YAMAHA '87

TZR250

SERVICE MANUAL
MANUEL D'ATELIER
WARTUNGSANLEITUNG

2MA-28197-80

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NOTICE

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

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

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

HOW TO USE THIS MANUAL

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.

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

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

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

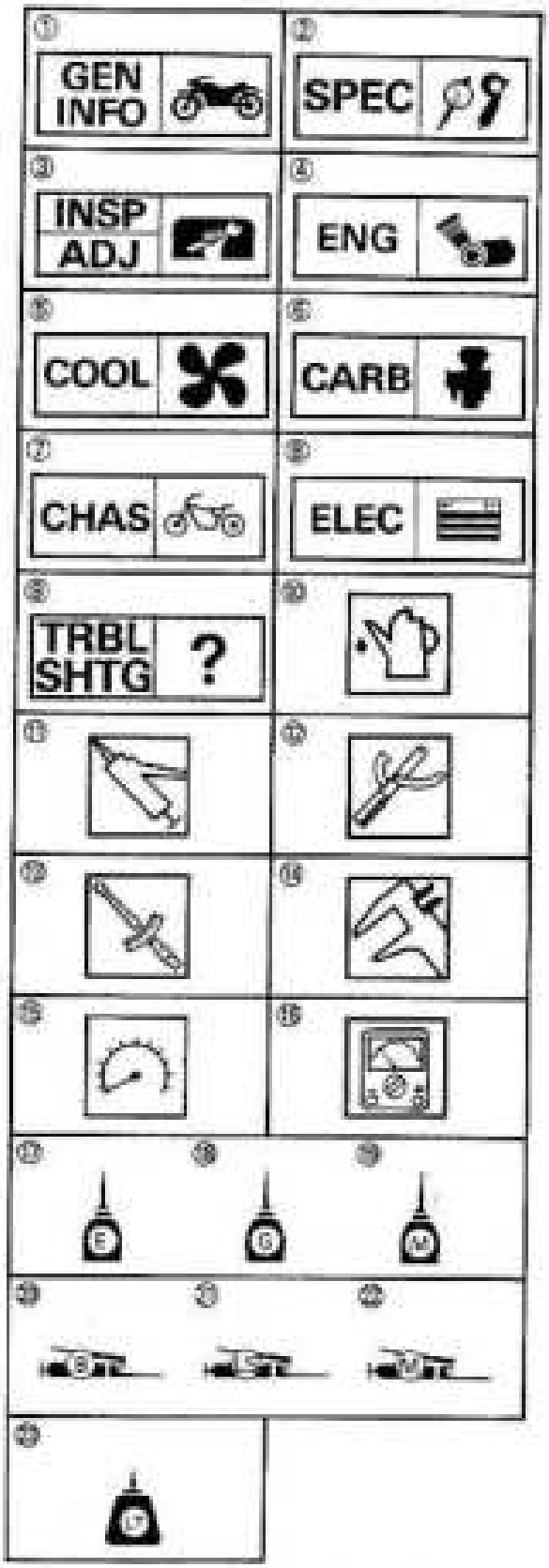
MANUAL FORMAT

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

- Bearings
  Pitting/Damage→Replace.

EXPLODED DIAGRAM

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



ILLUSTRATED SYMBOLS (Refer to the Illustration)

Illustrated symbols ① to ⑨ are designed as thumb tabs to indicate the chapter's number and content.

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

Illustrated symbols ⑩ to ⑯ are used to identify the specifications appearing in the text.

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

Illustrated symbols ⑰ to ㉒ in the exploded diagram indicate grade of lubricant and location of lubrication point.

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

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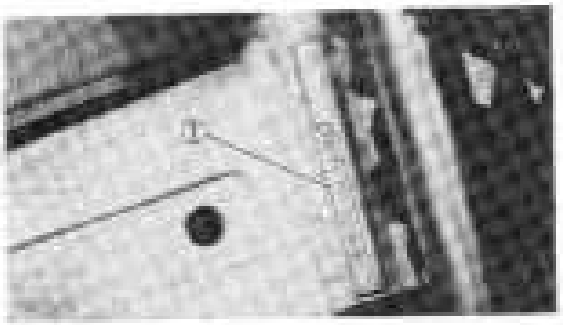
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GENERAL INFORMATION

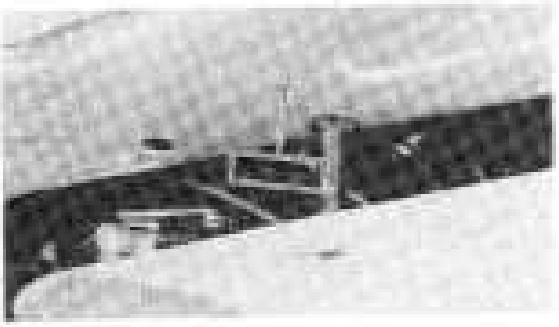


MOTORCYCLE IDENTIFICATION

FRAME SERIAL NUMBER

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

Starting Serial Number:	
TZR250	2MA-000101



ENGINE SERIAL NUMBER

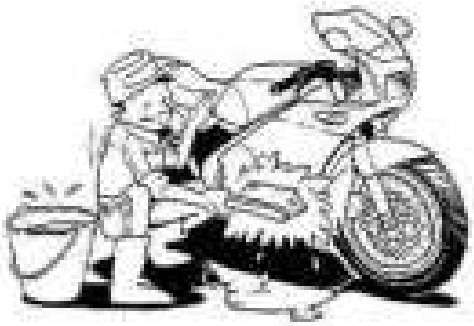
The engine serial number (1) is stamped into the elevated part of the right rear section of the engine.

Starting Serial Number:	
TZR250	2MA-000101

NOTE:

- The first three digits of these numbers are for model identification; the remaining digits are the unit production number.
- Designs and specifications are subject to 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.

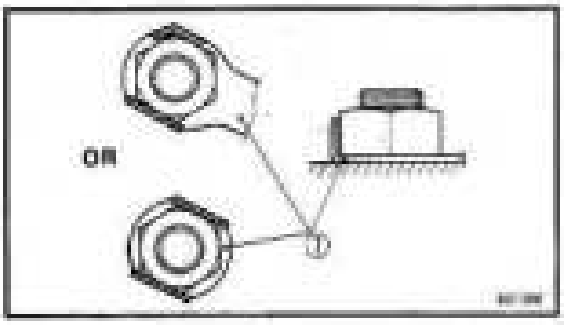
ALL REPLACEMENT PARTS

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

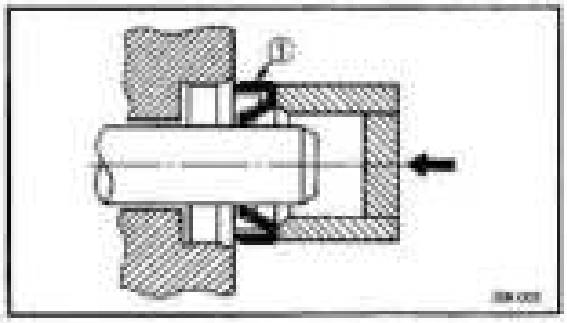
1. All gaskets, seals and O-rings should be replaced when an engine is overhauled. All gasket surfaces, oil seal lips and O-rings must be cleaned.

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



LOCK WASHERS/PLATES AND COTTER PINS

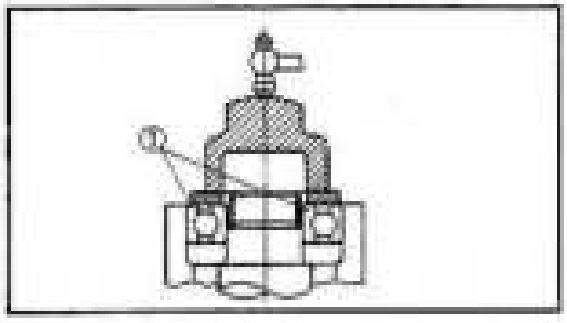
1. All lock washers/Plates ① and cotter pins must be replaced when they are removed. Lock tab(s) should be bent along the bolt or nut flat(s) after the bolt or nut has been properly tightened.



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 lips(s). Oil the bearings liberally when installing.

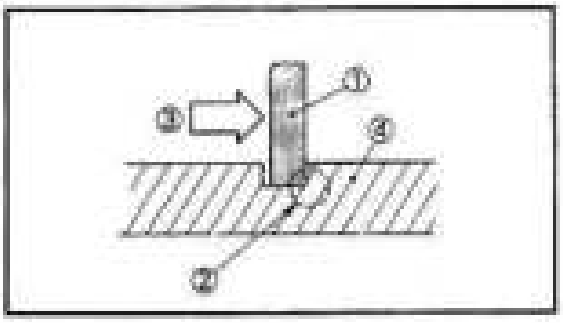
① Oil seal



CAUTION:

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

① Bearing



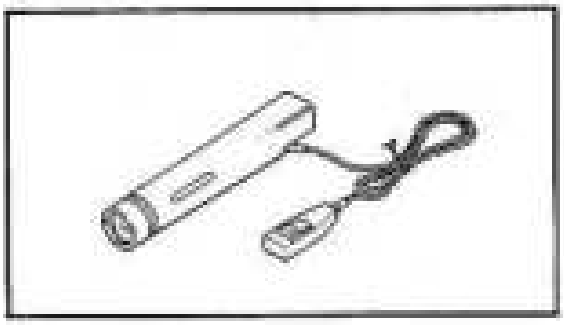
CIRCLIPS

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

④ Shaft

SPECIAL TOOLS

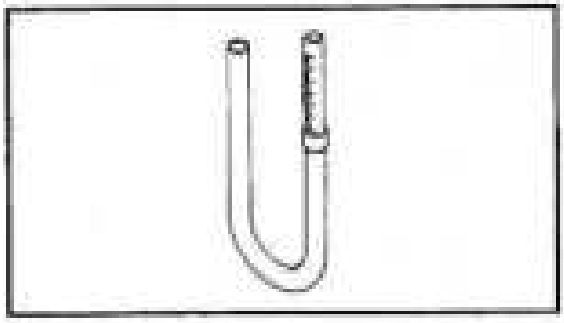
The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques.



FOR TUNE UP

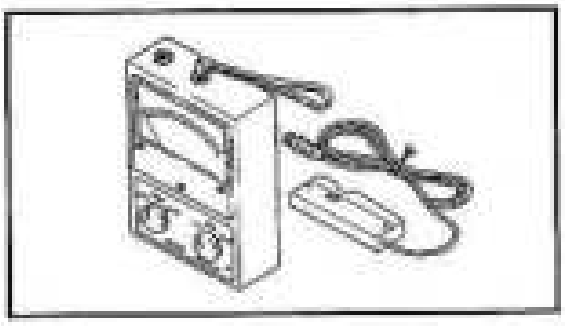
1. Inductive Timing Light
   P/N. 90890-03109

This tool is necessary for adjusting ignition timing.



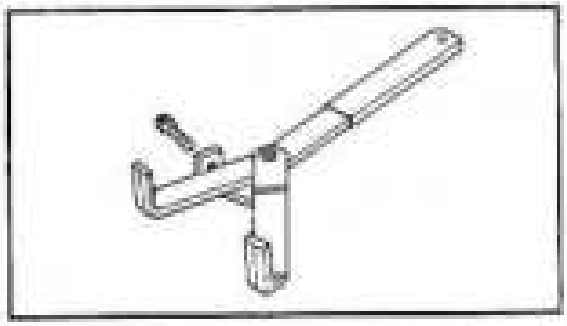
2. Fuel Level Gauge
   P/N. 90890-01312

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



3. Inductive Tachometer
   P/N. 90890-03113

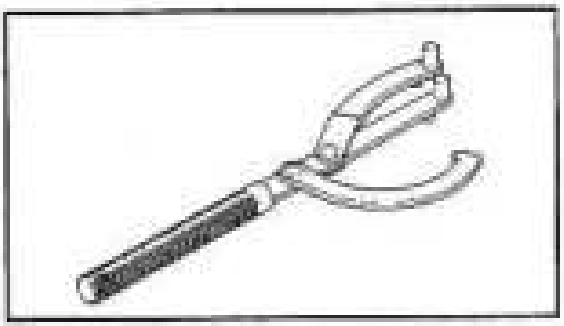
This tool is needed for detecting engine rpm.



FOR ENGINE SERVICE

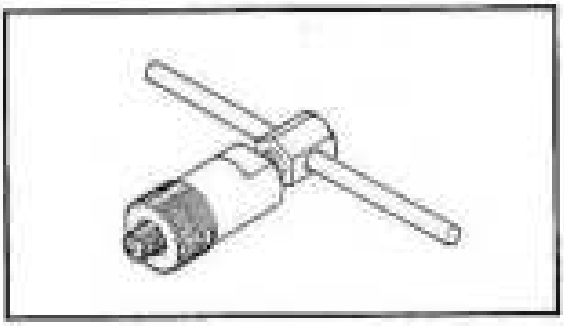
1. Universal Clutch Holder
   P/N. 90890-04086

This tool is used to hold the clutch when loosening or tightening the clutch boss locknut.



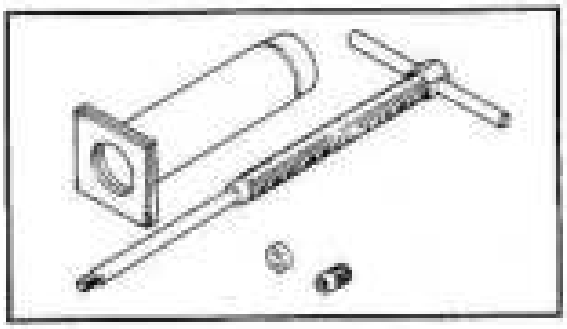
2. Universal Rotor Holder
   P/N. 90890-01235

This tool is used when loosening or tightening the flywheel magneto securing bolt.



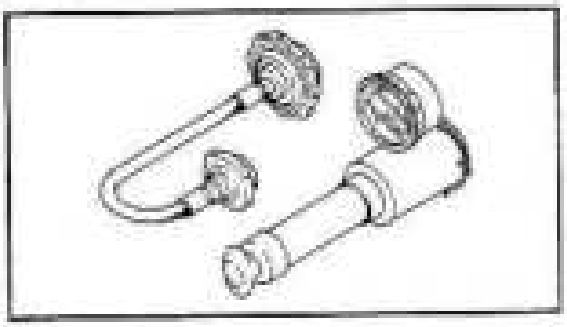
3. Flywheel Puller
   P/N. 90890-01189

This tool is used for removing the flywheel.



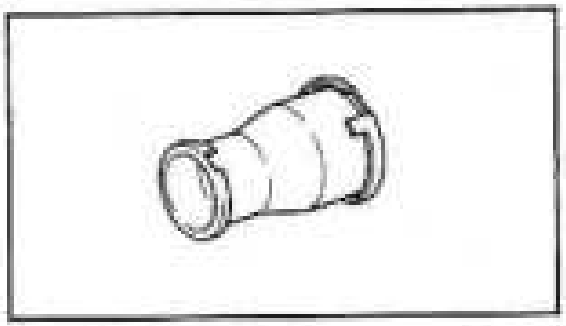
4. Piston Pin Puller
   P/N. 90890-01304

This tool is used to remove the piston pin.



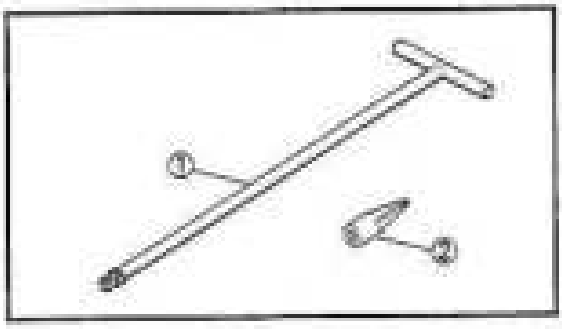
5. Cooling System Tester
   P/N. 90890-01325

This tester is needed for checking the cooling system.



6. Adapter
P/N. 90890-01352

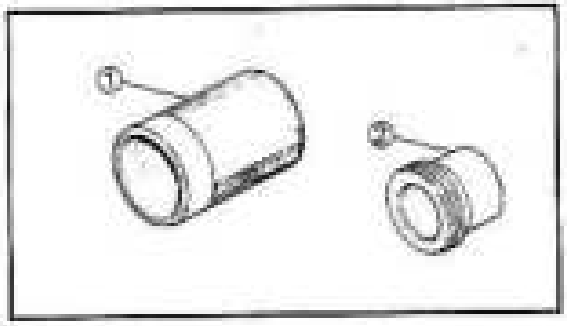
This tool is used for checking the radiator cap.



FOR CHASSIS SERVICE

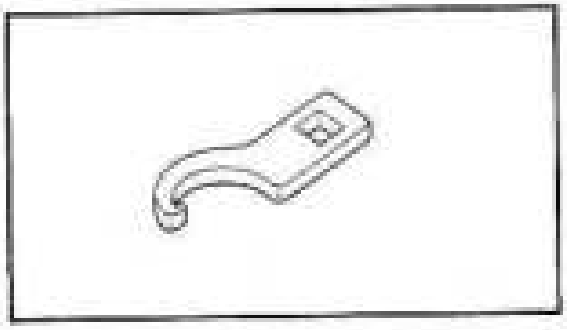
1. T-Handle ..... ①
P/N. 90890-01326
Front Fork Cylinder Holder ..... ②
P/N. 90890-01294

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



2. Front Fork Seal Driver (Weight) ..... ①
P/N. 90890-01367
Adapter ..... ②
P/N. 90890-01368

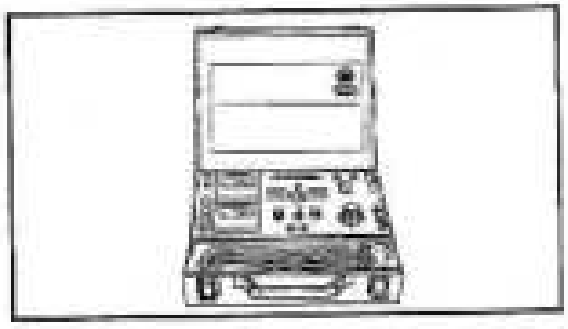
These tools are used when installing the fork seal.



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

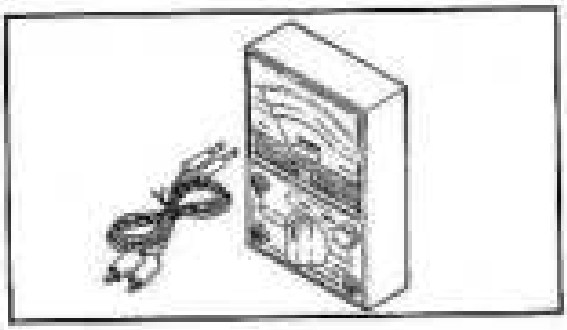
This tool is used to loosen and tighten the steering ring nut.

FOR ELECTRICAL COMPONENTS



1. Electro Tester
P/N. 90890-03021

This tester is necessary for checking the ignition system components.



2. Pocket Tester
P/N. 90890-03112

This tester is invaluable for checking the electrical system.

SPECIFICATIONS

GENERAL SPECIFICATIONS

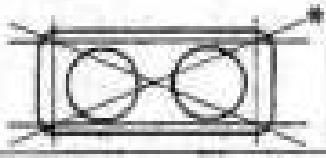
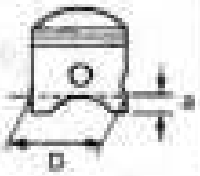
Model	TZR250
Model Code Number:	2MA
Frame Starting Number:	2MA-000101
Engine Starting Number:	2MA-000101
Dimensions:	
Overall Length	2,055 mm (80.9 in) (Except for France) 2,005 mm (78.9 in) (For France)
Overall Width	660 mm (26.0 in)
Overall Height	1,135 mm (44.7 in)
Seat Height	760 mm (29.9 in)
Wheelbase	1,375 mm (54.1 in)
Minimum Ground Clearance	135 mm (5.3 in)
Basic Weight:	
With Oil and Full Fuel Tank	144 kg (317 lb)
Minimum Turning Radius:	2,800 mm (110.2 in)
Engine:	
Engine Type	Liquid cooled 2-stroke
Induction System	Reed valve
Cylinder Arrangement	Forward inclined parallel 2-cylinder
Displacement	249 cm^3
Bore × Stroke	56.4 × 50.0 mm (2.22 × 1.97 in)
Compression Ratio	5.9 : 1
Starting System	Kick starter
Lubrication System:	
Type	Separate lubrication (Yamaha Autolube)
Engine Oil Type	Yamaha Oil 2T or air cooled 2 stroke engine oil
Transmission Oil Type	SAE 10W30 type SE motor oil
Oil Capacity:	
Engine Oil (Oil Tank)	1.4 L (1.23 Imp qt, 1.48 US qt)
Transmission Oil	
Periodic Oil Change	1.0 L (0.9 Imp qt, 1.1 US qt)
Total Amount	1.0 L (0.9 Imp qt, 1.1 US qt)
Coolant Capacity:	
Including All Routes	1.35 L (1.19 Imp qt, 1.43 US qt)
Air Filter:	
Type	Wet element

Model	TZR250	
Fuel:		
Type	Premium gasoline	
Fuel Tank Capacity		
Full Amount	16.0 L (3.52 Imp gal, 4.23 US gal)	
Reserve Amount	4.0 L (0.88 Imp gal, 1.06 US gal)	
Carburetor:		
Type/Quantity	TM28SS/2 pcs.	
Manufacturer	MIKUNI	
Spark Plug:		
Type/Quantity	BR9ES/2 pcs.	
Manufacturer	NGK	
Plug Gap	0.7 – 0.8 mm (0.028 – 0.032 in)	
Clutch:		
Type	Wet, multiple disc	
Transmission:		
Type	Constant mesh 6-speed	
Primary Reduction System	Helical gear	
Primary Reduction Ratio	56/22 (2.545)	
Secondary Reduction System	Chain drive	
Secondary Reduction Ratio	41/14 (2.929)	
Operation	Left foot operation	
Gear Ratio		
1st	32/13 (2.462)	
2nd	28/16 (1.750)	
3rd	25/19 (1.316)	
4th	26/24 (1.083)	
5th	25/26 (0.962)	
6th	23/27 (0.852)	
Chassis:		
Frame Type	Semi double cradle	
Caster Angle	26°	
Trail	96 mm (3.78 in)	
Tire:		
Type	Tubeless	
Size		
Front	100/80 – 17 52H	
Rear	120/80 – 17 61H	
Tire Pressure (Cold tire):	Front	Rear
Up to 90 kg (198 lb) load*	180 kPa (1.8 kg/cm², 26 psi)	200 kPa (2.0 kg/cm², 28 psi)
90 kg (198 lb) – Maximum (196 kg (432 lb)) load*	200 kPa (2.0 kg/cm², 28 psi)	230 kPa (2.3 kg/cm², 32 psi)
High speed riding	200 kPa (2.0 kg/cm², 28 psi)	230 kPa (2.3 kg/cm², 32 psi)

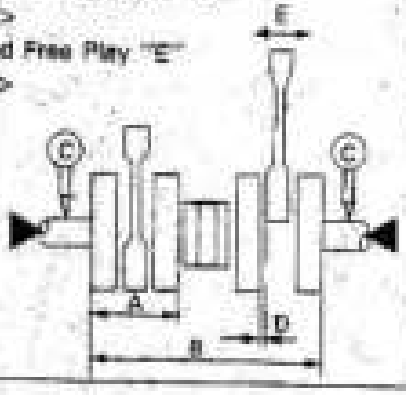
*Load is total weight of cargo, rider, passenger, and accessories.

MAINTENANCE SPECIFICATIONS

ENGINE

Model		TZR250
Cylinder Head:		
Warpage Limit		0.03 mm (0.0012 in) *Lines indicate straightedge measurement.
Cylinder:		
Bore Size		56.40 – 56.42 mm (2.220 – 2.221 in)
Taper Limit		0.05 mm (0.002 in)
Out of Round Limit		0.05 mm (0.002 in)
Piston:		
Piston Size "D"		56.39 – 56.49 mm (2.220 in)
Measuring Point "a"		15 mm (0.59 in)
Piston Off-Set		Zero mm (Zero in)
Piston-to-Cylinder Clearance		0.050 – 0.055 mm (0.0019 – 0.0021 in)
<Limit>		<0.1 mm (0.004 in)>
Over Size 1st		56.65 mm (2.23 in)
Over Size 2nd		56.90 mm (2.24 in)
Piston Ring:		
Sectional Sketch	Top Ring	Keystone type B = 1.2 mm (0.047 in) T = 2.2 mm (0.087 in)
		
	2nd Ring	Plain type B = 1.2 mm (0.047 in) T = 1.85 mm (0.073 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)
Side Clearance	Top Ring	0.020 – 0.060 mm (0.0008 – 0.0024 in)
	2nd Ring	0.030 – 0.065 mm (0.0012 – 0.0026 in)

Model	TZR250
Crankshaft:	
Crank Width "A"	55.95 – 56.00 mm (2.203 – 2.205 in)
Assembly Width "B"	167.90 – 168.05 mm (6.610 – 6.616 in)
Runout Limit "C"	0.03 mm (0.0012 in)
Big End Side Clearance "D"	0.25 – 0.75 mm (0.010 – 0.030 in)
<Limit>	<1.0 mm (0.039 in)>
Small End Free Play "E"	0.4 – 0.6 mm (0.016 – 0.024 in)
<Limit>	<1.0 mm (0.039 in)>
Clutch:	
Friction Plate	
Thickness	2.9 – 3.1 mm (0.114 – 0.122 in)
Quantity	7 pcs.
Wear Limit	2.8 mm (0.110 in)
Clutch Plate	
Thickness	1.5 – 1.7 mm (0.059 – 0.067 in)
Quantity	6 pcs.
Warpage Limit	0.1 mm (0.004 in)
Clutch Spring	
Free Length	34.9 mm (1.374 in)
Quantity	4 pcs.
Minimum Free Length	32.9 mm (1.295 in)
Clutch Release Method	Outer pull (Rack and pinion pull)
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
Guide Bar Bending Limit	0.03 mm (0.0012 in)
Kick Starter:	
Type	Ratchet type
Air Filter:	
Oil Grade	Air-Cooled 2 Stroke engine oil or Yamaha oil 2T



Model		TZR250
Carburetor:		
I.D. Mark		2MA 00
Main Jet	(M.J.)	#230
Air Jet	(A.J.)	ϕ1.5
Jet Needle-Position	(J.N.)	5L19—2/5
Needle Jet	(N.J.)	O—2 (#505)
Cutaway	(C.A.)	2.5
Pilot Air Jet	(P.A.J.)	ϕ1.4
Pilot Outlet	(P.O.)	ϕ0.6
Pilot Jet	(P.J.)	#20
Bypass 1	(B.P.1)	ϕ1.6
Valve Seat Size	(V.S.)	ϕ2.8
Starter Jet	(G.S.)	#35
Power Jet	(PW.J.)	#80
Fuel Level	(F.L.)	1.1—2.1 mm (0.04—0.08 in)
Float Height	(F.H.)	15—17 mm (0.59—0.67 in)
Idling Speed		1,150—1,250 r/min
Reed Valve:		
Valve Thickness		0.4 mm (0.016 in)
Valve Stopper Height		9.4 mm (0.370 in)
Valve Bending Limit		1.5 mm (0.07 in)
Lubrication System:		
Autolube Pump		
Color Code		Sky blue
Minimum Stroke		0.15—0.20 mm (0.006—0.008 in)
Maximum Stroke		2.08—2.27 mm (0.080—0.089 in)
Minimum Output		0.75—1.00 cm^3 per 200 strokes
Maximum Output		10.3—11.4 cm^3 per 200 strokes
Pulley Adjusting Mark		At full throttle
Oil Pump		
Type		Trochoid type
Tip Clearance		0.10—0.15 mm (0.004—0.006 in)
<Limit>		<0.17 mm (0.007 in)>
Side Clearance		0.04—0.09 mm (0.002—0.004 in)
<Limit>		<0.12 mm (0.005 in)>
Cooling System:		
Radiator Core Width		290.6 mm (11.44 in)
Radiator Core Height		180.0 mm (7.09 in)
Radiator Core Thickness		16.0 mm (0.63 in)
Radiator Cap Opening Pressure		75—106 kPa (0.75—1.06 kg/cm^2, 10—14 psi)
Reservoir Tank Capacity		0.25 L (0.22 Imp qt, 0.26 US qt)
Water Pump Type		Single-suction centrifugal pump
Thermostatic valve:		
Opening Temperature		63—67°C (146—153°F)
Full Open Temperature/Lift		80°C (176°F)/7 mm (0.28 in) or more

Tightening Torque:

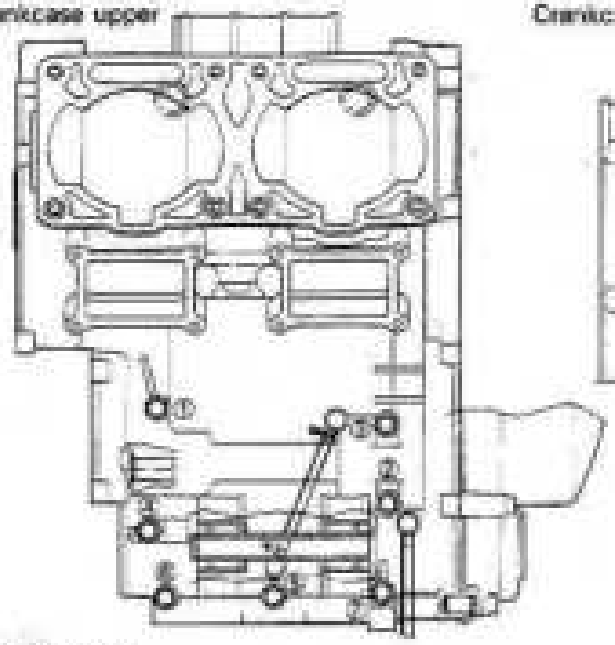
Part to be tightened	Q'ty	Thread size	Tightening torque			Remarks
			Nm	m•kg	ft•lb	
Cylinder head						
Cap nut	4	M8 ×1.25	22	2.2	16	
Flange nut	6	M8 ×1.25	22	2.2	16	
Spark plug	2	M14×1.25	20	2.0	14	
Cylinder						
Stud bolt	4	M8 ×1.25	13	1.3	9.4	
Stud bolt	6	M8 ×1.25	13	1.3	9.4	
Flange nut	8	M8 ×1.25	28	2.8	20	
Crankcase						
Stud bolt	4	M8 ×1.25	13	1.3	9.4	
Stud bolt	4	M8 ×1.25	13	1.3	9.4	
Flange bolt	7	M8 ×1.25	24	2.4	17	L: 90 mm (3.5 in)
Flange bolt	1	M8 ×1.25	24	2.4	17	L: 105 mm (4.1 in)
Flange bolt	7	M6 ×1.0	10	1.0	7.2	L: 55 mm (2.2 in)
Flange bolt	1	M6 ×1.0	10	1.0	7.2	L: 40 mm (1.6 in)
Pulley cover (Power valve)						
Hexagon socket head bolt	2	M5 ×0.8	7	0.7	5.1	
Pulley housing (Power valve)						
Hexagon socket head bolt	2	M5 ×0.8	7	0.7	5.1	
Power valve						
Hexagon socket head bolt	2	M5 ×0.8	7	0.7	5.1	
Power valve pulley						
Hexagon bolt with spring washer and plain washer	1	M6 ×1.0	10	1.0	7.2	
Thrust plate (Power valve)						
Hexagon socket head bolt	2	M5 ×0.8	7	0.7	5.1	
Power valve holder						
Hexagon socket head bolt	1	M5 ×0.8	7	0.7	5.1	
Power valve joint						
Hexagon socket head bolt	2	M5 ×0.8	7	0.7	5.1	
Power valve cable adjuster						
Hexagon nut	2	M6 ×1.0	8	0.8	5.8	
Water pump housing cover						
Hexagon socket head bolt	2	M6 ×1.0	10	1.0	7.2	L: 25 mm (1.0 in)
Hexagon socket head bolt	2	M6 ×1.0	10	1.0	7.2	L: 65 mm (2.5 in)
Drain bolt	1	M8 ×1.25	16	1.6	11	
Thermostatic valve cover						
Hexagon socket head bolt	3	M6 ×1.0	10	1.0	7.2	
Radiator						
Flange bolt	2	M6 ×1.0	6	0.6	4.3	
Radiator cover						
Panhead screw with spring washer and plain washer	4	M6 ×1.0	6	0.6	4.3	
Autolube pump						
Panhead screw	2	M5 ×0.8	5	0.5	3.6	

Part to be tightened	Q'ty	Thread size	Tightening torque			Remarks
			Nm	m•kg	ft•lb	
Oil pump						
Panhead screw	3	M5 ×0.8	5	0.5	3.6	
Delivery pipe (Oil pump)						
Panhead screw	1	M5 ×0.8	5	0.5	3.6	
Strainer cover						
Panhead screw	2	M5 ×0.8	5	0.5	3.6	
Intake manifold						
Hexagon socket head bolt	8	M6 ×1.0	10	1.0	7.2	
Starter lever						
Panhead screw with spring washer	2	M4 ×0.7	2	0.2	1.4	
Muffler						
Flange nut	4	M8 ×1.25	18	1.8	13	
A.C. Generator cover						
Hexagon socket head bolt	4	M6 ×1.0	5	0.5	3.6	
Crankcase cover (Left)						
Hexagon socket head bolt	3	M6 ×1.0	5	0.5	3.6	
Crankcase cover (Right)						
Hexagon socket head bolt	7	M6 ×1.0	10	1.0	7.2	
Flange bolt	1	M10×1.0	22	2.2	16	
Drain bolt	1	M8 ×1.25	16	1.6	11	
Autolube pump cover						
Hexagon socket head bolt	2	M6 ×1.0	6	0.6	4.3	
Clutch cable holder						
Hexagon socket head bolt	1	M6 ×1.0	10	1.0	7.2	
Kick crank						
Hexagon bolt	1	M8 ×1.25	25	2.5	18	
Primary drive gear						
Hexagon nut	1	M16×1.0	65	6.5	47	
Clutch boss						
Hexagon nut	1	M20×1.0	90	9.0	65	
Pressure plate						
Hexagon screw with plain washer	4	M5 ×0.8	7	0.7	5.1	
Pull lever holder						
Panhead screw	1	M6 ×1.0	10	1.0	7.2	
Bearing holder (Main axle)						
Hexagon socket head bolt	2	M6 ×1.0	10	1.0	7.2	
Drive sprocket						
Hexagon nut	1	M20×1.0	90	9.0	65	
Stopper plate (Shift cam)						
Flat head screw	2	M6 ×1.0	8	0.8	5.8	
Stopper lever						
Bolt	1	M6 ×1.0	10	1.0	7.2	
Shift lever adjuster						
Hexagon nut	1	M8 ×1.25	30	3.0	22	

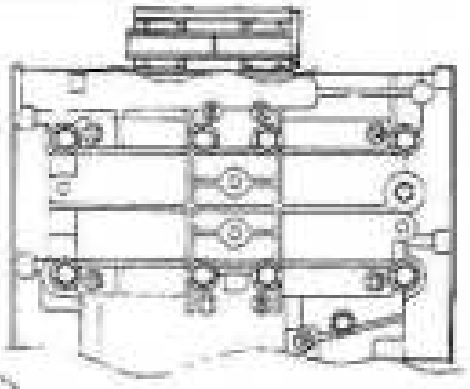
Part to be tightened	Q'ty	Thread size	Tightening torque			Remarks
			Nm	m•kg	ft•lb	
Change pedal						
Hexagon socket head bolt	1	M6 ×1.0	10	1.0	7.2	
Shift rod						
Hexagon nut	2	M8 ×1.25	10	1.0	7.2	
Stator coil						
Panhead screw with spring washer	3	M6 ×1.0	7	0.7	5.1	
Pickup coil						
Panhead screw with spring washer and plain washer	2	M5 ×0.8	5	0.5	3.6	
C.D.I. magneto						
Hexagon nut	1	M12×1.25	80	8.0	58	
Neutral switch	1	M10×1.25	3	0.3	2.2	
Thermo unit	1	PT 1/8	15	1.5	11	

Tightening sequence:

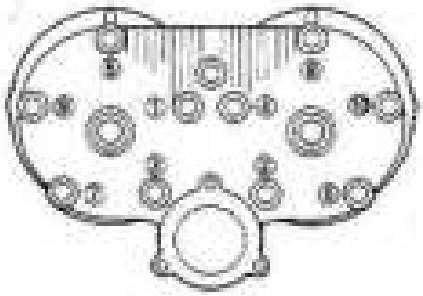
Crankcase upper



Crankcase lower



Cylinder head



CHASSIS

Model	TZR250
Steering System:	
Bearing Type	Ball Bearing
Bearing Size (Quantity)	
Upper	1/4 in (19 pcs.)
Lower	1/4 in (19 pcs.)
Front Suspension:	
Front Fork Travel	140 mm (5.51 in)
Fork Spring Free Length	427.2 mm (16.82 in)
<Limit>	<420.0 mm (16.53 in)>
Collar Length	80.0 mm (3.54 in)
Spring Rate (K_1)	8 N/mm (0.8 kg/mm, 68.8 lb/in)
Stroke (K_1)	0.0–140.0 mm (0.0–5.51 in)
Optional Spring	No.
Oil Capacity	444 cm³ (15.63 Imp oz, 15.01 US oz)
Oil Level	90 mm (3.54 in)
	From top of inner tube fully compressed without spring.
Oil Grade	Fork oil 10W or equivalent
Rear Suspension:	
Shock Absorber Travel	40 mm (1.57 in)
Spring Free Length	182 mm (7.17 in)
Fitting Length	168 mm (6.61 in)
Spring Rate (K_1)	105 N/mm (10.5 kg/mm, 578.3 lb/in)
Stroke (K_1)	0.0–40.0 mm (0.0–1.57 in)
Optional Spring	No.
Enclosed Gas Pressure	1,200 kPa (12.0 kg/cm², 170.6 psi)
<Minimum – Maximum>	<1,100–1,300 kPa (11.0–13.0 kg/cm², 156.4–184.8 psi)>
Swingarm:	
Free Play Limit (Swingarm end)	1.0 mm (0.039 in)
	Move swingarm end side to side
Front Wheel:	
Type	Cast wheel
Rim Size	MT2.15 × 17
Rim Material	Aluminum
Rim Runout Limit	
Vertical	2.0 mm (0.079 in)
Lateral	2.0 mm (0.079 in)

Model	TZR250
Rear Wheel:	
Type	Cast wheel
Rim Size	MT2.50×17
Rim Material	Aluminum
Rim Runout Limit:	
Vertical	2.0 mm (0.079 in)
Lateral	2.0 mm (0.079 in)
Drive Chain:	
Type/Manufacturer	520 V4/DAIDO
Number of Links	110 Links
Chain Free Play	30 – 40 mm (1.18 – 1.57 in)
Front Disc Brake:	
Type	Single
Disc Outside Diameter	320 mm (12.6 in)
Disc Thickness	5.0 mm (0.20 in)
Pad Thickness	7.5 mm (0.29 in)
<Wear Limit>	<0.5 mm (0.02 in)>
Master Cylinder Inside Diameter	14.0 mm (0.55 in)
Caliper Cylinder Inside Diameter	33.96 mm (1.34 in)
Brake Fluid Type	DOT No.3
Rear Disc Brake:	
Type	Single
Disc Outside Diameter	210 mm (8.27 in)
Disc Thickness	5.0 mm (0.20 in)
Pad Thickness	5.5 mm (0.22 in)
<Wear Limit>	<0.5 mm (0.02 in)>
Master Cylinder Inside Diameter	12.7 mm (0.50 in)
Caliper Cylinder Inside Diameter	38.1 mm (1.50 in)
Brake Fluid Type	DOT No.3
Brake Lever and Brake Pedal:	
Brake Lever Free Play	2 – 5 mm (0.08 – 0.20 in) At end of brake lever
Brake Pedal Position	65 mm (2.16 in) Below top of footrest
Clutch Lever and Throttle Grip:	
Clutch Lever Free Play	10 – 15 mm (0.39 – 0.59 in) At end of clutch lever
Throttle Cable Free Play	2 – 5 mm (0.08 – 0.20 in) At grip flange

Tightening Torque:

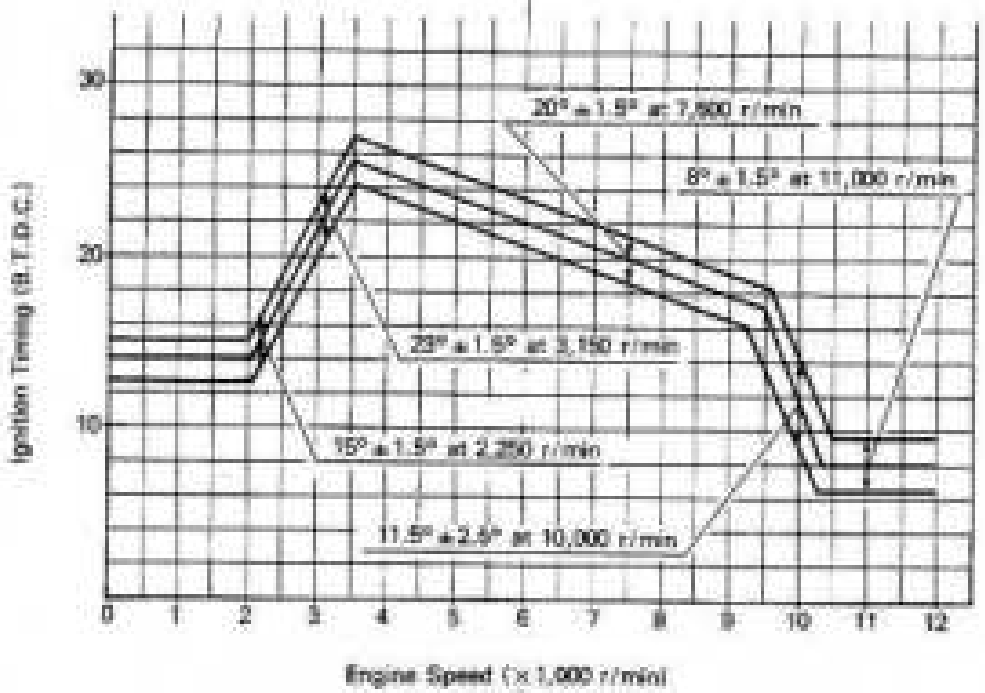
Part to be tightened	Thread size	Tightening torque			Remarks
		Nm	m•kg	ft•lb	
Engine mount:					
Front	M10 × 1.25	55	5.5	40	
Rear	M10 × 1.25	55	5.5	40	
Engine bracket and crankcase (Lower)	M10 × 1.25	55	5.5	40	
Engine bracket and torque rod	M10 × 1.25	45	4.5	32	
Torque rod and torque rod stay	M10 × 1.25	45	4.5	32	
Down tube and frame:					
Upper	M8 × 1.25	25	2.5	18	
Lower	M10 × 1.25	45	4.5	32	
Pivot shaft and nut	M14 × 1.5	90	9.0	65	
Swing arm and connecting arm	M10 × 1.25	37	3.7	27	
Connecting arm and relay arm	M12 × 1.25	40	4.0	29	
Relay arm and frame	M10 × 1.25	37	3.7	27	
Rear shock absorber and frame	M10 × 1.25	40	4.0	29	
Steering shaft and nut	M22 × 1.0	110	11.0	80	
Handle crown and inner tube	M8 × 1.25	32	3.2	23	
Under bracket and inner tube	M10 × 1.25	35	3.5	25	
Cap bolt (Front fork)	M35 × 1.0	23	2.3	17	
Inner tube and damper rod	M10 × 1.25	20	2.0	14	
Brake disc and wheel hub	M8 × 1.25	20	2.0	14	
Brake caliper and front fork	M10 × 1.25	35	3.5	25	
Brake hose and brake caliper	M10 × 1.25	26	2.6	19	
Front wheel axle	M12 × 1.25	74	7.4	53	
Rear wheel axle and nut	M14 × 1.5	105	10.5	75	
Driven sprocket and wheel hub	M8 × 1.25	32	3.2	23	
Caliper bracket and swingarm	M10 × 1.25	45	4.5	32	
Brake caliper and caliper bracket	M10 × 1.25	35	3.5	25	
Handlebar and inner tube	M6 × 1.0	13	1.3	9.4	
Frame and footrest bracket	M8 × 1.25	32	3.2	23	
Footrest (For rider) and footrest bracket	M10 × 1.25	55	5.5	40	
Sidestand bracket and frame	M10 × 1.25	55	5.5	40	
Ring nut (Steering shaft)	M25 × 1.0	20	2.0	14	Refer to "NOTE".

NOTE:

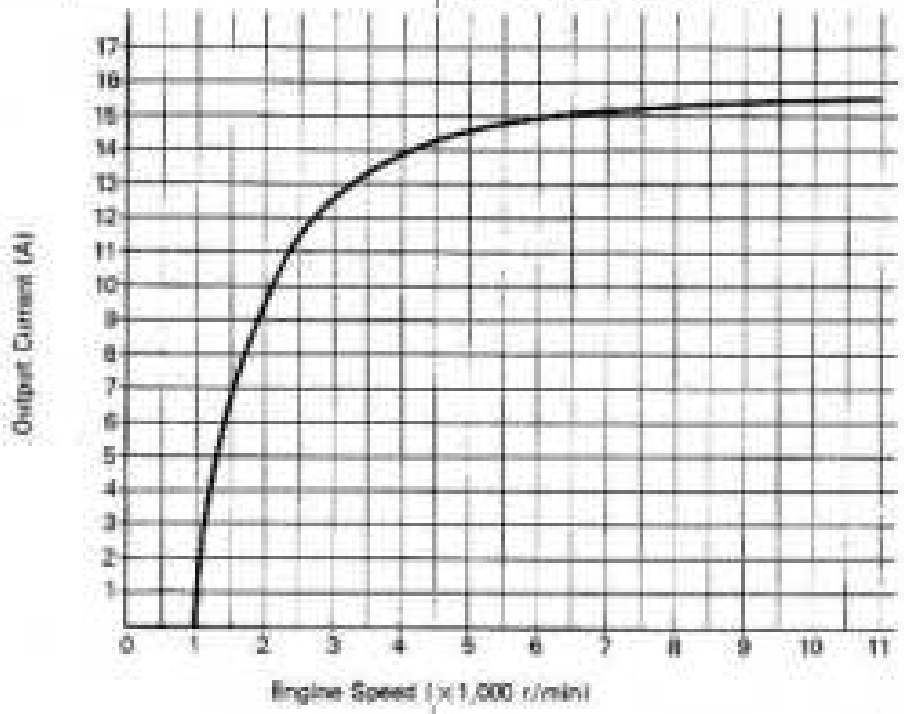
1. First, tighten the ring nut approximately 40 Nm (4.0 m•kg, 29 ft•lb) by using the torque wrench, then loosen the ring nut one turn.
2. Retighten the ring nut to specification.

ELECTRICAL

Model	TZR250
Voltage:	12V
Ignition System:	
Ignition Timing (B.T.D.C.)	14° at 1,200 r/min
Advancer Type	Electrical type



C.D.I.:	
Magneto Model/Manufacturer	TVCE38/NIPPON DENSO
C.D.I. Unit Model/Manufacturer	GAB73/NIPPON DENSO
Pickup Coil Resistance (Color)	94 – 140Ω at 20°C (68°F) (White/Green – White/Red)
Source Coil (1) Resistance (Color)	128 – 193Ω at 20°C (68°F) (Green – Brown)
Source Coil (2) Resistance (Color)	3.6 – 5.4Ω at 20°C (68°F) (Brown – Red)
Ignition Coil:	
Model/Manufacturer	JO136/NIPPON DENSO
Minimum Spark Gap	6 mm (0.24 in)
Primary Coil Resistance	0.26 – 0.40Ω at 20°C (68°F)
Secondary Coil Resistance	4.7 – 7.0kΩ at 20°C (68°F)
Spark Plug Cap:	
Type	Resin Type
Plug Cap Resistance	10kΩ at 20°C (68°F)

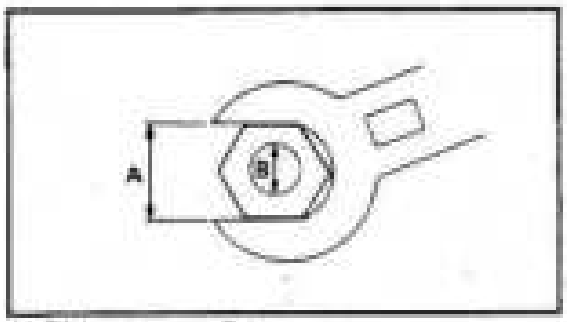
Model	TZR250
Charging System:	A.C. Magneto Generator
A.C. Magneto Generator:	
Model/Manufacturer	VCE38/NIPPON DENSO
Stator Coil Resistance (Color)	0.44 – 0.660 at 20°C (68°F) (White – White)
Standard Output	14.3 – 15.3V at 3,000 r/min
	
Voltage Regulator:	
Model/Manufacturer	SH668/SHINDENGEN
Rectifier:	
Model/Manufacturer	SH668/SHINDENGEN
Capacity	25A
Withstand Voltage	200V
Battery:	
Specific Gravity	1.280
Horn:	
Type	Plane Type
Quantity	1 pc.
Model/Manufacturer	YFS – 12/NIKKO
Maximum Amperage	2.5A

Model	TZR250
Flasher Relay:	
Type	Condenser Type
Model/Manufacturer	FU257CD/NIPPON DENSO
Self Canceling Device	Yes
Flasher Frequency	75 – 95 cycles/min
Wattage	27W×2+3.4W
Flasher Cancelling Unit (Except for Germany):	
Model/Manufacturer	1AO/MATSUSHITA
Ignition Control Unit:	
Model/Manufacturer	4Y3/YAMAHA
Oil Level Switch:	
Model/Manufacturer	1KT/TAIHEIYO ASTI
Thermo Unit:	
Model/Manufacturer	11H/NIPPON SEIKI
Y.P.V.S. Control Unit:	
Model/Manufacturer	1KT/YAMAHA
Y.P.V.S. Servo Motor:	
Model/Manufacturer	1KT/YAMAHA
Curcuit Breaker:	
Type	Fuse
Curcuit (Fuse):	
"MAIN"	20A (1 pc.)
"HEADLIGHT"	15A (1 pc.)
"SIGNAL"	15A (1 pc.)
"YPVS"	5A (1 pc.)

GENERAL TORQUE SPECIFICATIONS

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

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



A: Distance across flats
B: Outside 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	Rotation per minute	—	Engine speed

LUBRICATION POINTS AND LUBRICANT TYPE

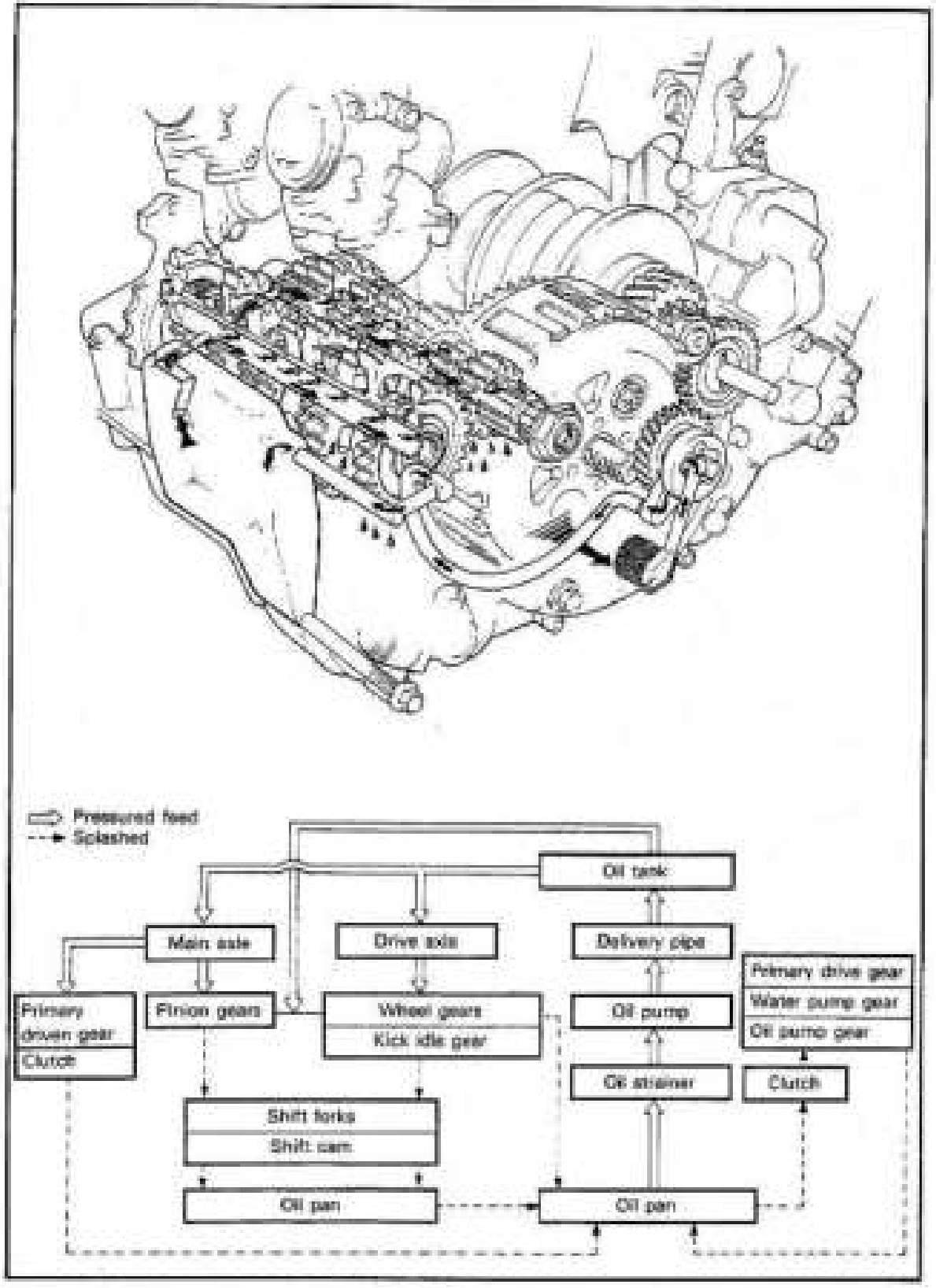
ENGINE

Lubrication Points (Part name)	Lubricant Type
Oil seal lips (All)	
O-rings (All)	
Bearing retainer Crankshaft bearings (Left and center) Needle bearings (Connecting rod) Main axle bearings Drive axle bearings Shift cam bearings Pull rod bearing	
Crank pins	
Piston rings, piston pins and pistons	
Power valve holders	
Impeller shaft (Water pump)	
Worm shaft (Autolube pump)	
Pump shaft (Oil pump)	
Kick idle gear	
Kick axle	
Primary driven gear (Clutch housing)	
Pull rod	
Pull lever axle	
Sliding gear (Transmission)	
Free movement gear (Transmission)	
Collar (Drive axle)	
Guide bar (Shift forks)	
Link ball (Change pedal)	
Pivoting points (Change pedal)	
Crankcase mating surfaces	Yamaha Bond No. 4

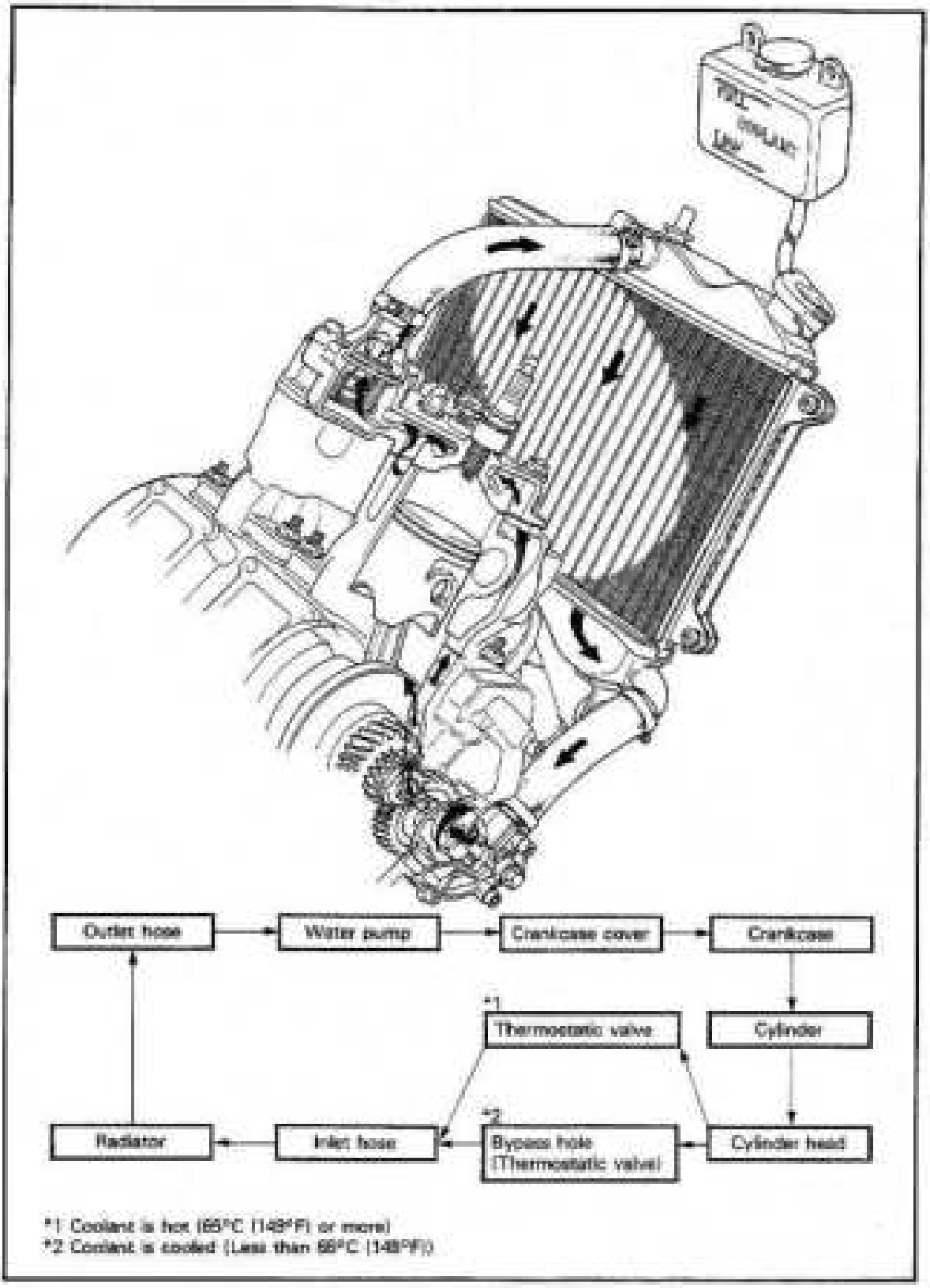
CHASSIS

Lubrication Points (Part name)	Lubricant Type
Ball bearings (Steering shaft)	
Oil seal lips (Front wheel and rear wheel)	
Pivoting point (Brake pedal)	
Pivoting point (Sidestand)	
Right handlebar end	
Throttle cable end (Throttle grip)	
Pivoting point (Clutch lever)	
Clutch cable end (Clutch lever)	
Pivoting point (Brake lever)	
Bushes (Rear shock absorber)	
Oil seal lips (Rear shock absorber)	
Pivot shaft (Swingarm)	
Oil seal lips (Swingarm)	
Bearing (Swingarm)	
Bushes (Relay arm)	
Collars (Relay arm)	
Oil seal lips (Connecting arm)	
Bearing (Connecting arm)	
Collars (Connecting arm)	
Front wheel axle	
Rear wheel axle	
Collar (Front wheel)	
Speedometer gear unit	

LUBRICATION DIAGRAM

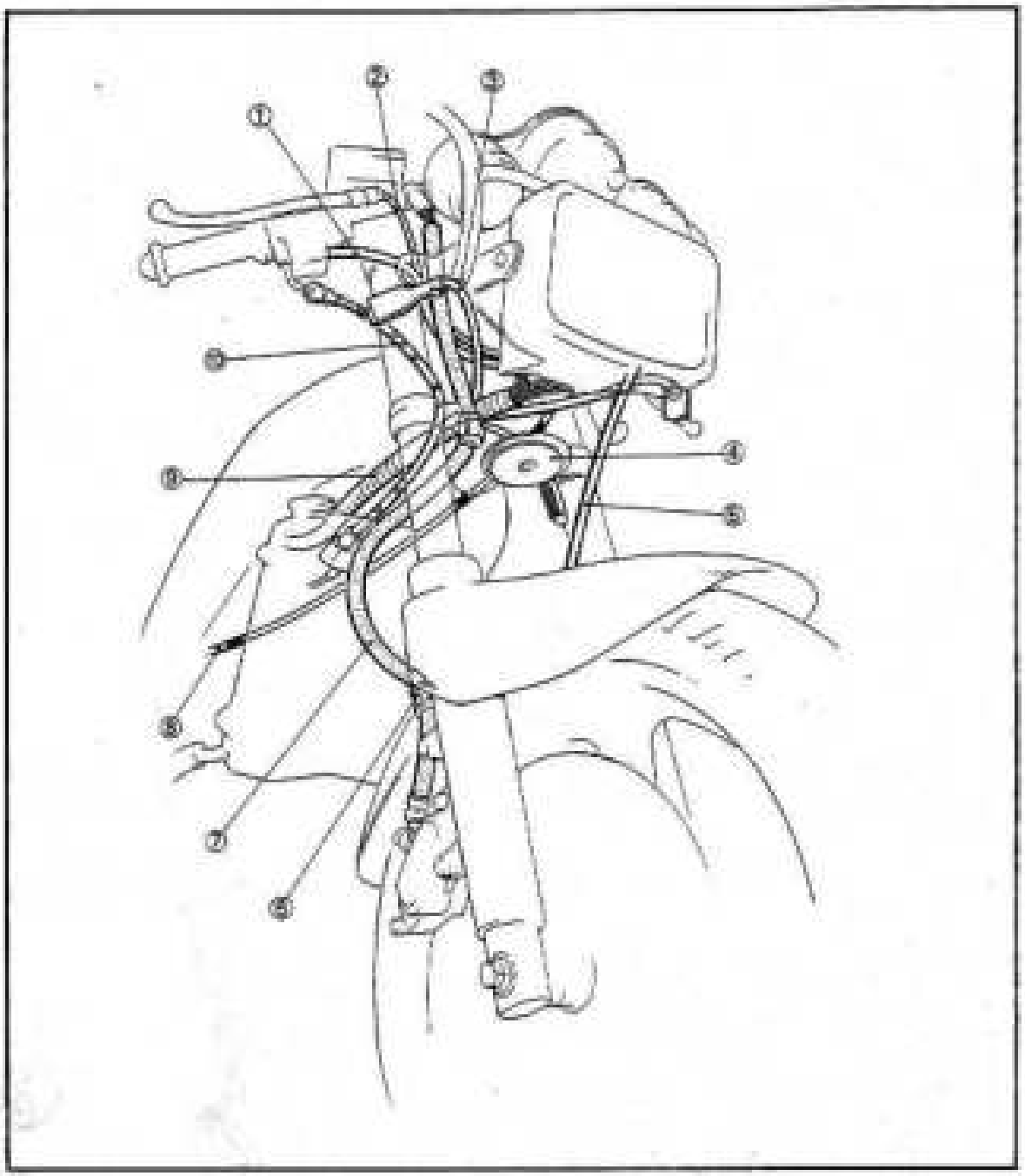


COOLANT FLOW CHART

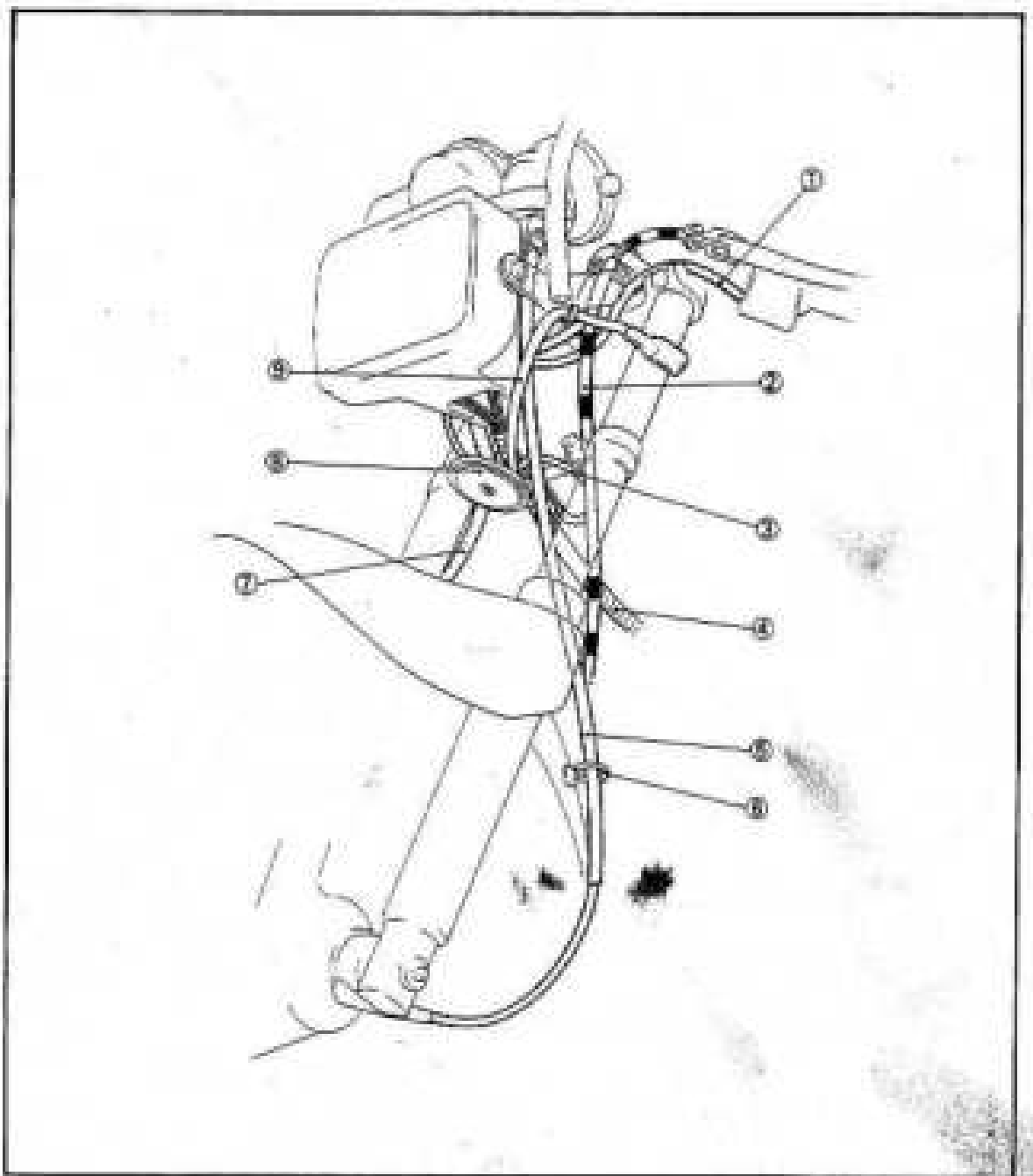


CABLE ROUTING

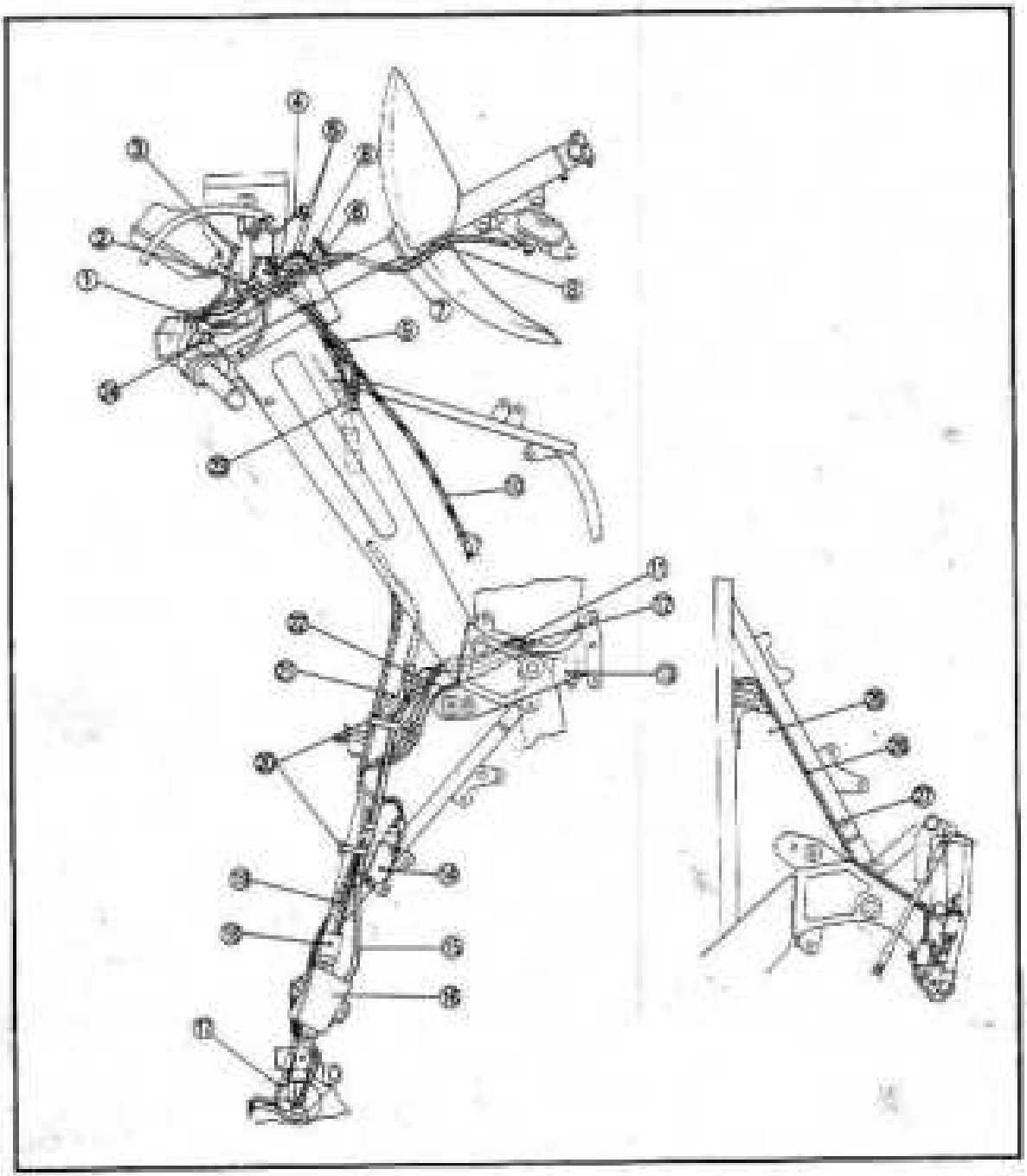
① Handlebar switch lead (Right)
② Front brake switch lead
③ Front flasher light lead (Right)
④ Horn
⑤ Speedometer cable
⑥ Clamp
⑦ Brake hose
⑧ Clutch cable
⑨ Wire harness
⑩ Throttle cable



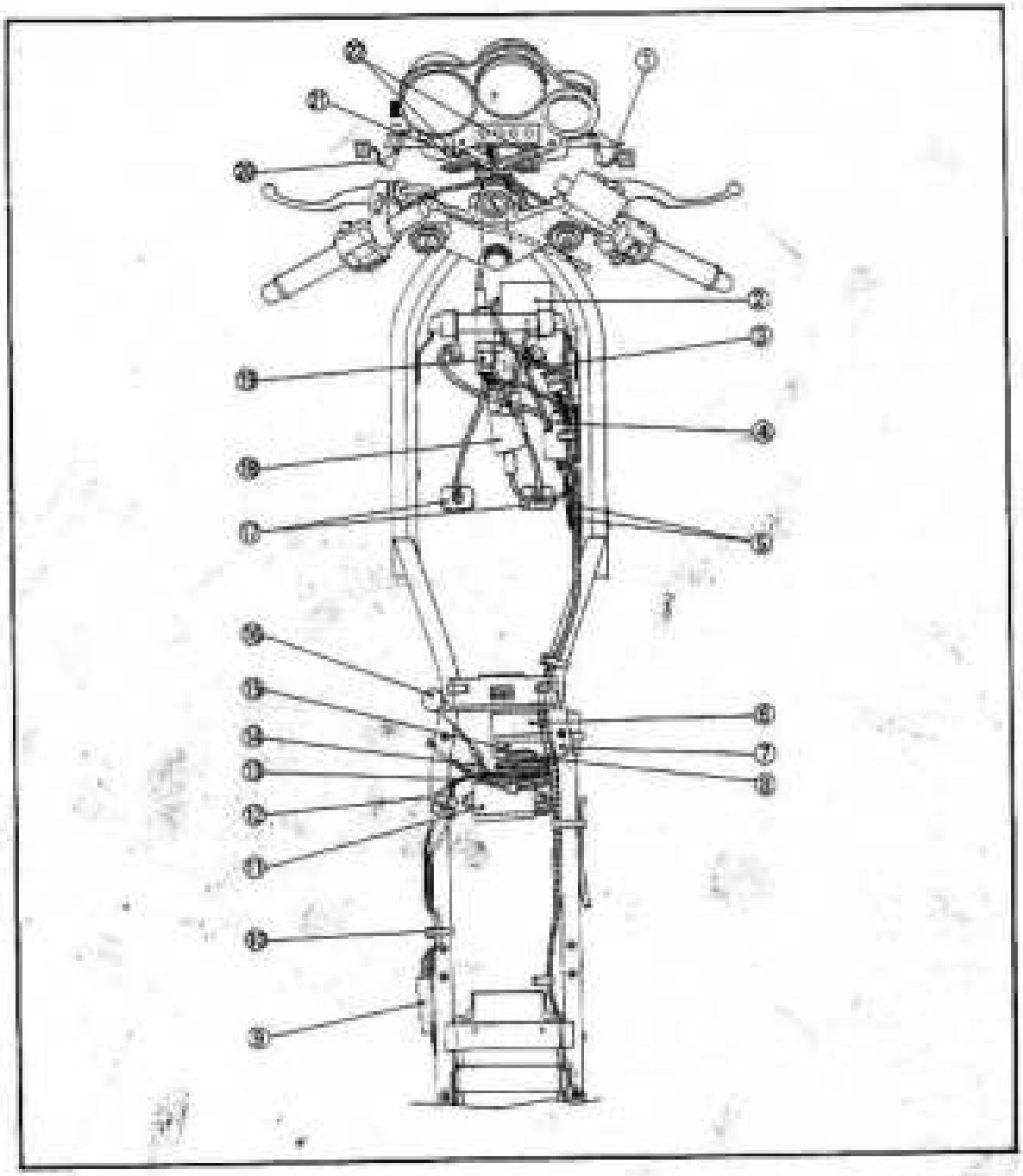
① Handlebar switch lead (Left)
② Clutch cable
③ Horn lead
④ Wire harness
⑤ Speedometer cable
⑥ Clamp
⑦ Brake hose
⑧ Horn
⑨ Front flasher light lead (Left)



① Front brake switch lead
② Band
③ Main switch lead
④ Front flasher light lead (Right)
⑤ Horn lead
⑥ Horn
⑦ Brake hose
⑧ Clamp
⑨ Wire harness
⑩ Clutch cable
⑪ Pickup coil lead
⑫ Stator coil lead
⑬ Rear brake switch
⑭ Rectifier/Regulator
⑮ C.D.I. unit lead
⑯ C.D.I. unit
⑰ Fender stay 1
⑱ Ignition control unit
⑲ Sidestand switch lead
⑳ Band
㉑ Wire harness
㉒ Rear brake switch lead
㉓ Throttle cable
㉔ Handlebar switch lead (Right)
㉕ Oil tank
㉖ Sidestand switch lead
㉗ Band



① Front flasher light lead (Right)
② Servomotor
③ Servomotor lead
④ Ignition coil
⑤ Ignition coil lead
⑥ Battery
⑦ Battery ⊕ terminal
⑧ Battery ⊖ lead
⑨ Control unit
⑩ Band
⑪ Fuse box
⑫ Sidestand switch lead
⑬ Control unit lead
⑭ Oil level gauge lead
⑮ Battery ⊖ terminal
⑯ Oil level gauge
⑰ Carburetor
⑱ Wire cylinder assembly
⑲ Flasher relay
⑳ Front flasher light lead (Left)
㉑ Main switch lead
㉒ Band



PERIODIC INSPECTION AND ADJUSTMENT

INTRODUCTION

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

PERIODIC MAINTENANCE/LUBRICATION INTERVALS

Unit: km (mi)

ITEM	REMARKS	BREAK-IN 1,000 (600)	EVERY 6,000 (4,000) or 6 months	EVERY 12,000 (8,000) or 12 months
Spark plug(s)	Check condition. Clean or replace if necessary.	○	○	○
Air filter	Clean. Replace if necessary.		○	○
Carburetor	Check idle speed/synchronization/starter operation. Adjust if necessary.	○	○	○
Fuel line	Check fuel hose and vacuum hose for cracks or damage. Replace if necessary.		○	○
Transmission oil	Check oil level/oil leakage. Correct if necessary. Replace every 24,000 (16,000) or 24 months. Warm engine before draining.	REPLACE	○	○
Autolube pump	Check operation. Correct if necessary. Air bleeding.	○	○	○
Y.P.V.S. system	Check operation. Correct if necessary.	○	○	○
Brake	Check operation/fluid leakage/See NOTE. Correct if necessary.		○	○
Clutch	Check operation. Adjust if necessary.		○	○
Swingarm pivot	Check swingarm assembly for looseness. Correct if necessary. Moderately repack every 24,000 (16,000) or 24 months. Lubricate.**		○	○
Rear suspension link pivots	Check operation. Apply grease lightly every 24,000 (16,000) or 24 months. Lubricate.**			○
Wheels	Check balance/damage/runout. Repair if necessary.		○	○
Wheel bearings	Check bearing assembly for looseness/damage. Replace if damaged.		○	○
Steering bearing	Check bearing assembly for looseness. Correct if necessary. Moderately repack every 24,000 (16,000) or 24 months.**	○		○
Front forks	Check operation/oil leakage. Repair if necessary.		○	○
Rear shock absorber	Check operation/oil leakage. Repair if necessary.		○	○
Cooling system	Check coolant leakage. Repair if necessary. Replace coolant every 24,000 (16,000) or 24 months.		○	○
Drive chain	Check chain slack/alignment. Adjust if necessary. Clean and lube.	EVERY 500 (300)		
Fittings/Fasteners	Check all chassis fittings and fasteners. Correct if necessary.	○	○	○
Sidestand	Check operation. Repair if necessary.	○	○	○
Sidestand switch	Check operation. Repair if necessary.	○	○	○
Battery	Check specific gravity. Check breather pipe for proper operation. Correct if necessary.		○	○

**: Lithium soap base grease

NOTE:

Brake system:

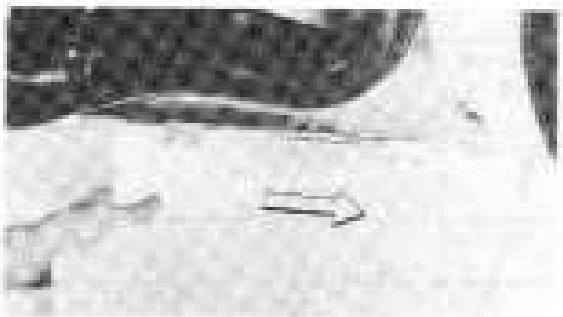
1. When disassembling the master cylinder or caliper cylinder, replace the brake fluid. Normally check the brake fluid level and add the fluid as required.
2. We recommended that, on the inner parts of the master cylinder and caliper cylinder, replace the oil seals every two years.
3. We recommended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



COWLINGS

REMOVAL

1. Remove:
   - Lower cowl (Right) ③

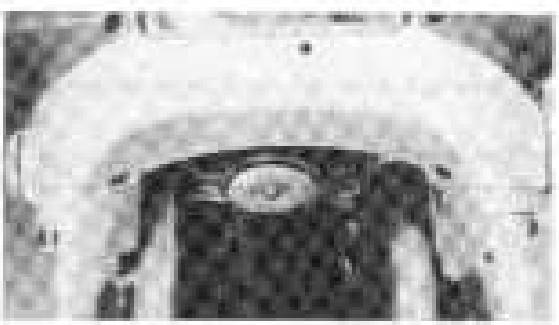


NOTE:

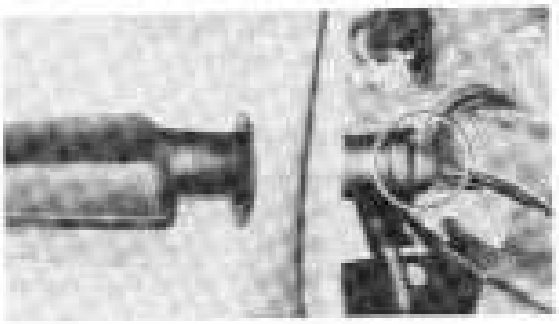
Slide the lower cowl (Right) forward and remove it.



2. Remove:
   - Lower cowl (Left)

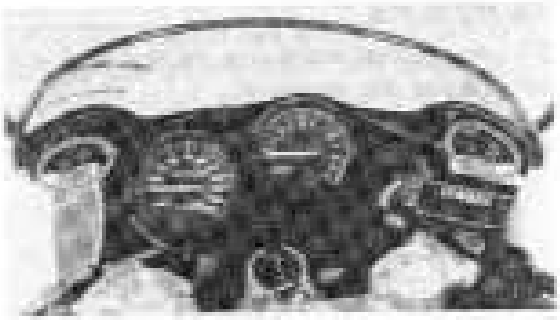






3. Disconnect:
   - •Flasher light leads (Green and black leads)
   - •Flasher light leads (Chocolate and black leads)

4. Remove:
   - •Flasher light (Right)
   - •Flasher light (Left)



5. Remove:
   - •Rear view mirrors



6. Remove:
   - •Upper cowl

INSTALLATION

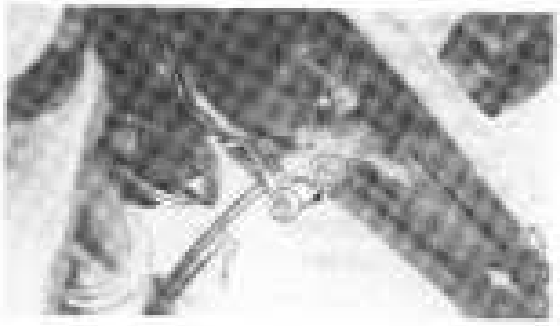
Reverse the "REMOVAL" procedure.
Note the following points.

1. Install:
   - •Upper cowl

	Bolts (Upper Cowl): **8 Nm (0.8 m-kg, 5.8 ft-lb)**

2. Install:
   - •Rear view mirrors

	Bolt (Rear View Mirror): **8 Nm (0.8 m-kg, 5.8 ft-lb)** **Nut (Rear View Mirror):** **8 Nm (0.8 m-kg, 5.8 ft-lb)**



3. Install:
   - Flasher light (Right)
   - Flasher light (Left)

NOTE:

- On the left side, install the flasher light having a chocolate color lead. Next, install the other flasher light with a dark green color lead on the right side.
- Install the flasher light with the notch in its end fitting the convex part of the flasher light stay.
- Connect the flasher light lead and the negative lead to the wire harness. The leads of identical colors should be connected.

SIDE COVERS

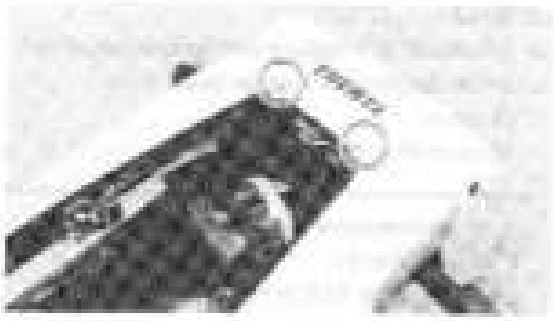
REMOVAL



1. Remove:
   - Seat

NOTE:

To open the seat lock, insert the key in the lock and turn it clockwise.



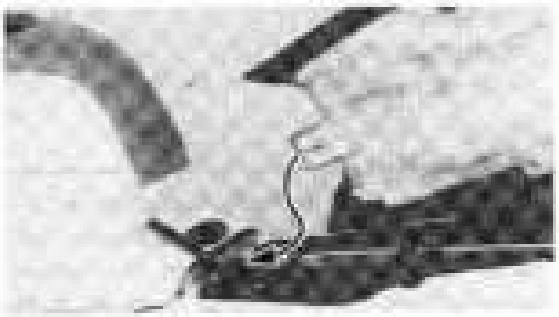
2. Remove:
   - Tail cover

NOTE:

Slide the tail cover backward and remove it.



3. Remove:
   - Side cover (Left)
   - Side cover (Right)



INSTALLATION

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

1. Install:
   - Seat

NOTE:

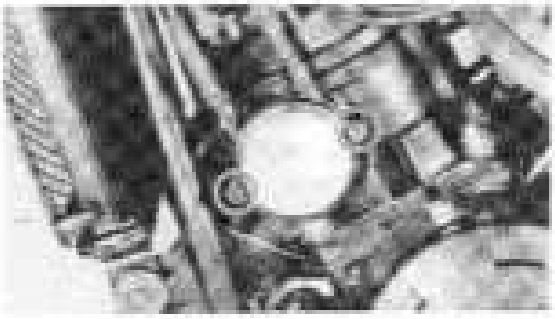
Insert the lobe on the seat front into the receptacle on the frame, then push down the seat.

ENGINE

Y.P.V.S. CABLE ADJUSTMENT

1. Remove:
   - Lower cowl (Right)
   - Lower cowl (Left)

   Refer to the "COWLINGS" section in the CHAPTER 3.

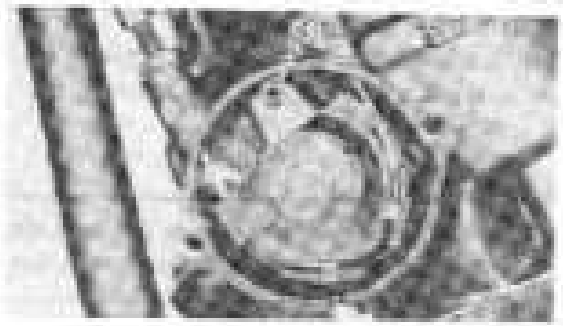


2. Remove:
   - Pulley cover (Power valve)

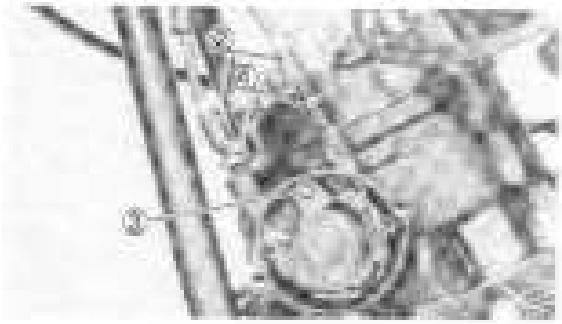
3. Turn on the main switch.

