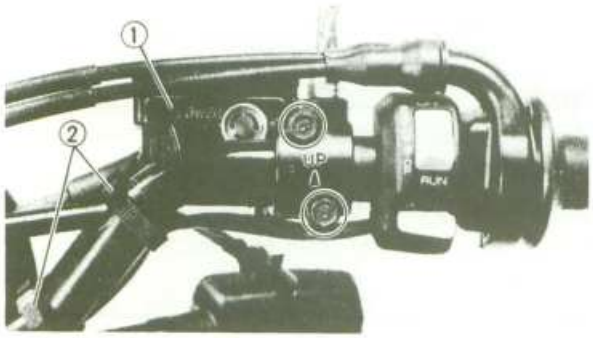
7. Install:
   - Handleber switch (right) (1)

NOTE:
When installing the handlebar switch (right) make sure its projection fits into the hole as shown.



8. Install:
   - Handlebar switch (1) (left)
   - Clutch switch (2)
   - Bands (3)
   - Clutch cable (4)

NOTE:
Apply a light coat of lithium soap base grease onto the clutch cable end.

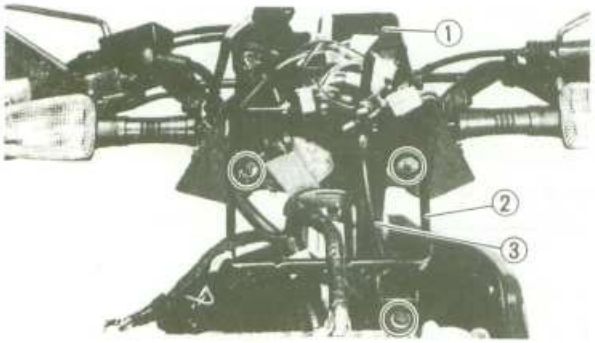


9. Install:
   - Brake master cylinder (1)
   - Brake switch
   - Bands (2)
   - Brake lever
   - Protecter (right)
   - Mirror (right)

NOTE:
- Install the master cylinder bracket with the " UP" mark facing upward.
- Tighten first the upper bolt, then the lower bolt.

Bolts (master cylinder bracket):
7 Nm (0.7 m · kg, 5.1 ft · lb)

10. Install:
    - Meter assembly (1)
    - Headlight stay (2)



Bolt (meter assembly):
7 Nm (0.7 m · kg, 5.1 ft · lb)
Bolt (headlight stay)
7 Nm (0.7 m·kg, 5.1 ft·lb)

11. Install:
    - Speed meter cable (3)

12. Install:
    - Front fork

    Refer to the "FRONT FORK - INSTALLATION" section.

Nut (lower bracket):
23 Nm (2.3 m · kg, 17 ft · lb)
Pinch bolt (handlebar crown):
23 Nm (2.3 m · kg, 17 ft · lb)

13. Tighten:
    - Steering shaft bolt

Steering shaft bolt:
72 Nm (7.2 m·kg, 52 ft·lb)

14. Connect
    - Flasher light lead (right)
    - Pilot box coupler
    - Brake switch coupler
    - Handlebar switch coupler (right)
    - Main switch coupler
    - Clutch switch coupler
    - Handlebar switch coupler (left)
    - Meter leads
    - Flasher light lead (left)

    Refer to the "CABLE ROUTING" section in the CHAPTER 2.
15. Install:
    - Headlight lens unit
    - Cowling



Bolt (headlight upper):
16 Nm (1.6 m·kg, 12 ft·lb)
Bolt (headlight lower):
7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (cowling):
7 Nm (0.7 m·kg, 5.1 ft·lb)

16. Install:
    - Front wheel

    Refer to the "FRONT WHEEL - INSTALLATION" section.



Wheel axle:
58 Nm (5.8 m·kg, 42 ft·lb)
Nut (axle holder):
9 Nm (0.9 m·kg, 6.5 ft·lb)

17. Adjust:
    - Clutch cable free play

    Refer to the "CLUTCH ADJUSTMENT" section in CHAPTER 3.

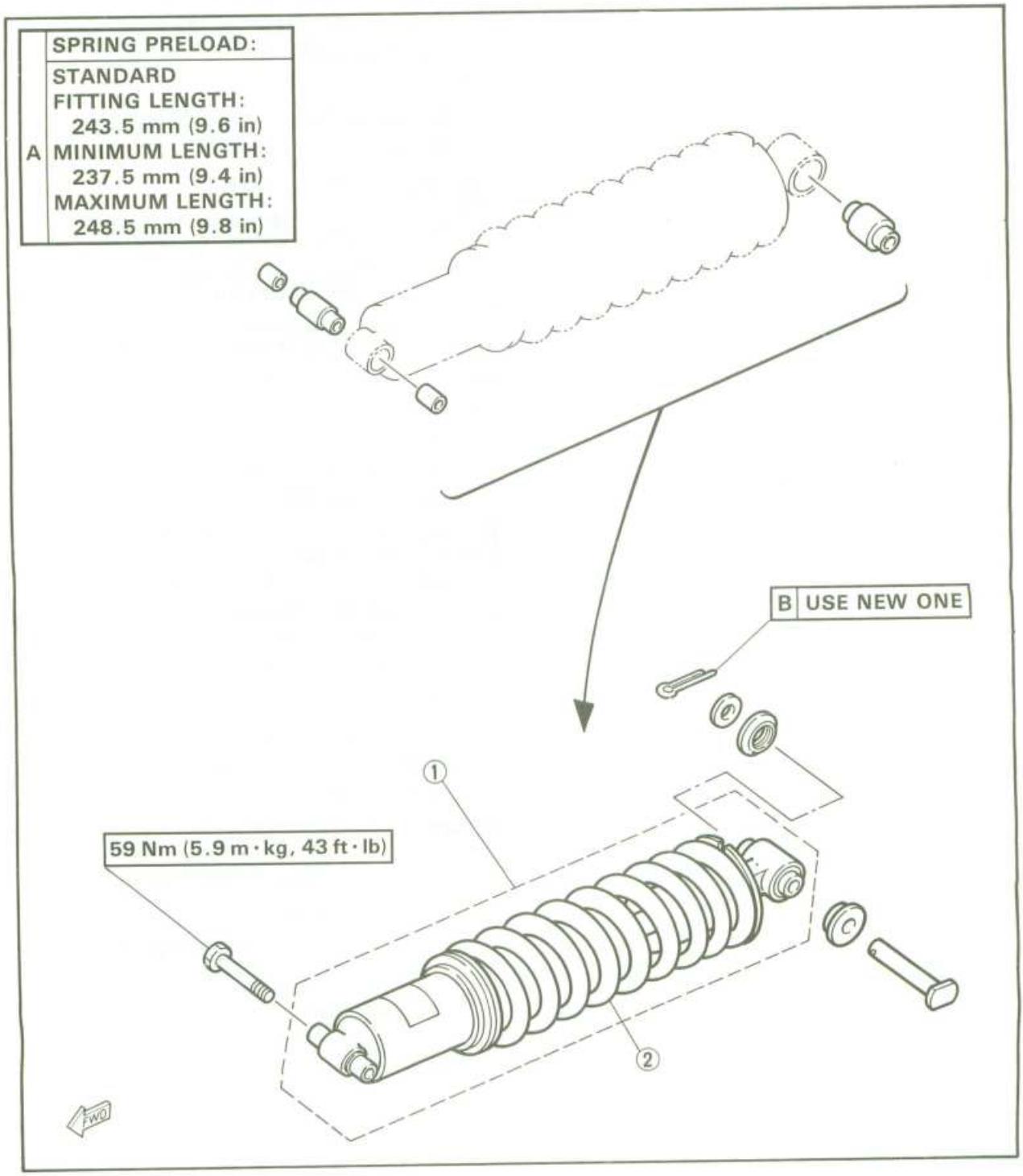


Free play:
2 ~ 3 mm (0.08 ~ 0.12 in)
at lever pivot.

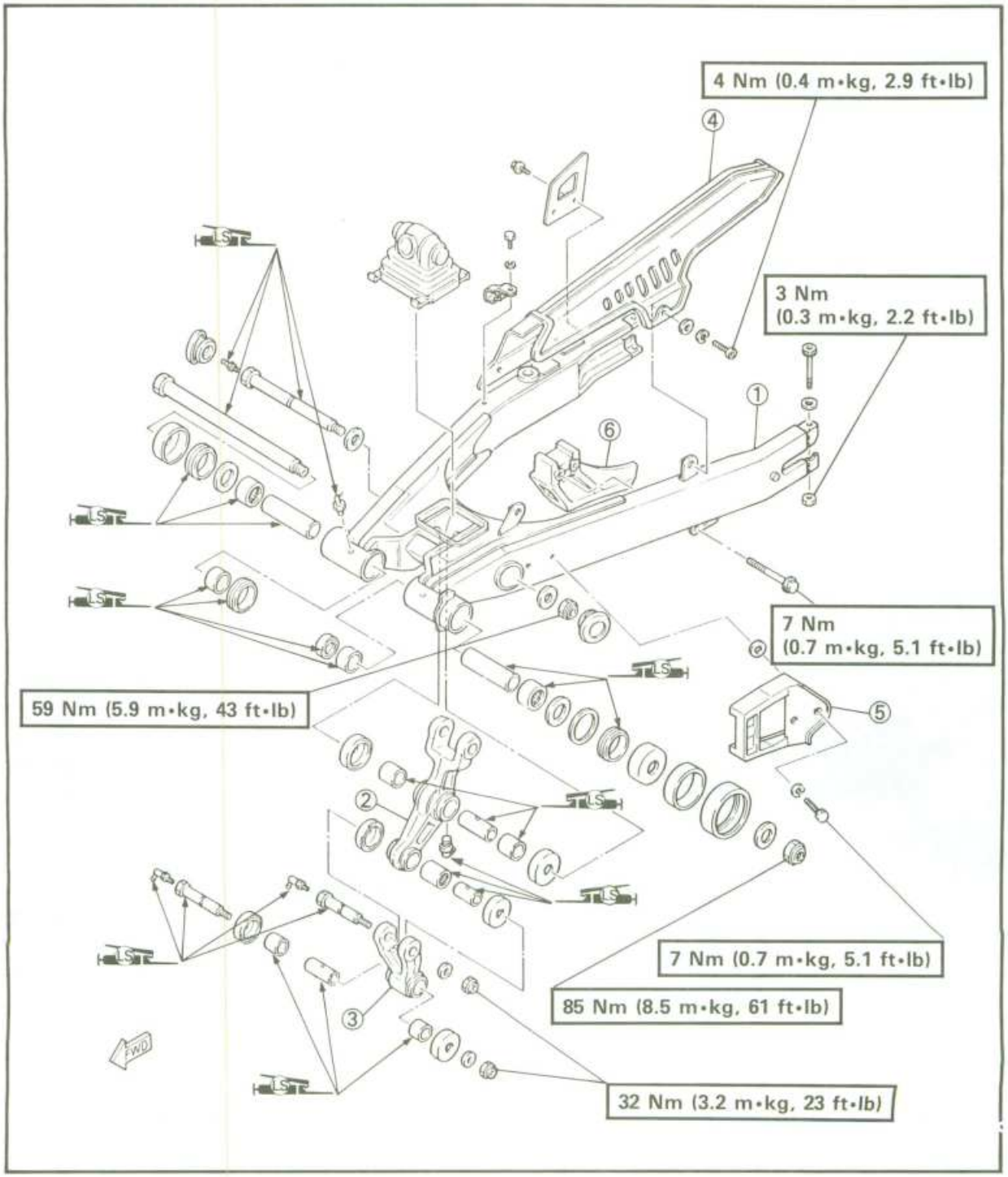
18. Install:
    - Protecters (left)

REAR SHOCK ABSORBER AND SWINGARM

① Rear shock absorber assembly
② Spring



① Swingarm
② Relay arm
③ Connection rod
④ Chain case
⑤ Chain protector
⑥ Chain guide

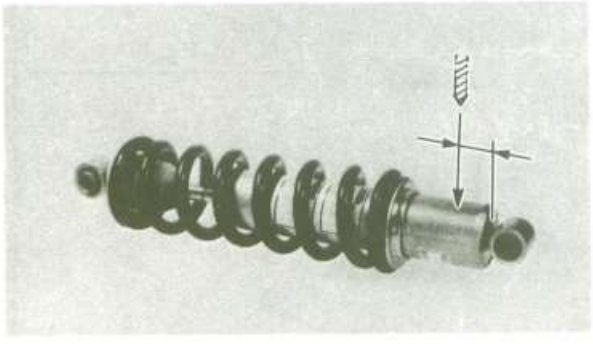


HANDLING NOTES

⚠ WARNING

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

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



NOTES ON DISPOSAL

* *

Shock absorber disposal steps:

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

⚠ WARNING

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

* *

REMOVAL

⚠ WARNING

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

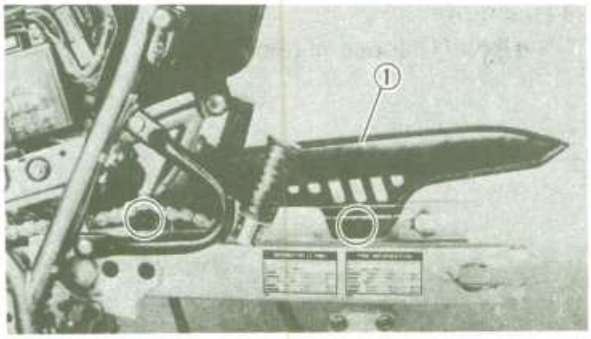
1. Place the motorcycle on a level place.

2. Remove:
   - Seat
   - Side covers
   - Air scoops
   - Cover (fuel tank)
   - Fuel tank

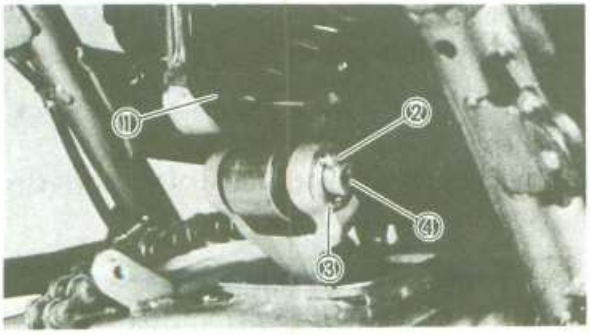
   Refer to the "SEAT, FUEL TANK AND COVER" section in the CHAPTER 3.

3. Elevate the rear wheel by placing a suitable stand under the engine.
4. Remove:
   - Rear wheel

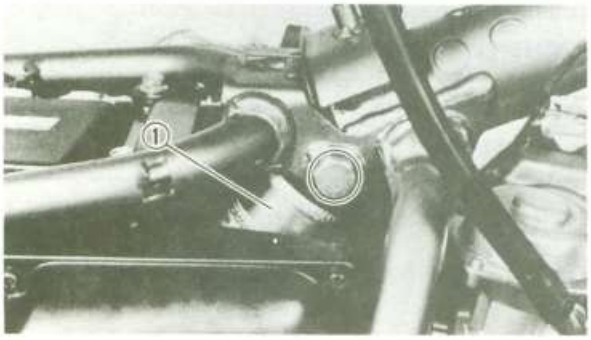
   Refer to the "REAR WHEEL - REMOVAL" section.



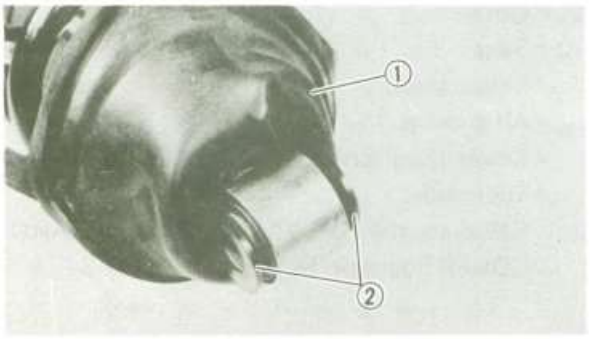
5. Remove:
   - Chain case ①



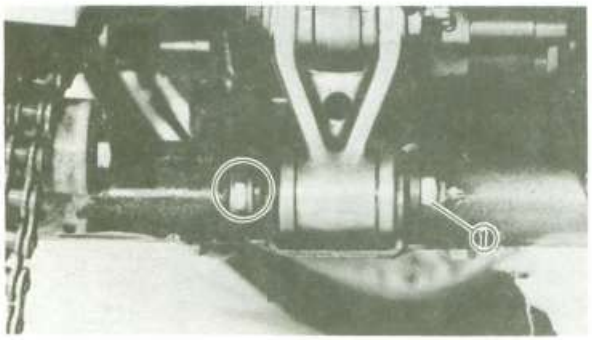
6. Pull up the rubber cover ①
7. Remove:
   - Cotter pin ②
   - Washer ③
   - Shaft ④



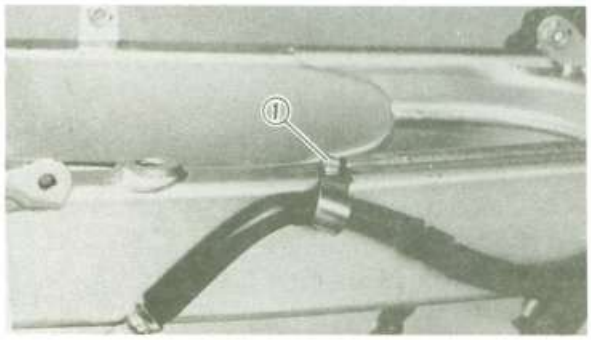
8. Remove:
   - Rear shock absorber ①



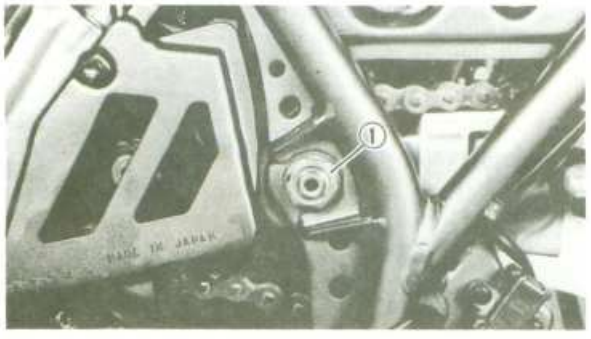
9. Remove:
   - Rubber cover ①
   - Washer ②
     (from rear shock absorber)



10. Remove:
    - Bolt ① (connecting rod)



11. Remove:
    - Bolt ① (hose clamp)



12. Check:
    - Swingarm free play

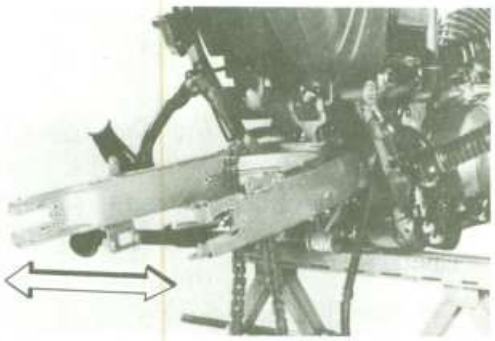
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Inspection steps:

- Check the tightening torque of the pivot shaft (swingarm) securing nut ①.

	Nut (pivot shaft): 85 Nm (8.5 m · kg, 61 ft · lb)

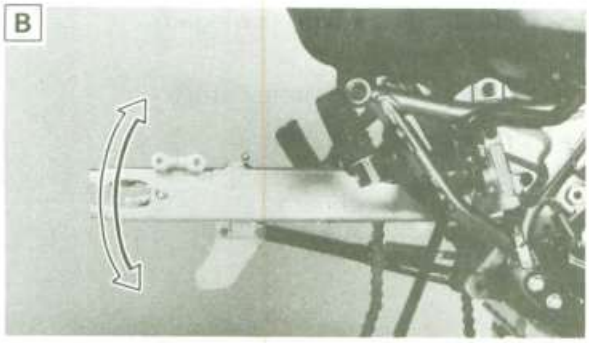
A



- Check the swingarm side play A by moving it from side to side.
  If side play noticeable, check the inner collar, bearing, washer and thrust cover.

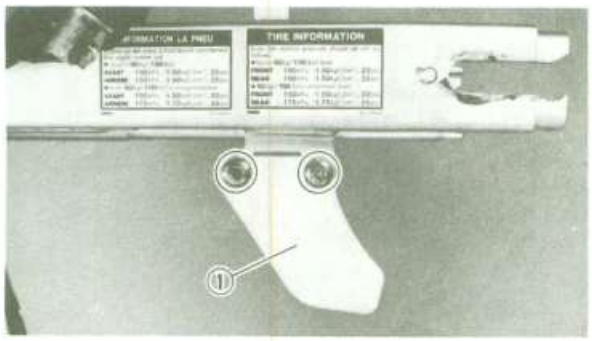
Side play (at end of swingarm):
Limit : 1.0 mm (0.04 in)

B

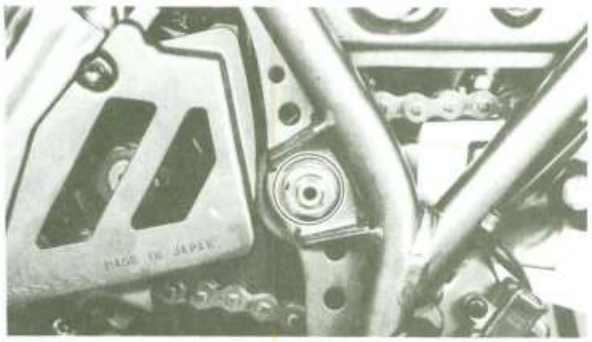


- Check the swingarm vertical movement B by moving it up and down.
  If vertical movement is tight, binding or rough, check the innercollar, bearing, washer and thrust cover.

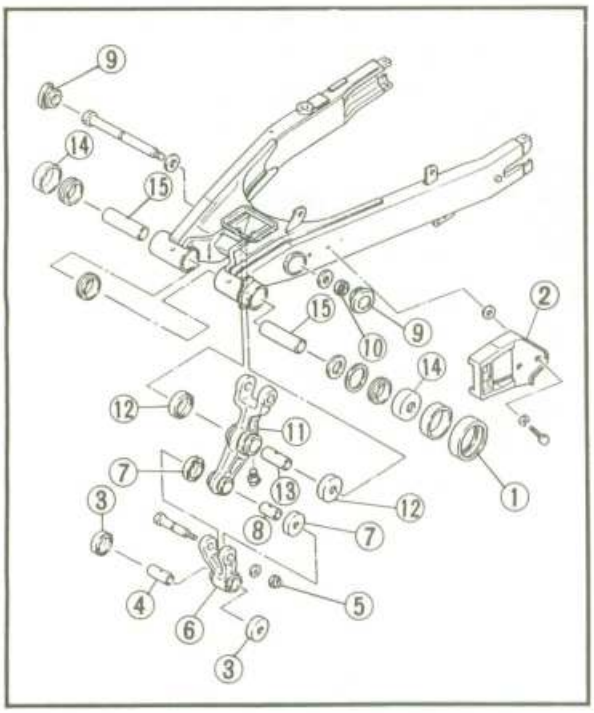
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13. Remove:
    - Chain guide ①



14. Remove:
    - Pivot shaft
    - Swingarm

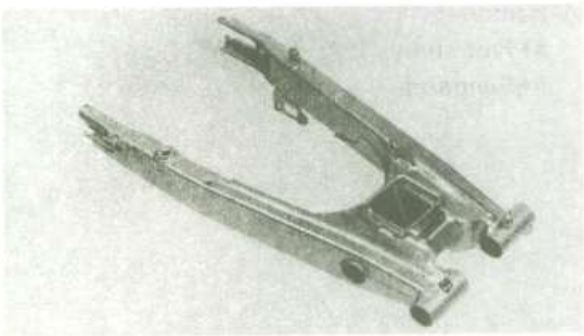


15. Remove:
- Chain protector roller ①
- Chain protector ②
- Thrust cover ③ (connecting rod)
- Collar ④ (connecting rod)
- Nut ⑤ (connecting rod - relay arm)
- Connecting rod ⑥
- Thrust cover ⑦ (relay arm)
- Collar ⑧ (relay arm)
- Rubber cap ⑨
- Nut ⑩ (relay arm - swingarm)
- Relay arm ⑪
- Thrust cover ⑫ (relay arm)
- Collar ⑬ (relay arm)
- Thrust cover ⑭ (swingarm)
- Collar ⑮ (swingarm)

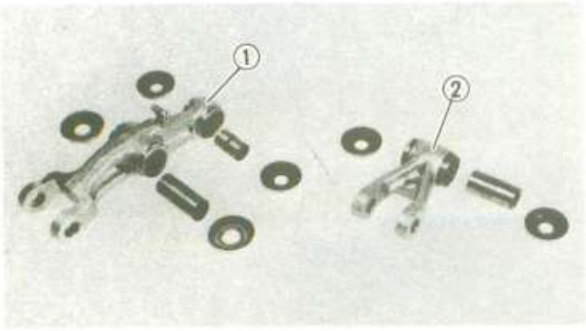
INSPECTION



1. Inspect:
- Shock absorber
  Oil leaks/Damage → Replace.

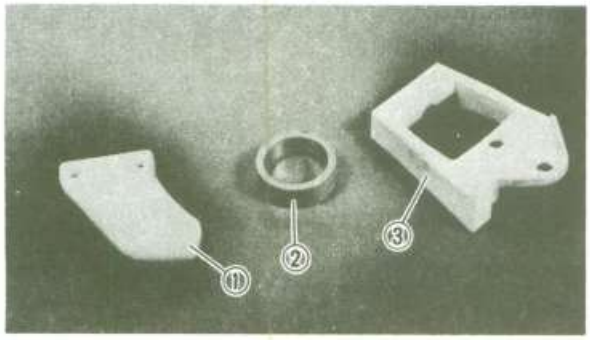


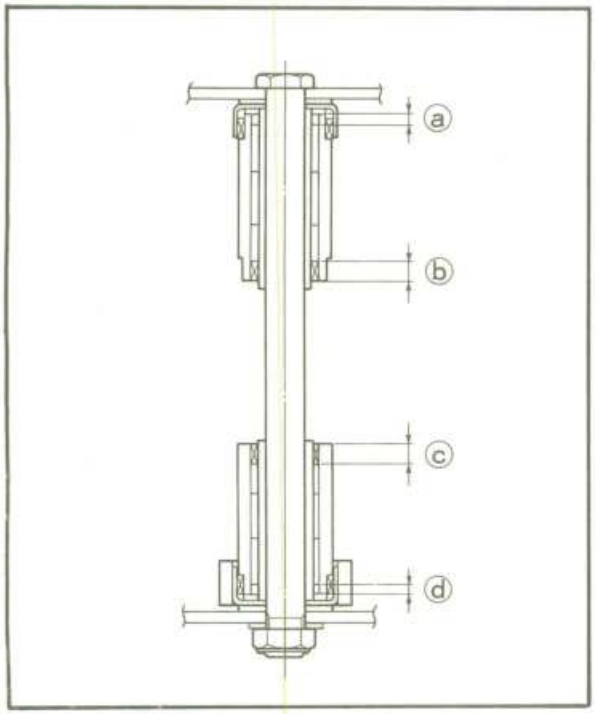
2. Inspect:
- Swingarm
  Bends/Cracks/Damage → Replace.