NOTE:

If does not operate the Y.P.V.S. motor, refer to the "Y.P.V.S. SYSTEM" in the CHAPTER 8.



4. Check:
   - Alignment mark ①
     Not aligned → Adjust the Y.P.V.S. cables.



5. Adjust:
   - Y.P.V.S. cables

Adjustment steps:
- Loosen both locknuts ① and turn in both adjusters ②.
- Insert a pin ③ [ø4 mm (ø0.16 in)] through the aligning indent in the pulley and into the hole.
- Turn both adjusters, counterclockwise so that the cable free play becomes Zero mm (Zero in) with fingers.
- Turn both adjusters 1/4 turn clockwise.
- Tighten the locknuts.

Locknuts:
8 Nm (0.8 m·kg, 5.8 ft·lb)

- Remove the pin.
- Turn on the main switch and, check that the alignment mark is aligned.
  If not, repeat the above steps.



6. Install:
   - Pulley cover (Power valve)

Bolts (Pulley Cover):
7 Nm (0.7 m·kg, 5.1 ft·lb)

7. Install:
   - Lower cowl (Left)
   - Lower cowl (Right)

   Refer to the "COWLINGS" section in the CHAPTER 3.

CARBURETOR SYNCHRONIZATION

NOTE:

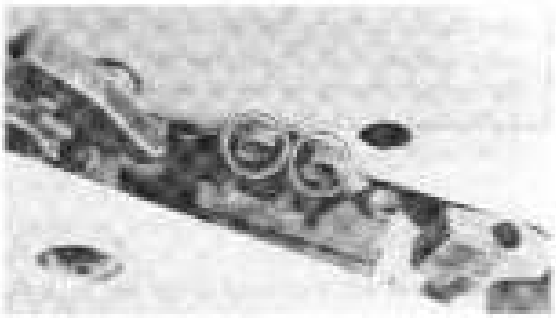
Right carburetor and left carburetor must be adjusted to open and close simultaneously.



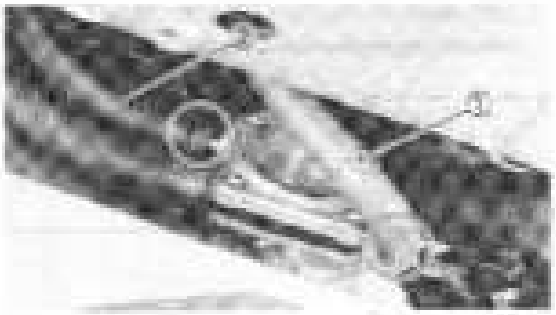
1. Remove:
   - Seat

NOTE:

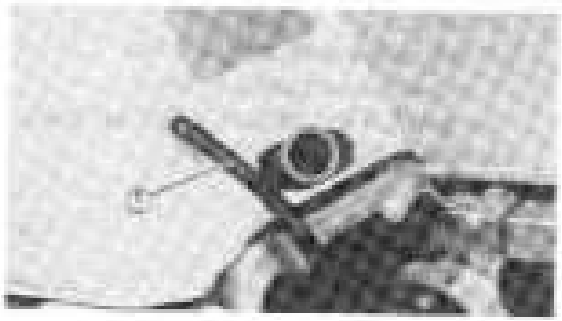
To open the seat lock, insert the key in the lock and turn it clockwise.



2. Turn the fuel cock to "ON" position.
3. Remove:
   - Bolts (Fuel cock bracket)



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

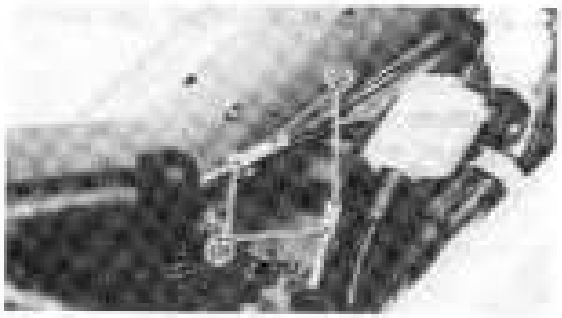


5. Disconnect:
   • Fuel breather hose ①
6. Remove:
   • Fuel tank



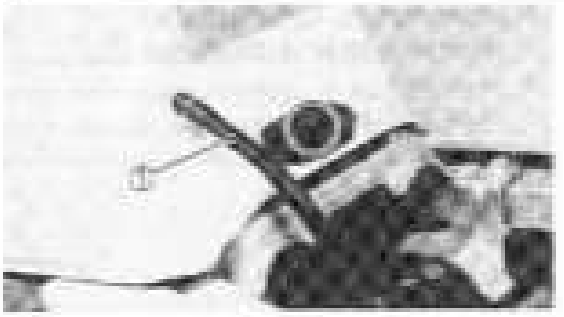
7. Check:
   • Alignment mark ①
   (on the throttle valve)
   Not aligned → Adjust the throttle cable.

Checking steps:
- Turn the throttle grip until the alignment mark appears in the center of the window ② of the right carburetor.
- While keeping the grip at this position, check the left carburetor window for the presence of the alignment mark at the same position.
- If not, adjust the throttle cable for the left carburetor.



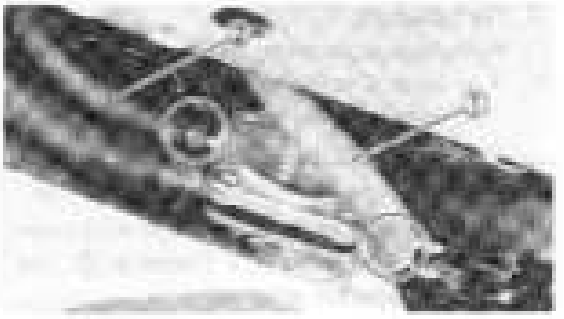
8. Adjust:
   • Throttle cables

Adjustment steps:
- Loosen the locknut ①.
- Turn the adjuster ② in or out until the alignment mark comes to the same position.
- Tighten the locknut.
- Finally check that both alignment marks appear at the same position at the same time.
- If not, repeat the above steps.



9. Install:
   • Fuel tank

10. Connect:
    • Fuel breather hose ①



11. Connect:
    • Fuel delivery hose ①
    • Vacuum hose ②

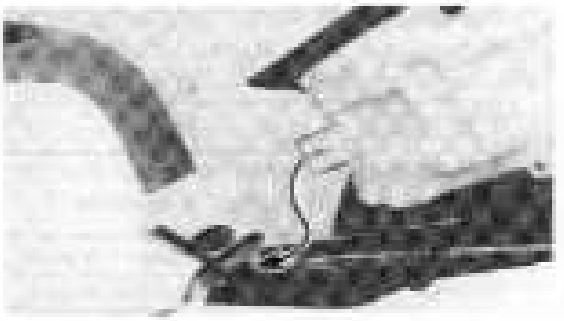
12. Install:
    • Fuel cock

13. Check:
    • Engine idle speed
    Refer to the "IDLE SPEED ADJUSTMENT" section in the CHAPTER 3.

	Engine Idle Speed: **1,150 – 1,250 r/min**

14. Check:
    • Throttle cable free play
    Refer to the "THROTTLE CABLE FREE PLAY ADJUSTMENT" section in the CHAPTER 3.

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



15. Install:
    • Seat

NOTE:
Insert the lobe on the seat front into the receptacle on the frame, then push down the seat.

IDLE SPEED ADJUSTMENT

NOTE:

The carburetor synchronization must be adjusted properly before adjusting the idle speed.

1. Remove:
   - Lower cowl (Right)
   - Lower cowl (Left)

   Refer to the "COWLINGS" section in the CHAPTER 3.
2. Start the engine and let it warm up.
3. Attach:
   - Inductive tachometer

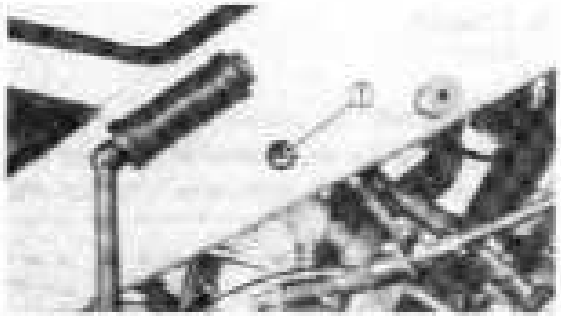
   To the spark plug lead.

	Inductive Tachometer: 90890-03113

4. Check:
   - Engine idle speed

   Out of specification → Adjust.

	Engine Idle Speed: 1,100 – 1,200 r/min



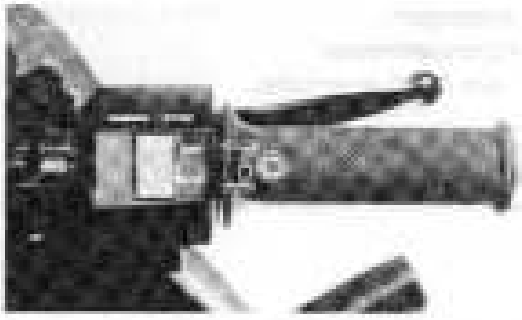
5. Adjust:
   - Engine idle speed

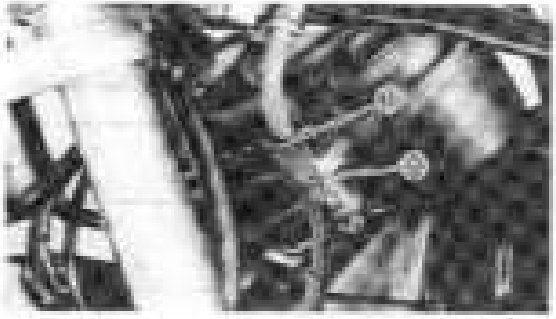
Adjustment steps: • Turn the throttle stop screw (1) in or out until specified idle speed is obtained.	
Turn in	Idle speed becomes higher.
Turn out	Idle speed becomes lower.

NOTE:
- Left-hand and right-hand throttle stop screws must be set so that both cylinders are working together.
- After adjusting engine idle speed, throttle cable free play should be adjusted.

5. Install:
   - Lower cowl (Left)
   - Lower cowl (Right)

   Refer to the "COWLINGS" section in the CHAPTER 3.





THROTTLE CABLE FREE PLAY ADJUSTMENT

1. Check:
   - Throttle cable free play (a)

   Out of specification → Adjust.

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

2. Adjust:
   - Throttle cable free play

Adjustment steps: • Loosen the locknut (1). • Turn the adjuster (2) in or out until the correct free play is obtained.	
Turn in	**Free play is increased.**
Turn out	**Free play is decreased.**
• Tighten the locknut.	

AUTOLUBE PUMP CABLE ADJUSTMENT

NOTE:

Before adjusting Autolube pump cable, carburetor synchronization and throttle cable free play should be adjusted.



1. Remove:
   - Lower cowl (Right)

   Refer to the "COWLINGS" section in the CHAPTER 3.
2. Remove:
   - Autolube pump cover ①



3. Fully open the throttle grip and hold it at this position.
4. Check:
   - Alignment mark ①

   Not aligned → Adjust Autolube pump cable.



5. Adjust:
   - Autolube pump cable

Adjustment steps:
- Loosen the locknut ①.
- Turn the adjuster ② in or out until the alignment mark is aligned with the pin.
- Tighten the locknut.

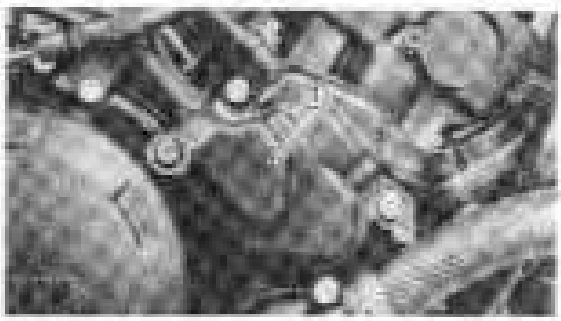
6. Install:
   - Autolube pump cover
   - Lower cowl (Right)

Bolts (Autolube Pump Cover):
9 Nm (0.6 m·kg, 4.3 ft·lb)

AUTOLUBE PUMP STROKE ADJUSTMENT

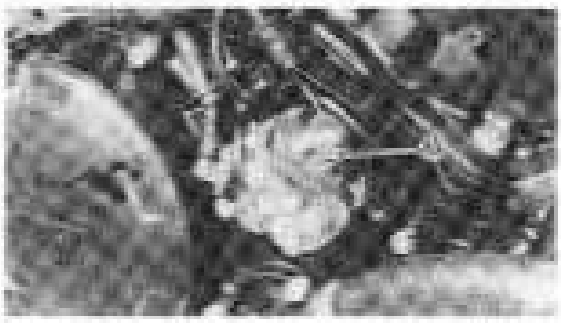
1. Remove:
   - Lower cowl (Right)

   Refer to the "COWLINGS" section in the CHAPTER 3.

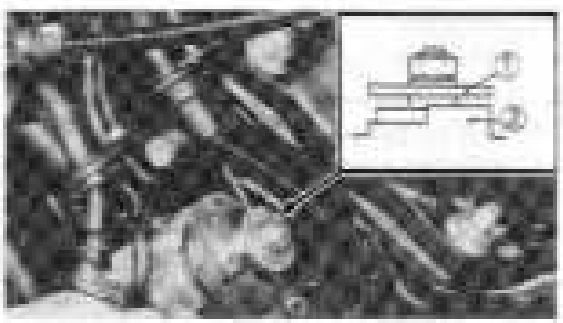


2. Remove:
   - Autolube pump cover ③

3. Start the engine and let it warm up.



4. While running the engine at idle, observe the pump adjusting plate carefully. Stop the engine moment that the adjusting plate ① moves out to its limit.



5. Measure:
   - Gap

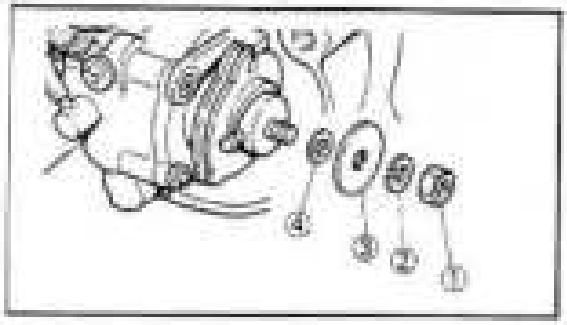
   Out of specification → Adjust.

   Measure the gap with the thickness gauge between the raised boss ② on the pump adjusting pulley and the adjusting plate ①.

Minimum Pump Stroke:
0.15 – 0.25 mm (0.006 – 0.009 in)

NOTE:

When inserting the thickness gauge between the adjusting plate and the adjusting pulley, be careful so that neither the plate nor the pulley is moved. In other words, do not force the thickness gauge into the gap.



6. Adjust:
   - Autolube pump minimum stroke

Adjustment steps:
- Remove the locknut ①, spring washer ② and adjusting plate ③.
- Adjust the pump stroke by adding or removing a shim ④.

Add shim	**Pump stroke is increased.**
Remove shim	**Pump stroke is decreased.**

- Install the adjusting plate, spring washer and locknut.

Locknut:
7 Nm (0.7 m·kg, 5.1 ft·lb)

- Recheck the minimum pump stroke. If out of specification, perform the above steps again.

7. Install:
   - Autolube pump cover
   - Lower cowl (Right)

Bolts (Autolube Pump Cover):
6 Nm (0.6 m·kg, 4.3 ft·lb)

AUTOLUBE PUMP AIR BLEEDING

NOTE:

The Autolube pump and delivery lines must be bled on the following occasions:
- Setting up a new motorcycle out of the crate.
- Whenever the oil tank has run dry.
- Whenever any portion of the engine oil system is disconnected.

5. Install:
   - Clip
   - Autolube pump cover
   - Lower cowl (Right)

Bolts (Autolube Pump Cover): 6 Nm (0.6 m-kg, 4.3 ft-lb)

SPARK PLUG INSPECTION

1. Remove:
   - Lower cowl (Right)
   - Lower cowl (Left)

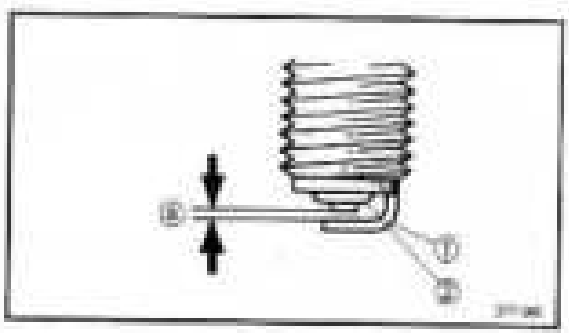
   Refer to the "COWLINGS" section in the CHAPTER 3.

2. Remove:
   - Spark plug

3. Inspect:
   - Spark plug type

   Incorrect → Replace.

Standard Spark Plug: BR9ES (N.G.K.)



4. Inspect:
   - Electrode ①

   Wear / Damage → Replace.
   - Insulator ②

   Abnormal color → Replace

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

5. Clean the spark plug with a spark plug cleaner or wire brush.

6. Measure:
   •Plug gap ⓐ
   Use a Wire Gauge or Feeler Gauge.
   Out of specification → Regap.

Spark Plug Gap:
0.7 – 0.8 mm (0.028 – 0.032 in)

7. Tighten:
   •Spark plug(s)
   Before installing a spark plug, clean the gasket and plug surfaces.

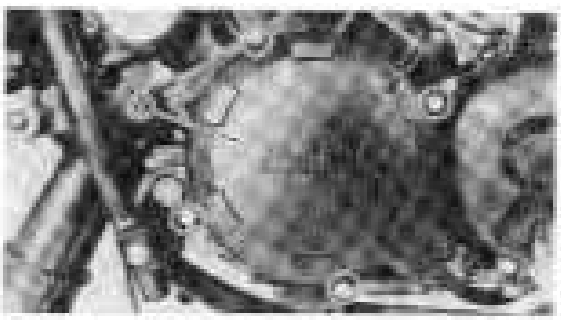
Spark Plug:
20 Nm (2.0 m•kg, 14 ft•lb)

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

8. Install:
   •Lower cowl (Left)
   •Lower cowl (Right)

IGNITION TIMING CHECK

1. Remove:
   •Lower cowl (Right)
   •Lower cowl (Left)
   Refer to the "COWLINGS" section in the CHAPTER 3.



2. Remove:
   •A.C. Generator cover ①

3. Attach:
   - Timing Light
   - Inductive Tachometer

   To #1 spark plug lead (Left).

Timing Light:
90890-03109
Inductive Tachometer:
90890-03113

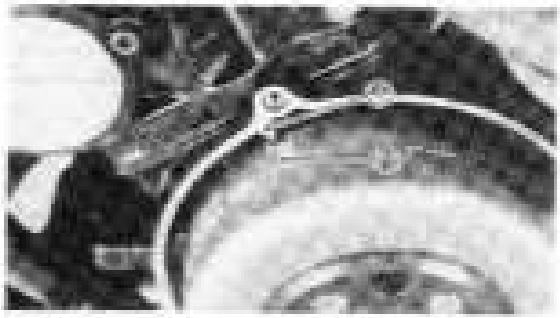
4. Check:
   - Ignition timing

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

Engine Speed:
1,200 r/min

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

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



5. Install:
   - A.C. Generator cover
   - Lower cowl (Left)
   - Lower cowl (Right)

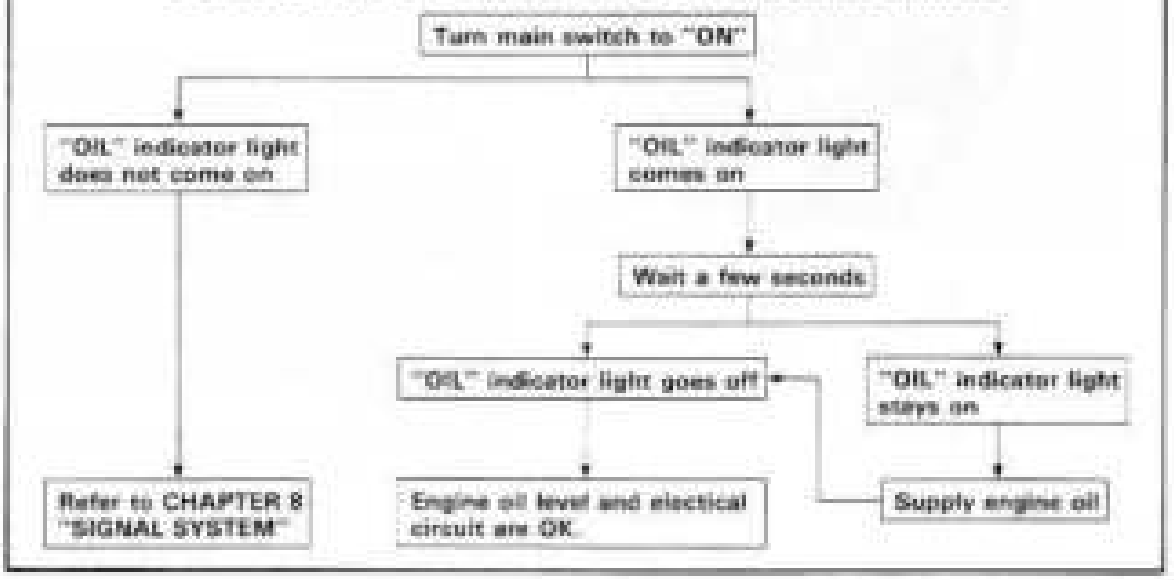
Bolts (A.C. Generator Cover):
5 Nm (0.5 m·kg, 3.6 ft·lb)

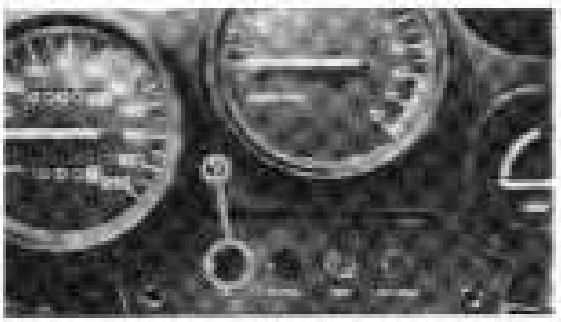
ENGINE OIL LEVEL CHECK

1. Check:
   - Oil level
   Oil level low → Add sufficient oil.

Recommended Oil:
Yamaha Oil 2T or Air Cooled 2 Stroke Engine Oil
Oil Tank Capacity:
1.4 L (1.2 Imp qt, 1.5 US qt)

OIL LEVEL AND "OIL" INDICATOR LIGHT CHECKING METHOD





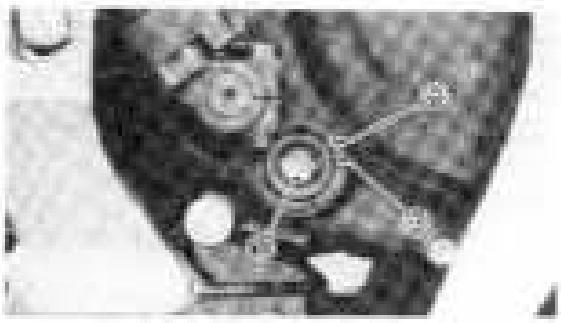
NOTE:

If the main switch is turned off after the "OIL" light goes off and then immediately again the main switch is turned on, the "OIL" light may not come on. This is not because of failure.

① "OIL" indicator light

CAUTION:

Always use the same type of engine oil; mixing oils may result in a harmful chemical reaction and lead to poor performance.



TRANSMISSION OIL LEVEL INSPECTION

1. Place the motorcycle on a level surface and warm up the engine for several minutes.
2. Stop the engine and inspect the oil level through the level window ①.

NOTE:

Wait a few minutes until level settles before inspecting.

3. Inspect:
   - Oil level

   Oil level should be between maximum ② and minimum ③ marks.
   Oil level low→Add oil to proper level.

Recommended Oil:
SAE 10W30 Type SE Motor Oil

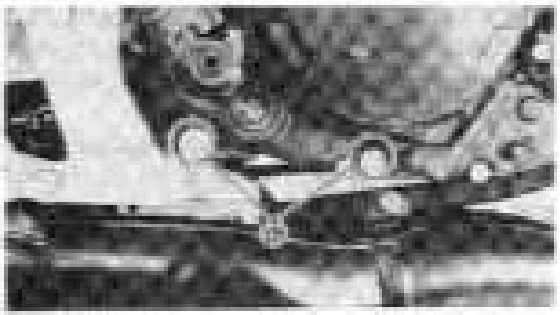
NOTE:

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

TRANSMISSION OIL REPLACEMENT

1. Warm up the engine for several minutes.
2. Remove:
   - Lower cowl (Right)

   Refer to the "COWLINGS" section in the CHAPTER 3.



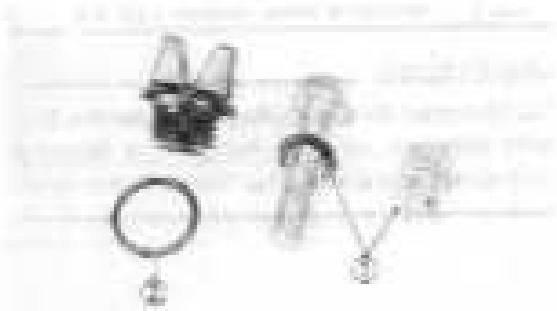
3. Place an open container under the engine.

4. Remove:
   - Oil filler cap
   - Drain bolts ①

5. Drain:
   - Transmission oil

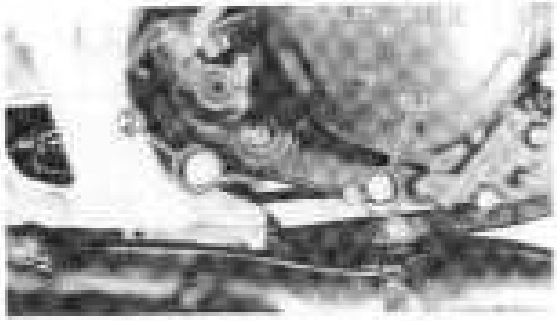
NOTE:

Drain the transmission oil with the motorcycle slightly inclined to the right.



6. Inspect:
   - Gasket ① (Drain bolt)
   - O-ring ② (Oil filler cap)

   Damage → Replace.



7. Install:
   - Drain bolts

Drain Bolt ①:
16 Nm (1.6 m•kg, 11 ft•lb)
Drain Bolt ②:
22 Nm (2.2 m•kg, 16 ft•lb)

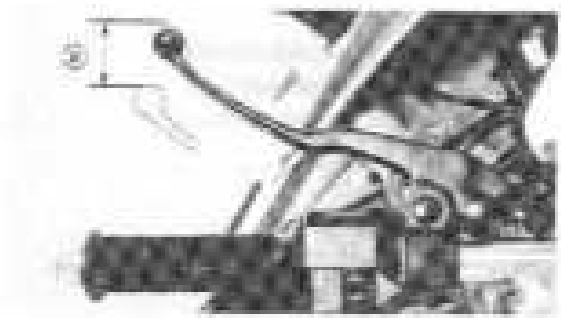
8. Fill:
   - Crankcase

Recommended Oil:
SAE 10W30 Type SE Motor Oil
Oil Capacity:
1.0 L (0.9 Imp qt, 1.1 US qt)

CAUTION:

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

3. Install:
   - Oil filler cap
   - Lower cowl (Right)

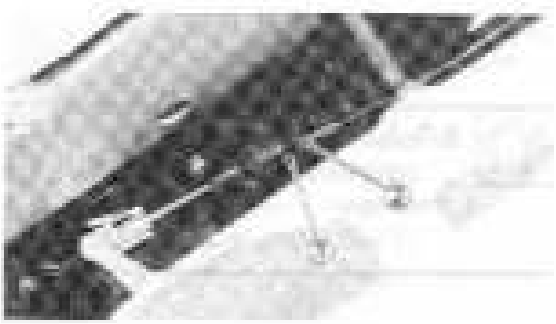


CLUTCH ADJUSTMENT

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

Free Play:
10 – 15 mm (0.4 – 0.6 in)



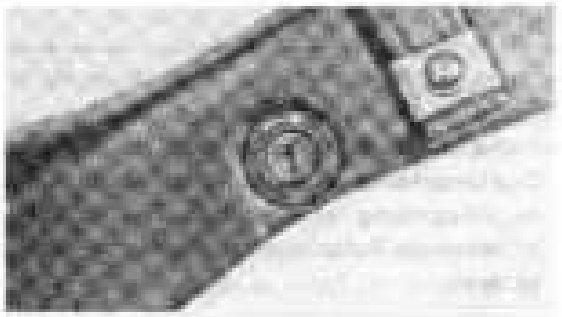


2. Adjust:
   - Clutch cable free play

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.

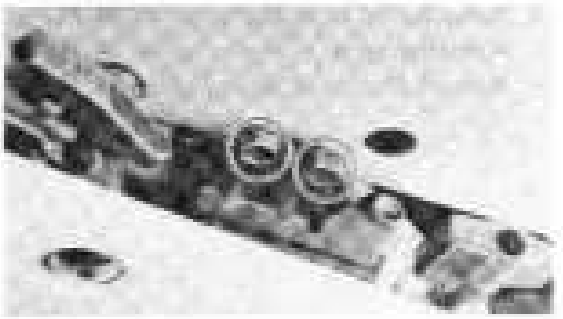


AIR FILTER CLEANING

1. Remove:
   - Seat

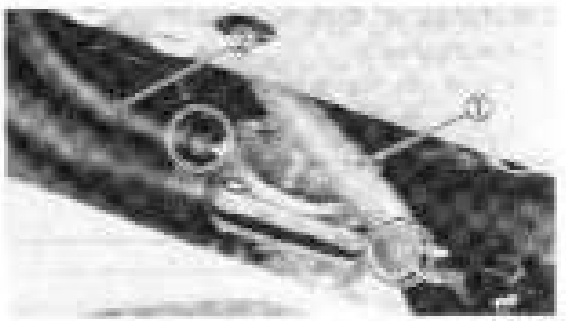
NOTE:

To open the seat lock, insert the key in the lock and turn it clockwise.

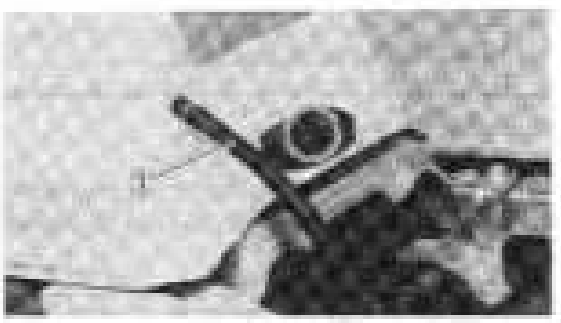


2. Turn the fuel cock to "ON" position.

3. Remove:
   - Bolts (Fuel cock bracket)

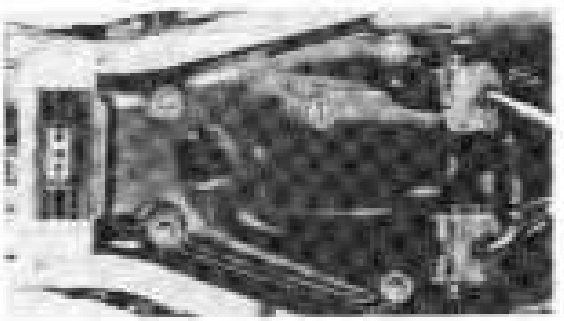


4. Disconnect:
   - Fuel delivery hose ①
   - Vacuum hose ②

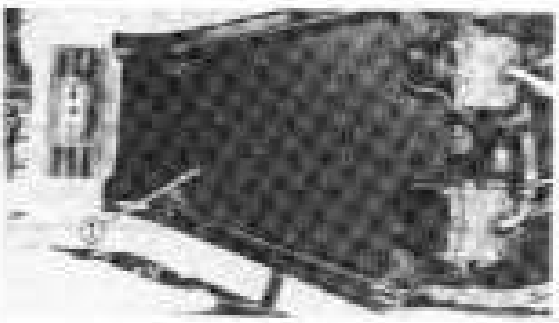


5. Disconnect:
   - Fuel breather hose ①

6. Remove:
   - Fuel tank



7. Remove:
   - Air filter case cover ①



8. 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.

9. Clean:
   • Air filter element

Cleaning steps:
- Wash the element gently, but thoroughly in solvent.

WARNING:

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

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

CAUTION:

Do not twist the element when squeezing the element.

10. Install:
    • Air filter element

CAUTION:

Make sure the element edge fits into the corresponding filter case groove.

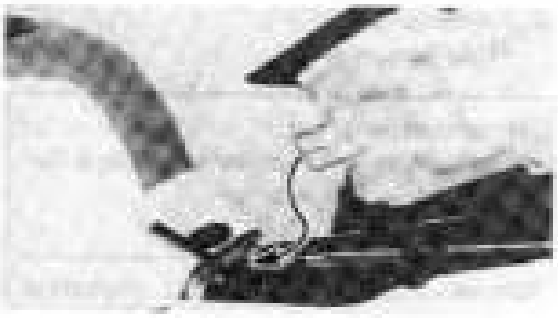
11. Inspect:
    •Element
    Damage→Replace.

12. Apply:
    •Air-Cooled 2 stroke engine oil or Yamaha oil 2T
    Onto the element.

13. Squeeze out the excess oil.

NOTE:
The element should be wet but not dripping.

14. Install:
    •Air filter case cover
    •Fuel tank
    •Fuel cock
15. Connect:
    •Fuel breather hose
    •Fuel delivery hose
    •Vacuum hose
16. Install:
    •Seat



NOTE:
Insert the lobe on the seat front into the receptacle on the frame, then push down the seat.

CARBURETOR JOINT INSPECTION

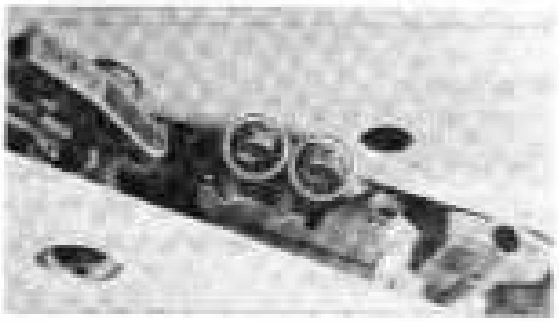
1. Remove:
    •Seat

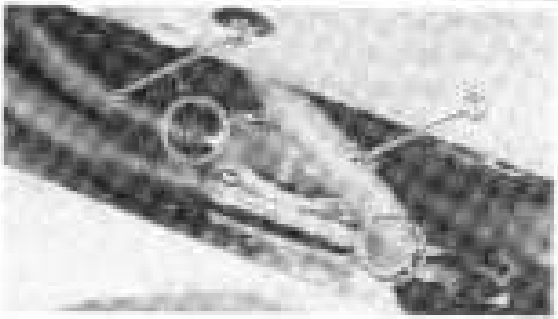


NOTE:
To open the seat lock, insert the key in the lock and turn it clockwise.

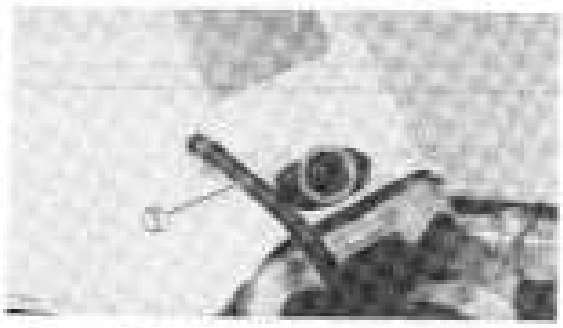
2. Turn the fuel cock to "ON" position.

3. Remove:
    •Bolts (Fuel cock bracket)



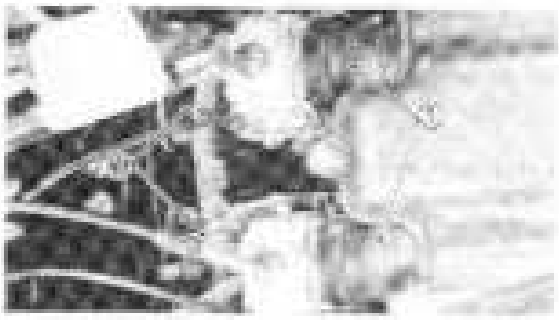


4. Disconnect:
   - Fuel delivery hose ①
   - Vacuum hose ②



5. Disconnect:
   - Fuel breather hose ①

6. Remove:
   - Fuel tank

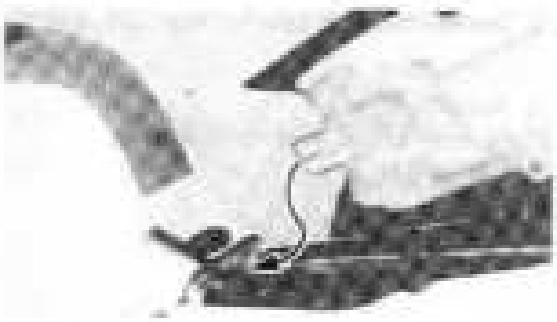


7. Inspect:
   - Carburetor joints ①

   Cracks/Damage → Replace.
   Refer to the "CHAPTER 6—CARBURETION" section for replacement.

8. Install:
   - Fuel tank
   - Fuel cock

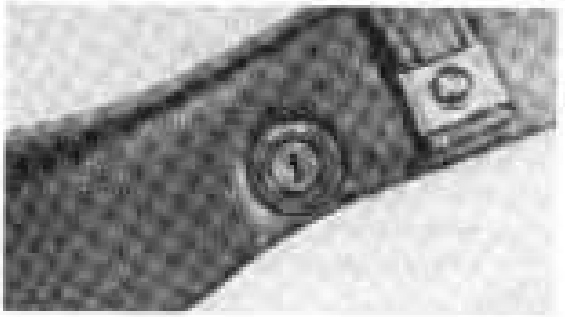
9. Connect:
   - Fuel breather hose
   - Fuel delivery hose
   - Vacuum hose



10. Install:
    - Seat

NOTE:

Insert the lobe on the seat front into the receptacle on the frame, then push down the seat.

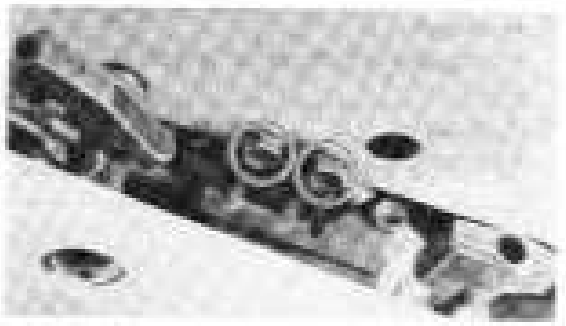


FUEL LINE INSPECTION

1. Remove:
   - Seat

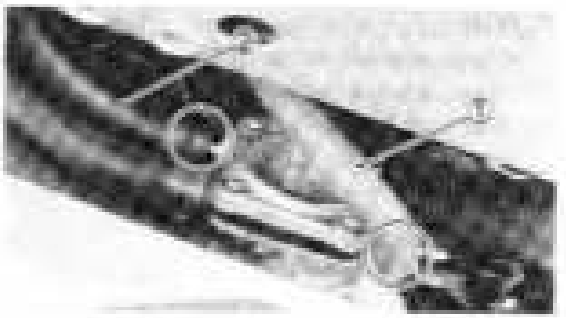
NOTE:

To open the seat lock, insert the key in the lock and turn it clockwise.

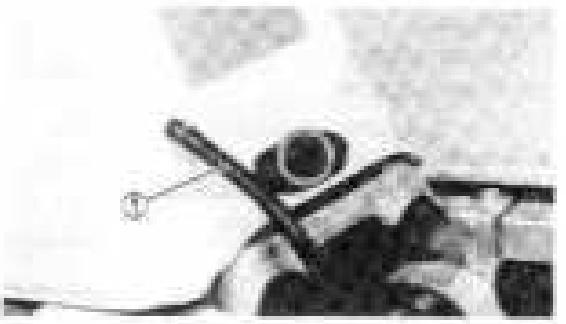


2. Turn the fuel cock to "ON" position.

3. Remove:
   - Bolts (Fuel cock bracket)

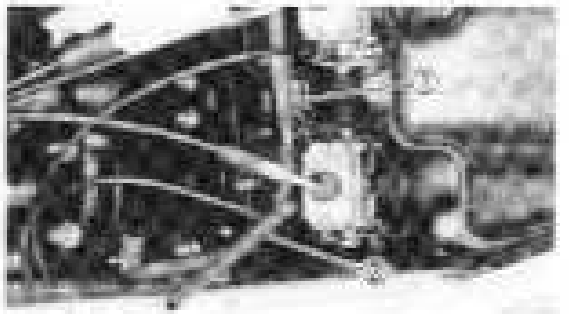


4. Disconnect:
   - Fuel delivery hose ①
   - Vacuum hose ②



5. Disconnect:
   - Fuel breather hose ①

6. Remove:
   - Fuel tank

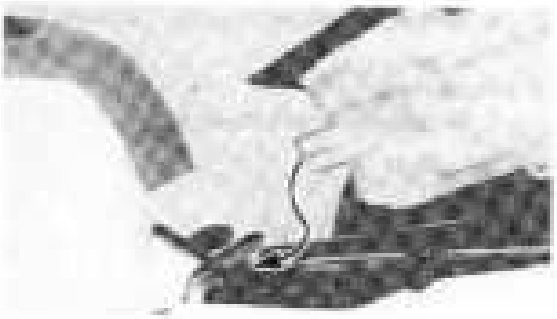


7. Inspect:
   - Fuel delivery hoses ①
   - Vacuum hose ②

   Cracks/Damage → Replace.

8. Install:
   - Fuel tank
   - Fuel cock

9. Connect:
   - Fuel breather hose
   - Fuel delivery hose
   - Vacuum hose



10. Install:
    - Seat

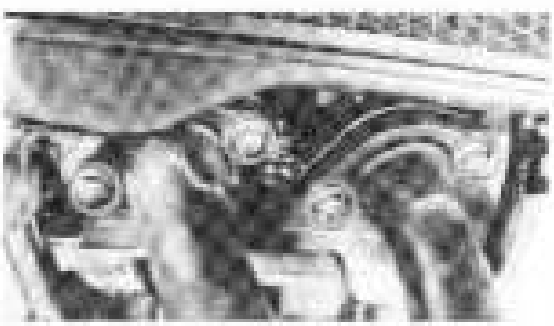
NOTE:

Insert the lobe on the seat front into the receptacle on the frame, then push down the seat.

EXHAUST SYSTEM INSPECTION

1. Remove:
   - Lower cowl (Right)
   - Lower cowl (Left)

   Refer to the "COWLINGS" section in the CHAPTER 3.





2. Inspect:
   - Exhaust pipes
   - Mufflers

     Cracks/Damage → Replace.
   - Gaskets

     Exhaust gas leaks → Replace.

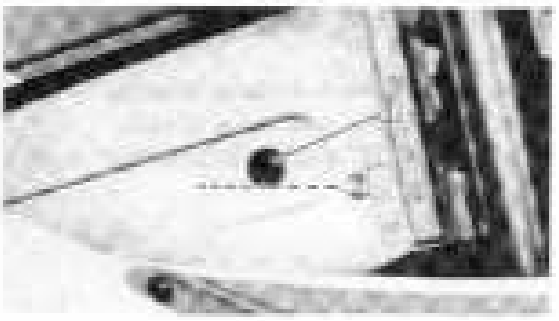
Replacement steps:
- Remove the muffler assembly.
- Install a new muffler assembly.

Nuts (Exhaust Pipe):
18 Nm (1.8 m•kg, 13 ft•lb)
Bolt (Muffler):
32 Nm (3.2 m•kg, 23 ft•lb)

3. Install:
   - Lower cowl (Left)
   - Lower cowl (Right)

COOLANT LEVEL INSPECTION

1. Place the motorcycle on a level surface and warm up the engine.



2. Stop the engine and inspect the coolant level through the checking hole ① of the right-hand frame.

NOTE:

Wait a few minutes until the coolant level settles before inspecting.

3. Inspect:
   - Coolant level

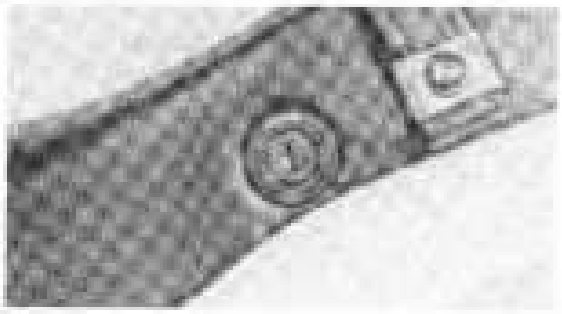
   Coolant level is under low level line ② → Add soft water (tap water).

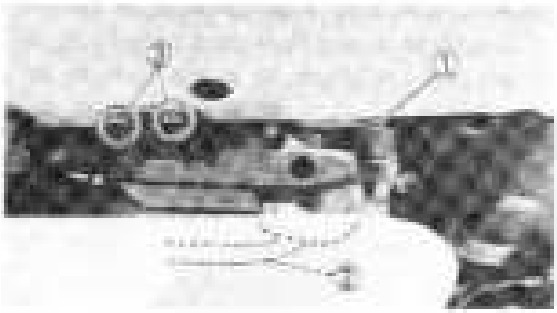
NOTE:

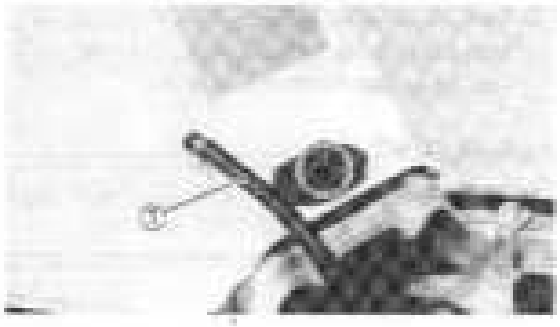
Position the motorcycle straight up when inspecting the coolant level, a slight tilt to the side can produce false readings.

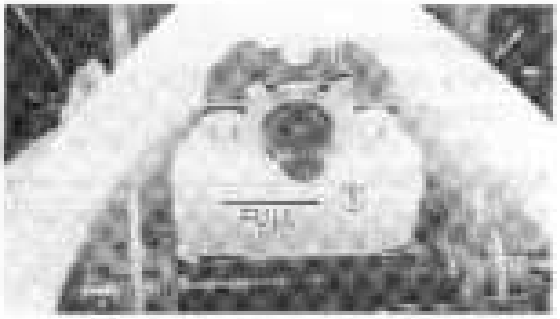
CAUTION:

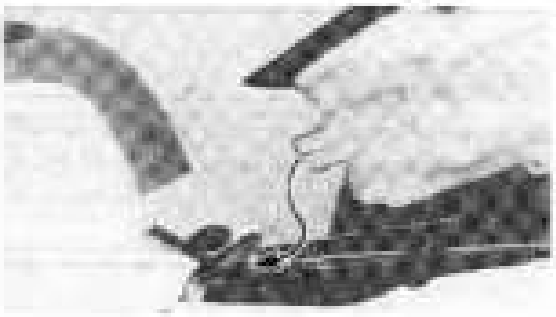
Hard water or salt water is harmful to the engine parts. You may use boiled water or distilled water, if you can't get soft water.











4. Add:
   •Soft water (tap water)
   To reservoir tank.

Adding steps:
•Remove the seat.

NOTE:
To open the seat lock, insert the key in the lock and turn it clockwise.

•Turn the fuel cock to "ON" position, and disconnect the fuel delivery hose ① and vacuum hose ②.

•Remove the bolts ③ (Fuel cock bracket).

•Disconnect the fuel breather hose ① and remove the fuel tank.

•Add the soft water (tap water) until the coolant level reaches "FULL" level mark ①.

•Install the fuel tank and fuel cock, then connect the fuel delivery hose, vacuum hose and breather hose.

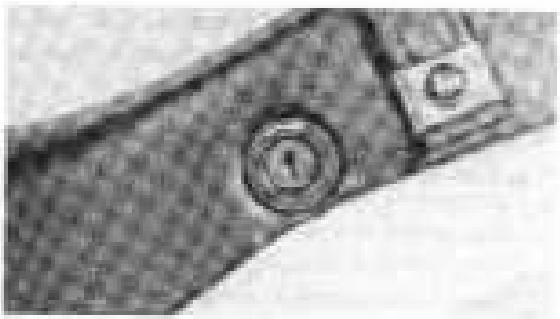
•Install the seat.

NOTE:
Insert the lobe on the seat front into the receptacle on the frame, then push down the seat.

COOLANT REPLACEMENT

1. Remove:
   - Lower cowl (Right)

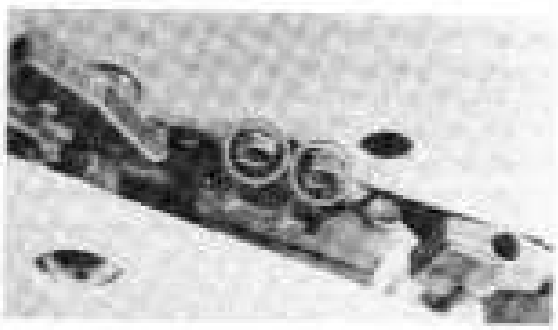
   Refer to the "COWLINGS" section in the CHAPTER 3.



2. Remove:
   - Seat

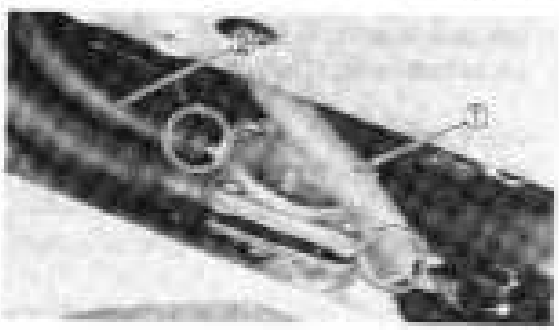
NOTE:

To open the seat lock, insert the key in the lock and turn it clockwise.

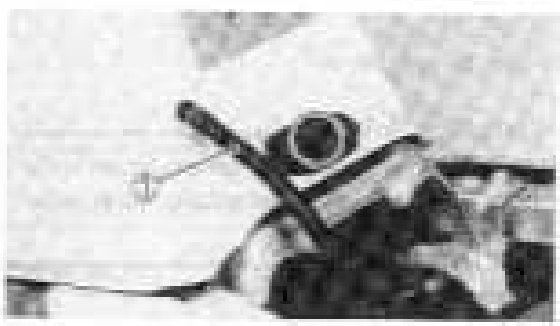


3. Turn the fuel cock to "ON" position.

4. Remove:
   - Bolts (Fuel cock bracket)

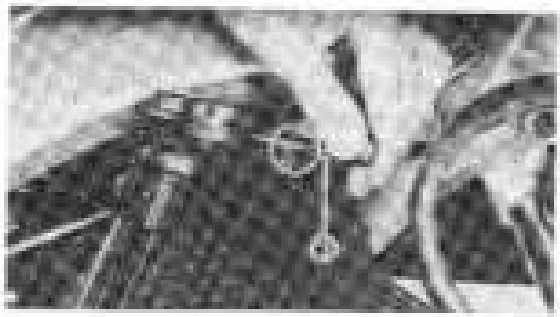


5. Disconnect:
   - Fuel delivery hose ①
   - Vacuum hose ②



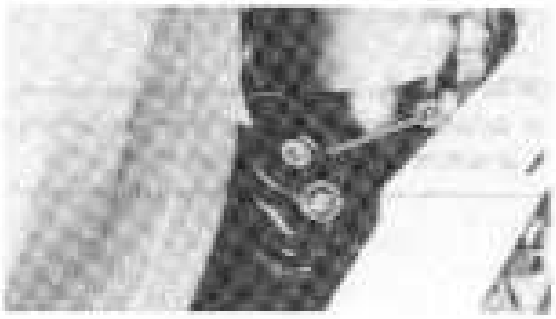
6. Disconnect:
   - Fuel breather hose ①

7. Remove:
   - Fuel tank



8. Disconnect:
   • Breather hose ①

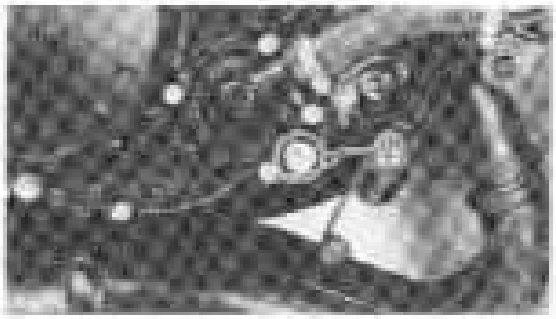
9. Drain the reservoir tank of its coolant.



10. Remove:
   • Radiator cap ①

WARNING:

Do not remove the radiator cap when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. When the engine has cooled, open the radiator cap by the following procedure: Place a thick rag, like a towel, over the radiator cap, slowly rotate the cap counterclockwise to the detent. This procedure allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning counterclockwise and remove it.

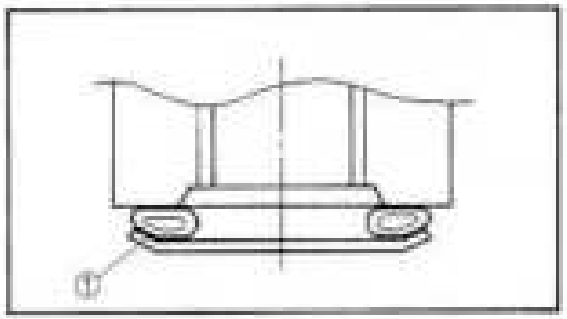


11. Remove:
   • Drain bolt ①

12. Drain:
   • Coolant

NOTE:

Drain the coolant with the motorcycle slightly inclined to the right.

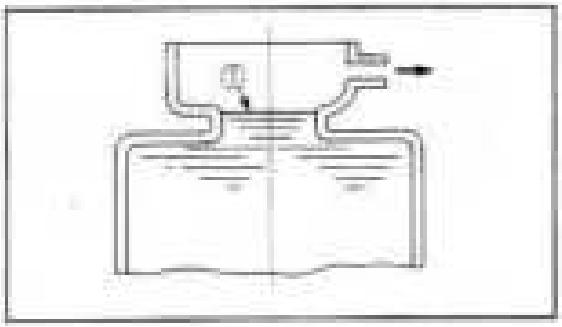


13. Install:
   • Gasket ①
   • Drain bolt

Drain Bolt:
16 Nm (1.6 m•kg, 11 ft•lb)

NOTE:

Install the gasket as shown.



14. Fill:
- Radiator
- Engine

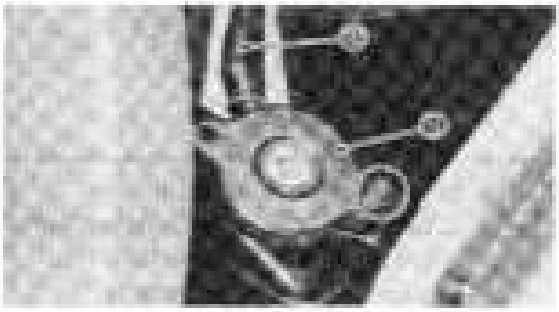
To specified level ①.

Recommended Coolant:
High Quality Ethylene Glycol Anti-freeze Containing Anti-corrosion for Aluminum Engine Inhibitors
Coolant and Water (Soft Water)
Mixed Ratio:
50%/50%
Total Amount:
1.35 L (1.2 Imp qt, 1.4 US qt)
Reservoir Tank Capacity:
0.25 L (0.22 Imp qt, 0.26 US qt)

Handling notes of coolant:
The coolant is harmful so it should be handled with special care.

WARNING:
- When coolant splashes to your eye, Thoroughly wash your eye with water and see your doctor.
- When coolant splashes to your clothes, Quickly wash it away with water and then with soap.
- When coolant is swallowed, Quickly make him vomit and take him to a doctor.

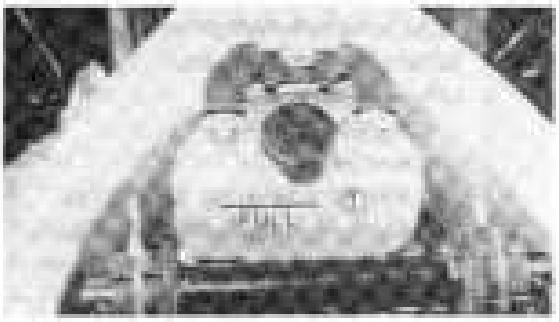
CAUTION:
- Hard water or salt water is harmful to the engine parts; use boiled or distilled water if you can't get soft water.
- Do not use water containing impurities or oil.
- Take care so that coolant does not splash to painted surfaces. If splashes, wash it away with water.



15. Install:
    - Radiator cap ①

	Screw (Radiator Cap): **5 Nm (0.5 m-kg, 3.6 ft-lb)**

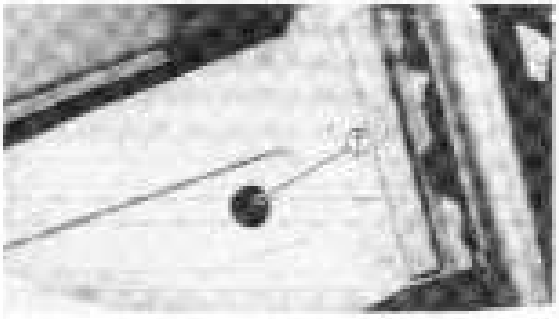
16. Connect:
    - Breather hose ②



17. Fill the reservoir tank with the coolant until the coolant level reaches "FULL" level mark ①.

18. Install:
    - Fuel tank
    - Fuel cock

19. Connect:
    - Fuel delivery hose
    - Vacuum hose
    - Fuel breather hose

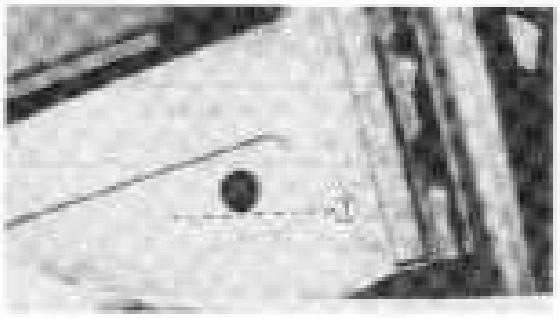


20. Start the engine and let it warm up.

21. Stop the engine and inspect the coolant level through the checking hole ① of the right-hand frame.

NOTE:

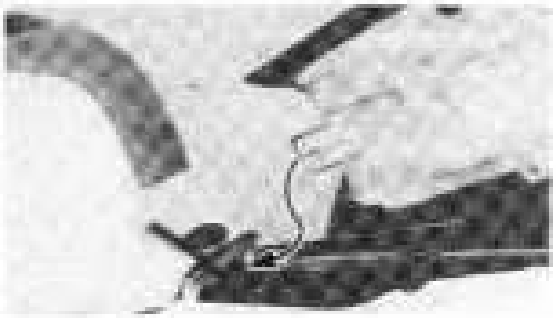
Wait a few minutes until the coolant level settles before inspecting.



22. Inspect:
    •Coolant level
    Coolant level is under low level line ① → Add Coolant.

NOTE:

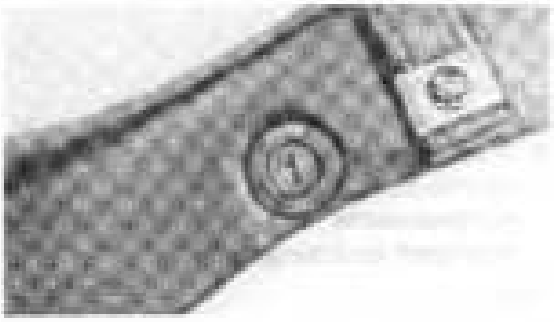
Position the motorcycle straight up when inspecting the coolant level, a slight tilt to the side can produce false readings.



23. Install:
    •Lower cowl (Right)
    •Seat

NOTE:

Insert the lobe on the seat front into the receptacle on the frame, then push down the seat.

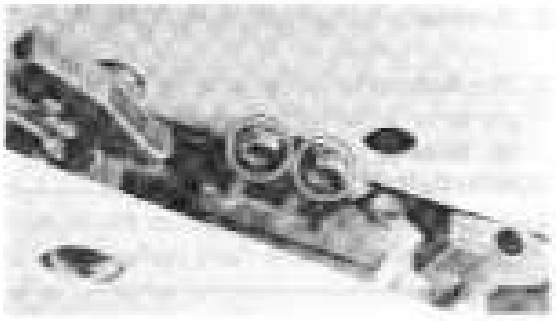


COOLING SYSTEM INSPECTION

1. Remove:
    •Seat

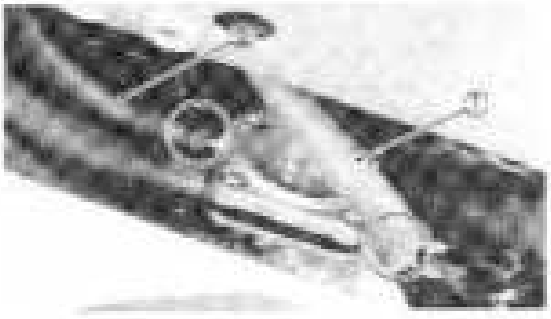
NOTE:

To open the seat lock, insert the key in the lock and turn it clockwise.

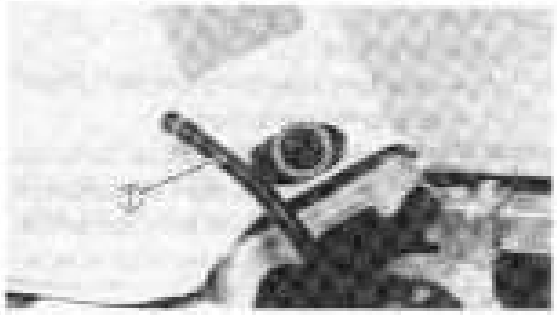


2. Turn the fuel cock to "ON" position.

3. Remove:
    •Bolts (Fuel cock bracket)



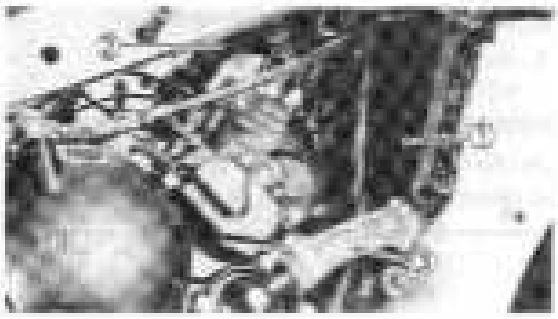
4. Disconnect:
    •Fuel delivery hose ①
    •Vacuum hose ②



5. Disconnect:
   •Fuel breather hose ①

6. Remove:
   •Fuel tank

7. Remove:
   •Lower cowl (Right)
   Refer to the "COWLINGS" section in the CHAPTER 3.

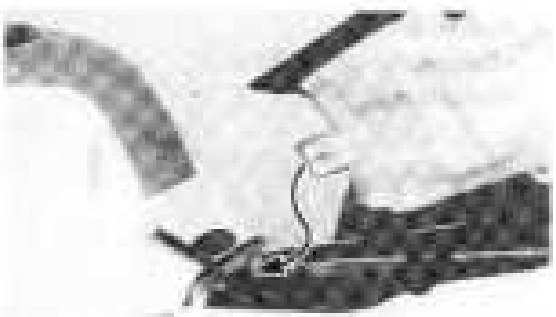


8. Inspect:
   •Radiator ①
   •Inlet hose ②
   •Outlet hose ③
   Cracks/Damage→Replace.

   Refer to the "CHAPTER 5—COOLING SYSTEM" for replacement.

9. Install:
   •Fuel tank
   •Fuel cock

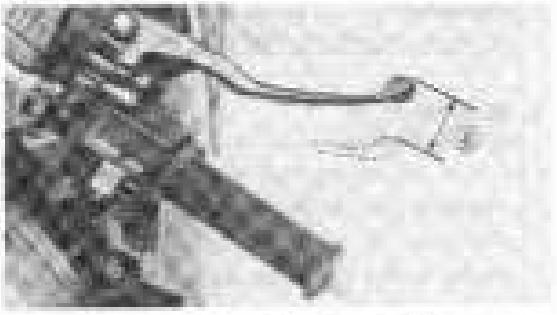
10. Connect:
    •Fuel breather hose
    •Fuel delivery hose
    •Vacuum hose



11. Install:
    •Seat

NOTE:

Insert the lobe on the seat front into the receptacle on the frame, then push down the seat.





CHASSIS

FRONT BRAKE ADJUSTMENT

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

Free Play:	2 – 5 mm (0.08 – 0.20 in)

2. Adjust:
   - Brake lever free play

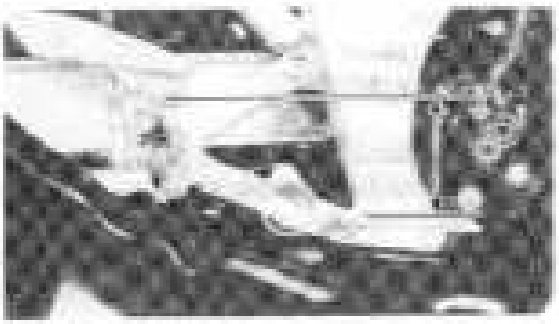
Adjustment steps:
- Loosen the locknut (1).
- Turn the adjuster (2) in or out until the specified free play is obtained.

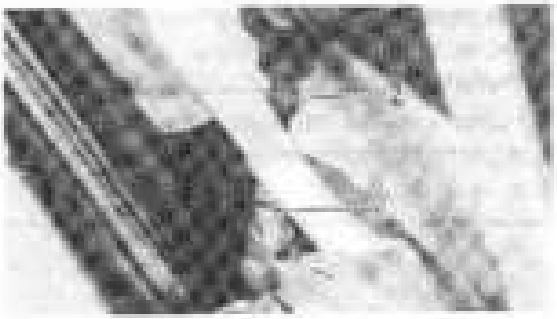
Turn in	Free play is decreased.
Turn out	Free play is increased.

- Tighten the locknut.

CAUTION:

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





REAR BRAKE ADJUSTMENT

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

Brake Pedal Height:	55 mm (2.16 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.

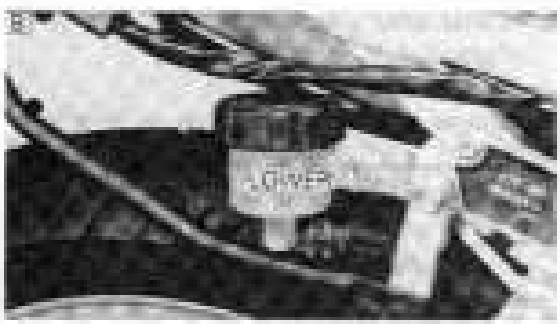
WARNING:

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)





BRAKE FLUID INSPECTION

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

	Recommended Brake Fluid: DOT #3

A For front brake.
B For rear brake.

NOTE:

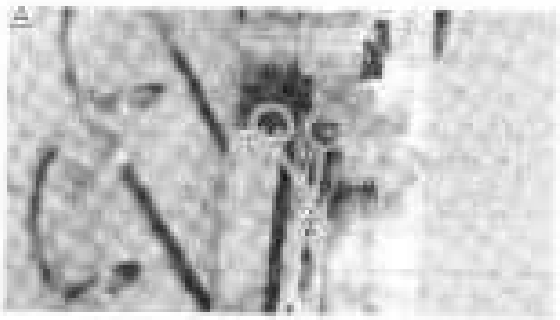
- Position the motorcycle straight up when inspecting the brake fluid level.
- When inspecting the front brake fluid level, make sure the master cylinder top is horizontal by turning the handlebars.
- Before inspecting the rear brake fluid level, remove the side cover (Right).
  Refer to the "SIDE COVERS" section in the CHAPTER 3.

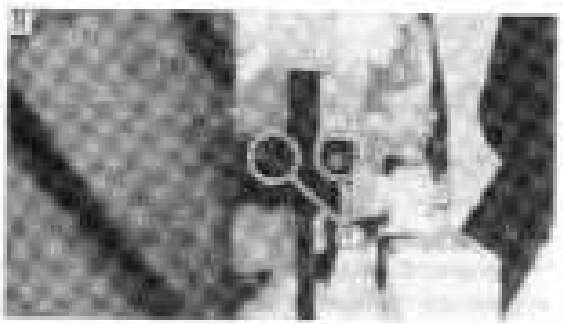
CAUTION:

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

WARNING:

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





BRAKE PAD INSPECTION

1. Activate the brake lever or brake pedal.
2. Inspect:
   - Brake pad
     Wear indicator ① almost contacts brake disc → Replace brake pad as a set.

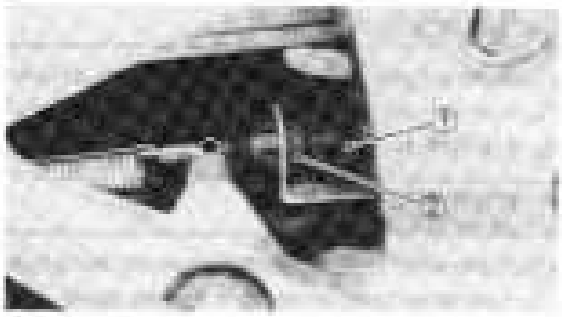
Ⓐ Front brake
Ⓑ Rear brake

Refer to the "BRAKE PAD REPLACEMENT" section in the CHAPTER 7 for replacement.

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.

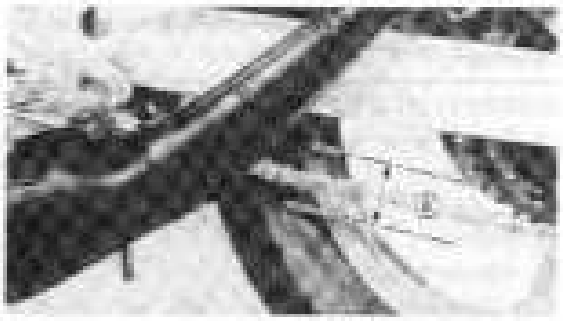


1. Hold the switch body ① with your hand so that it does not rotate and turn the adjusting nut ②.

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.

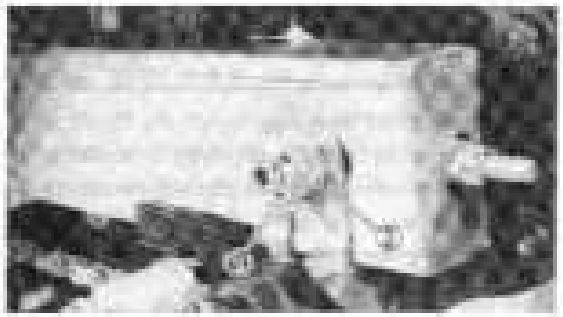
Drive Chain Slack:
30 – 40 mm (1.18 – 1.57 in)

2. Adjust:
   - Drive chain slack

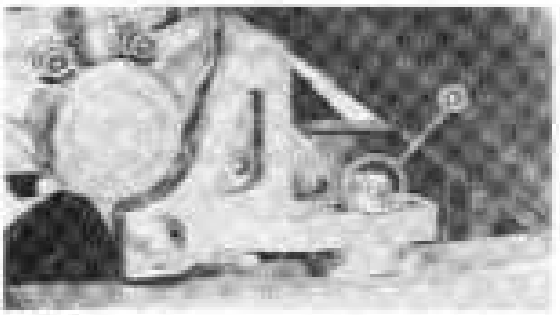
Adjustment steps:

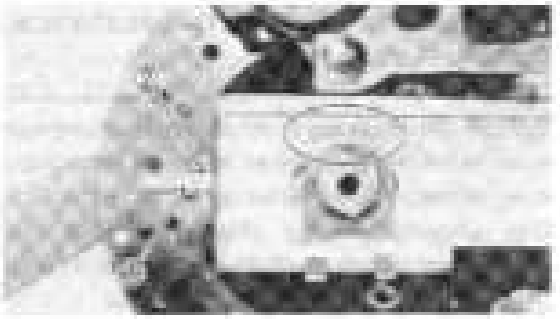
CAUTION:

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



- Loosen the locknut ① and axle nut ②.





•Loosen the bolt ① (Brake caliper bracket).

•Loosen the locknut ① and turn the adjuster ② in or out until the specified slack is obtained.

Turn in	Slack is increased.
Turn out	Slack is decreased.

NOTE:
Turn each adjuster 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 locknut.

•Tighten the bolt (Brake caliper bracket), axle nut and locknut (axle nut).

Bolt (Brake Caliper Bracket):
45 Nm (4.5 m•kg, 32 ft•lb)
Axle Nut:
105 Nm (10.5 m•kg, 75 ft•lb)
Locknut (Axle Nut):
45 Nm (4.5 m•kg, 32 ft•lb)

DRIVE CHAIN LUBRICATION

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

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

STEERING HEAD ADJUSTMENT

WARNING

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

1. Remove:
   - Lower cowl (Right)
   - Lower cowl (Left)

   Refer to the "COWLINGS" section in the CHAPTER 3.

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:
•Remove the front wheel.
NOTE:
Do not depress the brake lever when the disc is off the caliper as the brake pads will be forced shut.

•Remove the handlebars ①, spacers ② and handle crown ③.



•Tighten the ring nut using the Ring Nut Wrench.



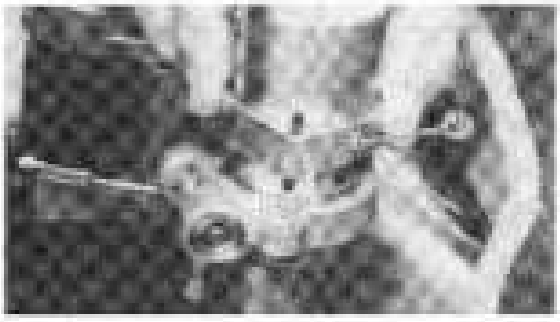
Ring Nut Wrench:
90890-01403

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

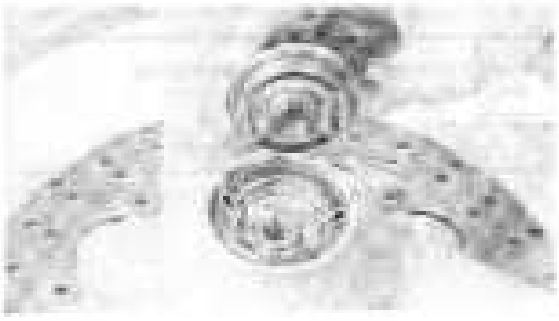
Ring Nut (Initial Tightening):
40 Nm (4.0 m•kg, 29 ft•lb)

•Loosen the ring nut one turn.









•Retighten the ring nut using the Ring Nut Wrench.

WARNING:

Avoid over-tightening.

Ring Nut (Final Tightening):
30 Nm (2.0 m•kg, 14 ft•lb)

•Install the handle crown.

Nut ①:
110 Nm (11 m•kg, 80 ft•lb)
Bolts ②:
32 Nm (3.2 m•kg, 23 ft•lb)

•Install the spacer ①.

NOTE:

Insert the pin on the spacer into the corresponding hole on the handle crown.

•Install the handlebars.

NOTE:

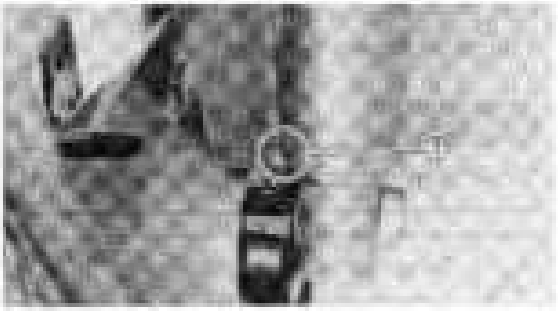
Insert the pin on the spacer into the corresponding hole on the handlebar.

Bolts (Handlebar):
13 Nm (1.3 m•kg, 9.4 ft•lb)

•Install the front wheel.

NOTE:

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



NOTE:
Be sure that the projecting portion ① (torque stopper) of the speedometer gear unit is positioned correctly.

Wheel Axle:
74 Nm (7.4 m•kg, 53 ft•lb)
Pinch Bolt:
20 Nm (2.0 m•kg, 14 ft•lb)

5. Install:
   - Lower cowl (Left)
   - Lower cowl (Right)

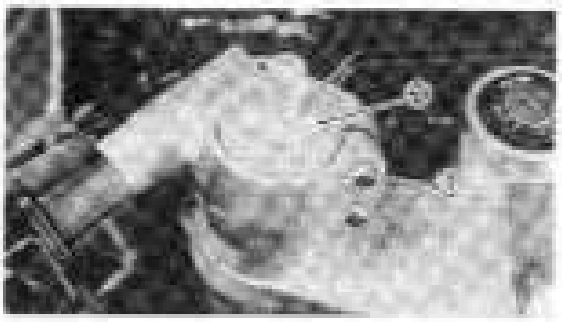
FRONT FORK OIL REPLACEMENT

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

1. Remove:
   - Lower cowl (Right)
   - Lower cowl (Left)

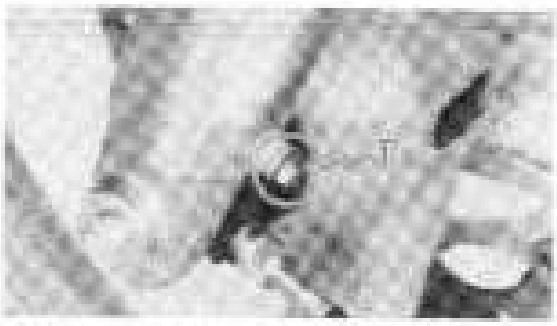
   Refer to the "COWLINGS" section in the CHAPTER 3.

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



3. Loosen:
   •Bolts ① (Handlebar)

4. Remove:
   •Cap bolt ②



5. Place an open container under the drain hole.

6. Remove:
   •Drain screw ③

WARNING:

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

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

8. Inspect:
   •O-ring (Cap bolt)
   •Gasket (Drain screw)
   Damage → Replace.

9. Install:
   •Drain screw
   •Gasket (Drain screw)

10. Fill:
    •Fork oil

Front Fork Oil Capacity (Each Fork):
444 cm³ (15.7 Imp oz, 15.0 US oz)
Recommended Oil:
Fork Oil 10W or Equivalent

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

12. Install:
    •Cap bolt

Cap Bolt:
23 Nm (2.3 m•kg, 17 ft•lb)

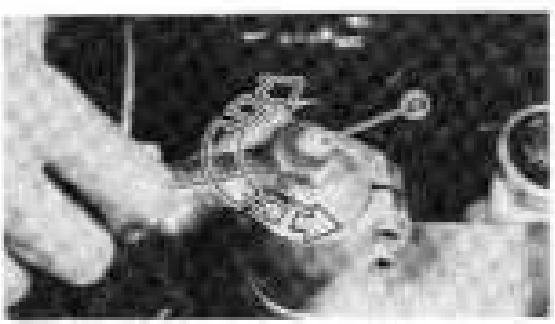
13. Tighten:
    •Bolts (Handlebar)

Bolts (Handlebar):
13 Nm (1.3 m•kg, 9.4 ft•lb)

FRONT FORK ADJUSTMENT

WARNING:

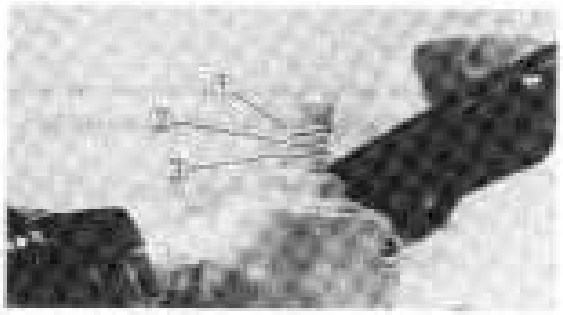
Always adjust each fork preload to the same setting. Uneven adjustment can cause poor handling and loss of stability.



1. Adjust:
    •Spring preload

Adjustment steps:
•Turn the adjuster (1) in or out.

Turn in	Preload is increased.
Turn out	Preload is decreased.



CAUTION:

The grooves are there just to show the adjusting level.

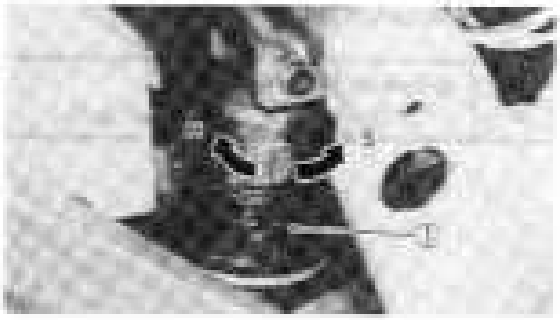
① Hard
② Standard
③ Soft

REAR SHOCK ABSORBER ADJUSTMENT

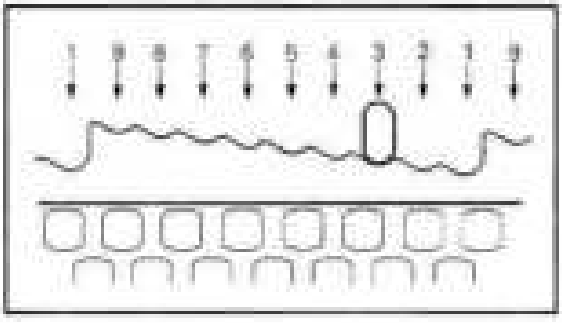
The spring preload of the rear shock absorber can be adjusted to suit rider's preference, weight, and the course conditions.

1. Remove:
   - Side cover (Right)

   Refer to the "SIDE COVERS" section in the CHAPTER 3.



2. Adjust:
   - Spring preload



Adjustment steps:

- To increase preload, adjuster ① is turned toward the "H". To decrease preload, adjuster is turned toward the "S".

	Hard						STD	Soft	
Adjusting position	8	8	7	6	5	4	3	2	1

NOTE:

When adjusting, use the special wrench and extension bar which are included in the owner's tool kit.

3. Install:
   - Side cover (Right)

RECOMMENDED COMBINATIONS OF FRONT FORK AND REAR SHOCK ABSORBER SETTINGS

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

	Front fork	Rear shock absorber	Loading condition			
	Adjusting position	Spring seat	Solo rider	With passenger	With accessories and equipment	With accessories, equipment and passenger
1.	STANDARD	3	○			
2.	HARD	4			○	
3.	HARD	5		○		
4.	HARD	6, 7				○

TIRE INSPECTION

WARNING

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

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

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

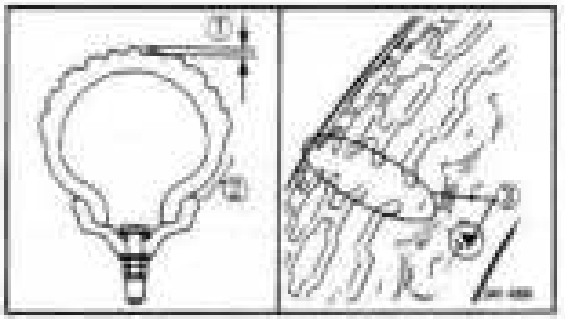
1. Measure:
   - Tire pressure
   Out of specification → Adjust.

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.

Basic weight: With oil and full fuel tank	144 kg (318 lb)	
Maximum load*	196 kg (432 lb)	
Cold tire pressure	Front	Rear
Up to 90 kg (198 lb) load*	180 kPa (1.8 kg/cm², 26 psi)	200 kPa (2.0 kg/cm², 28 psi)
90 kg (198 lb) – Maximum load*	200 kPa (2.0 kg/cm², 28 psi)	230 kPa (2.3 kg/cm², 32 psi)
High speed riding	200 kPa (2.0 kg/cm², 28 psi)	230 kPa (2.3 kg/cm², 32 psi)

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



2. Inspect:
   • Tire surfaces
   Wear/Damage → Replace.

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

① Tread depth
② Side wall
③ Wear indicator

WHEEL INSPECTION

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

NOTE:

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

WARNING:

Never attempt even small repairs to the wheel.

2. Tighten:
   • Valve stem locknut

1.5 Nm (0.15 m•kg, 1.1 ft•lbf)

WARNING:

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

CABLE INSPECTION AND LUBRICATION

WARNING

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

1. Inspect:
   • Cable sheath
   Damage → Replace.

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

Recommended Lubricant:
SAE 10W30 Motor Oil

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

LEVER AND PEDAL LUBRICATION

Lubricate pivoting parts of each lever and pedal.

Recommended Lubricant:
SAE 10W30 Motor Oil

SIDESTAND LUBRICATION

Lubricate the sidestand at pivot points.

Recommended Lubricant:
SAE 10W30 Motor Oil

SWINGARM AND RELAY ARM LUBRICATION

Lubricate the swingarm and relay arms at their pivoting points.

Light weight Lithium Soap Base Grease



① Grease nipple



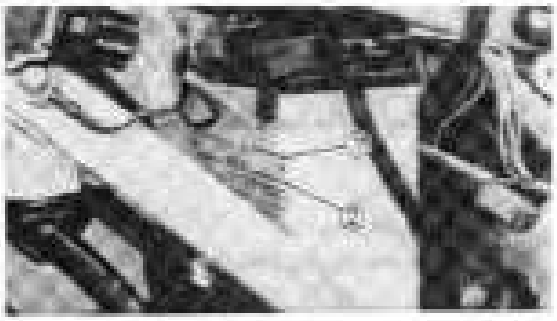
ELECTRICAL

BATTERY INSPECTION

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

NOTE:

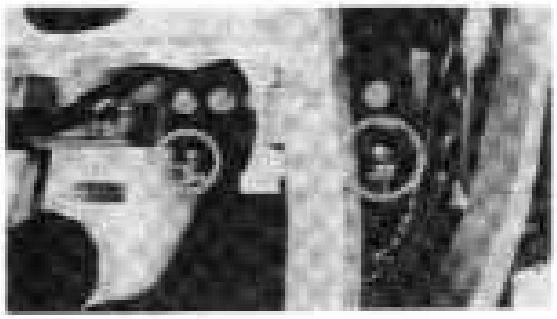
To open the seat lock, insert the key in the lock and turn it clockwise.



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

CAUTION:

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

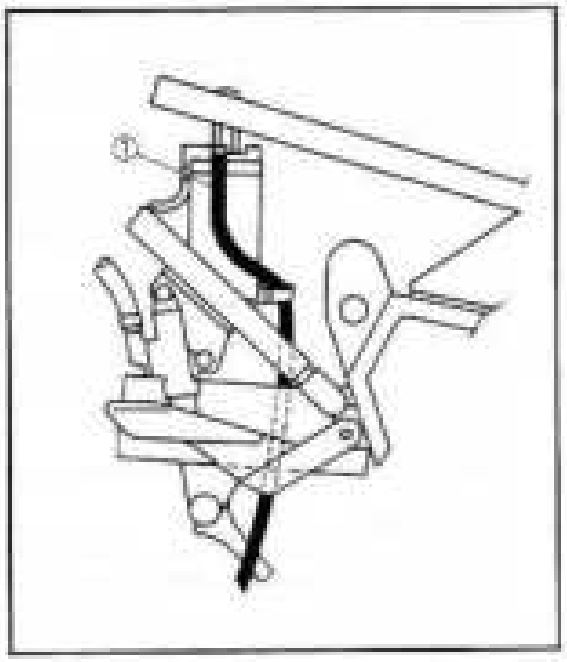


3. Inspect:
   - Battery terminal

   Dirty terminal→Clean with wire brush.
   Poor connection→Correct.

NOTE:

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



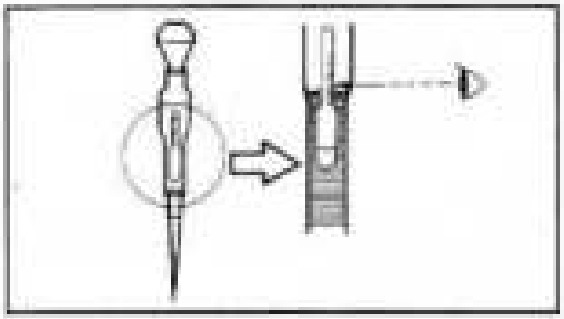
4. Connect:
   - Breather pipe ①

   Be sure the hose is properly attached and routed.

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

CAUTION:

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



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

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

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

CAUTION:

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



WARNING

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

Always follow these preventive measures:

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

Antidote (EXTERNAL):

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

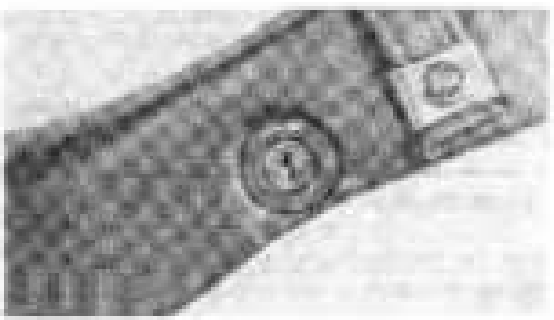
Antidote (INTERNAL):

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

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

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

KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.

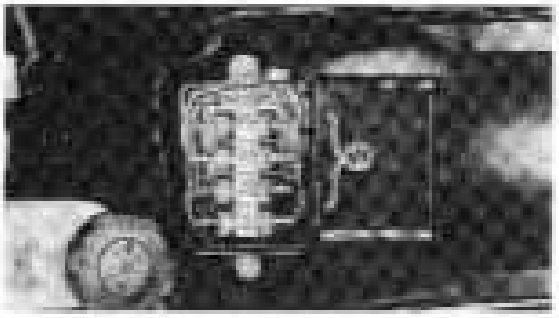


FUSE INSPECTION

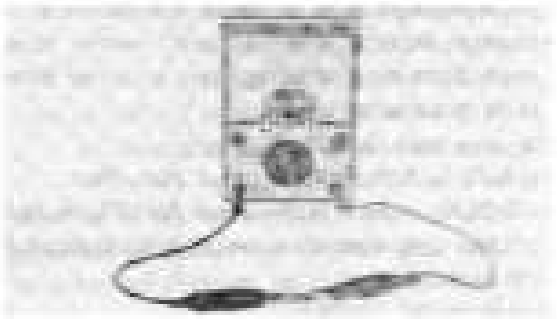
1. Remove:
   - Seat

NOTE:

To open the seat lock, insert the key in the lock and turn it clockwise.



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:
90890-03112

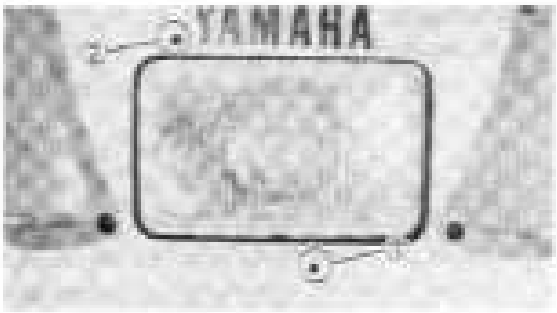
• If the tester is indicated at ∞. The fuse is blown, replace it.

4. Replace:
   • Blown fuse

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

WARNING

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



HEADLIGHT BEAM ADJUSTMENT

1. Adjust:
   - Headlight beam (Vertical)

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

2. Adjust:
   - Headlight beam (Horizontal)

To right the beam	Turn the adjuster ② counterclockwise.
To left the beam	Turn the adjuster ② clockwise.



HEADLIGHT BULB REPLACEMENT

1. Remove:
   - Headlight lead coupler ①
   - Cover ②



2. Remove:
   - Bulb holder ①
   - 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.

3. Install:
   •Bulb (New)
   Secure the new bulb with the bulb holder.

CAUTION:

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

4. Install:
   •Cover
   •Headlight lead coupler

ENGINE OVERHAUL

ENGINE REMOVAL

NOTE:

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

- Cylinder head
- Cylinder
- Piston and piston ring
- Power valve
- Clutch
- Primary drive gear
- Kick axle
- Shift shaft
- A.C magneto
- Autolube pump
- Oil pump

COWLINGS

1. Remove:
   - Lower cowl (Right)
   - Lower cowl (Left)

   Refer to "COWLINGS" section in CHAPTER 3.

TRANSMISSION OIL

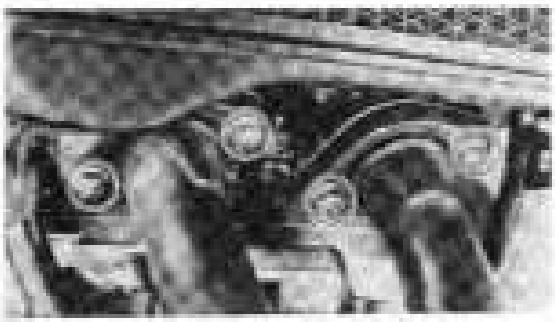
1. Drain:
   - Transmission oil

   Refer to "TRANSMISSION OIL REPLACEMENT" section in CHAPTER 3.

COOLANT

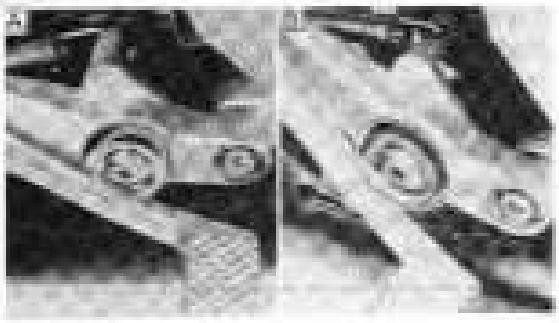
1. Drain:
   - Coolant

   Refer to "COOLANT REPLACEMENT" section in CHAPTER 3.



MUFFLER ASSEMBLY

1. Remove:
   - Muffler assembly



Ⓐ Right hand
Ⓑ Left hand



SEAT

1. Remove:
   - Seat

NOTE:

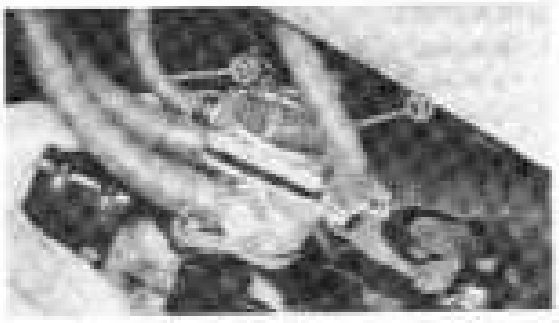
To open the seat lock, insert the key in the lock and turn it clockwise.



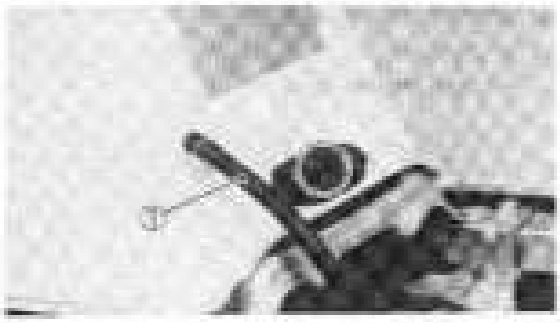
FUEL TANK

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

2. Remove:
   - Bolts (Fuel cock bracket)

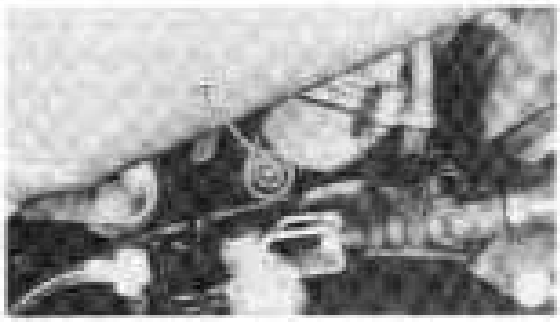


3. Disconnect:
   - Fuel delivery hose ①
   - Vacuum hose ②



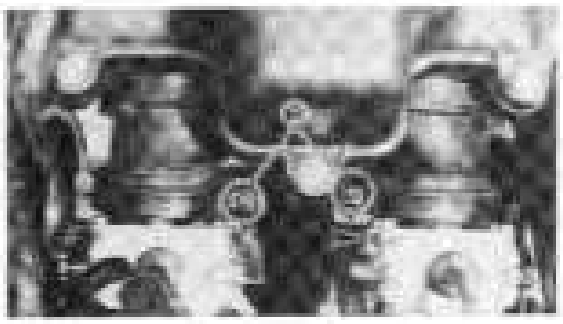
4. Disconnect:
   • Breather hose ①

5. Remove:
   • Fuel tank



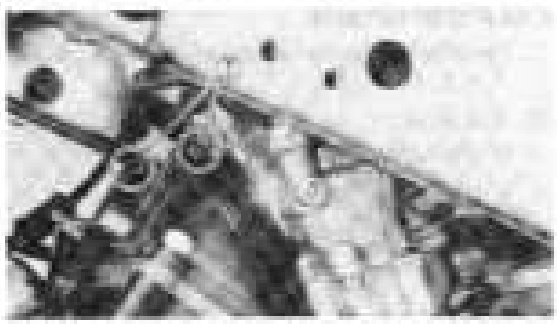
CARBURETOR

1. Loosen the drain screw ① and drain the float chamber of fuel.



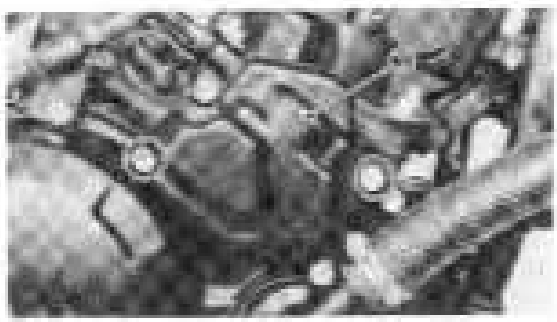
2. Loosen:
   • Screws ① (Carburetor joint)

3. Remove:
   • Air cleaner case



4. Loosen:
   • Screws ① (Carburetor joint)

5. Remove:
   • Carburetors



AUTOLUBE PUMP CABLE AND HOSE

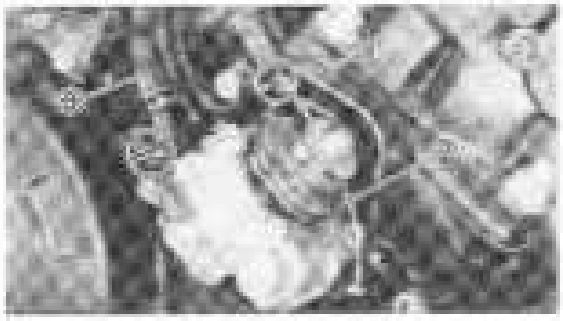
1. Remove:
   • Autolube pump cover ①



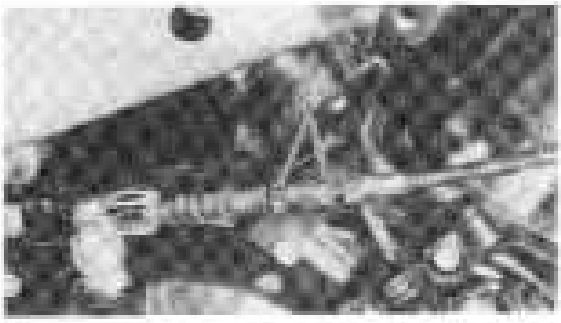
2. Remove:
   - Clip ①
   - Cable end ②



NOTE:
Turn the pump pulley counterclockwise by finger to make the pump cable loose enough for its end to be removed from the pulley.

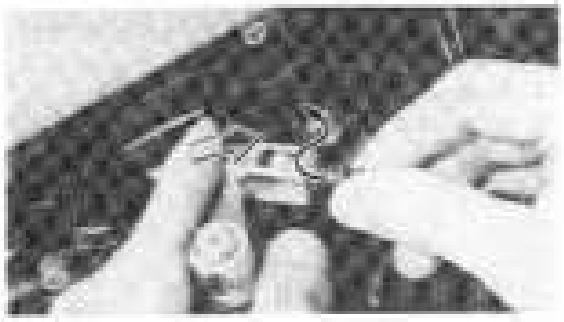


3. Remove:
   - Clip ①
   - Autolube pump cable ②
   - Oil hose ③

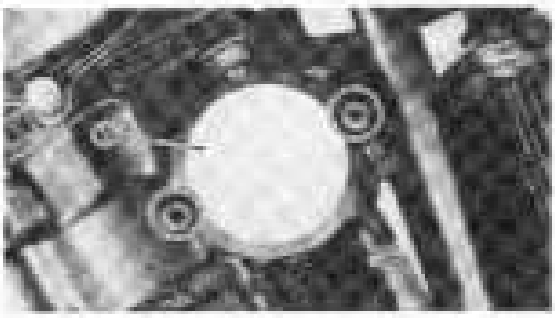


CLUTCH CABLE

1. Loosen:
   - Cable adjusters ①

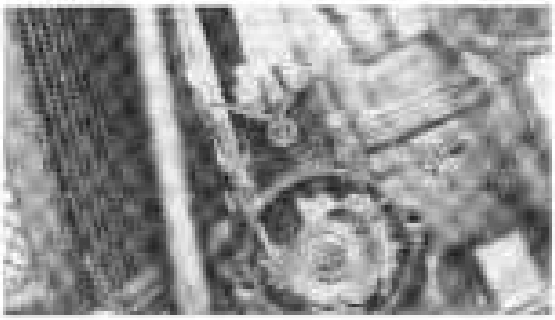


2. Remove:
   - Clutch cable



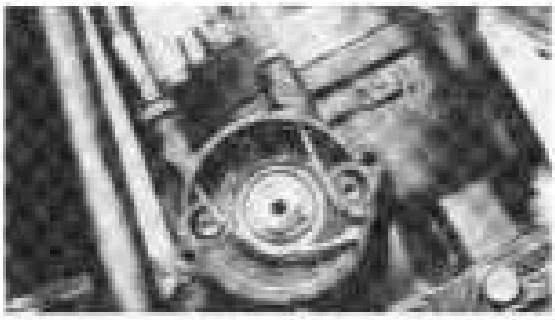
Y.P.V.S. CABLES

1. Remove:
   - Pulley cover ① (Power valve)



2. Loosen:
   - Cable adjusters ①

3. Remove:
   - Pulley ②

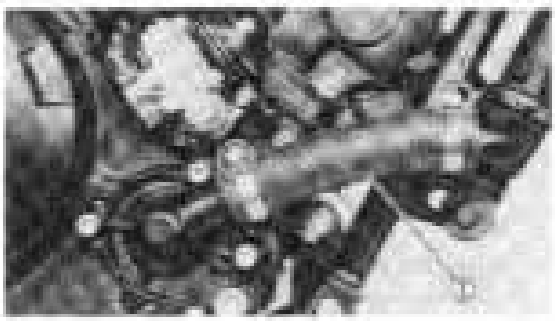


4. Remove:
   - Pulley housing ①

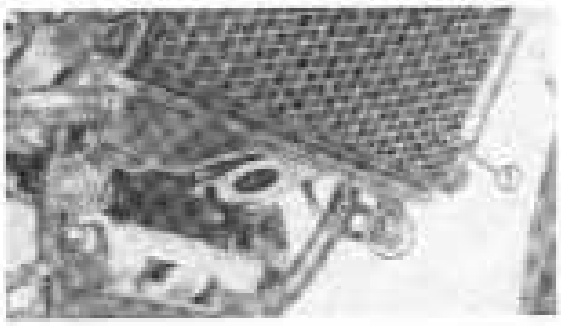


RADIATOR

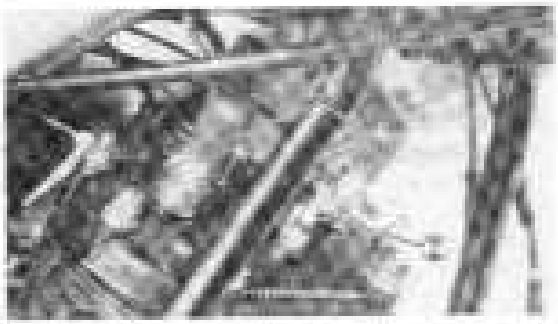
1. Disconnect:
   - Inlet hose ①



2. Disconnect:
   - Outlet hose ①

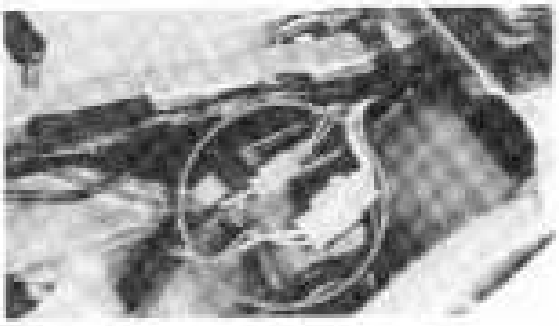


3. Remove:
   •Radiator ①

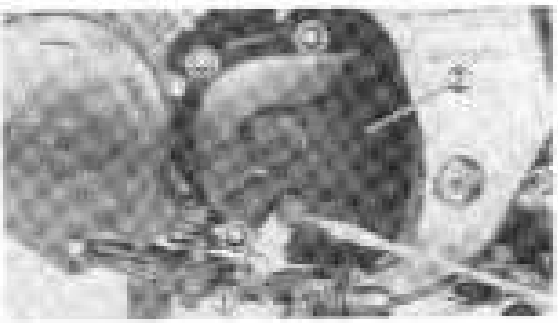


LEADS

1. Disconnect:
   •Spark plug leads ①
   •Thermo unit lead ②

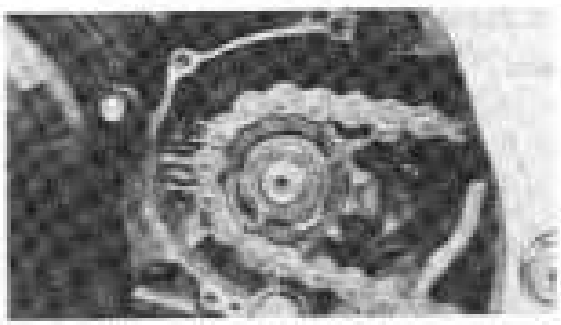


2. Disconnect:
   •Stator coil leads
   •Pickup coil leads
   •Source coil leads



DRIVE CHAIN

1. Remove:
   •Bolt ① (Shift arm)
   •Crankcase cover ② (Left)

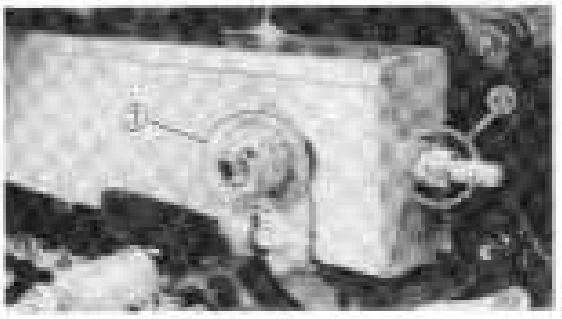


2. Straighten:
   •Lock washer tab

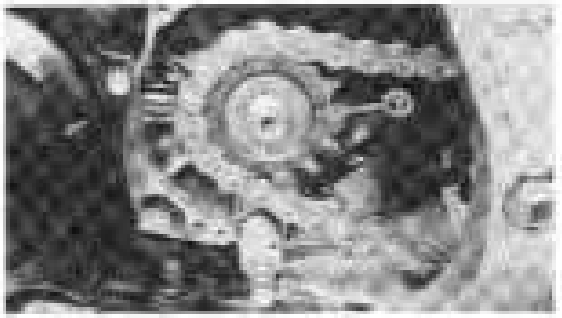
3. Loosen:
   •Nut ① (Drive sprocket)

NOTE:

Apply the rear brake for loosening the nut.



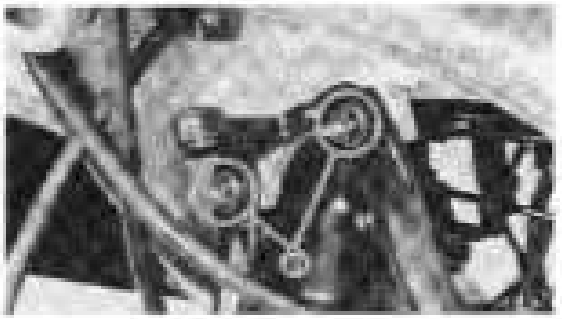
4. Loosen:
   - Rear axle nut ①
   - Adjusters ② (Chain puller)



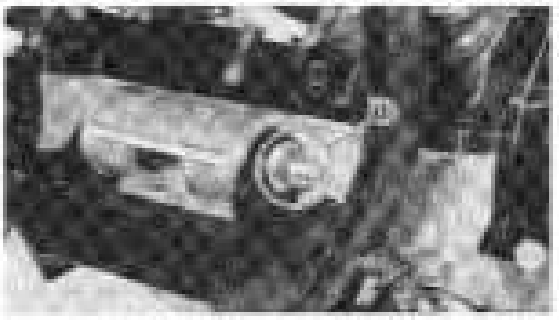
5. Remove:
   - Drive sprocket ①
   - Collar ②

ENGINE REMOVAL

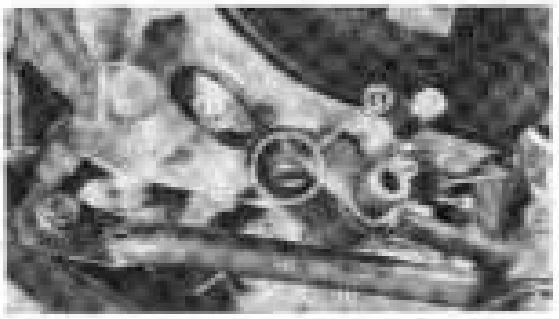
1. Place a suitable stand under the engine.



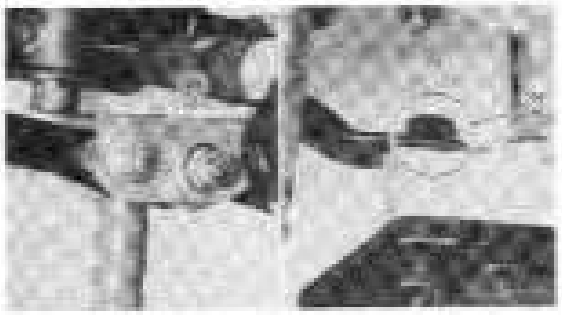
2. Remove:
   - Bolts ① (Down tube — Upper)



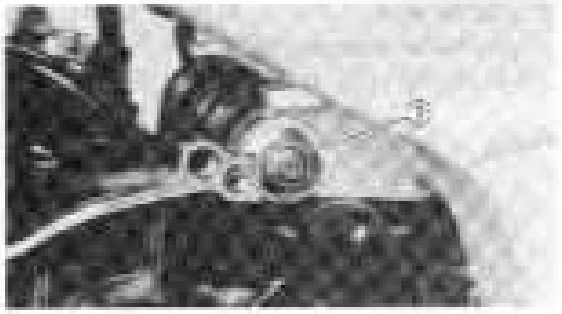
3. Remove:
   - Bolt ① (Engine mount — Front)



4. Remove:
   - Bolt ① (Engine bracket)



5. Loosen:
   - Bolt ① (Down tube — Lower)
   - Bolt ② (Torque rod stay — Rear)



6. Remove:
   - Bolt ① (Engine mount-Rear)
   - Engine assembly

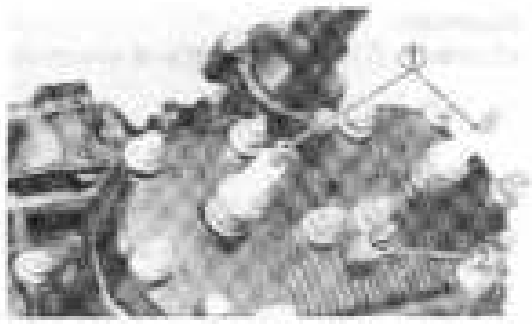
ENGINE DISASSEMBLY

CYLINDER HEAD, CYLINDERS AND PISTONS

NOTE:

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

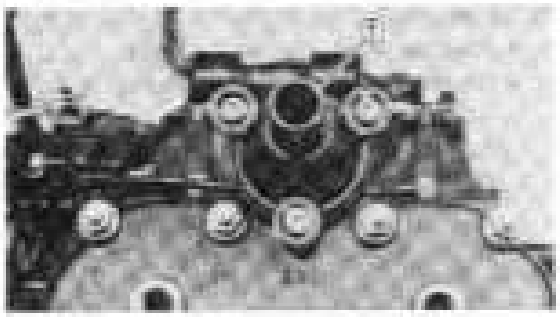
- Lower cowls
- Mufflers
- Y.P.V.S. cables
- Radiator



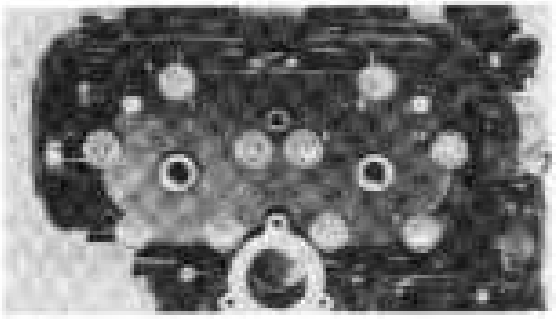
1. Remove:
   - Spark plugs ①
   - Thermo unit ②

WARNING:

Handle the thermo-unit with special care. Never subject it to strong or allow it to be dropped. Should it be dropped, it must be replaced.

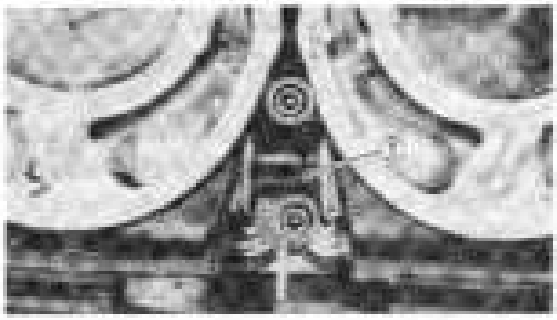


2. Remove:
   - Cover ① (Thermostatic valve)
   - Thermostatic valve

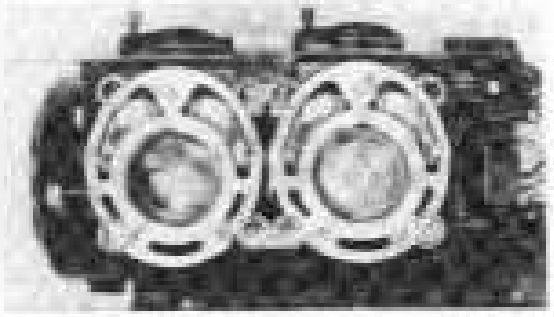


3. Remove:
   - Cylinder head
   - Gasket (Cylinder head)

NOTE:
- Loosen the nuts starting with the highest numbered one.
- Loosen the each nut 1/4 turn, and remove them after all nuts are loosened.



4. Remove:
   - Joint ① (Power valve)



5. Remove:
   - Cylinders
   - Gaskets (Cylinder)
   - Dowel pins

NOTE:
Loosen each nut 1/4 turn, and remove them after all nuts are loosened.



6. 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.



7. Remove:
   - Piston pin
   - Piston
   - Small end bearing

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:
90890-01304

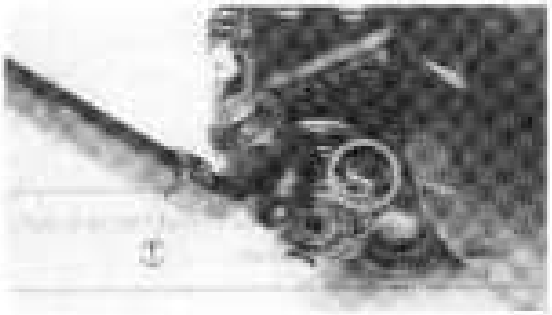
CAUTION:

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

CLUTCH AND PRIMARY DRIVE GEAR

NOTE:

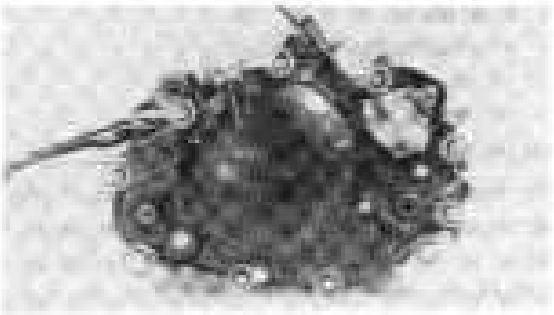
With the engine mounted, the clutch and primary drive gear can be maintained by removing the following parts.
- Lower cowl (Right)
- Outlet hose
- Autolube pump cable and hose



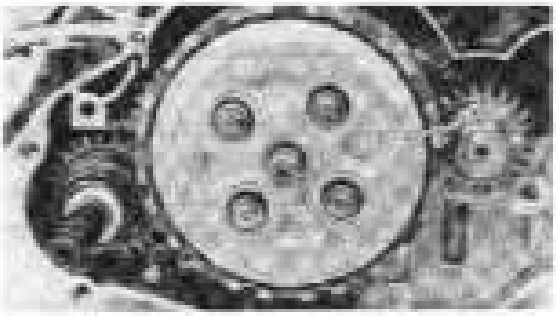
1. Remove:
   - Kick crank ①



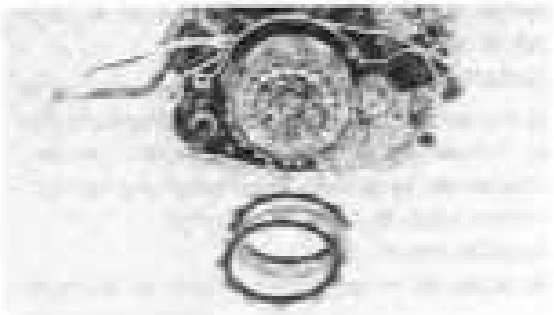
2. Disconnect:
   - Oil delivery hoses ①



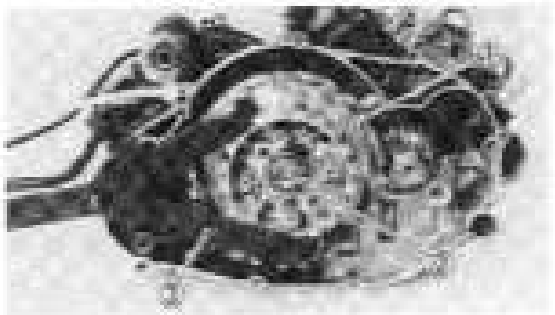
3. Remove:
   - Crankcase cover (Right)
   - Dowel pins
   - Gasket (Crankcase cover)



4. Remove:
   - Pressure plate ①



5. Remove:
   - Clutch plates
   - Friction plates



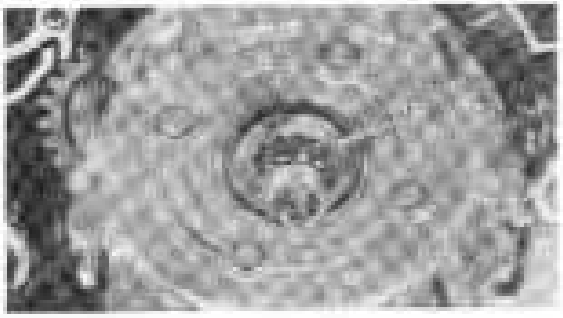
6. Straighten:
   - Lock washer tab

7. Remove:
   - Clutch boss ①

NOTE:

Hold the clutch boss to loosen the nut ② by the Universal Clutch Holder ③.

	Universal Clutch Holder: 90890-04086

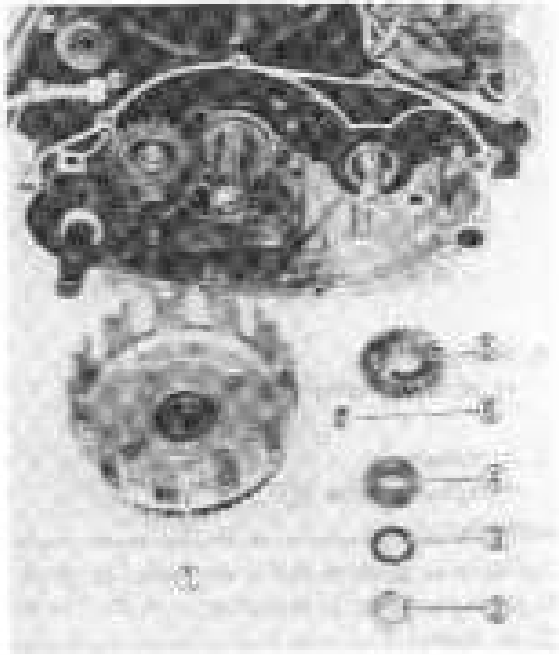


8. Remove:
   •Thrust washer ①



9. Loosen:
   •Nut ① (Primary drive gear)

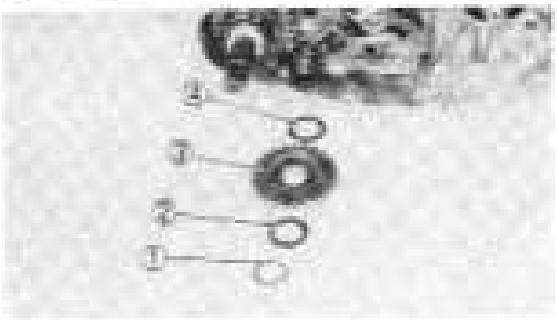
NOTE:
Place a folded rag ② between the teeth of the drive gear ③ and driven gear ④ to lock them.



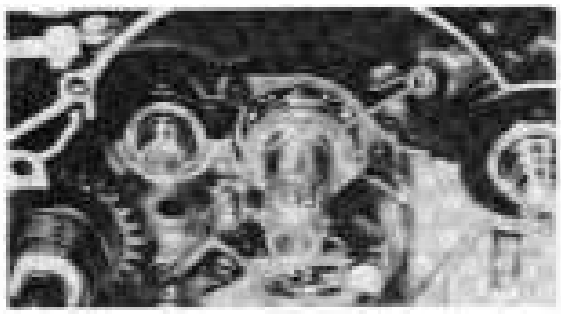
10. Remove:
   •Clutch housing ①
   •Nut ② (Primary drive gear)
   •Conical spring washer ③
   •Water pump drive gear ④
   •Primary drive gear ⑤
   •Key ⑥

KICK AXLE AND KICK IDLE GEAR

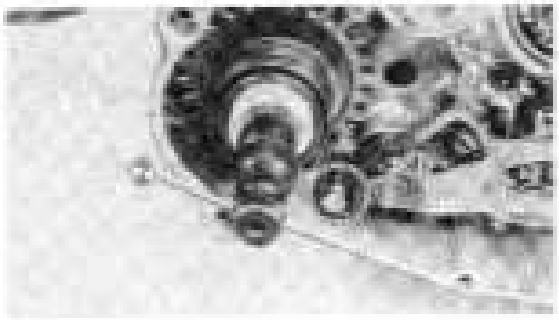
NOTE:
With the engine mounted, the kick axle and kick idle gear can be maintained by removing the following parts.
•Lower cowl (Right)
•Outlet hose
•Autolube pump cable and hose
•Crankcase cover (Right)
•Clutch



1. Remove:
   - Circlip ①
   - Washer ②
   - Kick idle gear ③
   - Washer ④



2. Remove:
   - Thrust washer ① (Clutch housing)



3. Unhook:
   - Return spring ①

4. Remove:
   - Kick axle ②

SHIFT SHAFT

NOTE:

With the engine mounted, the shift shaft can be maintained by removing the following parts.
- Lower cowl (Right)
- Outlet hose
- Autolube pump cable and hose
- Crankcase cover (Right)
- Clutch



1. Remove:
   - Shift shaft ①

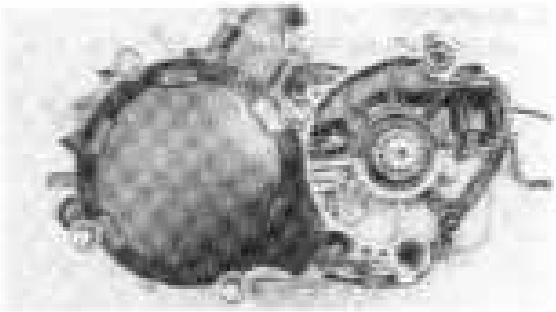


2. Remove:
   - Stopper lever ①
   - Return spring ②

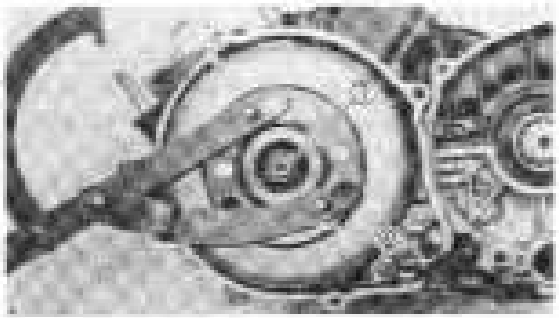
C.D.I. MAGNETO

NOTE:

With the engine mounted, the CDI magneto can be maintained by removing the following parts.
- Lower cowls
- Seat



1. Remove:
   - A.C. generator cover ①



2. Remove:
   - Nut ① (Rotor)

NOTE:

Hold the rotor to loosen the nut by the Universal Rotor Holder ②.

	Universal Rotor Holder: **90890-01235**



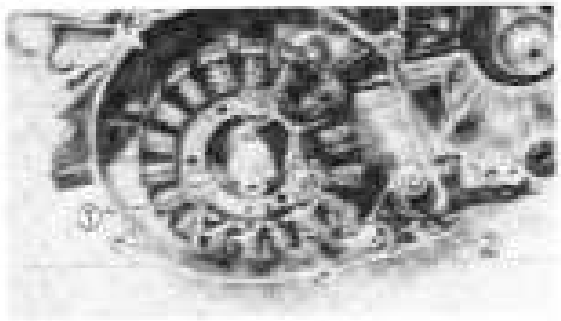
3. Remove:
   - Rotor ①
   - Woodruff key

   Use the Flywheel Puller ②.

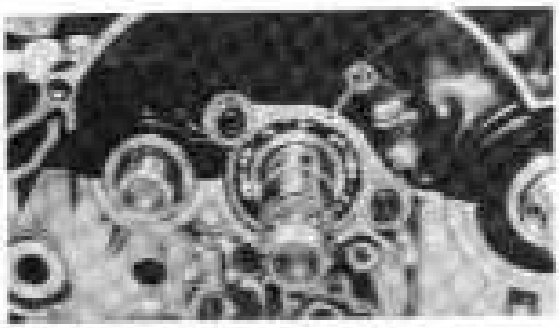
	Flywheel Puller: **90890-01189**



4. Loosen:
   - Screw (Neutral switch) ①

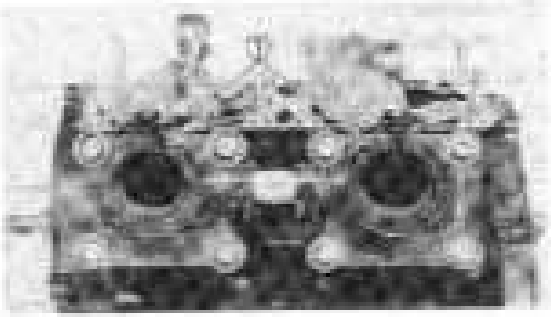


5. Remove:
   - Stator coil ①
   - Pickup coil ②

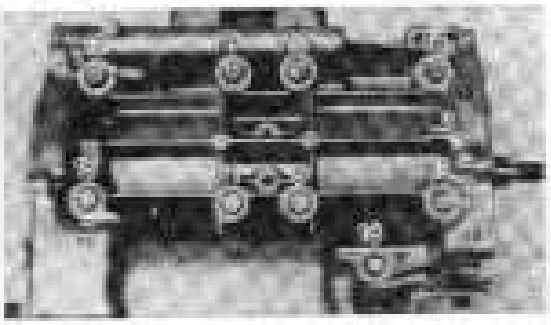


CRANKCASE (UPPER)

1. Remove:
   - Bearing holder ①



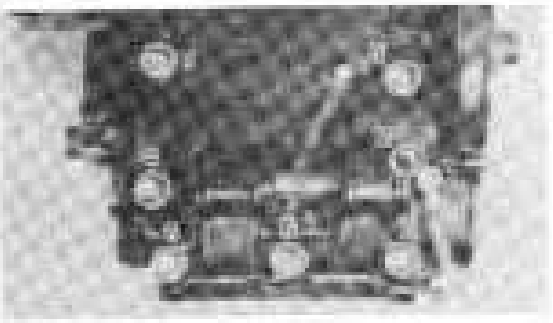
2. Remove:
   - Carburetor joints ①
   - Reed valves
   - Spacers
   - Gaskets

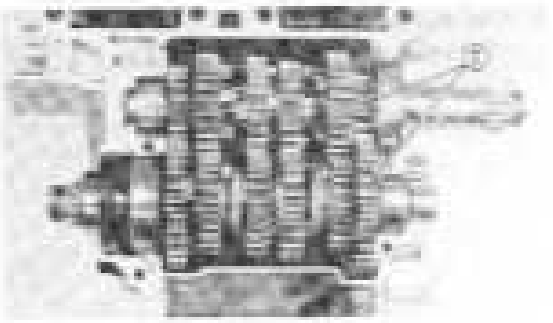


3. Remove:
   - Crankcase (Upper)

NOTE:

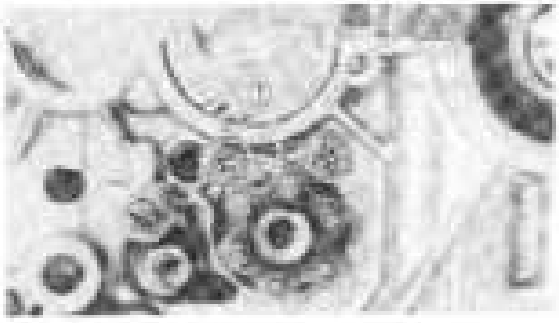
- Loosen the bolts starting with the highest numbered one.
- Loosen each bolt 1/4 turn, and remove them after all bolts are loosened.





TRANSMISSION, SHIFTER AND CRANKSHAFT

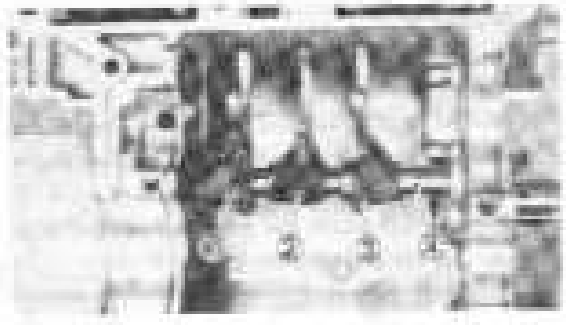
1. Remove:
   - Transmission assembly ①
   - Stopper rings



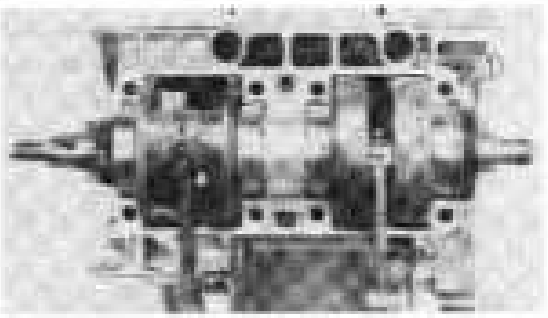
2. Remove:
   - Stopper plate ① (Shift cam)



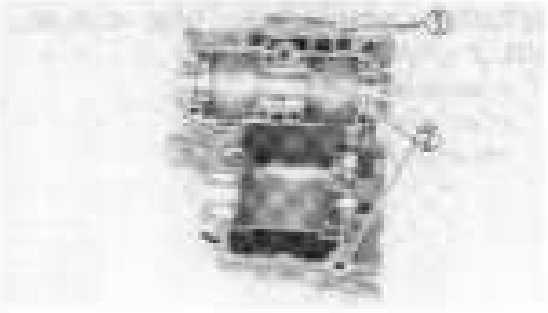
3. Remove:
   - Shift cam ①



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



5. Remove:
   - Crankshaft assembly ①
   - Stopper ring

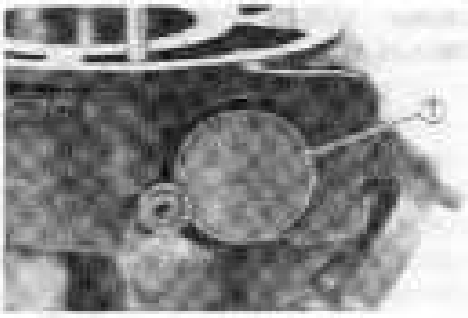


6. Remove:
   - O-rings ①
   - Dowel pins ②

POWER VALVES

NOTE:

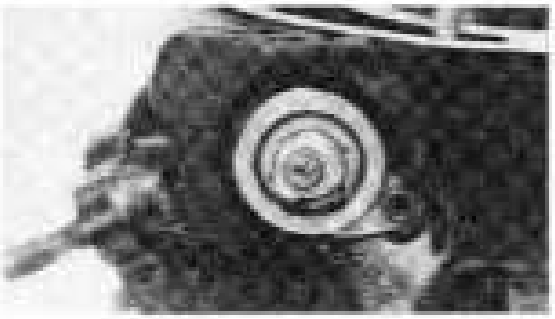
With the engine mounted, the power valves can be maintained by removing the following parts:
- Lower cowls
- Mufflers
- Y.P.V.S. cables
- Radiator
- Cylinder head
- Cylinder



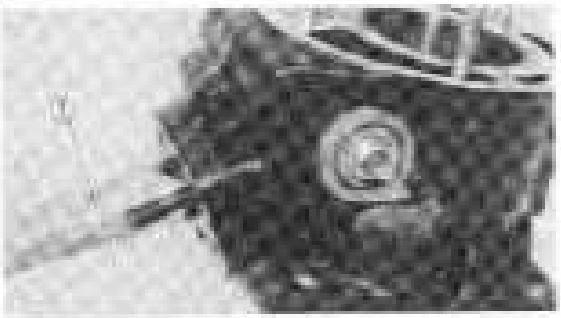
1. Remove:
   - Power valve holder ①

NOTE:

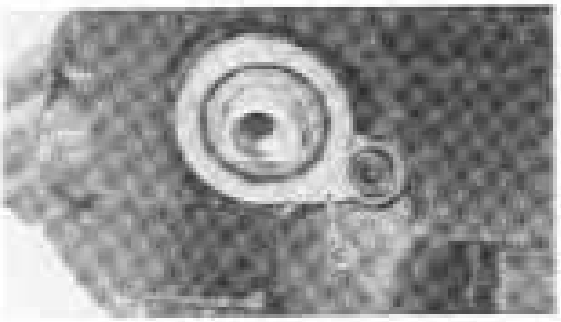
Remove the holder to maintain the power valve in the right-hand cylinder.



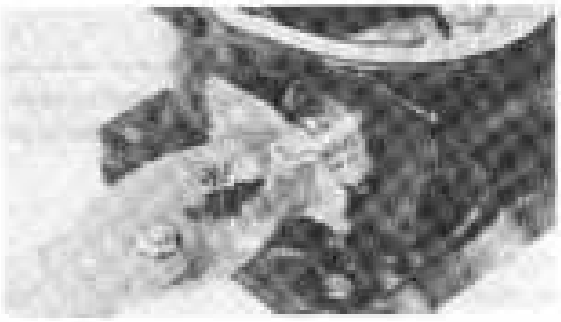
2. Remove:
   - Bolt (Power valve)



NOTE:
If stiff, use a wooden piece ① through the exhaust port to steady the valve.



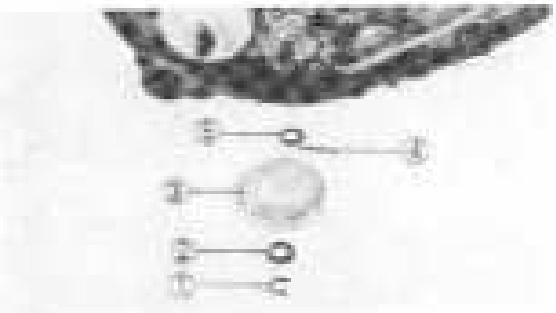
3. Remove:
   - Thrust plate ①



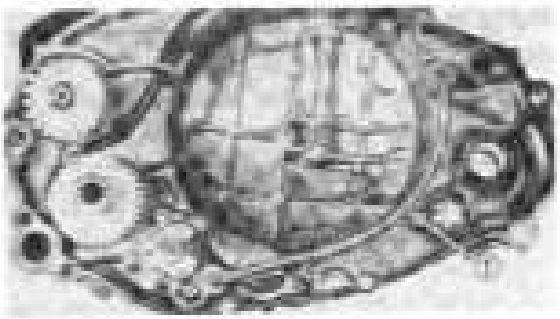
4. Remove:
   - Power valve

OIL PUMP AND STRAINER

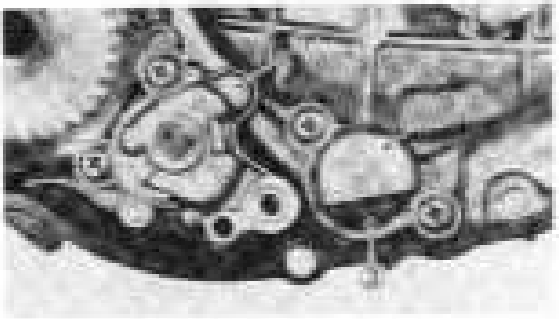
NOTE:
With the engine mounted, the oil pump and strainer can be maintained by removing the following parts.
- Lower cowl (Right)
- Outlet hose
- Autolube pump cable and hose
- Crankcase cover (Right)



1. Remove:
   - Circlip ①
   - Washer ②
   - Oil pump gear ③
   - Pin ④
   - Washer ⑤



2. Remove:
   - Oil delivery pipe ①
   - O-rings



3. Remove:
   - Oil pump ①
   - Strainer cover ②
   - Strainer ③

INSPECTION AND REPAIR

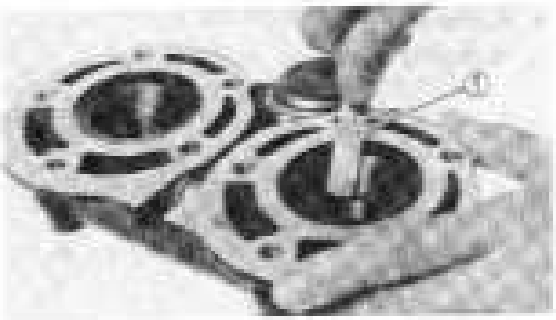
CYLINDER HEAD

1. Eliminate:
   - Carbon deposits

   Use a rounded scraper ①.

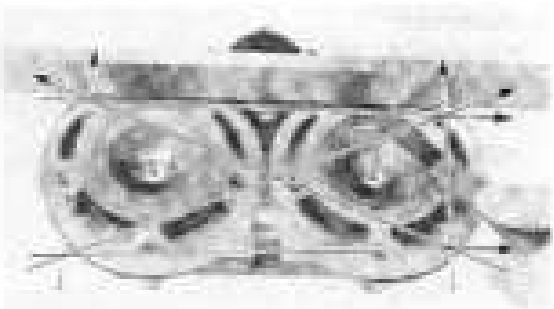
NOTE:

Take care to avoid damaging the spark plug threads. Do not use a sharp instrument. Avoid scratching the aluminum.



2. Inspect:
   - Cylinder head water jacket.

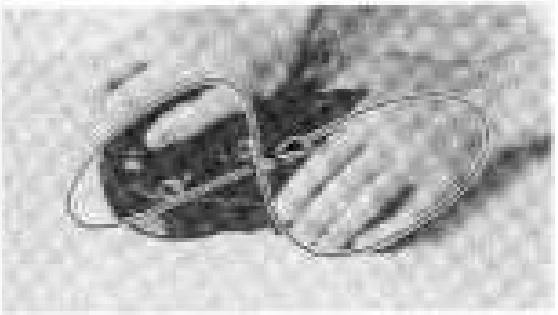
   Crust of minerals/Rust→Remove.



3. Measure:
   - Cylinder head warpage.

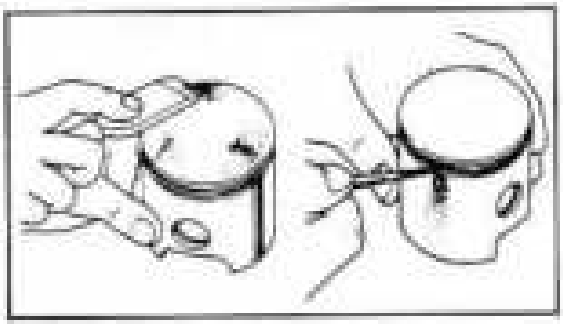
   Out of specification→Resurface.

	Warpage Limit: **0.03 mm (0.0012 in)**

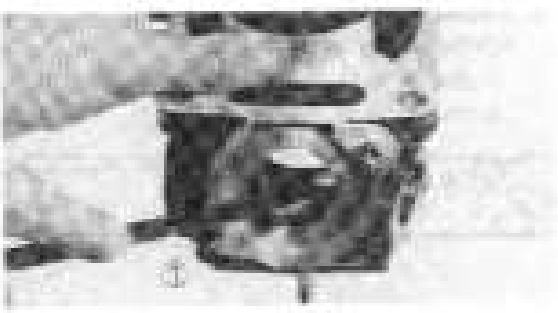


Warpage measurement and resurfacement steps:
- Attach a straight edge and a thickness gauge on the cylinder head.
- Measure the warpage.
- If the warpage is out of specification, resurface the cylinder head.
- Place a 400 – 600 grit wet sandpaper on the surface plate, and resurface the head using a figure-eight sanding pattern.

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







CYLINDER AND PISTON

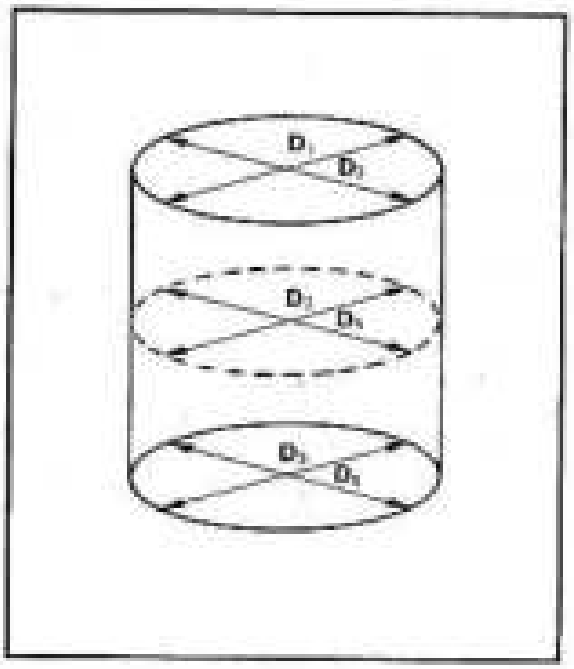
1. Eliminate:
   - Carbon deposits
     From the piston crown and ring grooves.
2. Eliminate:
   - Score marks and lacquer deposits
     From the sides of piston.
     Use a 600 – 800 grit wet sandpaper.

NOTE:
Sand in a crisscross pattern. Do not sand excessively.

3. Inspect:
   - Piston wall
     Wear / Scratches / Damage → Replace.

4. Eliminate:
   - Carbon deposits
     Use a rounded scraper ①.

5. Inspect:
- Cylinder water jacket
  Crust of minerals/Rust → Remove.
- Cylinder wall
  Wear/Scratches → Rebore or replace.



6. Measure:
- Piston-to-cylinder clearance

Piston-to-cylinder clearance measurement steps:

First step:
- Measure the cylinder bore "C" with a Cylinder Bore Gauge.

NOTE:

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

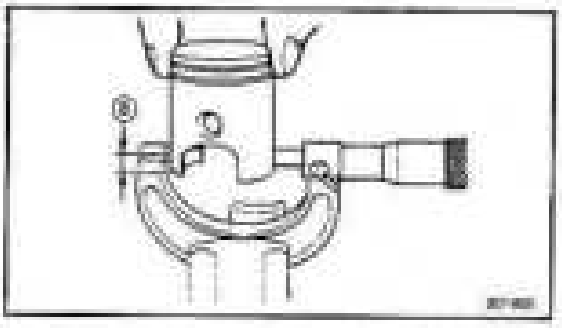
	Standard	Wear Limit
Cylinder Bore "C"	56.40 – 56.42 mm (2.220 – 2.221 in)	56.5 mm (2.224 in)
Taper "T"	—	0.05 mm (0.0019 in)
Out of Round "R"	—	0.05 mm (0.0019 in)

C = Maximum D
T = (Maximum D_1 or D_2) – (Maximum D_5 or D_6)
R = (Maximum D_1, D_3 or D_5) – (Minimum D_2, D_4 or D_6)

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

2nd step:
- Measure the piston skirt diameter "P" with a micrometer.

ⓐ 15.0 mm (0.59 in) from the piston bottom edge.



	Piston Size P
Standard	56.39 – 56.40 mm (2.220 in)
Oversize 1	56.65 mm (2.23 in)
Oversize 2	56.90 mm (2.24 in)

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

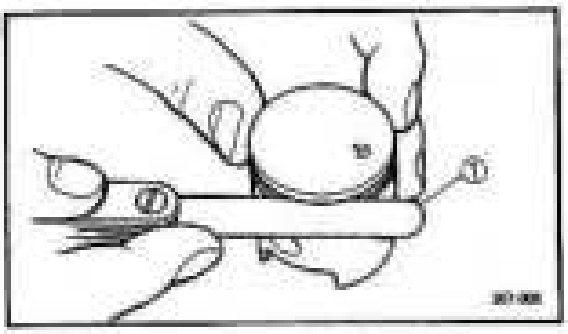
3rd step:

•Calculate the piston-to-cylinder clearance with following formula:

Piston-to-cylinder Clearance =
Cylinder Bore "C" –
Piston Skirt Diameter "P"

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

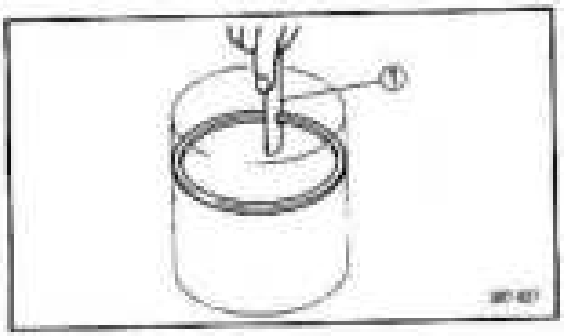
Piston-to-cylinder Clearance:
0.050 – 0.055 mm
(0.0019 – 0.0021 in)
Limit: 0.1 mm (0.004 in)



PISTON RINGS

1. Measure:
   •Side clearance
   Out of specification → Replace piston and/or rings.
   Use a Feeler Gauge ①.

Side Clearance	Top	0.020 – 0.060 mm (0.0008 – 0.0024 in)
	2nd	0.030 – 0.060 mm (0.0012 – 0.0024 in)



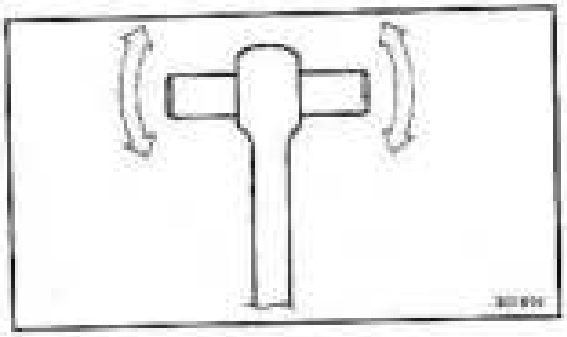
2. Install:
   •Piston ring
   (into the cylinder)
   Push the ring with the piston crown.
3. Measure:
   •End gap
   Out of specification→Replace rings as a set.
   Use a Feeler Gauge ①.

End Gap	Top	0.30 – 0.45 mm (0.012 – 0.018 in)
	2nd	0.30 – 0.45 mm (0.012 – 0.018 in)

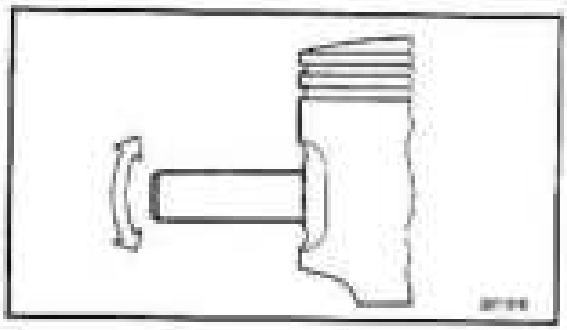
Oversize Piston Ring	
Oversize 1	25
Oversize 2	50

PISTON PIN AND BEARING

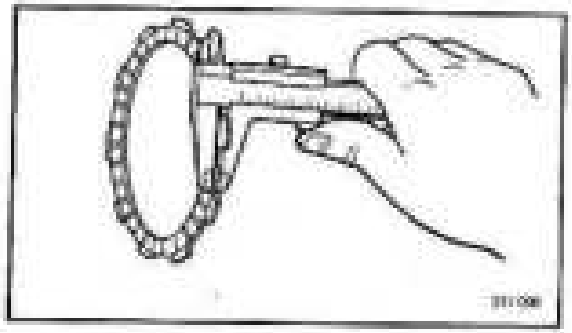
1. Lubricate:
   •Piston pin (Lightly)
2. Install:
   •Small end bearing
   •Piston pin
   (into the small end of connecting rod)



3. Check:
   •Free play
   There should be no noticeable for the play.
   Free play exists→Inspect the connecting rod for wear / Replace the pin and/or connecting rod as required.
4. Install:
   •Piston pin
   (into the piston pin hole)



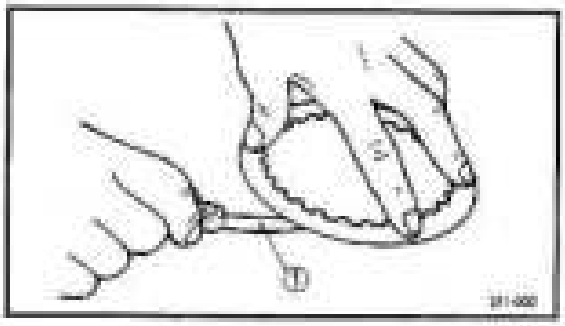
5. Check:
   • Free play (when the piston pin is in place in the piston)
   There should be no noticeable for the play.
   Free play exists → Replace piston pin and/or piston.
6. Inspect:
   • Piston pin and bearing
   Signs of heat discoloration → Replace.



CLUTCH

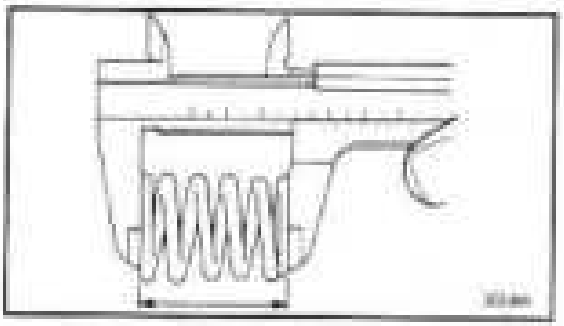
1. Inspect:
   • Friction plate
   Damage/Wear → Replace friction plate as a set.
2. Measure:
   • Friction plate thickness
   Out of specification → Replace friction plate as a set.
   Measure at all four point.

Wear Limit: 2.8 mm (0.11 in)



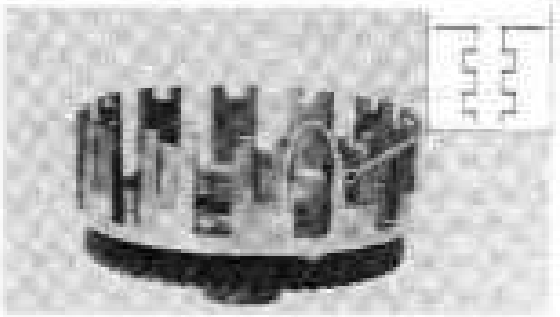
3. Inspect:
   • Clutch plate
   Damage → Replace clutch plate as a set.
4. Measure:
   • Clutch plate warpage
   Out of specification → Replace clutch plate as a set.
   Use a surface plate and Feeler Gauge ①.

Warp Limit: 0.1 mm (0.004 in)



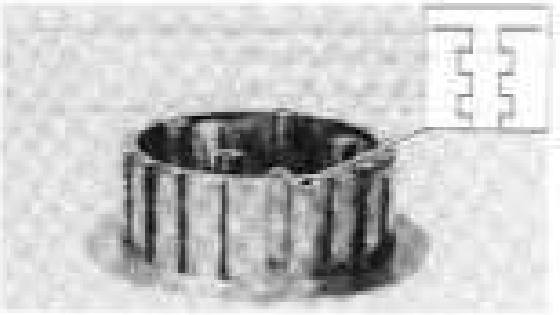
5. Measure:
   •Clutch spring free length
   Out of specification→Replace spring as a set.

Clutch Spring Minimum Length:
32.9 mm (1.295 in)



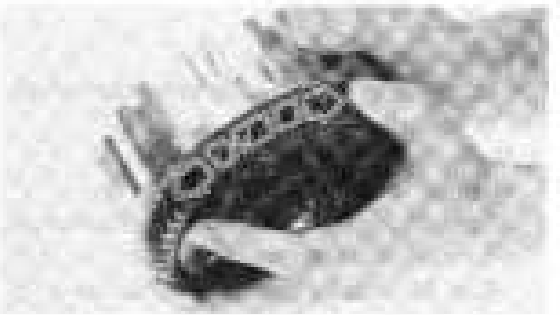
6. Inspect:
   •Dogs on the clutch housing
   Cracks/Wear/Damage→Deburr or replace.
   •Clutch housing bearing
   Scoring/Wear/Damage→Replace clutch housing.

NOTE:
Scoring on the clutch housing dogs will cause erratic operation.

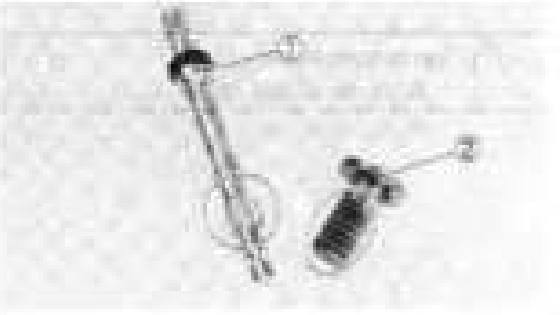


7. Inspect:
   •Clutch boss splines
   Scoring/Wear/Damage→Replace clutch boss.

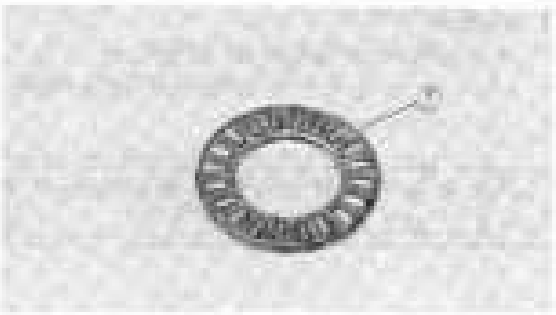
NOTE:
Scoring on the clutch boss splines will cause erratic operation.



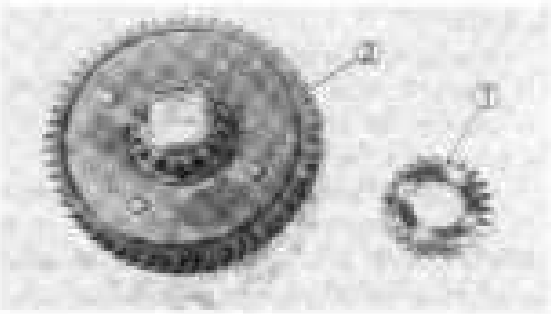
8. Check:
   •Circumferential play
   Free play exists→Replace.



9. Inspect:
   •Pull lever ①
   •Pull rod ②
   Wear/Damage→Replace.

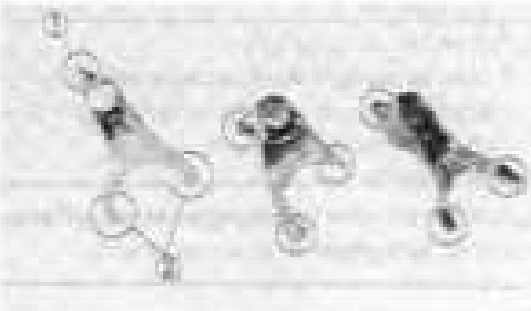


10. Inspect:
- Bearing ① (Pull rod)
Wear/Damage→Replace.



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.

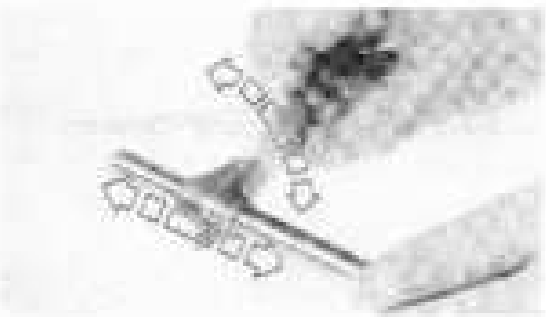


TRANSMISSION AND SHIFTER

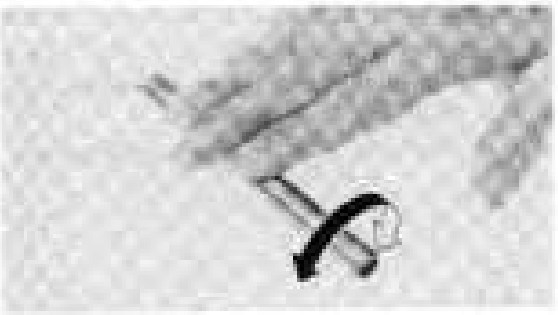
1. Inspect:
- Shift fork cam follower ①
- Shift fork pawl ②
Scoring/Bends/Wear→Replace.



2. Inspect:
- Shift cam groove
- Shift cam segment
Wear/Damage→Replace.



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



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

WARNING:

Do not attempt to straighten a bent guide bar.

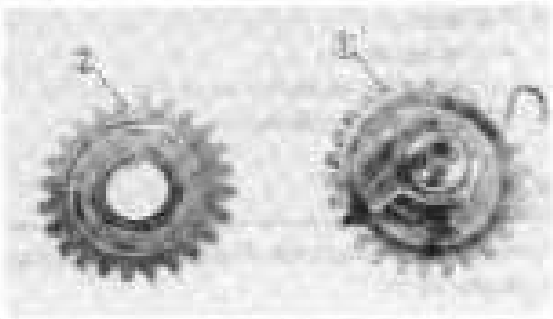
5. Measure:
   •Axle runout
   Use centering device and dial gauge.
   Out of specification→Replace bent axle.

Runout Limit:
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)
   Incorrect→Reassemble.
   •Gear movement
   Roughness→Replace.

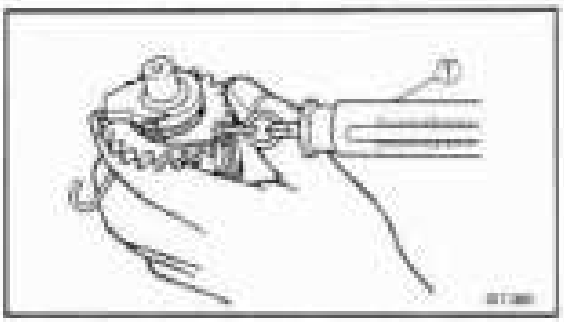
8. Inspect:
   •Circlips
   Damage/Looseness/Bends→Replace.



KICK STARTER

1. Inspect:
   - •Kick gear teeth ①
   - •Kick idle gear teeth ②

   Damage/wear→Replace both gears.



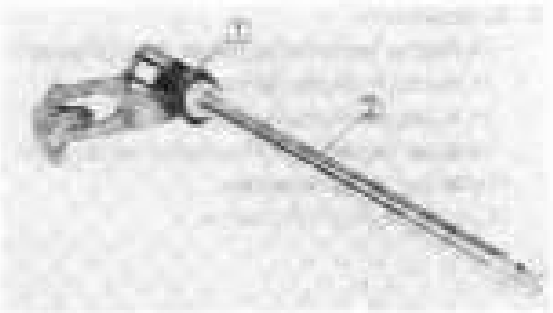
2. Measure:
   - •Kick clip tension

   Out of specification→Replace.
   Use a spring balance ①.

Kick Clip Tension:
0.8–1.3 kg (1.76–2.87 lb)

CAUTION:

Do not try to bend the clip.

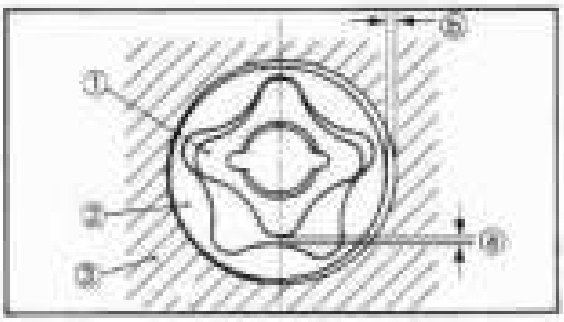


SHIFT SHAFT

1. Inspect:
   - •Spring ①

   Damage→Replace.
   - •Shift shaft ②

   Damage/Bends/Wear→Replace.



OIL PUMP

1. Measure:
   - •Tip clearance ⓐ

   (between inner rotor ① and outer rotor ②)
   - •Side clearance ⓑ

   (between outer rotor ② and pump housing ③)

   Out of specifications→Replace oil pump.

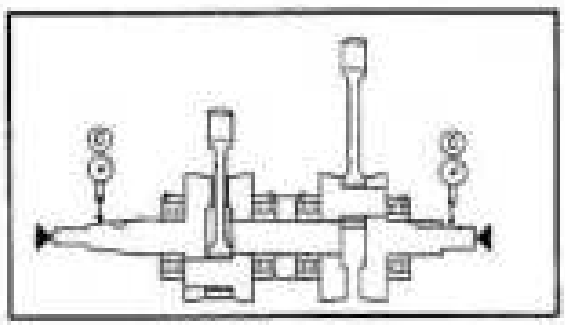
Oil Pump Clearance:	
Tip Clearance <Limit>	0.10 – 0.15 mm (0.004 – 0.006 in) <0.17 mm (0.007 in)>
Side Clearance <Limit>	0.04 – 0.09 mm (0.002 – 0.004 in) <0.12 mm (0.005 in)>

AUTOLUBE PUMP

Wear or an internal malfunction may cause pump output to vary from the factory setting. This situation is, however, extremely rare. If improper output is suspected, inspect the following:

1. Inspect:
   - Delivery line
     Obstructions → Blow out.
   - Pump body seal/Crankcase cover seal
     Wear/Damage → Replace.
   - Check ball/Spring
     Miss/Improper → Repair.
2. Inspect:
   - Allowing air
     Air exists → Air bleed.
3. Check:
   - Pump output
     Out of specification → Adjust.

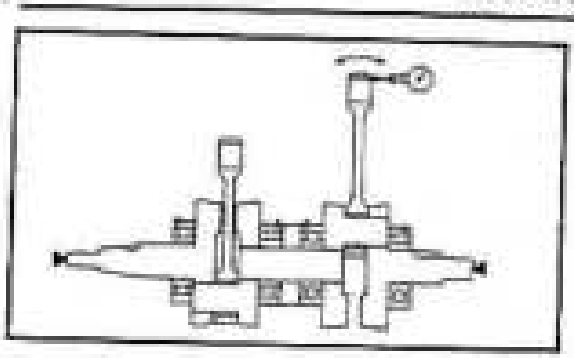
Minimum Output/200 Stroke:
0.75 – 1.00 cm^3 (0.026 – 0.035 Imp oz, 0.025 – 0.034 US oz)
Maximum Output/200 Stroke:
10.3 – 11.4 cm^3 (0.36 – 0.40 Imp oz, 0.35 – 0.39 US oz)

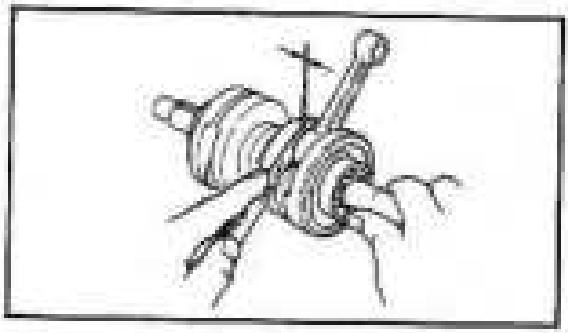


CRANKSHAFT

1. Measure:
   - Runout
     Use a centering device and Dial Gauge.
     Out of specification → Replace or repair.

Runout Limit:
0.03 mm (0.0012 in)





2. Measure:
   •Small end free play
   Use a Dial Gauge
   Out of specification→Replace the defective parts.

Small End Free Play:
0.4 ~ 0.6 mm (0.016 ~ 0.024 in)
<Limit>:
<1.0 mm (0.039 in)>

3. Measure:
   •Big end side clearance
   Use a Feeler Gauge.
   Out of specification→Replace the defective parts.

Big End Side Clearance:
0.25 ~ 0.75 mm (0.010 ~ 0.030 in)
<Limit>:
<1.0 mm (0.039 in)>

4. Inspect:
   •Crankshaft bearing
   Pitting/Damage→Replace.

NOTE:

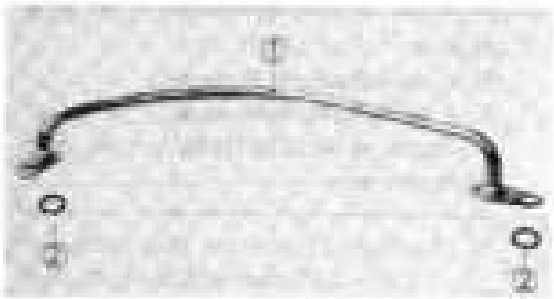
Lubricate the bearing immediately after examining them to prevent rust.

5. Inspect:
   •Stopper rings
   Bend/Damage→Replace.
   •Oil seals
   Wear/Damage→Replace.

CRANKCASE

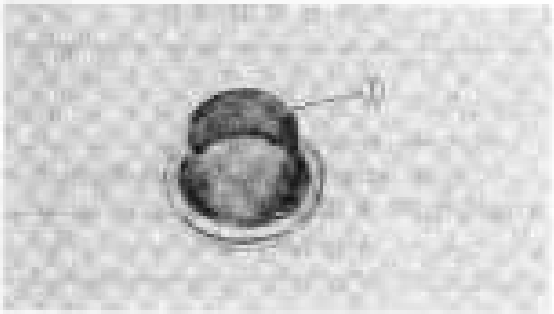
1. Thoroughly wash the case halves in mild solvent.
2. Clean all the gasket mating surfaces and crankcase mating surfaces thoroughly.

3. Inspect:
   - Crankcase
     Cracks/Damage → Replace.
   - Oil delivery passages
     Clog → Blow out with compressed air.



OIL PIPE AND STRAINER

1. Inspect:
   - Oil delivery pipe ①
     Cracks/Damage → Replace.
     Clog → Blow out with compressed air.
   - O-rings ②
     Damage → Replace.



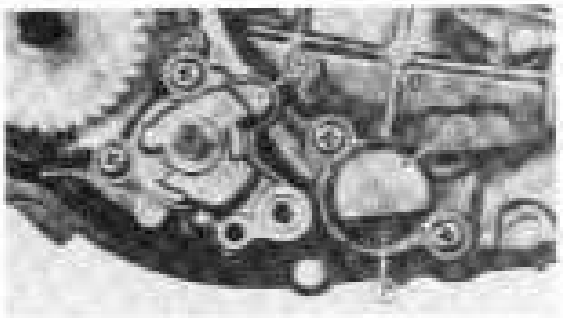
2. Inspect:
   - Oil strainer ①
     Damage → Replace.



POWER VALVE

1. Remove:
   - Score marks and lacquer deposits
     From curved surface (especially cleaning groove ①).

2. Inspect:
   - O-rings
   - Bushes
   - Oil seals
     Wear/Damage → Replace.

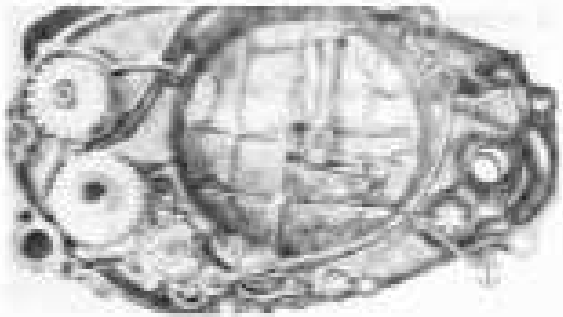


ENGINE ASSEMBLY AND ADJUSTMENT

OIL PUMP AND STRAINER

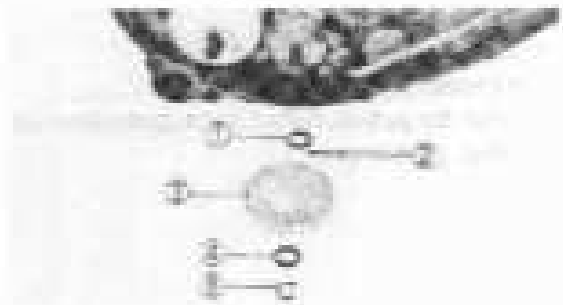
1. Install:
   - Strainer ①
   - Strainer cover ②
   - Oil pump ③

	Screws (Strainer Cover): 5 Nm (0.5 m•kg, 3.6 ft•lb) Use LOCTITE®.
	Screws (Oil Pump): 5 Nm (0.5 m•kg, 3.6 ft•lb) Use LOCTITE®.



2. Install:
   - O-rings
   - Oil delivery pipe ①

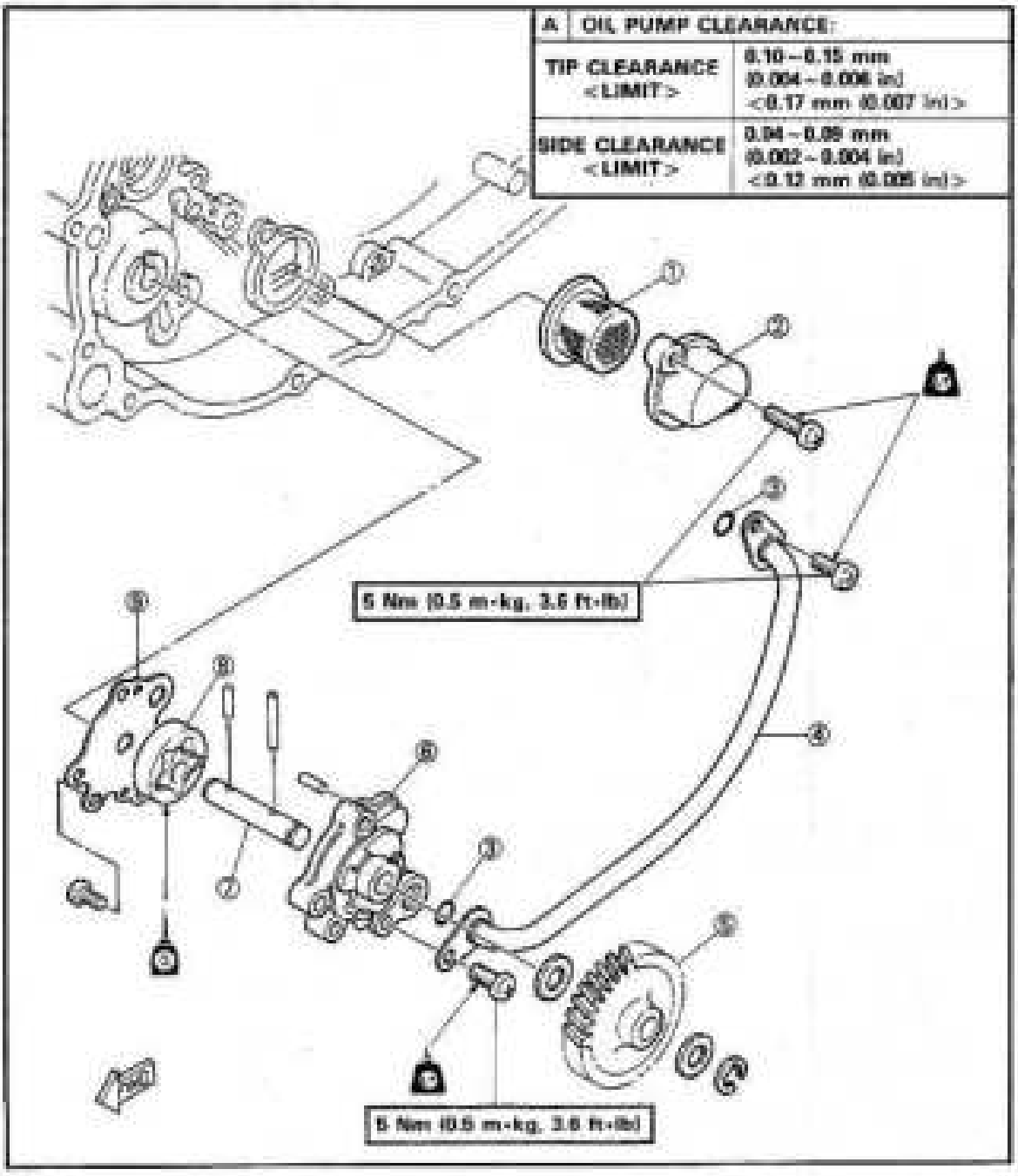
	Screws (Oil Delivery Pipe): 5 Nm (0.5 m•kg, 3.6 ft•lb) Use LOCTITE®.