3. Inspect:
- Relay arm ①
- Connecting rod ②
  Bends/Cracks/Damage → Replace.

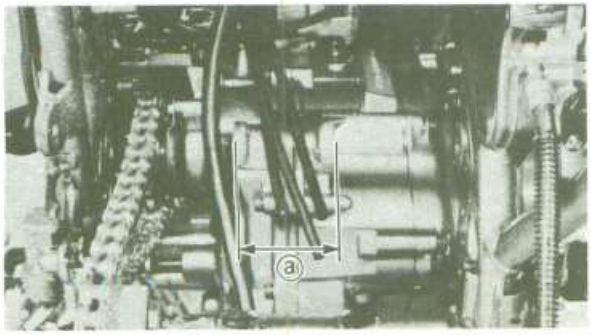
4. Inspect:
   - Oil seal
     Wear/Damage → Replace.
   - Washer
   - Thrust cover
     Wear/Damage → Replace.
   - Bushing
     Scratches/Damage → Replace.
   - Bearing
     Pitting/Damage → Replace.
5. Inspect:
   - Chain guide ①
   - Chain protector roller ②
   - Chain protector ③
     Wear/Damage → Replace.





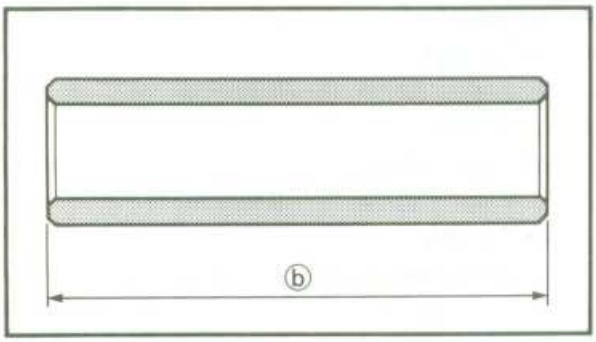
NOTE:
When replacing the bearing and bush of swingarm pivot, install new bearing ① and bush ② as shown.

ⓐ:4 mm (0.16 in)
ⓑ:8 mm (0.32 in)
ⓒ:8 mm (0.32 in)
ⓓ:4 mm (0.16 in)



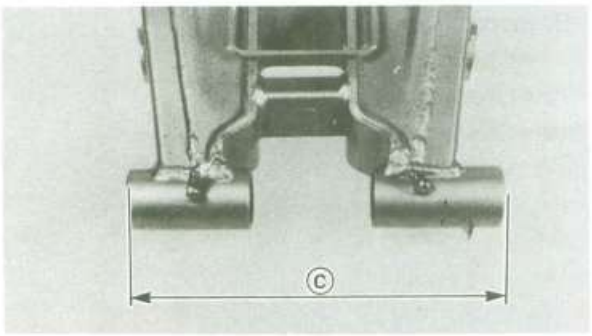
SIDE CLEARANCE ADJUSTMENT

1. Measure:
   - Engine mounting boss width ⓐ

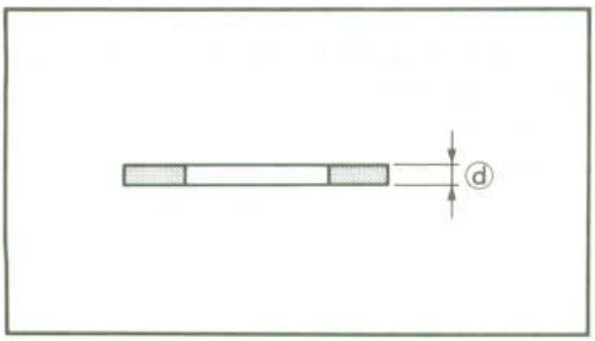


2. Measure:
   • Collar length ⓑ
   Out of specification → Replace.

Specified length/Qty:
74.9 ~ 75.0 mm
(2.949~2.953 in) /2 pcs.



3. Measure:
   • Pivot width ⓒ



4. Measure:
   • Washer thickness ⓓ
   Out of specification → Replace.

Washer thickness:
1.90 ~ 2.00 mm
(0.075 ~ 0.079 in)

5. Calculate:
   • Swingarm side clearance
   Out of specification → Adjust side clearance using shim.
   By using formula given below.

Side clearance:
(ⓐ + ⓑ × 2) — (ⓒ + ⓓ × 2)

Side clearance (at swingarm pivot):
0.4 ~ 0.7 mm
(0.016 ~ 0.028 in)
Limit : 0.3mm(0.012in)

* *

Example:

a. If the engine mounting boss width ⓐ, bush length ⓑ, are below.

ⓐ : 63.6 mm (2.50 in)

ⓑ : 74.9 mm (2.949 in)

b. If the pivot width ⓒ and washer thickness ⓓ are below.

ⓒ : 208.8 mm (8.22 in)

ⓓ : 1.9 mm (0.075 in)

Side clearance

= (63.6 + 74.9 × 2) - (208.8 + 1.9 × 2)

= 0.8 mm (0.03 in)

Then, install the one shim.



Shim thickness:
0.3 mm (0.012 in)

* *

INSTALLATION

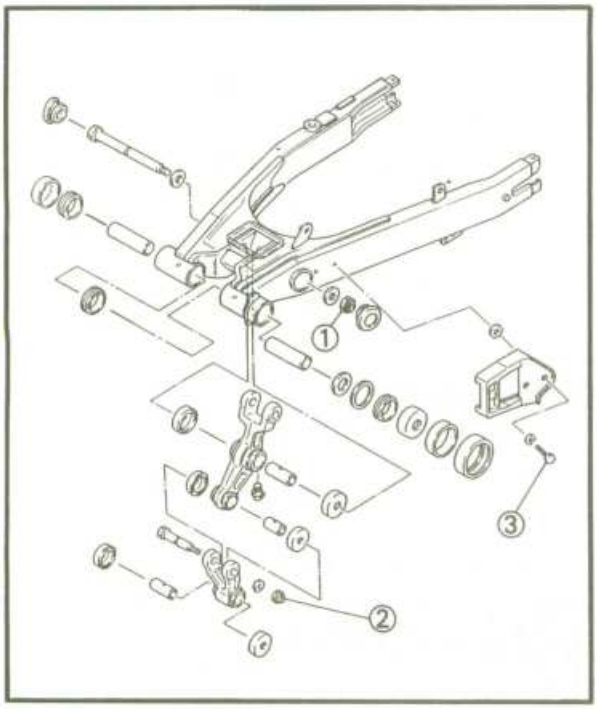
Reverse the "REMOVAL" procedure.

Note the following points.

1. Lubricate:
   - Bearing
   - Bushing
   - Thrust cover (inside)
   - Collar
   - Pivot shaft
   - Bolt (relay arm - swingarm)
   - Bolt (connecting rod - relay arm)
   - Bolt (connecting rod - frame)
   - Shaft (shock absorber)

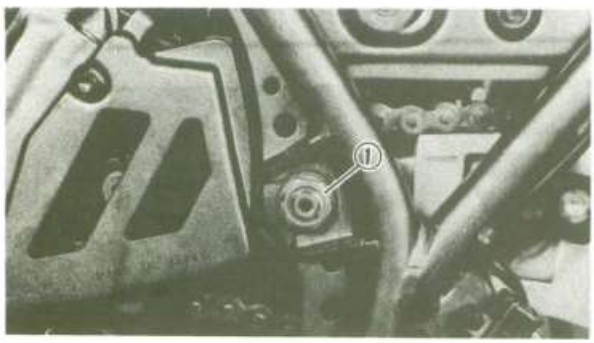


Lithium soap base grease



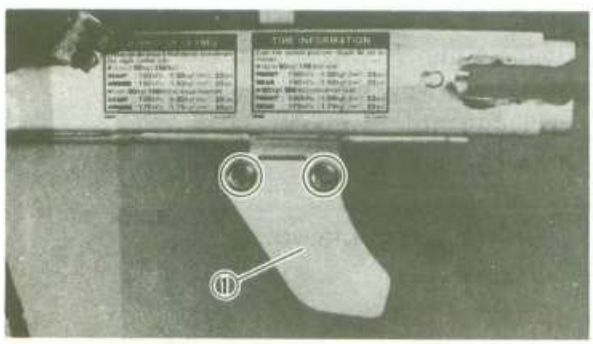
2. Tighten:
   - Nut ① (relay arm-swingarm)
   - Nut ② (relay arm-connecting rod)
   - Bolt ③ (chain protector)

Nut (relay arm-swingarm):
59 Nm (5.9 m · kg, 43 ft · lb)
Nut (relay arm-connecting rod):
32 Nm (3.2 m · kg, 23 ft · lb)
Bolt (chain protector):
7 Nm (0.7 m · kg, 5.1 ft · lb)



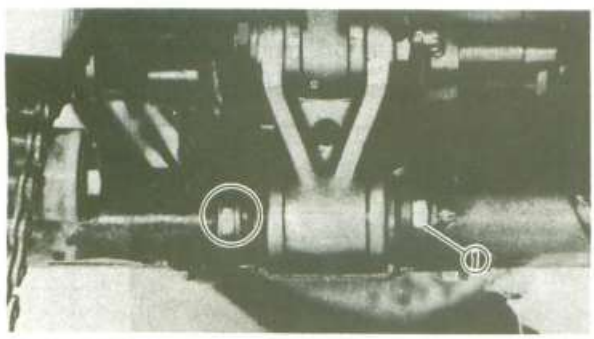
3. Tighten:
   - Nut ① (pivot shaft)

Nut ① (pivot shaft):
85 Nm (8.5 m · kg, 61 ft · lb)



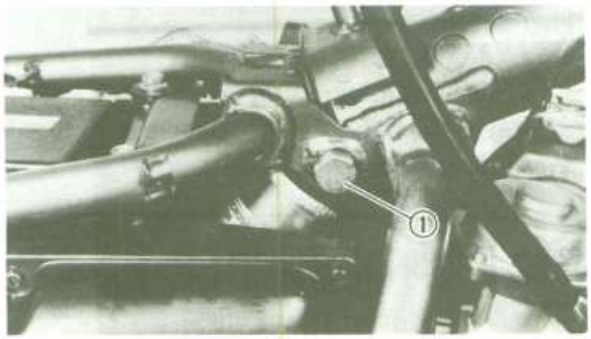
4. Tighten:
   - Bolt ① (chain guide)

Bolt ① (chain guide)
7 Nm (0.7 m · kg, 5.1 ft · lb)



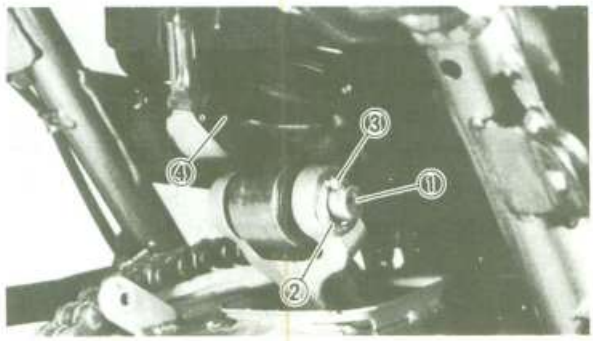
5. Tighten:
   - Nut ① (connecting rod-frame)

Nut ① (connecting rod-frame):
32 Nm (3.2 m · kg, 23 ft · lb)



6. Tighten:
   - Bolt ① (rear shock absorber)

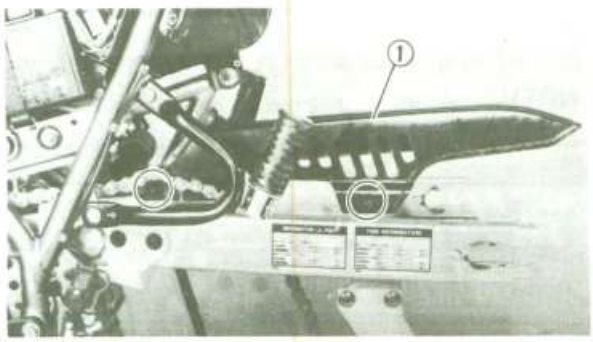
	Bolt ① (rear shock absorber): 59 Nm (5.9 m · kg, 43 ft · lb)



7. Install:
   - Shaft ①
   - Washer ②
   - Cotter pin ③
   - Rubber cover ④

NOTE:
Bend the ends of the cotter pin.

⚠WARNING
Always use a new cotter pin.



8. Tighten:
   - Screw ① (chain case)

	Screw ① (chain case): 4 Nm (0.4 m · kg, 2.9 ft · lb)

9. Install:
   - Rear wheel

   Refer to the "REAR WHEEL - INSTALLATION" section.

10. Adjust:
    - Drive chain slack

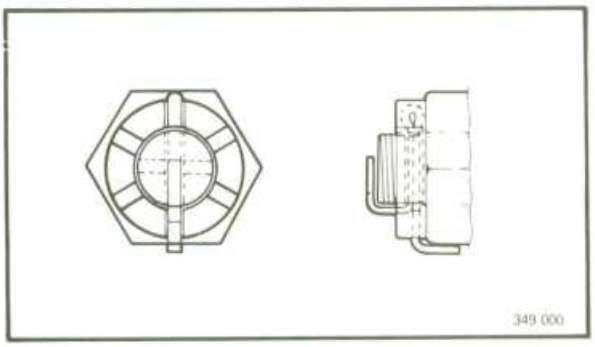
	Drive chain slack: 30 ~ 40 mm (1.18 ~ 1.57 in)

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

11. Tighten:
- Axle nut
- Bolt (swingarm end)
- Bolt (caliper bracket)
- Bolt (brake caliper)

Axle nut:
90 Nm (9.0 m · kg, 65 ft · lb)
Bolt (swingarm end):
3 Nm (0.3 m · kg, 2.2 ft · lb)
Bolt (caliper bracket):
45 Nm (4.5 m · kg, 32 ft · lb)
Bolt (brake caliper):
35 Nm (3.5 m · kg, 25 ft · lb)

Refer to the "REAR WHEEL - INSTALLATION" section in the CHAPTER 6.



12. Install:
- Cotter pin

NOTE:

Bend the ends of the cotter pin as illustration.

⚠ WARNING

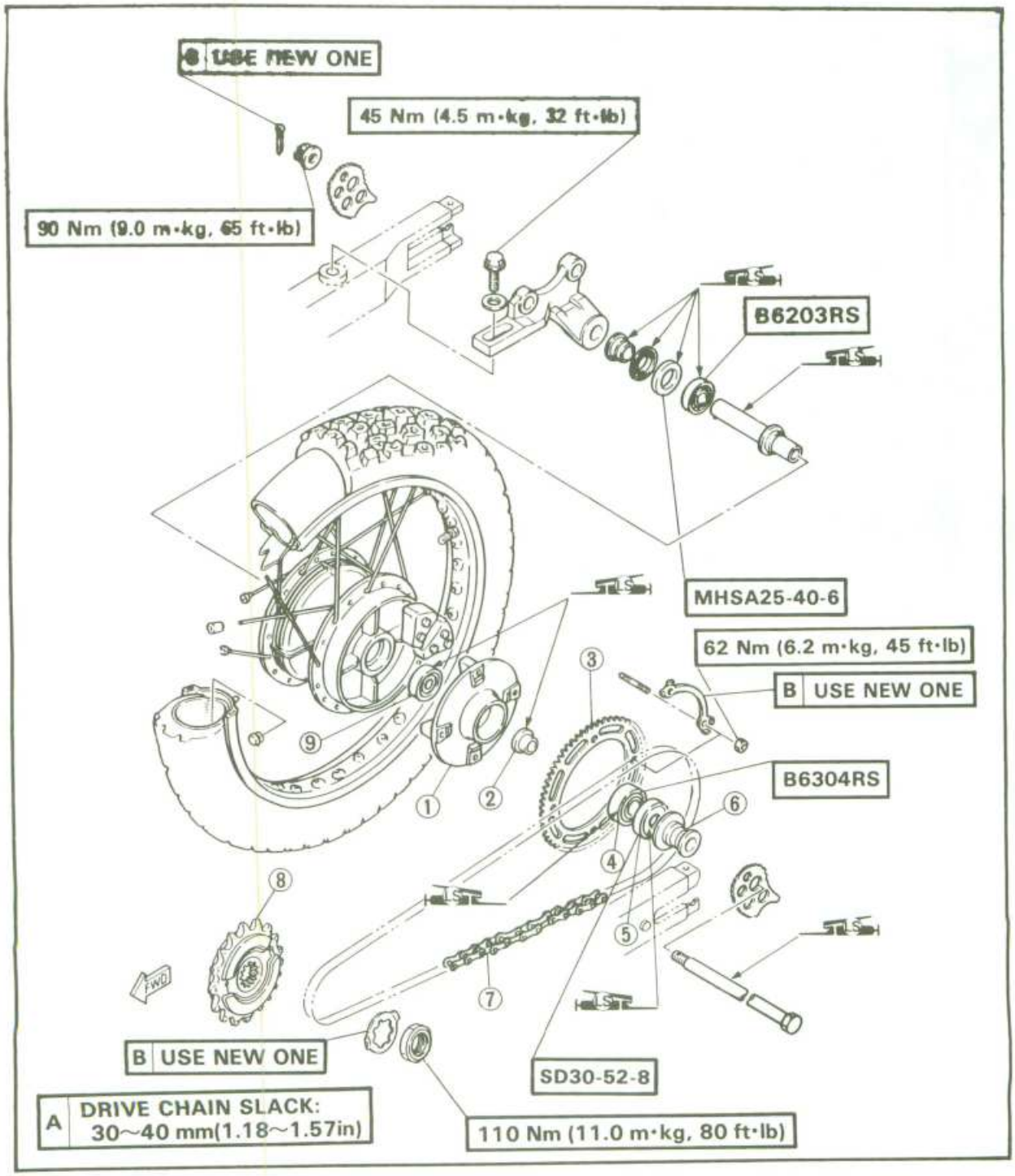
Always use a new cotter pin.

13. Install:
- Fuel tank
- Cover (fuel tank)
- Air scoops
- Side covers
- Seat

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

DRIVE CHAIN AND SPROCKET

① Clutch hub
② Collar
③ Driven sprocket
④ Bearing
⑤ Oil seal
⑥ Collar
⑦ Drive chain
⑧ Drive sprocket

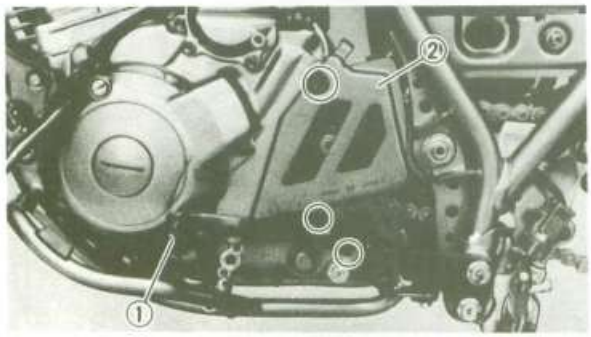


REMOVAL

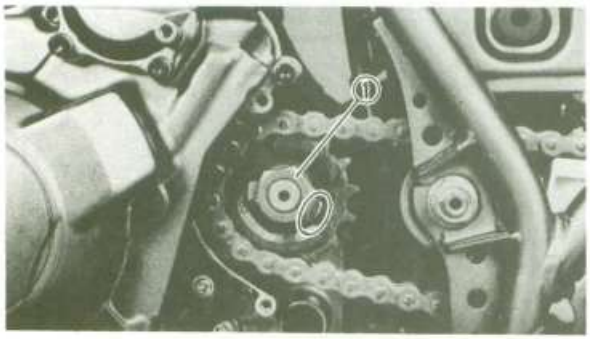
1. Place the motorcycle on a level place.

NOTE:

Before removing the drive chain and sprockets, drive chain slack and 10-link length of drive chain should be measured.



2. Remove:
   - Change pedal ①
   - Cover ② (drive sprocket)



3. Remove:
   - Drive sprocket ①

NOTE:

- Before removing the nut (drive sprocket), straighten the lock washer tab.
- Loosen the nut (drive sprocket) while applying the rear brake.

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

⚠ WARNING

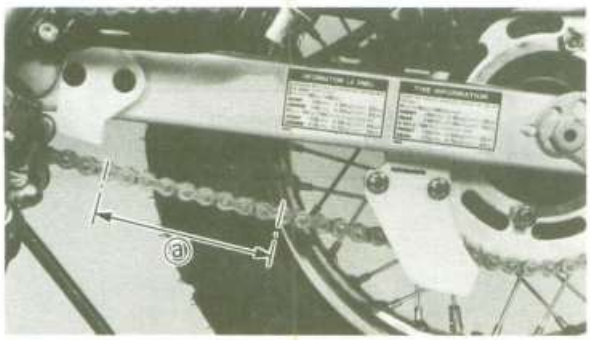
Securely support the motorcycle so there is no danger of it falling over.

5. Remove:
   - Rear wheel
   - Driven sprocket assembly
   - Damper rubber

   Refer to the "REAR WHEEL - REMOVAL" section.

6. Remove:
   - Swingarm
   - Drive chain

   Refer to the "REAR SHOCK ABSORBER AND SWINGARM - REMOVAL" section.

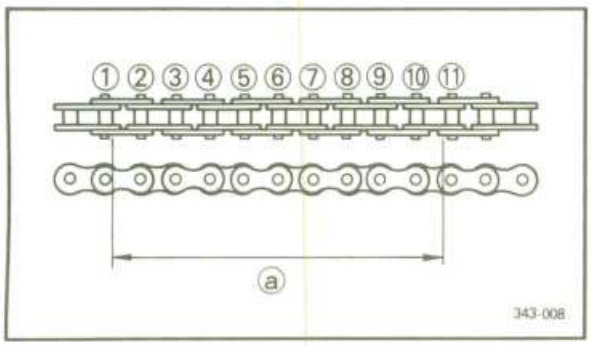


INSPECTION

1. Measure:
   - 10-link length (drive chain)

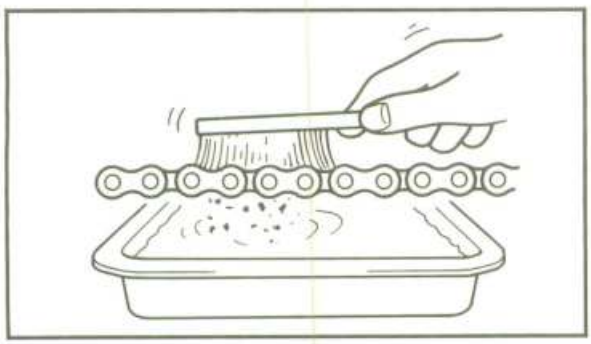
   Out of specification → Replace drive chain.

10-link length limit ⓐ:
150.2 mm (5.91 in)



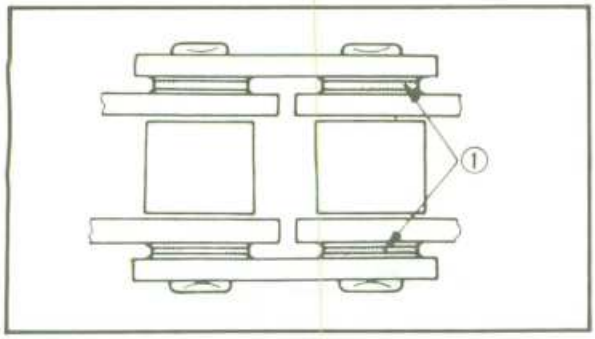
NOTE:

- For measurement make the chain tense by finger.
- 10-link length is a measurement between the insides of the ① and ⑪ rollers as shown.
- Two or three different 10-link lengths should be measured.