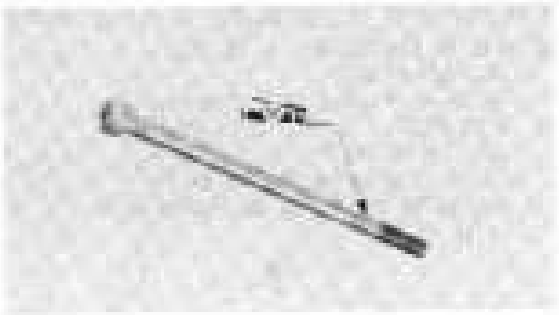


3. Install:
   - Washer ①
   - Pin ②
   - Oil pump gear ③
   - Washer ④
   - Circlip ⑤

OIL PUMP AND STRAINER

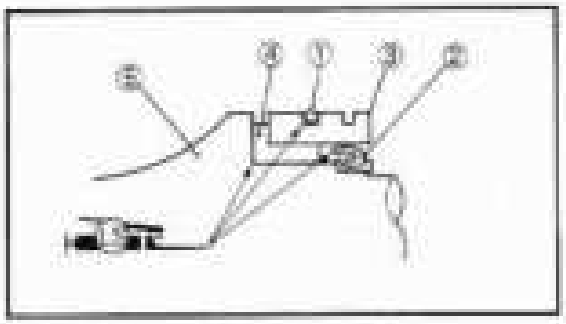
① Strainer
② Strainer housing
③ O-ring
④ Oil delivery pipe
⑤ Oil pump gear
⑥ Oil pump housing
⑦ Shaft
⑧ Rotor
⑨ Oil pump cover





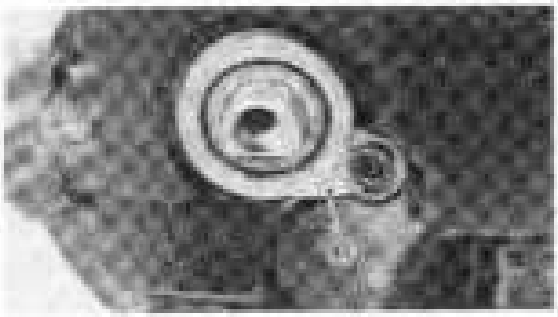
POWER VALVES

1. Apply:
   - Molybdenum disulfide grease
   To hexagon socket head bolts.



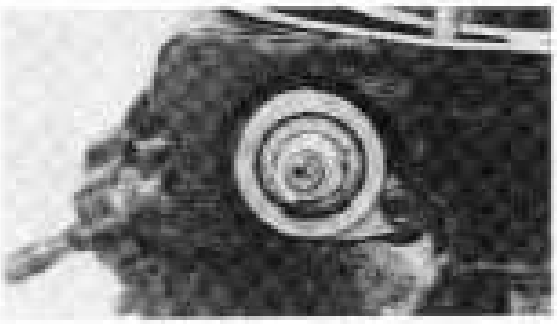
2. Apply:
   - Lithium soap base grease

① O-ring
② Oil seal
③ Holder
④ Solid bush
⑤ Power valve



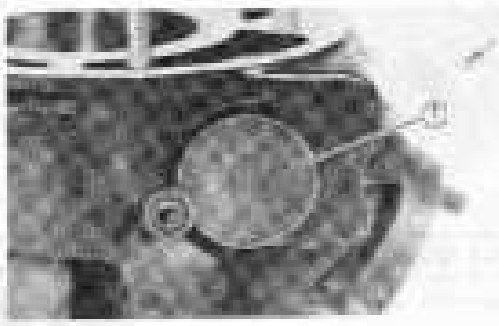
3. Install:
   - Half power valve (Left)
   - Knock pins
   - Half power valve (Right)
   - Thrust plate ①

	Bolt (Thrust Plate): **7 Nm (0.7 m•kg, 5.1 ft•lb)**



4. Tighten:
   - Bolt (Power valve)

	Bolt (Power Valve): **7 Nm (0.7 m•kg, 5.1 ft•lb)**

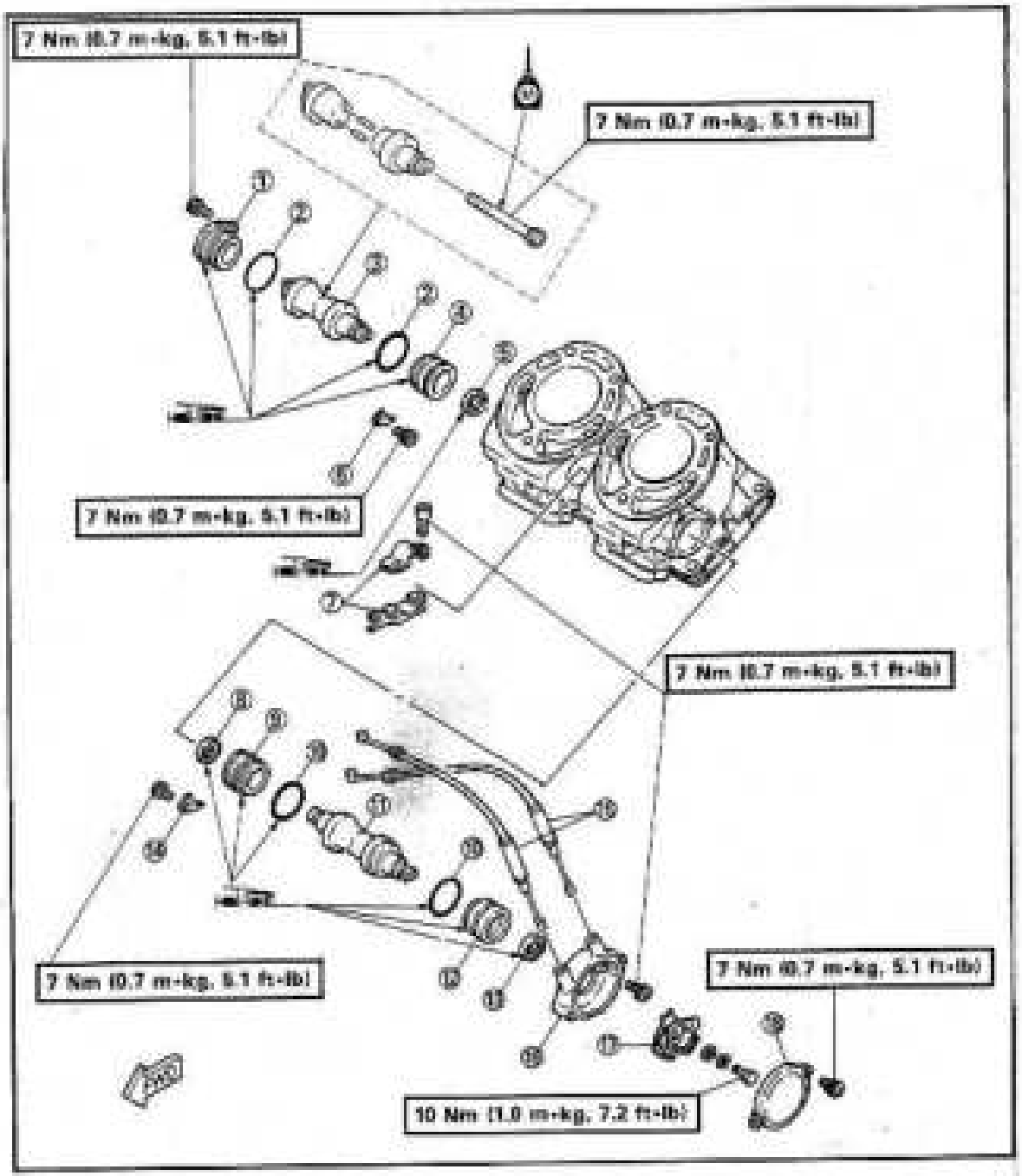


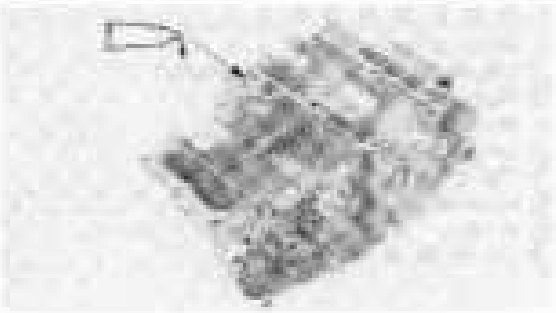
5. Install:
   - Power valve holder ①

	Bolt (Power Valve Holder): **7 Nm (0.7 m•kg, 5.1 ft•lb)**

POWER VALVE

1. Power valve holder
2. O-ring
3. Power valve (Right-hand)
4. Power valve holder
5. Oil seal
6. Thrust plate
7. Joint
8. Oil seal
9. Power valve holder
10. O-ring
11. Power valve (Left-hand)
12. Holder
13. Oil seal
14. Thrust plate
15. Y.P.V.S. cable
16. Pulley housing
17. Pulley
18. Pulley cover



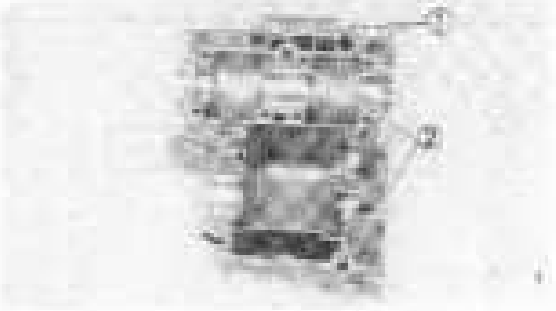


TRANSMISSION, SHIFTER AND CRANKSHAFT

1. Apply:
   - Yamaha Bond No. 4

   To the mating surfaces of both crankcase halves.

	Yamaha Bond No. 4: **90890-06143**



2. Install:
   - O-rings ①
   - Dowel pins ②

   Onto the crankcase (Lower)



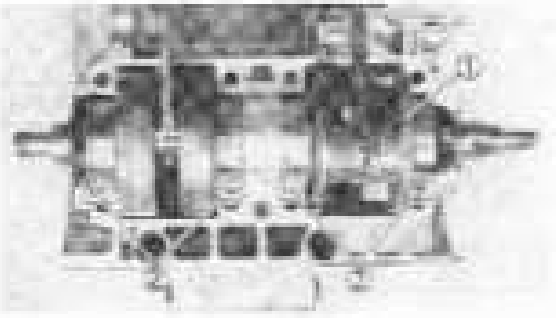
3. Install:
   - Stopper ring ①

   On the clutch side.

4. Apply:
   - Lithium soap base grease

   To the oil seal lips.
   - Engine oil

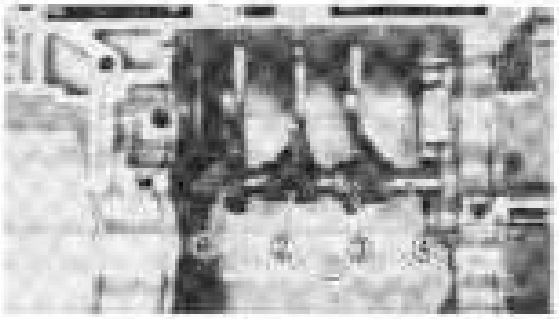
   To the bearings.



5. Install:
   - Crankshaft assembly ①

NOTE:

- Align the bearing knock pin ② with the pin slot in the crankcase lower half.
- Be sure the stopper ring is fitted to the bearing and the stopper ring have been positioned in the ring groove.



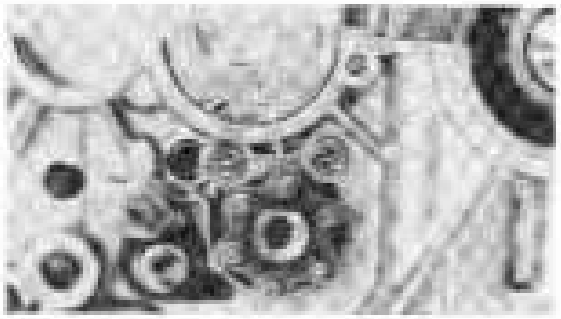
6. Install:
   - Shift fork #1 ①
   - Shift fork #2 ②
   - Shift fork #3 ③
   - Guide bar ④



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



7. Install:
   - Shift cam ①



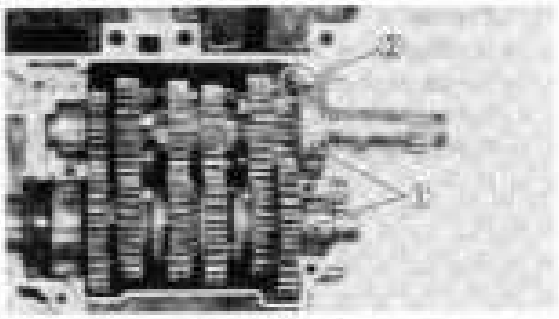
8. Install:
   - Stopper plate ① (Shift cam)

Screws (Stopper Plate):
8 Nm (0.8 m•kg, 5.8 ft•lb)
Use LOCTITE®.

NOTE:
Be sure the stopper plate is fitted in the groove of the shift cam.



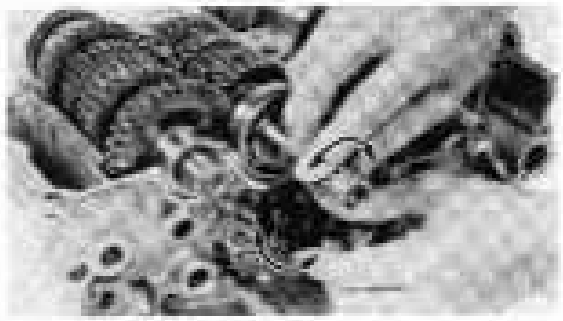
9. Install:
   - Stopper rings ①



10. Install:
    • Transmission assembly ①

NOTE:

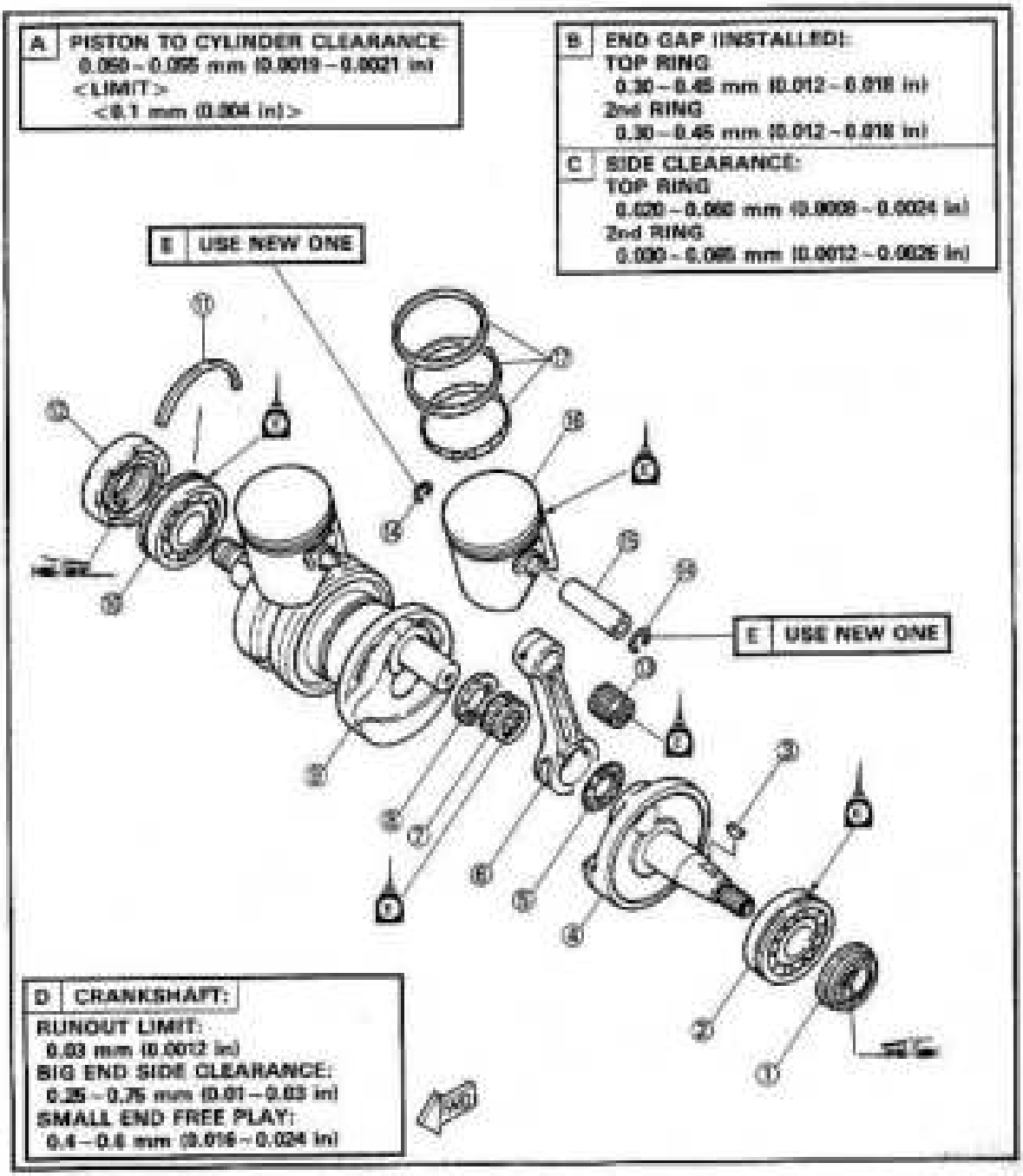
- Align the bearing knock pin ② with the pin slot in the crankcase lower half.
- Be sure the stopper ring is fitted to the bearing and the stopper ring have been positioned in the ring groove.



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

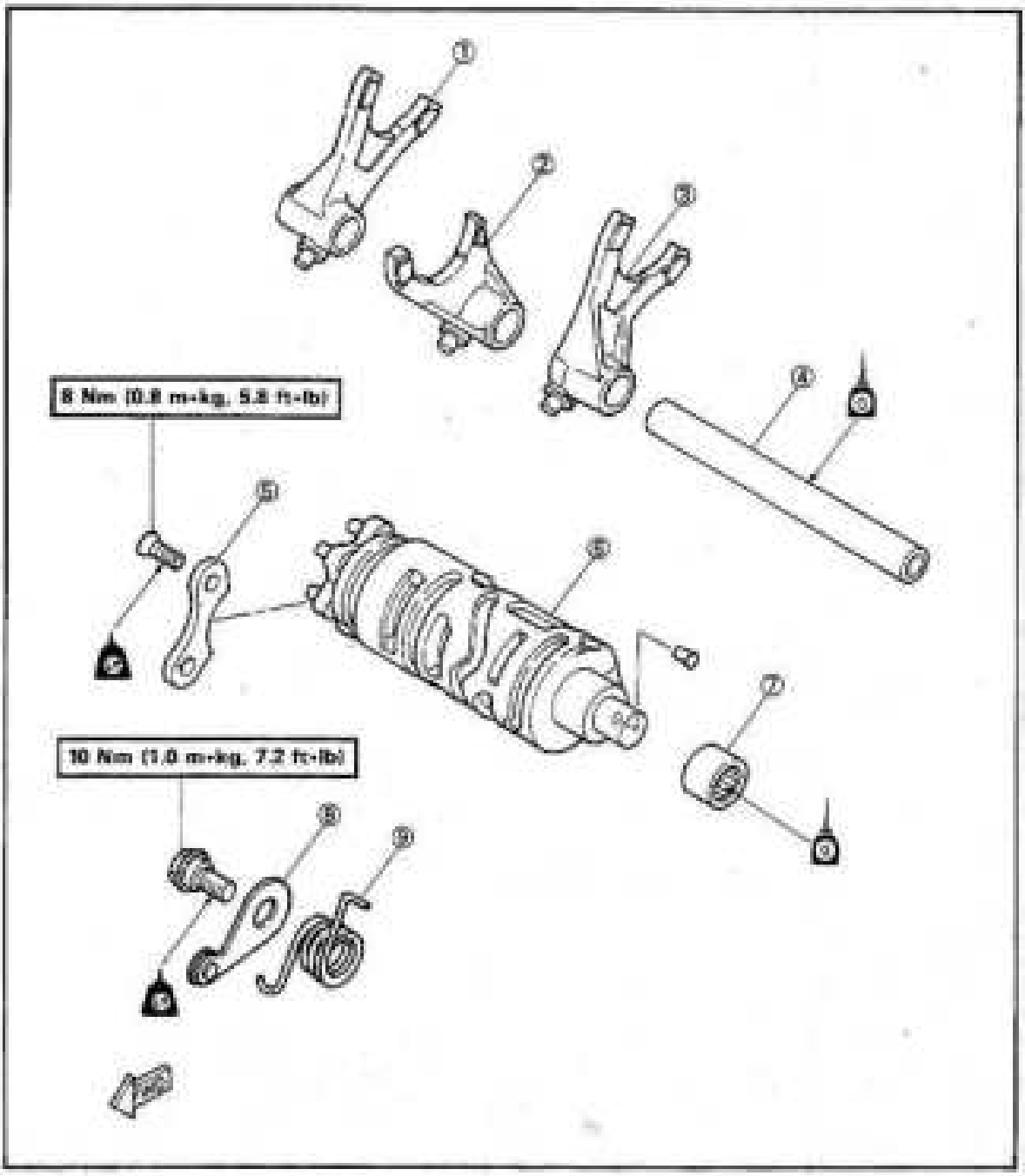
CRANKSHAFT, PISTON AND PISTON RING

① Oil seal
② Bearing
③ Woodruff key
④ Crank (Left)
⑤ Washer
⑥ Connecting rod
⑦ Big end bearing
⑧ Washer
⑨ Crank (Right)
⑩ Bearing
⑪ Circlip
⑫ Oil seal
⑬ Small end bearing
⑭ Piston pin clip
⑮ Piston pin
⑯ Piston
⑰ Piston ring set



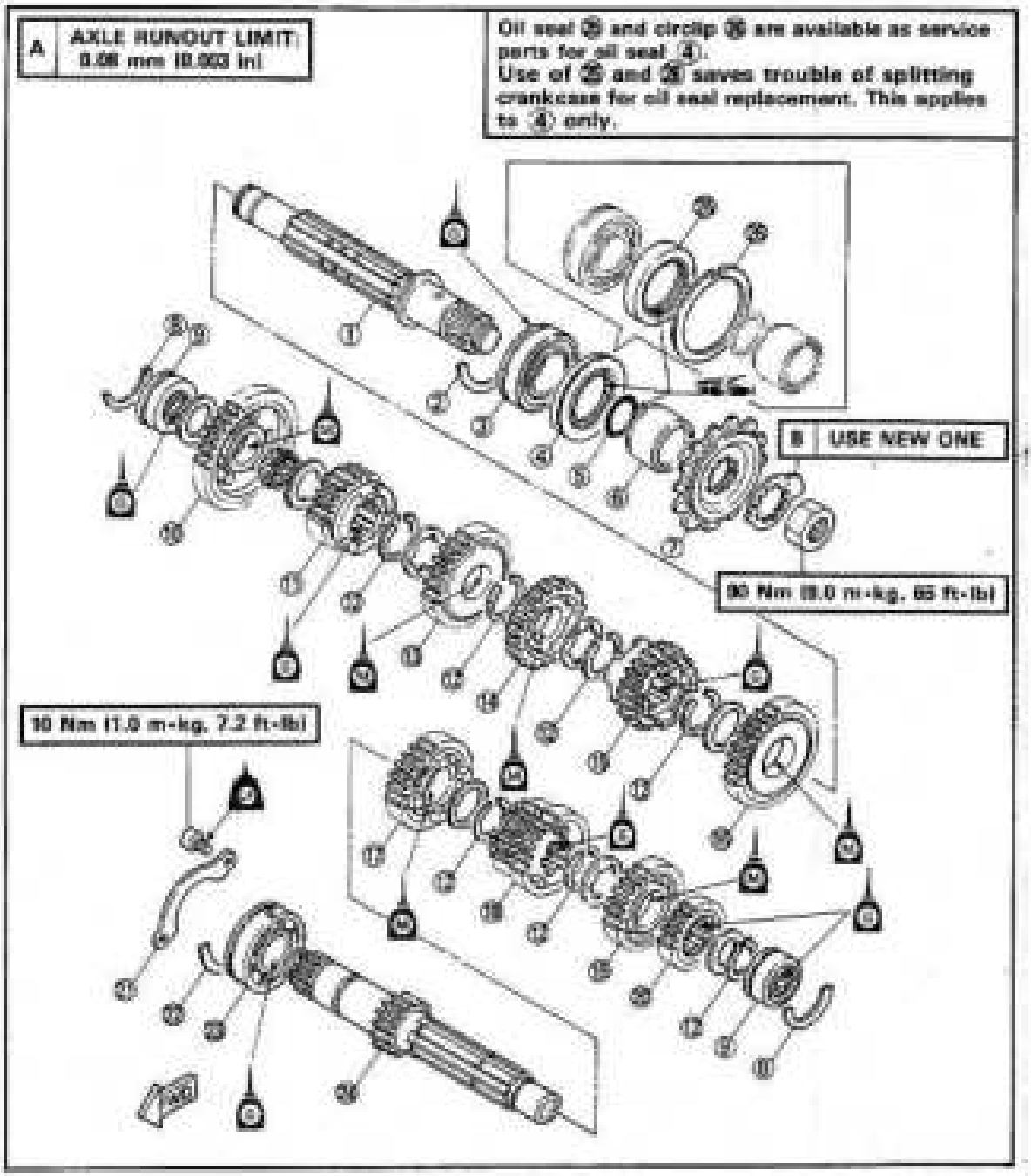
SHIFTER

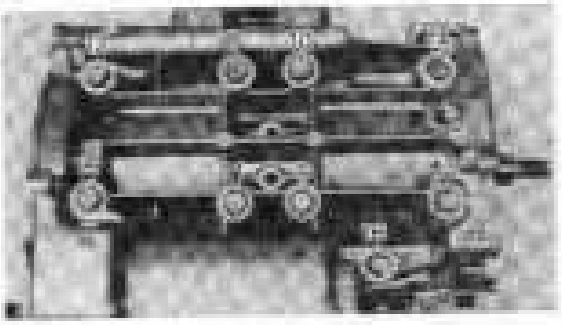
1. Shift fork #3
2. Shift fork #2
3. Shift fork #1
4. Guide bar
5. Stopper plate
6. Shift cam
7. Bearing
8. Stopper lever
9. Return spring

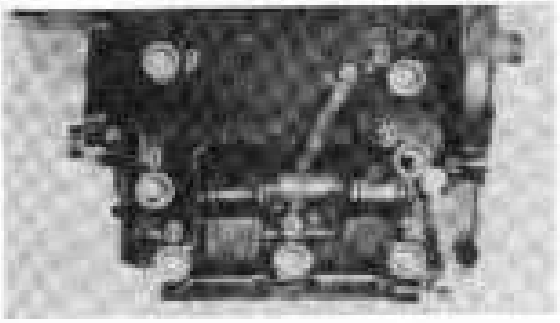


TRANSMISSION

1. Drive axle
2. Stopper ring
3. Bearing
4. Oil seal
5. O-ring
6. Collar
7. Drive sprocket
8. Stopper ring
9. Bearing
10. 1st wheel gear
11. 6th wheel gear
12. Circlip
13. 3rd wheel gear
14. 4th wheel gear
15. 5th wheel gear
16. 2nd wheel gear
17. 6th pinion gear
18. 3rd/4th pinion gear
19. 5th pinion gear
20. 2nd pinion gear
21. Bearing holder
22. Stopper ring
23. Bearing
24. Main axle
25. Oil seal
26. Circlip



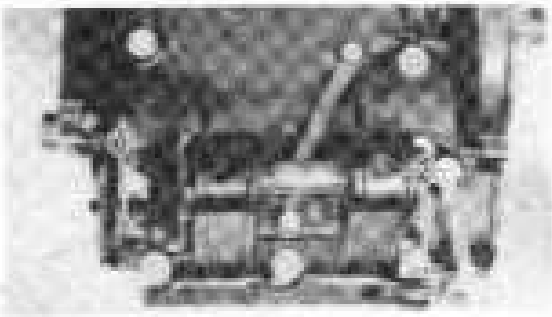




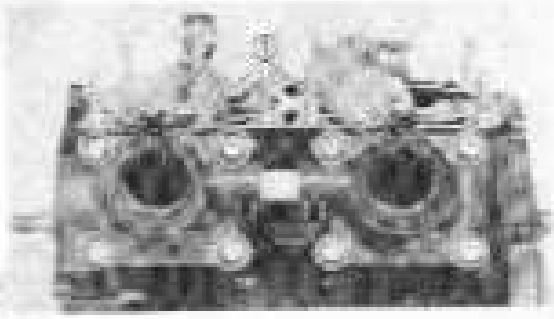
CRANKCASE (UPPER)

1. Install:
   - Crankcase (Upper)

Bolts tightening steps: •Temporarily tighten ① to ⑦ and next ⑧ to ⑮, in that order. •Tighten ① to ⑦.
5 Nm (0.5 m•kg, 3.6 ft•lb)
•Tighten ⑧ to ⑮.
10 Nm (1.0 m•kg, 7.2 ft•lb)
•Tighten ⑧ to ⑮.
24 Nm (2.4 m•kg, 17 ft•lb)
•Tighten ① to ⑦ and ⑯.
10 Nm (1.0 m•kg, 7.2 ft•lb)

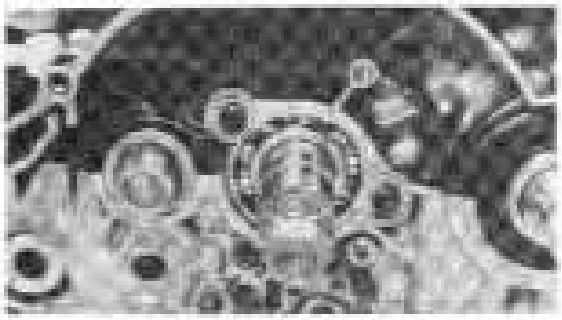


NOTE:
Install the clamp ① on the bolt No.4 and the clamp ② on the bolt No.7 as shown.



2. Install:
   - Gaskets
   - Spacers
   - Reed valves
   - Carburetor joints ①

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



3. Install:
   •Bearing holder ①

Bolts (Bearing Holder):
10 Nm (1.0 m•kg, 7.2 ft•lb)
Use LOCTITE®.



C.D.I. MAGNETO
1. Install:
   •Stator coil ①
   •Pickup coil ②

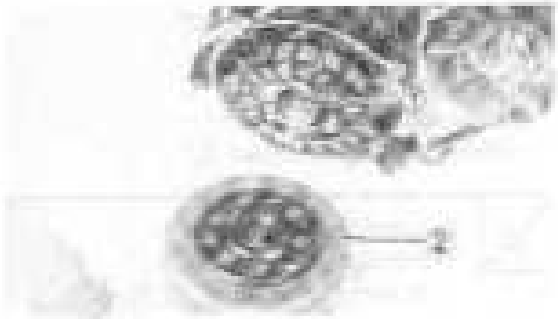
Screws (Stator Coil):
7 Nm (0.7 m•kg, 5.1 ft•lb)
Use LOCTITE®.
Screws (Pickup Coil)
5 Nm (0.5 m•kg, 3.6 ft•lb)
Use LOCTITE®.



NOTE:
Clamp the C.D.I. magneto leads with the clamps ①

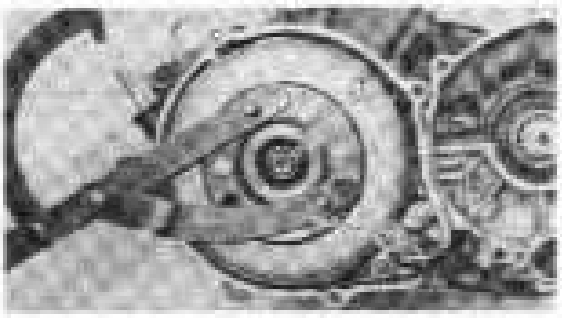


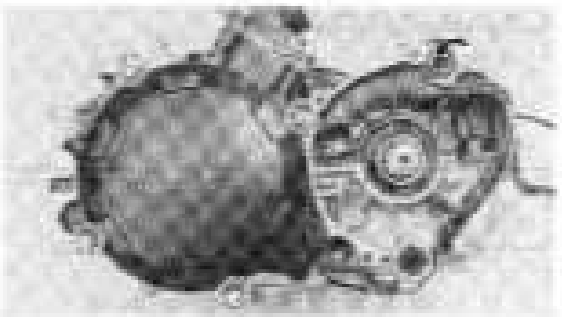
2. Install:
   •Neutral switch lead ①



3. Install:
   •Woodruff key ①
   •Rotor ②

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





4. Tighten:
   •Nut ① (Rotor)

NOTE:

Hold the rotor to tighten the nut by the Universal Rotor Holder ②.

	Universal Rotor Holder: **90890-01235**
	Nut (Rotor): **80 Nm (8.0 m•kg, 58 ft•lb)**

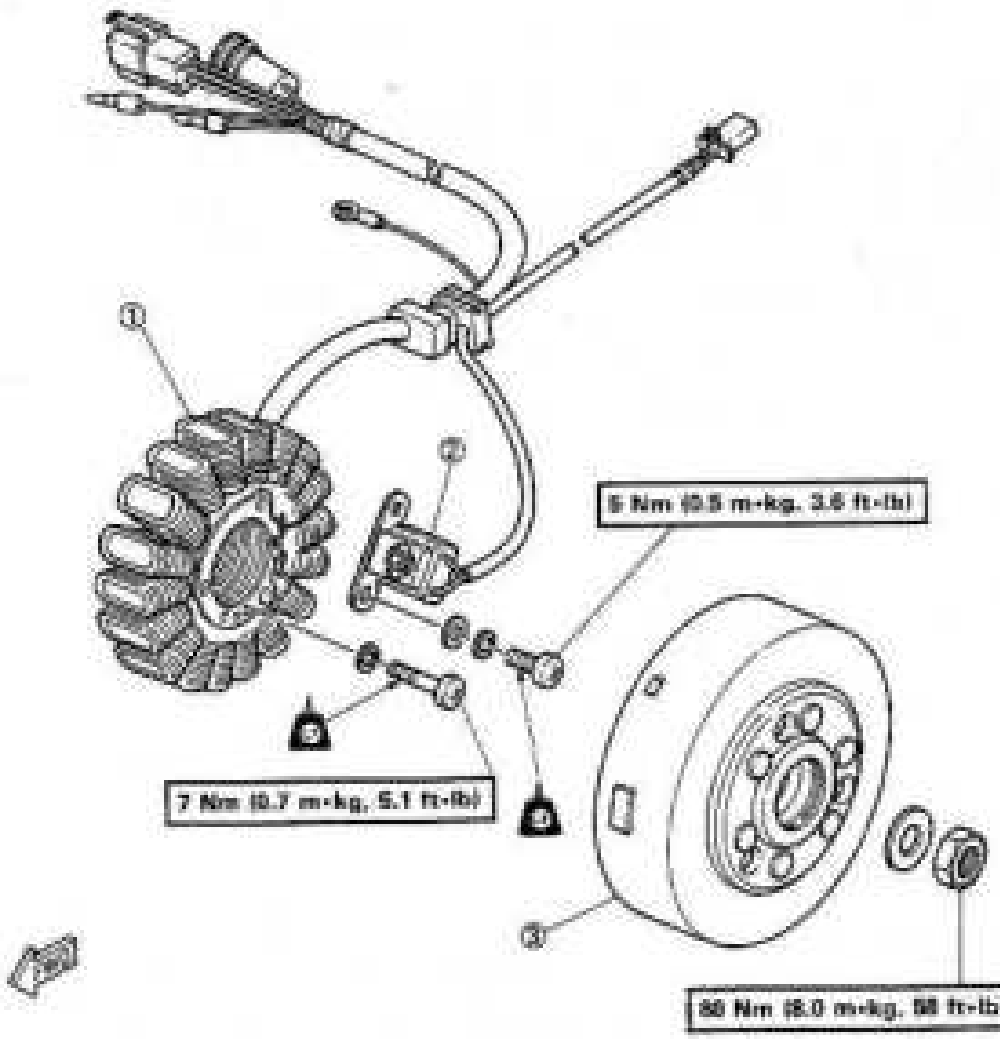
5. Install:
   •A.C. generator cover ①

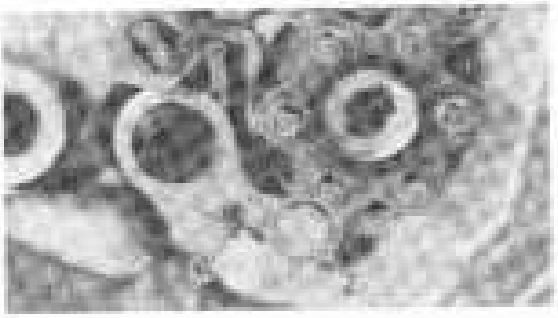
	Bolts (A.C. generator Cover): **5 Nm (0.5 m•kg, 3.6 ft•lb)**

C.D.I. MAGNETO

1. Stator coil
2. Pickup coil
3. Rotor

A	STATOR COIL RESISTANCE: 0.44 – 0.66Ω at 20°C (68°F) (White – White)
B	PICKUP COIL RESISTANCE: 94 – 140Ω at 20°C (68°F) (White/Green – White/Red)
C	SOURCE COIL (1) RESISTANCE: 128 – 193Ω at 20°C (68°F) (Green – Brown) SOURCE COIL (2) RESISTANCE: 3.6 – 5.4Ω at 20°C (68°F) (Brown – Red)





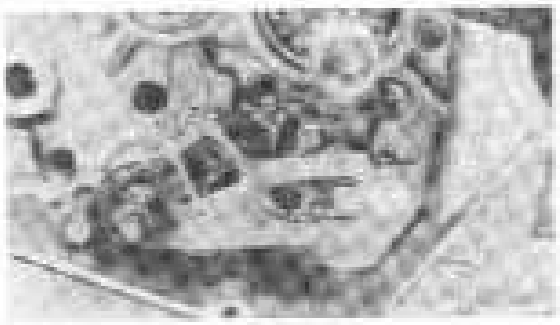
SHIFT SHAFT

1. Install:
   - Return spring ①
   - Stopper lever ②

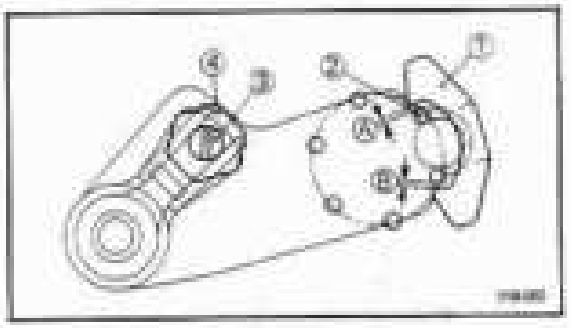
	Bolt (Stopper Lever): **10 Nm (1.0 m•kg, 7.2 ft•lb)** **Use LOCTITE®.**

NOTE:

Mesh the stopper lever with the shift cam.



2. Install:
   - Shift shaft ①



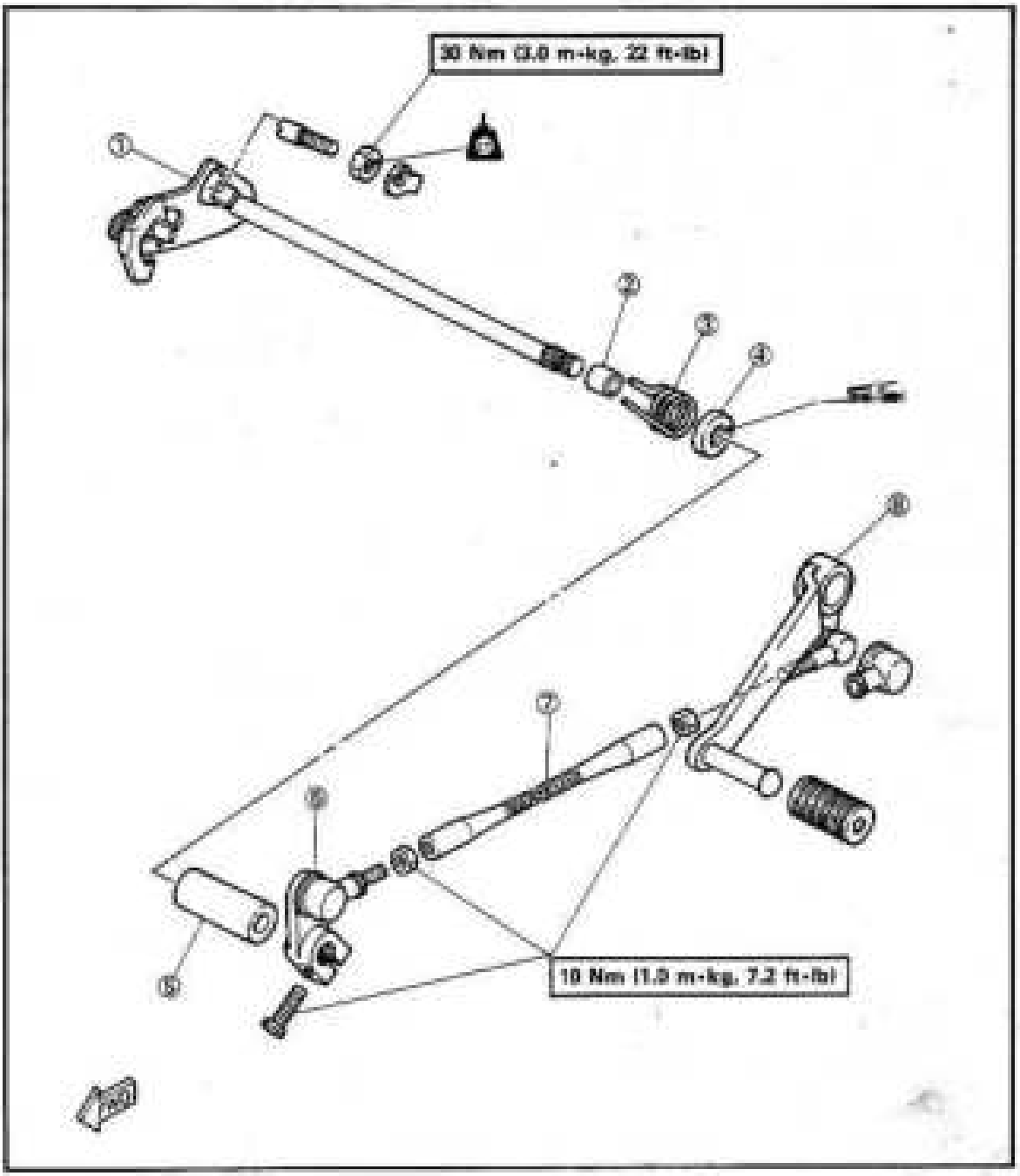
3. Check
   - Change lever position
     Gap Ⓐ and Ⓑ are not equal → Adjust.

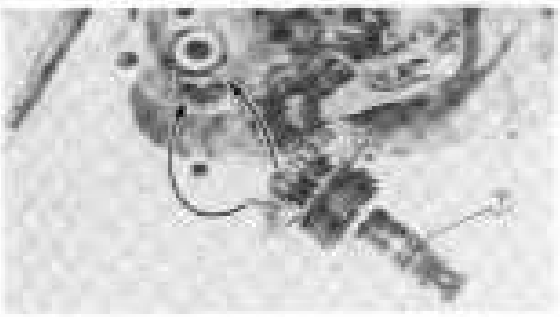
	Change lever position adjustment steps: •Straighten lock washer tab. •Loosen lock nut ①. •Turn adjuster ② in or out until gap Ⓐ and Ⓑ are equal. •Tighten lock nut.
	Nut: **30 Nm (3.0 m•kg, 22 ft•lb)** **Use LOCTITE®.**
	•Bend lock washer tab.

③ Segment
④ Change lever

SHIFT SHAFT AND CHANGE PEDAL

① Shift shaft
② Spacer
③ Torsion spring
④ Oil seal
⑤ Collar
⑥ Shift arm
⑦ Shift rod
⑧ Change pedal

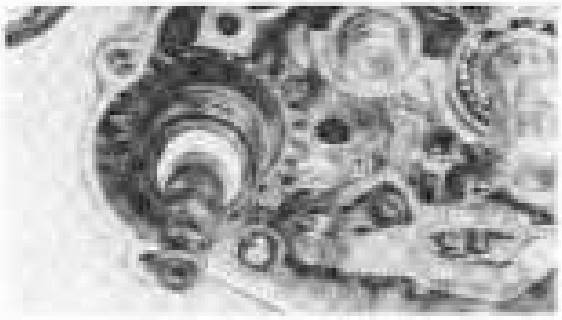




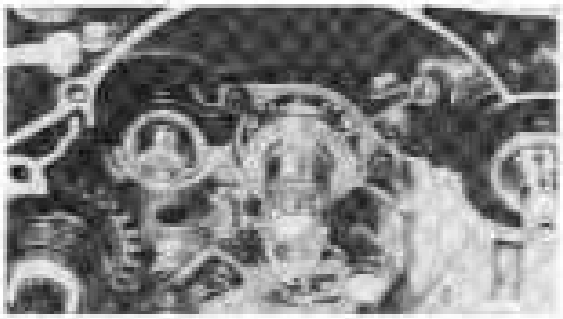
KICK AXLE AND KICK IDLE GEAR

1. Install:
   - Kick axle assembly ①

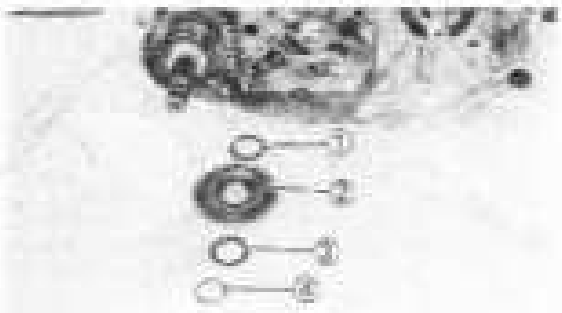
NOTE:
- Make sure that the kick stopper is stopped at the projection of the crankcase.
- Make sure that the kick clip is engaged with the crankcase hole.



2. Set the kick spring ① to the spring hook.



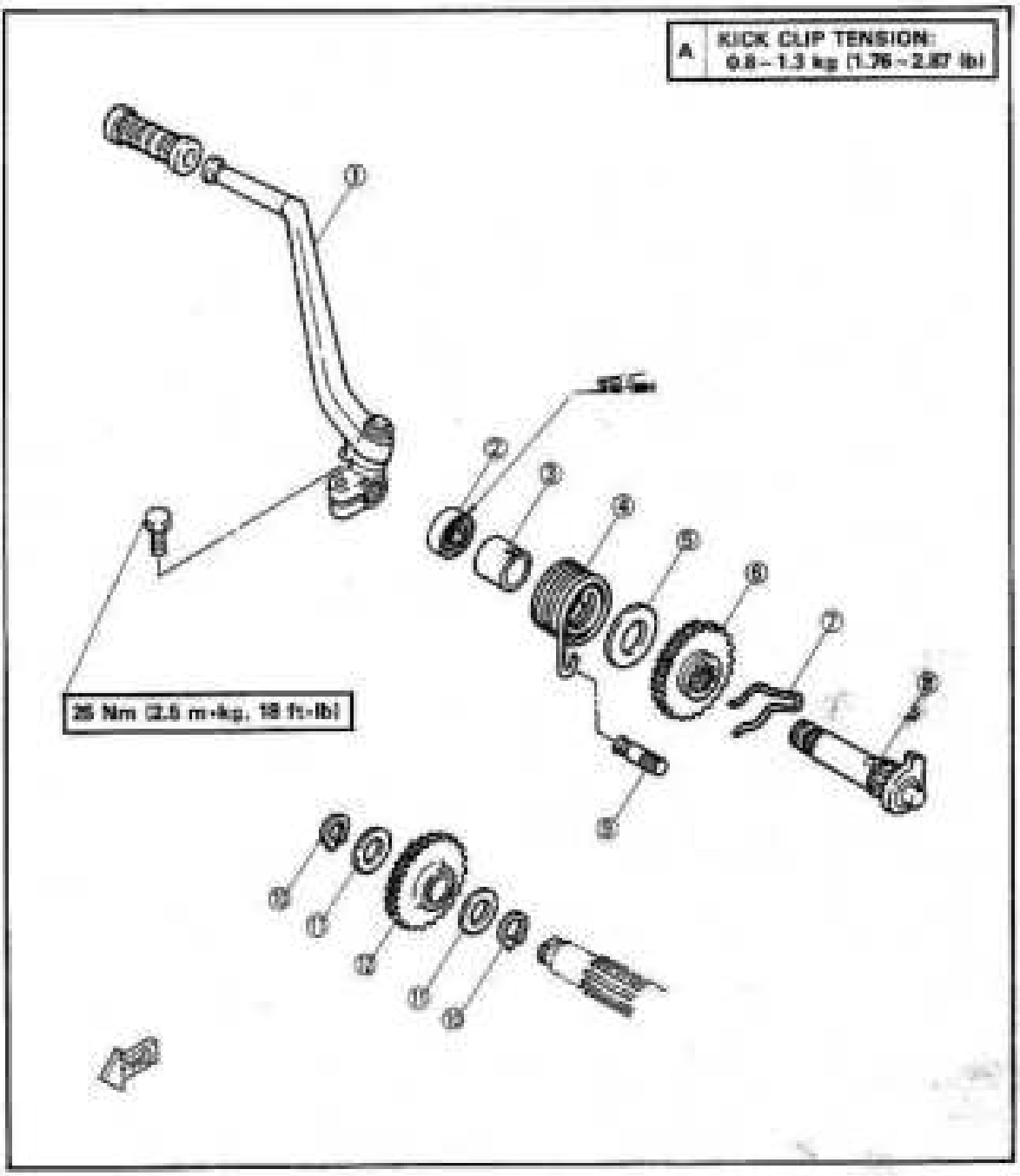
3. Install:
   - Thrust washer ① (Clutch housing)

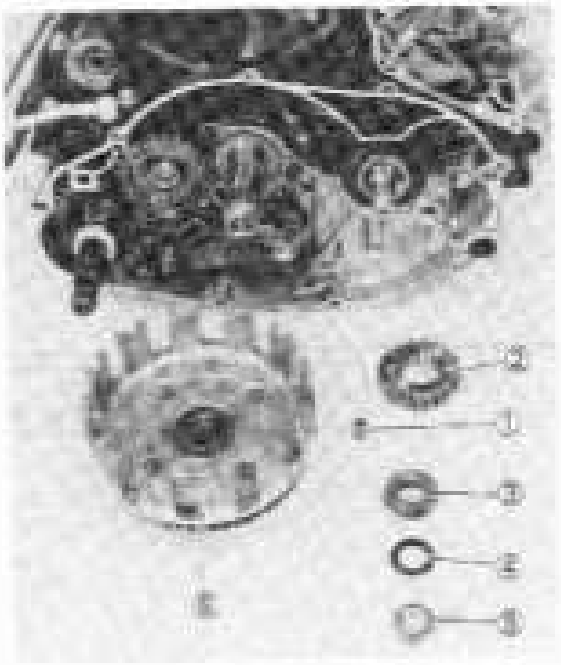


4. Install:
   - Washer ①
   - Kick idle gear ②
   - Washer ③
   - Circlip ④

KICK AXLE AND KICK IDLE GEAR

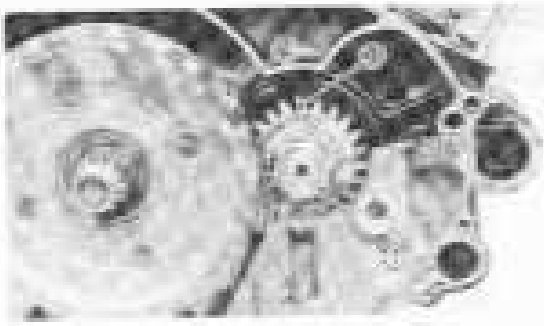
① Kick crank
② Oil seal
③ Spacer
④ Spring
⑤ Washer
⑥ Kick gear
⑦ Kick clip
⑧ Kick axle
⑨ Stopper
⑩ Circlip
⑪ Washer
⑫ Kick idle gear





CLUTCH AND PRIMARY DRIVE GEAR

1. Install:
   - Key ①
   - Primary drive gear ②
   - Water pump drive gear ③
   - Conical spring washer ④
   - Nut ⑤ (Primary drive gear)
   - Clutch housing ⑥

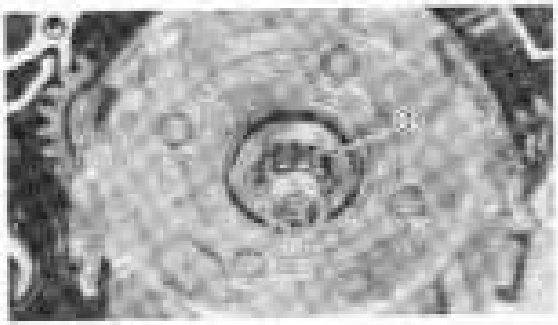


2. Tighten:
   - Nut ① (Primary drive gear)

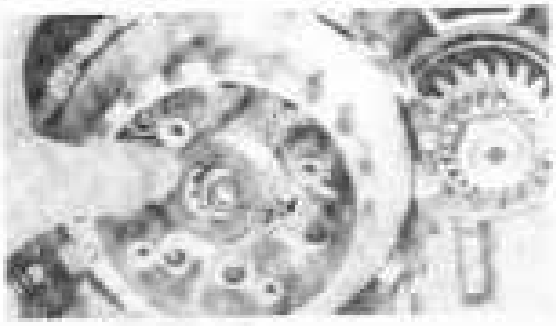
	Nut (Primary Drive Gear): 85 Nm (8.5 m•kg, 47 ft•lb)

NOTE:

Place a folded rag ② between the teeth of the drive gear ③ and driven gear ④ to lock them.



3. Install:
   - Thrust washer ①



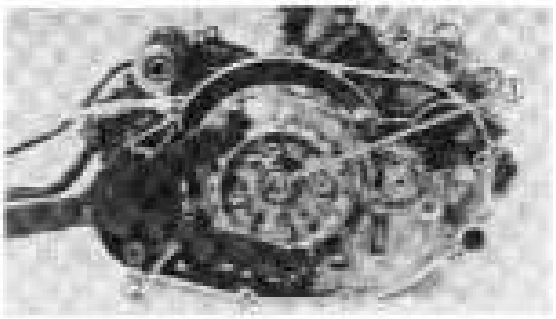
4. Install:
   - Clutch boss
   - Lock washer
   - Nut

NOTE:

Install the lock washer tab ① into the hole of the clutch boss.

WARNING:

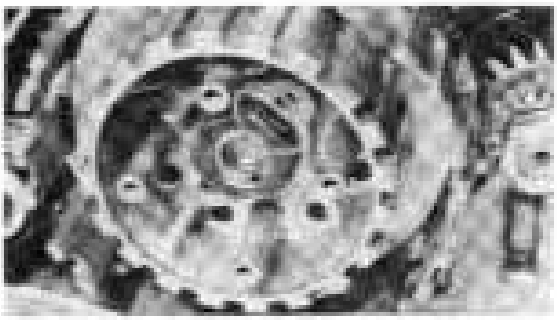
Always use a new lock washer.



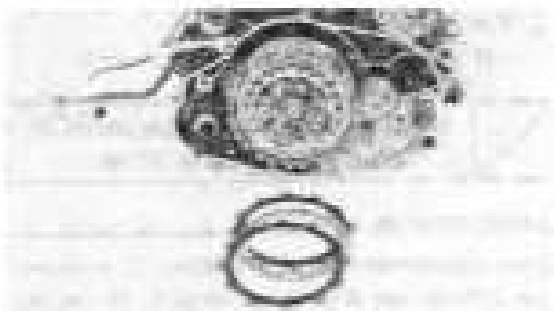
5. Tighten:
   •Nut ① (Clutch boss)

NOTE:
Hold the clutch boss to tighten the nut by the Universal Clutch Holder ②.

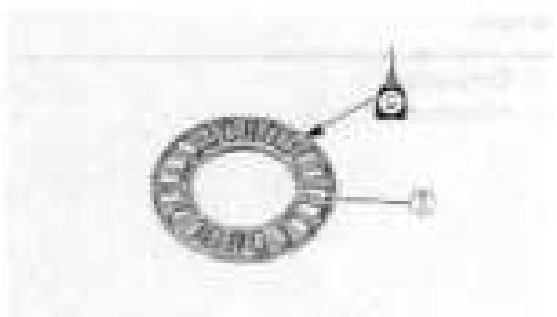
	Universal Clutch Holder: 90890-04086
	Nut (Clutch boss): 90 Nm (9.0 m•kg, 65 ft•lb)



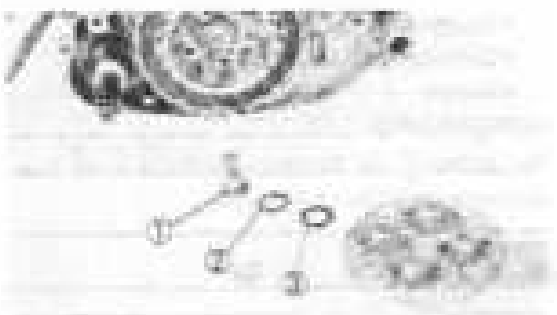
6. Bend the lock washer tab along the nut flats.



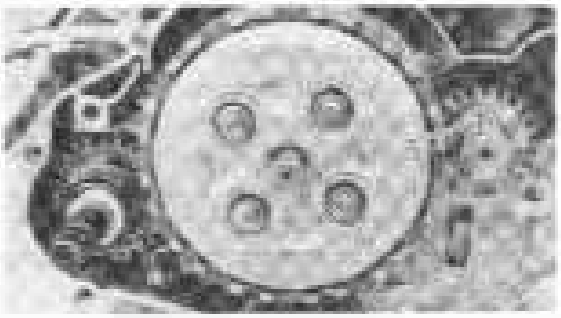
7. Install:
   •Friction plates
   •Clutch plates



8. Apply:
   •Gear oil
   To the bearing ①.

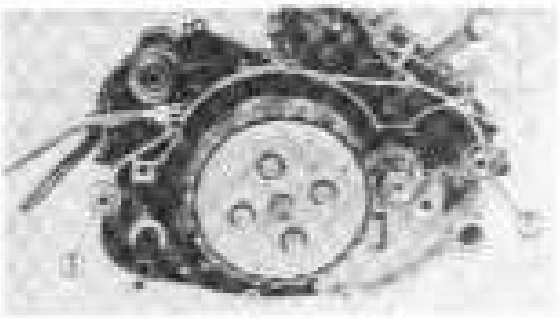


9. Install:
   •Pull rod ①
   •Bearing ②
   •Washer ③
   To the pressure plate.

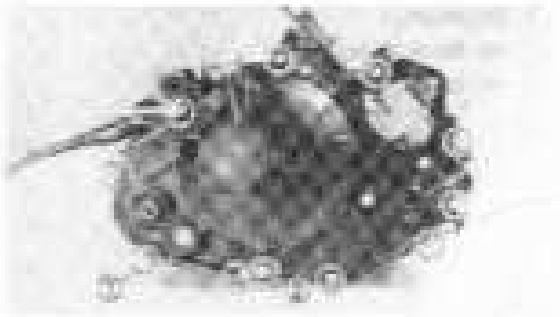


10. Install:
    - Pressure plate ①
    - Springs
    - Bolts

	Bolts (Pressure Plate): **7 Nm (0.7 m•kg, 5.1 ft•lb)**

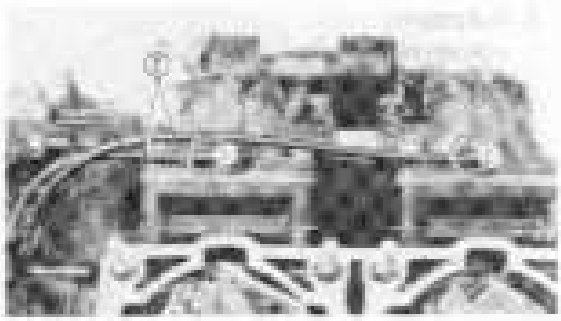


11. Install:
    - Dowel pins ①
    - Gasket (Crankcase cover)

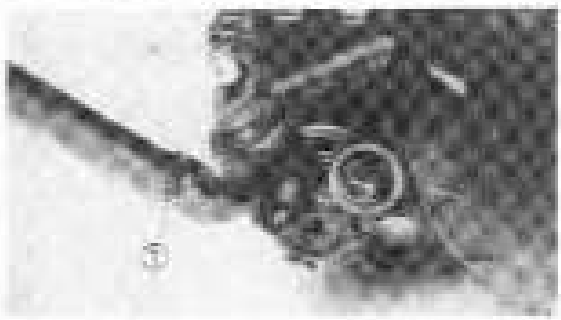


12. Install:
    - Crankcase cover (Right)

	Screws (Crankcase Cover): **10 Nm (1.0 m•kg, 7.2 ft•lb)** **Drain bolt ① (M10):** **22 Nm (2.2 m•kg, 16 ft•lb)** **Drain bolt ② (M8):** **16 Nm (1.6 m•kg, 11 ft•lb)**



13. Connect:
    - Oil delivery hoses ①

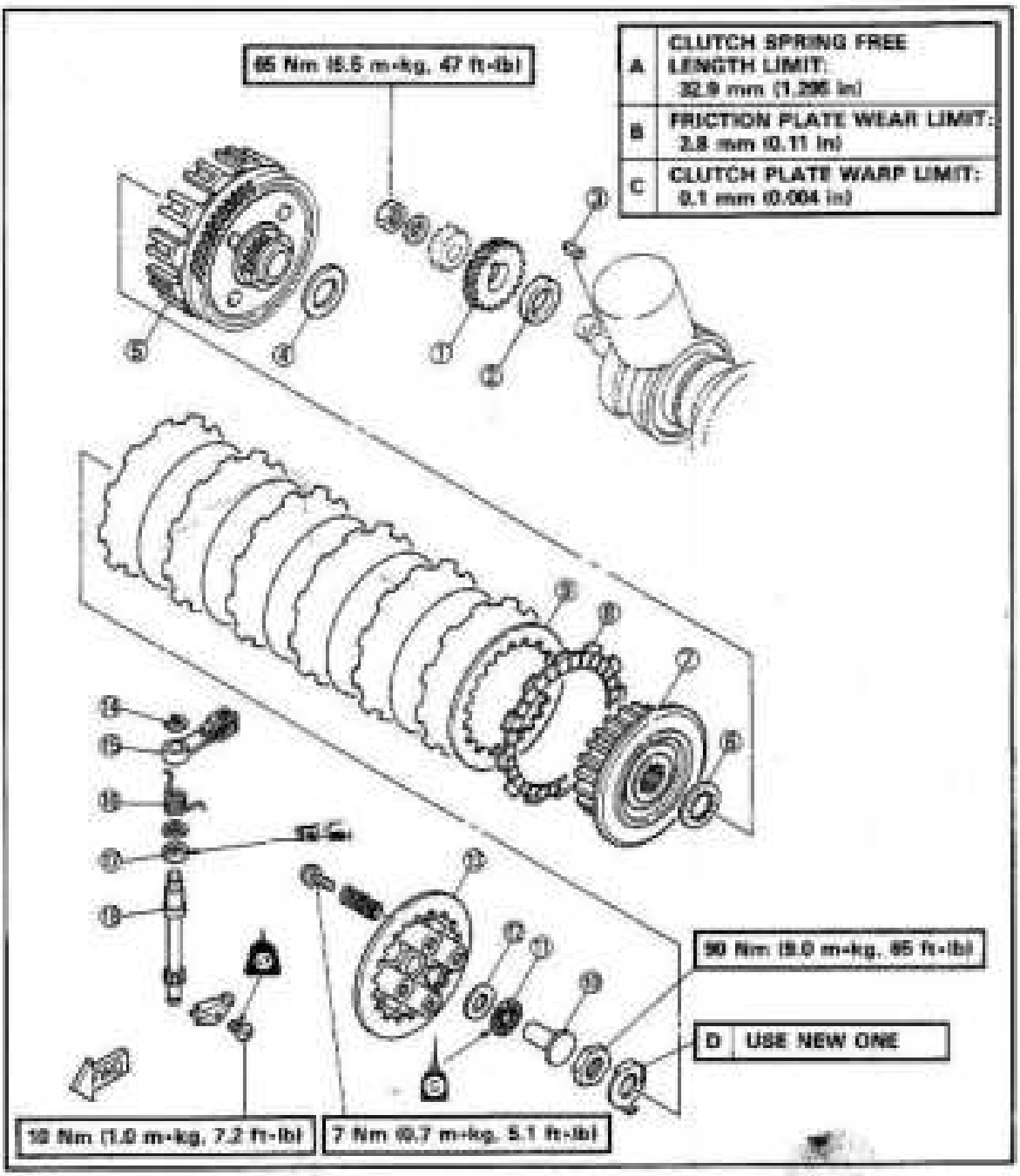


14. Install:
    - Kick crank ①

	Bolt (Kick Crank): **25 Nm (2.5 m•kg, 18 ft•lb)**

CLUTCH AND PRIMARY DRIVE GEAR

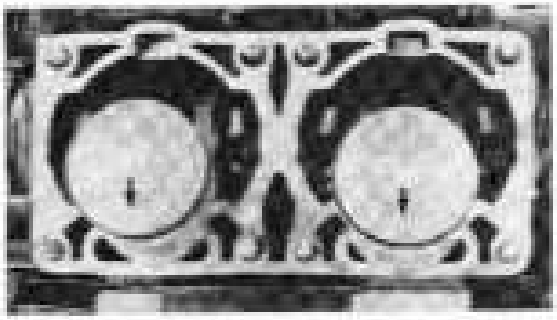
1. Primary drive gear
2. Spacer
3. Key
4. Thrust washer
5. Clutch housing
6. Thrust washer
7. Clutch boss
8. Friction plate
9. Clutch plate
10. Pull rod
11. Bearing
12. Washer
13. Pressure plate
14. Circlip
15. Pull lever
16. Spring
17. Oil seal
18. Lever rod



CYLINDER HEAD, CYLINDERS AND PISTONS

1. Apply:
   - Engine oil

   To the small end bearing and big end bearing.



2. Install:
   - Small end bearing
   - Piston
   - Piston pin

NOTE:

The arrow on the piston must point to the front of the engine.



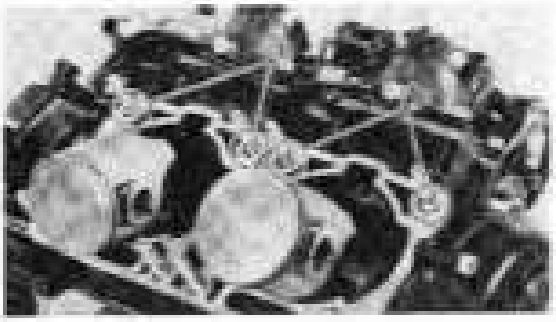
3. Install:
   - Piston pin clip ①

NOTE:

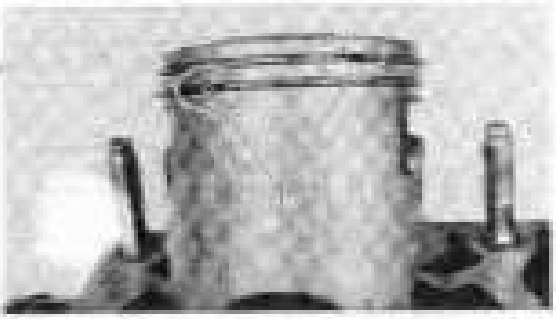
Before installing the piston pin clip, cover the crankcase with a clean towel or rag so you will not accidentally drop the pin clip and material into the crankcase.

WARNING:

Always use a new piston pin clip.



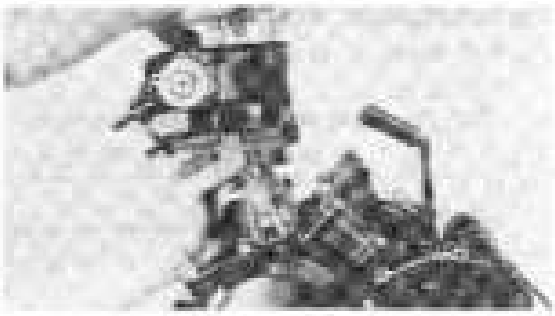
4. Install:
   - Dowel pins ①
   - Gaskets (Cylinder)



5. Check:
   - Piston rings

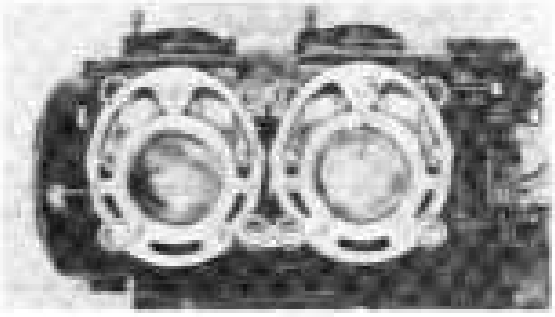
NOTE:

Make sure the ring ends ① are properly fitted around the ring locating pins in the piston grooves.



6. Install:
   • Cylinders

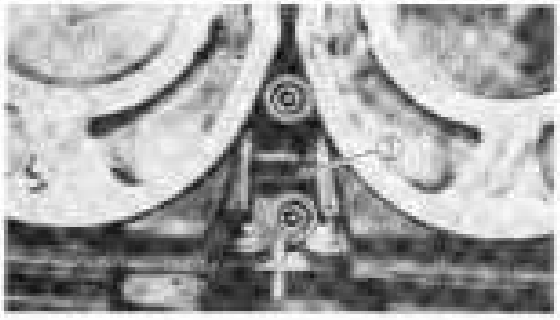
NOTE:
Install the cylinder with one hand while compressing the piston rings with the other hand.



7. Tighten:
   • Nuts (Cylinder)

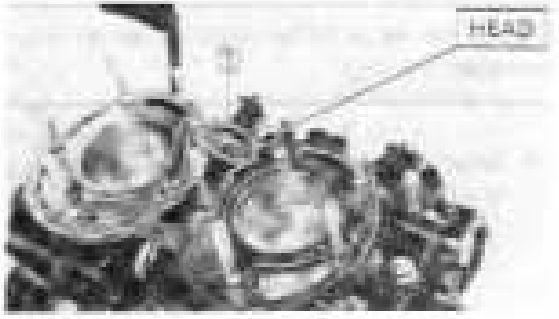
	Nuts (Cylinder): **28 Nm (2.8 m-kg, 20 ft-lb)**

NOTE:
Tighten the nuts in stage, using a crisscross pattern.



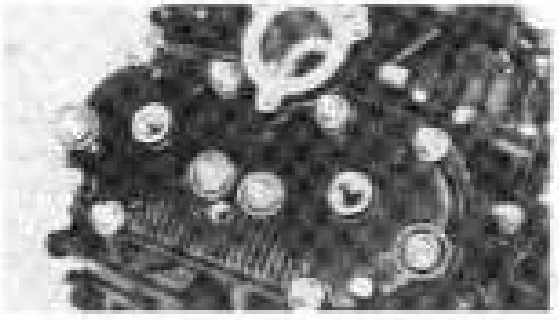
8. Install:
   • Joint ① (Power valve)

	Screws (Joint): **7 Nm (0.7 m-kg, 5.1 ft-lb)**



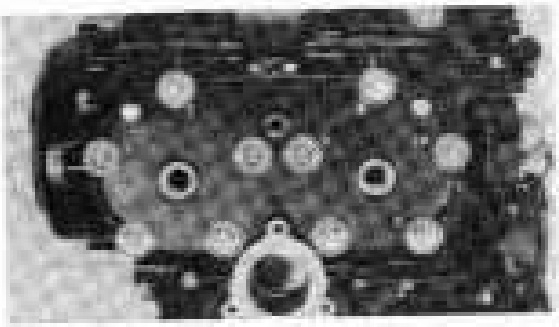
9. Install:
   • Gasket (Cylinder head)

NOTE:
Install the gasket with the "HEAD" mark ① faced upward.



10. Install:
   • Cylinder head
   • Copper washers
   • Nuts

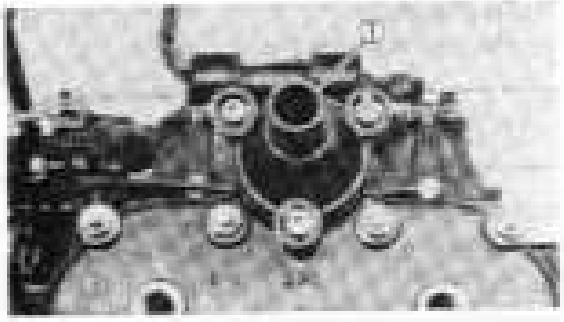
NOTE:
The copper washers and cap nuts should be installed on the No.1, No.4, No.9 and No.10.



11. Tighten:
    - Nuts (Cylinder head)

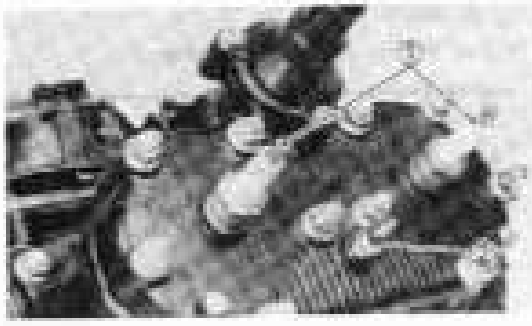
	Nuts (Cylinder Head): **22 Nm (2.2 m·kg, 16 ft·lb)**

NOTE:
The nuts should be tightened in the order of numbers and in two steps.



12. Install:
    - Thermostatic valve
    - Cover (1) (Thermostatic valve)

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



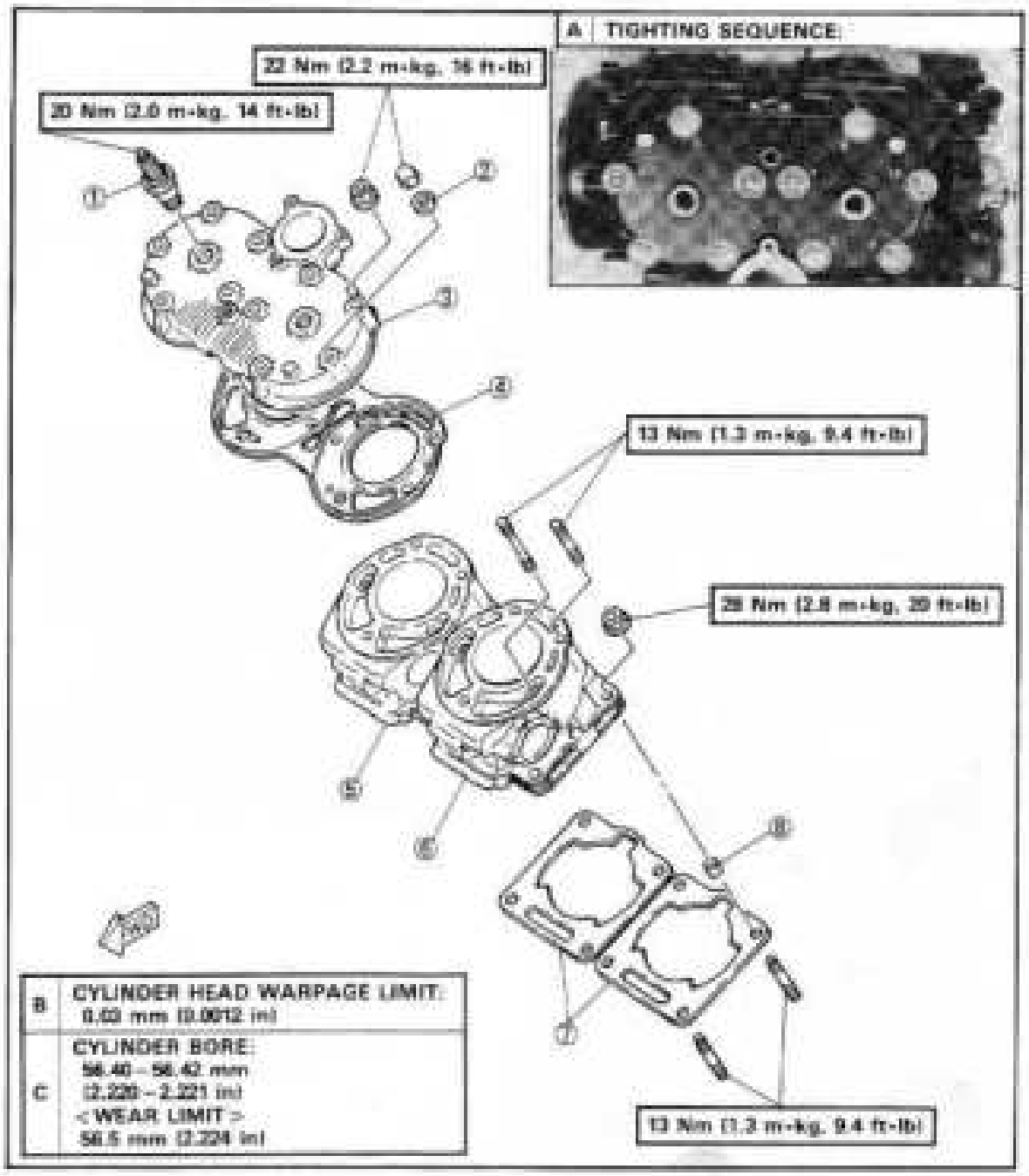
13. Install:
    - Spark plugs (1)
    - Thermo unit (2)

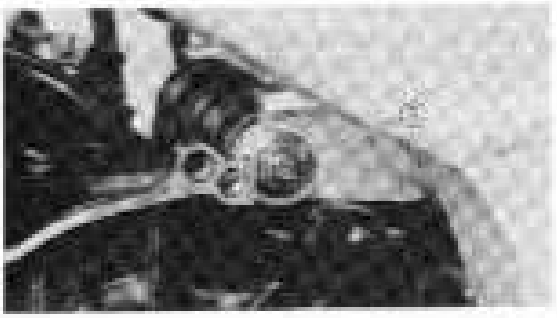
	Spark Plugs: **20 Nm (2.0 m·kg, 14 ft·lb)** **Thermo Unit:** **15 Nm (1.5 m·kg, 11 ft·lb)** **Use Water Resistant Sealant**

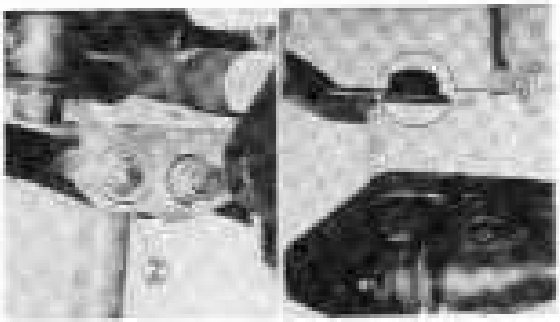
WARNING:
Handle the thermo unit with special care. Never subject it to strong or allow it to be dropped. Should it be dropped, it must be replaced.

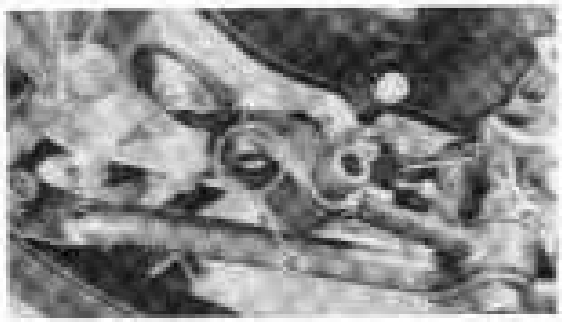
CYLINDER AND CYLINDER HEAD

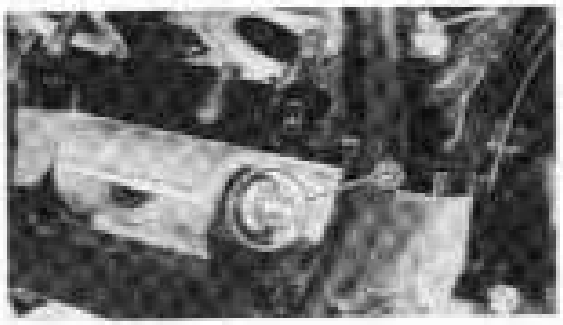
① Spark plug
②③ Copper washer
④⑤ Cylinder head
⑥ Gasket
⑦ Cylinder (Right-hand)
⑧ Cylinder (Left-hand)
⑨ Gasket
⑩ Dowel pin

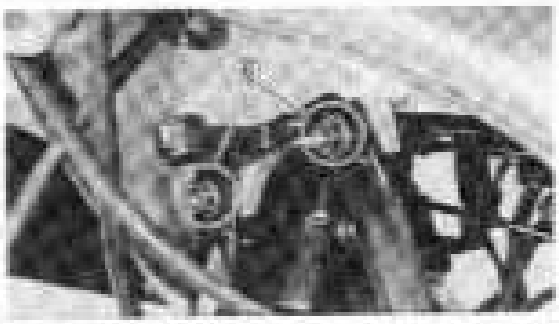












REMOUNTING ENGINE

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

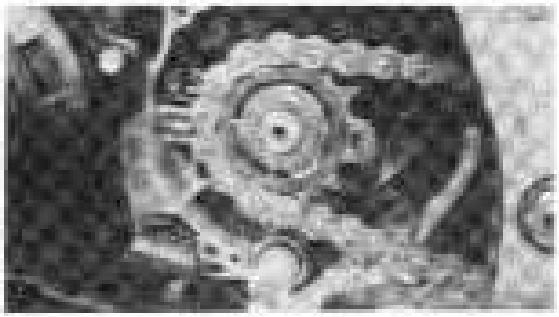
1. Install:
   - Engine assembly
   - Bolt ① (Engine mount – Rear)
   - Bolt ② (Down tube – Lower)
   - Bolt ③ (Torque rod stay – Rear)
   - Bolt ④ (Engine bracket)
   - Bolt ⑤ (Engine mount – Front)
   - Nuts ⑥ (Down tube – Upper)

NOTE:

Temporarily tighten the bolts and nuts before tightening them to specification.

2. Tighten:
   - Bolts
   - Nuts

•Nut (Engine Mount – Rear):
55 Nm (5.5 m•kg, 40 ft•lb)
•Nut (Down Tube – Lower):
45 Nm (4.5 m•kg, 32 ft•lb)
•Nut (Torque Rod Stay – Rear)
55 Nm (5.5 m•kg, 40 ft•lb)
•Bolt (Engine Bracket):
55 Nm (5.5 m•kg, 40 ft•lb)
•Nut (Engine Mount – Front):
55 Nm (5.5 m•kg, 40 ft•lb)
•Nuts (Down Tube – Upper):
25 Nm (2.5 m•kg, 18 ft•lb)



3. Tighten:
   •Nut (Drive Sprocket)

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

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

WARNING:
Always use a new lock washer.

4. Adjust:
   •Drive chain slack

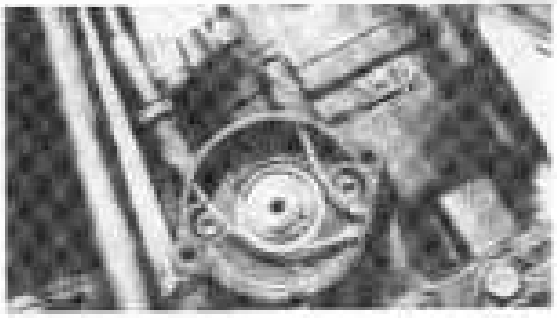
	Drive Chain Slack: **30–40 mm (1.18–1.57 in)**

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



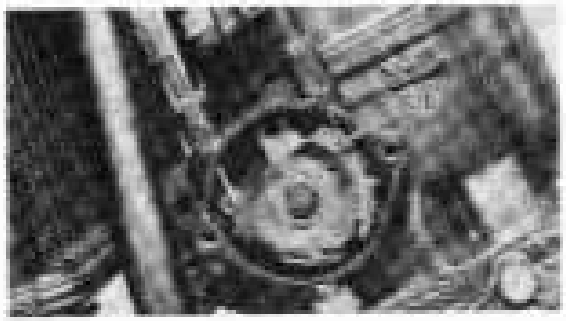
5. Install:
   •Radiator

	Bolts (Radiator): **6 Nm (0.6 m•kg, 4.3 ft•lb)**



6. Install:
   •Pulley housing ①

	Bolts (Pulley Housing): **7 Nm (0.7 m•kg, 5.1 ft•lb)**



7. Install:
   •Pulley ① (Power valve)

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

8. Adjust:
   •Y.P.V.S. cables

NOTE:

Before adjusting the Y.P.V.S. cables, turn the main switch to "ON" and operate the Y.P.V.S. motor.

Refer to "Y.P.V.S. CABLE ADJUSTMENT" section in CHAPTER 3.



9. Install:
   •Pulley cover ① (Power valve)

	Bolts (Pulley Cover): **7 Nm (0.7 m·kg, 5.1 ft·lb)**

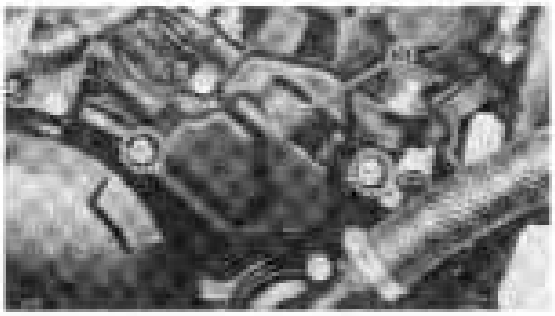
10. Adjust:
    •Clutch cable

	Free Play: **10 – 15 mm (0.4 – 0.6 in)** **At Lever End.**

Refer to "CLUTCH ADJUSTMENT" section in CHAPTER 3.

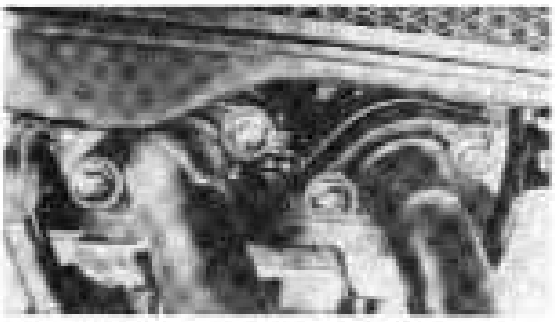
11. Adjust:
    •Autolube pump cable
    Refer to "AUTOLUBE PUMP CABLE ADJUSTMENT" section in CHAPTER 3.

12. Air bleeding:
    •Autolube pump
    Refer to "AUTOLUBE PUMP AIR BLEEDING" section in CHAPTER 3.



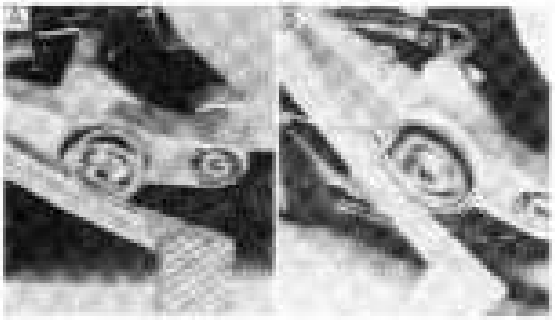
13. Install:
- Autolube pump cover ①

	Bolts (Autolube Pump Cover): 6 Nm (0.6 m·kg, 4.3 ft·lb)



14. Install:
- Muffler assembly

	Nuts: 18 Nm (1.8 m·kg, 13 ft·lb) **Bolts: 32 Nm (3.2 m·kg, 23 ft·lb)**



(A) Right-hand
(B) Left-hand

15. Fill:
- Coolant

	Total Amount: 1.35 L (1.2 Imp qt, 1.4 US qt)

Refer to "COOLANT REPLACEMENT" section in CHAPTER 3.

16. Fill:
- Transmission Oil

	Total Amount: 1.0 L (0.9 Imp qt, 1.1 US qt)

Refer to "TRANSMISSION OIL REPLACEMENT" section in CHAPTER 3.