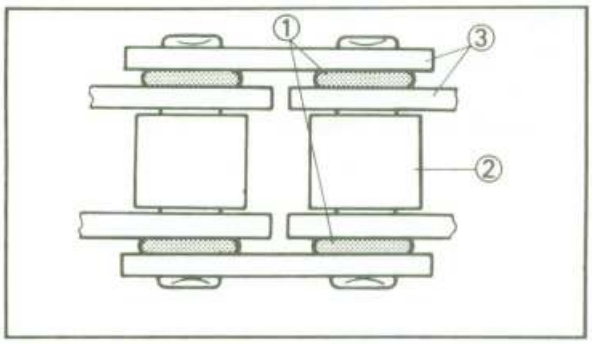
2. Clean:
   - Drive chain

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



CAUTION:

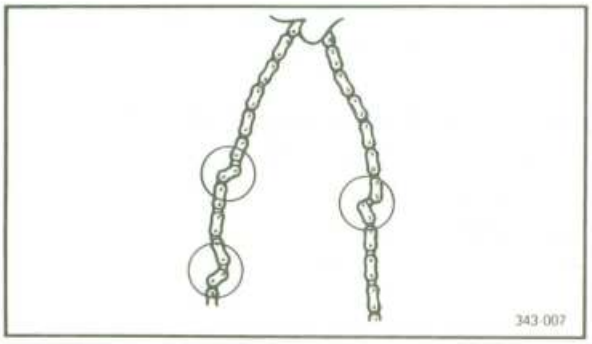
This motorcycle has a drive chain with small rubber O-rings ① between the chain plates. Steam cleaning, high-pressure washes, and certain solvent can damage these O-rings. Use only kerosene to clean the drive chain.



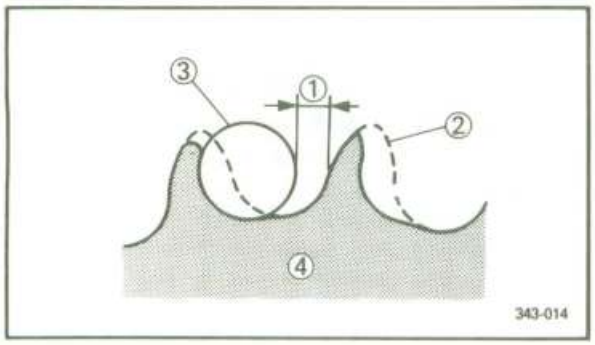
3. Inspect:
   - O-rings ① (drive chain)
     Damage → Replace drive chain.
   - Rollers ②
   - Side plates ③
     Damage/Wear → Replace drive chain.

4. Lubricate:
   - Drive chain

Drive chain lubricant:
SAE 30 ~ 50 motor oil

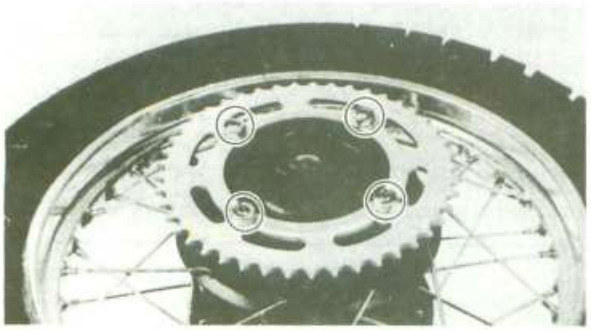


5. Inspect:
   - Drive chain
     Stiff → Clean and lublicate or replace.



6. Inspect:
   - Drive sprocket
   - Driven sprocket
     More than 1/4 teeth ① wear → Replace sprocket.
     Bent teeth → Replace sprocket.

② Correct
③ Roller
④ Sprocket



* *

Driven sprocket replacement steps:

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

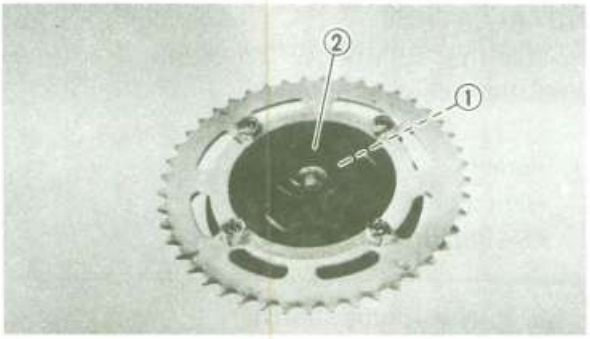
⚠WARNING

Always use new lock washers.

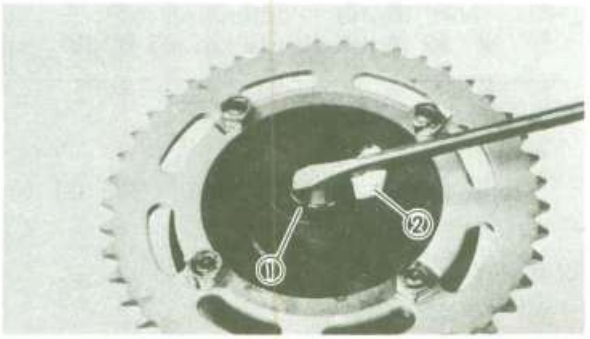
	Nut (driven sprocket): 62 Nm (6.2 m·kg, 45 ft·lb)

● Bend the lock washer tabs along the nut flats.

* *



7. Inspect:
   - Bearing ①
     Bearing turns roughly → Replace.
   - Oil seal ②
     Wear/Damage → Replace.



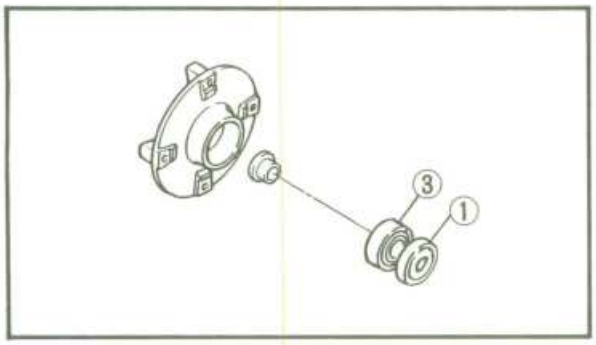
* *

Oil seal and wheel bearing replacement steps:

- Clean the outside of the sprocket hub.
- Remove the oil seals ① using a flat-head screw driver.

NOTE:

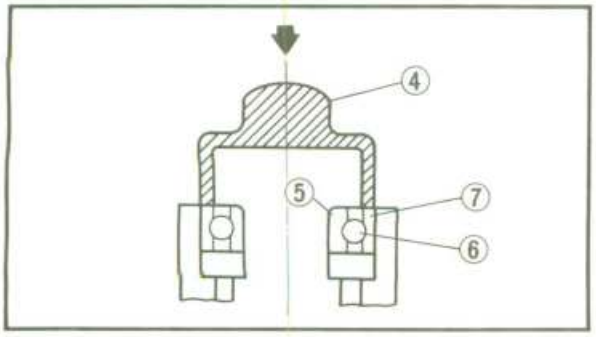
Place a rag ② on the outer edge to prevent damage.



- Remove the bearing ③ using a general bearing puller.
- Install the new bearing and oil seal by reversing the previous steps.

NOTE:

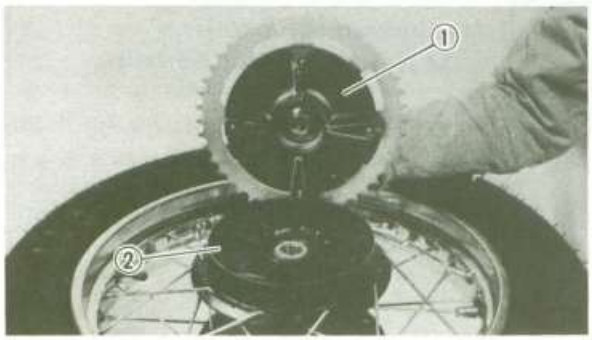
Use a socket ④ that matches the outside diameter of the race of the bearing and oil seal.



CAUTION:

Do not strike the center race ⑤ or balls ⑥ of the bearing. Contact should be made only with the outer race ⑦.

* *



8. Inspect:
   - Sprocket wheel hub ①
     Cracks/Damage → Replace.
   - Dumper rubber ②
     Wear/Damage → Replace.

INSTALLATION

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

1. Install:
   - Drive chain
   - Swingarm

Nut (pivot shaft):
85 Nm (8.5 m · kg, 61 ft · lb)
Nut (frame - connecting rod):
32 Nm (3.2 m · kg, 23 ft · lb)

2. Install:
   - Rear wheel
     Refer to the "REAR WHEEL INSTALLATION" section.
3. Install:
   - Drive sprocket

Nut (drive sprocket):
110 Nm (11.0 m · kg, 80 ft · lb)

⚠ WARNING

Always use a new lock washer.

NOTE:

- Tighten the nut (drive sprocket) while applying the rear brake.
- After tightening the nut, bend the lock washer tab along the nut flats.

4. Adjust:
   - Drive chain slack

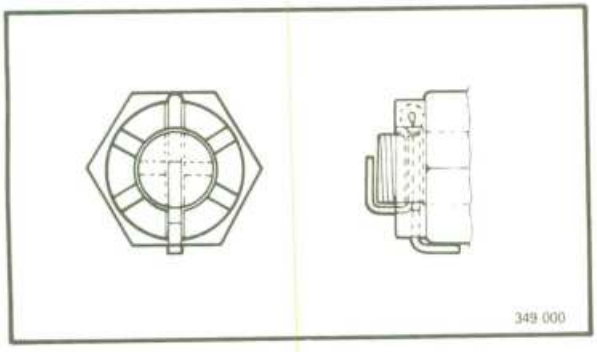
   Refer to the "DRIVE CHAIN SLACK ADJUSTMENT" section in the CHAPTER 3.

Drive chain slack:
30 ~ 40 mm (1.18 ~ 1.57 in)

5. Tighten:
   - Axle nut
   - Bolt (swingarm end)
   - Bolt (caliper bracket)
   - Bolt (brake caliper)

Axle nut:
90 Nm (9.0 m·kg, 65 ft·lb)
Bolt (swingarm end):
3 Nm (0.3 m·kg, 2.2 ft·lb)
Bolt (caliper bracket):
45 Nm (4.5 m·kg, 32 ft·lb)
Bolt (brake caliper):
35 Nm (3.5 m·kg, 25 ft·lb)

Refer to the "REAR WHEEL INSTALLATION" section.



6. Install:
   - Cotter pin

NOTE:

Bend the ends of the cotter pin as illastration.

⚠ WARNING

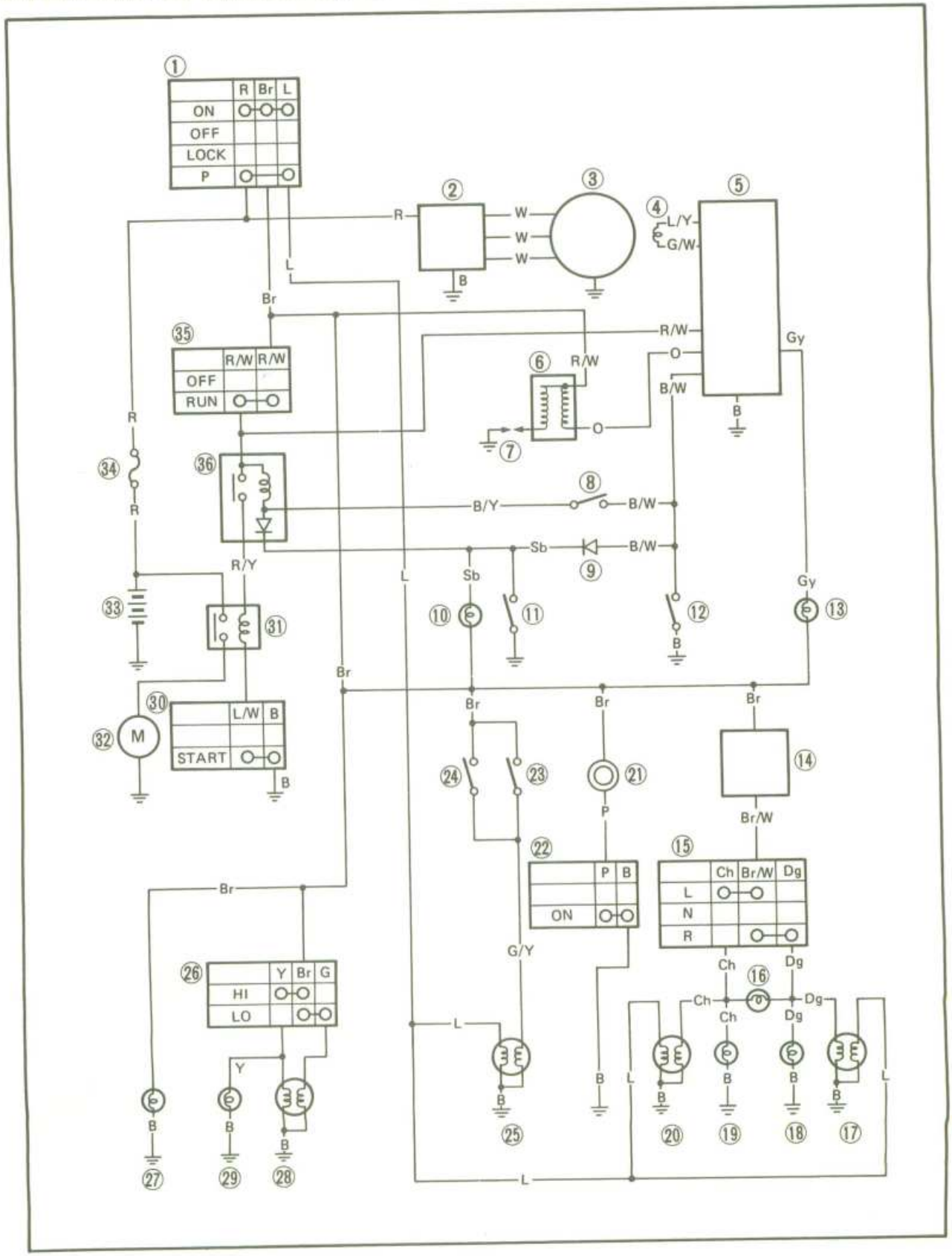
Always use a new cotter pin.

7. Install:
   - Cover (drive sprocket)
   - Change pedal

Bolt (cover):
10 Nm (1.0 m · kg, 7.2 ft · lb)
Bolt (change pedal):
10 Nm (1.0 m · kg, 7.2 ft · lb)

ELECTRICAL

XT600EA/EAC CIRCUIT DIAGRAM



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

COLOR CODE

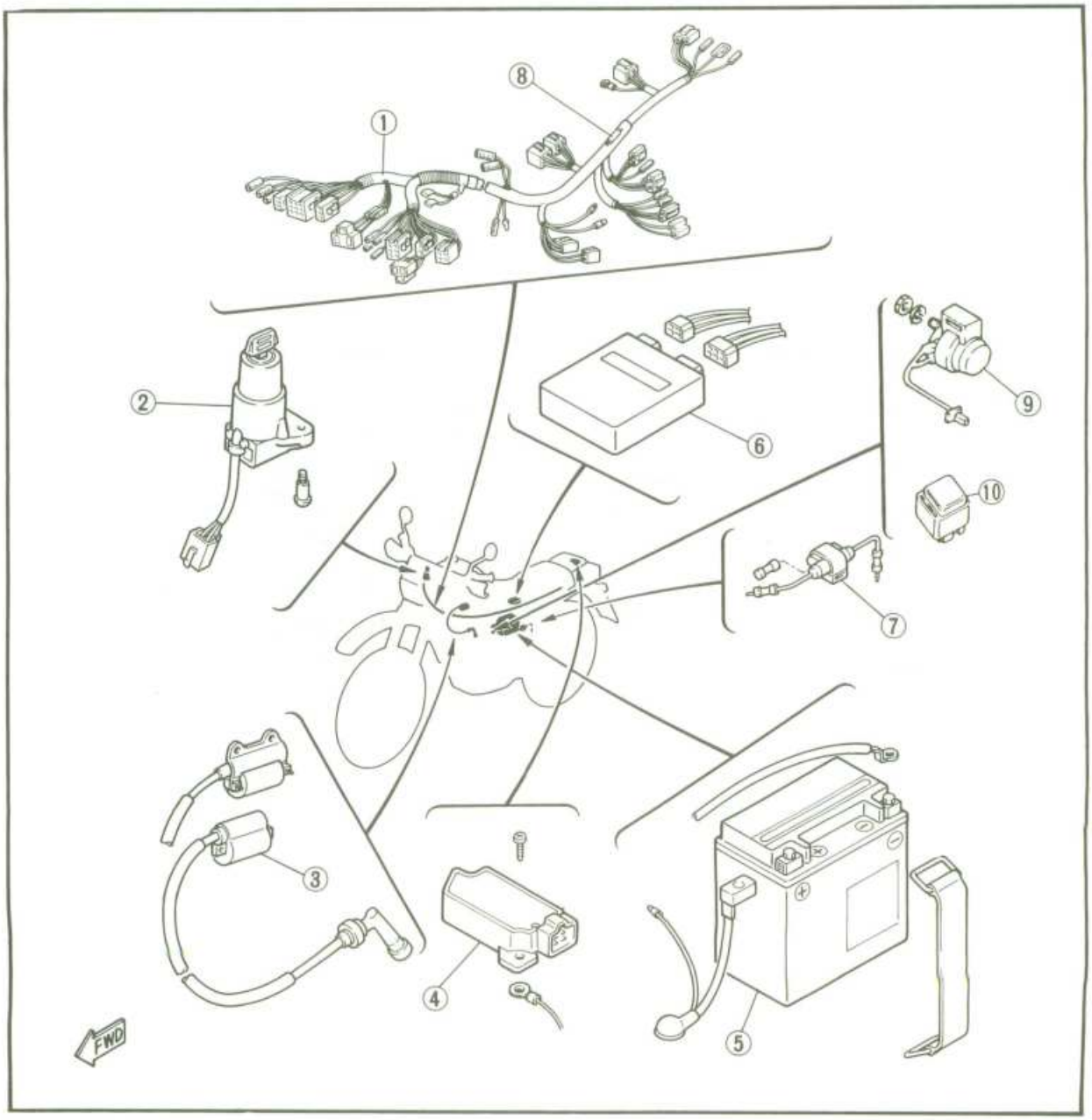
B	Black	Gy	Gray
Br	Brown	Y	Yellow
Ch	Chocolate	B/W	Black/White
Dg	Dark green	B/Y	Black/Yellow
G	Green	Br/W	Brown/White
L	Blue	G/W	Green/White
O	Orange	G/Y	Green/Yellow
P	Pink	L/Y	Blue/Yellow
R	Red	L/W	Blue/White
Sb	Sky blue	R/W	Red/White
W	White	R/Y	Red/Yellow

ELECTRICAL COMPONENTS

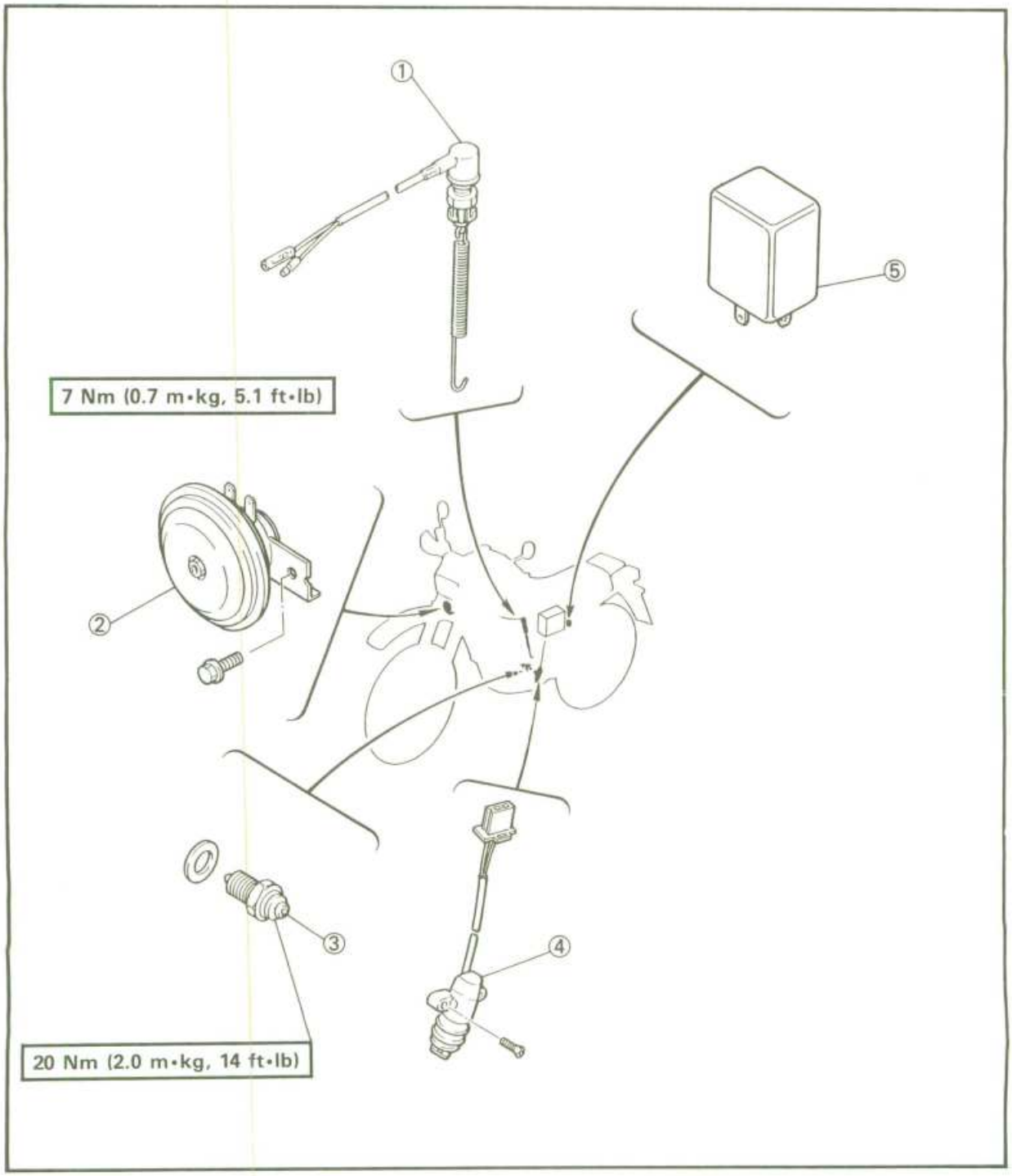
① Wire harness
② Main switch
③ Ignition coil
④ Rectifier/Regulator
⑤ Battery
⑥ Ignitor unit
⑦ Fuse
⑧ Diode
⑨ Starter relay
⑩ Starting circuite cut-off relay

IGNITION COIL:
PRIMARY COIL RESISTANCE:
3.4 ~ 4.6 Ω at 20°C (68°F)
SECONDARY COIL RESISTANCE:
10.4 ~ 15.6kΩ at 20°C (68°F)

BATTERY:
CAPACITY:
12V 8AH
SPECIFIC GRAVITY:
1.320



① Rear brake switch
② Horn
③ Neutral switch
④ Sidestand switch
⑤ Flasher relay



CHECKING OF SWITCHES

NOTE:

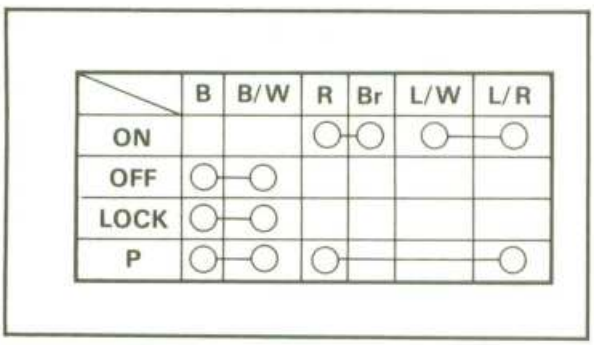
This section is written based on a general model.

Check the switches for the continuity between the terminals to determine correct connection.

Read the following for switch inspection.

SWITCH CONNECTION AS SHOWN IN MANUAL

The manual contains a connection chart as shown left showing the terminal connections of the switches (e.g., main switch, handlebar switch, brake switch, lighting switch, etc.)



The extreme left column indicates the switch positions and the top line indicates the colors of leads connected with the terminals in the switch component.

"○—○" indicates the terminals between which there is a continuity of electricity; i.e., a closed circuit at the respective switch positions.

In this chart:
"R and Br" and "L/W and L/R" are continuous with the "ON" switch position.

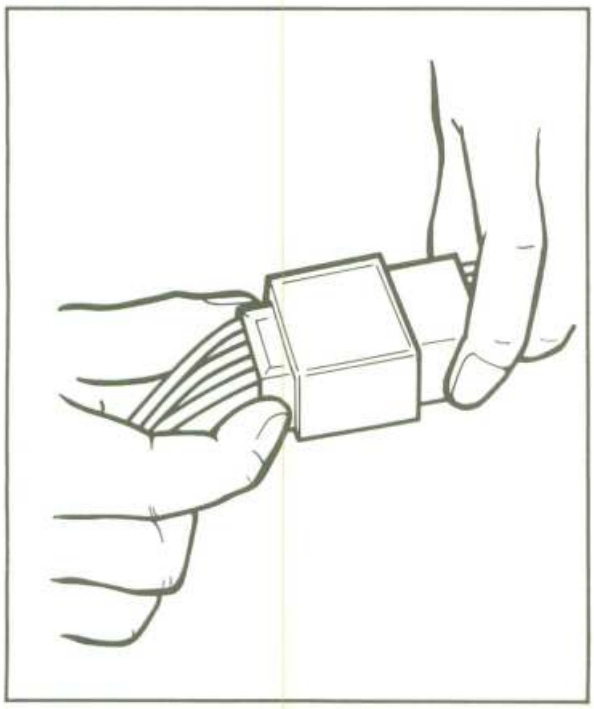
"B and B/W" is continuous with the "OFF" switch position.