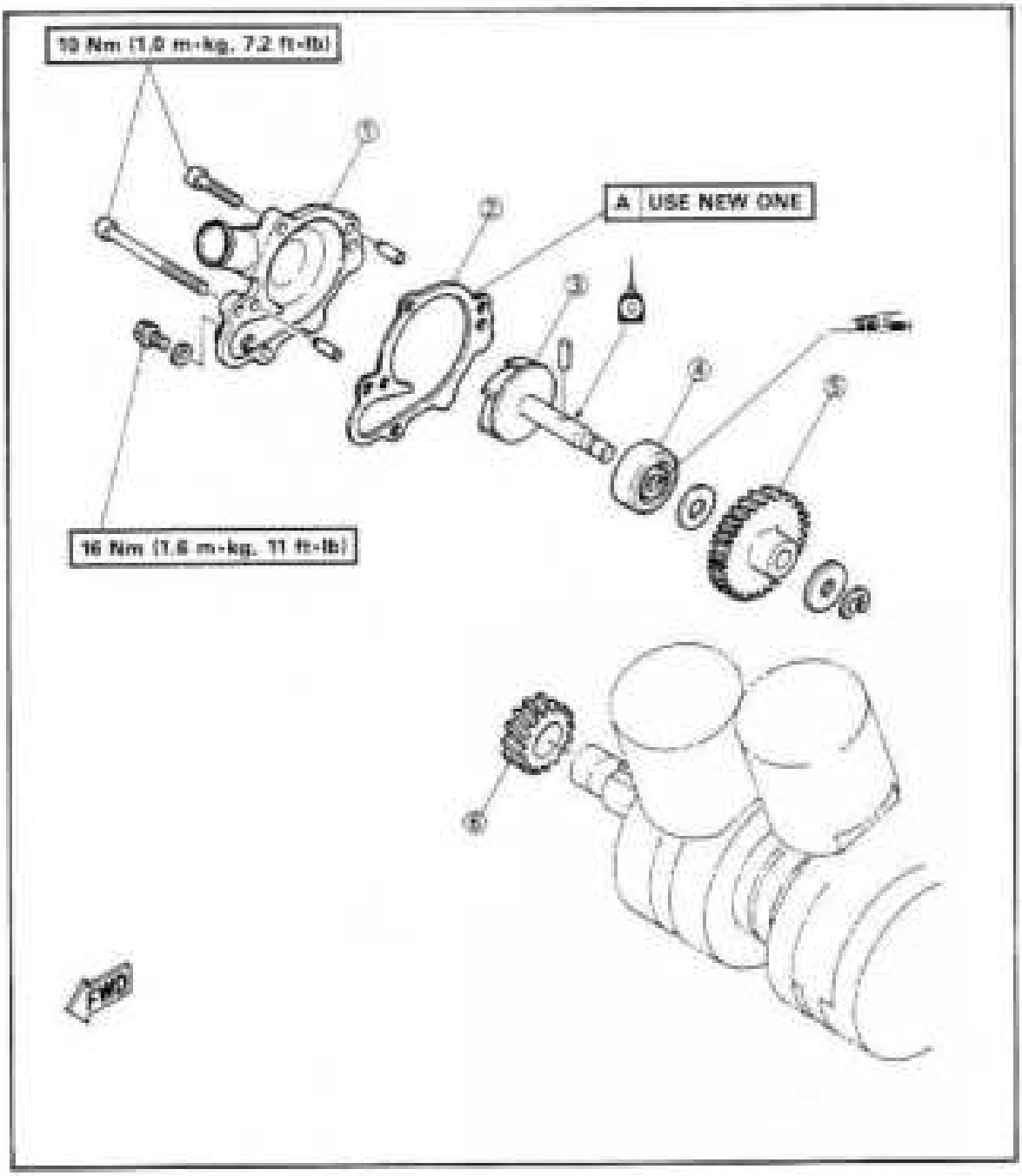
17. Install:
    - Lower cowl (Left)
    - Lower cowl (Right)

    Refer to "COWLINGS" section in CHAPTER 3.

COOLING SYSTEM

WATER PUMP

1. Water pump housing cover
2. Gasket
3. Impeller shaft
4. Oil seal
5. Impeller shaft gear
6. Impeller shaft drive gear



REMOVAL

NOTE:

It is necessary to disassemble the water pump, unless there is no abnormality such as excessive change in coolant temperature and/or level, discoloration of coolant, or milky transmission oil.

1. Remove:
   - Lower cowl (Right)
   - Lower cowl (Left)

   Refer to the "COWLINGS" section in the CHAPTER 3.

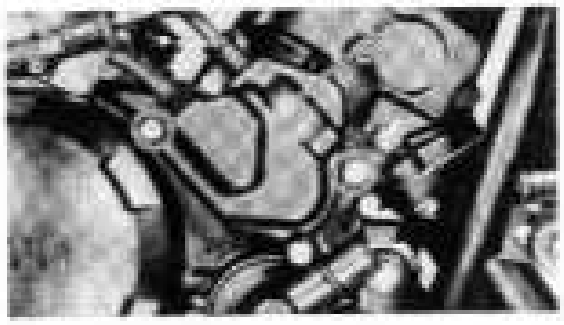
2. Drain:
   - Crankcase

     Refer to the "TRANSMISSION OIL REPLACEMENT" section in the CHAPTER 3.
   - Cooling system

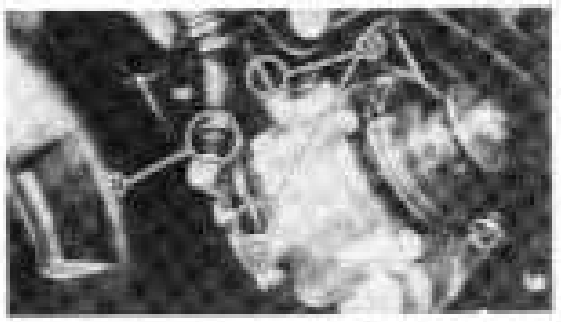
     Refer to the "COOLANT REPLACEMENT" section in the CHAPTER 3.



3. Remove:
   - Outlet hose ①



4. Remove:
   - Autolube pump cover ①



5. Disconnect:
   - •Oil hose ①
   - •Oil delivery hoses ②

NOTE:

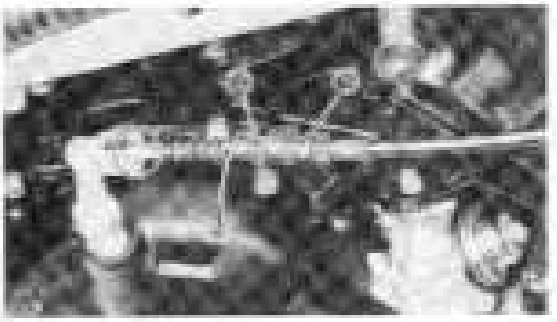
Plug the oil pipe so oil will not run out of oil tank.



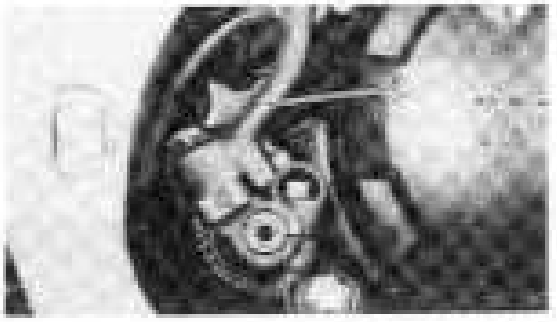
6. Remove:
   - •Clip ①
   - •Clip ②
   - •Autolube pump cable ③

NOTE:

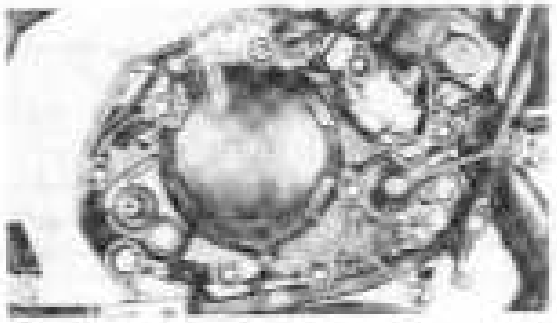
Turn the pump pulley counterclockwise by finger to make the pump cable loose enough for its end to be removed from the pulley.



7. Loosen:
   - •Locknut ① (Clutch cable)
   - •Adjuster ② (Clutch cable)
8. Remove:
   - •Clutch cable ③



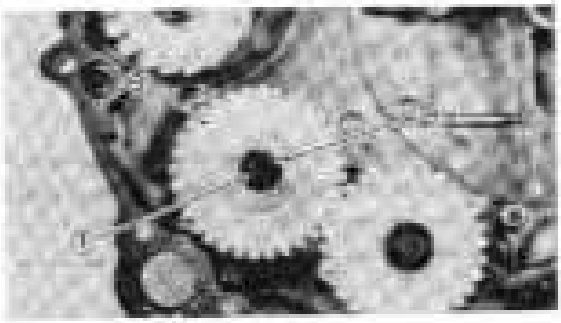
9. Remove:
   - •Kick crank ①



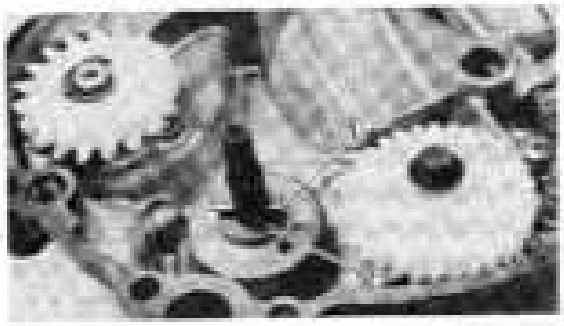
10. Remove:
    - •Water pump housing cover ①
    - •Crankcase cover ② (Right)

CAUTION:

Drain the coolant out of the water pump while taking care so that it does not splash to the Autolube pump.



11. Remove:
    - Circlip ①
    - Plain washer ②
    - Impeller shaft gear ③

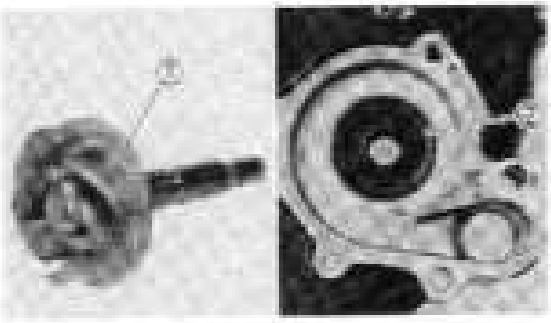


12. Remove:
    - Pin ①
    - Plain washer ②



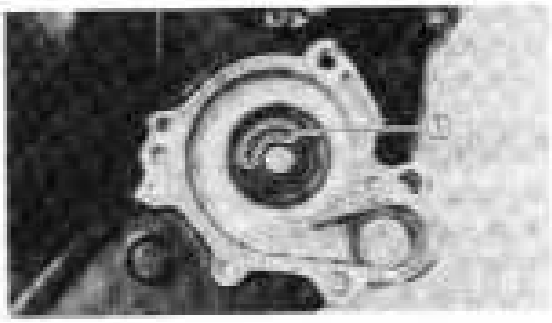
13. Remove:
    - Impeller shaft

14. Eliminate deposits from the impeller and water pump housing.



INSPECTION

1. Inspect:
    - Impeller ①
      Cracks/Wear/Damage→Replace.
    - Oil seal ②
      Wear/Damage→Replace.



Oil seal replacement steps:
- Remove the oil seal from the crankcase cover by tapping its toward the outside.
- Install the new oil seal with the "WATER SIDE" mark ① on the outside.

NOTE:
Press-fit the oil seal until its contact the bottom.

INSTALLATION

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

1. Apply:
   - Lightweight lithium base grease
     To oil seal lips and impeller shaft.



2. Install:
   - Impeller shaft ①
     Install the shaft while turning it.

NOTE:

Take care so that the oil seal lip is not damaged or the spring does not slip off its position.

3. Install:
   - Crankcase cover (Right)
   - Water pump housing cover

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

CAUTION:

Always use new gaskets.

4. Install:
   - Kick crank

	Bolt (Kick Crank): **25 Nm (2.5 m•kg, 18 ft•lb)**

5. Fill:
   - Transmission oil
     Refer to the "TRANSMISSION OIL REPLACEMENT" section in the CHAPTER 3.
   - Coolant
     Refer to the "COOLANT REPLACEMENT" section in the CHAPTER 3.

6. Adjust:
   - Clutch cable free play



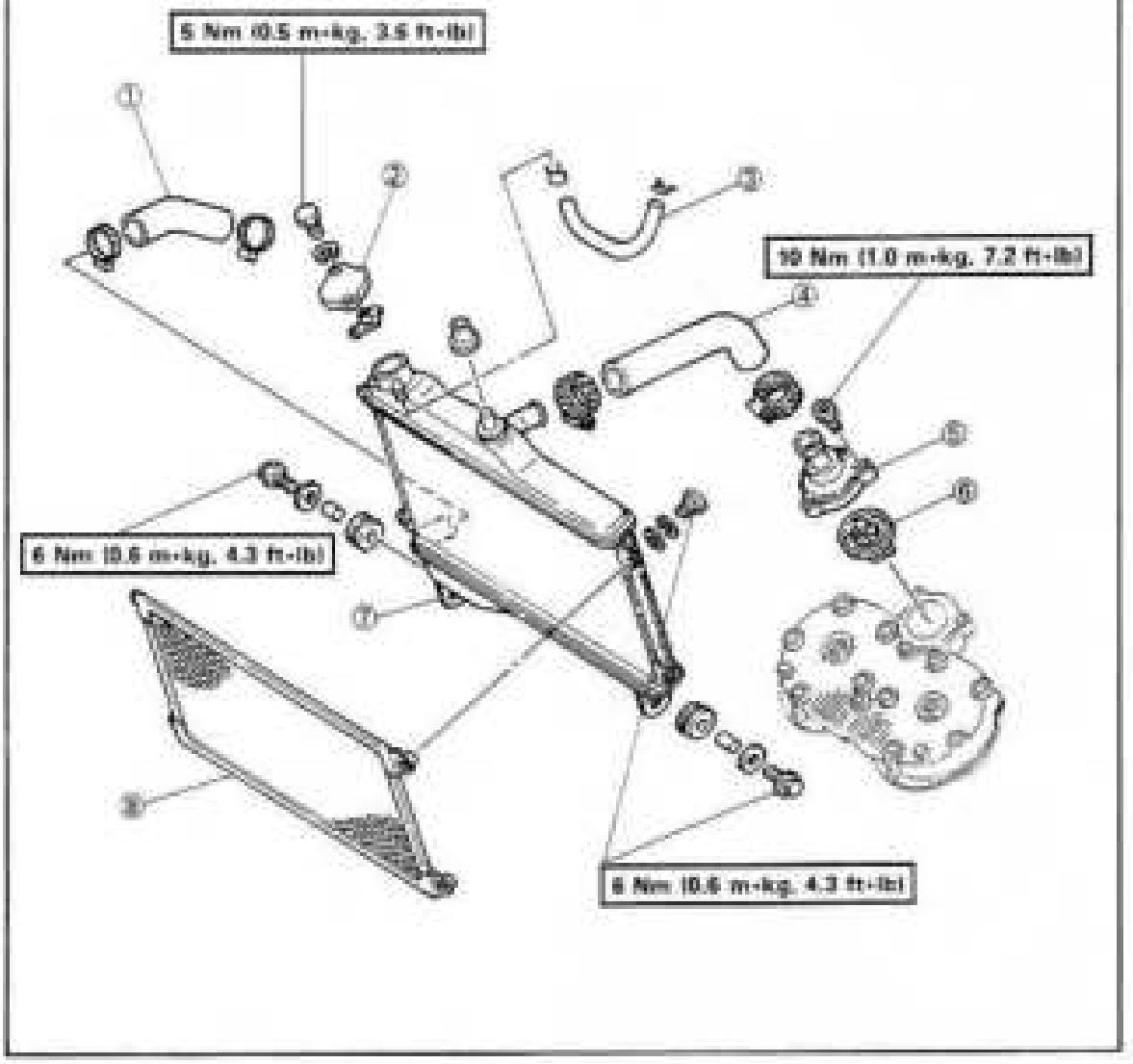
Clutch Cable Free Play:
10 – 15 mm (0.4 – 0.6 in)
At Lever End.

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

THERMOSTATIC VALVE AND RADIATOR

① Outlet hose
② Radiator cap
③ Coolant breather hose
④ Inlet hose
⑤ Thermostatic valve cover
⑥ Thermostatic valve
⑦ Radiator
⑧ Radiator cover

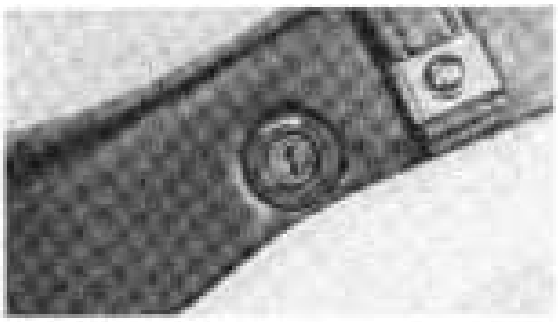
A	RADIATOR CAP OPENING PRESSURE: 75 – 105 kPa (0.75 – 1.05 kg/cm², 10 – 14 psi)
B	COOLANT CAPACITY: 1.35 L (1.19 Imp qt, 1.43 US qt) Including all routes.
C	THERMOSTATIC VALVE OPENING TEMPERATURE: 63 – 67°C (146 – 153°F)



REMOVAL

1. Remove:
   - Lower cowl (Right)
   - Lower cowl (Left)

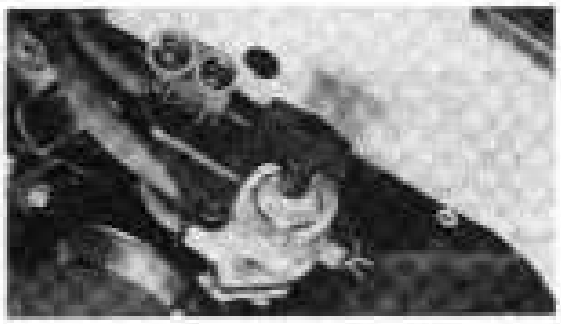
   Refer to the "COWLINGS" section in the CHAPTER 3.



2. Remove:
   - Seat

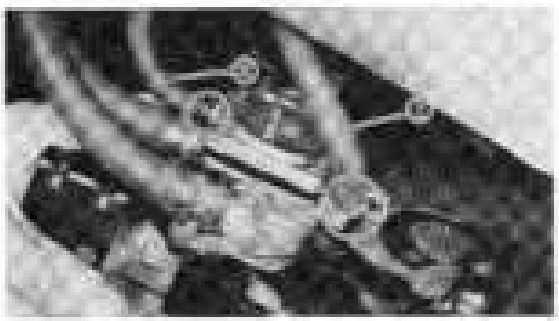
NOTE:

To open the seat lock, insert the key in the lock and turn it clockwise.

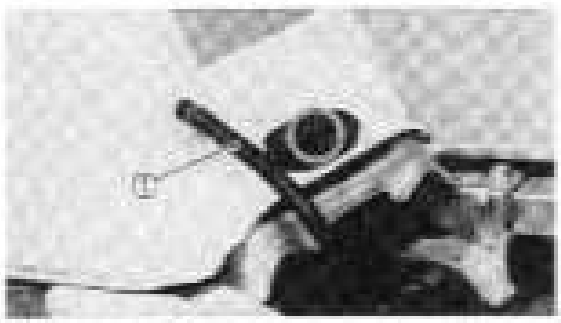


3. Turn the fuel cock to "ON" position.

4. Remove:
   - Bolts (Fuel cock bracket)



5. Disconnect:
   - Fuel delivery hose (1)
   - Vacuum hose (2)



6. Disconnect:
   - Fuel breather hose (1)

7. Remove:
   - Fuel tank

8. Drain:
   • Cooling system
   Refer to the "COOLANT REPLACEMENT" section in the CHAPTER 3.

NOTE:

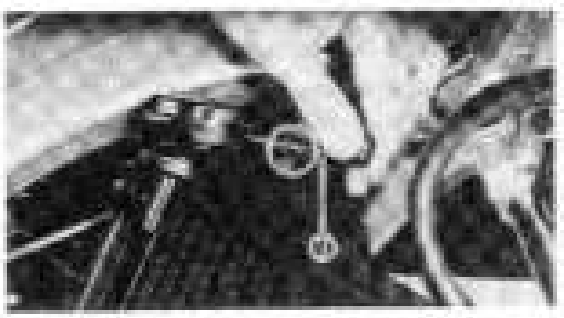
Thoroughly flush the cooling system with clean tap water.

CAUTION:

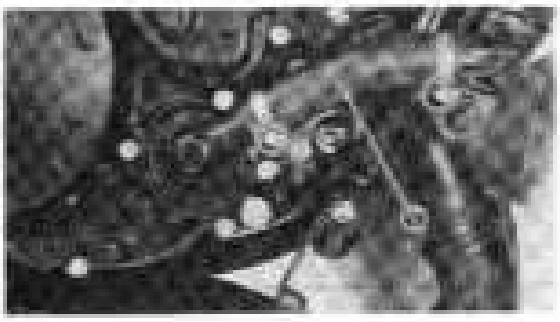
Take care so that coolant does not splash to painted surfaces. If splashes, wash it away with water.

WARNING:

Do not remove the radiator cap, drain bolts and hoses especially when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. When the engine has cooled, place a thick rag like a towel over the radiator cap, slowly rotate the cap counterclockwise to the detent. This procedure allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning counterclockwise and remove it.



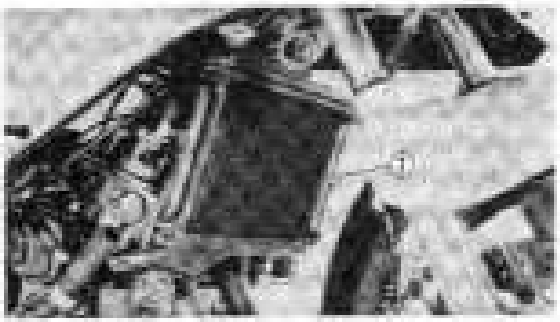
9. Disconnect:
   • Coolant breather hose ①



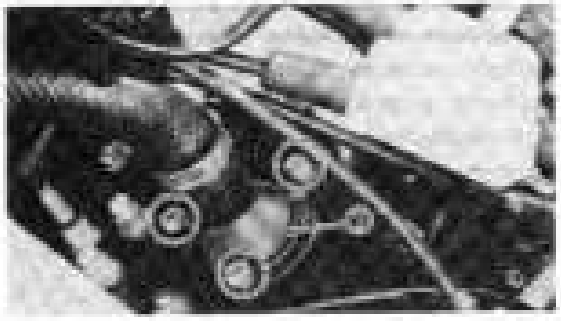
10. Remove:
    • Outlet hose ①



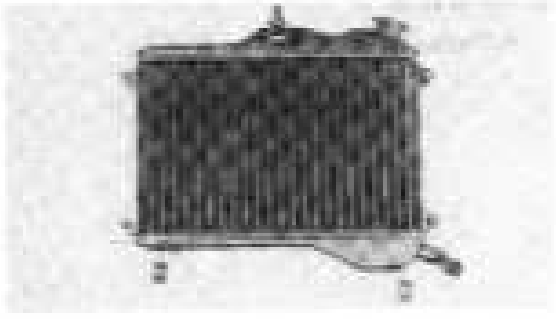
11. Remove:
    • Inlet hose ①



12. Remove:
    • Radiator ①



13. Remove:
    • Thermostatic valve cover ①
    • Thermostatic valve



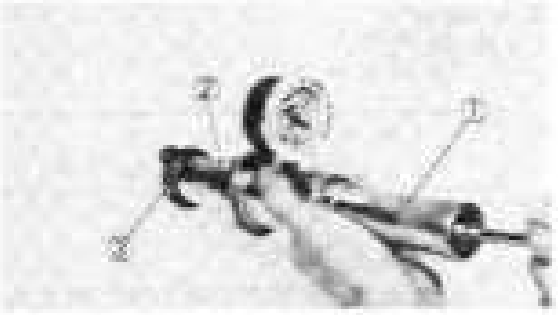
INSPECTION

1. Inspect:
    • Radiator core
    Obstruction → Blow out with compressed air through rear of the radiator.
    Flattened fin → Repair/replace.

2. Inspect:
- Inlet hose
  Crack/Damage → Replace.
- Outlet hose
  Crack/Damage → Replace.

3. Measure:
- Radiator cap opening pressure
  Radiator cap opens at pressure below the specified pressure → Replace.

Valve Opening Pressure:
75 – 105 kPa
(0.75 – 1.05 kg/cm², 10 – 14 psi)

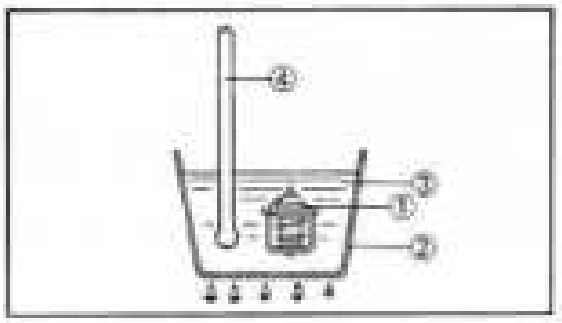


Measurement steps:
- Attach the Cooling System Tester ① and Adapter ② to the radiator cap ③.

Cooling System Tester:
90890-01325
Adapter:
90890-01352

- Apply the specified pressure for 10 seconds, and make sure there is no pressure drop.

4. Inspect:
- Thermostatic valve
  Valve does not open at 63 – 67°C (146 – 153°F) → Replace.



Inspection steps:
- Suspend thermostatic valve ① in a vessel ②.
- Place reliable thermometer in a water ③.
- Heat water slowly.
- Observe thermometer ④, while stirring water continually.

NOTE:

Thermostatic valve is sealed and its setting is specialized work. If its accuracy is in doubt, always it. A faulty unit could cause serious overheating or overcooling.

INSTALLATION

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

1. Tighten:
   - Bolts (Thermostatic valve cover)

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

2. Tighten:
   - Bolts (Radiator)

	Bolts (Radiator): 6 Nm (0.6 m·kg, 4.3 ft·lb)

3. Fill:
   - Coolant

   Refer to the "COOLANT REPLACEMENT" section in the CHAPTER 3.

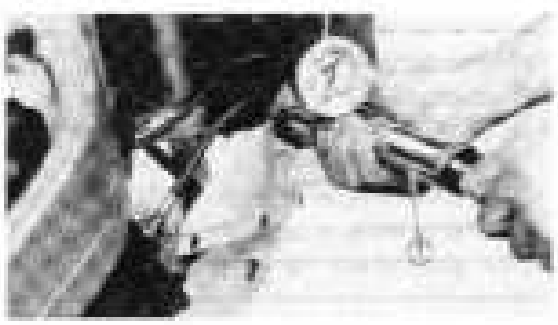
4. Inspect:
   - Cooling system

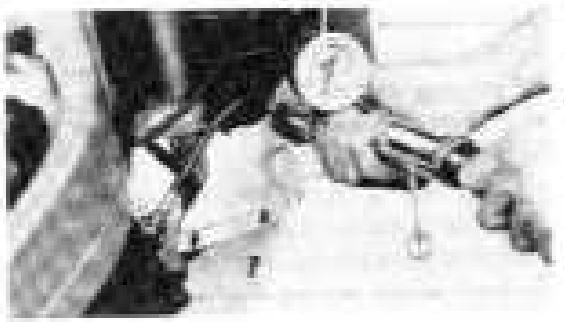
   Decrease of pressure (leaks) → Repair as required.

Inspection steps:
- Attach the Cooling System Tester ① to the radiator.

	Cooling System Tester: 90890-01325

- Apply 100 kPa (1.0 kg/cm², 14 psi) pressure.
- Measure the indicated pressure with the gauge.





5. Install:
   • Seat

NOTE:

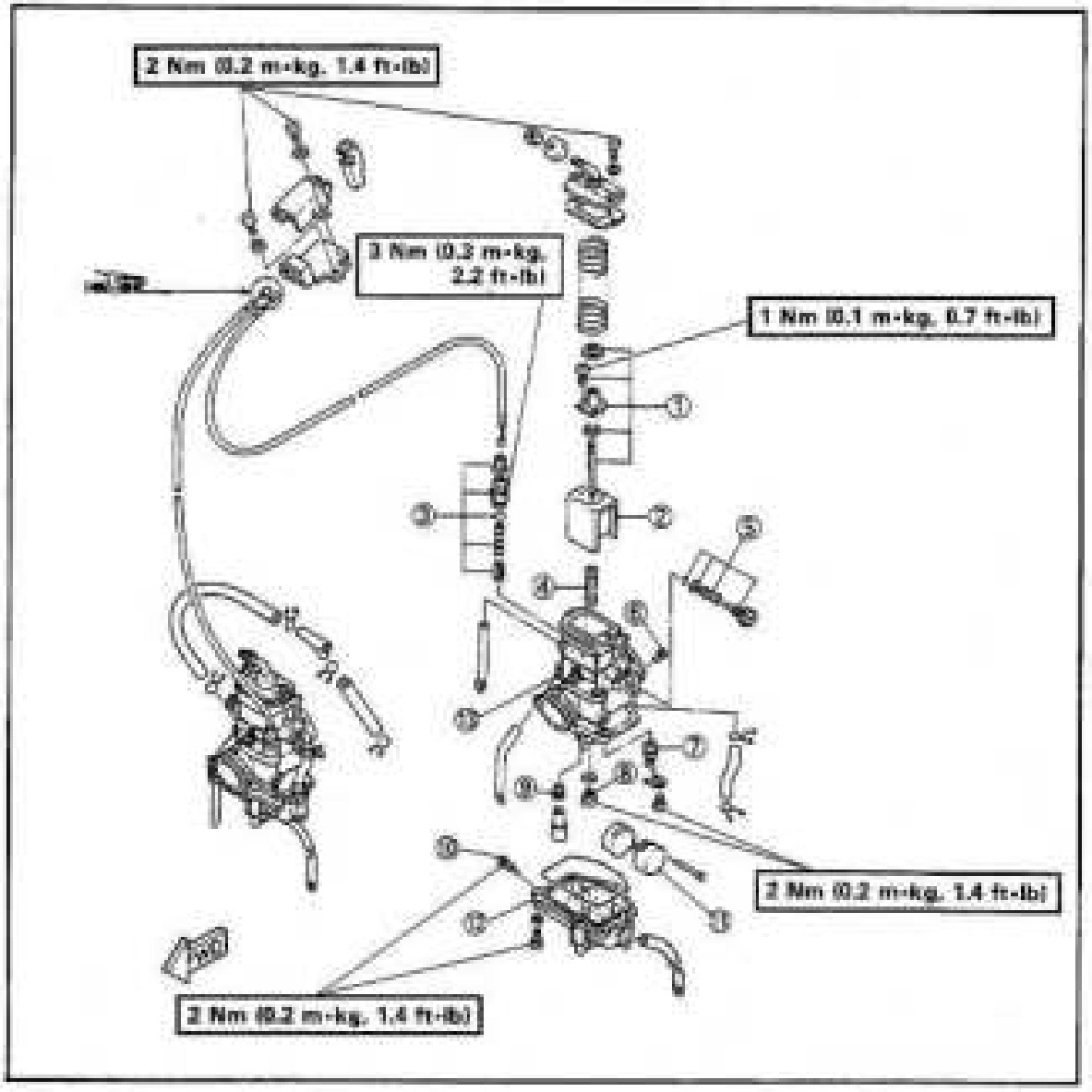
Insert the lobe on the seat front into the receptacle on the frame, then push down the seat.

CARBURETION

CARBURETOR

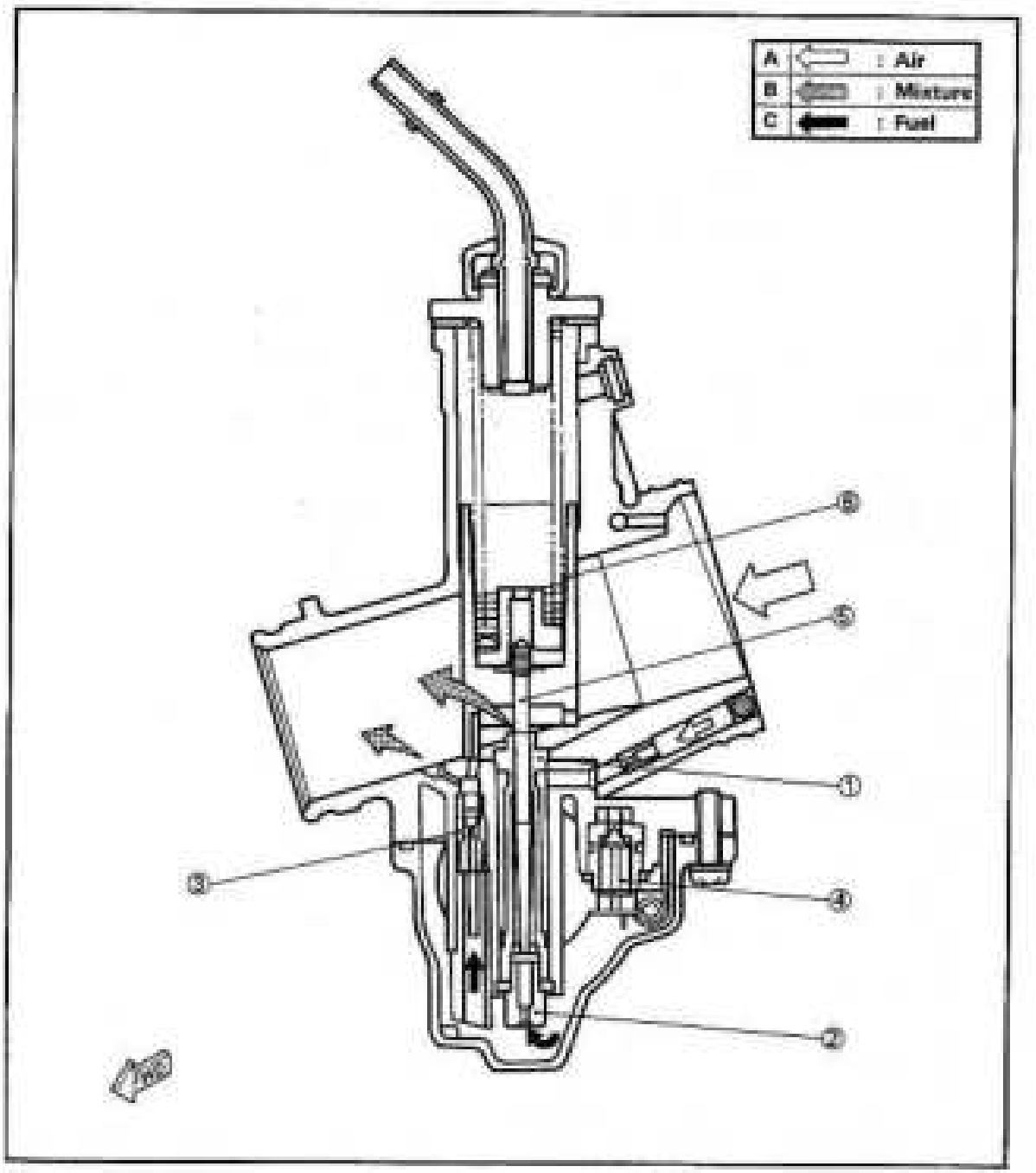
SPECIFICATIONS	
MAIN JET (M.J.)	#230
PILOT JET (P.J.)	#20
MAIN AIR JET (M.A.J.)	ø1.5
PILOT AIR JET (P.A.J.)	ø1.4
JET NEEDLE (J.N.)	5L19-2/5
CUTAWAY (C.A.)	2.5
STARTER JET (G.S.)	#35
MAIN NOZZLE (N.J.)	Q-2
POWER JET (PW.J.)	#60
FUEL LEVEL (F.L.)	1.1 – 2.1 mm (0.04 – 0.08 in)
FLOAT HEIGHT (F.H.)	15 – 17 mm (0.59 – 0.67 in)

① Jet needle assembly
② Throttle valve
③ Starter plunger assembly
④ Main nozzle
⑤ Throttle stop screw assembly
⑥ Pilot air jet
⑦ Needle valve assembly
⑧ Main jet
⑨ Pilot jet
⑩ Drain screw
⑪ Float
⑫ Float chamber
⑬ Carbureror body



SECTION VIEW

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



REMOVAL

NOTE:

To following parts can be cleaned and inspected without disassembly.
- Throttle valve
- Starter plunger
- Throttle stop screw

1. Remove:
   - Lower cowl (Right)
   - Lower cowl (Left)

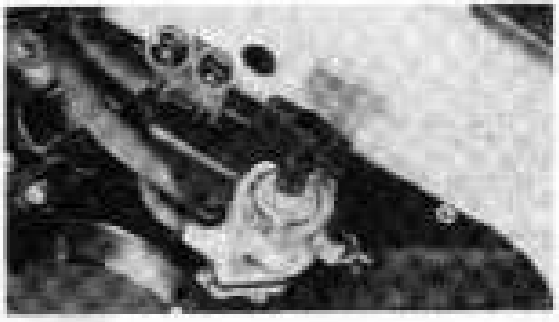
   Refer to the "COWLINGS" section in the CHAPTER 3.



2. Remove:
   - Seat

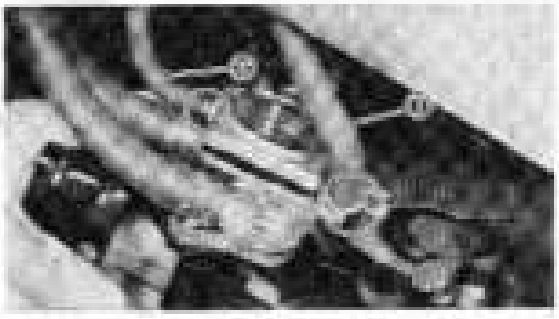
NOTE:

To open the seat lock, insert the key in the lock and turn it clockwise.

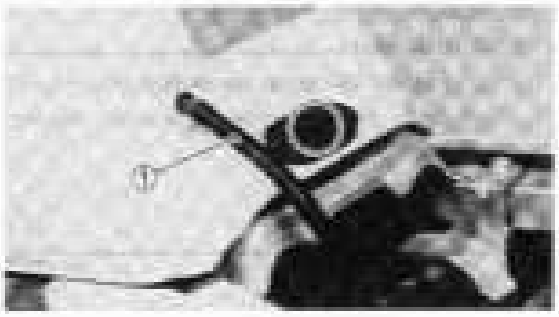


3. Turn the fuel cock to "ON" position.

4. Remove:
   - Bolts (Fuel cock bracket)

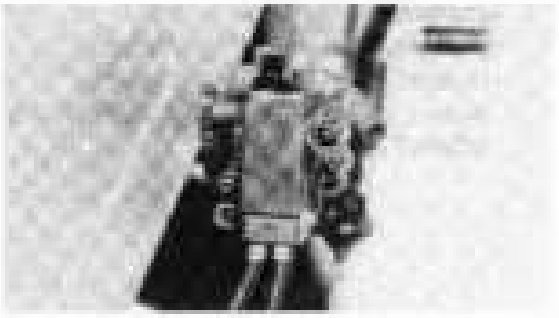


5. Disconnect:
   - Fuel delivery hose ①
   - Vacuum hose ②



6. Disconnect:
   • Fuel breather hose (1)

7. Remove:
   • Fuel tank

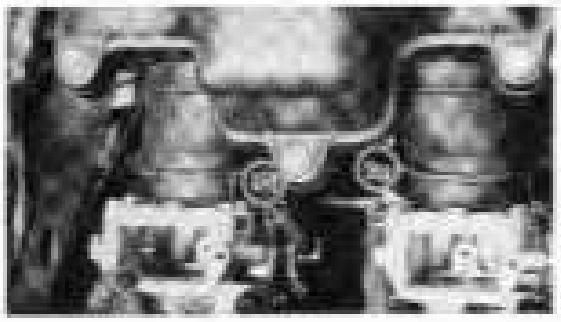


8. Remove:
   • Screw (Starter lever bracket)

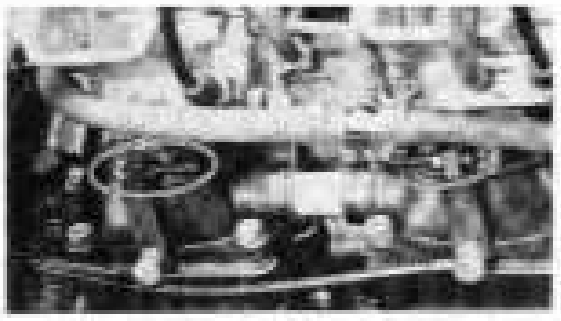


9. Remove:
   • Screws (Carburetor top cover)

10. Remove:
    • Throttle valve assembly



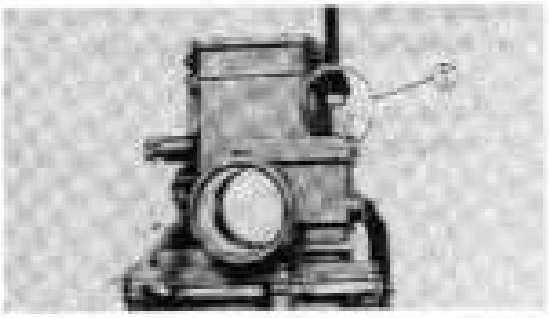
11. Remove:
    • Air cleaner case



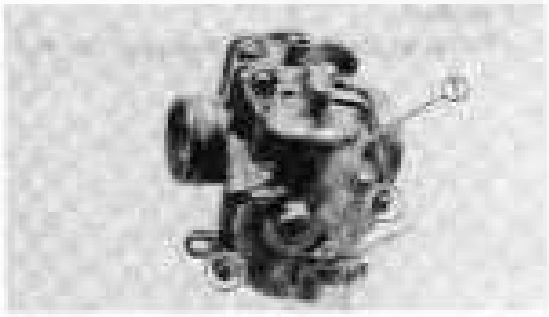
12. Loosen:
    • Screws (Carburetor joint)

13. Remove:
    • Carburetors

DISASSEMBLY



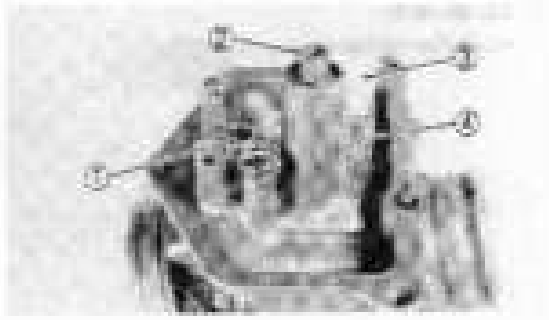
1. Remove:
   - Starter plunger assembly ①



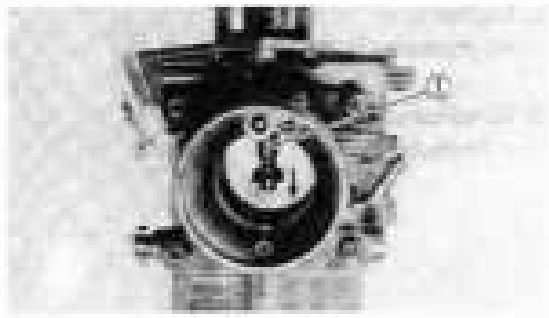
2. Remove:
   - Float chamber ①



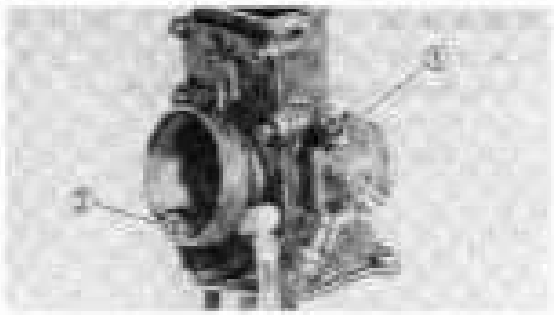
3. Remove:
   - Float pin ①
   - Float ②
   - Needle valve



4. Remove:
   - Valve seat ①
   - Main jet ②
   - Pipe ③
   - Pilot jet ④



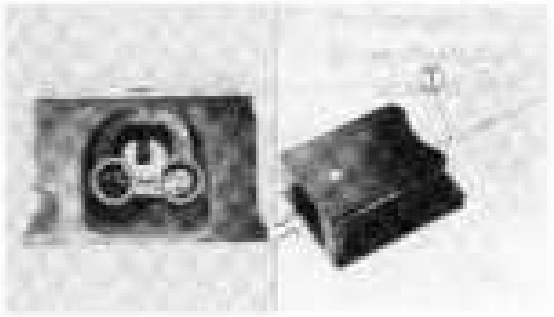
5. Remove:
   - Main nozzle ①



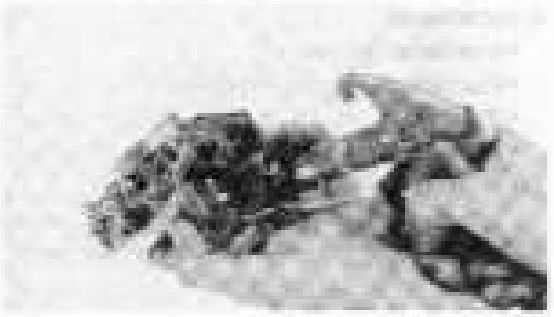
6. Remove:
   - Throttle stop screw ①
   - Pilot air jet ②



7. Remove:
   - Throttle valve ①



8. Remove:
   - Jet needle ①

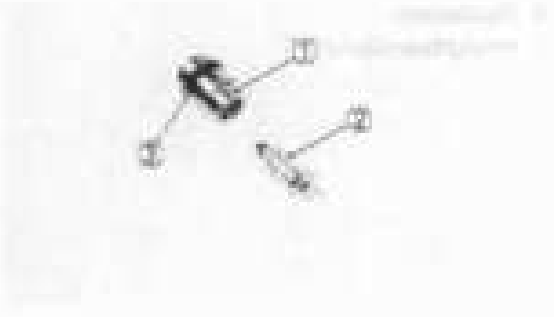


INSPECTION

1. Inspect:
   - Carburetor body
     Contamination→Clean.

NOTE:

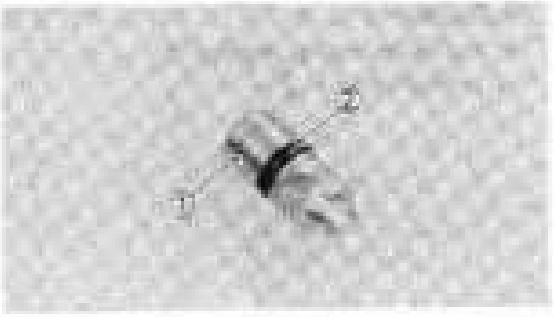
Use a petroleum based solvent for cleaning. Blow out all passages and jets with compressed air.



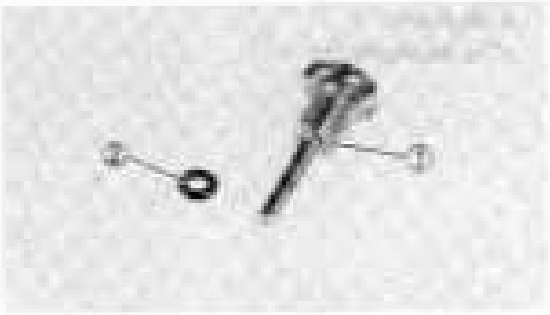
2. Inspect:
   - Valve seat ①
   - Needle valve ②
     Wear / Contamination→Replace.
   - O-ring ③
     Damage→Replace.

NOTE:

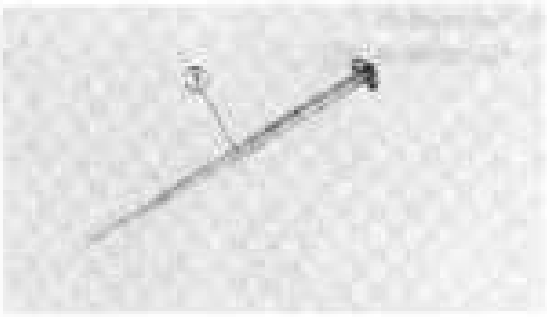
Always replace the needle valve and valve seat as a set.



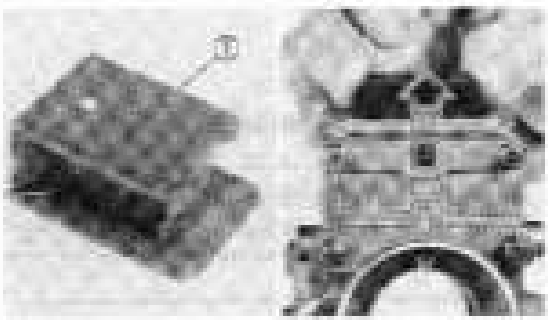
3. Inspect:
   - Starter plunger ①
     Wear/Contamination → Replace.
   - O-ring ②
     Damage → Replace.



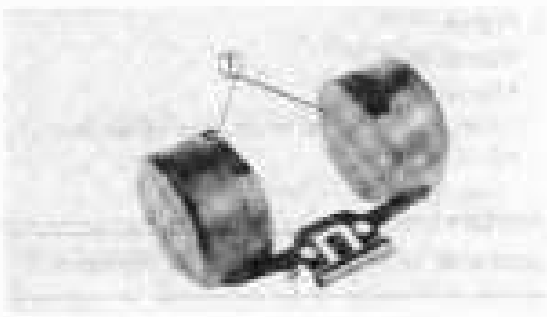
4. Inspect:
   - Throttle stop screw ①
     Wear/Contamination → Replace.
   - O-ring ②
     Damage → Replace.



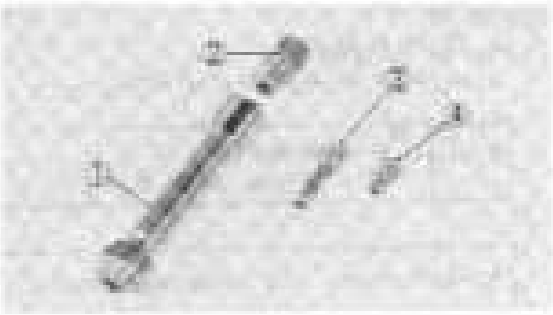
5. Inspect:
   - Jet needle ①
     Bends/Wear → Replace.



6. Inspect:
   - Throttle valve ①
     Wear/Damage → Replace.
7. Check:
   - Free movement
     Stick → Replace.
     Insert the throttle valve into the carburetor body, and check for free movement.



8. Inspect:
   - Float ①
     Damage → Replace.



8. Inspect:
- •Main jet ①
- •Main nozzle ②
- •Pilot jet ③
- •Pilot air jet ④

Contamination→Clean.

NOTE:

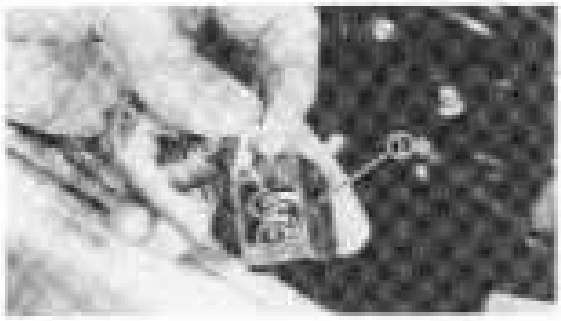
Blow out the jets with compressed air.

ASSEMBLY

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

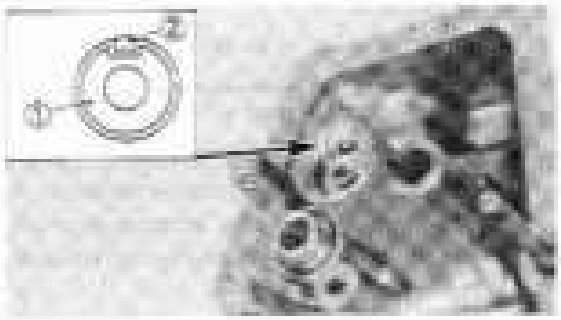
CAUTION:

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



1. Tighten:
- •Screws (Throttle valve ①)

	Screws (Throttle Valve): 1 Nm (0.1 m•kg, 0.7 ft•lb)



2. Install:
- •Main nozzle ①

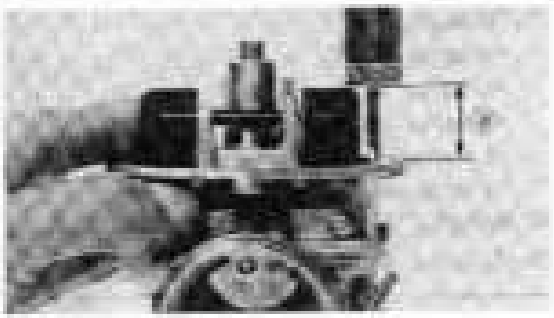
NOTE:

Align the knock pin ② with the pin slot in the main nozzle.



3. Tighten:
- •Screw (Valve seat holder)
- •Main jet

	Screw (Valve Seat Holder): 2 Nm (0.2 m•kg, 1.4 ft•lb) **Main Jet:** 2 Nm (0.2 m•kg, 1.4 ft•lb)



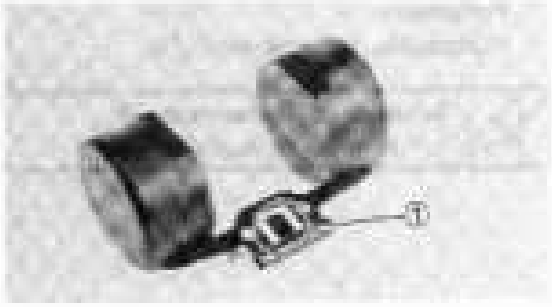
4. Measure:
   •Float height ⓐ
   Out of specification → Adjust.

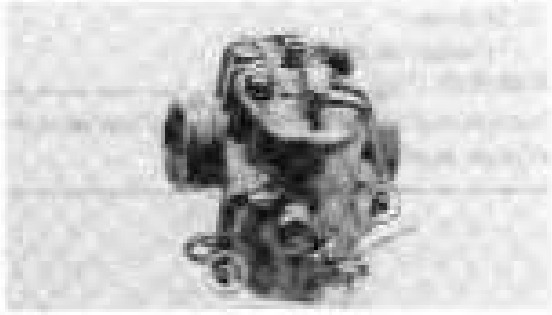
Float Height (F.H.):
15 – 17 mm (0.59 – 0.67 in)

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.

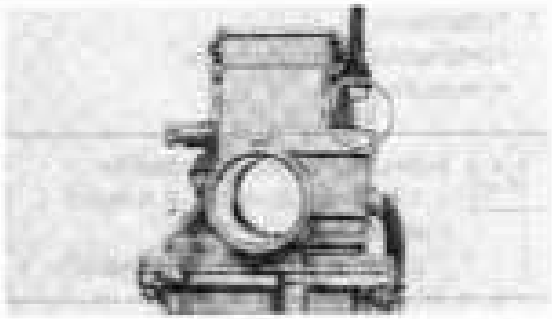
•If the float height is not within specification, inspect the valve seat and needle valve.
•If either is worn, replace them both.
•If both are fine, adjust the float height by bending the float tang ① on the float.
•Recheck the float height.





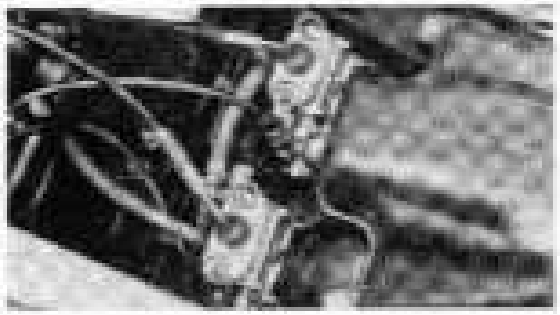
5. Tighten:
   •Screws (Float chamber)

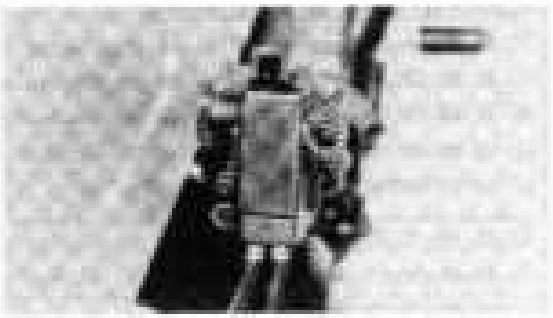
Screws (Float Chamber):
2 Nm (0.2 m•kg, 1.4 ft•lb)



6. Tighten:
   •Nut (Starter plunger)

Nut (Starter Plunger):
3 Nm (0.3 m•kg, 2.2 ft•lb)





INSTALLATION

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

1. Tighten:
   - Screws (Carburetor Top Cover)

	Screws (Carburetor top cover): 2 Nm (0.2 m-kg, 1.4 ft-lb)

2. Tighten:
   - Screw (Starter lever bracket)

	Screw (Starter Lever Bracket): 2 Nm (0.2 m-kg, 1.4 ft-lb)

3. Adjust:
   - Carburetor Synchronization

   Refer to the "CARBURETOR SYNCHRONIZATION" section in the CHAPTER 3.

4. Adjust:
   - Idle speed

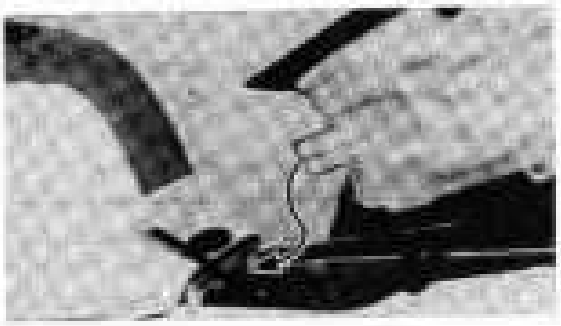
   Refer to the "IDLE SPEED ADJUSTMENT" section in the CHAPTER 3.

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

5. Adjust:
   - Throttle cable free play

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

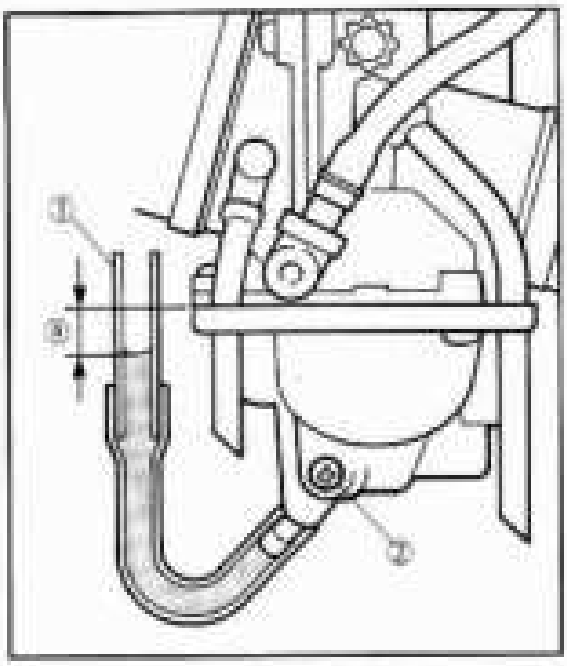
	Throttle Cable Free Play: 2 – 5 mm (0.08 – 0.20 in)



6. Install:
   •Seat

NOTE:

Insert the lobe on the seat front into the receptacle on the frame, then push down the seat.



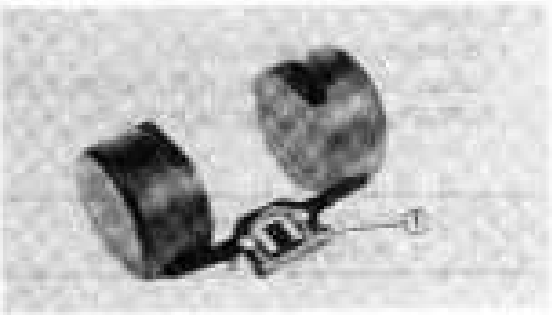
FUEL LEVEL ADJUSTMENT

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 **90890-01312**

4. Loosen the drain screw ②, and warm up the engine for several minutes.
5. Measure:
   •Fuel level ③
   Out of specification→Adjust.

	Fuel Level: **1.1–2.1 mm (0.04–0.08 in)** **Below the Carburetor Body Edge.**

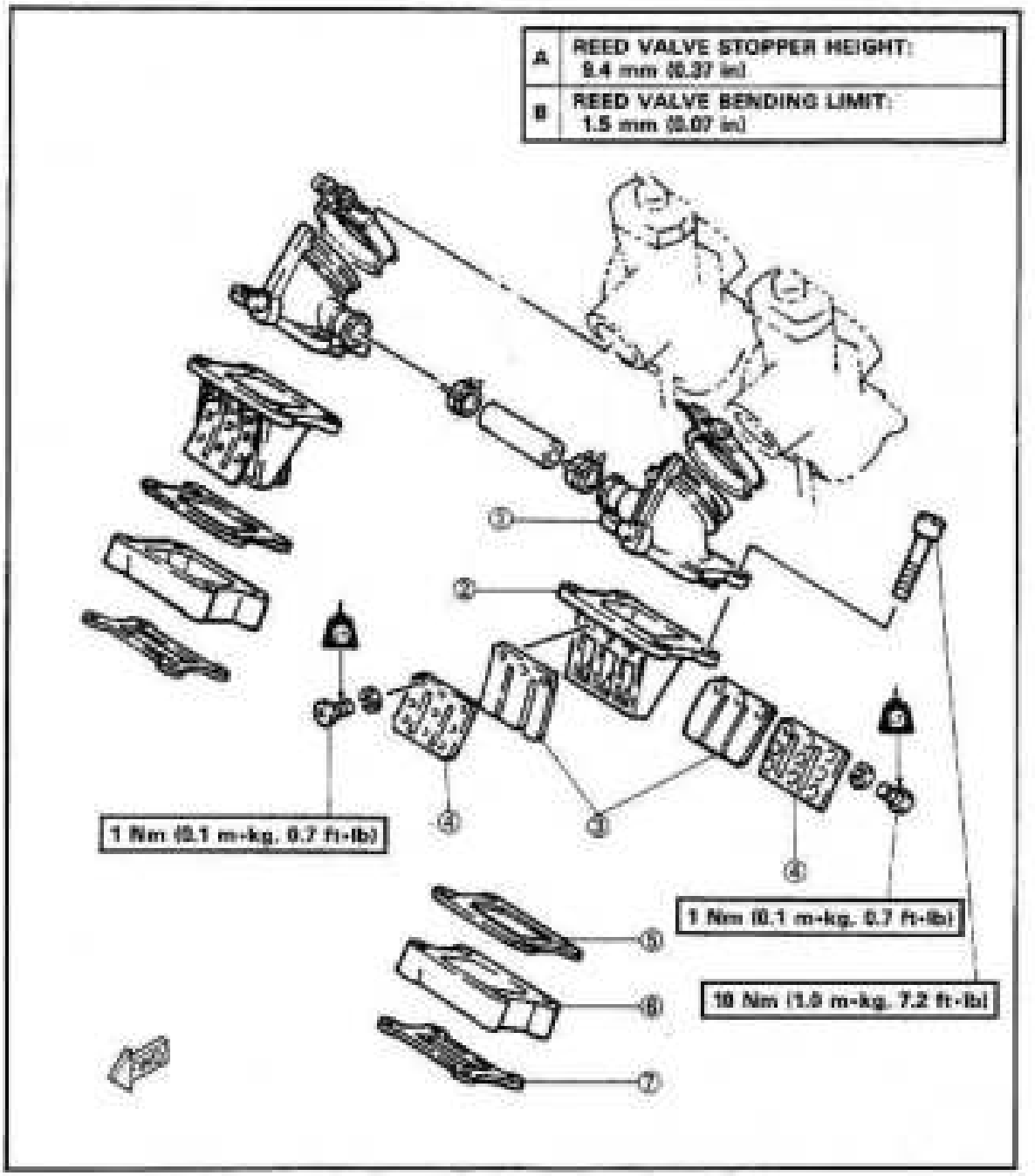


6. Adjust:
   •Fuel level

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.

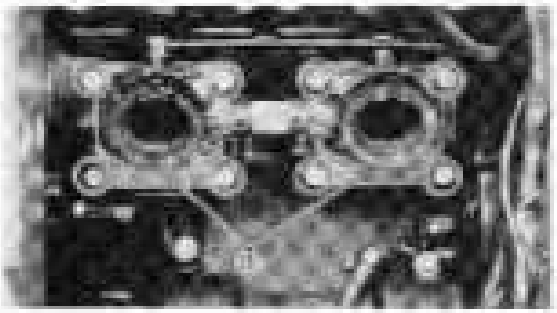
REED VALVE

1. Intake manifold
2. Reed valve seat
3. Reed valve
4. Reed valve stopper
5. Gasket
6. Spacer
7. Gasket

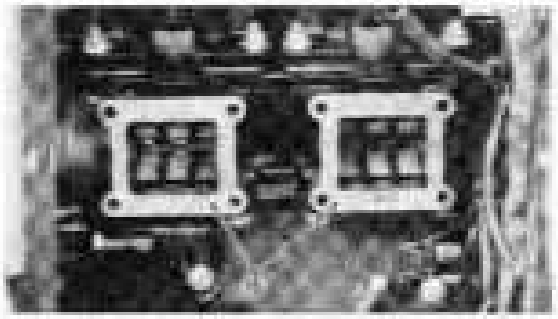


REMOVAL

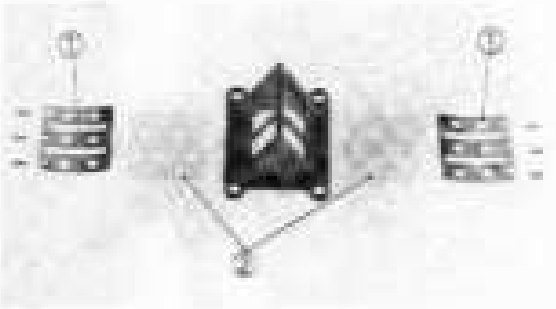
1. Remove:
   - Carburetor
     Refer to the "CARBURETOR – REMOVAL" section in the CHAPTER 6.



2. Remove:
   - Intake manifold ①

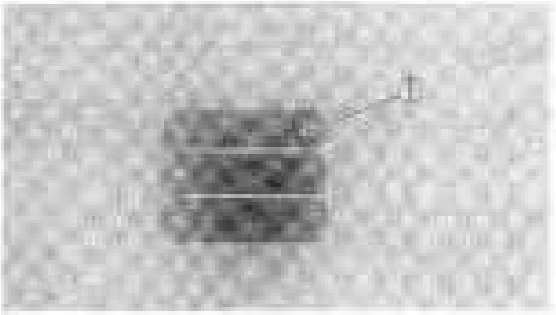


3. Remove:
   - Reed valve assembly ①



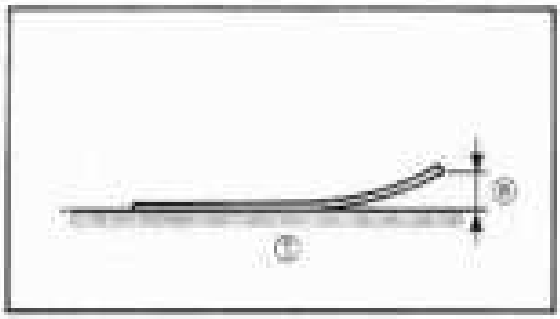
DISASSEMBLY

1. Remove:
   - Reed valve stopper ①
   - Reed valve ②



INSPECTION

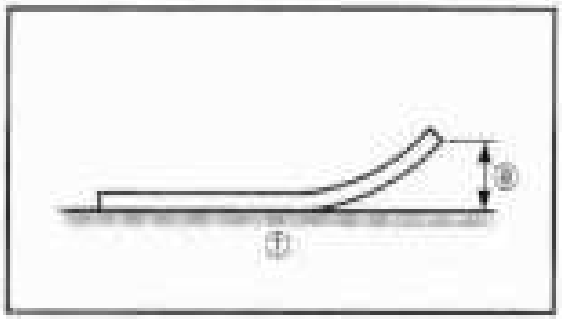
1. Inspect:
   - Reed valve ①
   - Reed valve stopper
     Cracks/Damage → Replace.



2. Measure:
   - Reed valve bending limit (a)
     Out of specification→Replace.

Reed Valve Bending Limit:
1.5 mm (0.07 in)

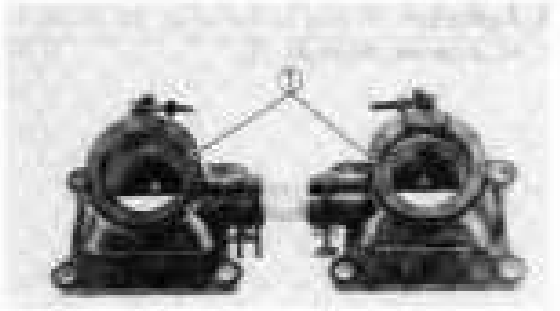
1 Surface plate



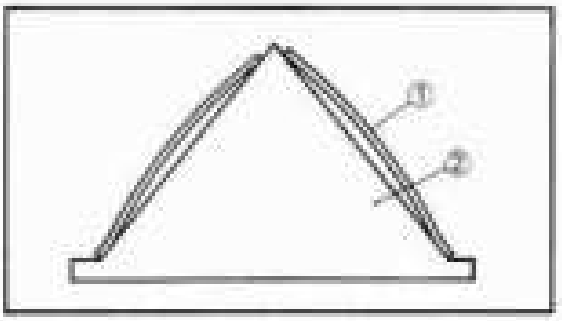
3. Measure:
   - Reed valve stopper height (a)
     Out of specification→Replace.

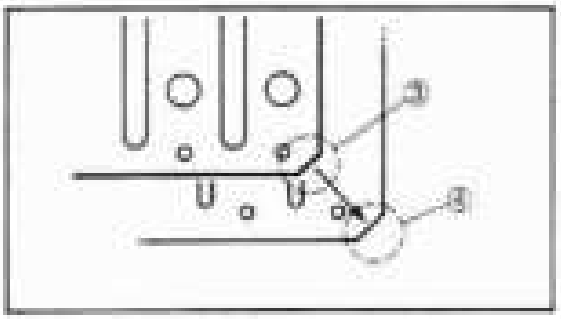
Reed Valve Stopper Height:
9.4 mm (0.37 in)

1 Surface plate



4. Inspect:
   - Intake manifold (1)
   - Gaskets
     Cracks/Damage→Replace.





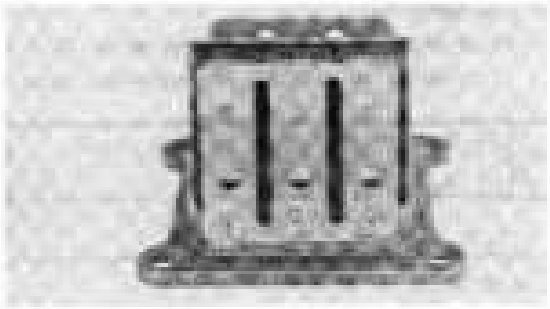
ASSEMBLY

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

1. Install:
   - Reed valves
   - Reed valve stoppers

NOTE:

- Place the reed valve (1) with its concave facing the reed valve seat (2).
- Fit the reed valve stopper cut (3) with the corresponding cut (4) on the reed valve.



2. Tighten:
   • Screws (Reed valve)

Screws (Reed Valve):
1 Nm (0.1 m•kg, 0.7 ft•lb)
Use LOCTITE®.

NOTE:
Tighten each screw gradually to avoid warping.

INSTALLATION

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

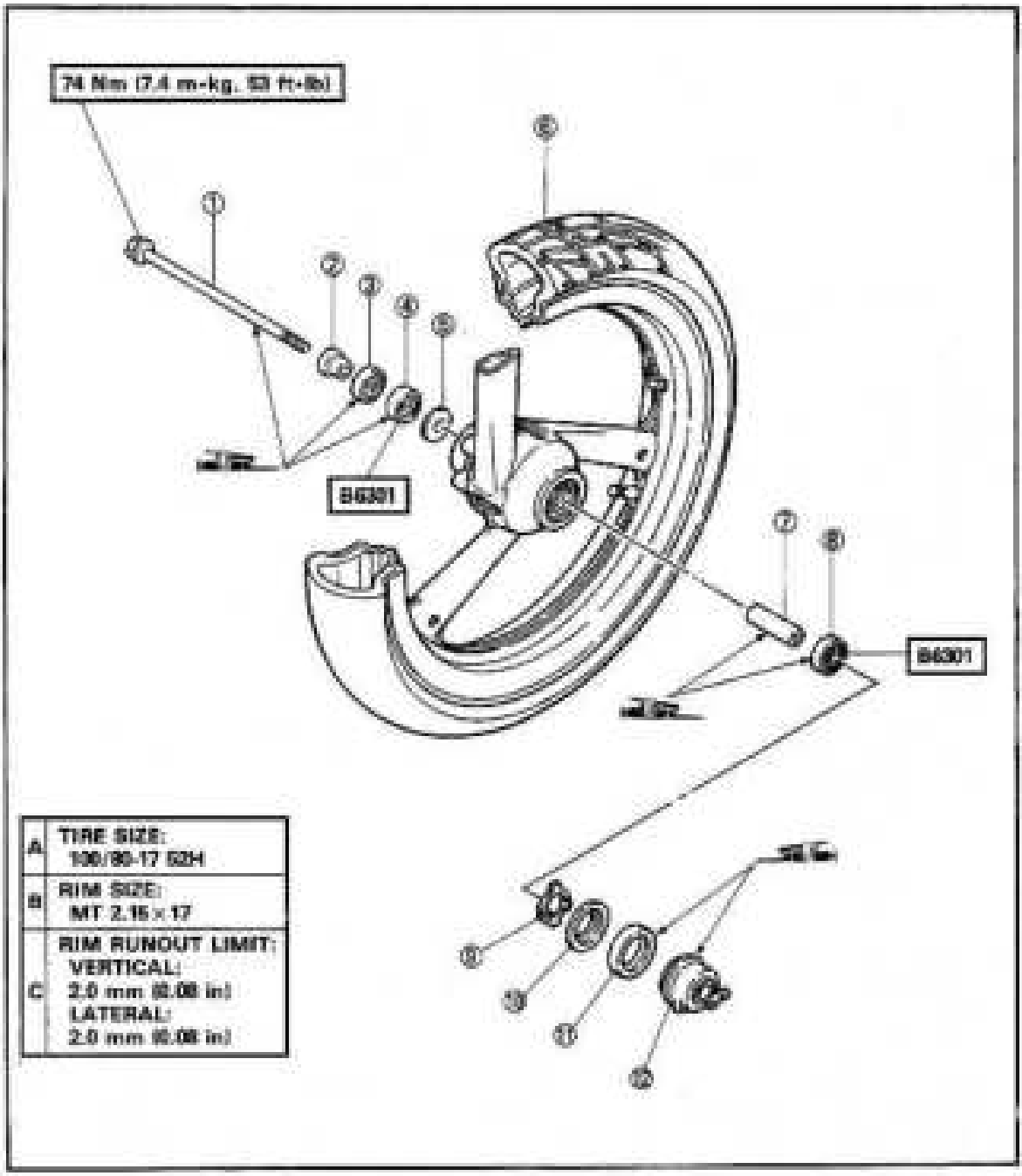
1. Tighten:
   • Bolts (Intake manifold)

Bolts (Intake Manifold):
10 Nm (1.0 m•kg, 7.2 ft•lb)

CHASSIS

FRONT WHEEL

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



A	TIRE SIZE: 130/90-17 62H
B	RIM SIZE: MT 2.15 × 17
C	RIM RUNOUT LIMIT: VERTICAL: 2.0 mm (0.08 in) LATERAL: 2.0 mm (0.08 in)

REMOVAL

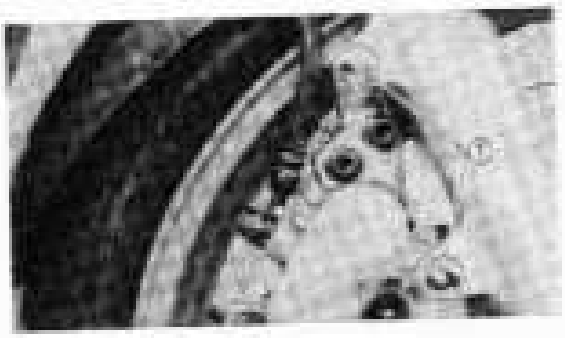
1. Remove:
   - Lower cowl (Right)
   - Lower cowl (Left)

   Refer to "COWLINGS" section in CHAPTER 3.

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

WARNING:

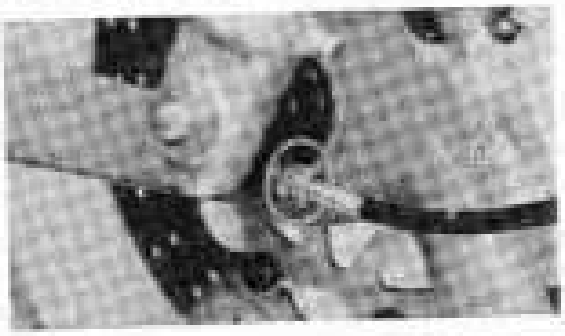
Support the motorcycle securely so there is no danger of it falling over.



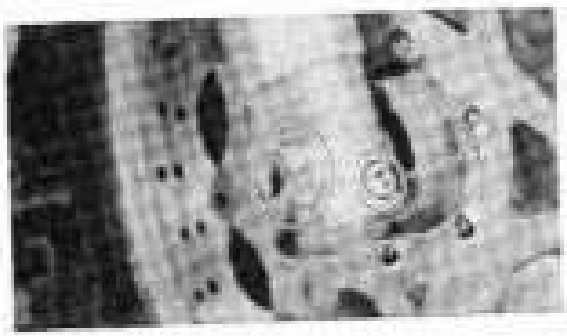
3. Remove:
   - Bolts ① (Brake caliper)

NOTE:

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

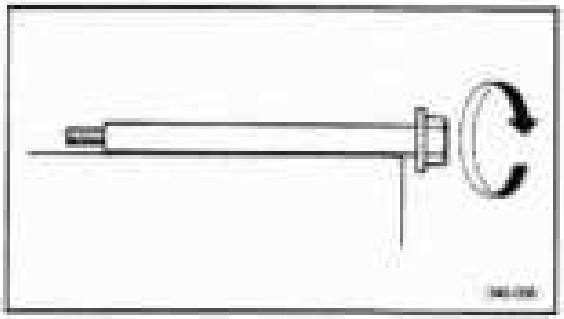


4. Remove:
   - Speedometer cable ①



5. Loosen:
   - Pinch bolt ①

6. Remove:
   - Front wheel



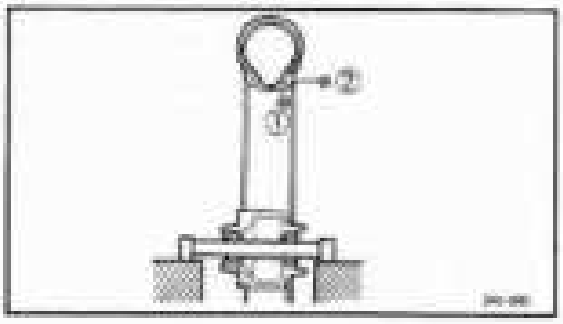
INSPECTION

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

WARNING:

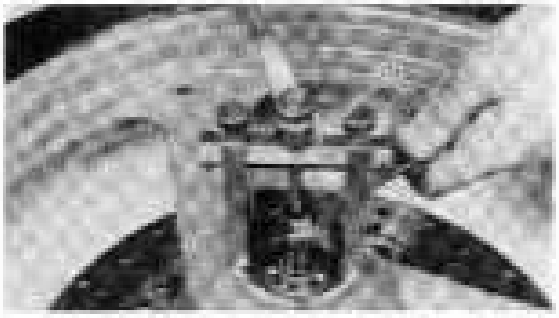
Do not attempt to straighten a bent axle.

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

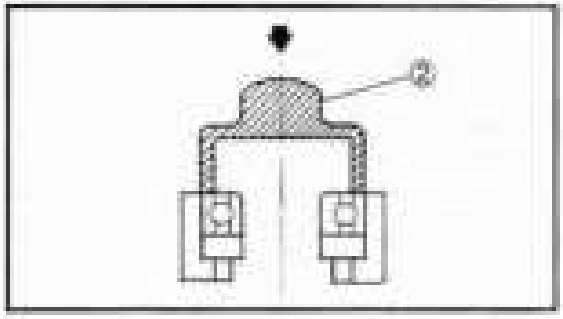


4. Measure:
   - Wheel runout
     Out of specification → Check the wheel and bearing play.

Rim Runout Limits:
Radial ①: 2.0 mm (0.08 in)
Lateral ②: 2.0 mm (0.08 in)



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



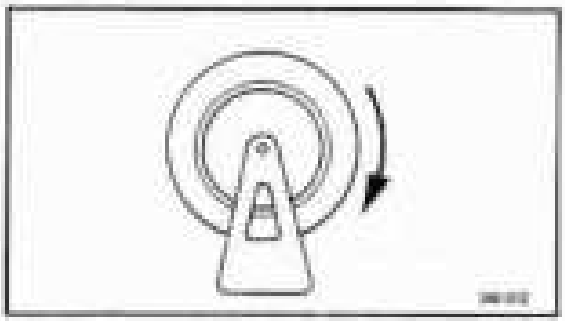
Wheel bearing replacement steps:
- Clean the outside of the wheel hub.
- Remove the bearing using a general bearing puller ①.
- Install the new bearing.

NOTE:

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

CAUTION:

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

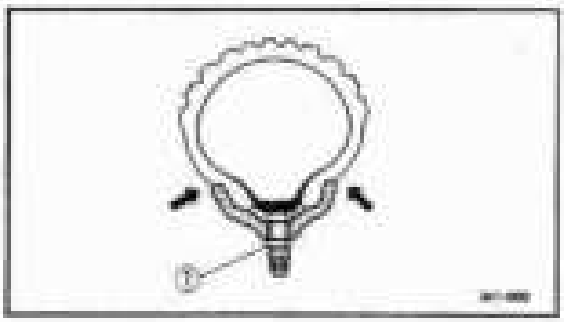


6. Check:
   - •Wheel balance
     Wheel is not statically balanced if it comes to rest at the same point after several light rotations.
     Out of balance→Install appropriate balance weight at lightest point (on top).

NOTE:
Balance wheel with brake disc installed.

WARNING

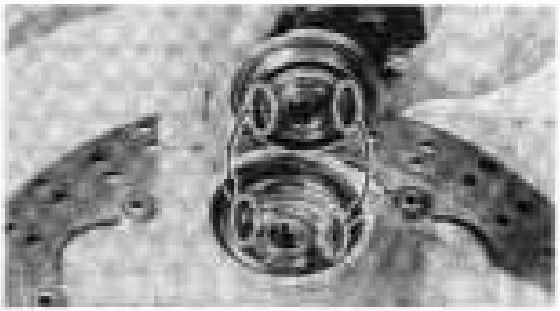
- **After mounting a tire, ride conservatively to allow proper tire to rim seating. Failure to do so may cause an accident resulting in motorcycle damage and possible operator injury.**
- **After a tire repair or replacement, be sure to torque tighten the valve stem locknut ① to specification.**



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

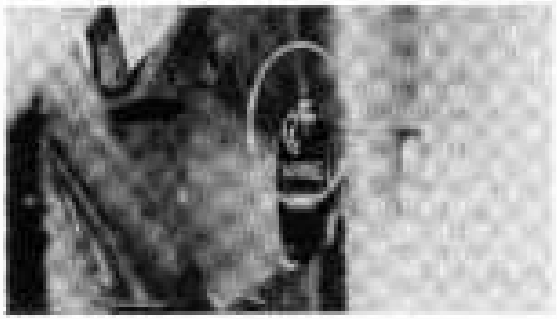
INSTALLATION
When installing the front wheel, reverse the removal procedure. Note the following points.

1. Apply:
   - •Lithium base grease
     Lightly grease to the oil seal and gear unit.



2. Install:
   - •Gear unit assembly

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



3. Install:
   - Front wheel assembly

NOTE:

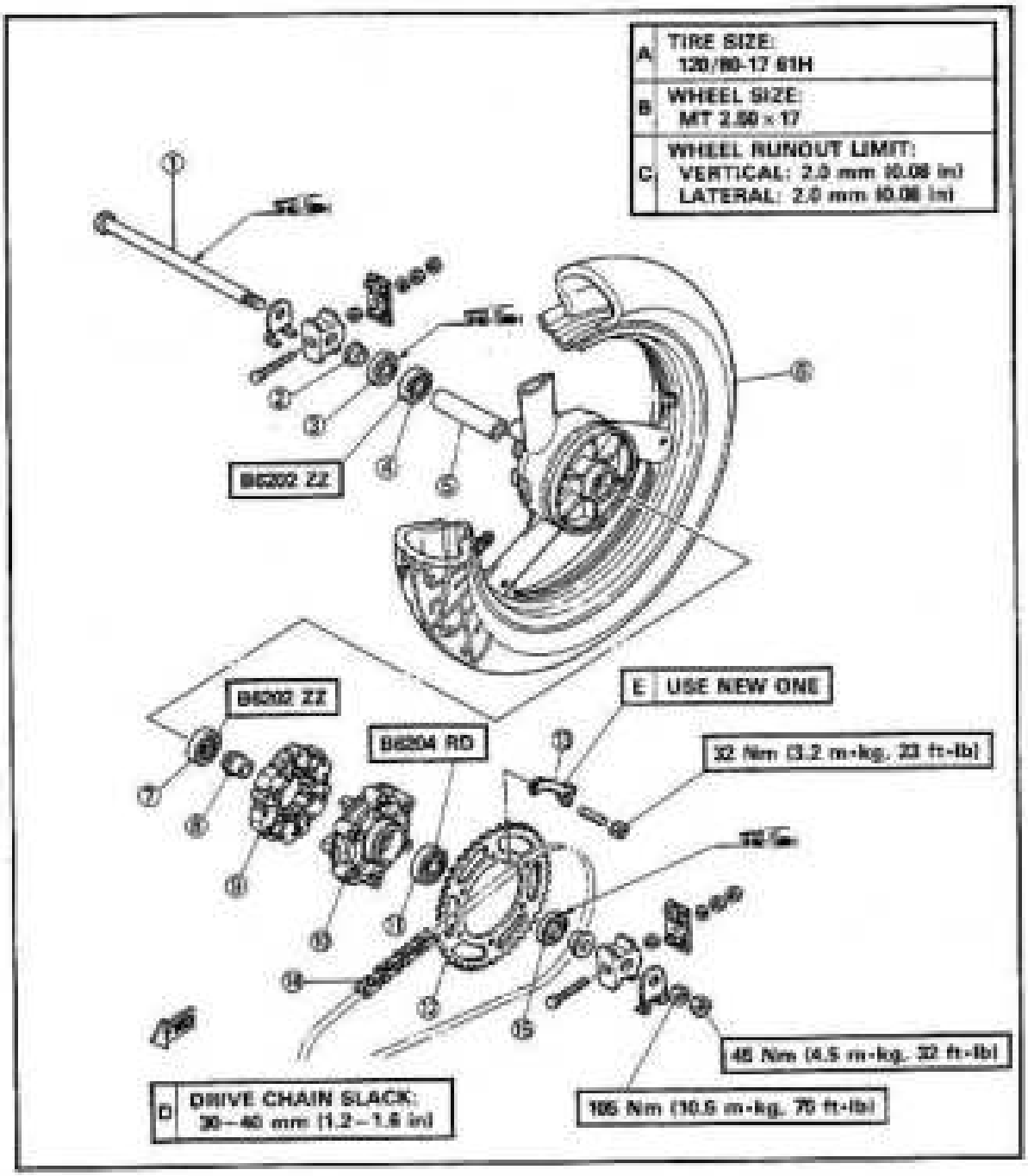
Be sure the boss on the outer fork tube correctly engages with the locating slot on the gear unit assembly.