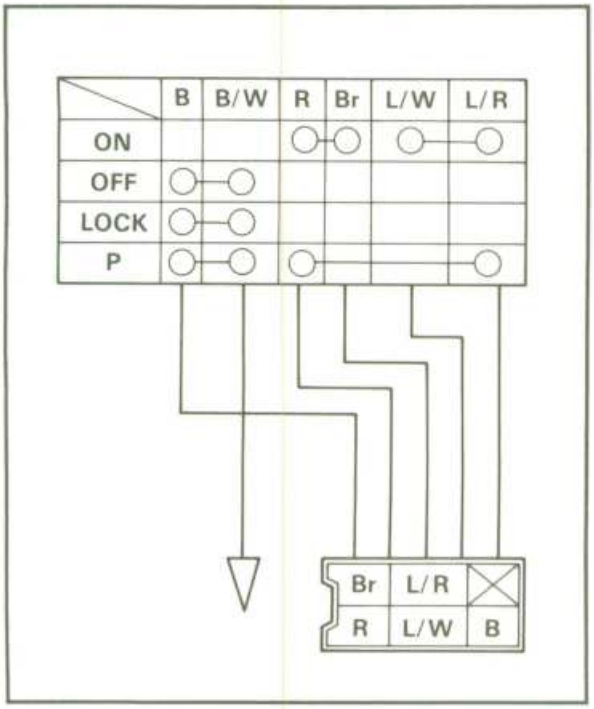
"B and B/W" is continuous with the "LOCK" switch position.
"B and B/W" and "R and L/R" are continuous with the "P" switch position.

CHECKING SWITCH FOR TERMINAL CONNECTION

Before checking the switch, refer to the connection chart as shown above and check for the correct terminal connection (closed circuit) by the color combination.

To explain how to check the switch, the main switch is taken for example in the following.





1. Disconnect the main switch coupler from the wire harness.

CAUTION:

Never disconnect the main switch coupler by pulling the leads. Otherwise, leads may be pulled off the terminals inside the coupler.

2. Inspect whether any lead is off the terminal inside the coupler. If it is, repair it.

NOTE:

If the coupler is clogged with mud or dust, blow it off by compressed air.

3. Use the connection chart to check the color combination for continuity (a closed circuit). In this example, the continuity is as follows.

   "R and Br" and L/W and L/R" are continuous with the "ON" switch position.

   "B and B/W" is continuous with the "OFF" switch position.

   "B and B/W" is continuous with the " LOCK" switch position.

   "B and B/W" and "R and L/R" are continuous with the "P" switch position.

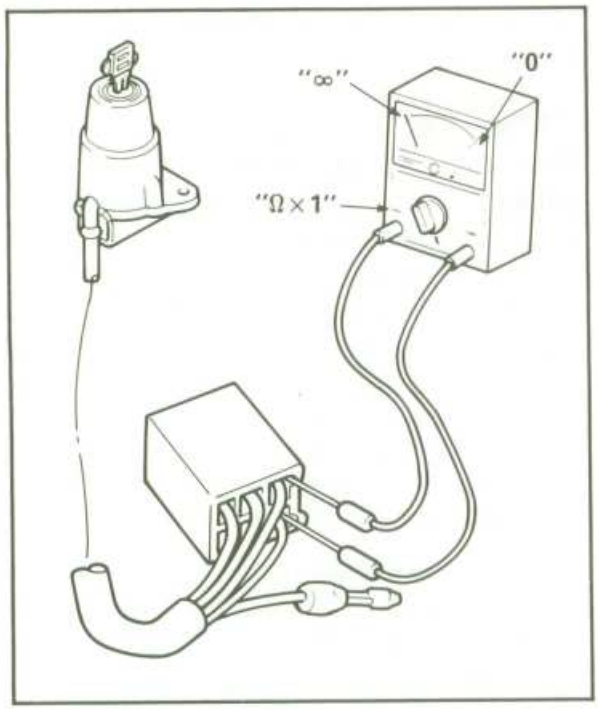
   Please note that there is no continuity (an open circuit) at all for the color combinations other than the above.

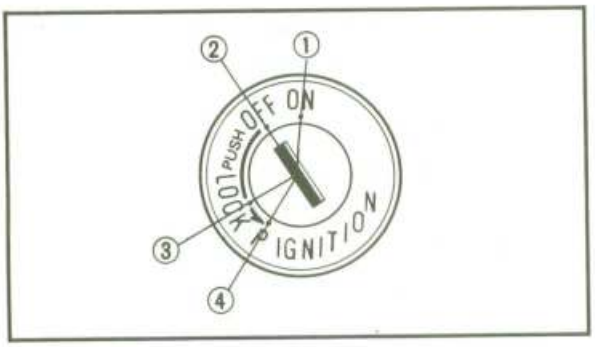
4. Check the switch component for the continuity between "R and Br".

* *

Checking steps:

- Turn the switch key to the "ON", "OFF", "LOCK", and "P" several times.
- Set the pocket tester selector to the "Ωx1".
- Connect the tester (+) lead to the "R" lead terminal in the coupler and the (−) lead to the "Br" lead terminal.





NOTE:

Use thin probes for checking the continuity. Otherwise, the probes may contact other terminals inside the coupler.

●Check the continuity between "R" and "Br" at the respective switch positions of "ON" ①, " OFF" ②, "LOCK" ③, and "P" ④. There must be continuity (the tester indicating "0") at the "ON" switch position, and there must be no continuity (the tester indicating " ∞ .") at " OFF", "LOCK", or "P". There is something wrong between "R" and "Br" if there is no continuity at the "ON" position or if there is some continuity either at the "OFF" or " LOCK" or "P".

NOTE:

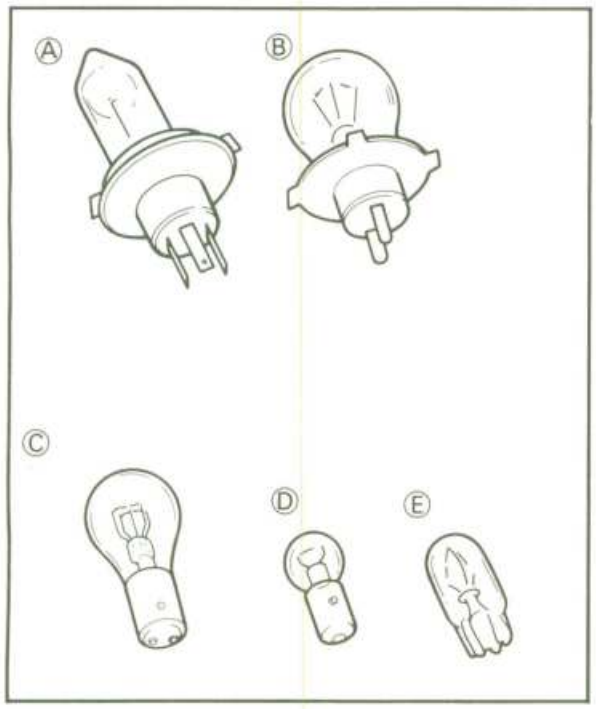
Check the switch for continuity several times.

* *

5. Next go on to checking of the continuity between "B and B/W", "L/W and L/R", and "R and L/R" at the respective switch positions, as in the same manner mentioned above.
6. If there is something wrong with any one of the combinations, replace the switch component.

CHECKING OF BULBS (FOR HEADLIGHT, TAIL/BRAKE LIGHT, FLASHER LIGHT, METER LIGHT, ETC.)

Check the bulb terminal continuity for the condition of the bulb.



KINDS OF BULBS

The bulbs used in the motorcycle are classified as shown left by the shape of the bulb socket.

Ⓐ and Ⓑ are mainly used for the headlight.

Ⓒ is mainly used for the flasher light and tail/brake light.

Ⓓ and Ⓔ are mainly used for the meter light and other indicator lights.

CHECKING BULB CONDITION

1. Remove the bulb.

NOTE:

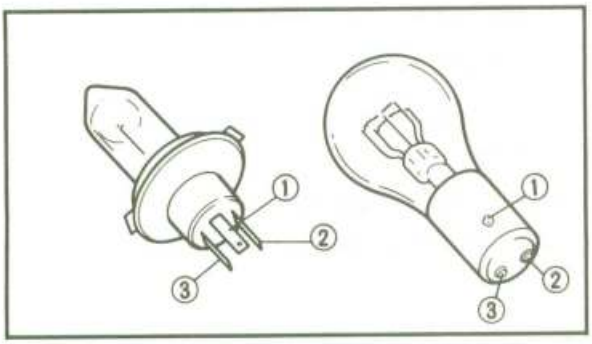
- Bulbs of the Ⓐ and Ⓑ type uses a bulb holder.
  Remove the bulb holder before removing the bulb itself. Most of the bulb holders for this type can be removed by turning them counterclockwise.
- Most of the bulbs of Ⓒ and Ⓓ type can be removed from the bulb sockets by pushing and turning them counterclockwise.
- Bulbs of the Ⓔ type can be removed from the bulb sockets by simply pulling them out.

CAUTION:

Be sure to hold the socket firmly when removing the bulb. Never pull the lead. Otherwise, the lead may be pulled off the terminal in the coupler.

⚠ WARNING

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



2. Check the bulb terminals for continuity.

* *

Checking steps:

- Set the pocket tester selector to the "Ω × 1".
- Connect the tester leads to the respective bulb terminals.

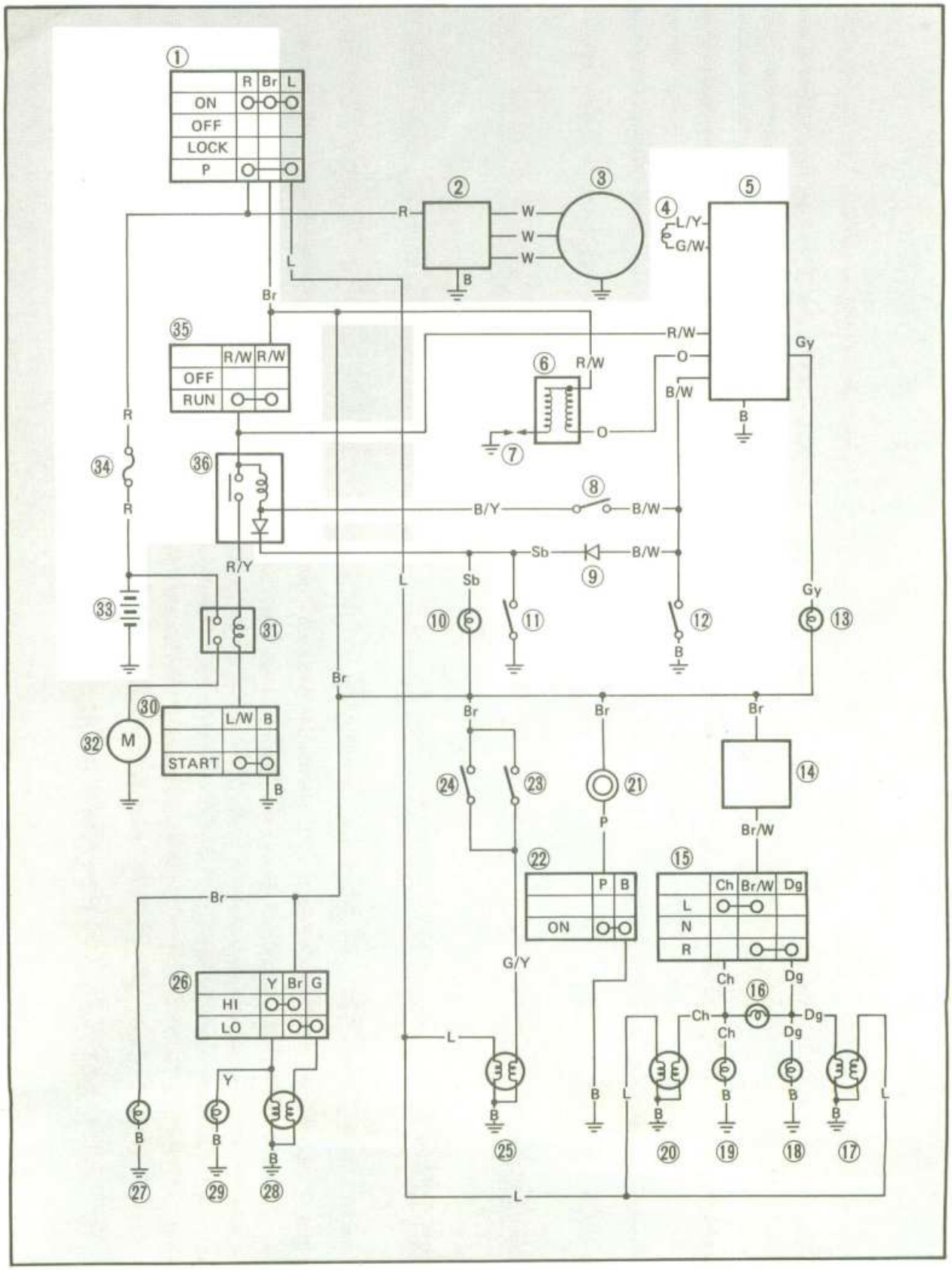
  Take for example a 3-terminal bulb as shown left. First check the continuity between the ① and ② terminals by connecting the tester (+) lead to the ① terminal and the tester (−) lead to the ② terminal. Then check the continuity between the ① and ③ terminals by connecting the tester (+) lead still to the ① terminal and the tester (−) lead to the ③ terminal. If the tester shows "∞" in either case, replace the bulb.

* *

3. Check the bulb socket by installing a proven bulb to it. As in the checking of bulbs, connect the pocket tester leads to the respective leads of the socket and check for continuity in the same manner as mentioned above.

IGNITION SYSTEM

CIRCUIT DIAGRAM

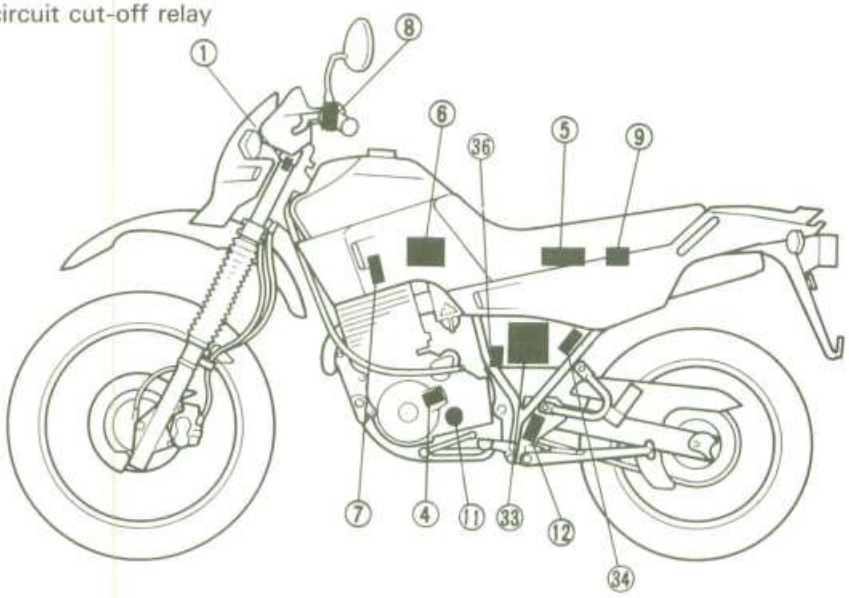


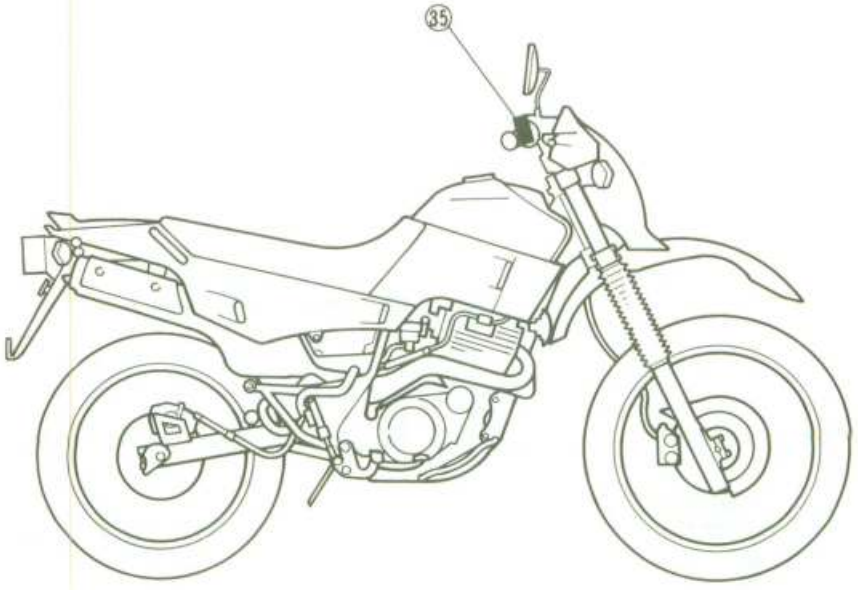
Aforementioned circuit diagram shows ignition circuit in the circuit diagram.

NOTE:

For the color codes, see page 7-2.

① Main switch
④ Pickup coil
⑤ Ignitor
⑥ Ignition coil
⑦ Spark plug
⑧ Clutch switch
⑨ Diode
⑪ Neutral switch
⑫ Sidestand switch
㉝ Battery
㉞ Fuse
㉟ "ENGINE STOP" switch
㊱ Starting circuit cut-off relay





TROUBLESHOOTING

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

Procedure

Check;

1. Fuse
2. Battery
3. Spark plug
4. Ignition spark gap
5. Spark plug cap resistance
6. Ignition coil resistance
7. Main switch
8. "ENGINE STOP" switch
9. Sidestand switch
10. Neutral switch
11. Clutch switch
12. Pickup coil resistance
13. Wiring connection (Entire ignition system)

NOTE:

- Remove the following parts before troubleshooting.
  1. Seat
  2. Side cover (left and right)
  3. Air scoop (left and right)
  4. Cover (fuel tank)
  5. Fuel tank
  6. Cowling (headlight)
- Use the following special tools in this troubleshooting.



Dynamic spark tester:
P/N. YM-34487
P/N. 90890-03144



Pocket tester:
P/N. YU-03112
P/N. 90890-03112

1. Fuse

- Remove the fuse.
- Connect the pocket tester (Ω × 1) to the fuse.
- Check the fuse for continuity. Refer to the "FUSE INSPECTION" section in the CHAPTER 3.

NOCONTINUITY → Replace fuse.

CONTINUITY ↓

2. Battery

- Check the battery condition. Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

Voltage:
12.8 V or higher at 20°C (68°F)

INCORRECT →

- Clean battery terminals.
- Recharge or replace battery. Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

CORRECT ↓

*

*

3. Spark plug

- Check the spark plug condition.
- Check the spark plug type.
- Check the spark plug gap.
  Refer to the "SPARK PLUG INSPECTION" section in the CHAPTER 3.

Standard spark plug:
DPR8EA-9 (N.G.K.)
X24EPR-U9 (N.D.)

Spark plug gap:
DPR8EA-9, X24EPR-U9
0.8 ~ 0.9 mm
(0.031 ~ 0.035 in)

INCORRECT → Repair or replace spark plug.

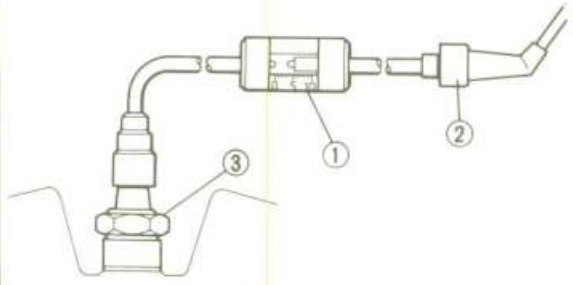
CORRECT

4. Ignition spark gap

- Disconnect the spark plug cap from spark plug.
- Connect the dynamic spark tester ① as shown.

② Spark plug cap
③ Spark plug

- Turn the main switch to "ON".



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

Minimum spark gap:
6.0 mm (0.24 in)

MEETS SPECIFICATION → Ignition system is good.

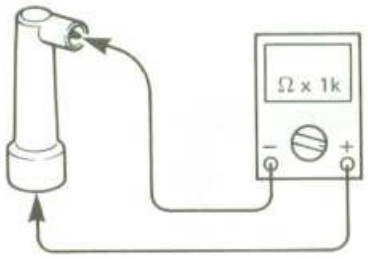
OUT OF SPECIFICATION OR NO SPARK

*

*

5. Spark plug cap resistance

- Remove the spark plug cap.
- Connect the pocket tester (Ω x 1k) to the spark plug cap.



- Check the spark plug cap for specificated resistance.

Spark plug cap resistance:
10 kΩ at 20°C (68°F)

OUT OF SPECIFICATION

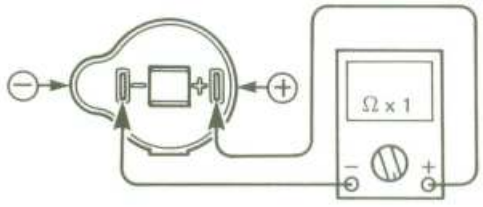
Spark plug cap is faulty, replace it.

MEETS SPECIFICATION

6. Ignition coil resistance

- Disconnect the ignition coil leads (Orange and Black) from the wire harness.
- Connect the pocket tester (Ω × 1) to the ignition coil.

Tester (+) lead → ⊕ terminal
Tester (–) lead → ⊖ terminal

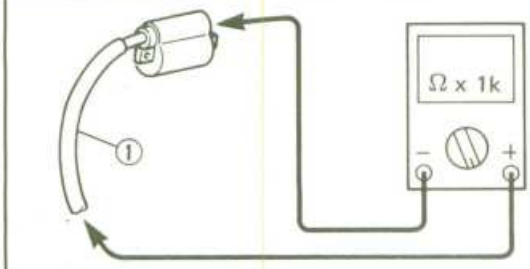


- Check the primary coil for specificated resistance.

Primary coil resistance:
3.4 ~ 4.6 Ω at 20°C (68°F)
(⊕ terminal – ⊖ terminal)

• Connect the pocket tester (Ω × 1k) to the ignition coil.

Tester (+) lead → Spark plug lead ①
Tester (−) lead → ⊖ terminal



• Check the secondary coil for specificated resistance.

Secondary coil resistance:
10.4~15.6kΩ at 20°C (68°F)
(Spark plug lead - ⊖ terminal)

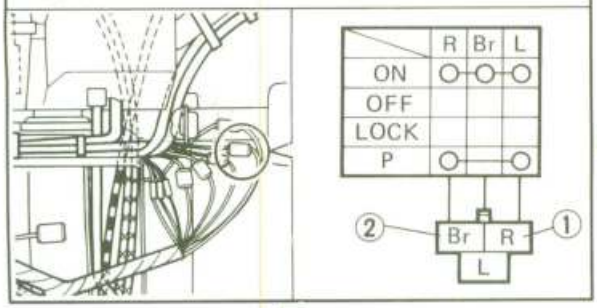
OUT OF SPECIFICATION

Ignition coil is faulty, replace it.

BOTH MEET SPECIFICATIONS

7. Main switch

• Disconnect the main switch coupler from the wire harness.
• Connect the pocket tester (Ω x 1) to the main switch terminal.
• Check the switch component for the continuity between "Red ① and Brown ②". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

Main switch is faulty, replace it.

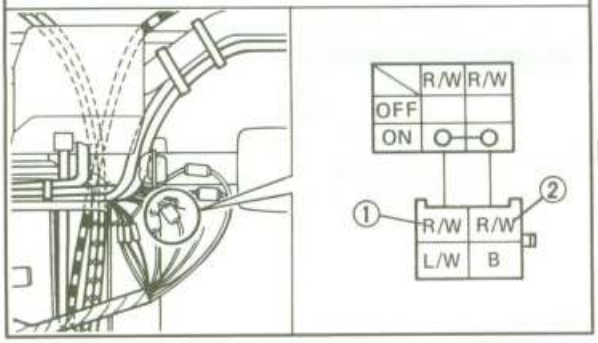
CORRECT

*

*

8. "ENGINE STOP" switch

- Disconnect the handlebar switch (right) lead coupler from the wire harness.
- Connect the pocket tester (Ω x1) to the engine stop switch terminal.
- Check the switch component for the continuity between "Red/White ① and Red/White ②". Refer to the "CHECKING OF SWITCHES" section.



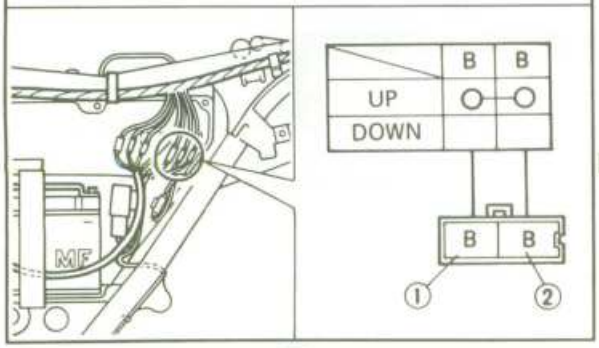
INCORRECT

"ENGINE STOP" switch is faulty, replace handlebar switch (right).

CORRECT

9. Sidestand switch

- Disconnect the sidestand switch coupler from the wire harness.
- Connect the pocket tester (Ω × 1) to the sidestand switch terminal.
- Check the switch component for the continuity between "Black ① and Black ②". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

Sidestand switch is faulty, replace it.

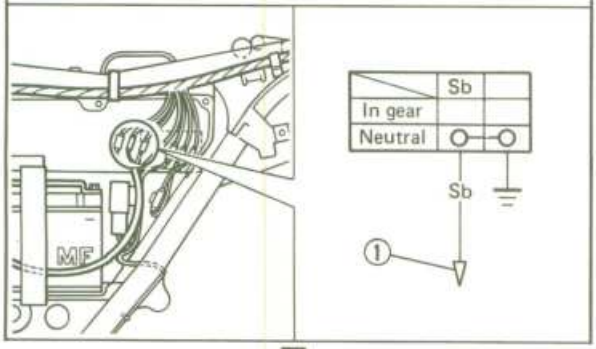
CORRECT

*

*

10. Neutral switch

- Disconnect the neutral switch coupler from the wire harness.
- Connect the pocket tester (Ω x 1) to the neutral switch lead.
- Check the switch component for the continuity between "Sky blue ① and ground". Refer to the "CHECKING OF SWITCHES" section.



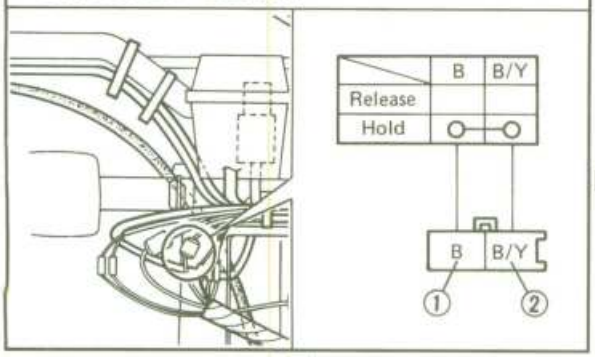
INCORRECT

Neutral switch is faulty, replace it.

CORRECT

11. Clutch switch

- Disconnect the clutch switch coupler from the wire harness.
- Connect the pocket tester (Ω x 1) to the clutch switch lead.
- Check the switch component for the continuity between "Black ① and Black/Yellow ②". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

Clutch switch is faulty, replace it.

CORRECT

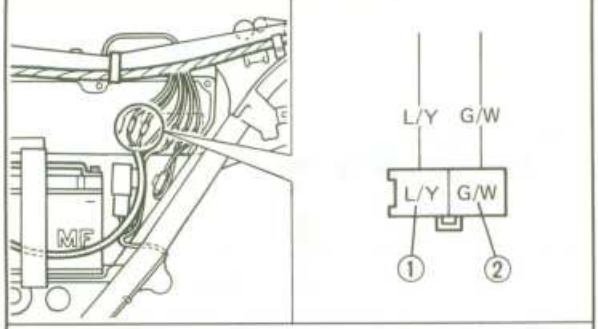
*

*

12. Pickup coil resistance

- Disconnect the A.C. magneto coupler from the wire harness.
- Connect the pocket tester (Ω × 100) to the pickup coil terminal.

Tester (+) lead → Blue/Yellow ① terminal
Tester (−) lead → Green/White ② terminal



- Check the pickup coil for specified resistance.

Pickup coil resistance:
184 ~ 276 Ω at 20°C (68°F)
(Blue/Yellow - Green/White)

OUT OF SPECIFICATION →

Pickup coil is faulty, replace it.

MEET SPECIFICATION ↓

13. Wiring connection

Check the entire ignition system for connections.
Refer to the "WIRING DIAGRAM" section.

POOR CONNECTION →

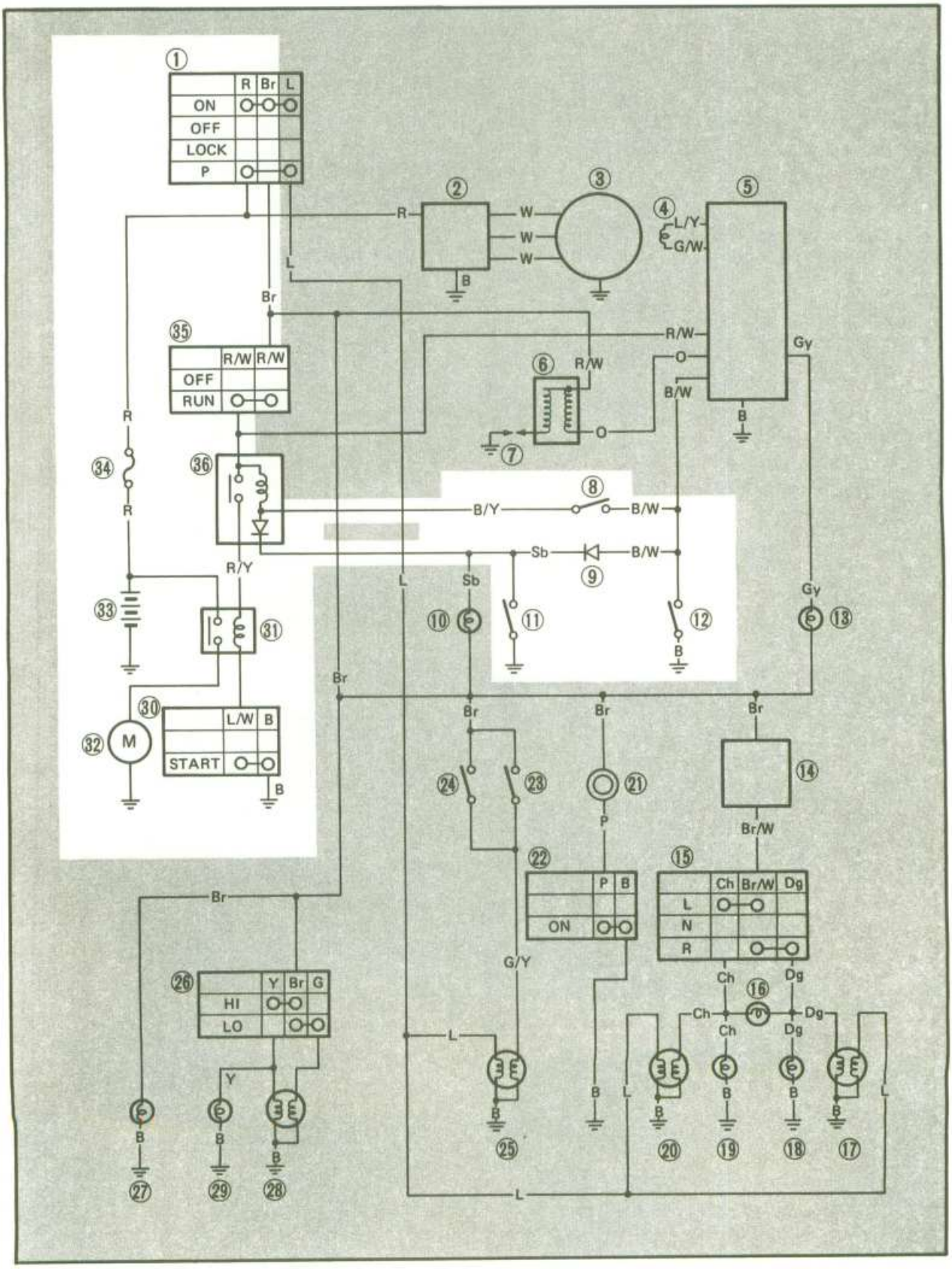
Correct.

CORRECT ↓

Ignitor unit is faulty.
Replace the ignitor unit.

ELECTRICAL STARTING SYSTEM

CIRCUIT DIAGRAM

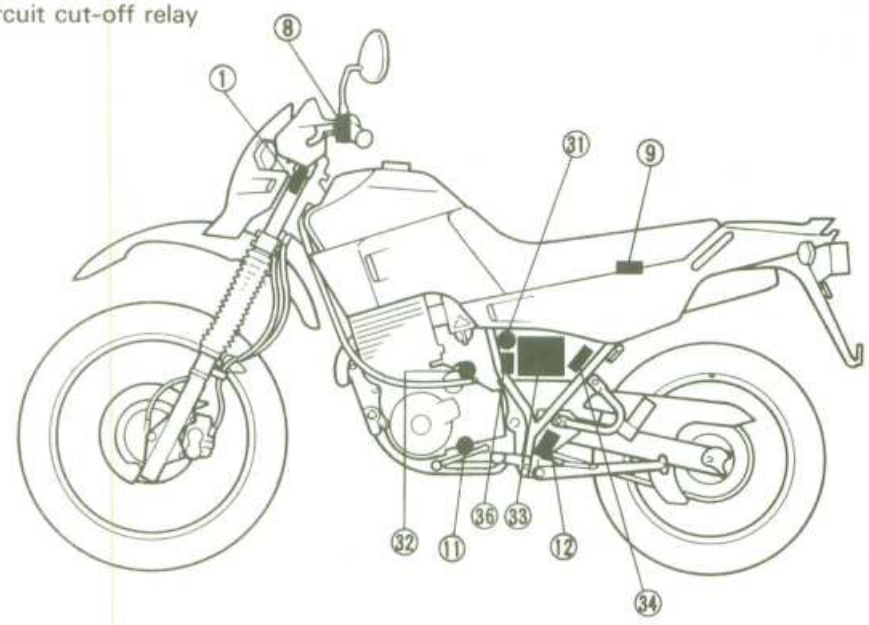


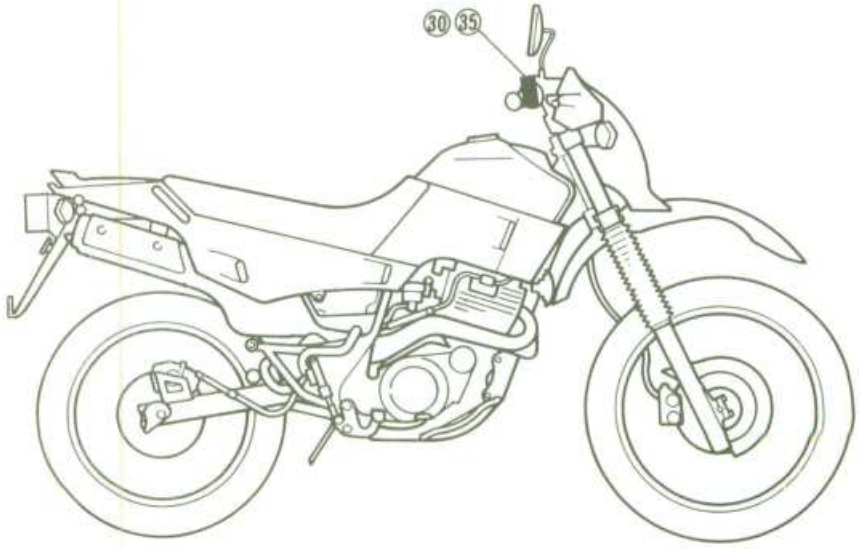
Aforementioned circuit diagram shows electrical starting circuit in the circuit diagram.

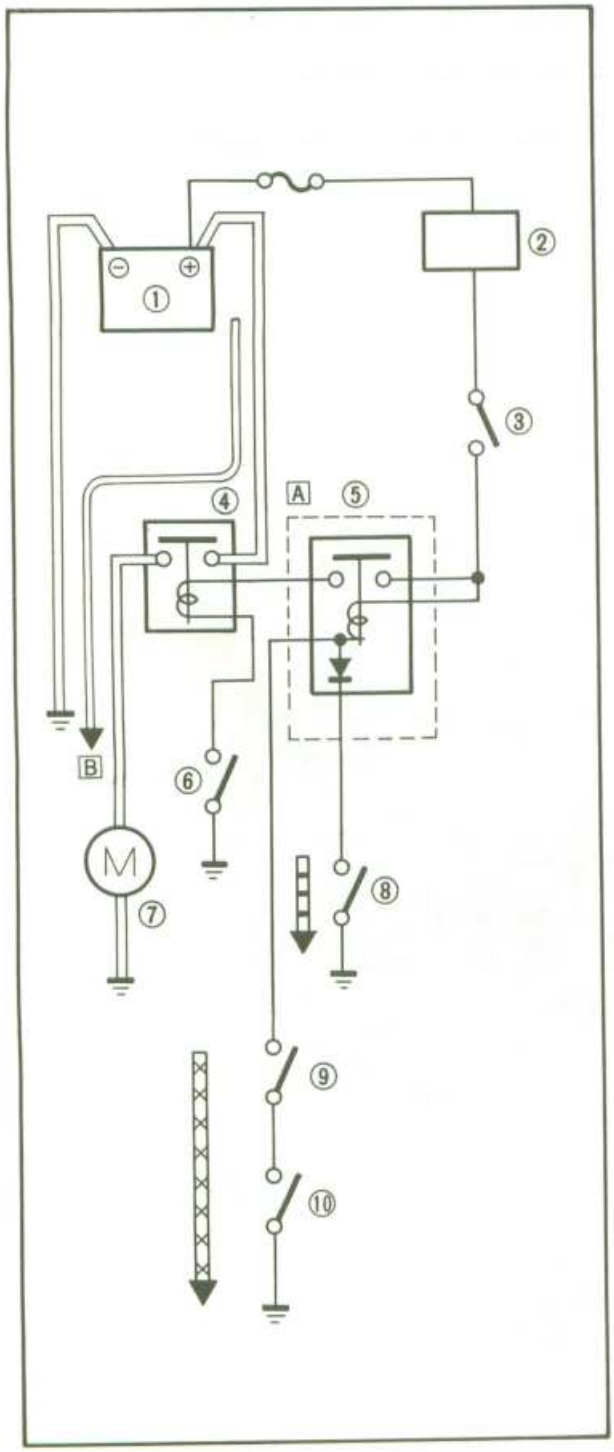
NOTE:

For the color codes, see page 7-2.

① Main switch
⑧ Clutch switch
⑨ Diode
⑪ Neutral switch
⑫ Sidestand switch
㉚ "START" switch
㉛ Starter relay
㉜ Starter motor
㉝ Battery
㉞ Fuse
㉟ "ENGINE STOP" switch
㊱ Starting circuit cut-off relay







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 Main switch
③ "ENGINE STOP" switch
④ Starter relay
⑤ Starting circuit cut-off relay
⑥ "START" switch
⑦ Starter motor
⑧ Neutral switch
⑨ Clutch switch
⑩ Sidestand switch
Ⓐ To starting circuit cut-off relay
Ⓑ To starter motor

TROUBLESHOOTING

STARTER MOTOR DOES NOT OPERATE.

Procedure

Check;

1. Fuse
2. Battery
3. Starter motor
4. Starter relay
5. Starting circuit cut-off relay
6. Main switch
7. "ENGINE STOP" switch
8. Sidestand switch
9. Neutral switch
10. Clutch switch
11. "START" switch
12. Wiring connection
    (Entire electric starting system)

NOTE:

- Remove the following before troubleshooting.

1. Seat
2. Side cover (left and right)
3. Air scoop (left and right)
4. Cover (fuel tank)
5. Fuel tank
6. Cowling (headlight)

- Use the following special tool in this troubleshooting.



Pocket tester:
P/N. YU-03112
P/N. 90890-03112

1. Fuse

- Remove the fuse.
- Connect the (pocket tester (Ω × 1) to the fuse.
- Check the fuse for continuity.
  Refer to the "FUSE INSPECTION" section in the CHAPTER 3.

NOCONTINUITY → Replace fuse.

CONTINUITY ↓

2. Battery

Check the battery condition.
Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

Voltage:
12.8 V or higher at 20°C (68°F)

INCORRECT →

- Clean battery terminals.
- Recharge or replace battery.
  Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

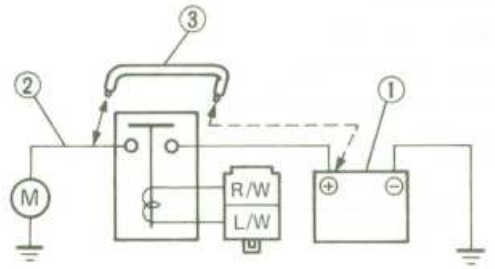
CORRECT ↓

*

*

3. Starter motor

- Connect the battery positive terminal ① and starter motor cable ② using a jumper lead ③ * as shown.



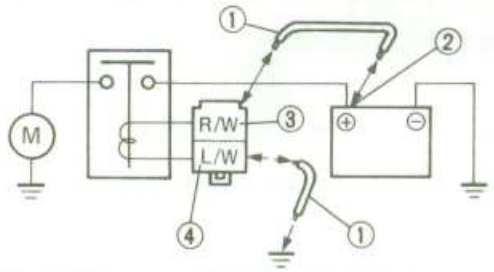
- Check the starter motor operation.

OPERATIVE

4. Starter relay

- Disconnect the starter relay coupler.
- Connect the battery and frame to the starter relay coupler, using the jumper lead ① as shown.

Battery (+) terminal ② →
Red/White terminal ③
Frame → Blue/White terminal ④



- Check the starter motor operation.

OPERATIVE

*

*

⚠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.

NO OPERATIVE

Starter motor is faulty, repair or replace it.

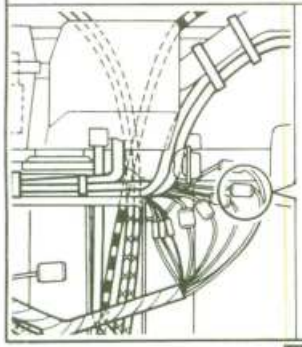
NO OPERATIVE

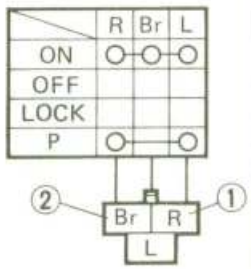
Starter relay is faulty, replace it.

*

5.Main switch

- Disconnect the main switch coupler from the wire harness.
- Connect the pocket tester (Ω × 1) to the main switch terminal.
- Check the switch component for the continuity between "Red ① and Brown ②". Refer to the "CHECKING OF SWITCHES" section.





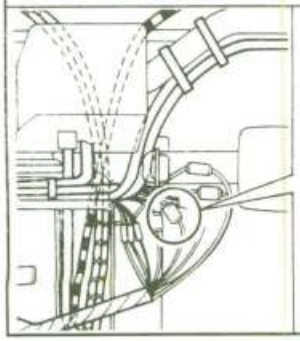
INCORRECT

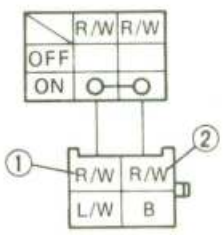
Main switch is faulty, replace it.

CORRECT

6."ENGINE STOP" switch

- Disconnect the handlebar switch (right) lead coupler from the wire harness.
- Connect the pocket tester (Ωx1) to the engine stop switch terminal.
- Check the switch component for the continuity between "Red/White ① and Red/White ②". Refer to the "CHECKING OF SWITCHES" section.





INCORRECT

"ENGINE STOP" switch is faulty, replace handlebar switch (right).

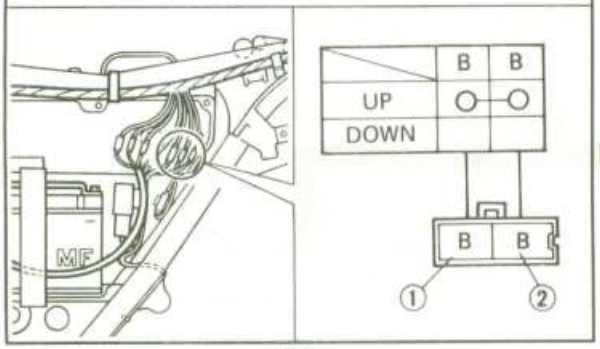
*

*

CORRECT

7. Sidestand switch

- Disconnect the sidestand switch coupler from the wire harness.
- Connect the pocket tester (Ω × 1) to the sidestand switch terminal.
- Check the switch component for the continuity between "Black ① and Black ②". Refer to the "CHECKING OF SWITCHES" section.



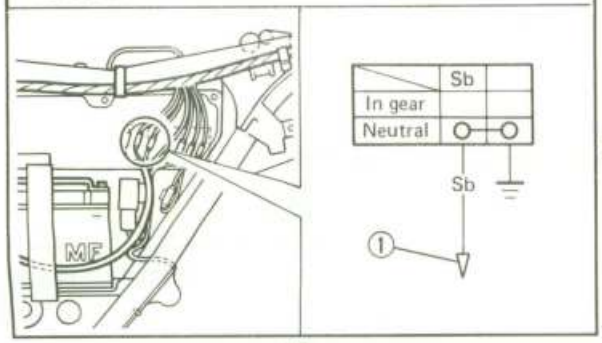
INCORRECT

Sidestand switch is faulty, replace it.

CORRECT

8. Neutral switch

- Disconnect the neutral switch coupler from the wire harness.
- Connect the pocket tester (Ω × 1) to the neutral switch lead.
- Check the switch component for the continuity between "Sky blue ① and ground. Refer to the "CHECKING OF SWITCHES" section.

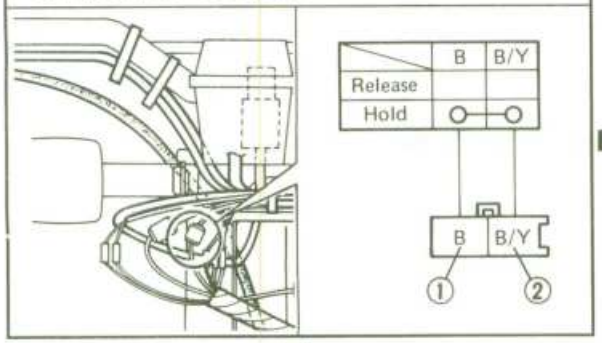


INCORRECT

Neutral switch is faulty, replace it.

*

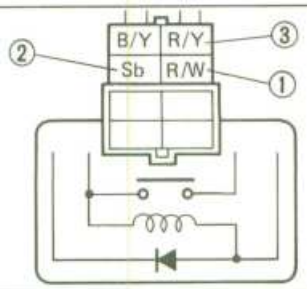
* ⇩ CORRECT

9. Clutch switch
• Disconnect the clutch switch coupler from the wire harness. • Connect the pocket tester (Ω × 1) to the clutch switch lead. • Check the switch component for the continuity between "Black ① and Black/Yellow ②". Refer to the "CHECKING OF SWITCHES" section.


INCORRECT ⇩

Clutch switch is faulty, replace it.

⇩ CONTINUITY

10. Starting circuit cut-off relay (relay assembly)
• Connect the pocket tester (DC20V) to the starting circuit cut-off relay coupler terminals.
Battery (+) terminal → **Red/ White ① terminal** **Battery (−) terminal →** **Sky blue ② terminal** **Tester (+) lead → Red/Yellow ③ terminal** **Tester (−) lead → Ground**

• Turn the main switch to "ON". • Check for voltage (12V) on the "Red/White" and "Red/Yellow" leads at the starting circuit cut-off relay coupler terminals.

NOCONTINUITY ⇩

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

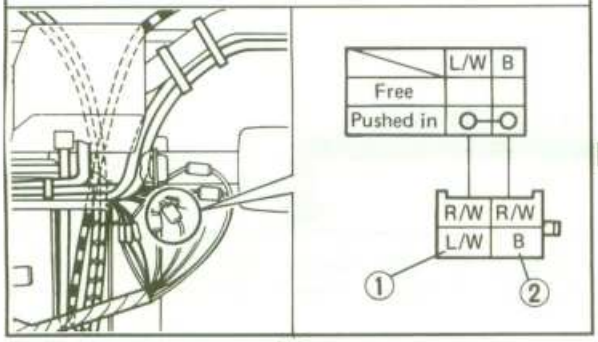
⇩ MEETS SPECIFICATION (12V)

*

*

11."START" switch

- Disconnect handlebar switch (right) coupler from wire harness.
- Connect the pocket tester (Ω × 1) to the handlebar switch terminal.
- Check the "START" switch component for the continuity between "Blue/White ① and Black ②". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

"START" switch is faulty, replace handlebar switch (right).

CORRECT

12.Wiring connection

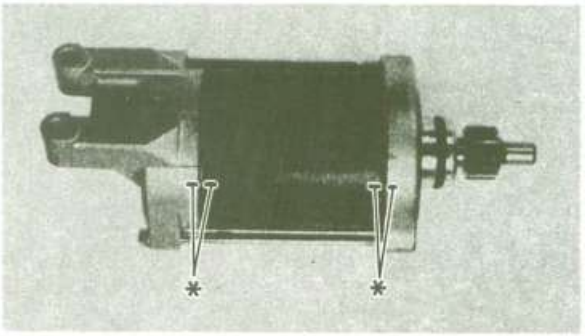
Check the entire ignition system for connections.
Refer to the "WIRING DIAGRAM" section.