4. Tighten:
   - Wheel axle
   - Pinch bolt
   - Bolts (Brake caliper)

Wheel Axle:
74 Nm (7.4 m·kg, 53 ft·lb)
Pinch Bolt:
33 Nm (2.3 m·kg, 17 ft·lb)
Bolts (Brake Caliper):
35 Nm (3.5 m·kg, 25 ft·lb)

REAR WHEEL

1. Wheel axle
2. Flange collar
3. Oil seal
4. Bearing
5. Collar
6. Rear wheel
7. Bearing
8. Flange collar
9. Damper
10. Hub
11. Bearing
12. Driven sprocket
13. Lock washer
14. Drive chain
15. Oil seal



REMOVAL

1. Remove:
   - Lower cowl (Right)
   - Lower cowl (Left)

   Refer to "COWLINGS" section in CHAPTER 3.

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

WARNING:

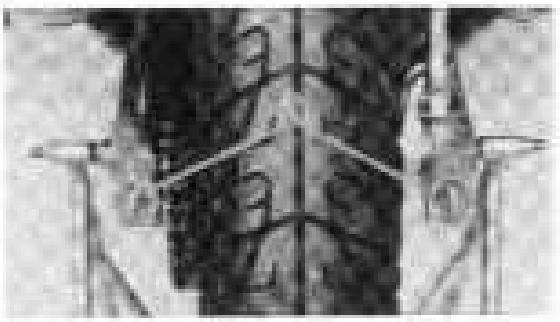
Support the motorcycle securely so there is no danger of it falling over.



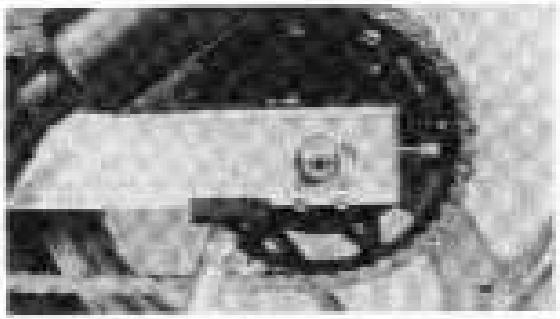
3. Remove:
   - Bolts ① (Brake caliper)

NOTE:

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



4. Loosen:
   - Nuts ① (Chain puller)



5. Remove:
   - Rear wheel

NOTE:

Before removing the rear wheel, push the wheel forward and remove the drive chain.

INSPECTION

1. Inspect:
   •Rear wheel axle
   Refer to "FRONT WHEEL—INSPECTION" section.

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

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

4. Check:
   •Wheel bearings
   Refer to "FRONT WHEEL—INSPECTION" section.

5. Check:
   •Wheel balance
   Refer to "FRONT WHEEL—INSPECTION" section.

INSTALLATION

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

1. Apply:
   •Lithium base grease
   Lightly grease to the oil seal lips.

2. Adjust:
   •Drive chain slack



Drive Chain Slack:
30 – 40 mm (1.2 – 1.6 in)

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

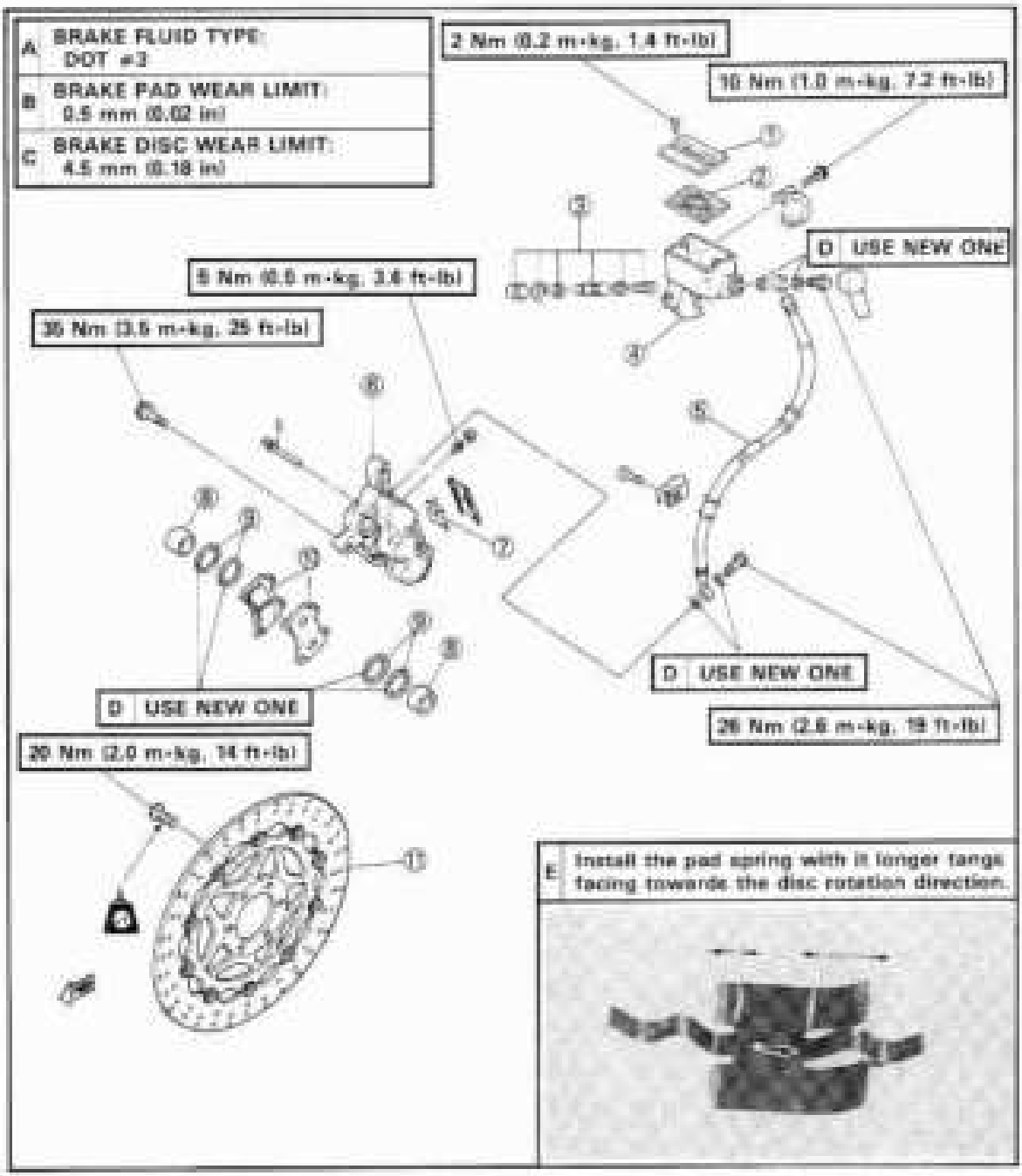
3. Tighten:
   - Axle nut
   - Locknut (Wheel axle)
   - Bolts (Brake caliper)



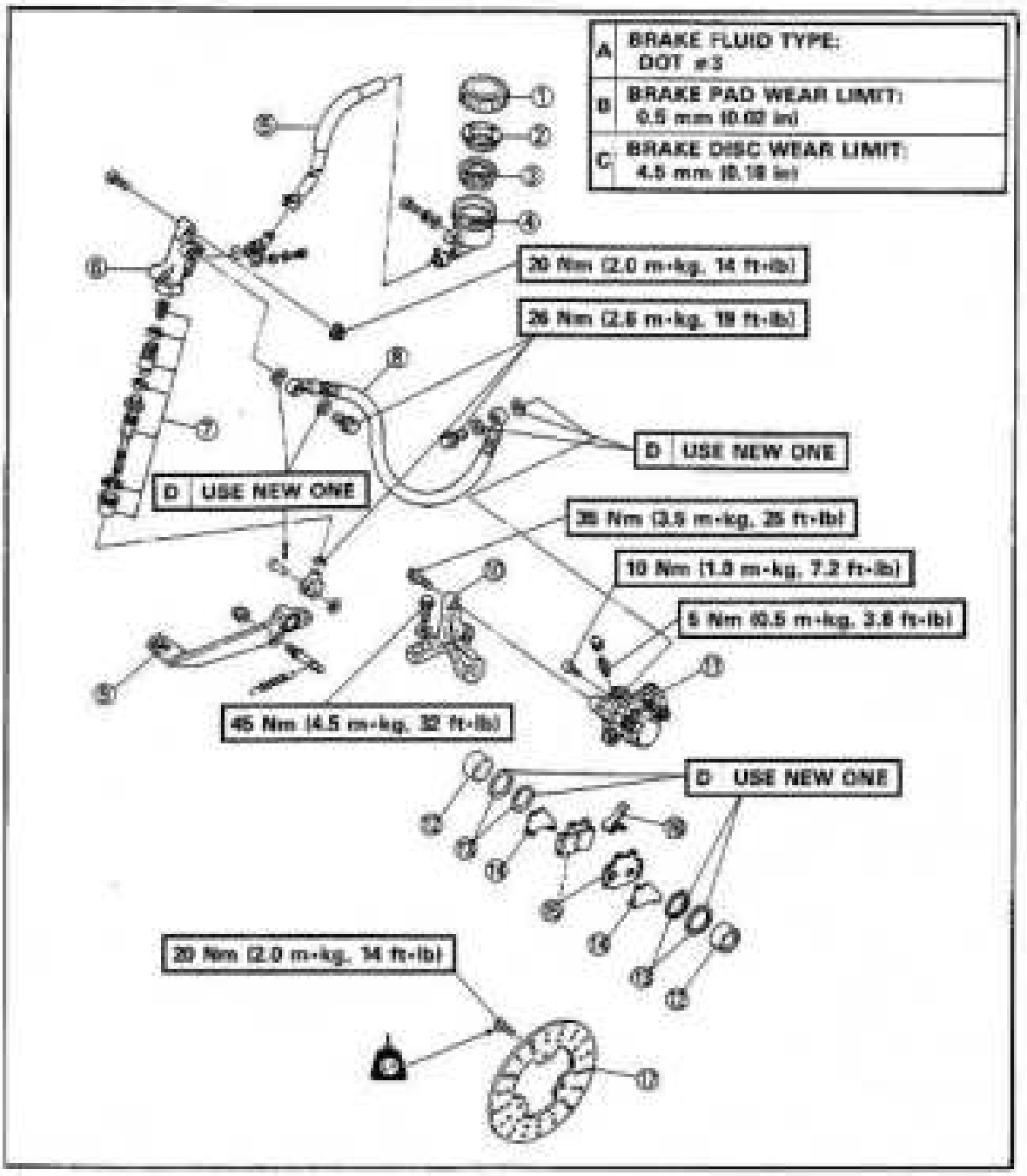
Axle Nut:
105 Nm (10.5 m·kg, 75 ft·lb)
Locknut (Wheel Axle):
45 Nm (4.5 m·kg, 32 ft·lb)
Bolts (Brake Caliper):
35 Nm (3.5 m·kg, 25 ft·lb)

FRONT AND REAR BRAKE

1. Master cylinder cap
2. Rubber seal
3. Master cylinder kit
4. Master cylinder
5. Brake hose
6. Brake caliper
7. Pad spring
8. Piston
9. Piston seal
10. Brake pad
11. Brake disc



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. Caliper bracket
11. Brake caliper
12. Piston
13. Piston seal
14. Shim
15. Brake pad
16. Pad spring
17. Brake disc



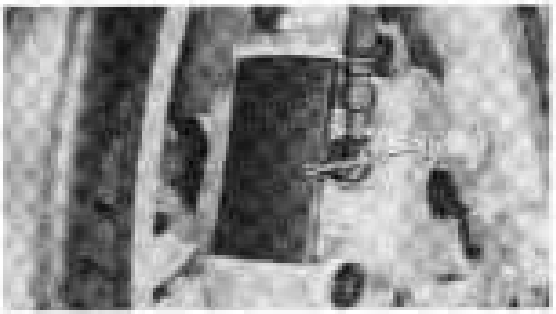
CAUTION:

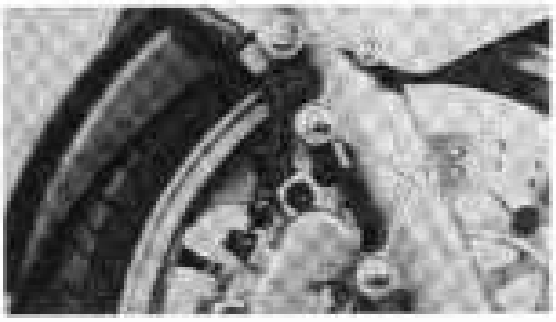
Disc brake components rarely require disassembly. Do not disassemble components unless absolutely necessary. If any hydraulic connection in the system is opened, the entire system should be disassembled, drained, cleaned and then properly filled and bled upon reassembly. Do not use solvents on brake internal components.
Solvents will cause seals to swell and distort. Use only clean brake fluid for cleaning. Use care with brake fluid. Brake fluid is injurious to eyes and will damage painted surfaces and plastic parts.

BRAKE PAD REPLACEMENT

NOTE:

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





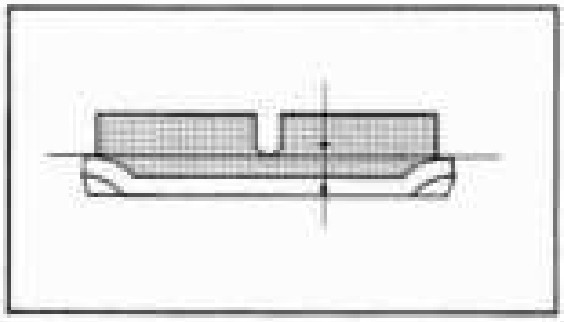
Front Brake

1. Remove:
   - Caliper cover ①

2. Remove:
   - Bolts ① (Brake caliper)
   - Bolt ② (Clamp)



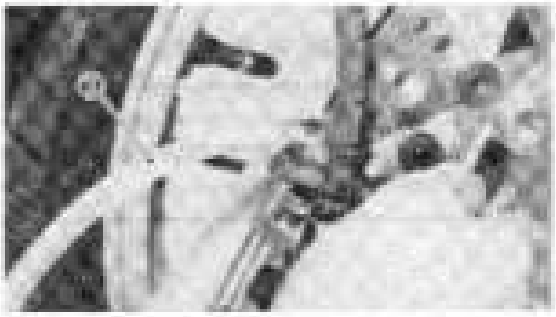
3. Remove:
   - Clips (1)
   - Retaining pins (2)
   - Pad spring (3)



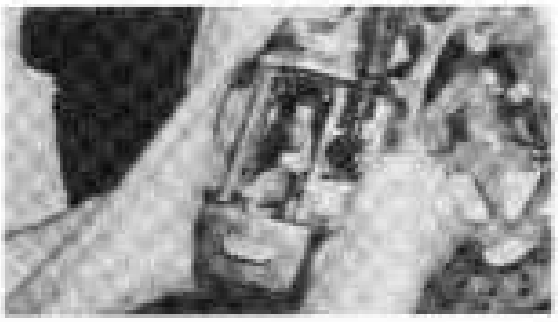
4. Remove:
   - Brake pads

Pad Wear Limit:
0.5 mm (0.02 in)

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



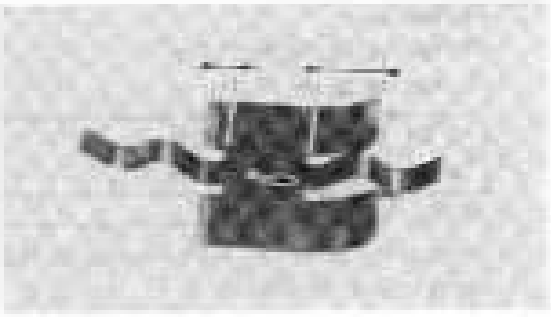
5. Connect a suitable hose (1) tightly to the caliper bleed screw. Then, place other end of this hose into an open container.



6. Loosen the caliper bleed screw and push the pistons into the caliper by your finger.

7. Tighten:
   - Caliper bleed screw

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



8. Install:
   - Brake pads (New)
   - Pad spring
   - Retaining pins
   - Clips

NOTE:
Install the pad spring with it longer tangs facing towards the disc rotation direction.

9. Install:
   - Bolts (Brake caliper)
   - Caliper cover

	Bolts (Brake Caliper): 36 Nm (3.5 m·kg, 25 ft·lb)



10. Inspect:
    - Brake fluid level

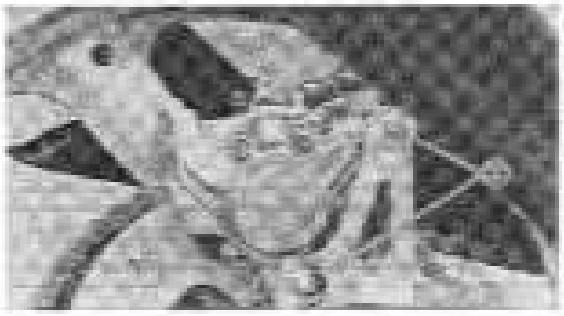
    Refer to "BRAKE FLUID INSPECTION" section in CHAPTER 3.

① "LOWER" level line

11. Check:
    - Brake lever operation

    A softy or spongy filling → Bleed brake system.

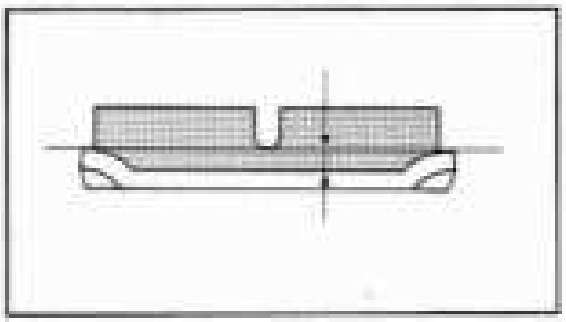
    Refer to "AIR BLEEDING" section in CHAPTER 7.



Rear Brake

1. Loosen:
   - Retaining bolts ①

2. Remove:
   - Bolts ② (Brake caliper)

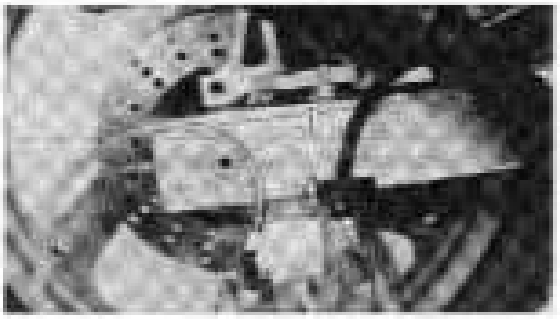


3. Remove:
   - Retaining bolts
   - Brake pads

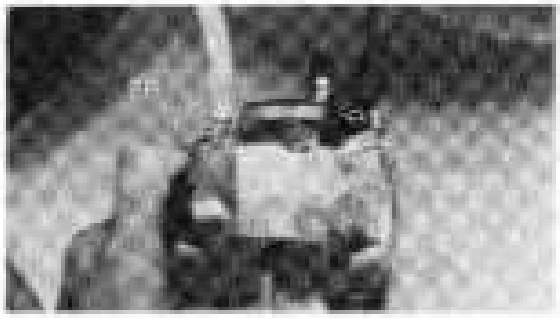
	Pad Wear Limit: 0.5 mm (0.02 in)

NOTE:

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



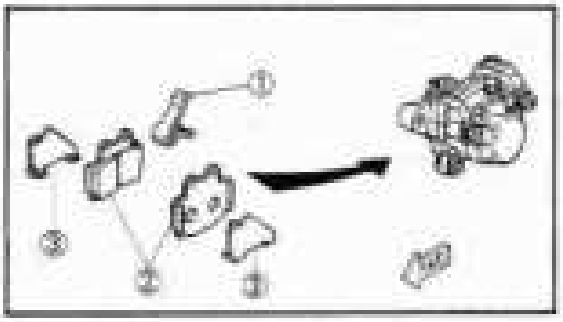
4. Connect a suitable hose ① tightly to the caliper bleed screw. Then, place other end of this hose into an open container.



5. Loosen the caliper bleed screw ① and push the pistons into the caliper by your finger.

6. Tighten:
   - Caliper bleed screw

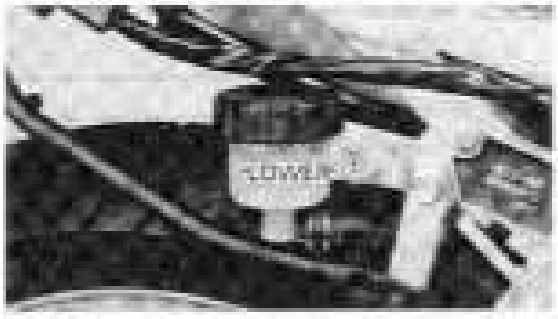
	Caliper Bleed Screw: **5 Nm (0.5 m·kg, 3.6 ft·lb)**



7. Install:
   - Pad spring ①
   - Brake pads ②
   - Shims ③

8. Install:
   - Retaining bolts
   - Bolts (Brake caliper)

	Retaining Bolts: **10 Nm (1.0 m·kg, 7.2 ft·lb)** **Bolts (Brake Caliper):** **35 Nm (3.5 m·kg, 25 ft·lb)**



9. Inspect:
   - Brake fluid level
   Refer to "BRAKE FLUID INSPECTION" section in CHAPTER 3.

① "LOWER" level line

10. Check:
- Brake pedal operation
  A softy or spongly filling → Bleed brake system.
  Refer to "AIR BLEEDING" section in CHAPTER 7.

CALIPER DISASSEMBLY

NOTE:

Before disassemblying the front brake caliper or rear brake caliper, drain the brake system of its brake fluid.

Front Brake

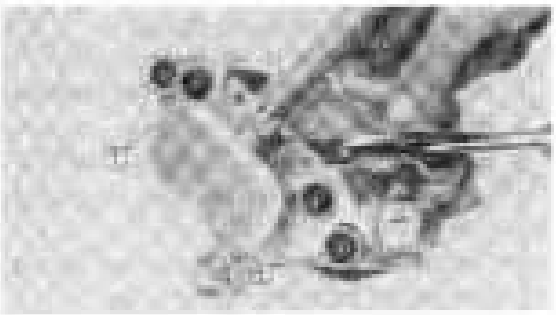
1. Remove:
- Brake pads
  Refer to "BRAKE PAD REPLACEMENT" section in CHAPTER 7.



2. Remove:
- Union bolt ①
- Copper washers
- Caliper body



3. Remove:
- Pistons ①
- Piston seals ②



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

WARNING:

Do not loosen the bolts ①.

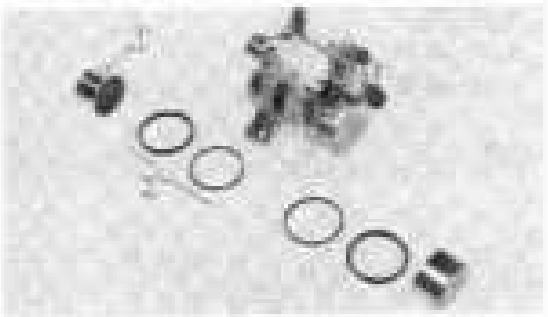
Rear Brake

1. Remove:
   - Brake pads

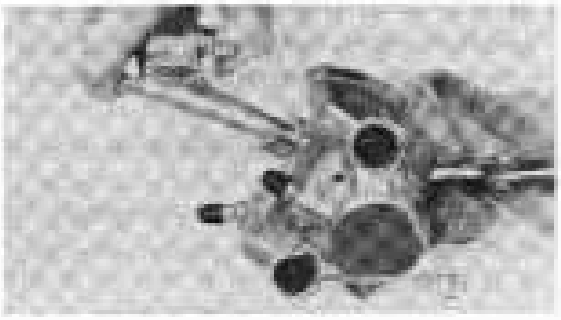
   Refer to "BRAKE PAD REPLACEMENT" section in CHAPTER 7.



2. Remove:
   - Union bolt ①
   - Copper washers



3. Remove:
   - Pistons ①
   - Piston seals ②



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

WARNING:

Do not loosen the bolts ①.

MASTER CYLINDER DISASSEMBLY

NOTE:

Before disassembling the front or rear brake master cylinders, drain the brake system of its brake fluid.

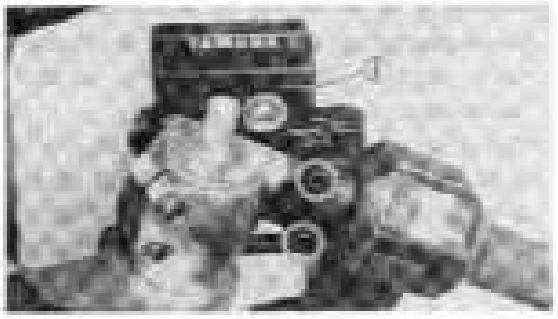


Front Brake

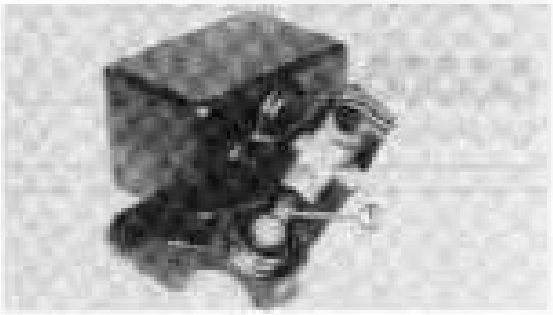
1. Remove:
   - Brake switch ①
   - Brake lever ②



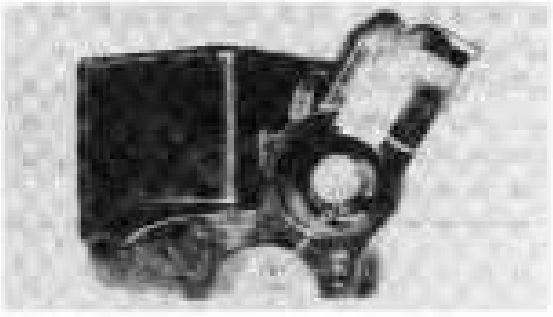
2. Remove:
   - Union bolt ①
   - Copper washers



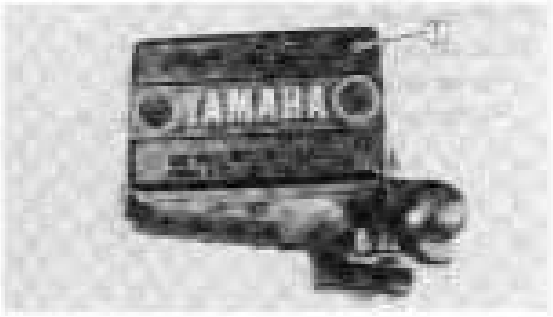
3. Remove:
   • Master cylinder assembly ①



4. Remove:
   • Dust boot ①



5. Remove:
   • Circlip ①
   • Master cylinder kit

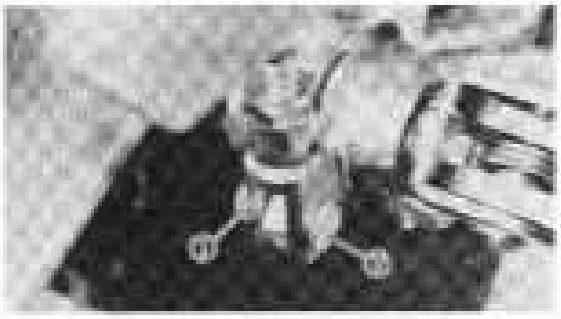


6. Remove:
   • Master cylinder cap ①
   • Rubber seal

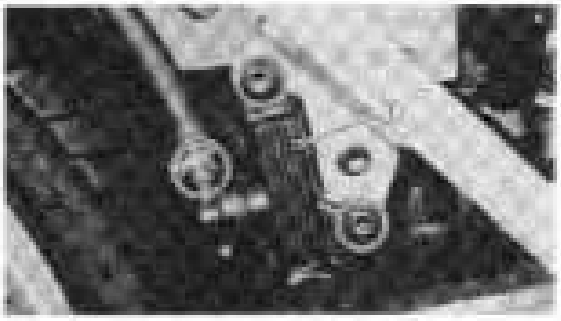


Rear Brake

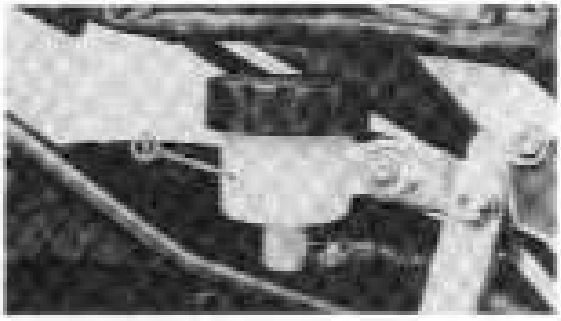
1. Remove:
   • Union bolt ①
   • Copper washer



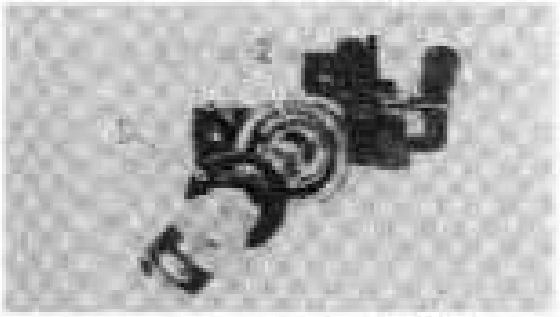
2. Remove:
   - Cotter pin ①
   - Plain washer
   - Pin ②



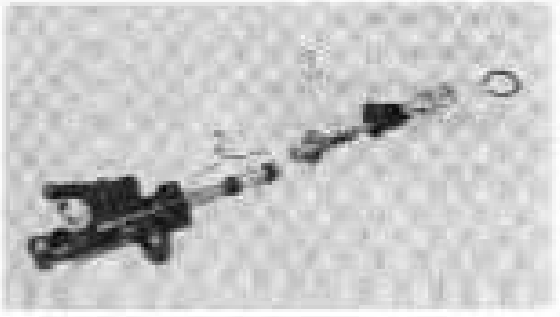
3. Remove:
   - Master cylinder assembly ①



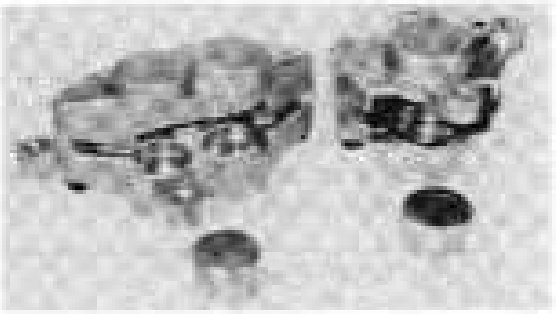
4. Remove:
   - Reservoir tank ①



5. Remove:
   - Dust boot ①
   - Circlip ②

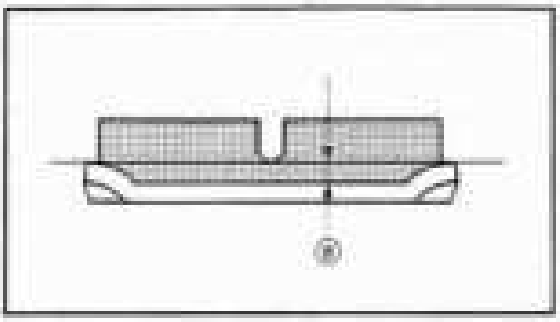


6. Remove:
   - Adjusting rod ①
   - Master cylinder kit ②



INSPECTION AND REPAIR

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

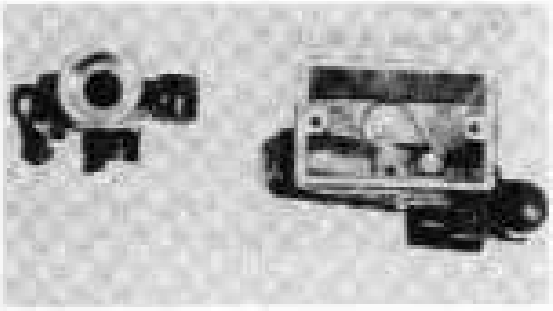


2. Measure:
   - Brake pad thickness (a)
     Out of specification → Replace.

Pad Wear Limit:
0.5 mm (0.02 in)

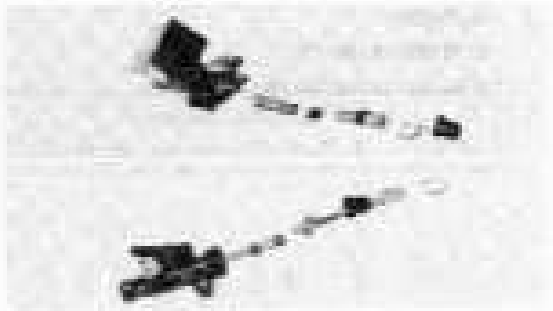
NOTE:
Replace the pads as a set if either is found to be worn to the wear limit.

3. Inspect:
   - Brake hose
     Cracks/Damage → Replace.



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

NOTE:
Clean all passages with new brake fluid.



5. Inspect:
   - Master cylinder kit
     Scratches/Wear → Replace.

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:
DOT #3

- **Replace the piston seals whenever a caliper is disassembled.**

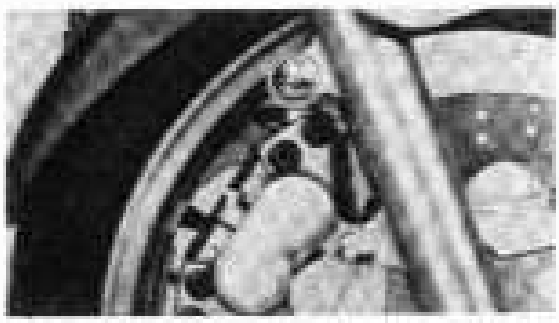


Front Brake

1. Install:
   - Piston seals ①
   - Pistons ②

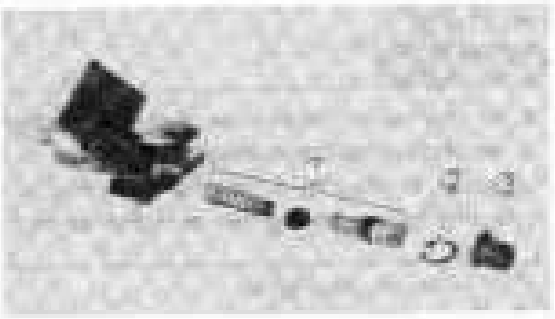
2. Install:
   - Brake pads
   - Pad spring
   - Retaining pins
   - Circlips
   - Caliper cover

   Refer to "BRAKE PAD REPLACEMENT" section in CHAPTER 7.

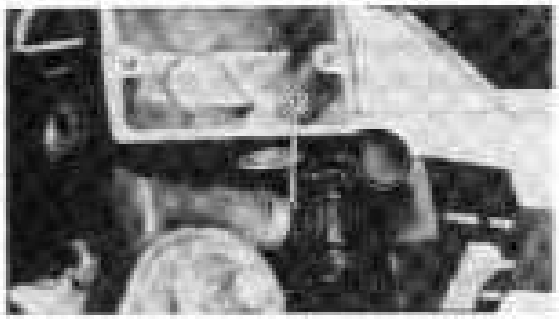


3. Install:
   - Brake caliper

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



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



5. Install:
   - Master cylinder (Front brake)

NOTE:
- Align the end of the master cylinder bracket with the punch mark ① on the handlebar.
- Install the master cylinder bracket with the "UP" mark facing upward.
- Tighten first the upper bolt, then the lower bolt.

	Bolts (Master Cylinder Bracket): 10 Nm (1.0 m·kg, 7.2 ft·lb)





6. Install:
   - Brake hose
   - Copper washers
   - Union bolts

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

A. Master cylinder
B. Brake caliper



CAUTION:
When installing the brake hose to the caliper, lightly touch the brake pipe ① with the projection ② on the caliper.

WARNING:
Always use new copper washers.



7. Install:
   - Brake switch ①
   - Brake lever ②

NOTE:

Apply lithium soap base grease to pivot shaft of brake lever.

8. Fill:
   - Brake fluid

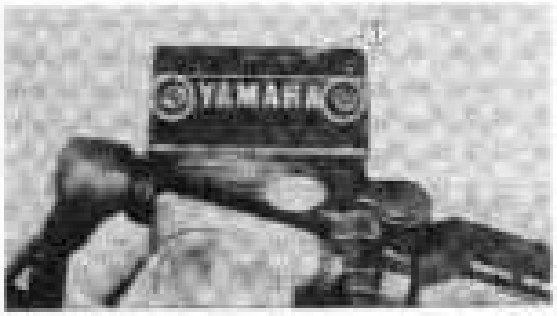
Recommended Brake Fluid:
DOT #3

CAUTION:

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

WARNING:

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



9. Install:
   - Rubber seal
   - Master cylinder cap ①

Screws (Master Cylinder Cap):
2 Nm (0.2 m·kg, 1.4 ft·lb)

10. Air bleed:
    - Brake system

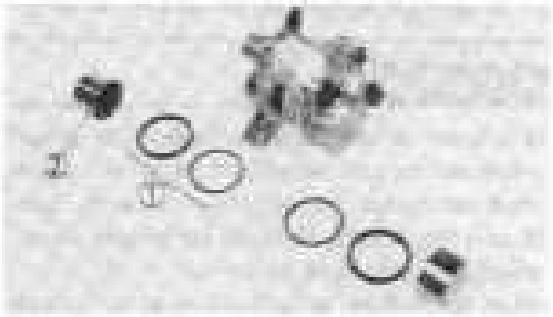
    Refer to "AIR BLEEDING" section in CHAPTER 7.



11. Inspect:
    - Brake fluid level

    Fluid level is under "LOWER" level line ① → Replenish.

    Refer to "BRAKE FLUID INSPECTION" section in CHAPTER 3.



Rear Brake

1. Install:
    - Piston seals ①
    - Pistons ②

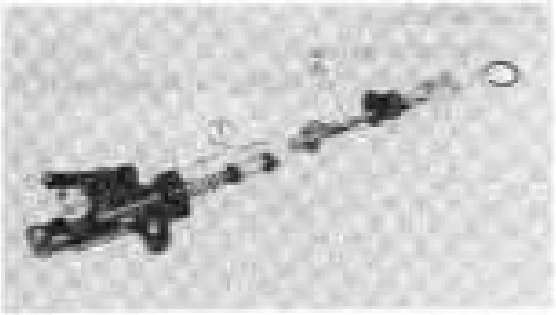
2. Install:
    - Brake pads
    - Pad spring
    - Shims
    - Retaining bolts

    Refer to "BRAKE PAD REPLACEMENT" section in CHAPTER 3.

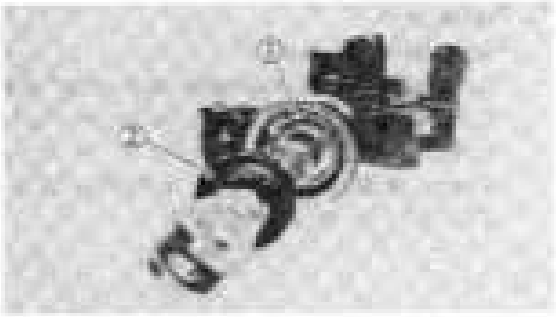


3. Install:
    - Brake caliper

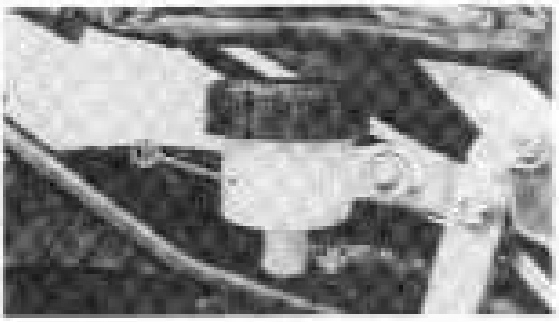
	Bolts (Brake Caliper): **35 Nm (3.5 m-kg, 25 ft-lb)**



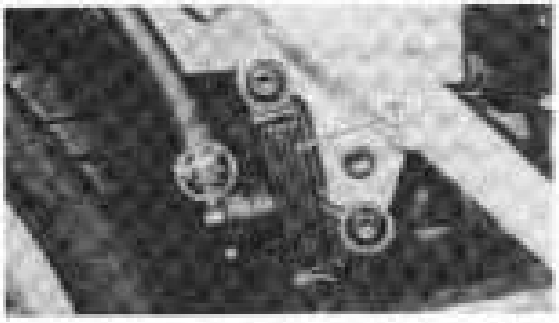
4. Install:
   - Master cylinder kit ①
   - Adjusting rod ②



5. Install:
   - Circlip ①
   - Dust boot ②

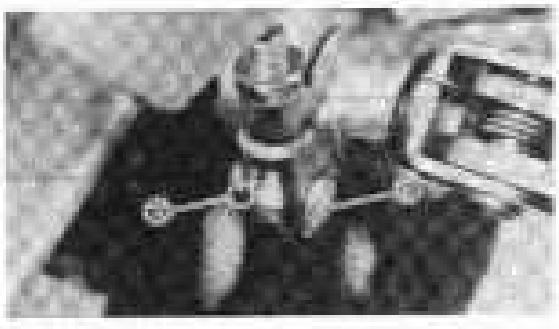


6. Install:
   - Reservoir tank ①



7. Install:
   - Master cylinder assembly ①

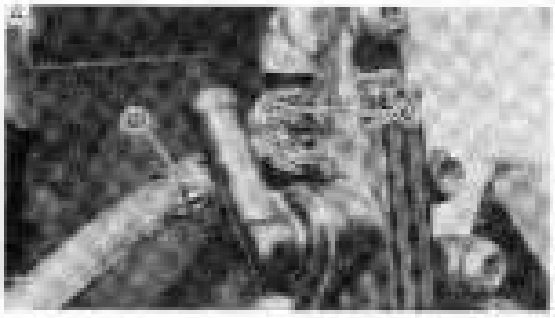
Bolts (Master Cylinder Assembly): 35 Nm (3.5 m•kg, 25 ft•lb)

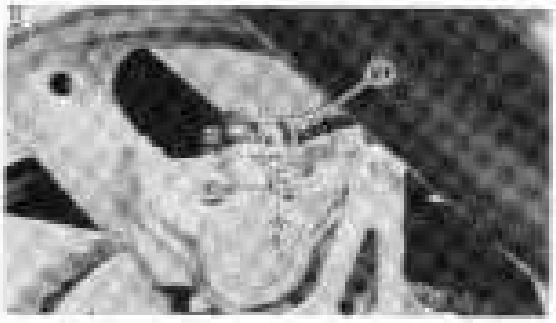


8. Install:
   - Pin ①
   - Plain washer
   - Cotter pin ②

WARNING:

Always use new cotter pin.





9. Install:
   - Brake hose
   - Copper washers
   - Union bolts

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

A Master cylinder
B Brake caliper

CAUTION:

When installing the brake hose, lightly touch the brake pipe (1) with the projections (2) on the caliper and master cylinder.

WARNING:

Always use new copper washers.

10. Fill:
    - Brake fluid

	Recommended Brake Fluid: DOT #3

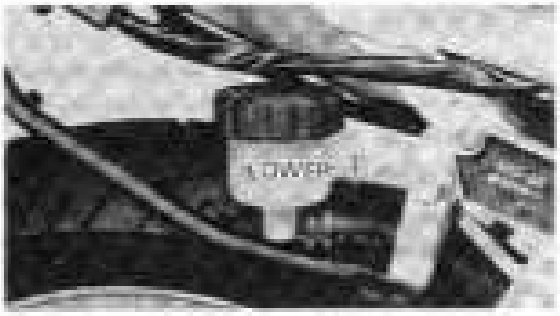
CAUTION:

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

WARNING:

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

11. Air bleed:
    - Brake system
      Refer to "AIR BLEEDING" section in CHAPTER 3.



12. Inspect:
    - Brake fluid level
      Fluid level is under "LOWER" level line (1) → Replenish.
      Refer to "BRAKE FLUID INSPECTION" section in CHAPTER 3.

AIR BLEEDING

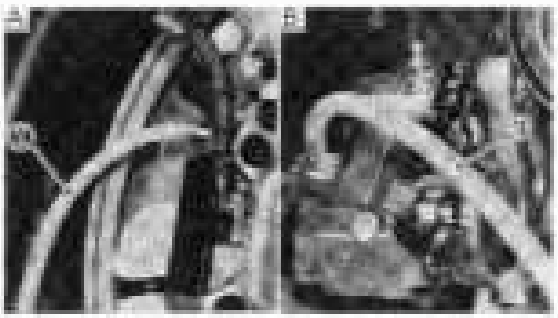
WARNING:

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

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

1. Bleed:
   - Brake fluid

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



A. Front
B. Rear

d. Place the other end of the tube into a container.
e. Slowly apply the brake lever or pedal several times.
f. Pull the lever in or push down on the pedal. Hold the lever or pedal in position.

g. Loosen the bleed screw and allow the lever or pedal to travel towards its limit.
h. Tighten the bleed screw when the lever or pedal limit has been reached; then release the lever or pedal.



Bleed Screw:
5 Nm (0.5 m·kg, 3.6 ft·lb)

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

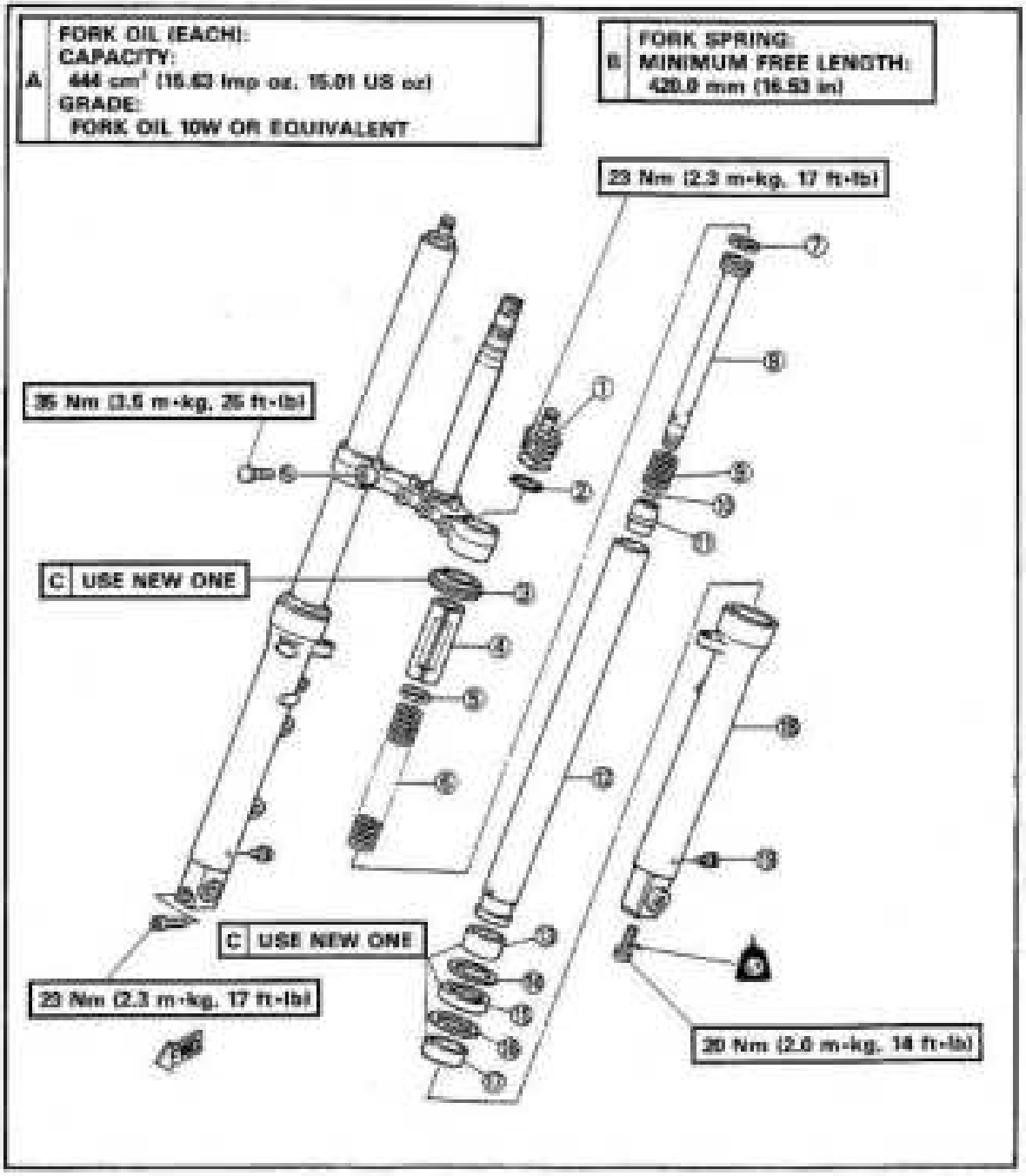
NOTE:

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

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

FRONT FORK

1. Cap bolt
2. O-ring
3. Dust seal
4. Spacer
5. Spring seat
6. Fork spring
7. Piston ring
8. Damper rod
9. Rebound spring
10. Circlip
11. Oil lock pieces
12. Inner fork tube
13. Slide metal
14. Retaining clip
15. Oil seal
16. Washer
17. Guide bush
18. Outer fork tube
19. Drain screw



REMOVAL

1. Remove:
   - Lower cowl (Right)
   - Lower cowl (Left)

   Refer to "COWLINGS" section in CHAPTER 3.

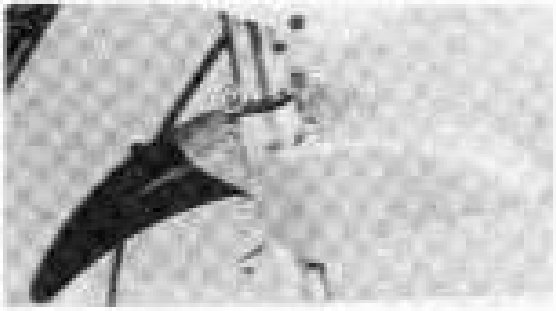
2. Elevate the front wheel by placing a suitable stand under the engine.

WARNING

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

3. Remove:
   - Front wheel

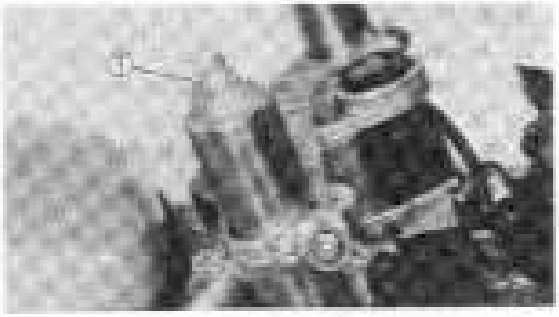
   Refer to "FRONT WHEEL — REMOVAL" section in CHAPTER 7.



4. Remove:
   - Front fender



5. Remove:
   - Handlebar (Right)
   - Handlebar (Left)
   - Spacers



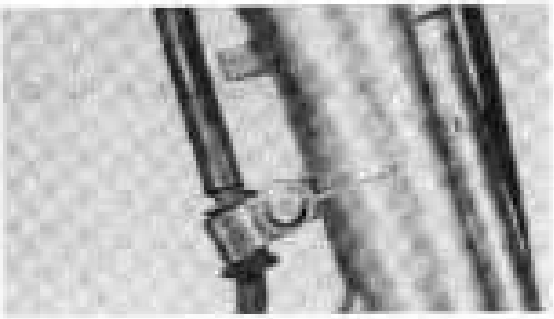
6. Loosen:
   - Cap bolt ①
   - Pinch bolt ② (Handle crown)



7. Loosen:
   - Pinch bolt ① (Under bracket)

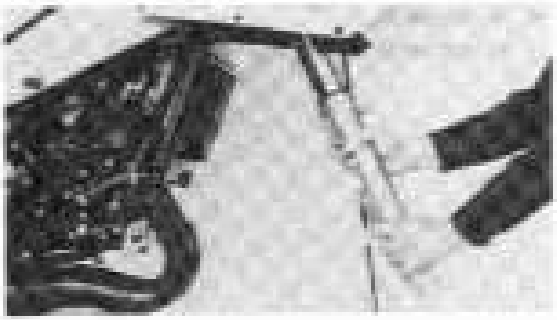
WARNING:

Support the fork before loosening the pinch bolt.

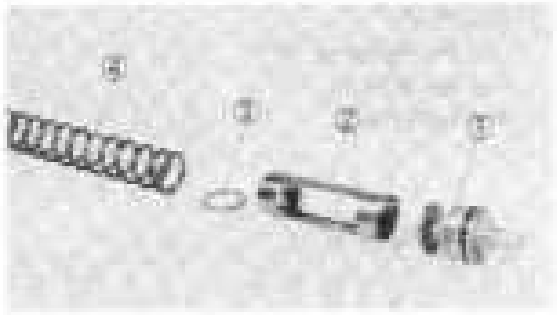


NOTE:

When removing the right-hand front fork, remove the bolt ① (Hose clamp).

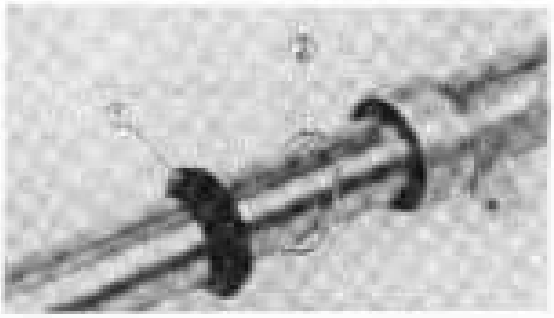


8. Remove:
   - Front fork



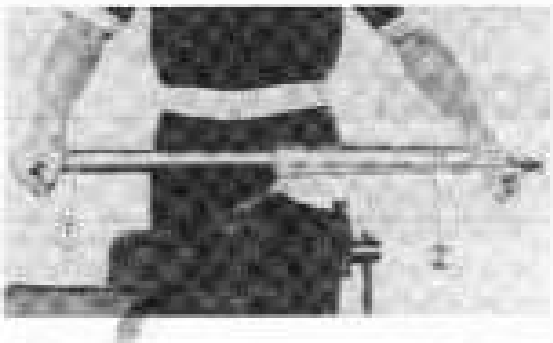
DISASSEMBLY

1. Remove:
   - Cap bolt ①
   - Spacer ②
   - Spring seat ③
   - Fork spring ④



2. Drain:
   - Fork oil

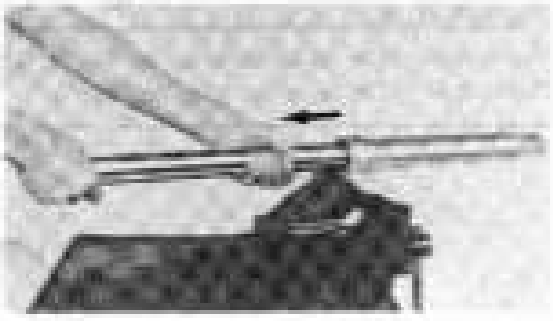
3. Remove:
   - Dust seal ①
   - Retaining clip ②



4. Remove:
   - Bolt (Damper rod)

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

T-Handle:
90890-01326
Holder:
90890-01294

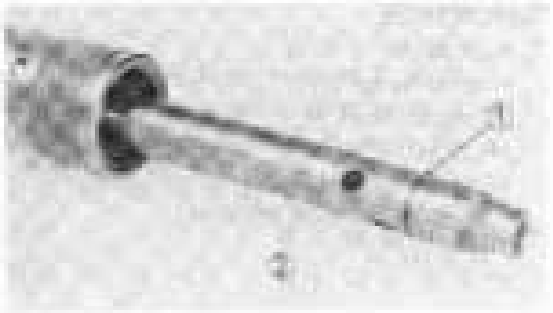


5. Remove:
   - Inner fork tube

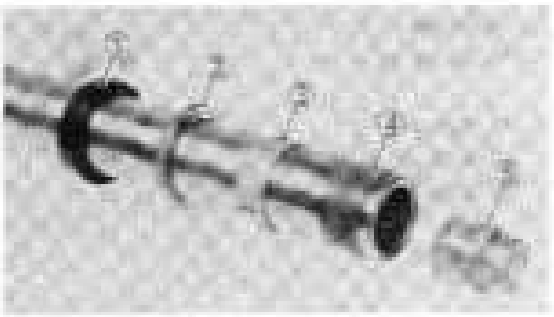
Removal steps:
- Hold the fork leg horizontally.
- Pull out the inner fork tube from the outer tube by forcefully, but carefully, withdrawing the inner fork tube.

CAUTION:

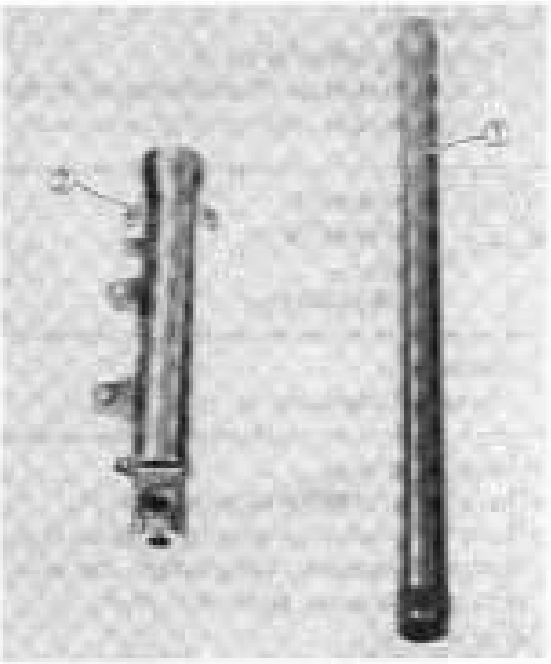
Avoid bottoming the inner tube in the outer tube during the above procedure, as the oil lock piece will be damaged.



6. Remove:
   - Circlip ①
   - Damper rod ②



7. Remove:
   - Oil seal ①
   - Washer ②
   - Guide bush ③
   - Slide bush ④
   - Oil lock piece ⑤



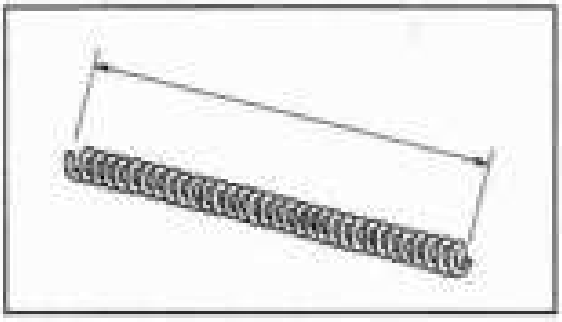
INSPECTION

1. Inspect:
   - Inner fork tube ①
   - Outer fork tube ②

   Scratches/Bends/Damage → Replace.

WARNING:

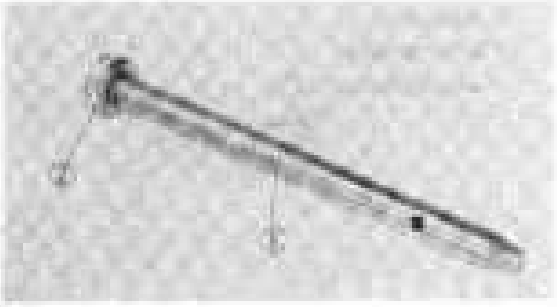
Do not attempt to straighten a bent inner fork tube as this may dangerously weaken the tube.



2. Measure:
   - Fork spring free length

   Out of specification → Replace.

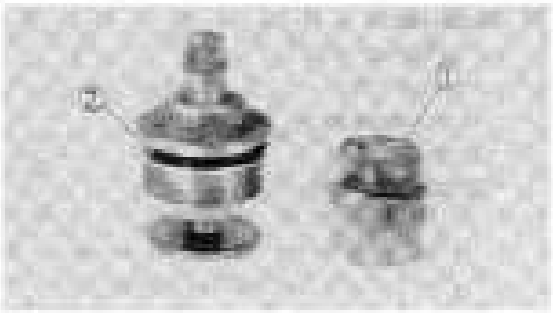
Fork Spring Free Length:
427.2 mm (16.82 in)
Minimum Free Length:
420.0 mm (16.53 in)



3. Inspect:
   - Damper rod ①

   Wear/Damage → Replace.
   Contamination → Blow out oil
   Oil passages with compressed air.
   - Piston ring ②

   Wear/Damage → Replace.



4. Inspect:
   - *Oil lock piece ①
   - *O-ring ②

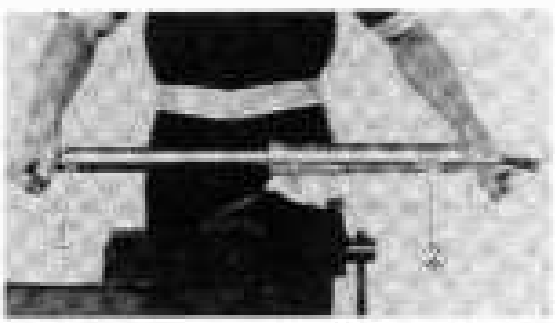
   Damage → Replace.

ASSEMBLY

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

NOTE:

- *In front fork reassembly, be sure to use following new parts.
  - * Guide bush
  - * Slide bush
  - * Oil seal
  - * Dust seal
- *Make sure all components are clean before reassembly.

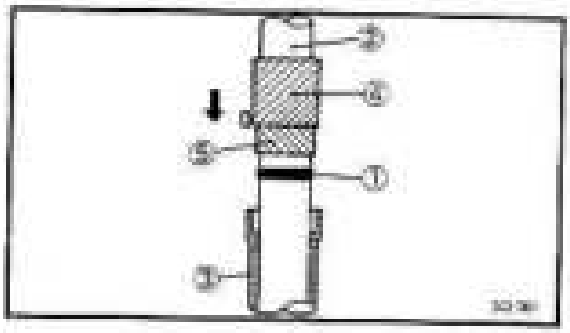


1. Tighten:
   - *Bolt (Damper rod)

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

T-Handle:
90890-01326
Holder:
90890-01294

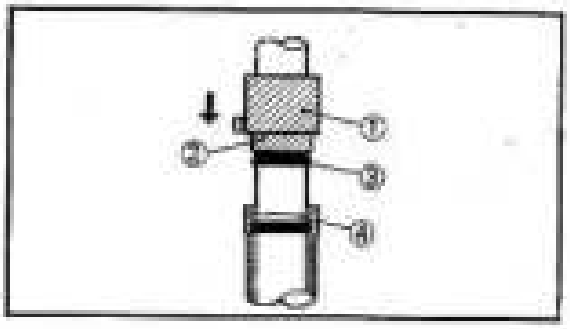
Bolt (Damper Rod):
20 Nm (2.0 m-kg, 14 ft-lb)
Apply LOCTITE®.



2. Install:
   •Guide bush ①
   Use the Fork Seal Driver Weight ④ and Adapter ⑤.

③ Inner fork tube
④ Outer fork tube

Fork Seal Driver Weight:
90890-01367
Adapter:
90890-01368



3. Install:
   •Oil seal ③
   Use the Fork Seal Driver Weight ① and Adapter ②.

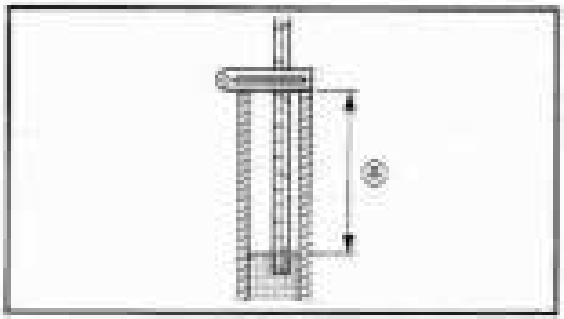
④ Washer

Fork Seal Driver Weight:
90890-01367
Adapter:
90890-01368

4. Fill:
   •Front fork

Fork Oil Capacity:
444 cm³ (15.63 Imp oz, 15.01 US oz)
Grade:
Fork Oil 10W or Equivalent

NOTE:
After filling the front fork with fork oil, slowly pump the front fork up and down to distribute oil.



5. Measure:
   • Oil level (B)
   Out of specification→Add or reduce oil.

Oil Level:
90 mm (3.54 in)
From the top of the inner fork tube.

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

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



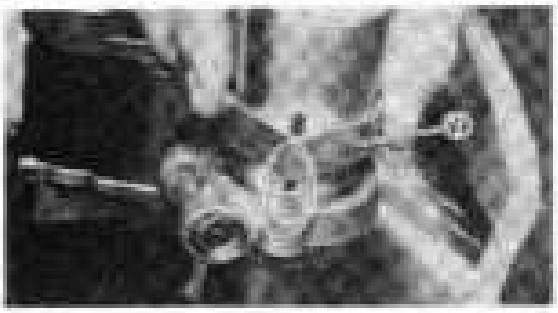
INSTALLATION
Reverse the "REMOVAL" procedure.
Note the following points.

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

NOTE:
Hold the inner tube with its top 52 mm (2.04 in) above the top of the handle crown.

2. Tighten:
   • Pinch bolt (Under bracket)
   • Cap bolt
   • Pinch bolt (Handle crown)

Pinch Bolt (Under Bracket):
35 Nm (3.5 m·kg, 25 ft·lb)
Cap Bolt:
23 Nm (2.3 m·kg, 17 ft·lb)
Pinch Bolt (Handle Crown):
32 Nm (3.2 m·kg, 23 ft·lb)



3. Install:
   • Spacers (1)

NOTE:
Insert the pin on the spacer into the corresponding hole on the handle crown.



4. Install:
   • Handlebars

NOTE:
Insert the pin on the spacer into the corresponding hole on the handlebar.

Bolts (Handlebar):
13 Nm (1.3 m·kg, 9.4 ft·lb)

5. Install:
   • Front fender

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

6. Install:
   • Front wheel

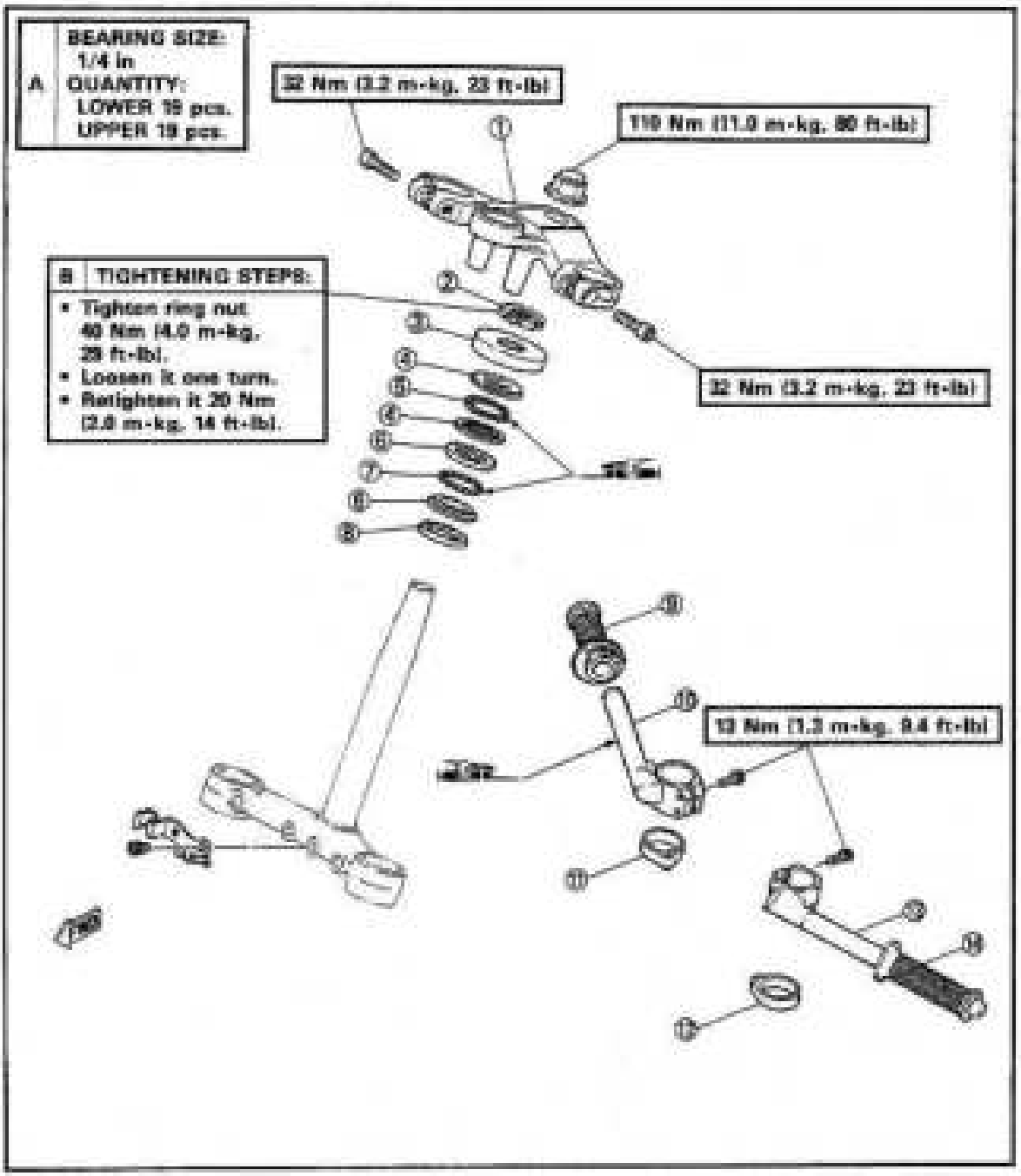
Wheel Axle:
74 Nm (7.4 m·kg, 53 ft·lb)
Bolts (Brake Caliper):
35 Nm (3.5 m·kg, 25 ft·lb)

Refer to "FRONT WHEEL — INSTALLATION" section in CHAPTER 7.

7. Install:
   • Lower cowl (Left)
   • Lower cowl (Right)
   Refer to "COWLINGS" section in CHAPTER 3.

STEERING HEAD AND HANDLEBARS

① Handle crown
② Ring nut
③ Ball race cover
④ Upper bearing race
⑤ Ball bearing
⑥ Lower bearing race
⑦ Ball bearing
⑧ Dust seal
⑨ Handlebar grip (Right-hand)
⑩ Handlebar (Right-hand)
⑪ Spacer
⑫ Spacer
⑬ Handlebar (Left-hand)
⑭ Handlebar grip (Left-hand)



REMOVAL

1. Remove:
   - Lower cowl (Right)
   - Lower cowl (Left)

   Refer to "COWLINGS" section in CHAPTER 3.

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

WARNING:

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

3. Remove:
   - Front wheel

   Refer to "FRONT WHEEL – REMOVAL" section in CHAPTER 7.



4. Remove:
   - Bolts ① (Master cylinder bracket)

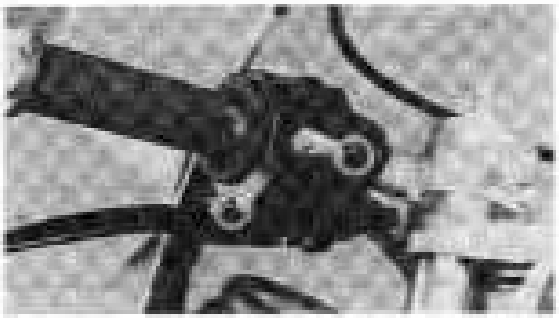


5. Loosen:
   - Screws ① (Right-hand handlebar switch)

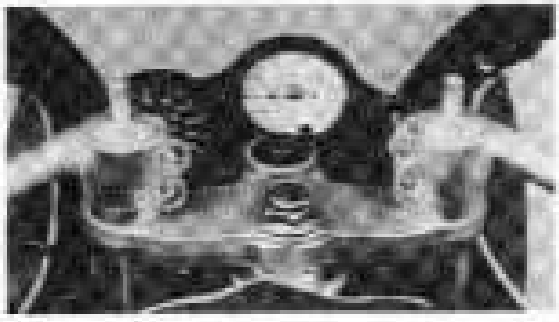


6. Loosen:
   - Locknut ①
   - Adjuster ②

7. Remove:
   - Clutch cable ③



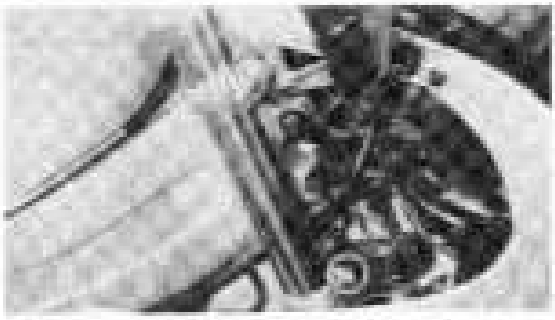
8. Remove:
   - Left handlebar switch



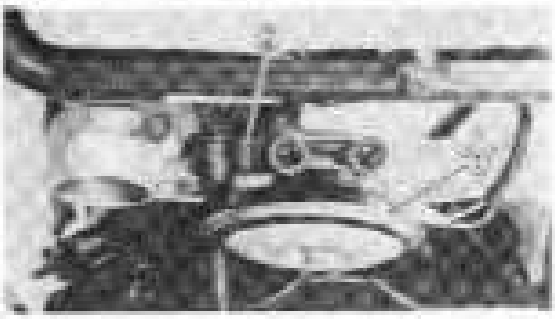
9. Remove:
   - Handlebar (Left-hand)
   - Handlebar (Right-hand)
   - Right-hand handlebar switch (With throttle grip)



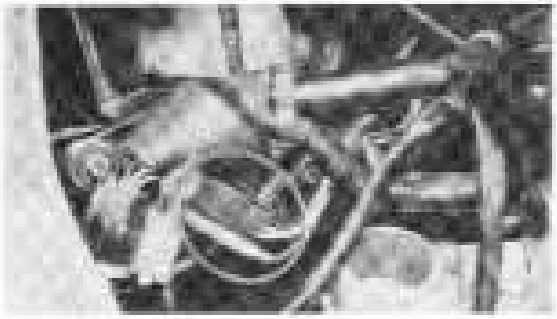
10. Remove:
    - Spacers ①



11. Remove:
    - Front forks



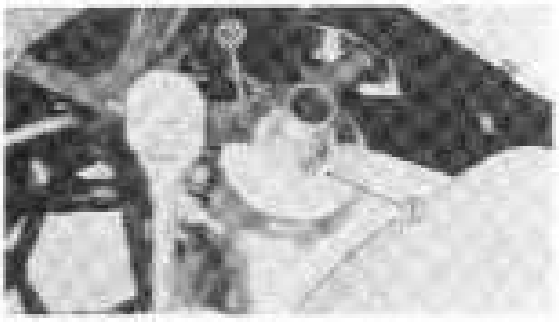
12. Remove:
- Horn ①
- Brake hose clamp ②



13. Disconnect:
- Main switch leads



14. Remove:
- Handle crown ①



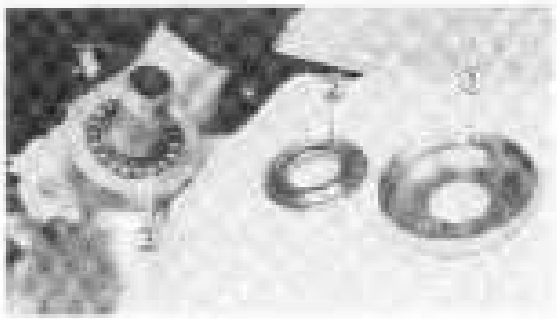
15. Remove:
- Ring nut ①

Use Ring Nut Wrench ②.

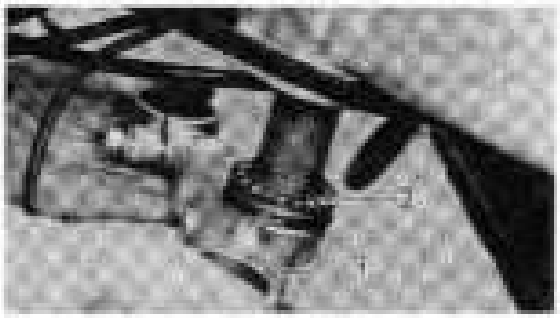
	Ring Nut Wrench: **90890-01403**

WARNING:

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



16. Remove:
- Bearing race cover ①
- Bearing race ②
- Upper bearings ③



17. Remove:
- Under bracket ①
- Lower bearings ②

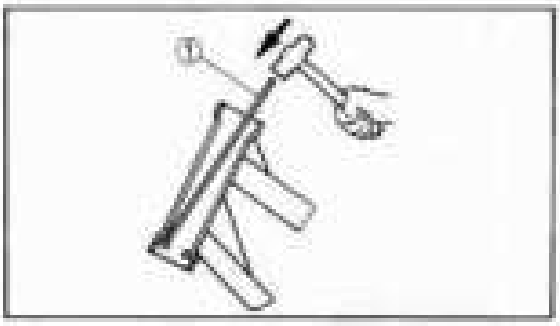
INSPECTION

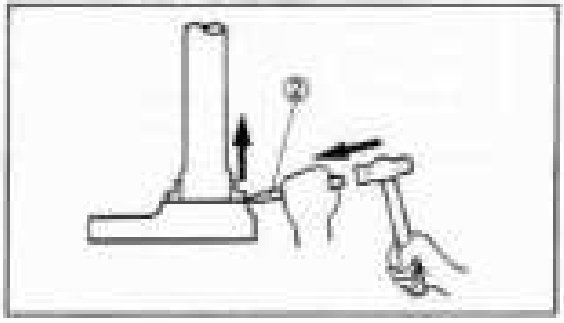
1. Wash the ball bearings and bearing races with a solvent.

2. Inspect:
- Ball bearings
- Bearing races
  Pitting/Damage → Replace.

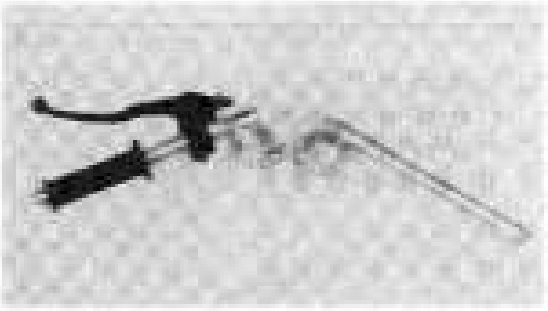
NOTE:

Always replace bearings and races as a set.





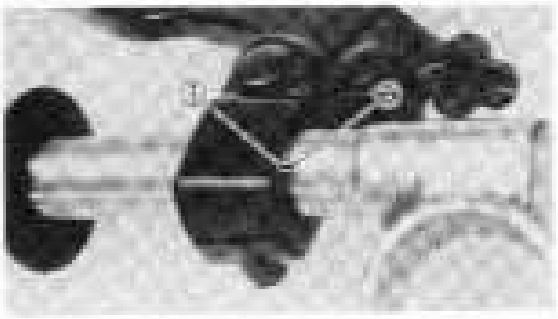
Bearing race replacement steps:
- Remove the bearing races on the head pipe using long rod ① and the hammer as shown.
- Remove the bearing race on the under bracket using the floor chisel ② and the hammer as shown.
- Install the new dust seal and races.



3. Inspect:
- Handlebars
  Bends/Cracks/Damage → Replace.

WARNING:

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



Left-hand handlebar replacement steps:
- For reinstalling the lever holder, put an identifying mark (1) on the lever holder as shown.

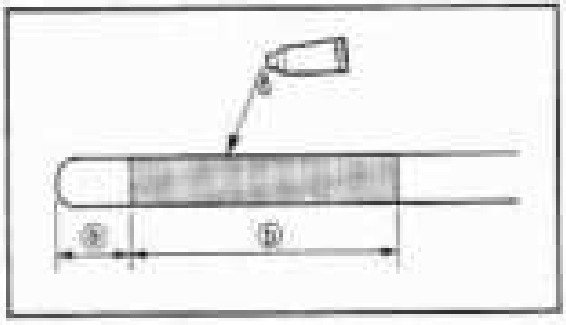
(2) Punch mark
- Remove the handlebar grip and lever holder.

- Install the lever holder to a new handlebar.

NOTE:

Align the identifying mark on the lever holder with the punch mark on the handlebar.

Bolt (Lever Holder):
13 Nm (1.3 m·kg, 9.4 ft·lb)



- Apply a light coat of an adhesive for rubber on the handlebar end as shown.

(a) 14 mm (1.57 in)
(b) 115 mm (4.53 in)
- Install the handlebar grip as shown.

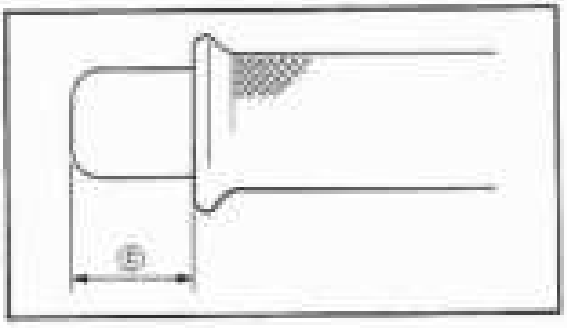
(c) 14 mm (1.57 in)

NOTE:

Wipe off excess adhesive with a clean rag.

WARNING:

Leave the handlebar intact until the adhesive becomes dry enough to make the grip and handlebar stuck securely.

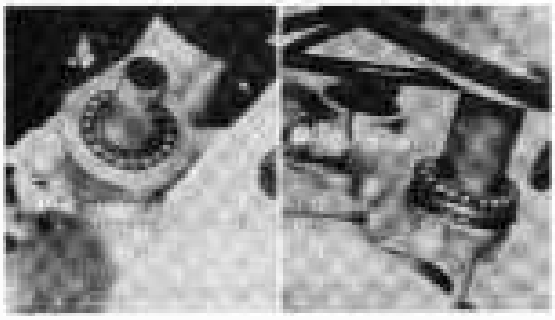


INSTALLATION

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

1. Apply:
   - Lithium soap base grease

   To bearing races.



2. Install:
   •Bearings
   Arrange the bearings around race, and apply more grease.

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

3. Install:
   •Under bracket

WARNING:

Hold the under bracket until it is secured.



4. Tighten:
   •Ring nut

Ring nut tightening steps:
•Tighten the ring nut using the Ring Nut Wrench.

Ring Nut Wrench:
90890-01403

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

Ring Nut (Initial Tightening):
40 Nm (4.0 m•kg, 29 ft•lb)

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

WARNING:

Avoid over-tightening.

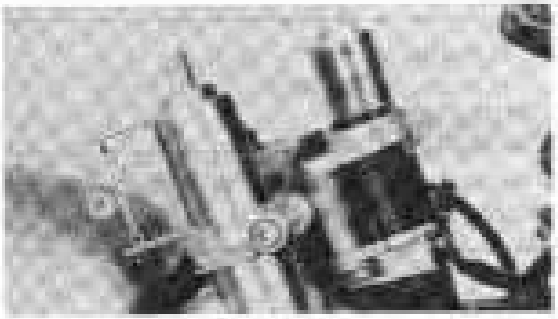
Ring Nut (Final Tightening):
20 Nm (2.0 m•kg, 14 ft•lb)



5. Install:
   • Handle crown

NOTE:

Temporary tighten the steering fitting nut ①.



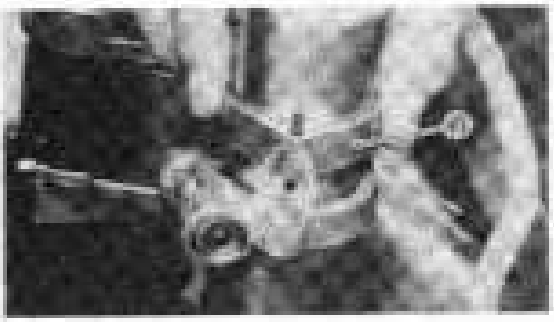
6. Install:
   • Front forks
   Refer to the "FRONT FORK—INSTALLATION" section.

② 52 mm (2.04 in)

	Pinch Bolt (Under Bracket): **35 Nm (3.5 m•kg, 25 ft•lb)** **Pinch Bolt (Handle Crown):** **32 Nm (3.2 m•kg, 23 ft•lb)**

7. Tighten:
   • Steering fitting nut

	Steering Fitting Nut: **110 Nm (11.0 m•kg, 80 ft•lb)**



8. Install:
   • Spacers ①

NOTE:

Insert the pin on the spacer into the corresponding hole on the handle crown.

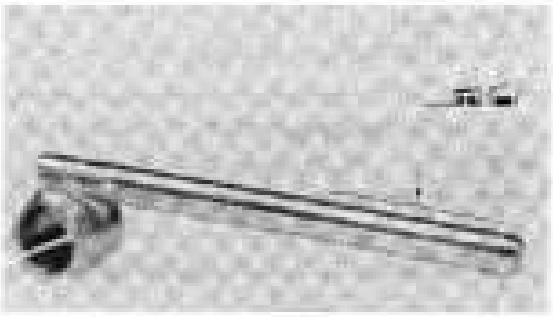


9. Install:
   • Handlebars

NOTE:

Insert the pin on the spacer into the corresponding hole on the handlebar.

	Bolts (Handlebar): **13 Nm (1.3 m•kg, 9.4 ft•lb)**



NOTE:

Before installing the right-hand handlebar onto the handle crown, apply a light coat of lithium soap base grease onto the handlebar end and install the throttle grip to the handlebar.





10. Install:
    - Front brake master cylinder

NOTE:

- Align the end of the master cylinder bracket with the punch mark ① on the handlebar.
- Install the master cylinder bracket with the "UP" mark facing upward.
- Tighten first the upper bolt, then the lower bolt.

	Bolts (Master Cylinder Bracket): 10 Nm (1.0 m•kg, 7.2 ft•lb)

11. Install:
    - Clutch cable

NOTE:

Apply a light coat of lithium soap base grease onto the clutch cable end.

12. Install:
    - Front wheel

    Refer to "FRONT WHEEL—INSTALLATION" section in CHAPTER 7.