POOR CONNECTION

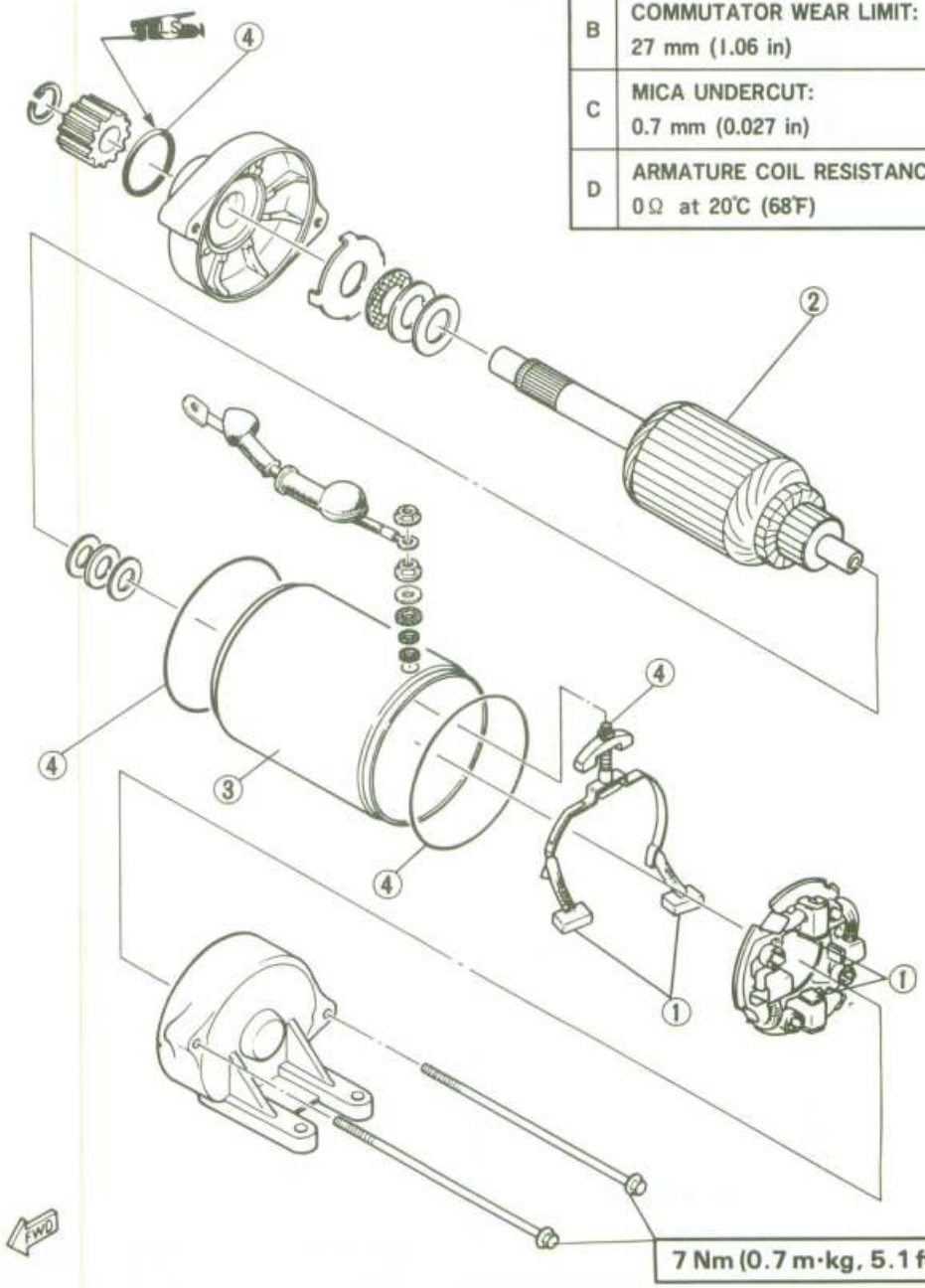
Correct.

STARTER MOTOR

① Brush
② Armature
③ Stator
④ O-ring



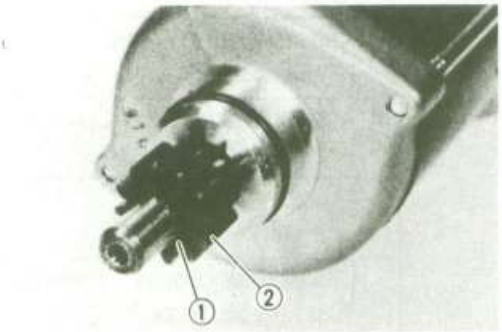
A	BRUSH LENGTH LIMIT: 5 mm (0.20 in)
B	COMMUTATOR WEAR LIMIT: 27 mm (1.06 in)
C	MICA UNDERCUT: 0.7 mm (0.027 in)
D	ARMATURE COIL RESISTANCE: 0 Ω at 20°C (68°F)



Removal

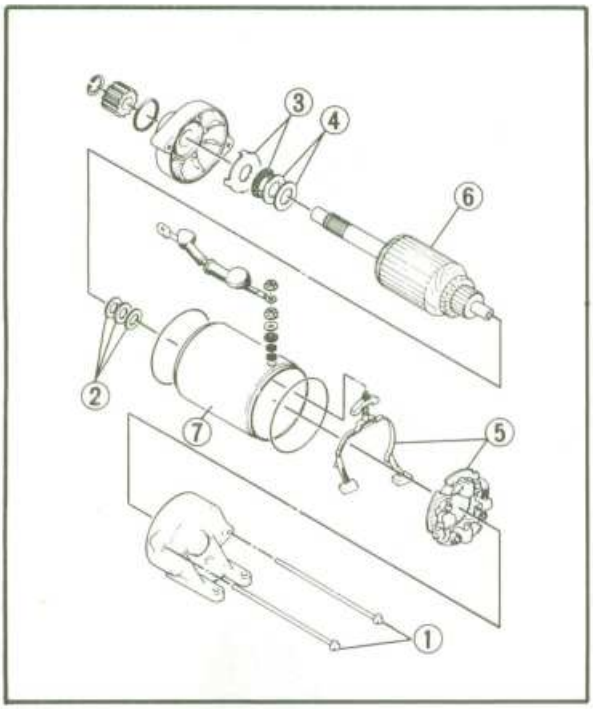
1. Remove:
   - Starter motor

   Refer to the "ENGINE OVERHAUL - ENGINE REMOVAL" section in the CHAPTER 4.



Disassembly

1. Remove:
   - Circlip ①
   - Drive gear ②



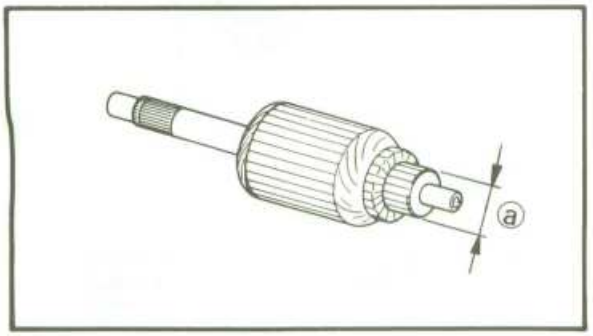
2. Remove:
   - Bolts ①
   - Shim ②
   - Washer ③
   - Shim ④
   - Brush ⑤
   - Armature ⑥
   - Yoke ⑦

Inspection and Repair

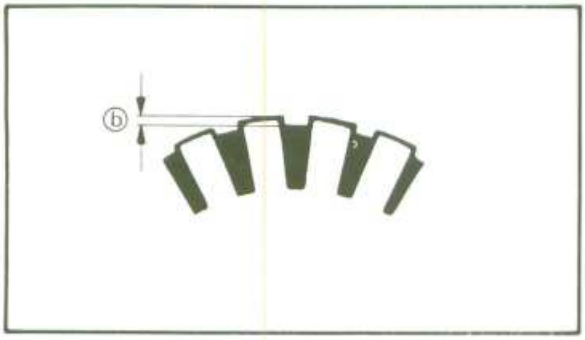
1. Inspect:
   - Commutator

   Dirty → Clean it with #600 grit sandpaper.
2. Measure:
   - Commutator diameter

   Out of specification → Replace starter motor.



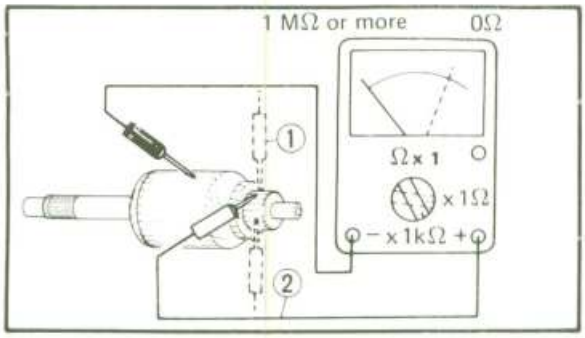
Commutator wear limit ⓐ: 27 mm (1.06 in)



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

Mica undercut ⓑ:
0.7 mm (0.027 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.

* *

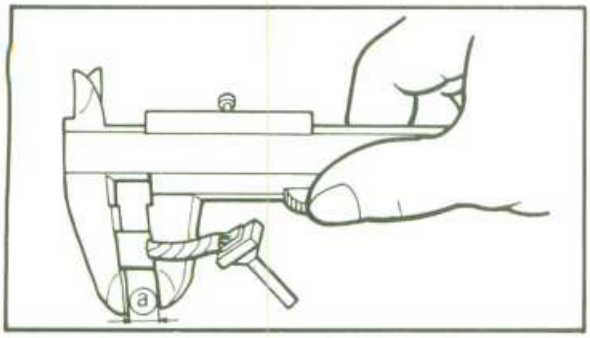
Armature coil inspecting steps:

- Connect the Pocket Tester for continuity check ① and insulation check ②.
- Measure the armature 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.

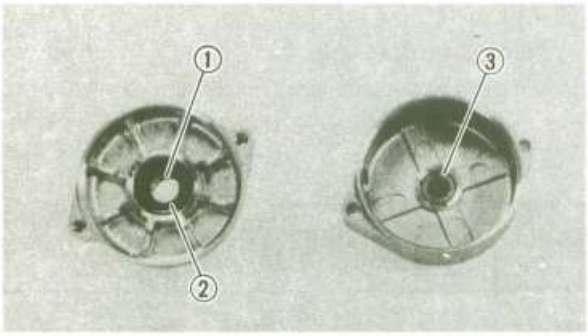
* *



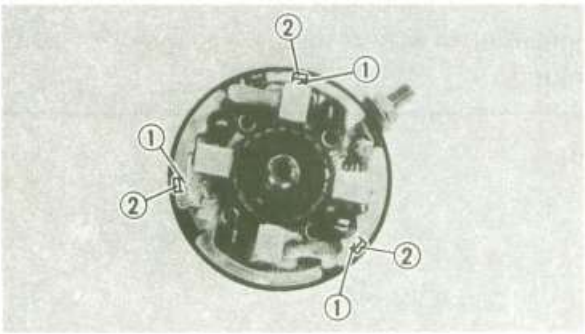
5. Measure:
   - Brush length
     Out of specification → Replace.

Brush length limit ⓐ :
5.0 mm (0.20 in)

6. Measure:
   - Brush spring pressure
     Fatigue → Replace as a set.



7. Inspect:
   - Bearing ①
   - Oil seal ②
   - O-rings
   - Bush ③



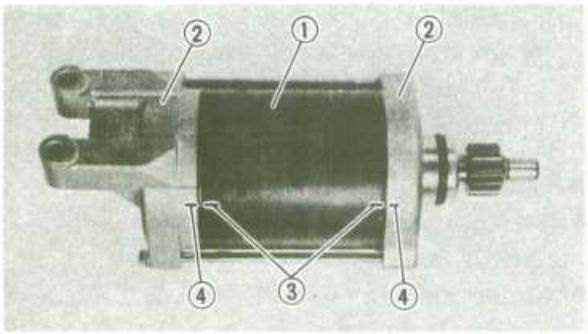
Assembly

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

1. Install:
   - Brush seat

NOTE:

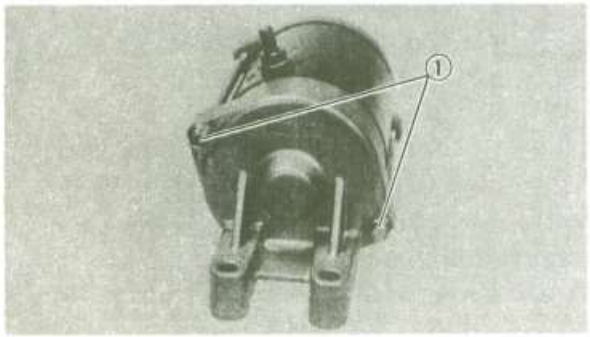
Align the projection ① on the brush seat with the slot ② on the housing.



2. Install:
   - Yoke ①
   - Housing cover ②

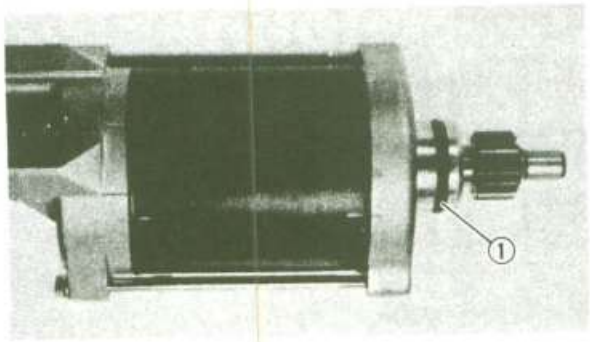
NOTE:

Align the match marks ③ on the yoke with the match marks on the housings ④.



3. Install:
   - Bolts ①

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



Installation

1. Install:
   - Starter motor

NOTE:

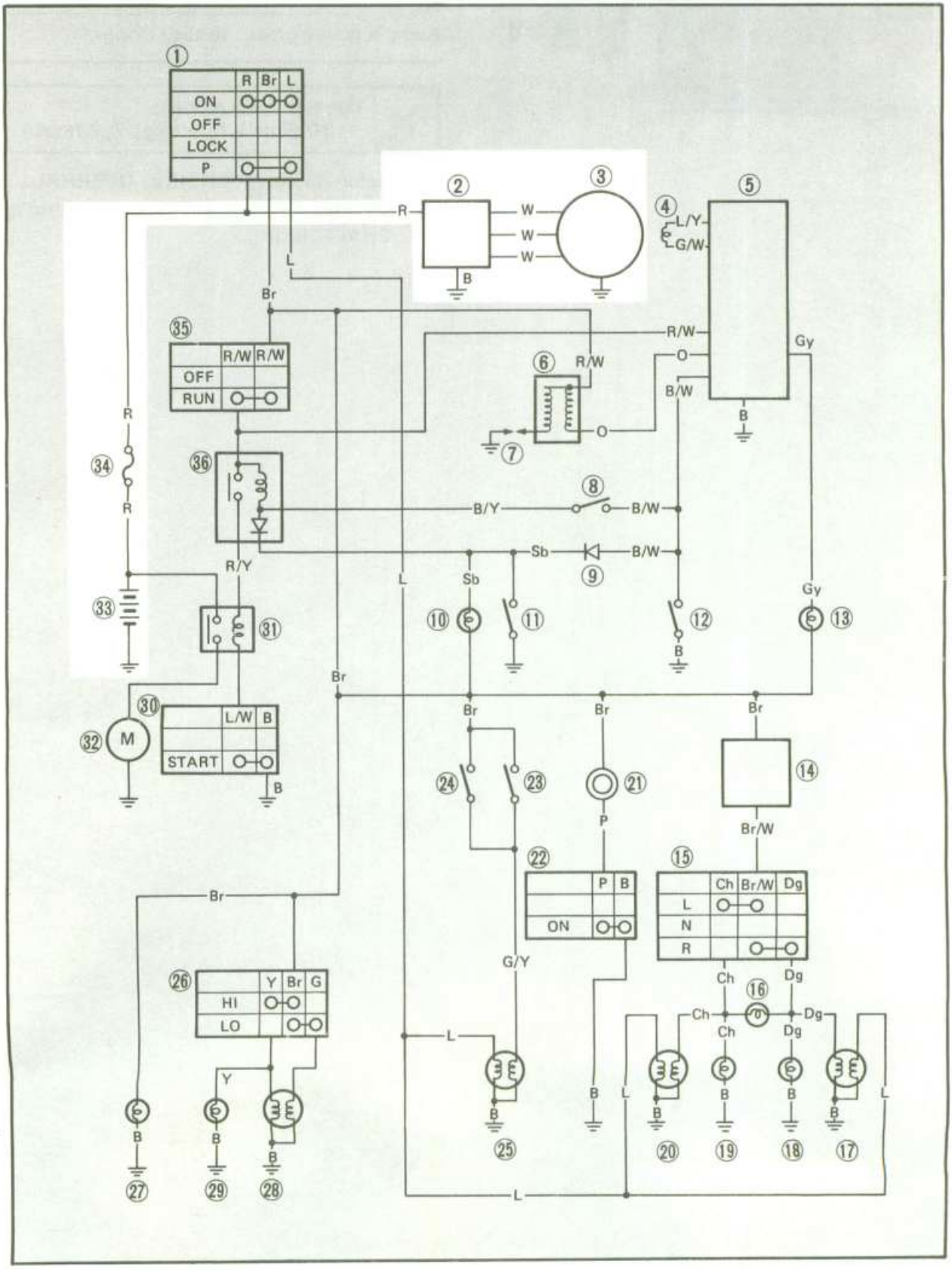
Apply a lightly grease to the O-ring ①.

	Bolt (starter motor): **10 Nm (1.0 m · kg, 7.2 ft · lb)**

Refer to the "ENGINE OVERHAUL - ENGINE INSTALLATION" section in the CHAPTER 4.

CHARGING SYSTEM

CIRCUIT DIAGRAM

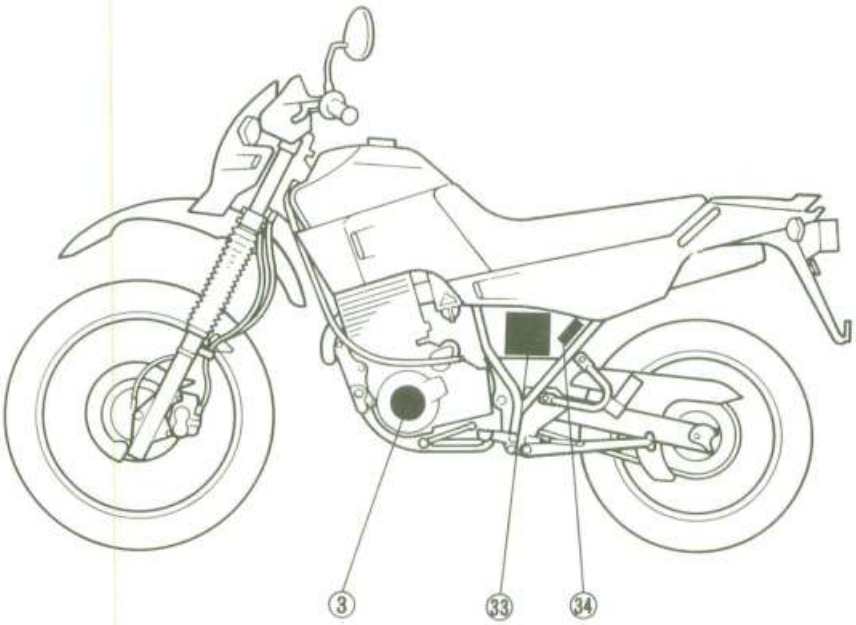


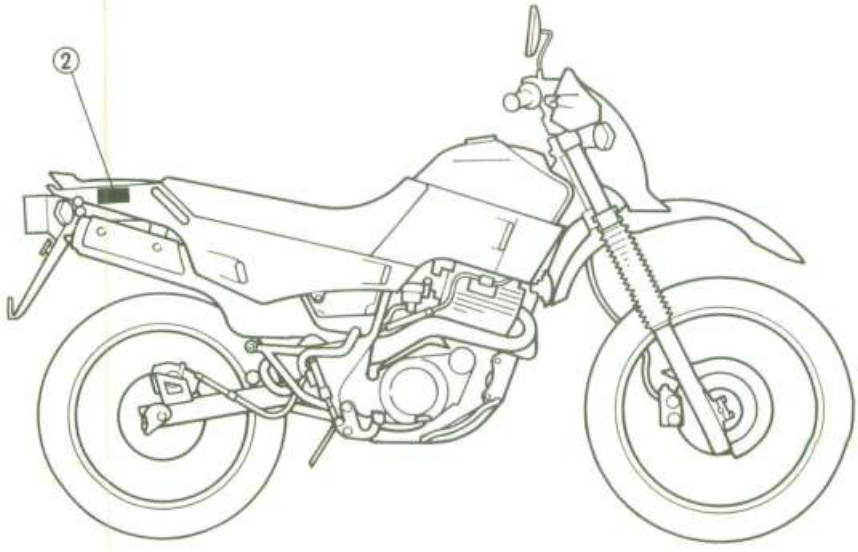
Aforementioned circuit diagram shows charging circuit in the circuit diagram.

NOTE:

For the color codes, see page 7-2.

② Rectifier/regulator
③ A.C. magneto
㉝ Battery
㉞ Fuse





TROUBLESHOOTING

THE BATTERY IS NOT CHARGED.

Procedure
Check;
1. Fuse
2. Battery
3. Charging voltage
4. Starter coil resistance
5. Wiring connection
   (Entire charging system)

NOTE:
- Remove the following parts before troubleshooting.
  1) Seat
  2) Side cover (left)
- Use the following special tools in this troubleshooting.



Inductive tachometer:
P/N. YU-08036-A
P/N. 90890-03113



Pocket tester:
P/N. YU-03112
P/N. 90890-03112

1. Fuse
- Remove the fuse.
- Connect the (pocket tester (Ω × 1) to the fuse.
- Check the fuse for continuity.
  Refer to the "FUSE INSPECTION" section in the CHAPTER 3.

NO CONTINUITY → Replace fuse.

CONTINUITY ↓

2. Battery
- Check the battery condition.
  Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

Voltage:
12.8 V or higher at 20°C (68°F)

INCORRECT →
- Clean battery terminals.
- Recharge or replace battery.
  Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

CORRECT ↓

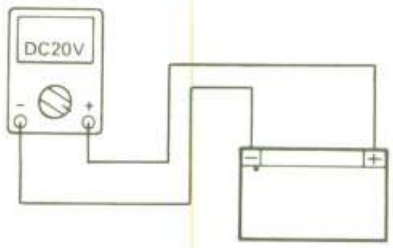
*

*

3. Charging voltage

- Connect the inductive tachometer to spark plug lead.
- Connect the pocket tester (DC20V) to the battery.

Tester (+) lead → Battery (+) terminal
Tester (−) lead → Battery (−) terminal



- Start the engine and accelerate to about, 5,000 r/min.
- Check charging voltage.

Charging voltage: 14.0V at 5,000 r/min

MEETS SPECIFICATION → Charging circuit is good.

NOTE:
Use a full charged battery.

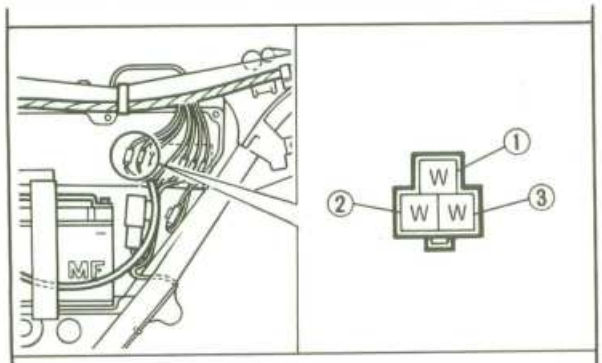
OUT OF SPECIFICATION

4. Stator coil resistance

- Disconnect the A.C. magneto coupler from the wire harness.
- Connect the pocket tester (Ω × 1) to the stator coil leads.

Stator coil (1)
Tester (+) lead → White lead ①
Tester (−) lead → White lead ②

***Stator coil* (2)**
Tester (+) lead → White lead ①
Tester (−) lead → White lead ③



• Check the stator coil for specified resistance.

Stator coil resistance:
White ① - White ②
0.52 ~0.78Ω at 20°C (68°F)
White ① - White ③
0.52 ~0.78Ω at 20°C (68°F)

OUT OF SPECIFICATION

Stator coil is faulty, replace it.

BOTH RESISTANCES MEET SPECIFICATIONS

5. Wiring connection

Check the entire charging system for connections.
Refer to the "WIRING DIAGRAM" section.

POOR CONNECTION

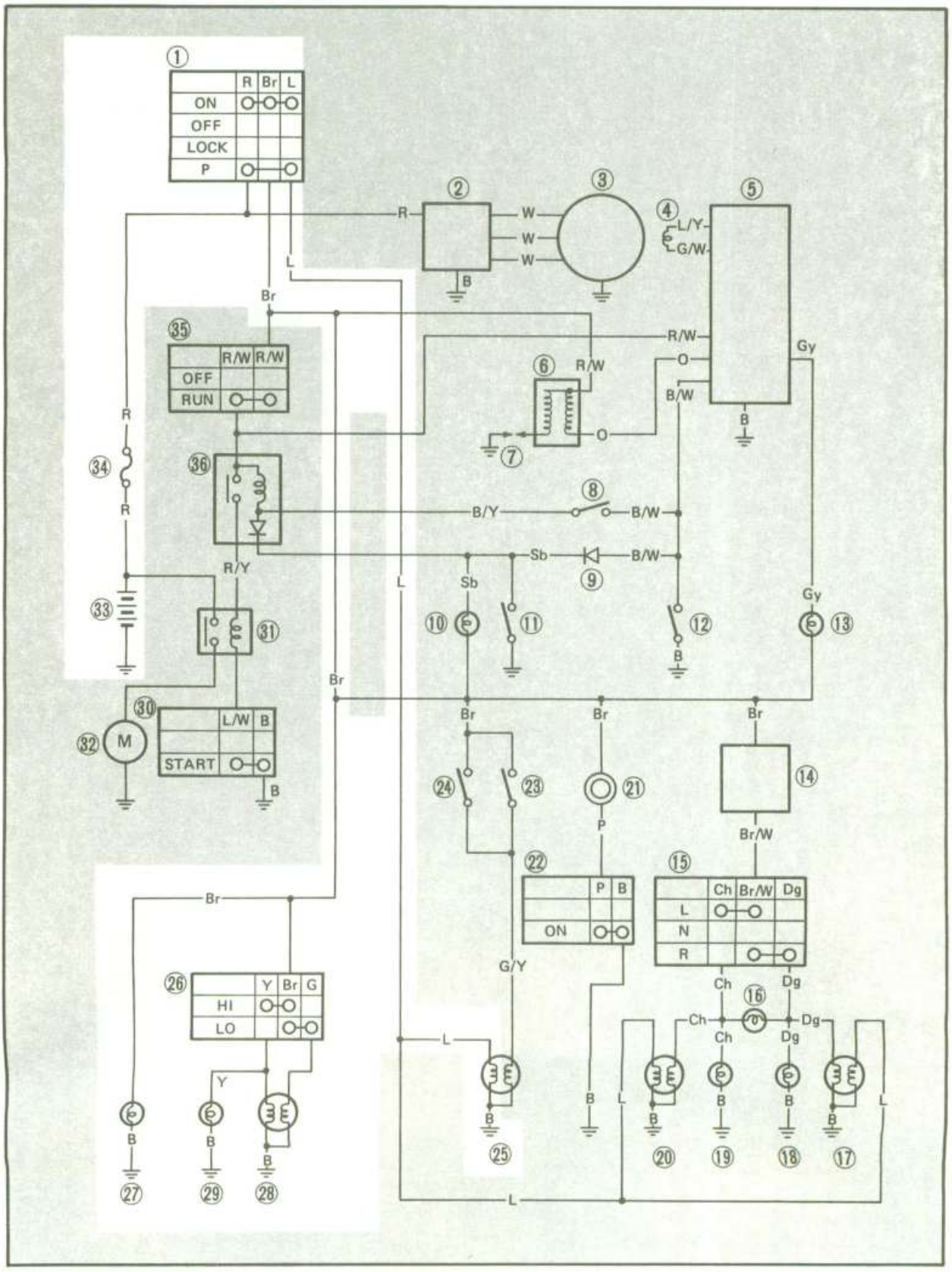
Correct.

CORRECT

Rectifier/regulator is faulty, replace it.

LIGHTING SYSTEM

CIRCUIT DIAGRAM

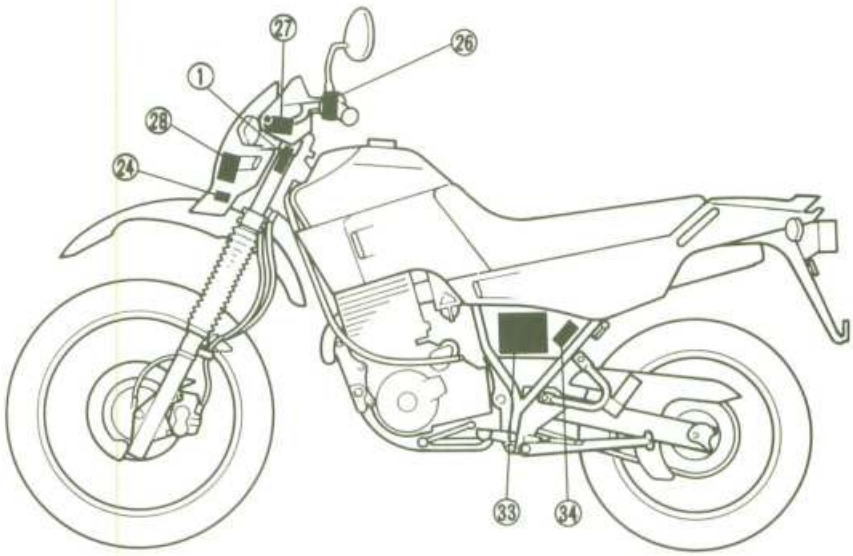


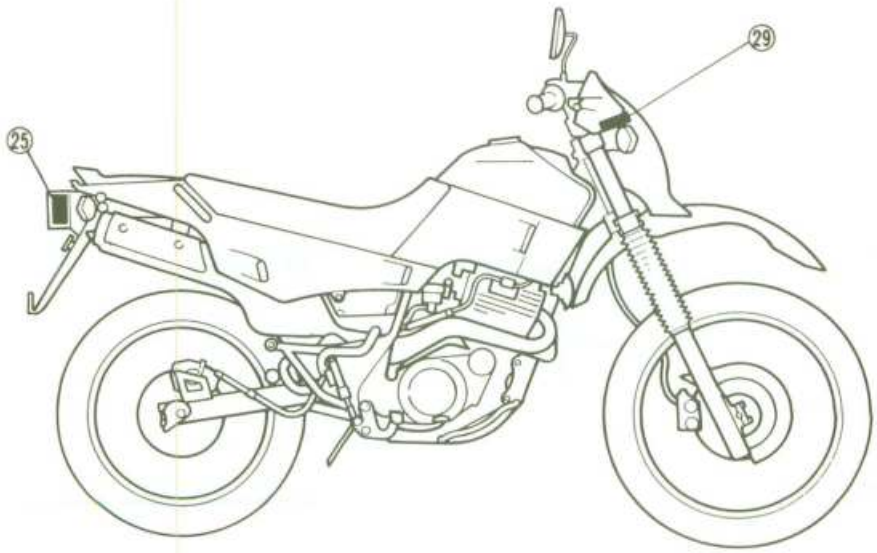
Aforementioned circuit diagram shows lighting circuit.

NOTE:

For color codes, see page 7-2.

① Main switch
㉕ Tail/brake light
㉖ "LIGHTS" (dimmer) switch
㉗ Meter light
㉘ Headlight
㉙ "HIGH BEAM" indicator light
㉝ Battery
㉞ Fuse





TROUBLESHOOTING

HEADLIGHT, TAILLIGHT, FRONT POSITION LIGHT AND/OR METER LIGHT DO NOT COME ON.

Procedure

Check;

1. Fuse
2. Battery
3. Main switch
4. "LIGHTS" (dimmer) switch
5. Wiring connection
   (Entire lighting system)

NOTE:

- Remove the following parts before troubleshooting.
  1) Seat
  2) Side cover (left and right)
  3) Cowling (headlight)
  4) Headlight lens unit.
  5) Tail cover
- Use the following special tool in this troubleshooting.



Pocket tester:
P/N. YU-03112
P/N. 90890-03112

1. Fuse

- Remove the fuse.
- Connect the pocket tester (Ω x 1) to the fuse.
- Check the fuse for continuity.
  Refer to the "FUSE INSPECTION" in the CHAPTER 3.

NOCONTINUITY → Replace fuse.

CONTINUITY ↓

2. Battery

- Check the battery condition.
  Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

Voltage
12.8 v or higher at 20°C (68°F)

INCORRECT → • Clean battery terminals.
• Recharge or replace battery.
Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

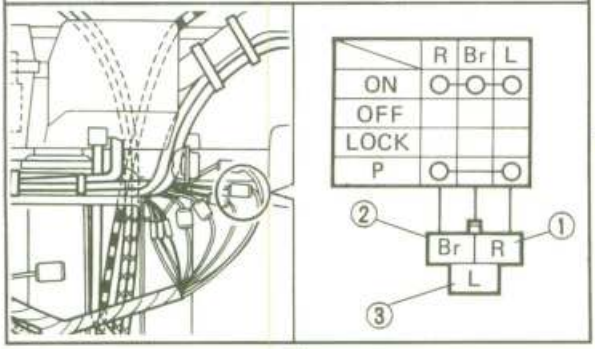
CORRECT ↓

*

*

3. Main switch

- Disconnect the main switch coupler from the wireharness.
- Connect the pocket tester (Ω x 1) to the main switch terminal.
- Check the switch component for the continuity between "Red ① and Brown ②" and "Red ① and Blue ③". Refer to the "CHECKING OF SWITCHES" section.



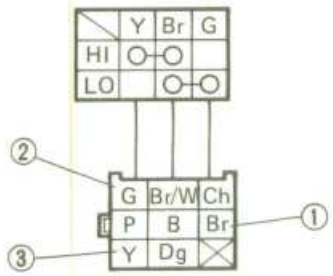
INCORRECT

Main switch is faulty, replace

CORRECT

4. "LIGHTS" (dimmer) switch

- Disconnect the handlebar switch (left) couple from the wireharness.
- Connect the pocket tester (Ω x 1) to the handlebar switch (left) terminal.
- Check the switch component for the continuity between "Brown ① and Green ②" and "Brown ① and Yellow ③". Refer to the "CHECKING OF SWITCHES" section.

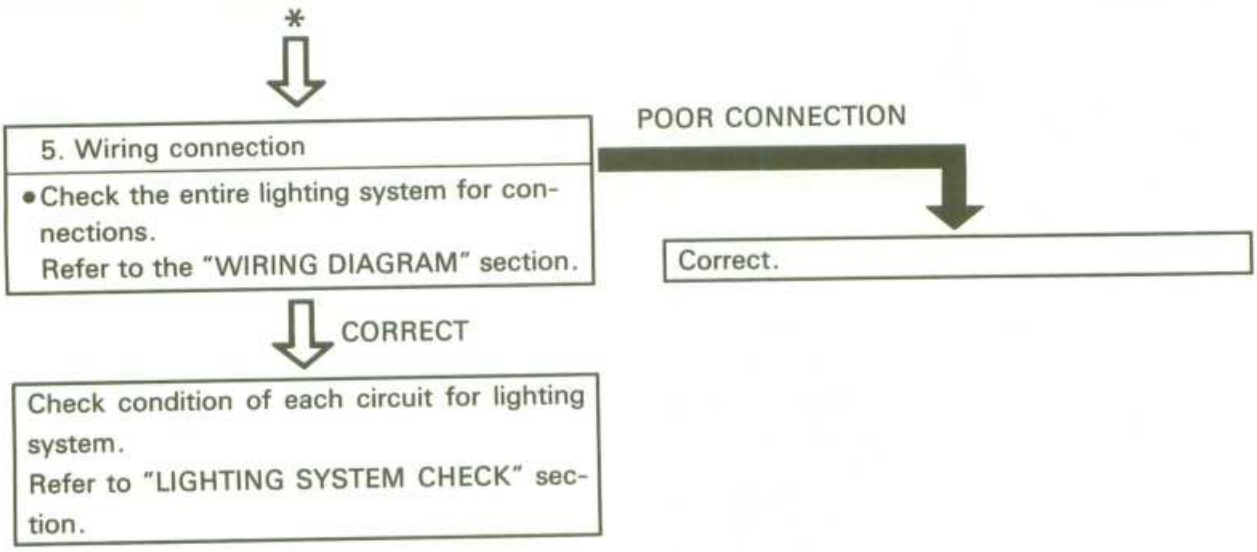


INCORRECT

"LIGHTS" (dimmer) switch is faulty, replace handlebar switch (left).

CORRECT

*


*
5. Wiring connection
• Check the entire lighting system for connections.
Refer to the "WIRING DIAGRAM" section.
POOR CONNECTION
Correct.
CORRECT
Check condition of each circuit for lighting system.
Refer to "LIGHTING SYSTEM CHECK" section.

LIGHTING SYSTEM CHECK

1. Headlight and "HIGH BEAM" indicator light do not come on.

1. Bulb and bulb socket

- Check the bulb and bulb socket for continuity.
  Refer to the "CHECKING OF BULBS" section.

NOCONTINUITY → Replace bulb and/or bulb socket.

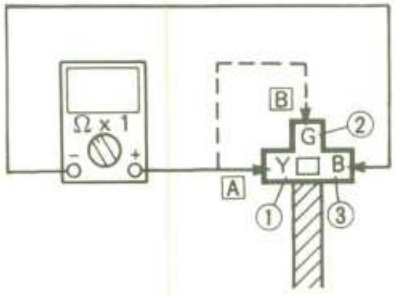
CONTINUITY ↓

2. Voltage

- Connect the pocket tester (DC20V) to the headlight and "HIGH BEAM" indicator light couplers.

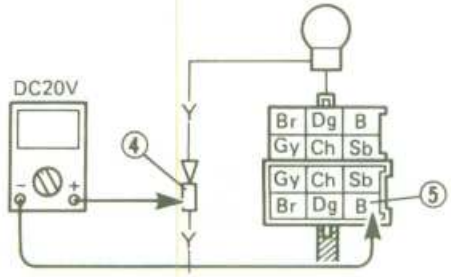
Head light:
Tester (+) lead → Green ① or Yellow ② lead.
Tester (−) lead → Black ③ lead
"HIGH BEAM" indicator light:
Tester (+) lead → Yellow ④ lead
Tester (−) lead → Black ⑤ lead

A



OUT OF SPECIFICATION → Wiring circuit from main switch to bulb socket connector is faulty, repair.

B



A When "LIGHT" (dimmer) switch is "HI" position.
B When "LIGHT" (dimmer) switch is "LO" position.

- Turn the main switch to "ON".
- Turn the "LIGHTS" (dimmer) switch to "LO" or "HI" position.
- Check for voltage (12V) on the "Green" and "Yellow" lead at bulb socket connectors.

⇩ MEETS SPECIFICATION (12V)

This circuit is good.

2. Meter light does not come on.

1. Bulb and bulb socket

- Check the bulb and bulb socket for continuity.
  Refer to the "CHECKING OF BULBS" section.

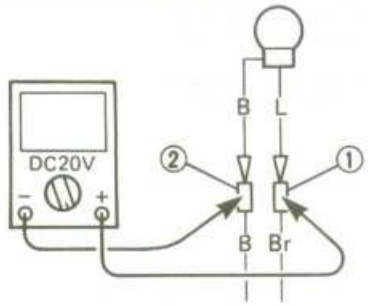
NOCONTINUITY → Replace bulb and/or bulb socket.

⇩ CONTINUITY

2. Voltage

- Connect the pocket tester (DC20V) to the bulb socket coupler.

Tester (+) lead → Blue ① terminal
Tester (−) lead → Black ② terminal



- Turn the main switch to "ON".
- Check for voltage (12V) on the "Blue" lead at the bulb socket connector.

OUT OF SPECIFICATION → Wiring circuit from main switch to bulb socket connector is faulty, repair.

⇩ MEETS SPECIFICATION (12V)

This circuit is good.

3. Front position light does not come on.

1. Bulb and bulb socket

- Check the bulb and bulb socket for continuity.
  Refer to the "CHECKING OF BULBS" section.

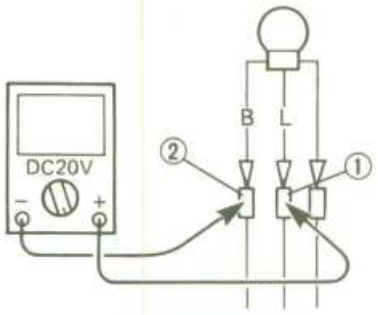
NOCONTINUITY → Bulb and/or bulb socket are faulty, replace.

CONTINUITY ⇩

2. Voltage

- Connect the pocket tester (DC20V) to the bulb socket connector.

Tester (+) lead → Blue ① terminal
Tester (−) lead → Black ② terminal



- Turn the main switch to "ON".
- Check for voltage (12V) on the "Blue" lead at the bulb socket connector.

OUT OF SPECIFICATION → Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V) ⇩

This circuit is good.

4. Taillight does not come on.

1. Bulb and bulb socket

- Check the bulb and bulb socket for continuity.
  Refer to the "CHECKING OF BULBS" section.

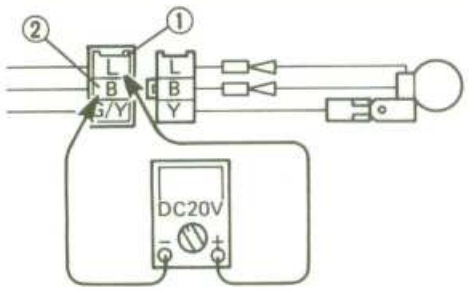
NOCONTINUITY → Replace bulb and/or bulb socket.

CONTINUITY ↓

2. Voltage

- Connect the pocket tester (DC20V) to the bulb socket connector.

Tester (+) lead → Blue ① terminal
Tester (−) lead → Black ② terminal



- Turn the main switch to "ON".
- Check for voltage (12V) on the "Blue" lead at the bulb socket connector.

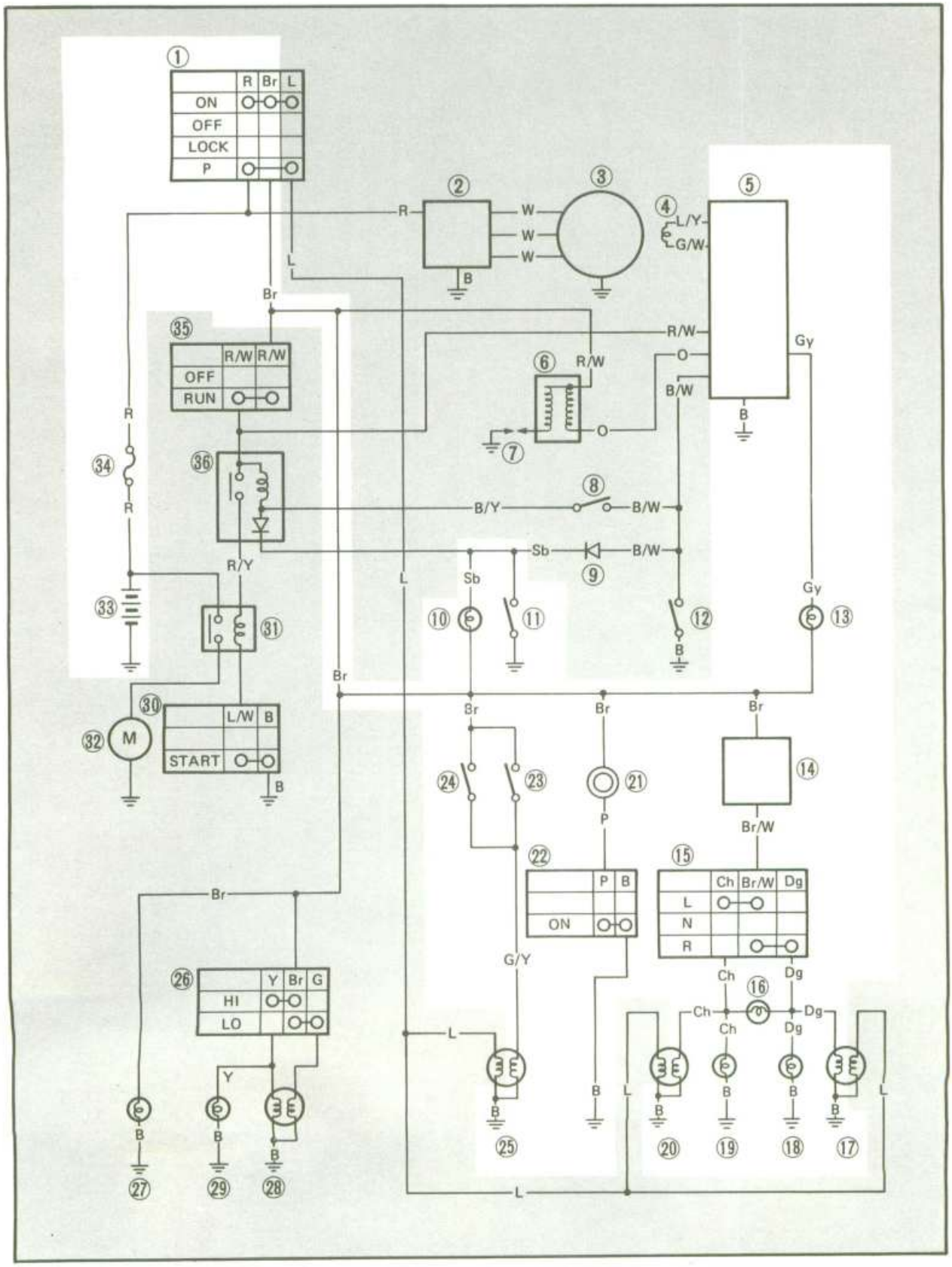
OUT OF SPECIFICATION → Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V) ↓

This circuit is good.

SIGNAL SYSTEM

CIRCUIT DIAGRAM

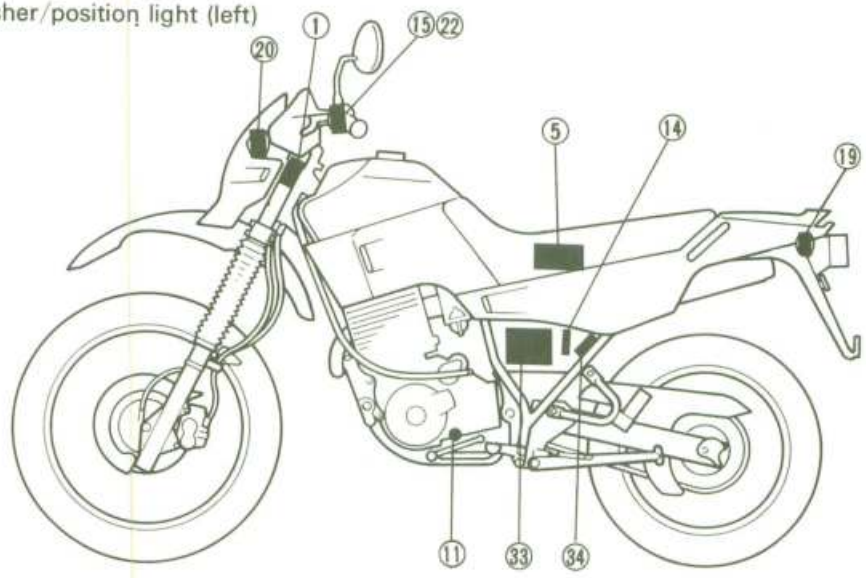


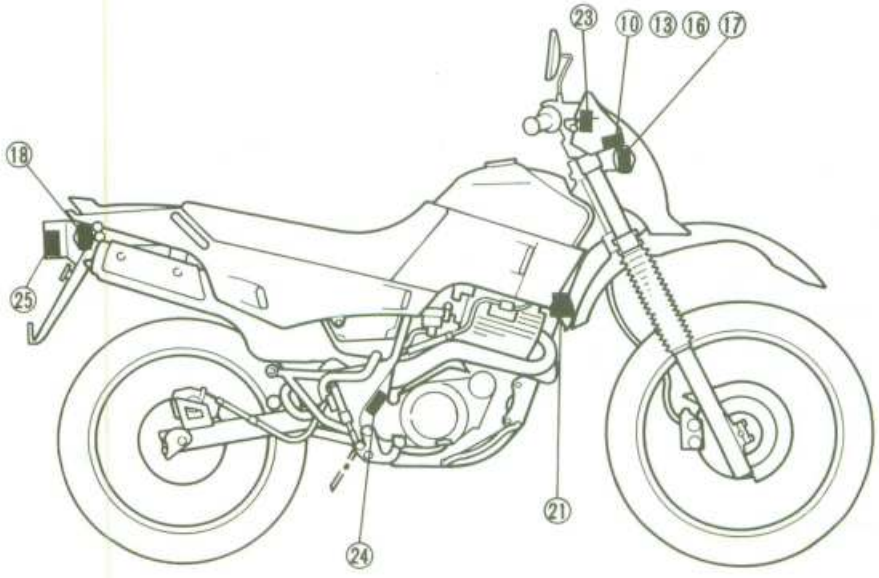
Aforementioned circuit diagram shows signal circuit .

NOTE:

For color codes, see page 7-2.

① Main switch
⑤ Ignitor
⑩ "NEUTRAL" indicator light
⑪ Neutral switch
⑬ "REV." indicator light
⑭ Flasher relay
⑮ "TURN" switch
⑯ "TURN" indicator light
⑰ Front flasher/position light (right)
⑱ Rear flasher light (right)
⑲ Rear flasher light (left)
⑳ Front flasher/position light (left)
㉑ Horn
㉒ "HORN" switch
㉓ Front brake switch
㉔ Rear brake switch
㉕ Tail/brake light
㉝ Battery
㉞ Fuse





TROUBLESHOOTING

• FLASHER LIGHT, BRAKE LIGHT AND/OR INDICATOR LIGHT DO NOT COME ON.
• HORN DOES NOT SOUND.

Procedure

Check;

1. Fuse
2. Battery
3. Main switch
4. Wiring connection
   (Entire signal system)

NOTE:

- Remove the following parts before troubleshooting.
  1) Seat
  2) Side cover (left and right)
  3) Cowling (headlight)
  4) Headlight lens unit.
  5) Tail cover
- Use the following special tool in this troubleshooting.



Pocket tester:
P/N. YU-03112
P/N. 90890-03112

1. Fuse

- Remove the fuse.
- Connect the pocket tester (Ω x 1) to the fuse.
- Check the fuse for continuity.
  Refer to the "FUSE INSPECTION" in the CHAPTER 3.

NOCONTINUITY → Replace fuse.

CONTINUITY ↓

2. Battery

- Check the battery condition.
  Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

Voltage
12.8 v or higher at 20°C (68°F)

INCORRECT →

- Clean battery terminals.
- Recharge or replace battery.
  Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

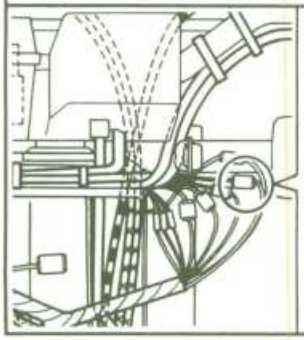
CORRECT ↓

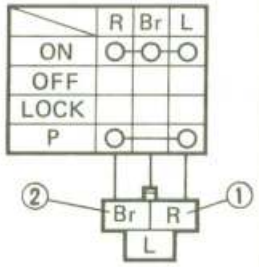
*

*

3. Main switch

- Disconnect the main switch coupler from the wireharness.
- Connect the pocket tester (Ω x 1) to the main switch terminal.
- Check the switch component for the continuity between "Red ① and Brown ②". Refer to the "CHECKING OF SWITCHES" section.





INCORRECT

Main switch is faulty, replace it.