	Wheel Axle: 74 Nm (7.4 m•kg, 53 ft•lb) **Pinch Bolt: 23 Nm (2.3 m•kg, 17 ft•lb)**

13. Adjust:
   •Clutch cable free play

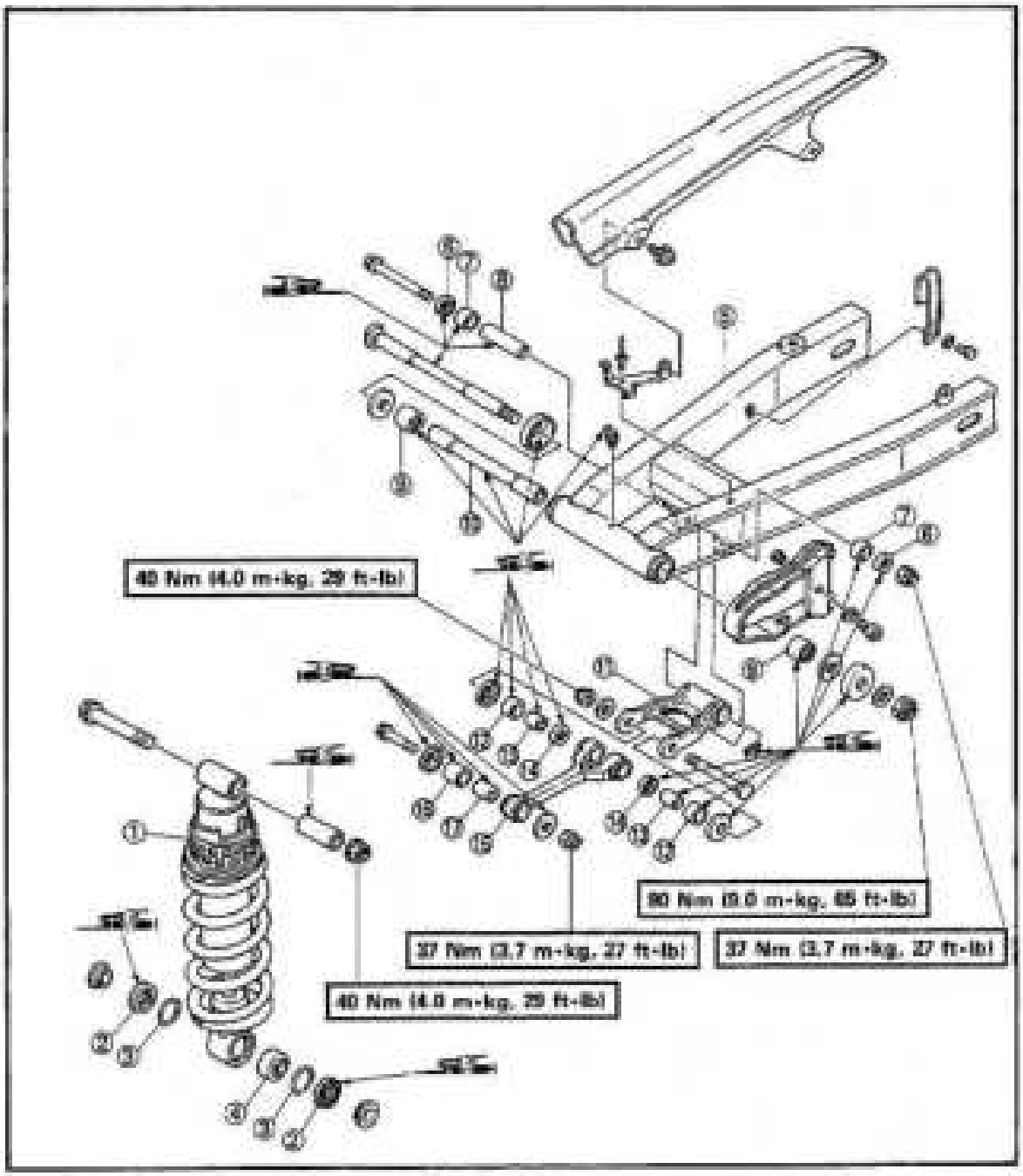


Free Play:
10 – 15 mm (0.4 – 0.6 in)
At Lever End.

Refer to "CLUTCH ADJUSTMENT" section in CHAPTER 3.

REAR SHOCK ABSORBER AND SWINGARM

1. Rear shock absorber
2. Oil seal
3. Circlip
4. Bearing
5. Swingarm
6. Oil seal
7. Bearing
8. Collar
9. Bearing
10. Bush
11. Connecting arm
12. Bush
13. Collar
14. Oil seal
15. Relay arm
16. Bush
17. Collar



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

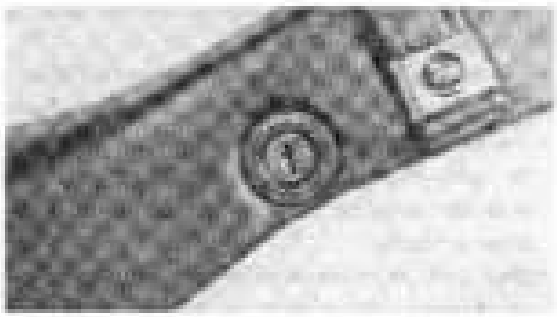
Wear eye protection to prevent eye damage from escaping gas and/or metal chips.

REMOVAL

Rear Shock Absorber

1. Remove:
   - •Lower cowl (Right)
   - •Lower cowl (Left)

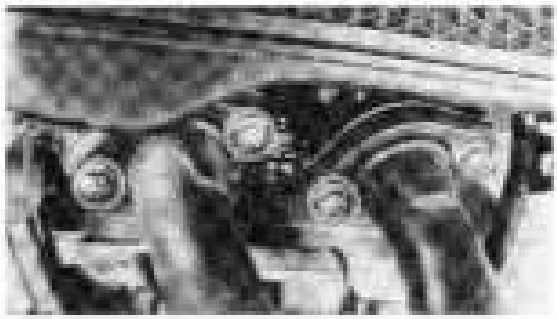
   Refer to "*COWLINGS*" section in CHAPTER 3.



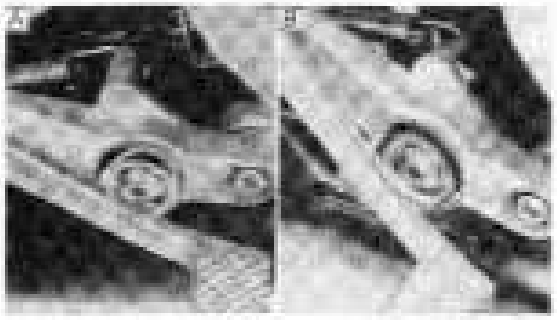
2. Remove:
   - •Seat

NOTE:

To open the seat lock, insert the key in the lock and turn it clockwise.



3. Remove:
   - •Mufflers

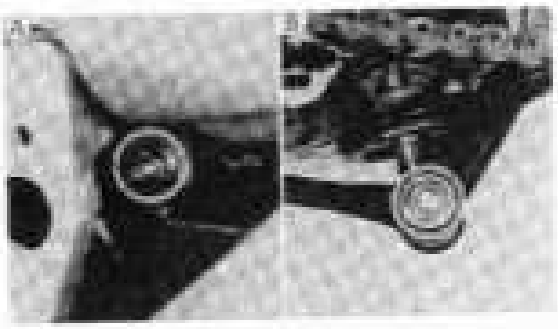


A Right-hand
B Left-hand

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.

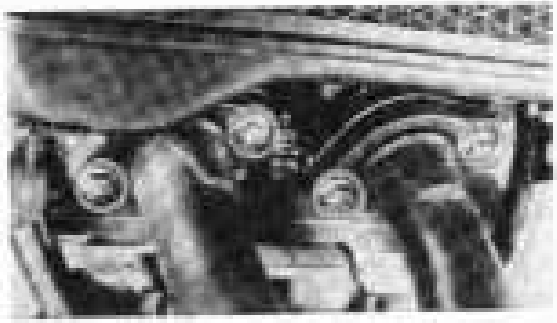


5. Remove:
   • Rear shock absorber

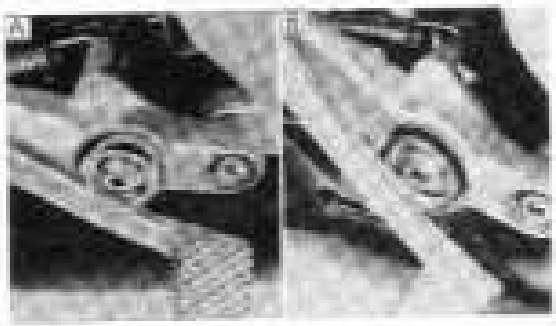
[A] Upper
[B] Lower

Swingarm

1. Remove:
   • Lower cowl (Right)
   • Lower cowl (Left)
   Refer to "COWLINGS" section in CHAPTER 3.



2. Remove:
   • Mufflers



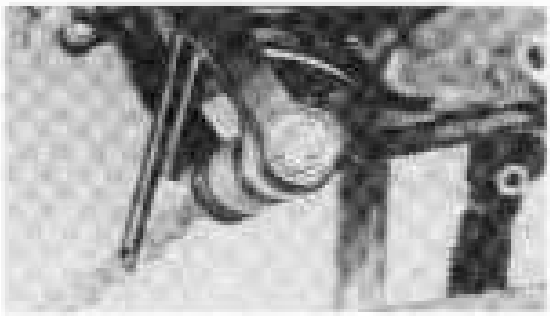
[A] Right-hand
[B] Left-hand

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

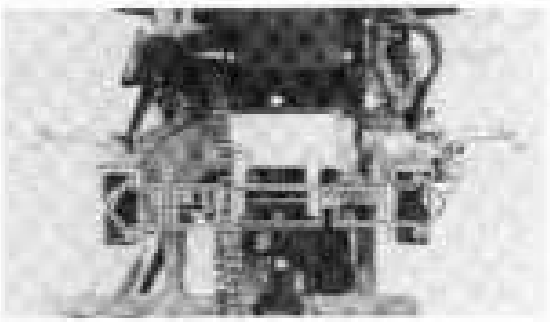
WARNING

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

4. Remove:
   • Rear wheel
   Refer to "REAR WHEEL – REMOVAL" section in CHAPTER 7.

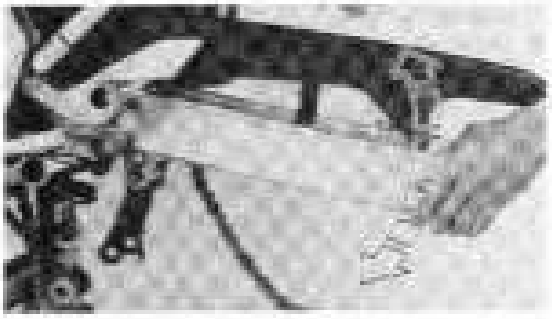


5. Remove:
   • Bolt (Relay arm – connecting arm)

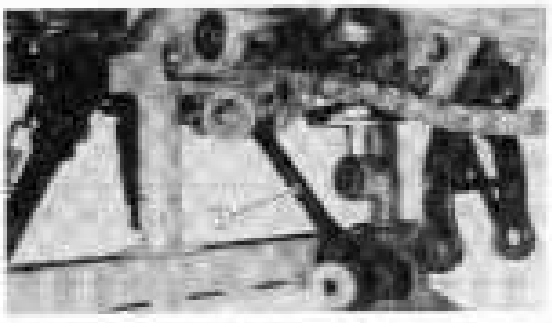


6. Check:
   • Swingarm (side play)
   Move swingarm from side to side.
   Over specified limit → Replace bearings.

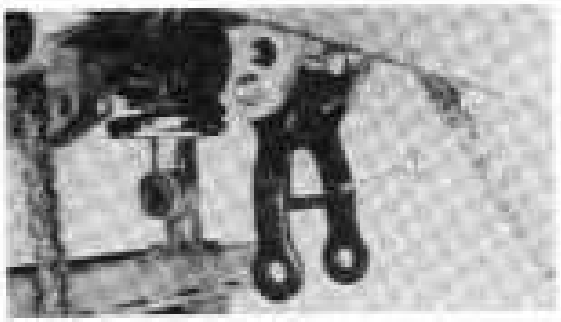
Side Play (At End of Swingarm):
1.0 mm (0.04 in)



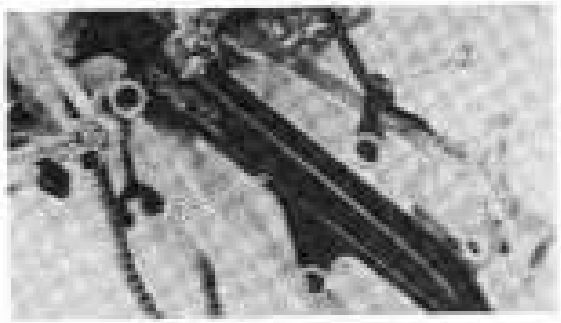
7. Check:
   • Swingarm (Vertical movement)
   Move swingarm up and down.
   Tightness/Binding/Rough Spots → Replace Bearings.



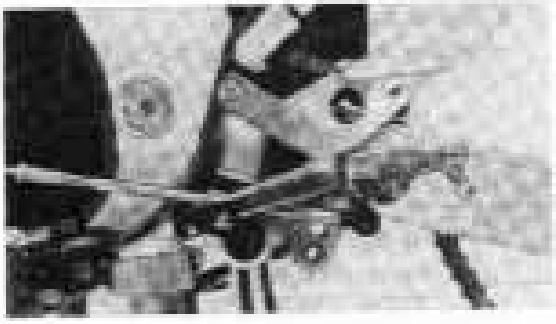
8. Remove:
   • Relay arm ①



9. Remove:
   •Connecting arm ①



10. Remove:
   •Chain guard ①
   •Brake hose guide ②

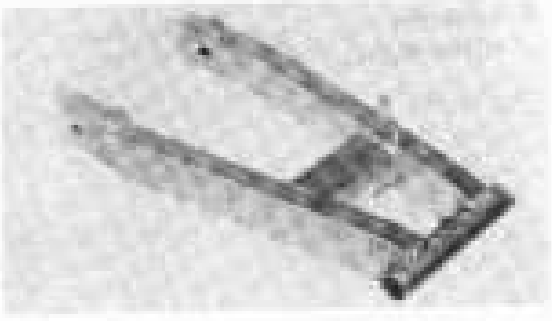


11. Remove:
   •Swingarm

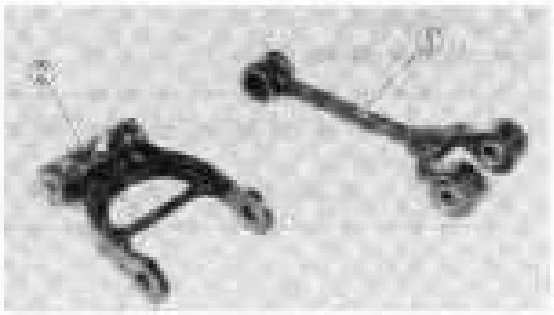


INSPECTION

1. Inspect:
   •Shock absorber
   Oil leaks/Damage → Replace.



2. Inspect:
   •Swingarm
   Bends/Cracks/Damage → Replace.



3. Inspect:
   - Relay arm ①
   - Connecting arm ②

   Bends/Cracks/Damage → Replace.

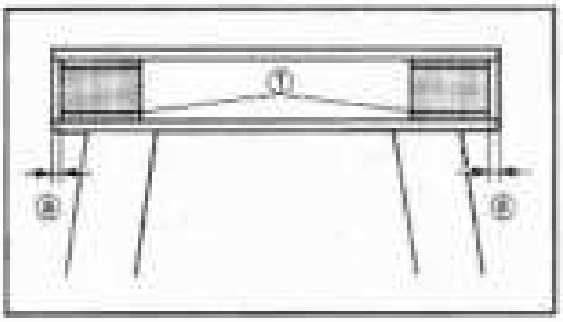
4. Inspect:
   - Oil seals

     Damage → Replace.
   - Thrust covers

     Damage → Replace.
   - Bushes

     Scratches/Damage → Replace.
   - Bearings

     Pitting/Damage → Replace.



NOTE:

When replacing the bearings of swingarm pivot, install new bearings ① as shown.

ⓐ 0.5 – 1.0 mm (0.02 – 0.04 in)

INSTALLATION

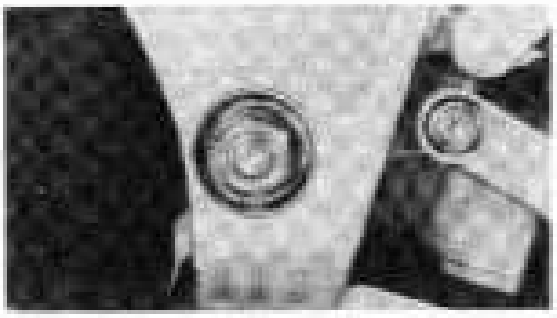
Swingarm

Reverse the "REMOVAL" procedure.

Note the following points.

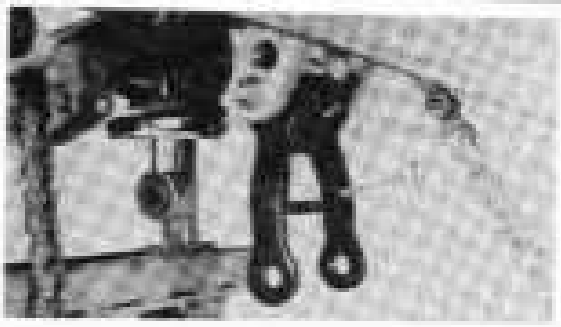
1. Apply:
   - Lithium soap base grease

     To oil seals, bearings, bushes and inside of thrust covers.



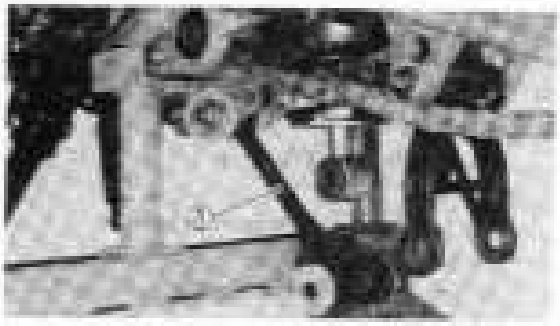
2. Install:
   - Swing arm

	Pivot Shaft: **90 Nm (9.0 m-kg, 65 ft-lb)**



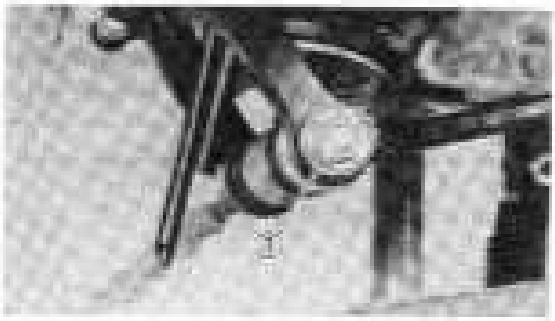
3. Install:
   •Connecting arm ①

	Nut (Connecting Arm – Swingarm): **37 Nm (3.7 m•kg, 27 ft•lb)**



4. Install:
   •Relay arm ①

	Nut (Relay Arm – Frame): **37 Nm (3.7 m•kg, 27 ft•lb)**



5. Install:
   •Nut ① (Relay arm – Connecting arm)

	Nut (Relay Arm – Connecting Arm): **40 Nm (4.0 m•kg, 29 ft•lb)**

6. Install:
   •Rear wheel
   Refer to "REAR WHEEL – INSTALLATION" section in CHAPTER 7.

	Axle Nut: **105 Nm (10.5 m•kg, 76 ft•lb)** **Locknut (Wheel Axle):** **45 Nm (4.5 m•kg, 32 ft•lb)** **Bolts (Brake Caliper):** **35 Nm (3.5 m•kg, 25 ft•lb)**

7. Adjust:
   •Drive chain slack
   Refer to "DRIVE CHAIN SLACK ADJUSTMENT "section in CHAPTER 3.

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

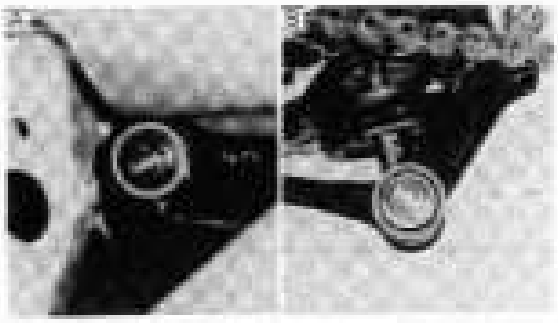
8. Install:
   • Mufflers

	Nuts (Exhaust Pipe): 18 Nm (1.8 m•kg, 13 ft•lb)
	Bolts (Muffler): 32 Nm (3.2 m•kg, 23 ft•lb)

Rear Shock Absorber

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

1. Apply:
   • Lithium soap base grease
   To oil seals and collar.



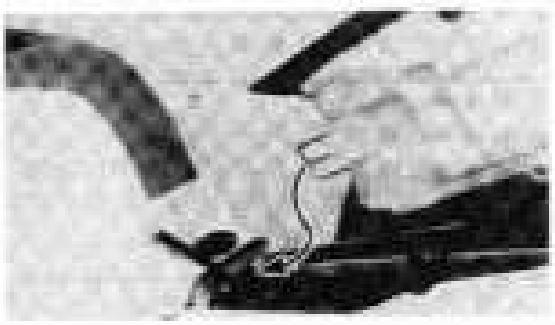
2. Install:
   • Rear shock absorber.

	Nut (Upper): 40 Nm (4.0 m•kg, 29 ft•lb)
	Nut (Lower): 40 Nm (4.0 m•kg, 29 ft•lb)

A. Upper
B. Lower

3. Install:
   • Mufflers

	Nuts (Exhaust Pipe): 18 Nm (1.8 m•kg, 13 ft•lb)
	Bolts (Muffler): 32 Nm (3.2 m•kg, 23 ft•lb)



4. Install:
   • Seat

NOTE:

Insert the lobe on the seat front into the receptacle on the frame, then push down the seat.

DRIVE CHAIN AND SPROCKETS

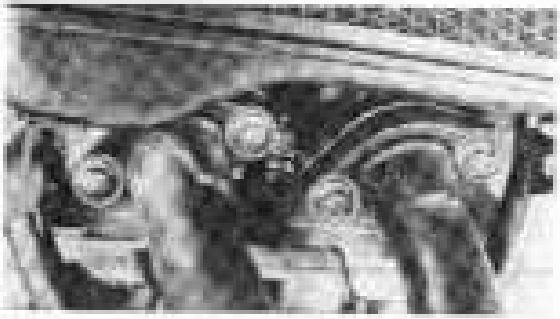
NOTE:

Before removing the drive chain and sprockets, drive chain slack and 10-link length of drive chain should be measured.

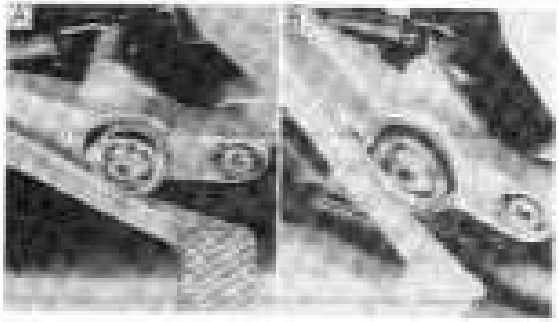
REMOVAL

1. Remove:
   - Lower cowl (Right)
   - Lower cowl (Left)

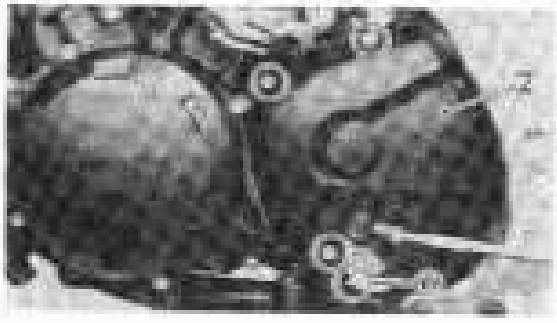
   Refer to "COWLINGS" section in CHAPTER 3.



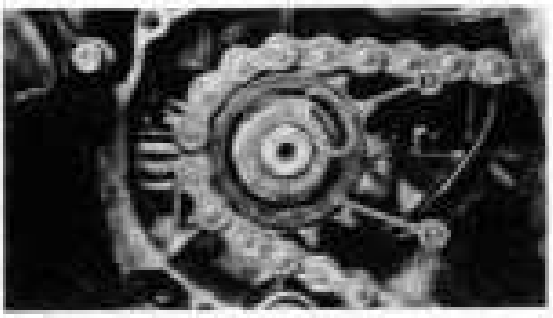
2. Remove:
   - Mufflers



R: Right-hand
L: Left-hand



3. Remove:
   - Bolt ① (Shift arm)
   - Crankcase cover ② (Left-hand)

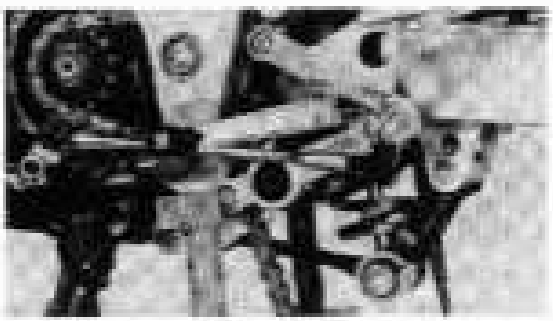


4. Straighten:
   •Lock washer tab ①
5. Remove:
   •Drive sprocket ②
6. Elevate the rear wheel by placing a suitable stand under the engine.

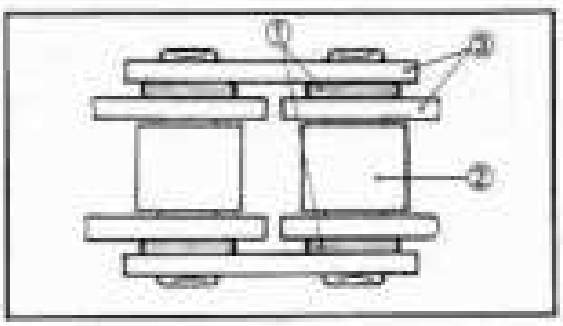
WARNING

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

7. Remove:
   •Rear Wheel
   Refer to "REAR WHEEL—REMOVAL" section in CHAPTER 7.

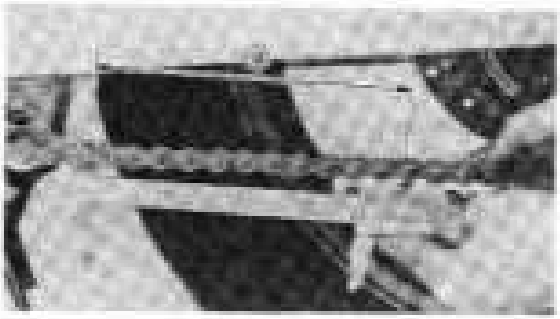


8. Remove:
   •Swingarm
   •Drive chain



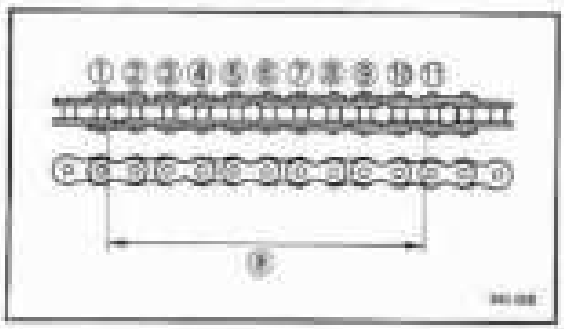
INSPECTION

1. Inspect:
   •O-rings ① (Drive Chain)
   Damage→Replace drive chain.
   •Rollers ② and side plates ③
   Damage/Wear→Replace drive chain.

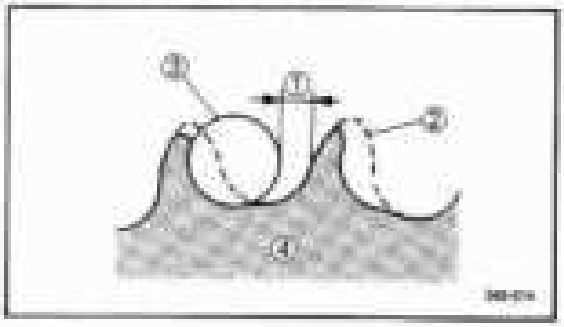


2. Measure:
   • 10-link length ⓐ (Drive chain)
   Out of specification → Replace drive chain.

10-Link Length Limit:
150.1 mm (5.91 in)

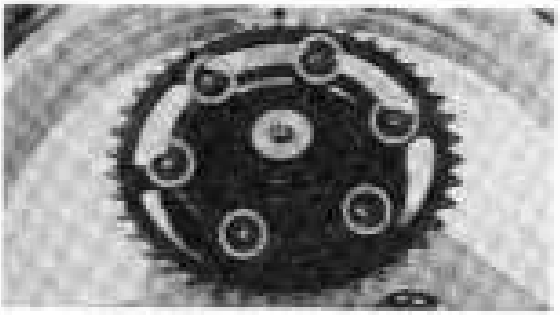


NOTE:
- For measurement make the chain tense by finger.
- 10-link length is a measurement between the insides of the ① and ⑪ rollers as shown.
- Two or three different 10-link lengths should be measured.



3. Inspect:
   • Drive and driven sprockets
   Wear / Damage → Replace.

① 1/4 tooth
② Correct
③ Roller
④ Sprocket

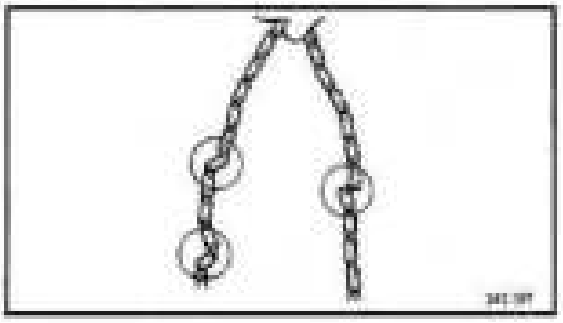


Driven sprocket replacement steps:
- Straighten the lock washer tabs and remove the driven sprocket.
- Install a new driven sprocket and lock washers.

WARNING:
Always use new lock washers.

Nuts (Driven Sprocket):
32 Nm (3.2 m•kg, 23 ft•lb)

- Bend the lock washer tabs along the nut flats.



4. Inspect:
   • Drive chain
   Stiff → Lubricate or replace.

INSTALLATION

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

1. Install:
   • Swingarm

Nut (Pivot Shaft):
90 Nm (9.0 m•kg, 65 ft•lb)
Nut (Swingarm – Connecting Arm):
37 Nm (3.7 m•kg, 27 ft•lb)

2. Install:
   • Drive sprocket

Nut (Drive Sprocket):
90 Nm (9.0 m•kg, 65 ft•lb)

WARNING:

Always use a new lock washer.

NOTE:

After tightening the nut, bend the lock washer tab along the nut flats.

3. Install:
   • Rear wheel
   Refer to "REAR WHEEL – INSTALLATION" section in CHAPTER 7.

Axle Nut:
105 Nm (10.5 m•kg, 75 ft•lb)
Locknut (Wheel Axle):
45 Nm (4.5 m•kg, 32 ft•lb)
Bolts (Brake Caliper):
35 Nm (3.5 m•kg, 25 ft•lb)

4. Adjust:
   • Drive chain slack
   Refer to "DRIVE CHAIN SLACK ADJUSTMENT" section in CHAPTER 3.



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

5. Install:
   • Crankcase cover (Left-hand)



Bolts (Crankcase Cover):
5 Nm (0.5 m•kg, 3.6 ft•lb)

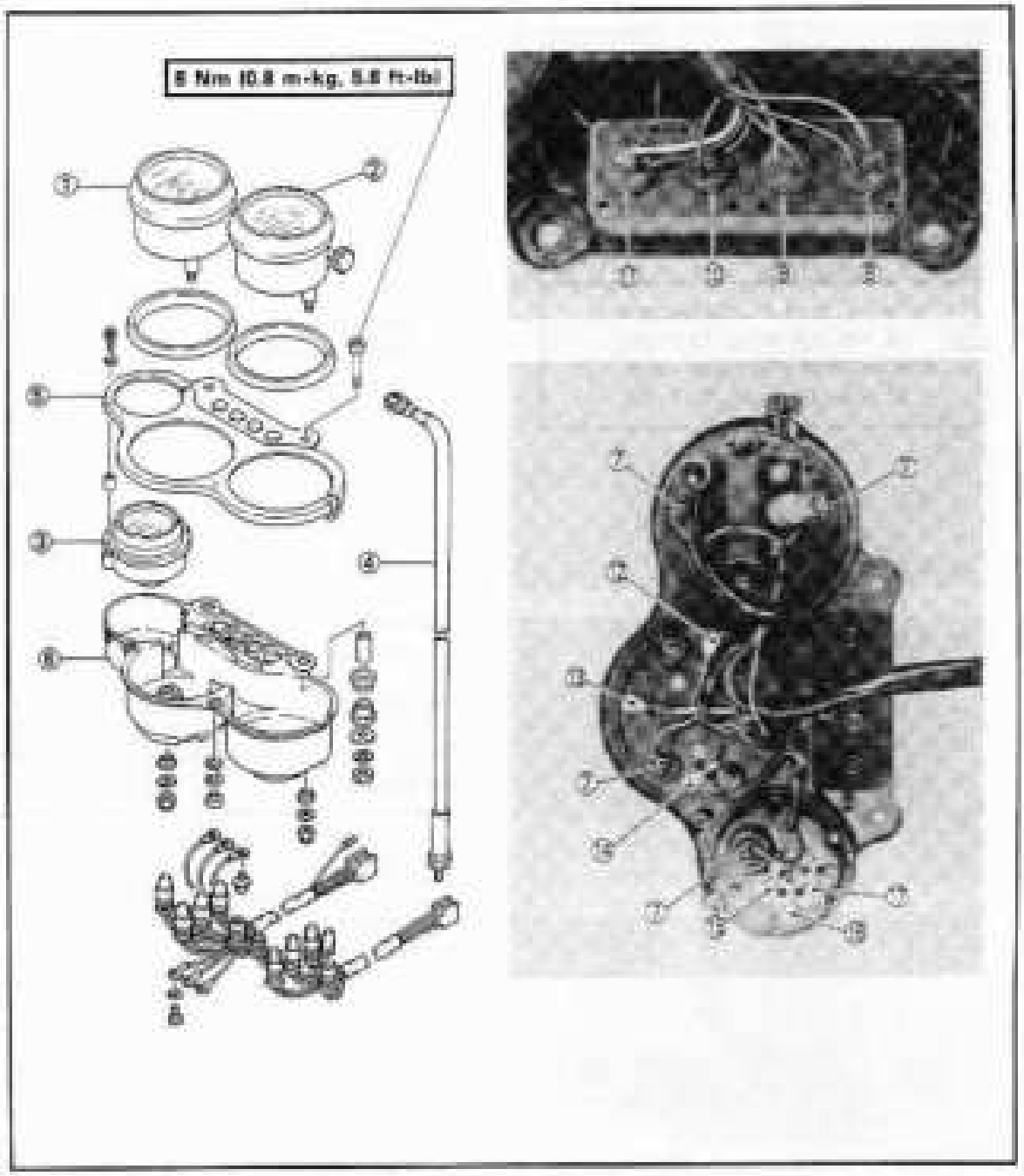
6. Install:
   • Mufflers

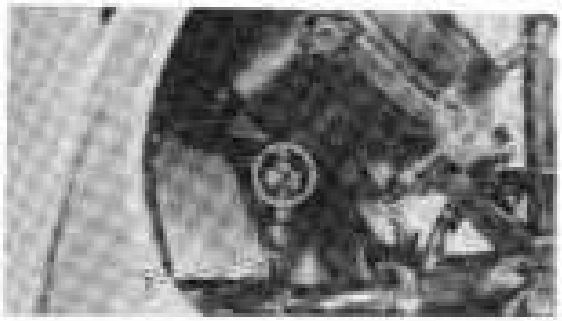


Nuts (Exhaust Pipe):
18 Nm (1.8 m•kg, 13 ft•lb)
Bolts (Muffler):
32 Nm (3.2 m•kg, 23 ft•lb)

METER ASSEMBLY

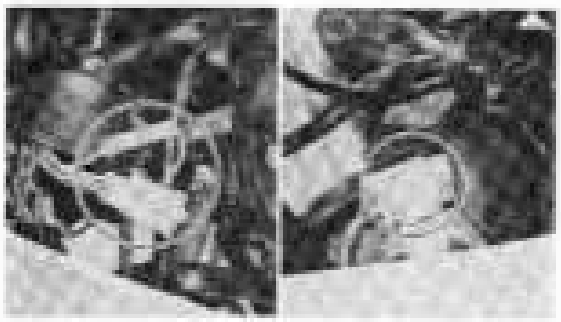
1. Tachometer
2. Speedometer
3. Temperature gauge
4. Speedometer cable
5. Meter panel
6. Meter housing
7. Meter light
8. "OIL" indicator light (With Brown and Black/Red leads)
9. "NEUTRAL" indicator light (With Brown and Sky blue leads)
10. "TURN" indicator light (With Dark green and Chocolate leads)
11. "HIGH BEAM" indicator light (With Yellow and Black leads)
12. Brown lead
13. Gray lead
14. Black lead
15. Green/Red lead
16. Black lead
17. Brown lead





REMOVAL

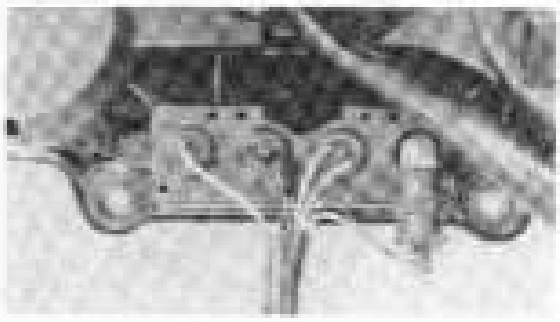
1. Remove:
   •Speedometer cable ①



2. Disconnect:
   •Meter leads



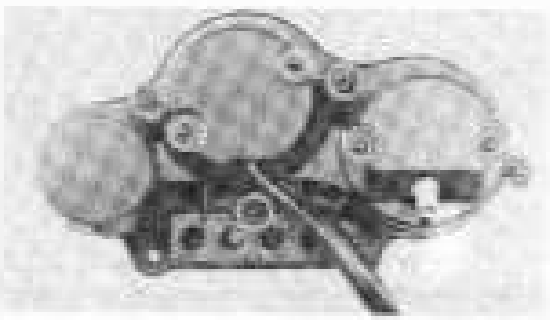
3. Remove:
   •Meter assembly



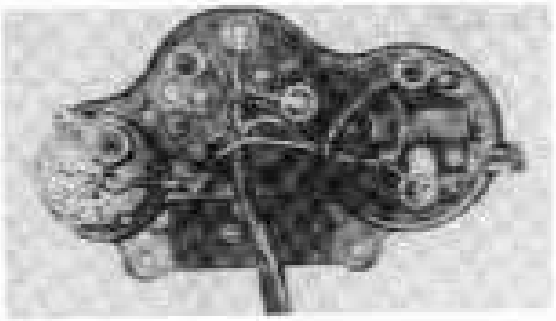
4. Remove:
   •Indicator bulbs

CAUTION:

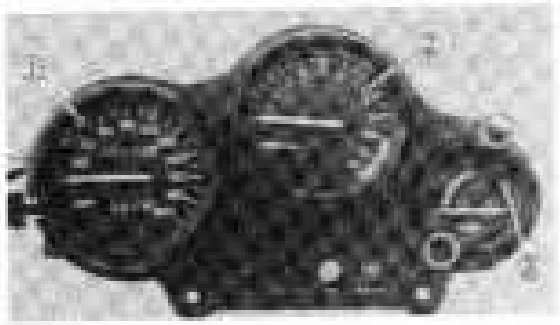
Do not remove the indicator bulbs by pulling the leads.



5. Remove:
   •Meter housing



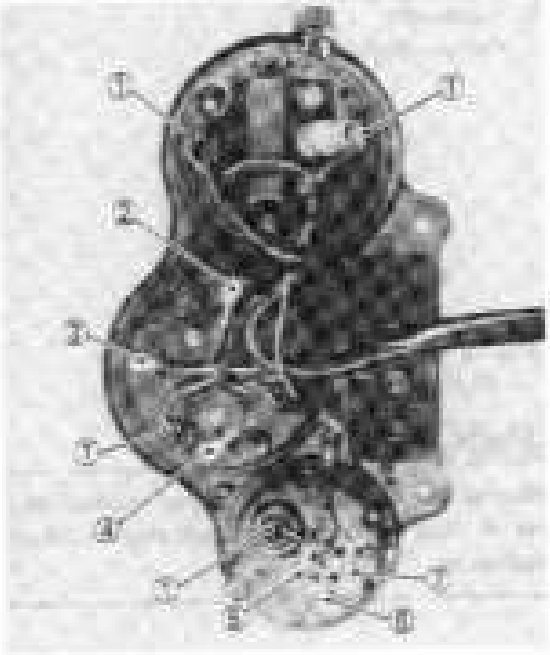
6. Remove:
   - Meter lights
   - Leads



7. Remove:
   - Speedometer ①
   - Tachometer ②
   - Temperature gauge ③

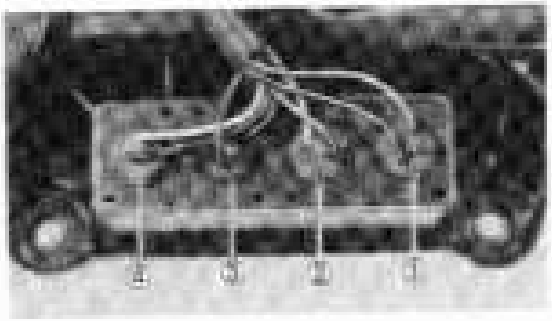
INSTALLATION

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



1. Install the meter lights and leads as shown.

① Meter lights
② Brown lead
③ Gray lead
④ Black lead
⑤ Green/Red lead
⑥ Black lead
⑦ Brown lead



2. Install the indicator lights as shown.

① "OIL" indicator light
(With Brown and Black/Red leads)
② "NEUTRAL" indicator light
(With Brown and Sky blue leads)
③ "TURN" indicator light
(With Dark green and Chocolate leads)
④ "HIGH BEAM" indicator light
(With Yellow and Black leads)

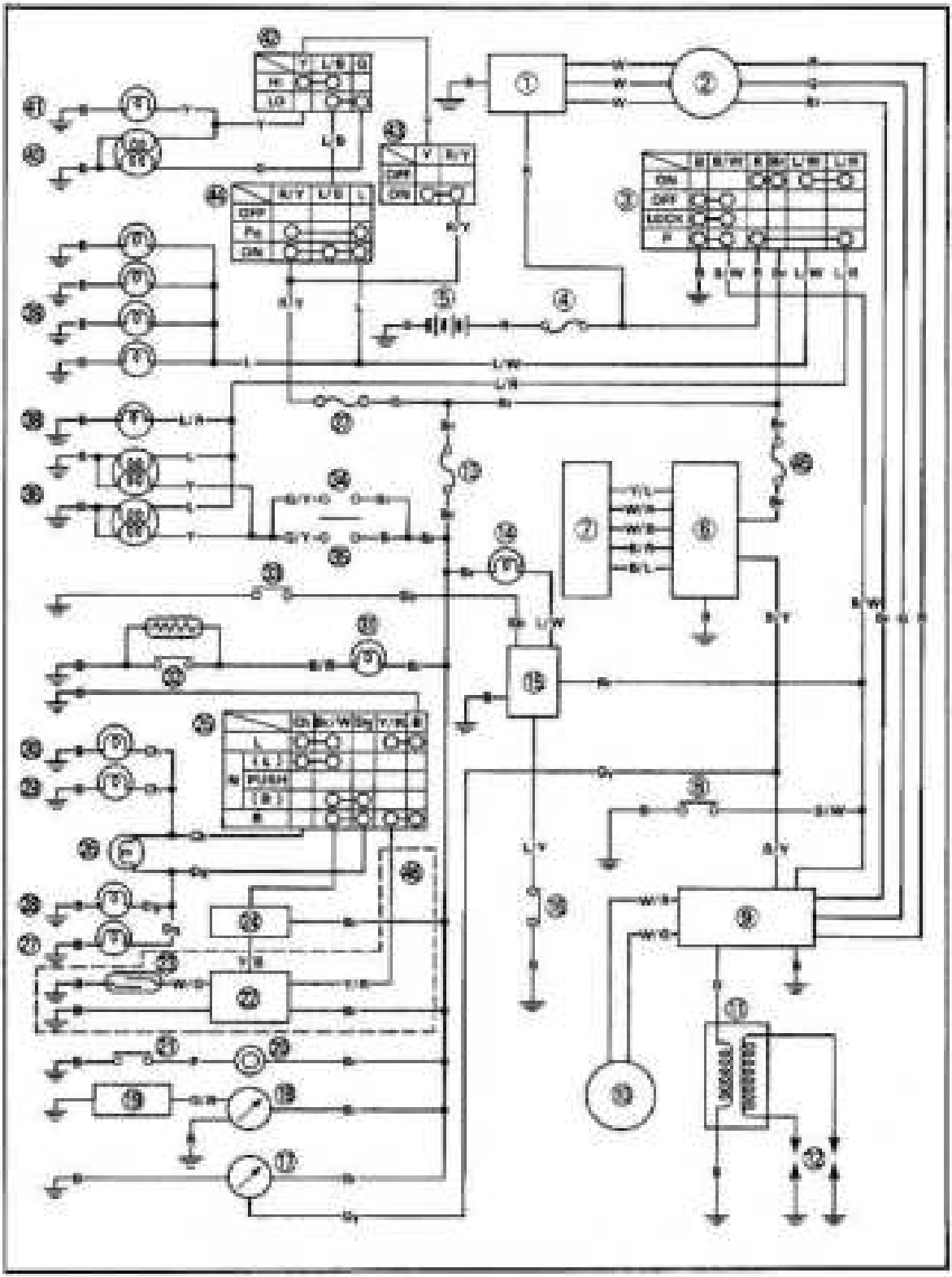


3. Install:
   • Meter assembly

	Bolts (Meter Assembly): **8 Nm (0.8 m·kg, 5.8 ft·lb)**

ELECTRICAL

TZR250 CIRCUIT DIAGRAM



① Rectifier/Regulator
② C.D.I. magneto
③ Main switch
④ "MAIN" fuse
⑤ Battery
⑥ Y.P.V.S. control unit
⑦ Servomotor
⑧ "ENGINE STOP" switch
⑨ C.D.I. unit
⑩ Pick-up coil
⑪ Ignition coil
⑫ Spark plug
⑬ "SIGNAL" fuse
⑭ "NEUTRAL" indicator light
⑮ Ignition control unit
⑯ Sidestand switch
⑰ Tachometer
⑱ Temperature gauge
⑲ Thermo unit
⑳ Horn
㉑ "HORN" switch
㉒ Cancelling unit
㉓ Reed switch
㉔ Flasher relay
㉕ "TURN" switch
㉖ "TURN" indicator light
㉗ Rear flasher light (Right)
㉘ Front flasher light (Right)
㉙ Rear flasher light (Left)
㉚ Front flasher light (Left)
㉛ "OIL" indicator light
㉜ Oil level gauge
㉝ Neutral switch
㉞ Front brake switch
㉟ Rear brake switch
㊱ Tail/Brake light
㊲ "HEAD" fuse
㊳ Auxiliary light
㊴ Meter light
㊵ Headlight
㊶ "HIGH BEAM" indicator light
㊷ "LIGHTS" (Dimmer) switch
㊸ "PASS" switch
㊹ "LIGHTS" switch
㊺ "YPVS" fuse
㊻ Except for Germany

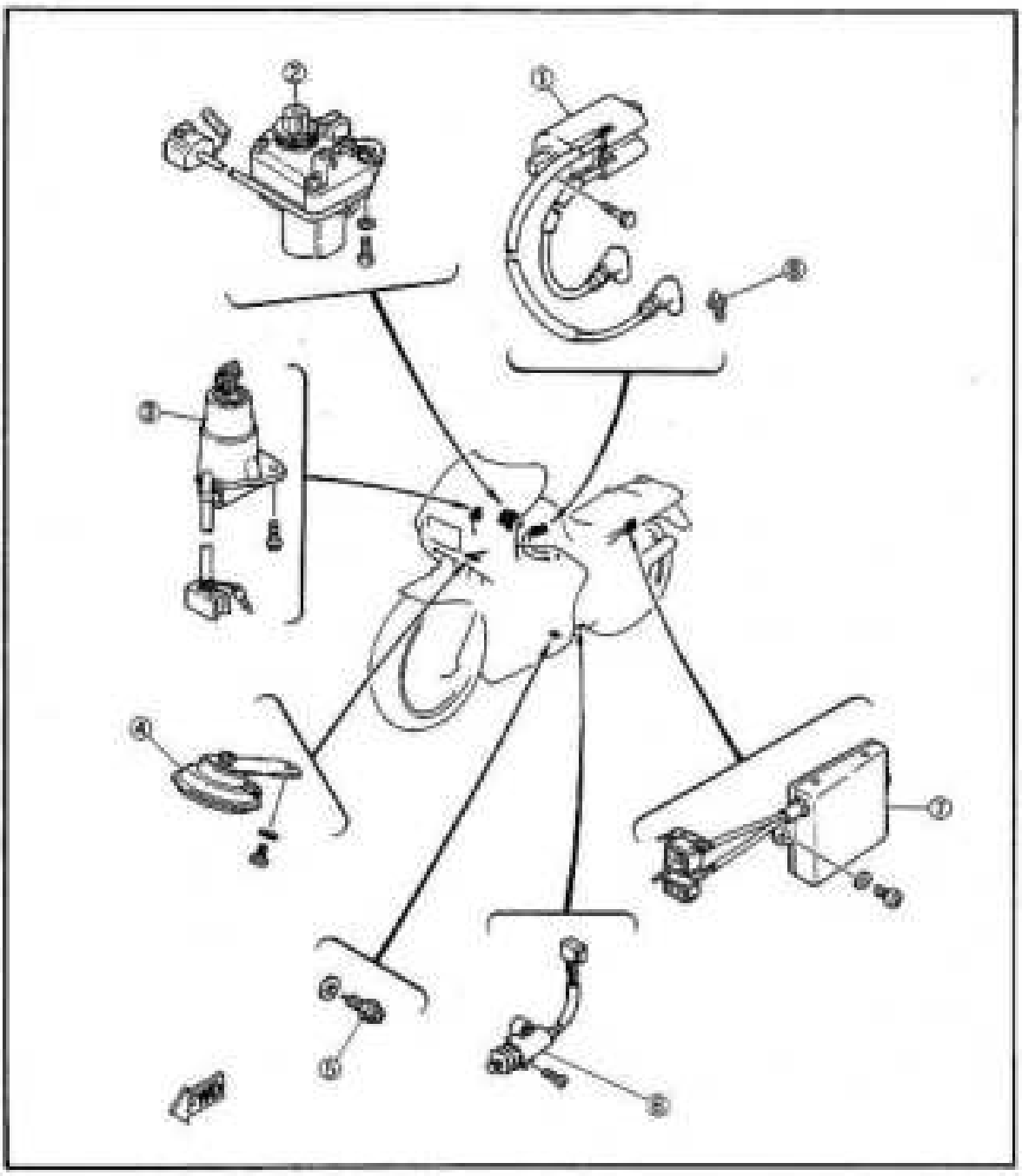
COLOR CODE

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

ELECTRICAL COMPONENTS

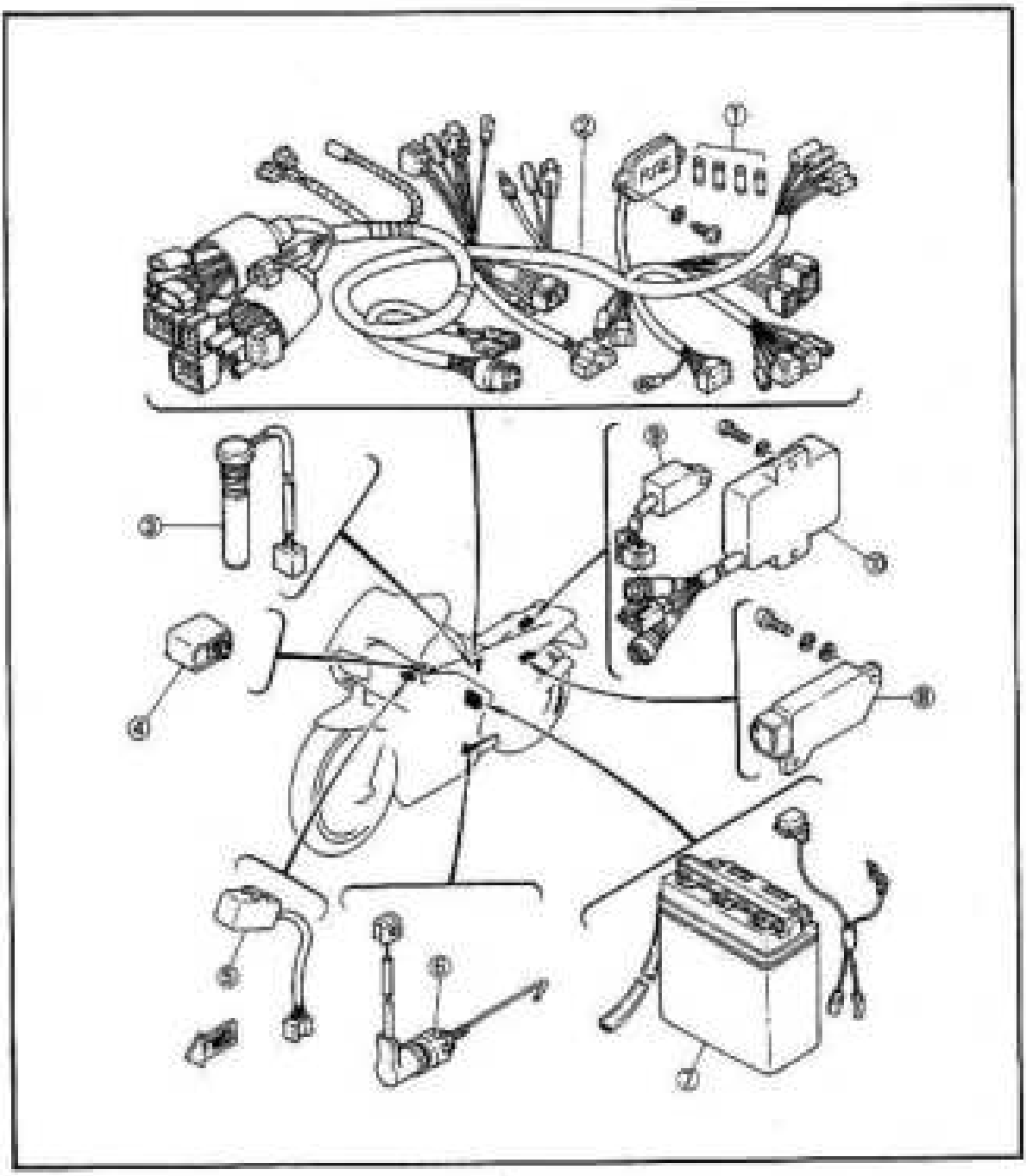
① Ignition coil
② Servomotor
③ Main switch
④ Horn
⑤ Neutral switch
⑥ Sidestand switch
⑦ Y.P.V.S. control unit
⑧ Thermo unit

IGNITION COIL:
PRIMARY COIL RESISTANCE
0.26 – 0.40Ω at 20°C (68°F)
SECONDARY COIL RESISTANCE
4.7 – 7.0 kΩ at 20°C (68°F)



① Fuse
② Wire harness
③ Oil level gauge
④ Flasher relay
⑤ Cancelling unit (Except for Germany)
⑥ Brake switch
⑦ Battery
⑧ Rectifier/Regulator
⑨ Ignition control unit
⑩ C.D.I. unit

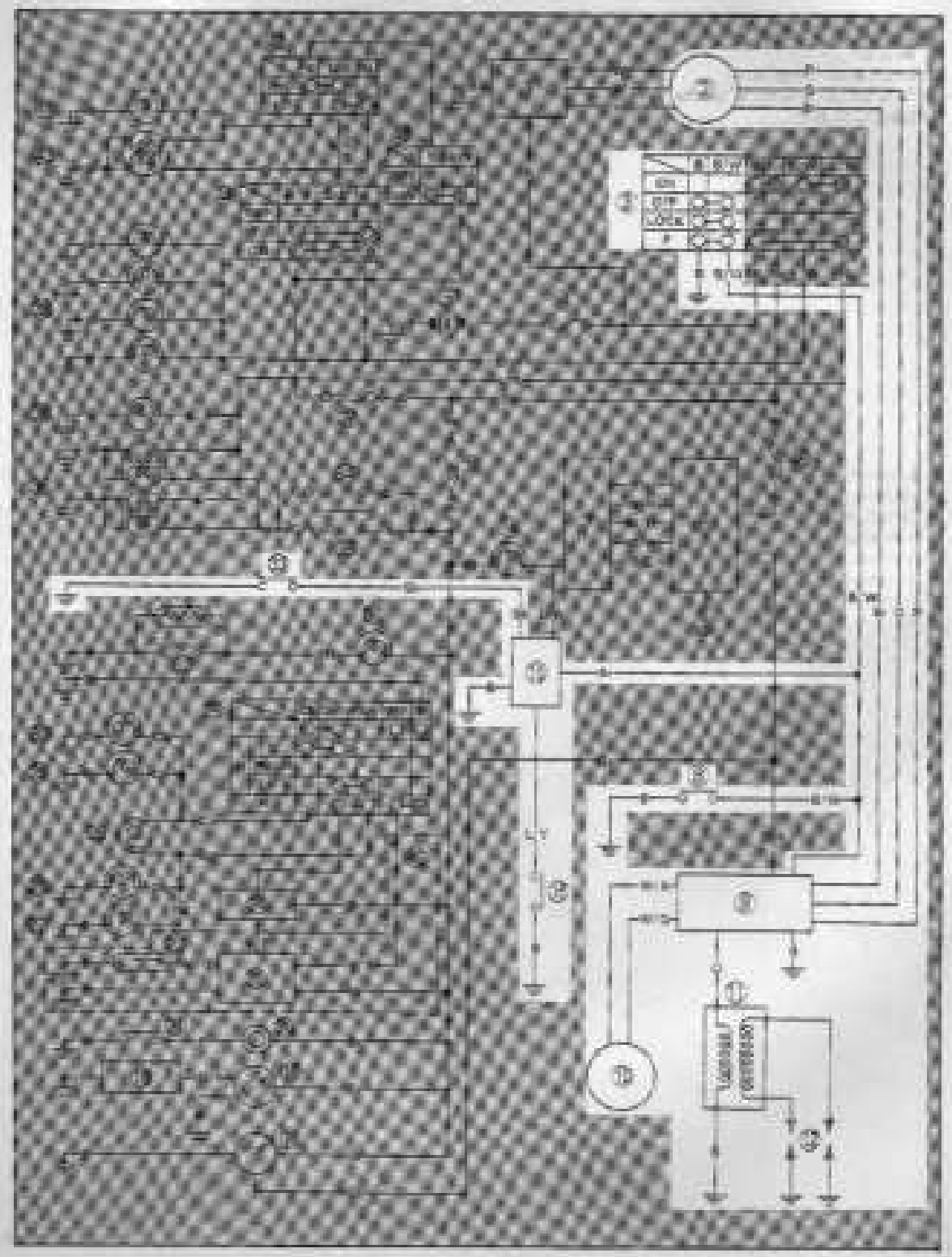
BATTERY:
CAPACITY
12V 4AH
SPECIFIC GRAVITY
1.280



IGNITION AND STARTING SYSTEM

CIRCUIT DIAGRAM

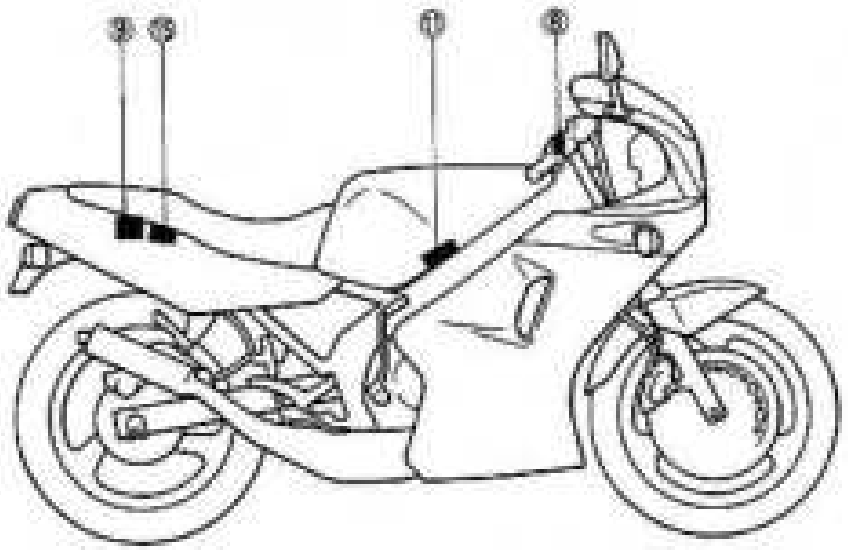
Below circuit diagram shows ignition and starting system.

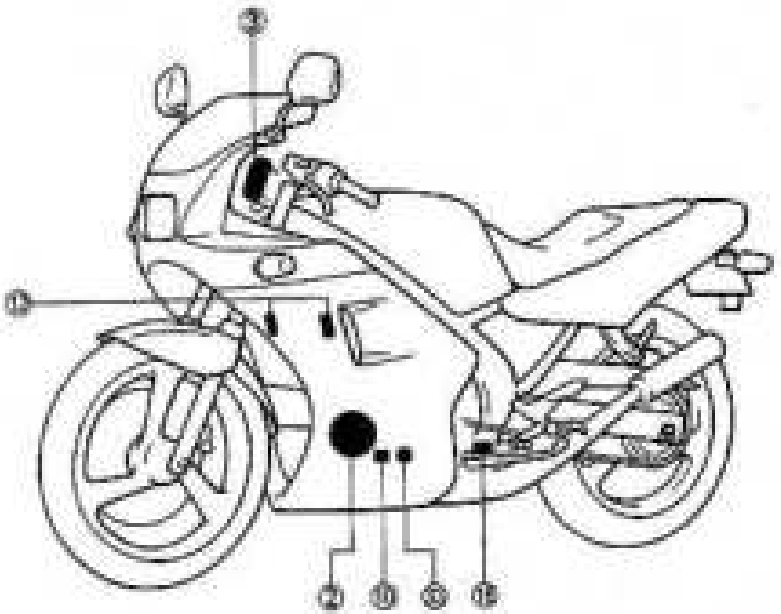


NOTE:

For the color codes, see page 8-2.

② C.D.I. magneto
③ Main switch
⑥ "ENGINE STOP" switch
⑨ C.D.I. unit
⑩ Pick-up coil
⑪ Ignition coil
⑫ Spark plug
⑬ Ignition control unit
⑱ Sidestand switch
㉓ Neutral switch



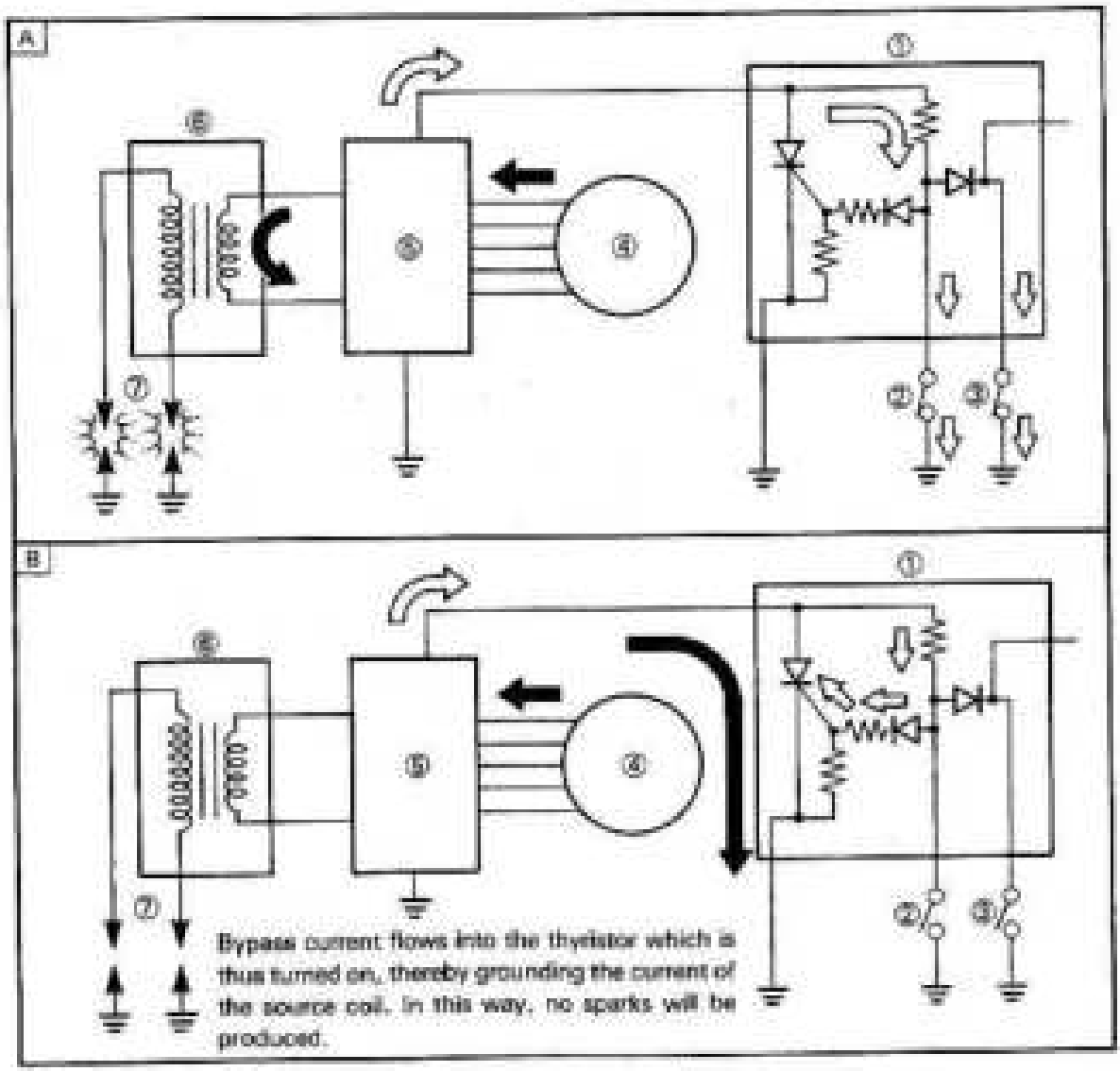


IGNITION CONTROL CIRCUIT OPERATION

The ignition control circuit on this model consists of the ignition control unit, neutral switch, neutral indicator light, and the sidestand switch. If the engine stop switch and the main switch are both on, the ignition spark can produce only if:

1. The transmission is in neutral (the neutral switch is on).
2. The sidestand is up (the sidestand switch is on).

	Transmission (Neutral switch)	Sidestand (Sidestand switch)	Spark plug
A	Neutral (close)	Up (close)	Spark
A	Neutral (close)	Down (open)	Spark
A	IN gear (open)	Up (close)	Spark
B	IN gear (open)	Down (open)	No spark

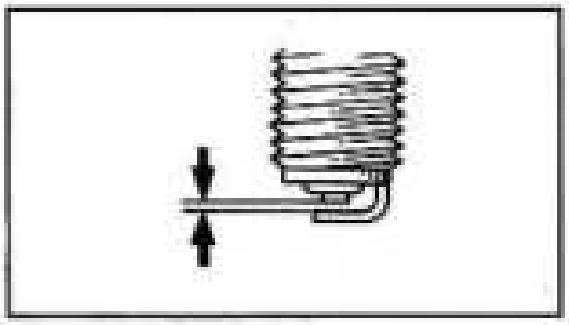


① Ignition control unit
②③ Sidestand switch
②③ Neutral switch
④ C.D.I. magneto
⑤ C.D.I. unit
⑥ Ignition coil
⑦ Spark plug
⑧ Thyristor

TROUBLESHOOTING (1)

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

1. Remove:
   - Lower cowl (Right)
   - Lower cowl (Left)

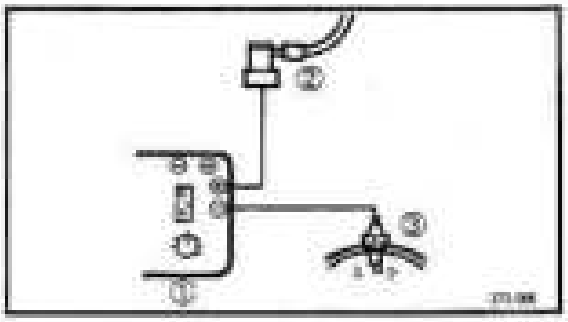


2. Spark plug inspection
   - Remove spark plug.
   - Clean spark plug with spark plug cleaner, if necessary.
   - Inspect electrode, insulator and plug gap. Refer to "SPARK PLUG INSPECTION" section in CHAPTER 3.

OK

No good

Replace or regap spark plug.



3. Ignition spark gap test
   - Connect Electro Tester ① as shown.

	Electro Tester: 90890-03021

② Spark plug cap
③ Spark plug

•Start engine, and increase spark gap until misfire occurs.

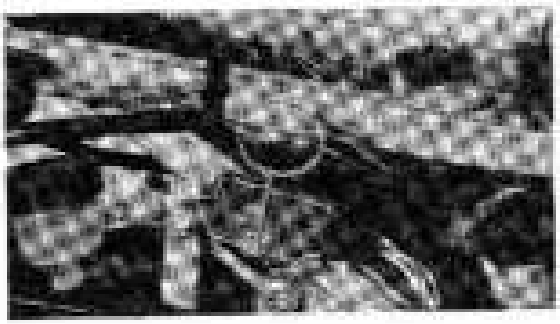
Minimum Spark Gap:
6.0 mm (0.24 in)

Out of specification or no spark

Meets specification

Ignition system is good.

4. Remove:
   •Seat
   •Side covers



5. Disconnect ignition control unit lead ① (Brown) and start engine.

Engine does not start

Engine starts (Spark)

Go to TROUBLESHOOTING (2).



6. Main switch operation check
   - Disconnect main switch leads (Black/White, Black, Blue/Red, Blue/White, Brown, Red).
   - Connect Pocket Tester to main switch leads.

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

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

	Pocket Tester: 90890-03112

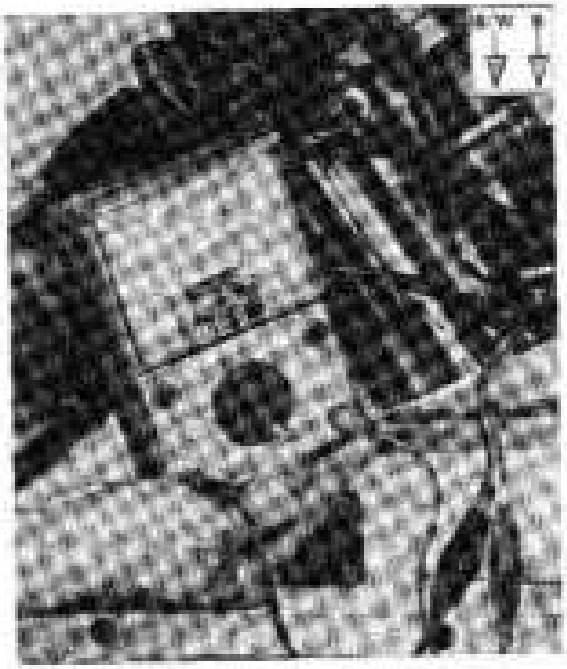
- Check main switch for operation.

Turn main switch to "OFF".	Switch is continued (∞Ω).
Turn main switch to "ON".	Switch is discontinued. (=0)

Switch operation is correct

Switch operation is incorrect.

Main switch is faulty, replace it.



7. "ENGINE STOP" switch operation check
   - Disconnect "ENGINE STOP" switch leads (Black/White, Black).
   - Connect pocket Tester to "ENGINE STOP" switch leads.

	Pocket Tester: 90890-03112

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

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

*Check the "ENGINE STOP" switch for operation.

Turn switch to "RUN" position	Switch is discontinued (on)
Turn switch to "OFF" position	Switch is continued (off).

Switch operation is correct

Switch operation is incorrect.

"ENGINE STOP" switch is faulty, replace handlebar switch assembly (Right).

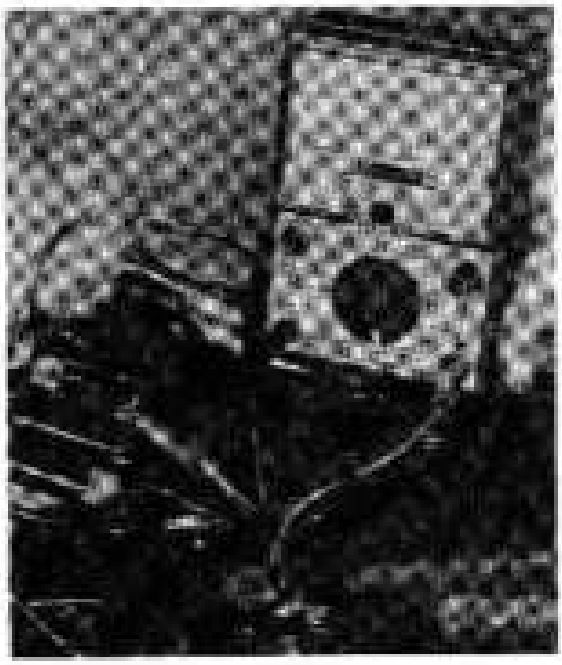
8. Remove:
*Fuel tank

9. Ignition coil resistance check
*Disconnect ignition coil leads (orange, Black) and spark plug leads.

*Connect Pocket Tester to terminals of ignition coil.



Pocket Tester:
90890-03112

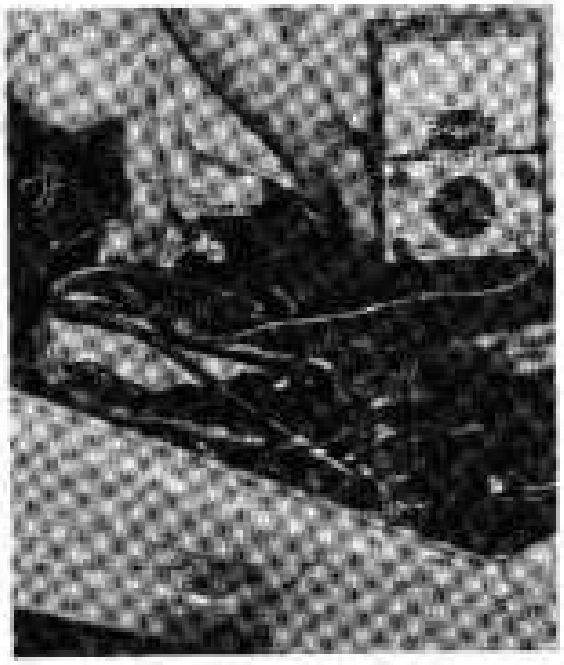


Tester (+) Lead→Terminal
Tester (−) Lead→Terminal

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

•Measure primary coil resistance.

Primary Coil Resistance:
0.26 – 0.40Ω at 20°C (68°F)



•Connect Pocket Tester to spark plug leads.

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

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

•Measure secondary coil resistance.

Secondary Coil Resistance:
4.7 – 7.0 kΩ at 20°C (68°F)

Both resistances meet specifications

Out of specification

Ignition coil is faulty, replace it.



10. Pick-up Coil resistance check
    - Disconnect pick-up coil leads (White/Green, White/Red).
    - Connect Pocket Tester to pick-up coil leads.

Pocket Tester: 90890-03112

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

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

- Measure Pick-up Coil resistance.

Pick-up Coil Resistance: 94 – 140Ω at 20°C (68°F)

Resistance meets specification

Out of specification

Pick-up coil is faulty, replace it.

11. Source coils resistance check
    - Disconnect source coil leads (Brown, Green, Red).
    - Connect Pocket Tester to source coil leads.

Pocket Tester: 90890-03112



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

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

•Measure source coil (1) resistance.

Source Coil (1) Resistance:
128 – 193Ω at 20°C (68°F)



•Connect Pocket Tester to source coil (2) leads.

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

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

•Measure source coil (2) resistance.

Source Coil (2) Resistance:
3.6 – 5.4Ω at 20°C (68°F)

Both resistances meet specification

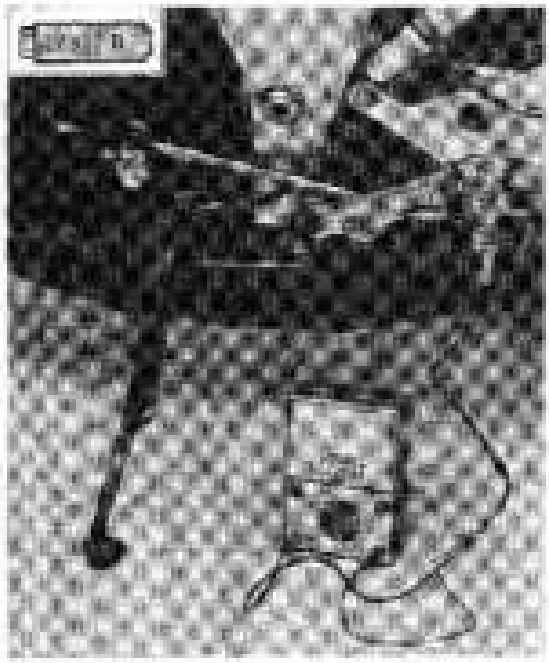
Out of specification

Source coil is faulty, replace it.

12. Check entire ignition system for connections. Refer to "WIRING DIAGRAM" section.

OK → C.D.I. unit is faulty, replace it.

Poor connection → Correct.



TROUBLESHOOTING (2)

1. Sidestand switch operation check
   - *Disconnect sidestand switch leads (Blue/Yellow, Black).
   - *Connect the Pocket Tester to sidestand switch leads.

Pocket Tester:
90890-03112

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

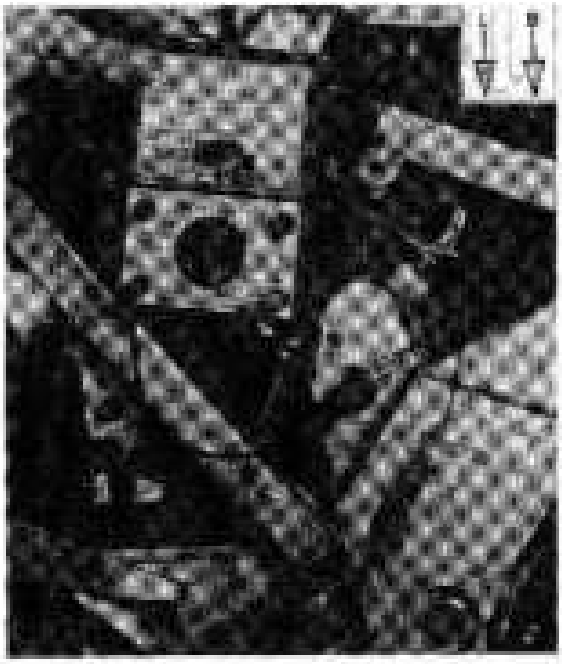
NOTE:
Set tester selector to "Ω × 1" position.

- *Check sidestand switch for operation.

Sidestand is up.	**Switch is continued (∞).**
Sidestand is down.	**Switch is discontinued (∞).**

Switch operation is correct. ↓ Switch operation is incorrect.

Sidestand switch is faulty, replace it.



2. Neutral switch operation check
   - Disconnect neutral switch leads (Blue, Black).
   - Connect Pocket Tester to neutral switch leads.

Pocket Tester: 90890-03112

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

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

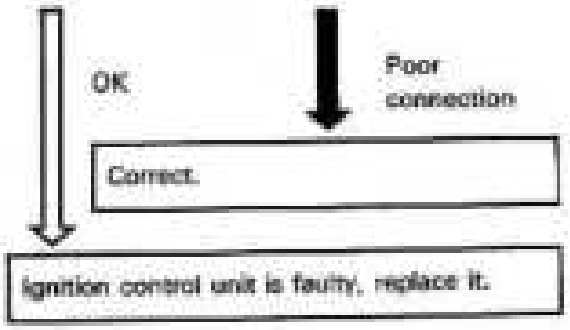
- Check neutral switch for operation.

Transmission is in neutral	**Switch is continued (00).**
Transmission is in gear	**Switch is discontinued (∞).**

Switch operation is correct. ↓ Switch operation is incorrect.

Neutral switch is faulty, replace it.

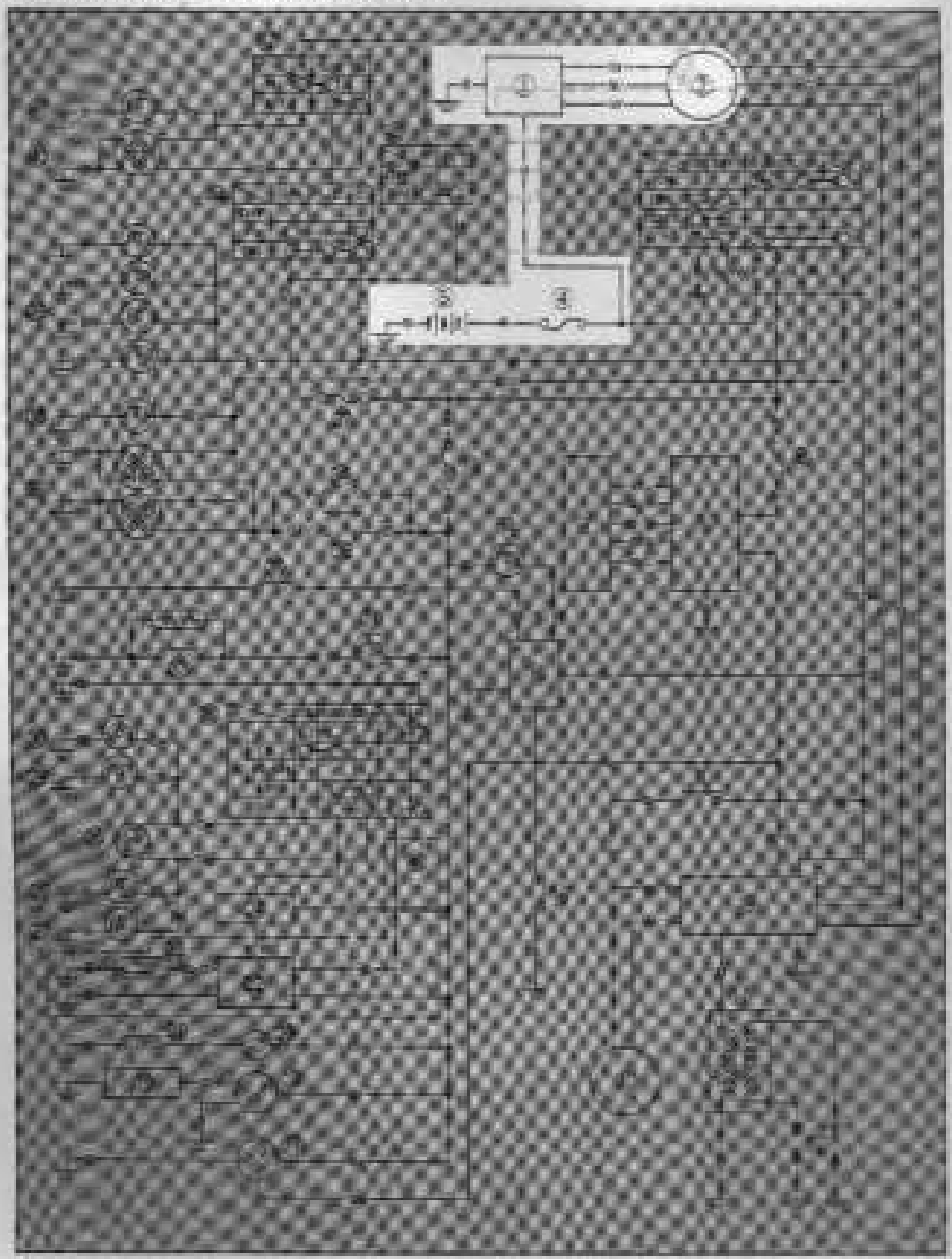
3. Check connections. Refer to "WIRING DIAGRAM" section.



CHARGING SYSTEM

CIRCUIT DIAGRAM

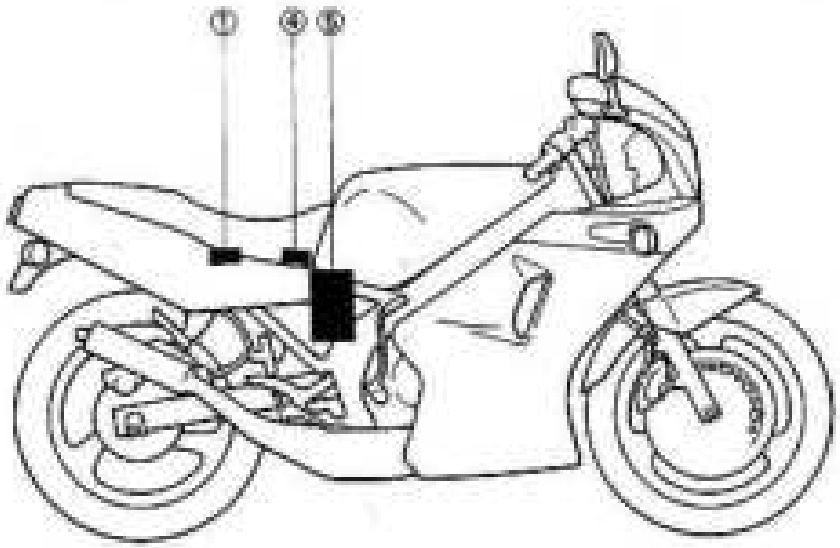
Below circuit diagram shows charging circuit.

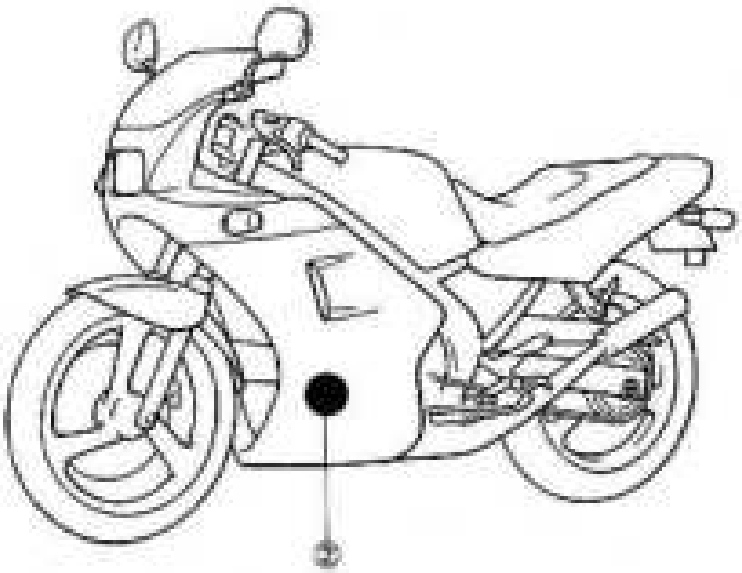


NOTE:

For the color codes, see page 8-2.

① Rectifier/Regulator
② C.D.I. magneto
④ "MAIN" fuse
⑮ Battery





TROUBLESHOOTING

THE BATTERY IS NOT CHARGED.

1. Remove:
   - Seat

2. Fuse inspection
   - Remove "MAIN" fuse and check it for continuity.
   Refer to "FUSE INSPECTION" section in CHAPTER 3.

Continuity

Discontinuity

Fuse is faulty, replace it.

3. Battery inspection
   - Fluid level
   - Battery terminals
   - Fluid specific gravity
   Refer to "BATTERY INSPECTION" section in CHAPTER 3.

OK

No good

Connect or replace battery.