CORRECT

4. Wiring connection

Check the entire signal system for connections. Refer to the "WIRING DIAGRAM" section.

POOR CONNECTION

Correct.

CORRECT

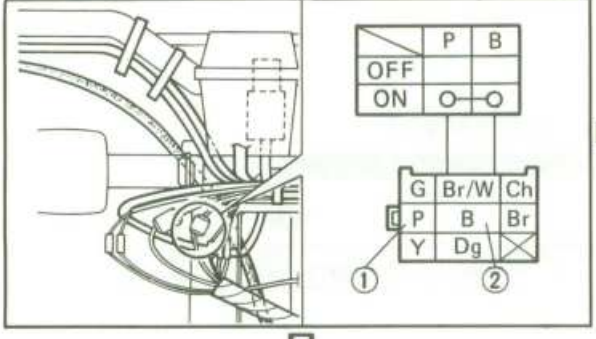
Check condition of each circuit for signal system. Refer to "SIGNAL SYSTEM CHECK" section.

SIGNAL SYSTEM CHECK

1. Horn does not sound.

1. "HORN" switch.

- Disconnect the handlebar switch (left) coupler from the wireharness.
- Connect the pocket tester (Ω x 1) to the handlebar switch leads.
- Check the switch component for the continuity between "Pink ① and Black ②". Refer to the "CHECKING OF SWITCHES" section.



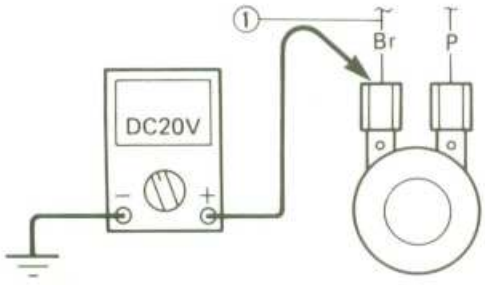
INCORRECT → "HORN" switch is faulty, replace handlebar switch (left).

CORRECT

2. Voltage

- Connect the pocket tester (DC20V) to the horn lead.

Tester (+) lead → Brown ① lead.
Tester (−) lead → Frame ground



OUT OF SPECIFICATION → Wiring circuit from main switch to horn terminal is faulty, repair.

- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at the horn terminal.

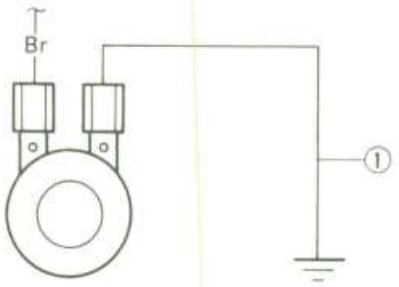
MEETS SPECIFICATION (12V)

*

*

3. Horn

- Disconnect the "Pink" lead at the horn terminal.
- Connect a jumper lead ① to the horn terminal and ground the jumper lead.
- Turn the main switch to "ON".



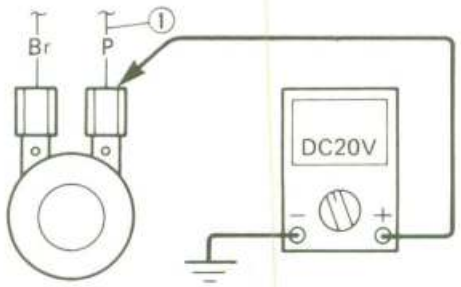
HORN IS SOUNDED → Horn is good.

HORN IS NOT SOUNDED

4. Voltage

- Connect the pocket tester (DC20V) to the horn at the "Pink" terminal.

Tester (+) lead → Pink ① lead.
Tester (−) lead → Frame ground



OUT OF SPECIFICATION → Horn is faulty, replace it.

- Turn the main switch to "ON".
- Check for voltage (12V) on the "Pink" lead at the horn terminal.

MEETS SPECIFICATION (12V)

Adjust or replace horn.

2. Brake light does not come on.

1. Bulb and bulb socket

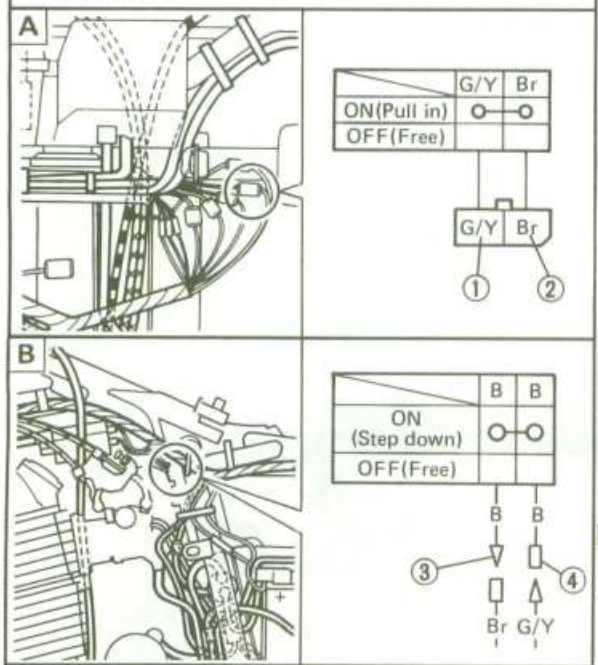
- Check the bulb and bulb socket for continuity.
  Refer to the "CHECKING OF BULBS" section.

NOCONTINUITY → Replace bulb and/or bulb socket.

CONTINUITY ↓

2. Brake switch

- Disconnect the brake switch and coupler from the wireharness.
- Connect the pocket tester (Ω x 1) to the brake switch terminal.
- Check the switch component for the continuity between "Green/Yellow ① and Brown ②" or "Black ③ and Black ④. Refer to the "CHECKING OF SWITCHES" section.



A Front brake switch
B Rear brake switch

INCORRECT → Brake switch is faulty, replace it.

CORRECT ↓

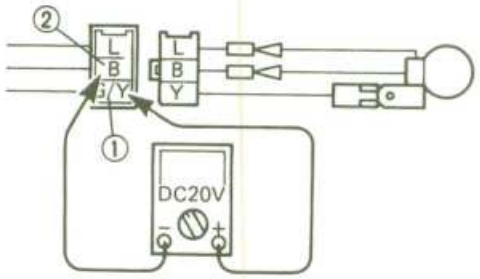
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3. Voltage

- Connect the pocket tester (DC20V) to the bulb socket connector.

Tester (+) lead → Green/Yellow ① lead
Tester (−) lead → Black ② lead



- Turn the main switch to "ON".
- The brake lever is pulled in or brake pedal is stepped down.
- Check for voltage (12V) on the "Green/Yellow" lead at the bulb socket connector.

OUT OF SPECIFICATION → Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V)

This circuit is good.

3. Flasher light and/or "TURN" indicator light do not blink.

1. Bulb and bulb socket

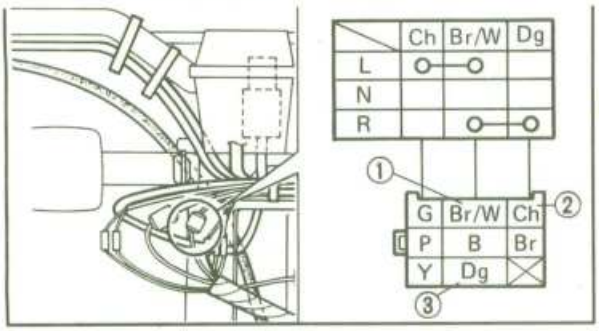
- Check the bulb and bulb socket for continuity.
  Refer to the "CHECKING OF BULBS" section.

NOCONTINUITY → Replace bulb and/or bulb socket.

CONTINUITY

2. "TURN" switch

- Disconnect the handlebar switch (left) coupler from the wireharness.
- Connect the pocket tester (Ω x 1) to the handlebar switch (left) leads.
- Check the switch component for the continuity between "Brown/White ① and Chocolate ②" and "Brown/White ① and Dark green ③". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

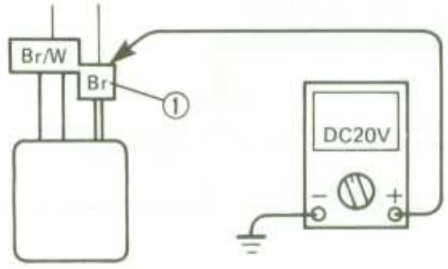
"TURN" switch is faulty, replace handlebar switch (left).

CORRECT

3. Voltage

- Connect the pocket tester (DC20V) to the flasher relay.

Tester (+) lead → Brown ① terminal
Tester (−) lead → Frame ground



OUT OF SPECIFICATION

Wiring circuit from main switch to flasher relay connector is faulty, repair.

- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at the flasher relay terminal.

MEETS SPECIFICATION (12V)

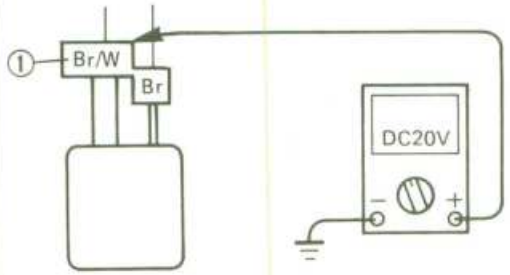
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4. Voltage

- Connect the pocket tester (DC20V) to the flasher relay.

Tester (+) lead → Brown/White ① terminal
Tester (−) lead → Frame ground



- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown/White" lead at the flasher relay terminal.

OUT OF SPECIFICATION → Flasher relay is faulty, replace it.

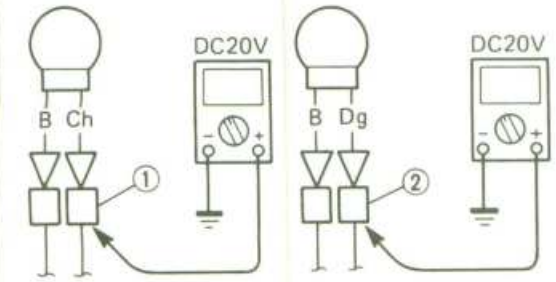
MEETS SPECIFICATION (12V)

5. Voltage

- Connect the handlebar switch (left) coupler to the wireharness.
- Connect the pocket tester (DC20V) to the bulb socket connector.

At flasher light (left):
Tester (+) lead → Chocolate ① lead
Tester (−) lead → Frame ground

At flasher light (right):
Tester (+) lead → Dark Green ② lead
Tester (−) lead → Frame ground



OUT OF SPECIFICATION → Wiring circuit from "TURN" switch to bulb socket connector is faulty, repair.

- Turn the main switch to "ON".
- Turn the "TURN" switch to "L" or "R".
- Check for voltage (wink at 2~8V) on the "Chocolate" lead or "Dark green" lead at the bulb socket connector.

⇩ MEETS SPECIFICATION (12V)

This circuit is good.

4. "NEUTRAL" indicator light does not come on.

1. Bulb and bulb socket

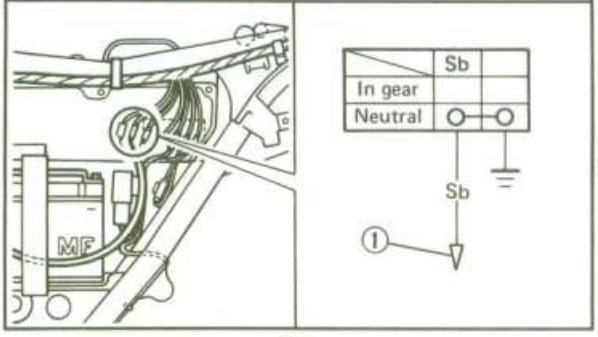
- Check the bulb and bulb socket for continuity.
  Refer to the "CHECKING OF BULBS" section.

NOCONTINUITY → Replace bulb and/or bulb socket.

⇩ CONTINUITY

2. Neutral switch

- Disconnect the neutral switch lead from the wireharness.
- Connect the pocket tester (Ω x 1) to the neutral switch leads.
- Check the switch component for the continuity between "Sky blue ① and Ground". Refer to the "CHECKING OF SWITCHES" section.



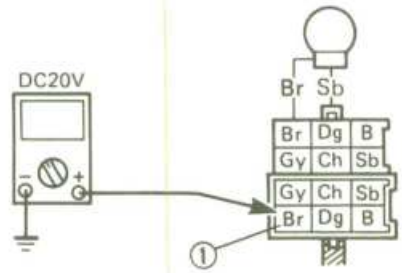
INCORRECT → Neutral switch is faulty, replace it.

⇩ CORRECT

3. Voltage

- Connect the pocket tester (DC20V) to the bulb socket connector.

Tester (+) lead → Brown ① terminal
Tester (−) lead → Frame ground



- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at the bulb socket connector.

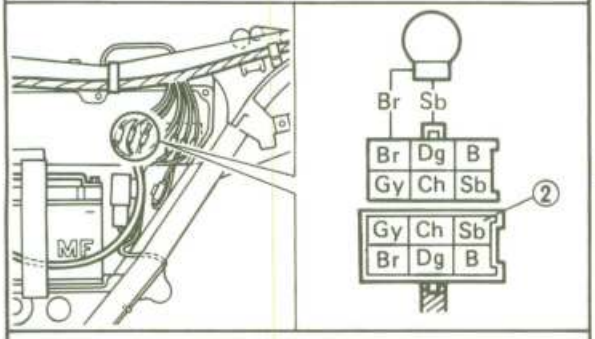
OUT OF SPECIFICATION

Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V)

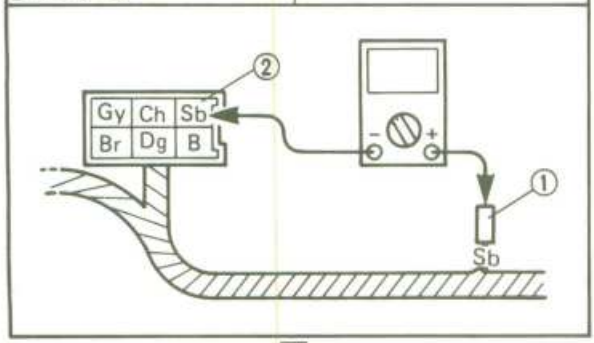
4. Neutral switch lead.

- Disconnect the neutral switch lead and bulb socket connector from the wireharness.
- Connect the pocket tester (Ω × 1) to the "Sky blue" neutral switch lead ① (wireharness side) and bulb socket terminal ②.



NOCONTINUITY

Wiring circuit from bulb socket to neutral switch lead is faulty, repair.



CONTINUITY

This circuit is good.

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 tank cap air passage • Deteriorated fuel or fuel containing water or foreign material
Fuel cock	• Clogged fuel hose • Clogged fuel filter
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
Air filter	• Clogged air filter element

STARTING FAILURE/HARD STARTING

ELECTRICAL SYSTEM

	PROBABLE CAUSE
Spark plug	• Improper plug gap • Worn electrodes • Wire between terminals broken • Improper heat range • Faulty spark plug cap
Ignition coil	• Broken or shorted primary/secondary • Faulty spark plug lead • Broken body
Ignitor unit system	• Faulty ignitor unit • Faulty pick-up coil • Broken woodruff key
Switches and wiring	• Faulty main switch • Faulty "ENGINE STOP" switch • Broken or shorted wiring • Faulty neutral switch • Faulty "START" switch • Faulty sidestand switch • Faulty clutch switch
Starter motor	• Faulty starter motor • Faulty starter relay • Faulty circuit cut-off relay (relay unit) • Faulty starter clutch

COMPRESSION SYSTEM

	PROBABLE CAUSE
Cylinder and cylinder head	• Loose spark plug • Loose cylinder head or cylinder • Broken cylinder head gasket • Broken cylinder gasket • Worn, damaged or seized cylinder
Piston and piston rings	• Improperly installed piston ring • Worn, fatigued or broken piston ring • Seized piston ring • Seized or damaged piston
Crankcase and crankshaft	• Improperly seated crankcase • Damaged crankshaft oil seal lip • Improperly sealed valve • Improperly contacted valve and valve seat • Improper valve timing • Broken valve spring • Seized crankshaft • Seized camshaft

POOR IDLE SPEED PERFORMANCE

POOR IDLE SPEED PERFORMANCE

	PROBABLE CAUSE
Carburetor	• Improperly returned starter plunger • Clogged or loose pilot jet • Clogged pilot air jet • Improperly adjusted idle speed (throttle stop screw) • Improper throttle cable free play • Flooded carburetor
Electrical system	• Faulty battery • Faulty spark plug • Faulty ignitor unit • Faulty A.C. magneto • Faulty ignition coil
Valve train	• Improperly adjusted valve clearance

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
Carburetor	• Deteriorated fuel, fuel containing water or foreign material • Sucked-in air • Deformed float • Diaphragm malfunction • Groove-worn needle valve • Improperly sealed valve seat • Improperly set clip position of jet needle • Improperly adjusted fuel level • Clogged or loose main jet • Clogged or loose main nozzle
Air cleaner	• Clogged air filter element

FAULTY GEAR SHIFTING

HARD SHIFTING

	PROBABLE CAUSE
Clutch	• Improperly adjusted clutch cable • Improperly adjusted push lever position • Improper engagement of push lever and push rod • Warped pressure plate • Unevenly tensioned clutch springs • Match marks not aligned • Bent push rod • Loose clutch boss nut/push rod bent • Burnt primary driven gear bushing • Bent clutch plate • Swollen friction plate • Broken clutch boss
Engine oil	• High oil level • Improper quality (high viscosity) • Deterioration

CHANGE PEDAL DOES NOT MOVE

	PROBABLE CAUSE
Shift shaft	• Bent shift shaft
Shift cam and shift fork	• Groove jammed with impurities • Seized shift fork • Bent shift fork guide bar
Transmission	• Seized transmission gear • Jammed impurities • Incorrectly assembled transmission

JUMP-OUT GEAR

	PROBABLE CAUSE
Shift shaft	• Improperly adjusted shift lever position • Improperly returned stopper lever
Shift fork	• Worn shift fork
Shift cam	• Improper thrust play • Worn shift cam groove
Transmission	• Worn gear dog

CLUTCH SLIPPING/DRAGGING

CLUTCH SLIPPING

	PROBABLE CAUSE
Clutch	• Improperly adjusted clutch cable • Loose clutch spring • Fatigued clutch spring • Worn friction plate • Worn clutch plate • Incorrectly assembled clutch
Engine oil	• Low oil level • Improper quality (low viscosity) • Deterioration

CLUTCH DRAGGING

Refer to the "HARD SHIFTING".

FAULTY BRAKE

POOR BRAKING EFFECT

PROBABLE CAUSE

- Worn brake pad
- Worn brake disc
- Air in brake fluid
- Leaking brake fluid
- Faulty cylinder kit cup
- Faulty caliper kit seal
- Loose union bolt
- Broken brake hose
- Oily or greasy brake disc
- Oily or greasy brake pad
- Improper brake fluid level

FRONT FORK OIL LEAKAGE AND FRONT FORK MALFUNCTION

OIL LEAKAGE

PROBABLE CAUSE

- Bent, damaged or rusty inner tube
- Damaged or cracked outer tube
- Damaged oil seal lip
- Improperly installed oil seal
- Improper oil level (too much)
- Loose damper rod holding bolt
- Broken cap bolt O-ring
- Loose drain bolt
- Damaged drain bolt gasket

MALFUNCTION

PROBABLE CAUSE

- Bent, deformed or damaged inner tube
- Bent or deformed outer tube
- Damaged fork spring
- Worn or damaged slide metal
- Bent or damaged damper rod
- Improper oil viscosity
- Improper oil level

INSTABLE HANDLING

INSTABLE HANDLING

INSTABLE HANDLING	PROBABLE CAUSE
Handlebars	• Improperly installed or bent
Steering	• Improperly installed handle crown • Bent lower bracket • Improperly installed steering shaft (improperly tightened ringnut) • Damaged 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 wheel • Loose bearing • Bent or loose wheel axle • Excessive wheel run-out
Frame	• Twisted • Damaged head pipe • Improperly installed bearing race
Swingarm	• Worn bearing or bush • Bent or damaged
Rear shock absorber	• Fatigued spring • Improper spring preload • 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 charging coil and/or faulty rectifier/regulator)
- Incorrect connection
- Improperly grounded
- Poor contacts (main or light switch)
- Bulb life expired

BULB BURNT OUT

PROBABLE CAUSE

- Improper bulb
- Faulty battery
- Faulty rectifier/regulator
- Improperly grounded
- Faulty main and/or "LIGHTS" switch
- Bulb life expired

FLASHER DOES NOT LIGHT

PROBABLE CAUSE

- Improperly grounded
- Discharged battery
- Faulty "TURN" switch
- Faulty flasher relay
- Broken. wireharness
- Loosely connected coupler
- Bulb burnt out

FLASHER KEEPS ON

PROBABLE CAUSE

- Faulty flasher relay
- Insufficient battery capacity (nearly discharged)
- Bulb burnt out
- Faulty "TURN" switch

FLASHER WINKS SLOWER

PROBABLE CAUSE
- Faulty flasher relay
- Insufficient battery capacity (nearly discharged)
- Improper bulb
- Faulty main and/or "TURN" switch

FLASHER WINKS QUICKER

PROBABLE CAUSE
- Improper bulb
- Faulty flasher relay

HORN IS INOPERATIVE

PROBABLE CAUSE
- Faulty battery
- Faulty main and/or "HORN" switch
- Improperly adjusted horn
- Faulty horn
- Broken wireharnes

OVERHEATING

OVERHEATING

PROBABLE CAUSE

Ignition system
- Improper spark plug gap
- Improper spark plug heat range
- Faulty ignitor unit

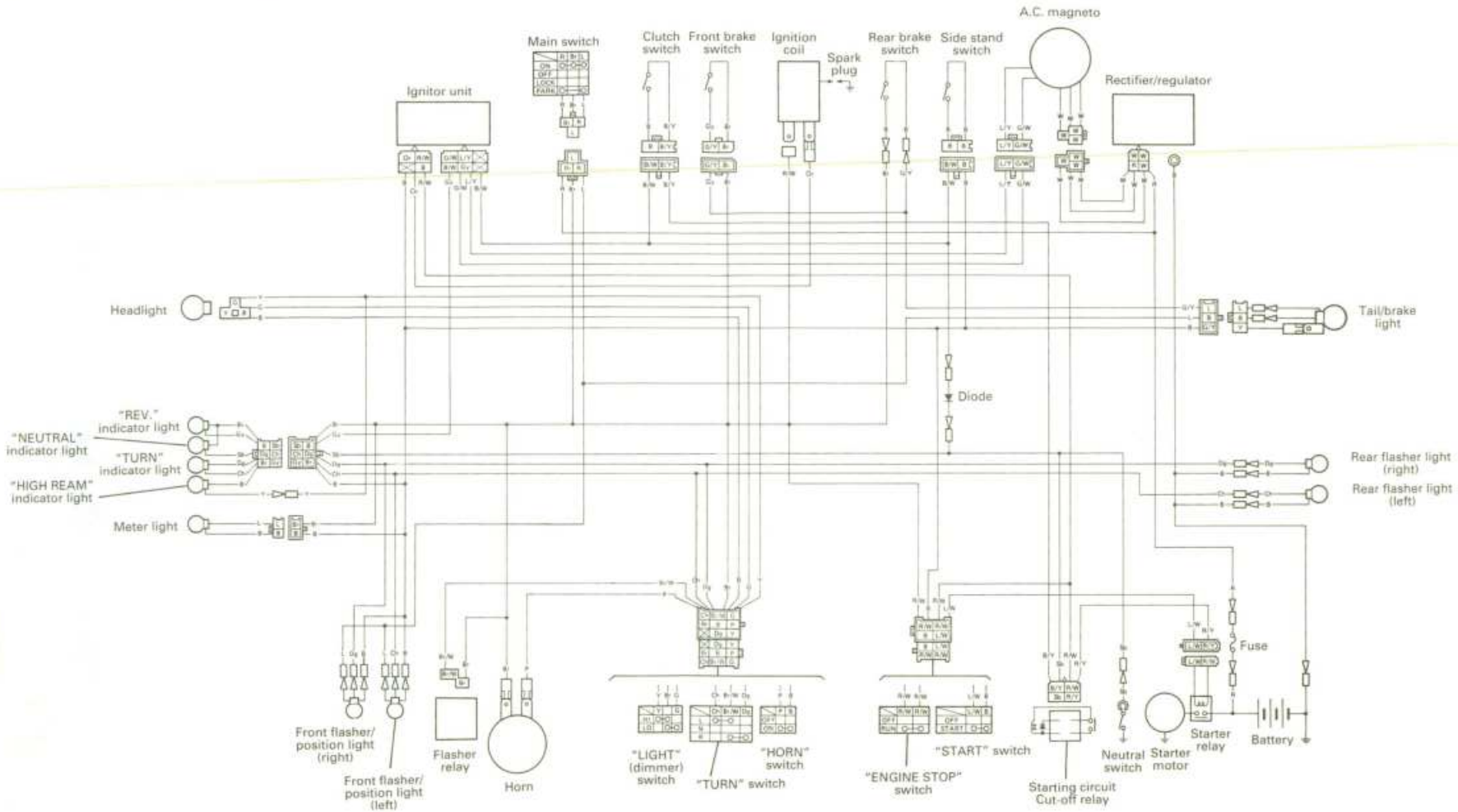
Fuel system
- Improper carburetor main jet (improper setting)
- Improperly adjusted fuel level
- Clogged air filter element

Compression system
- Heavy carbon build-up

Engine oil
- Incorrect oil level
- Improper oil viscosity
- Inferior oil quality

Brake
- Dragging brake

XT600EA/EAC WIRING DIAGRAM



COLOR CODE

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

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