4. Remove:
   •Side cover (Right)

5. Charging voltage check
   •Connect Inductive Tachometer to spark plug lead.

	Inductive Tachometer: **90890-03113**

•Connect Pocket Tester to battery.

	Pocket Tester: **90890-03112**

Tester (+) Lead → Battery (+) Terminal
Tester (−) Lead → Battery (−) Terminal

NOTE:
Set tester selector to "DC20V" position.

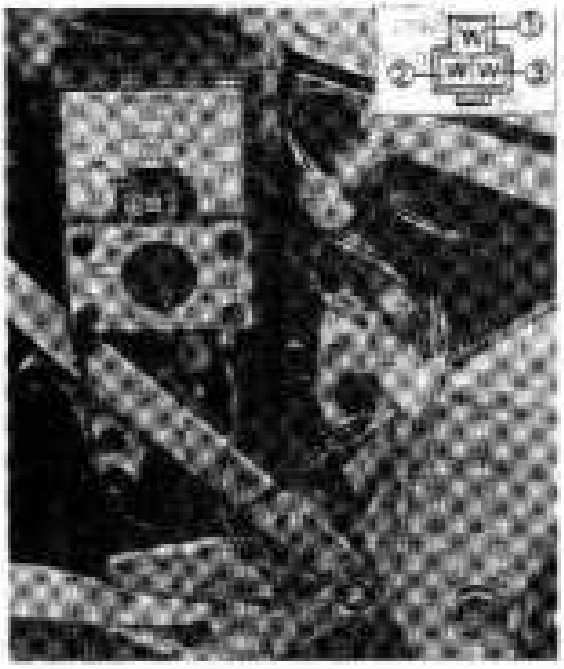
•Start engine and accelerate to about 3,000 r/min.
•Measure charging voltage.

	Charging Voltage: **14.3 – 15.3V at 3,000 r/min**

Out of specification

Charging voltage meets specificatio

Charging system is good.



6. Stator coil resistance check
   - Disconnect stator coil leads (White, White, White).
   - Connect Pocket Tester to stator coil leads.

Pocket Tester:
90890-03112

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

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

- Measure stator coil resistance.

Stator Coil Resistance:
White ① — White ②
0.44 – 0.66Ω at 20°C (68°F)
White ① — White ③
0.44 – 0.66Ω at 20°C (68°F)

Both resistances meet specifications

Out of specification

Stator coil is faulty, replace it.

7. Check entire charging system for connections. Refer to "WIRING DIAGRAM" section.

OK

Poor connection

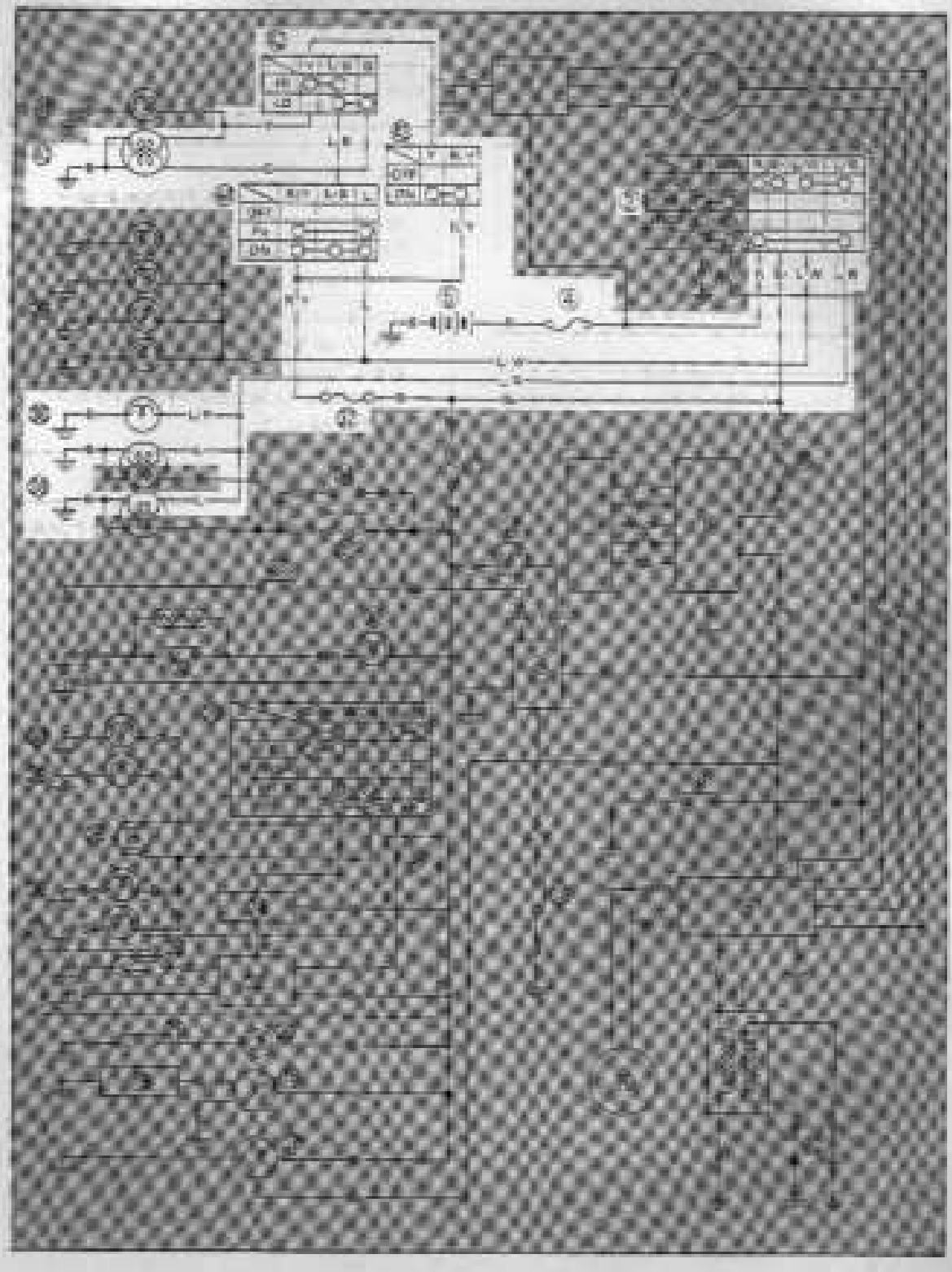
Correct.

Rectifier/Regulator is faulty, replace it.

LIGHTING SYSTEM

CIRCUIT DIAGRAM

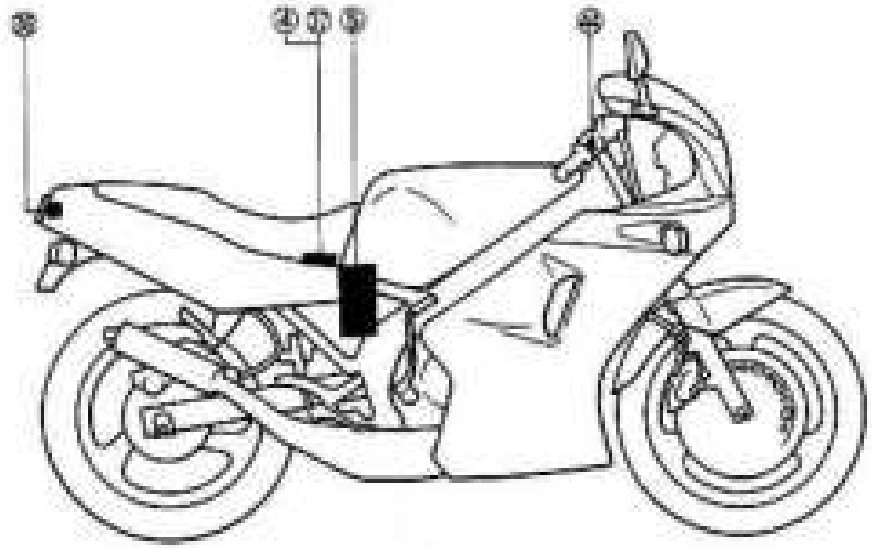
Below circuit diagram shows lighting circuit.

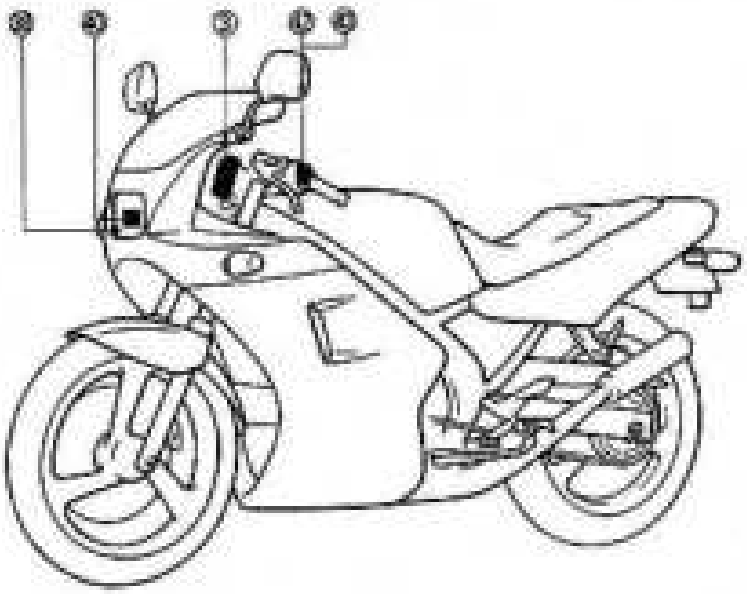


NOTE:

For the color codes, see page 8-2.

① Main switch
④ "MAIN" fuse
⑤ Battery
⑧ Tail/Brake light
⑨ "HEAD" fuse
⑩ Auxiliary light
⑪ Headlight
⑫ "LIGHTS" (Dimmer) switch
⑬ "PASS" switch
⑭ "LIGHTS" switch





TROUBLESHOOTING

NOTE:

The battery provides power for operation of the lighting system. If none of the above fail to operate proceed further. Low battery voltage indicates either a faulty battery, low battery fluid level or a defective charging system.
Also check fuse condition.

HEADLIGHT, TAILLIGHT OR AUXILIARY LIGHT DO NOT COME ON.

1. Remove:
   - Seat

2. Fuse inspection
   - Remove "MAIN" fuse and "HEAD" fuse.
   - Check "MAIN" fuse and "HEAD" fuse for continuity.
     Refer to "FUSE INSPECTION" section in CHAPTER 3.

Continuity

Discontinuity

Fuse is faulty, replace it.

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

   Refer to "BATTERY INSPECTION" section in CHAPTER 3.

OK

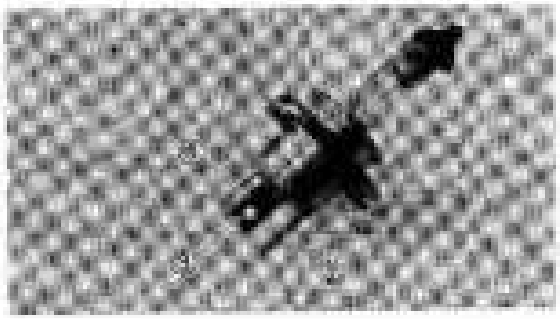
No good

Correct or replace battery.

4. Headlight bulb conduct check
   - Remove headlight bulb.

WARNING

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



- Connect Pocket Tester to bulb terminals and check bulb for continuity.

Pocket Tester:
90890-03112

Tester (+) Lead→Terminal ① **Tester (−) Lead→Terminal ③**
Tester (+) Lead→Terminal ② **Tester (−) Lead→Terminal ③**

NOTE:

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

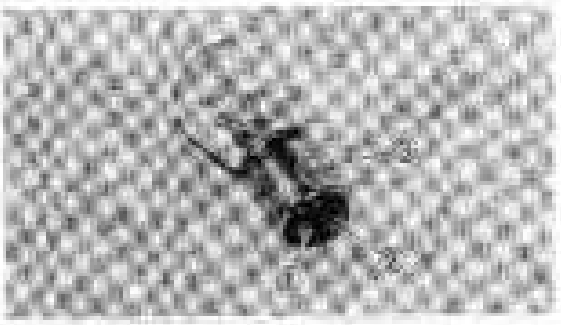
Continuity exists on both circuits.

Continuity does not exist on one circuit.

Bulb is faulty, replace it.

5. Tail/Brake light bulb conduct check.
   - Remove tail/brake light bulb.
   - Connect Pocket Tester to bulb terminals and check bulb for continuity.

Pocket Tester:
90890-03112



Tester (+) Lead→Terminal ① Tester (−) Lead→Terminal ③
Tester (+) Lead→Terminal ② Tester (−) Lead→Terminal ③

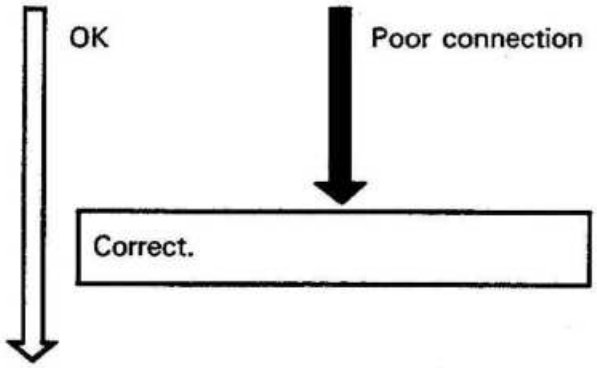
NOTE:
Set tester selector to "Ω × 1K" position.

Continuity exists on both circuits.

Continuity does not exist on one circuit.

Bulb is faulty, replace it.

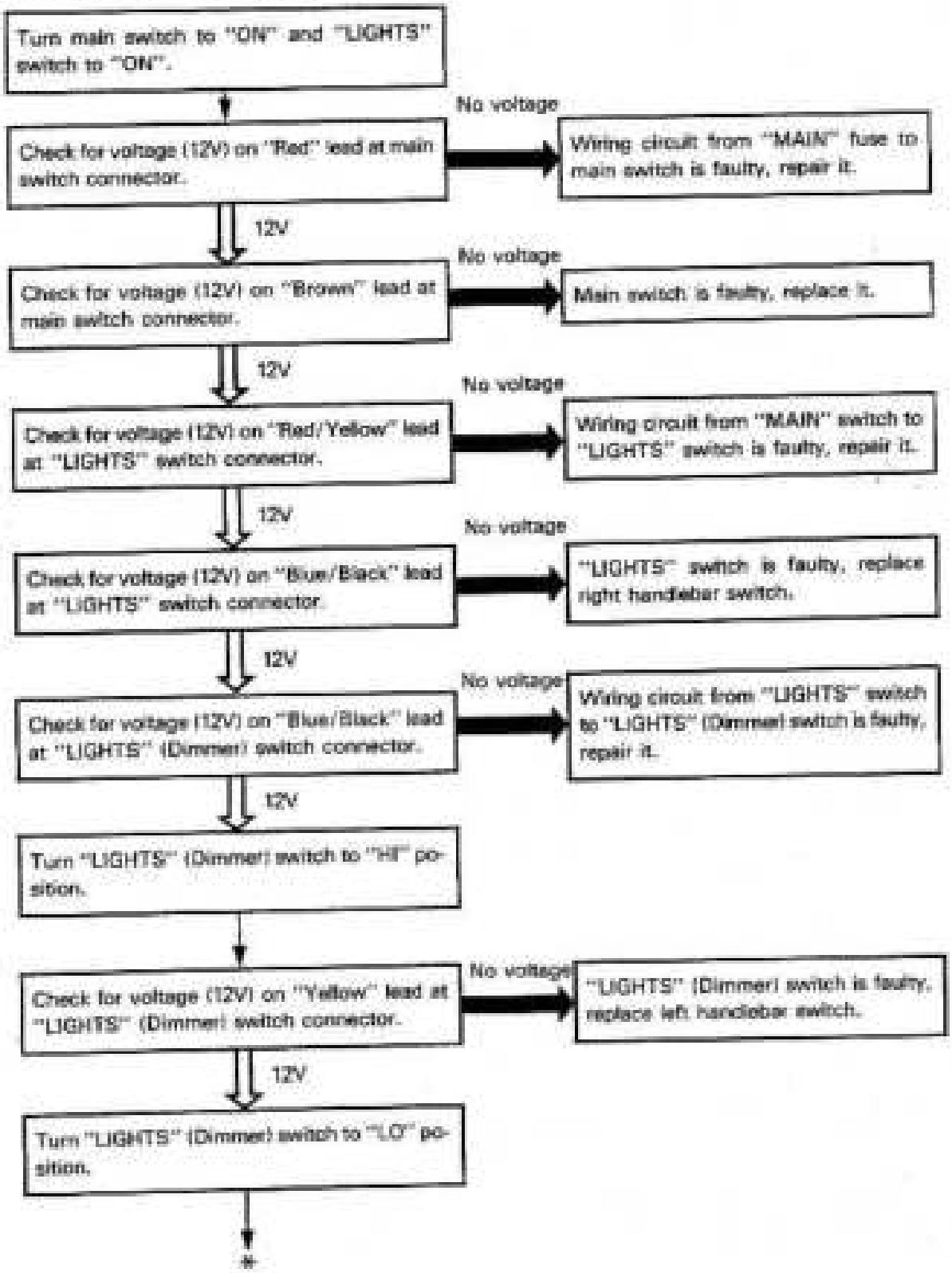
6. Check entire lighting system for connections. Refer to "WIRING DIAGRAM" section.

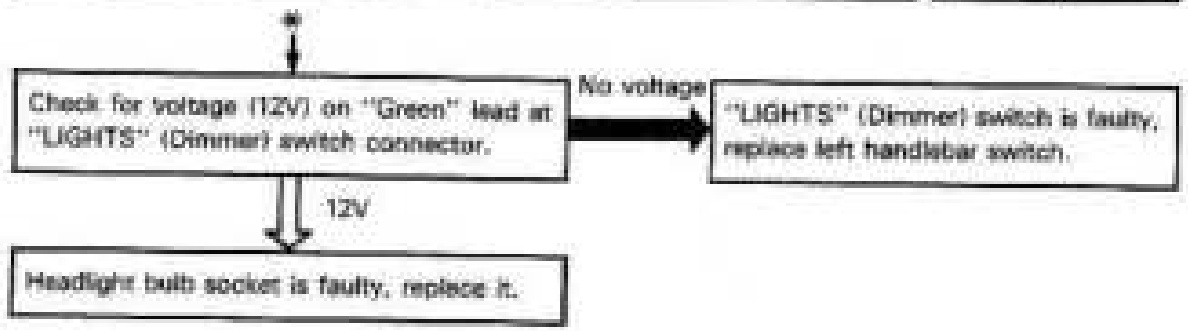


7. Check condition of each circuit for lighting system.
   Refer to "LIGHTING SYSTEM TESTS AND CHECKS" section.

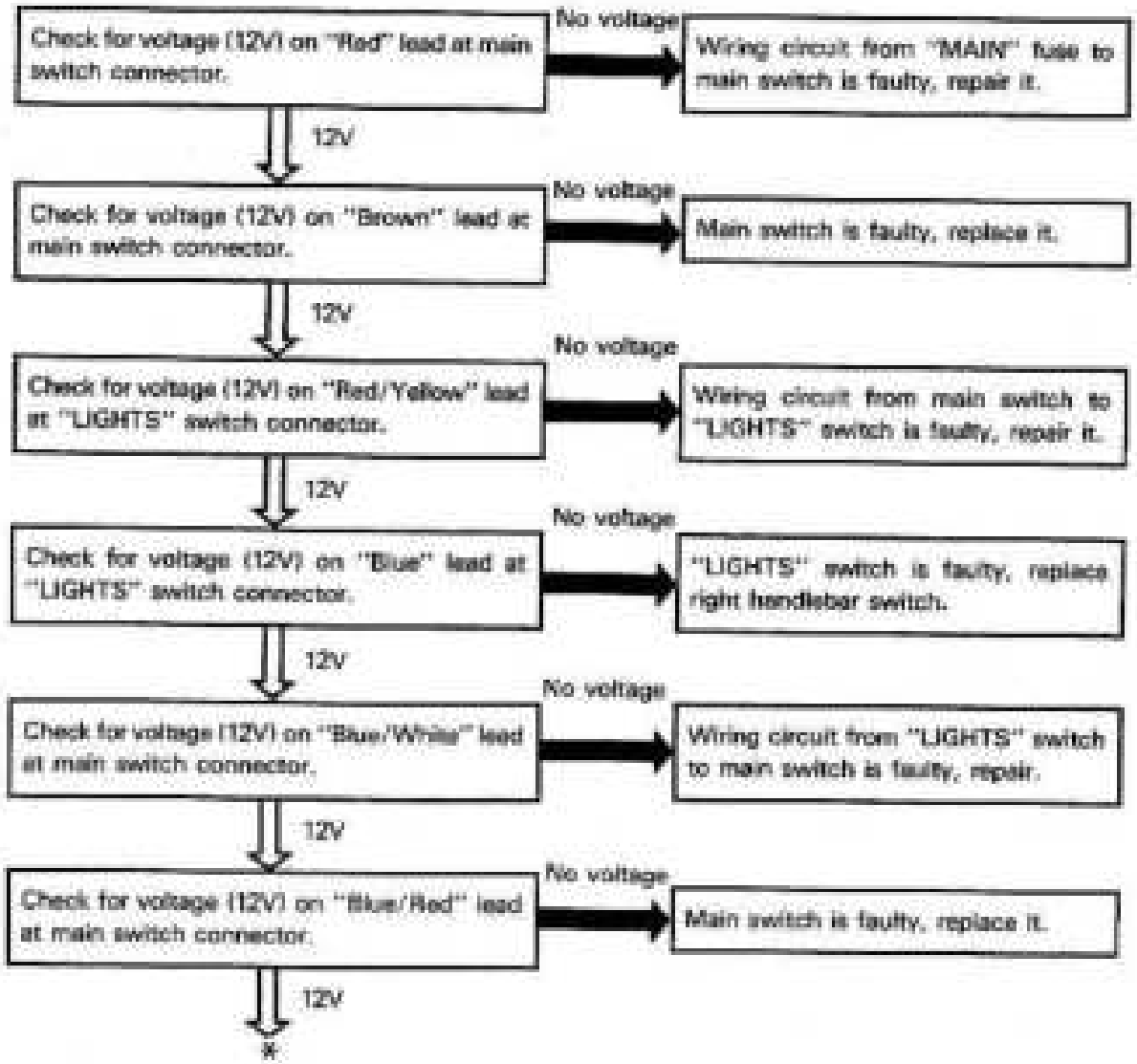
LIGHTING SYSTEM TESTS AND CHECKS

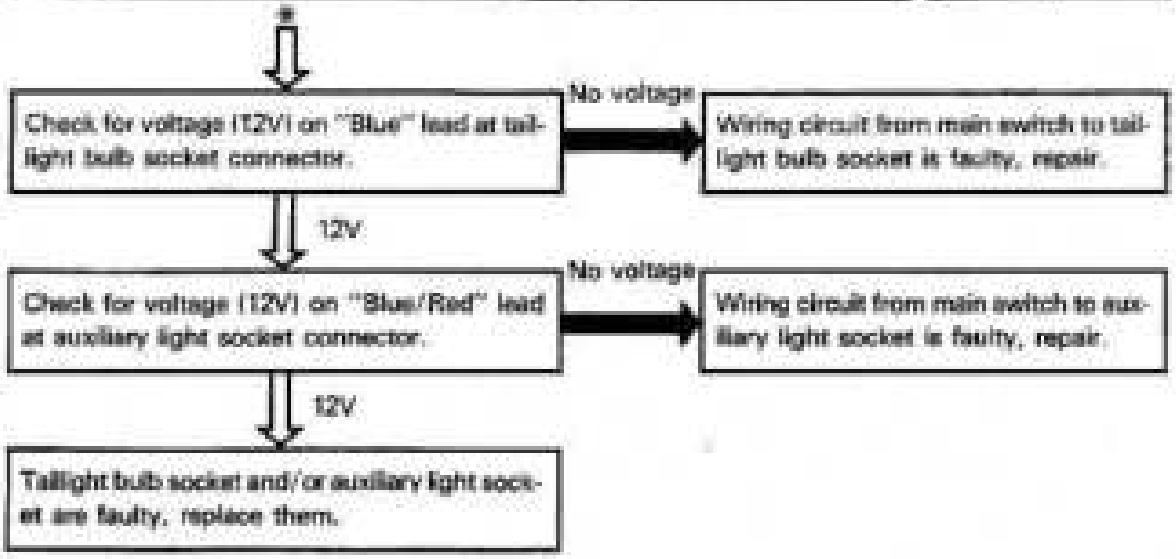
1. Headlight does not come on.



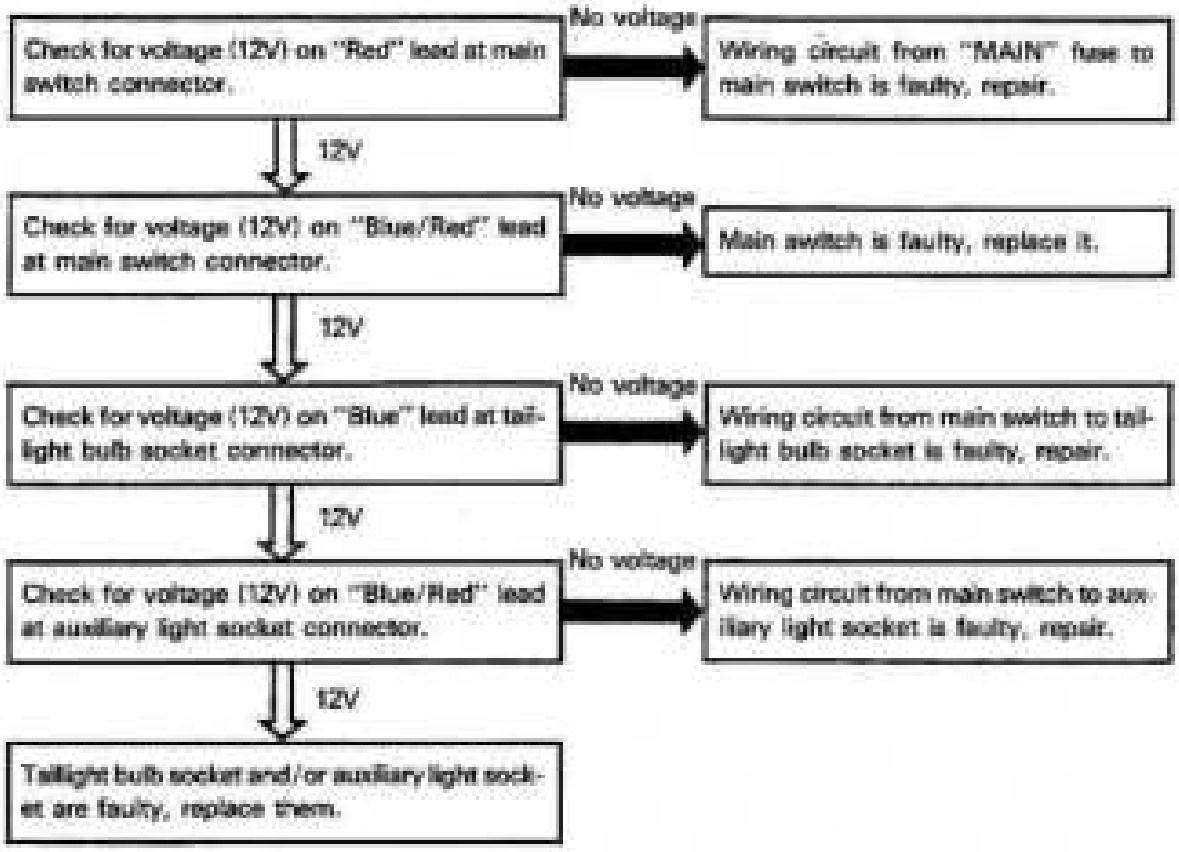


2. When turning main switch to "ON" and "LIGHTS" switch to "ON", taillight and/or auxiliary light do not come on.





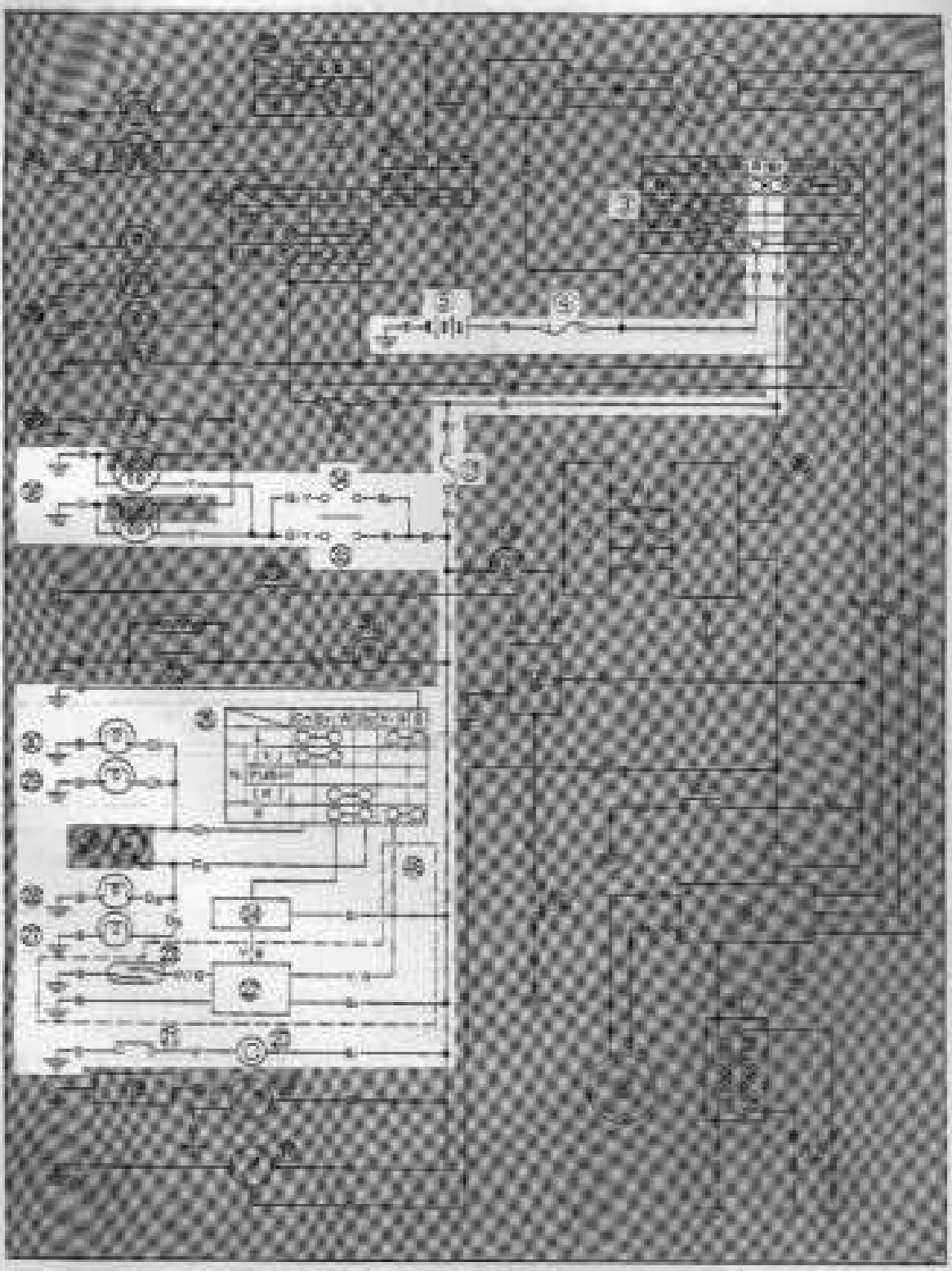
3. When turning main switch to "P" position, taillight and/or auxiliary light do not come on.



SIGNAL SYSTEM

CIRCUIT DIAGRAM

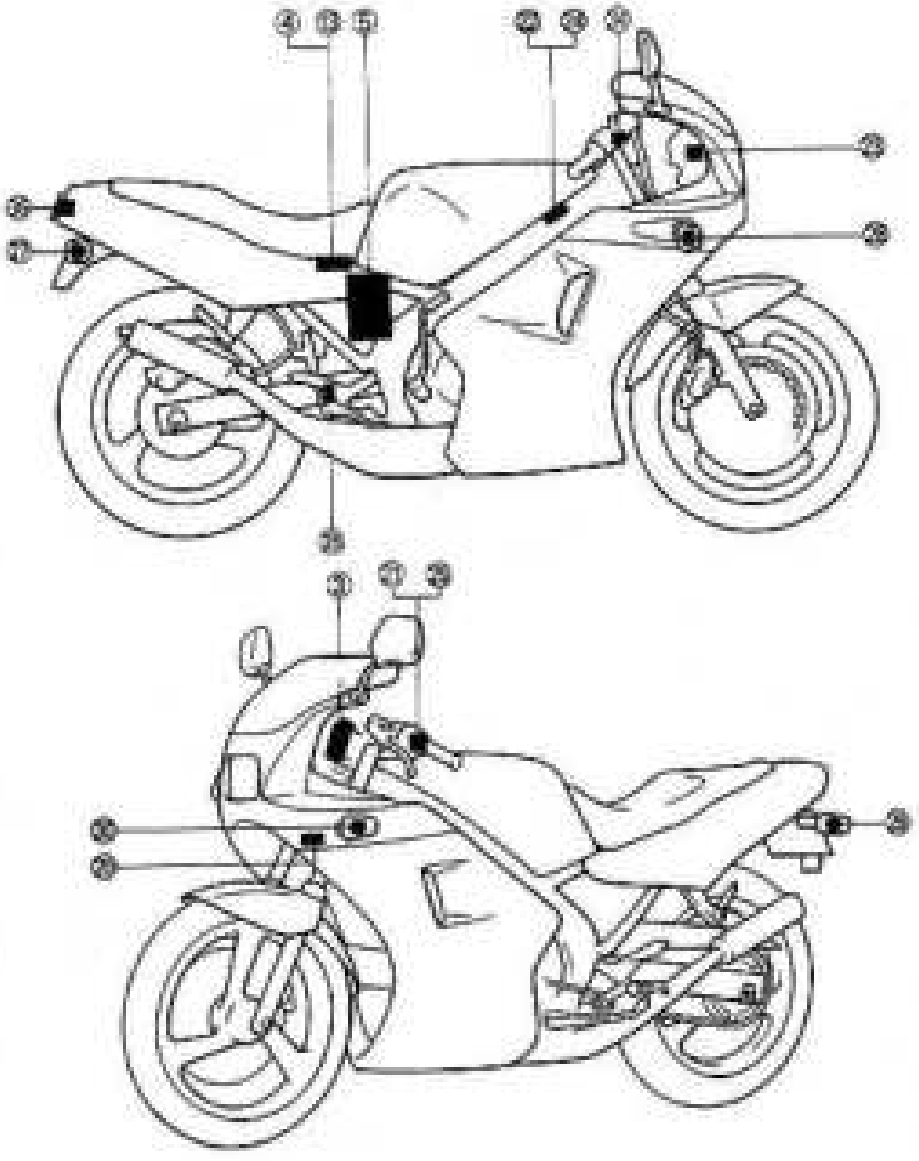
Below circuit diagram shows signal circuit.



NOTE:

For the color codes, see page 8-2.

① Main switch
② "MAIN" fuse
③ Battery
④ "SIGNAL" fuse
⑤ Horn
⑥ "HORN" switch
⑦ Canceling unit
⑧ Reed switch
⑨ Flasher relay
⑩ "TURN" switch
⑪ Rear flasher light (Right)
⑫ Front flasher light (Right)
⑬ Rear flasher light (Left)
⑭ Front flasher light (Left)
⑮ Front brake switch
⑯ Rear brake switch
⑰ Tail/Brake light
⑱ Except for Germany



TROUBLESHOOTING

NOTE:

The battery provides power for operation of the signal system. If none of the above fail to operate proceed further. Low battery voltage indicates either a faulty battery, low battery fluid level, or a defective charging system.
Also check fuse condition.

FLASHER LIGHT, BRAKE LIGHT OR HORN DO NOT OPERATE.

1. Remove:
   - Seat

2. Fuse inspection
   - Remove "MAIN" fuse and "SIGNAL" fuse.
   - Check fuses for continuity.
     Refer to "FUSE INSPECTION" section in CHAPTER 3.

Continuity

Discontinuity

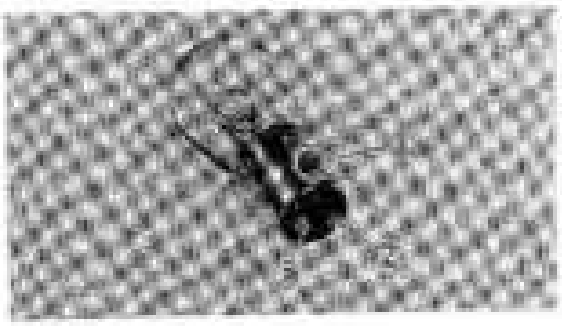
Fuse is faulty, replace it.

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

   Refer to "BATTERY INSPECTION" section in CHAPTER 3.

OK → 4. Tail/Brake light bulb conduct check
- Remove tail/brake light bulb.
- Connect Pocket Tester to bulb terminals and check bulb for continuity.

No good → Correct or replace battery.



Pocket Tester:
90890-03112

Tester (+) Lead→Terminal ①	Tester (−) Lead→Terminal ③
Tester (+) Lead→Terminal ②	Tester (−) Lead→Terminal ③

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

Continuity exists on both circuits.

Continuity does not exist on one circuit.

Bulb is faulty, replace it.

5. Flasher light bulb conduct check
   - Remove flasher light bulb
   - Connect Pocket Tester to bulb terminals and check bulb for continuity.

Pocket Tester:
90890-03112

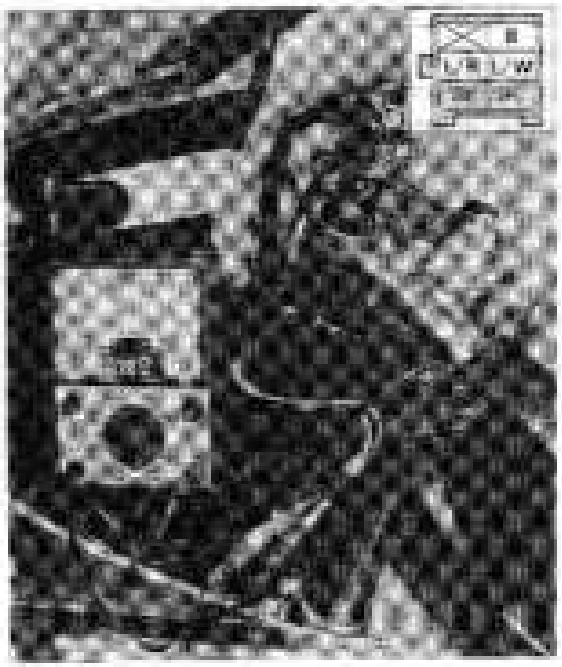
Tester (+) Lead→Terminal ①
Tester (−) Lead→Terminal ②

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

Continuity

Discontinuity

Bulb is faulty, replace it.



6. Main switch operation check
   - Disconnect main switch leads (Brown, Red, Blue/Red, Blue/White, Black).
   - Connect Pocket Tester to main switch leads.

Pocket Tester:
90890-03112

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

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

•Check main switch for operation.

Turn main switch to "ON".	Switch is continued (00).
Turn main switch to "OFF".	Switch is discontinued (∞).

Switch operation is correct

Switch operation is incorrect.

Main switch is faulty, replace it.

7. Check entire signal system for connections.
   Refer to "WIRING DIAGRAM" section.

OK

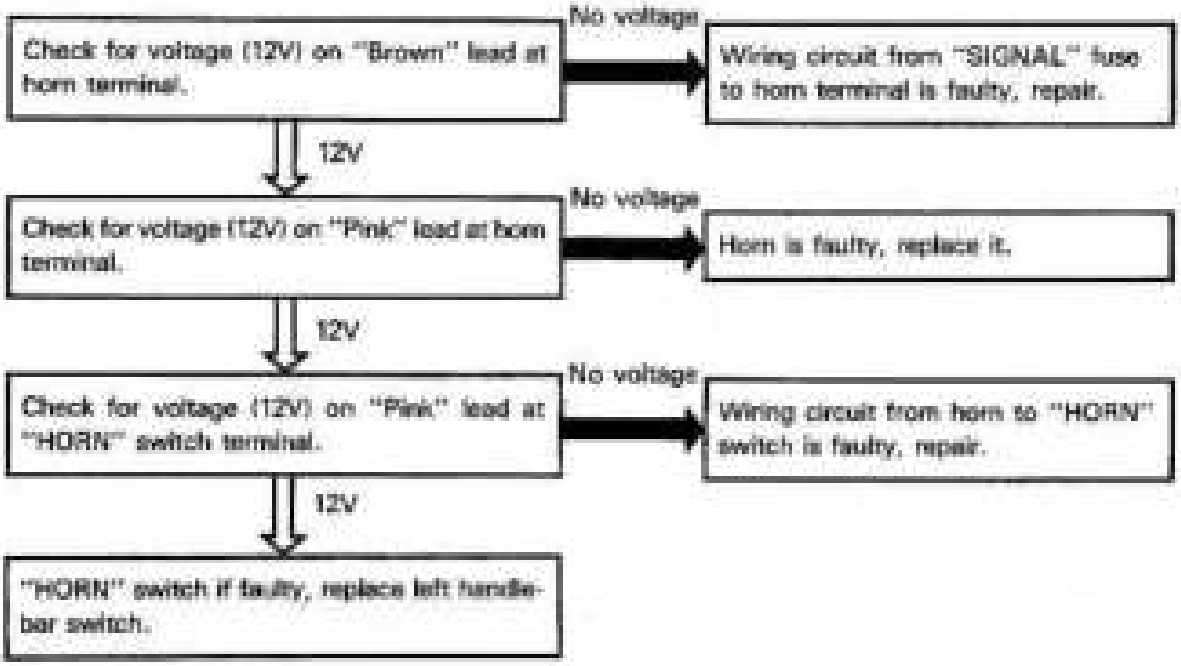
Poor connection

Correct.

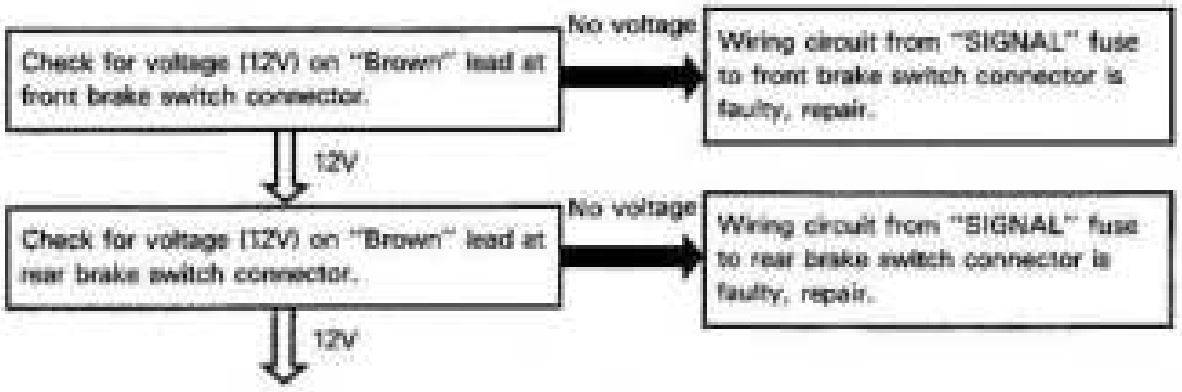
8. Check condition of each circuit for signal system.
   Refer to "SIGNAL SYSTEM TESTS AND CHECKS.

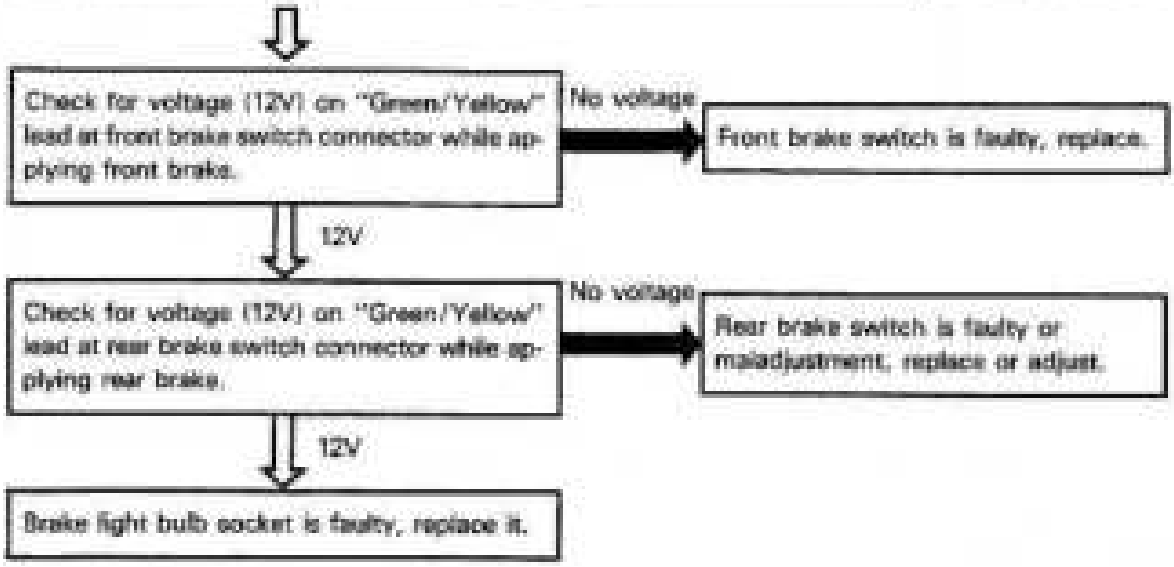
SIGNAL SYSTEM TESTS AND CHECKS

1. Horn does not sound, when pushing "HORN" switch.

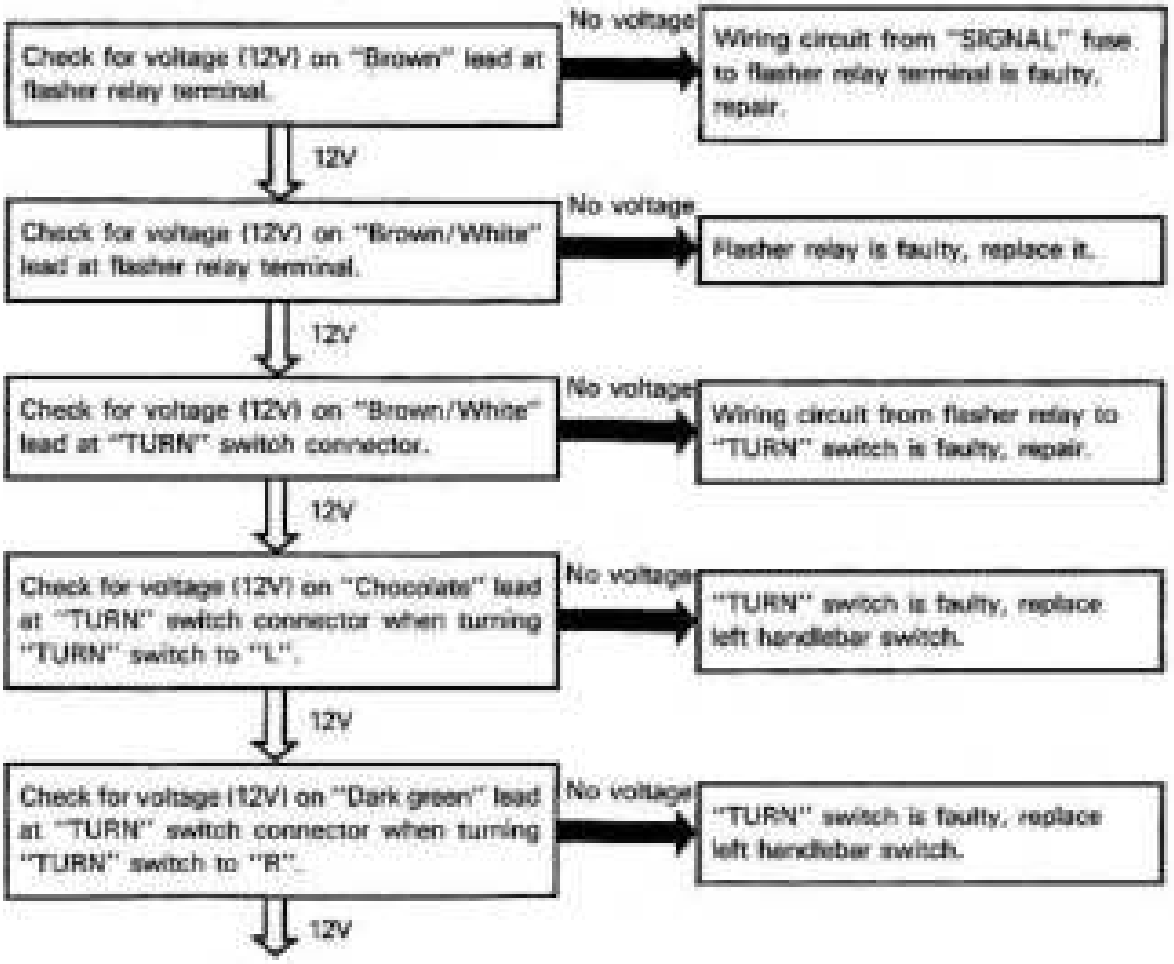


2. Brake light does not come on, when applying rear or front brake.





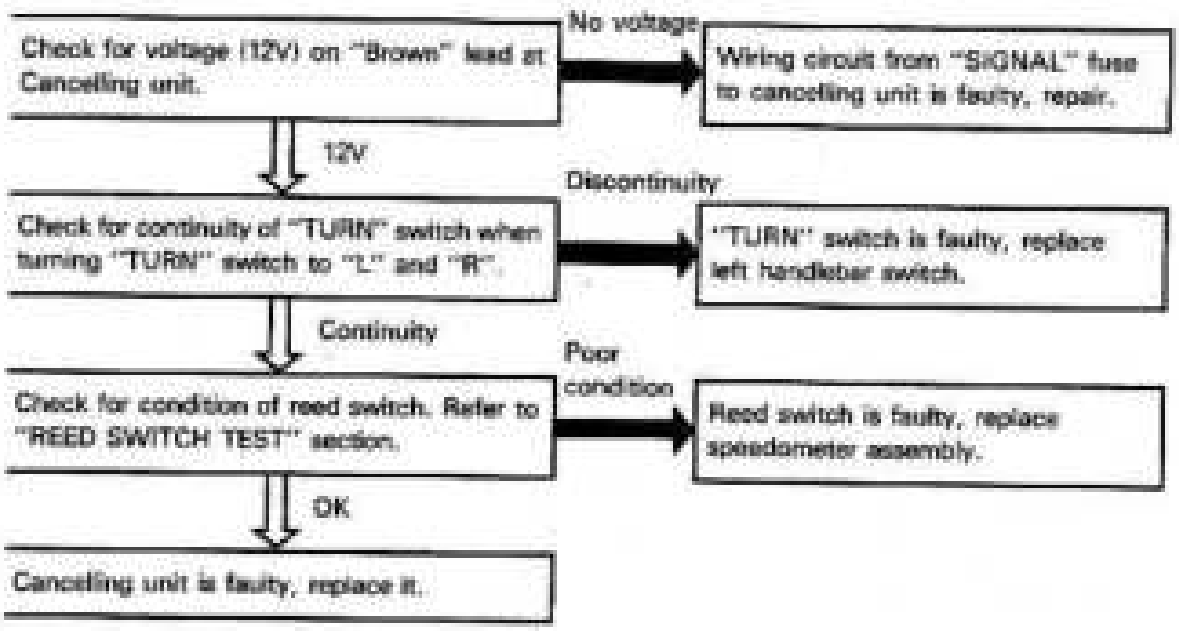
3. Flasher lights do not blink.

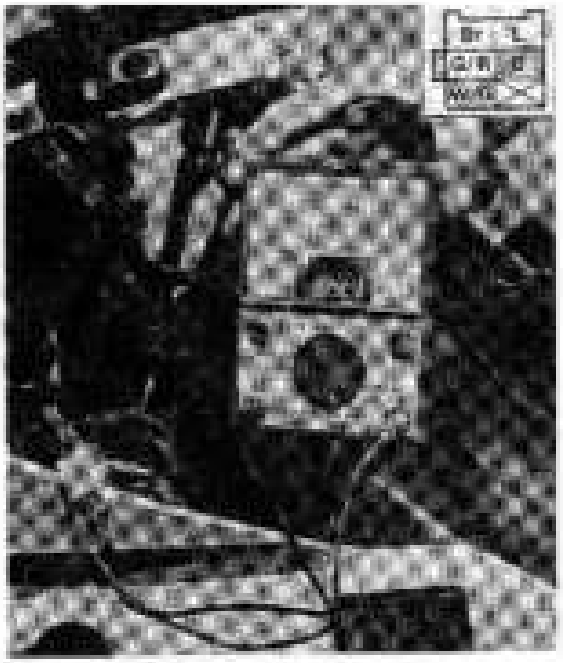


12V

Flasher light bulb socket is faulty, replace it.

4. Blinking (Flasher light) is not cancelled automatically.





REED SWITCH TEST

1. Disconnect:
   - Meter coupler (Brown, Blue, Green/Red, White/Green, Black)

2. Connect:
   - Pocket Tester

Pocket Tester:
90890-03112

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

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

3. Measure:
   - Reed switch resistance

   Out of specification→Replace.

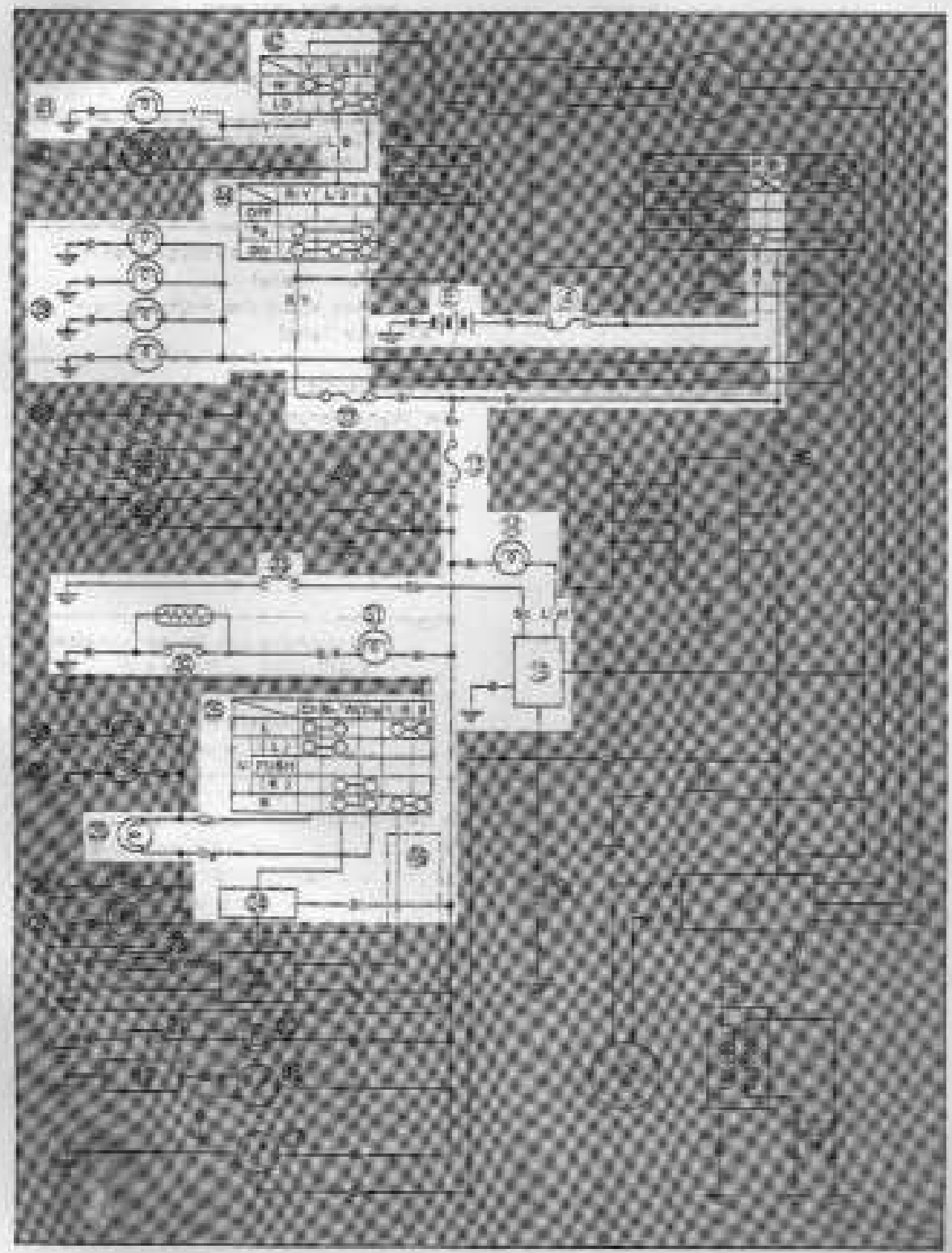
Reed Switch Resistance
(White/Green — Black):
About 7Ω
Then return back 0Ω or ∞Ω
when wheel is stopped

NOTE:
When measuring reed switch resistance, lift front wheel and rotate the wheel by hand.

DISPLAY SYSTEM

CIRCUIT DIAGRAM

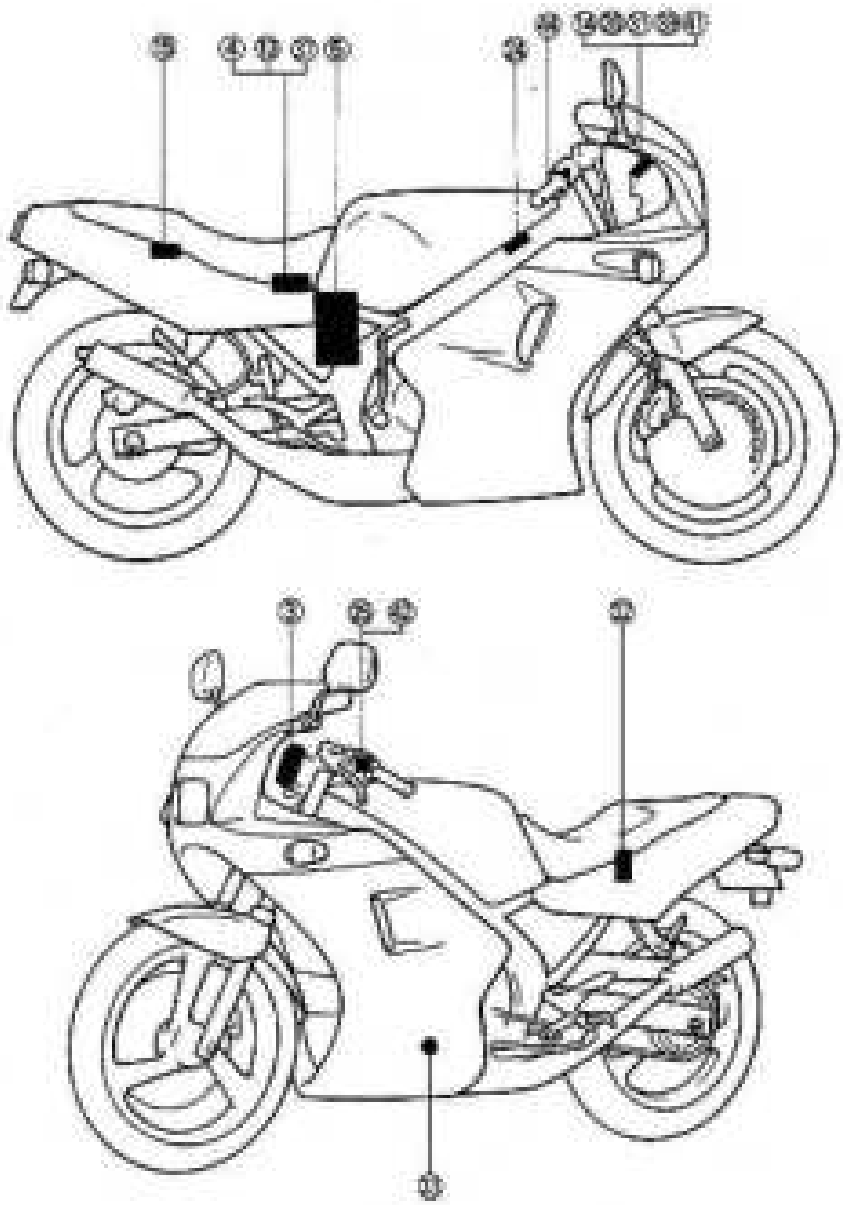
Below circuit diagram shows display system.



NOTE:

For the color codes, see page 8-2.

① Main switch
② "MAIN" fuse
③ Battery
④ "SIGNAL" fuse
⑤ "NEUTRAL" indicator light
⑥ Ignition control unit
⑦ Flasher relay
⑧ "TURN" switch
⑨ "TURN" indicator light
⑩ "OIL" indicator light
⑪ Oil level gauge
⑫ Neutral switch
⑬ "HEAD" fuse
⑭ Meter light
⑮ "HIGH BEAM" indicator light
⑯ "LIGHTS" (Dimmer) switch
⑰ "LIGHTS" switch



TROUBLESHOOTING

NOTE:

The battery provides power for operation of the display system. If none of the above fail to operate proceed further. Low battery voltage indicates either a faulty battery, low battery fluid level or a defective charging system.
Also check fuse condition.

INDICATOR LIGHTS AND METER LIGHTS DO NOT COME ON.

1. Remove:
   - Seat

2. Fuse inspection
   - Remove "MAIN", "SIGNAL" and "HEAD" fuses.
   - Check fuses for continuity.
     Refer to "FUSE INSPECTION" section in CHAPTER 3.

Continuity

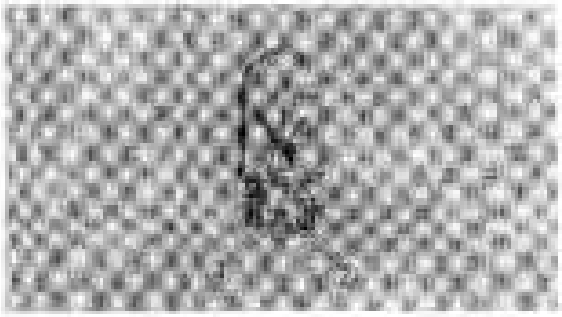
Discontinuity

Fuse is faulty, replace it.

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

   Refer to "BATTERY INSPECTION" section in CHAPTER 3.

OK → No good → Connect or replace battery.



4. Indicator light and meter light bulb conduct check
   - Connect Pocket Tester to bulb terminals and check bulb for continuity.

Pocket Tester:
90890-03112

Tester (+) Lead→Terminal ①
Tester (−) Lead→Terminal ②

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

Continuity → Discontinuity → Bulb is faulty, replace it.



5. Main switch operation check
   - Disconnect main switch leads (Brown, Red, Blue/Red, Blue/White, Black)
   - Connect Pocket Tester to main switch leads.

	Pocket Tester: 90890-03112

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

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

- Check main switch for operation.

Turn main switch to "ON".	**Switch is continued (∞).**
Turn main switch to "OFF".	**Switch is discontinued (∞).**

Switch operation is correct.

Switch operation is incorrect.

Main switch is faulty, replace it.

6. Check entire display system for connections. Refer to "WIRING DIAGRAM" section.

OK.

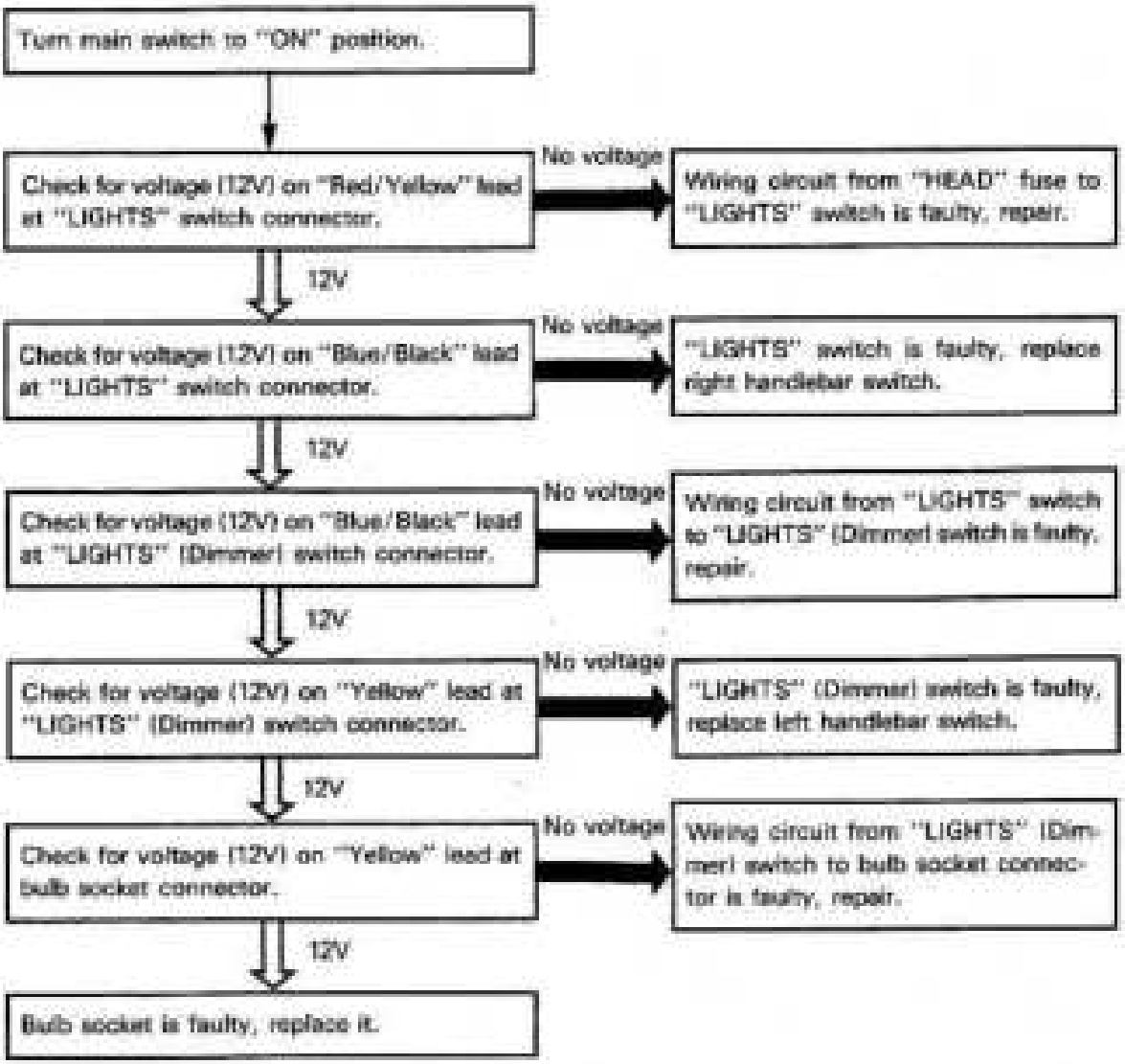
Poor connection.

Correct.

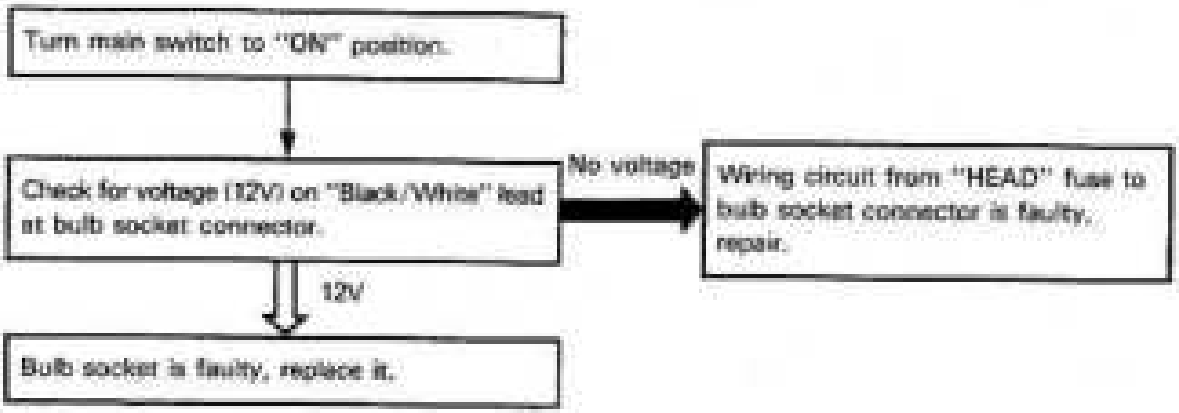
7. Check condition of each circuit for display system.
   Refer to "DISPLAY SYSTEM TESTS AND CHECKS".

DISPLAY SYSTEM TESTS AND CHECKS

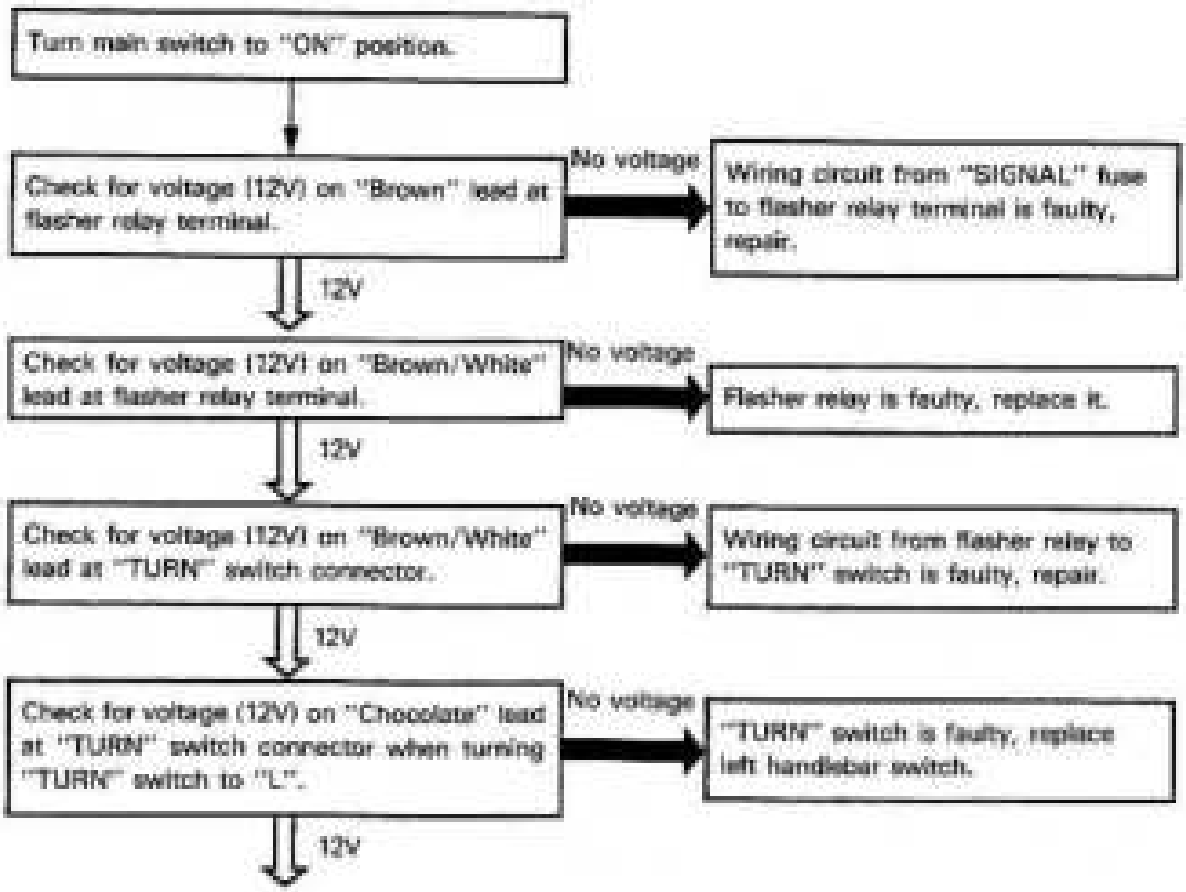
1. "HIGH BEAM" indicator light does not come on when turning "LIGHTS" (Dimmer) switch to "HI" and "LIGHTS" switch to "ON".

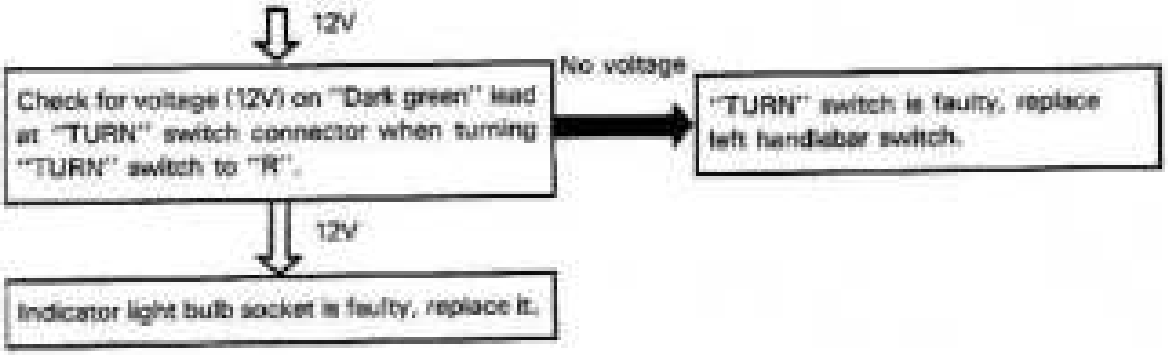


2. Meter light does not come on.

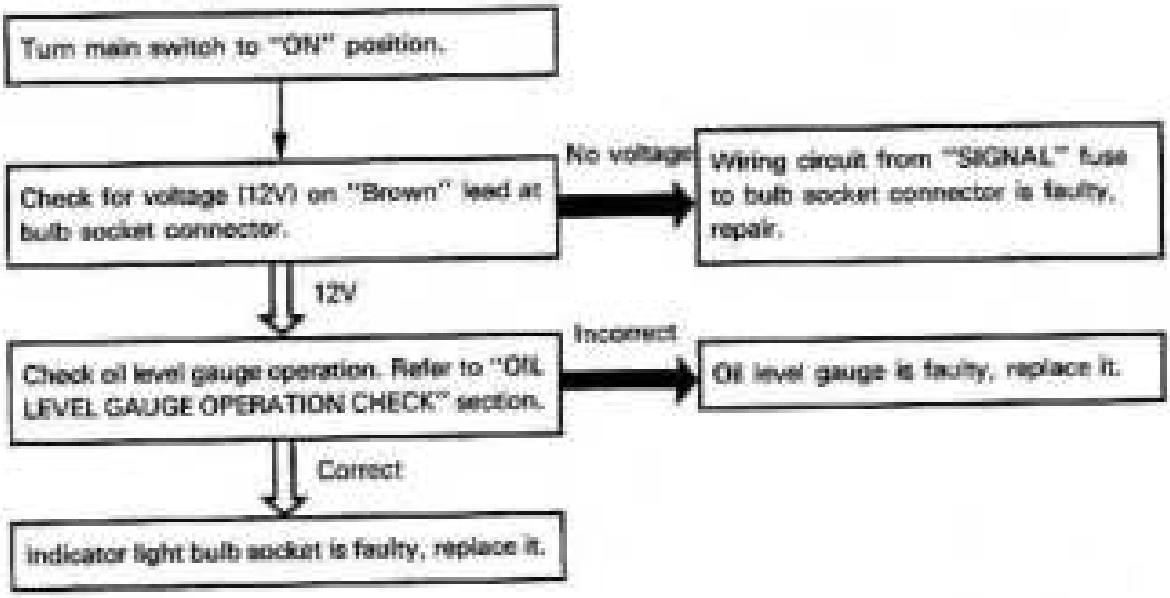


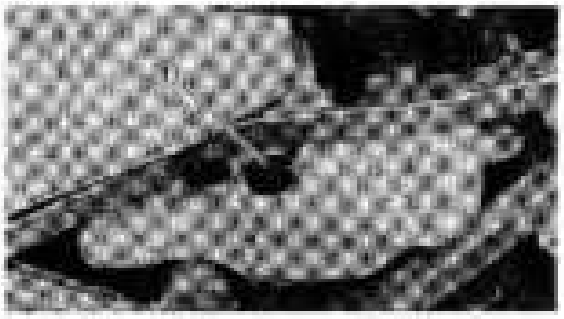
3. "TURN" indicator light does not come on.

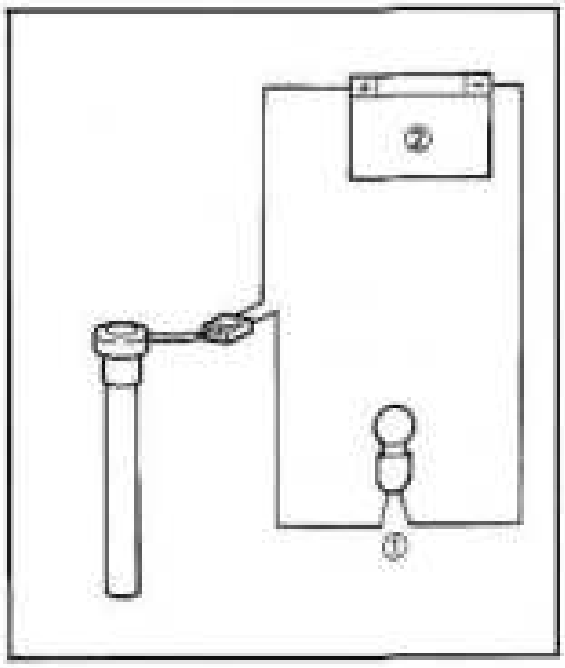




4. "OIL" indicator light does not come on when oil tank is dry.







OIL LEVEL GAUGE OPERATION CHECK

1. Remove:
   - Oil level gauge ①

2. Connect oil level gauge and checking light (12V/3.4W) ① to 12V battery ② as shown.

NOTE:

Use a full charged battery.

3. Check the oil level gauge for operation.

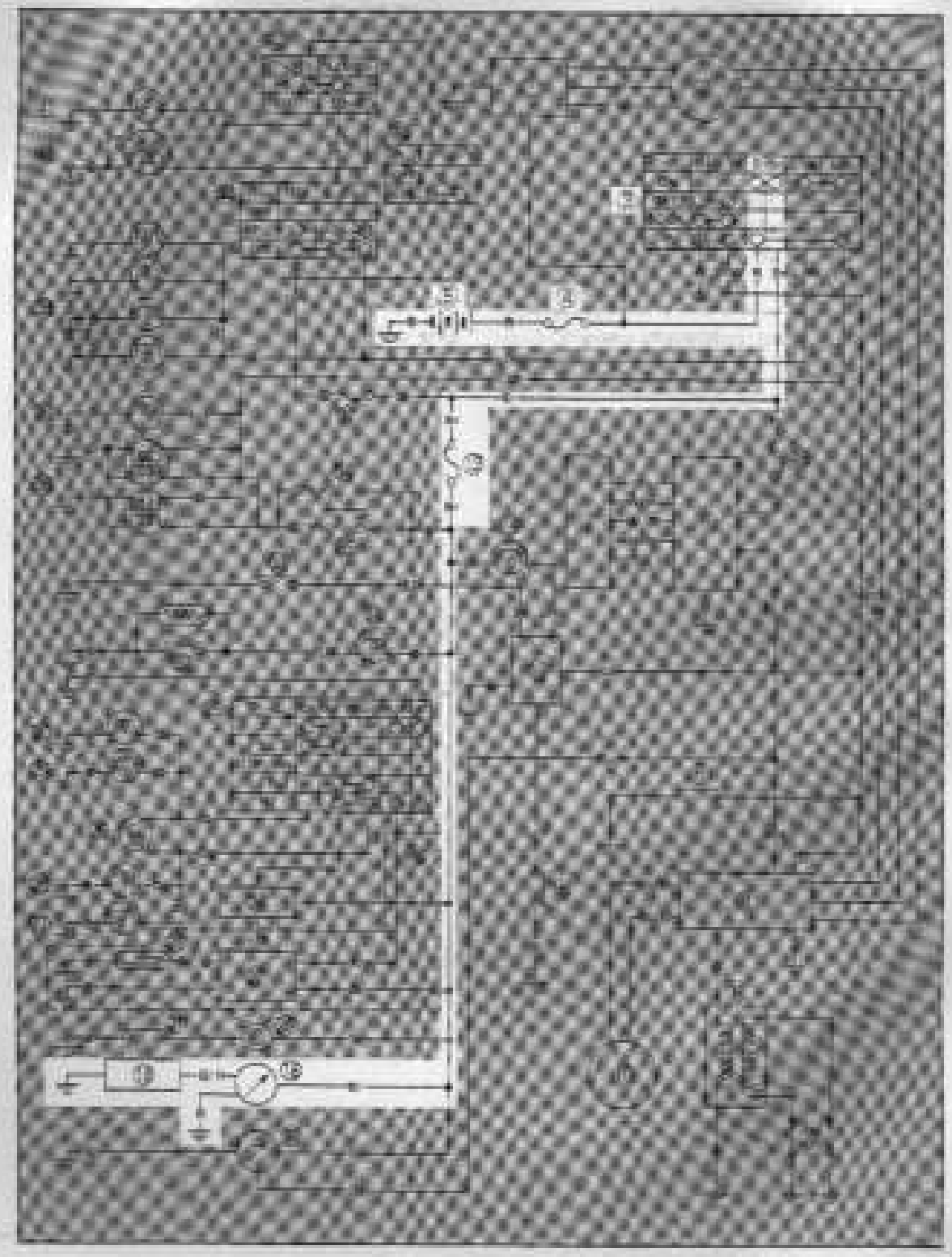
Upright position	•Light comes on •Wait a few second •Light goes out
Up-side down position	•Light comes on •Wait a few second •Light stays on

4. If the switch operation is incorrect, replace it.

COOLING SYSTEM

CIRCUIT DIAGRAM

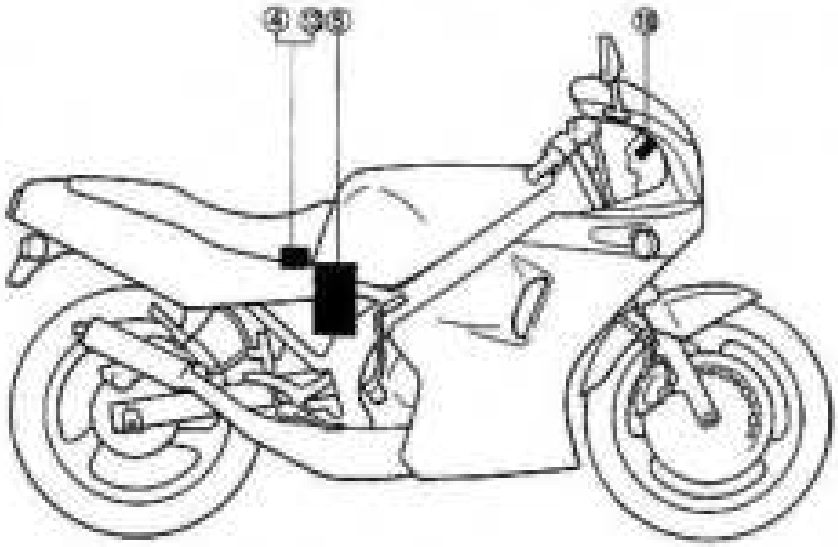
Below circuit diagram shows cooling circuit.

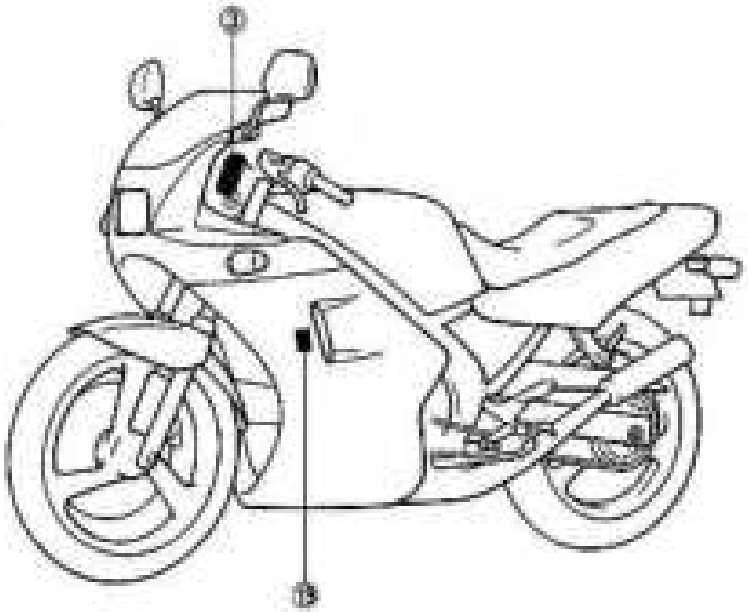


NOTE:

For the color codes, see page 8-2.

③ Main switch
④ "MAIN" fuse
⑤ Battery
⑥ "SIGNAL" fuse
⑮ Temperature gauge
⑰ Thermo unit





TROUBLESHOOTING

WHEN ENGINE IS HOT, TEMPERATURE GAUGE DOES NOT MOVE.

1. Remove:
   - Seat

2. Fuse inspection
   - Remove "MAIN" fuse and "SIGNAL" fuse.
   - Check fuses for continuity.
     Refer to "FUSE INSPECTION" section in CHAPTER 3.

Continuity

Discontinuity

Fuse is faulty, replace it.

3. Battery inspection.
   - Fluid level
   - Battery terminals
   - Fluid specific gravity
     Refer to "BATTERY INSPECTION" section in "CHAPTER 3.

OK

No good

Correct or replace battery.

4. Remove:
   •Lower cowl (Right)
   •Lower cowl (Left)

5. Main switch operation check
   •Disconnect main switch leads (Brown, Red, Blue/Red, Blue/White, Black).



•Connect Pocket Tester to main switch leads.

	Pocket Tester: **90890-03112**

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

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

•Check main switch for operation.

Turn main switch to "ON".	**Switch is continued (∞).**
Turn main switch to "OFF".	**Switch is discontinued (∞).**

Switch operation is correct.

Switch operation is incorrect.

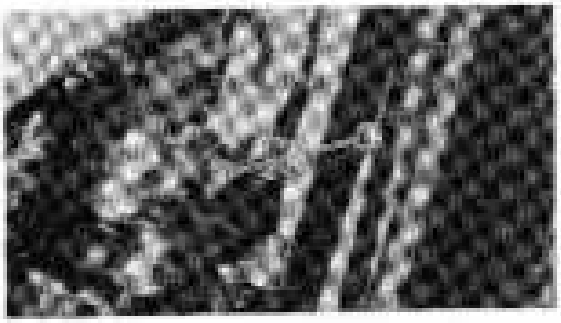
Main switch is faulty, replace it.

6. Check for voltage (12V) on "Brown" lead at temperature gauge.

12V

No voltage

Wiring circuit from "SIGNAL" fuse to temperature gauge is faulty, repair.



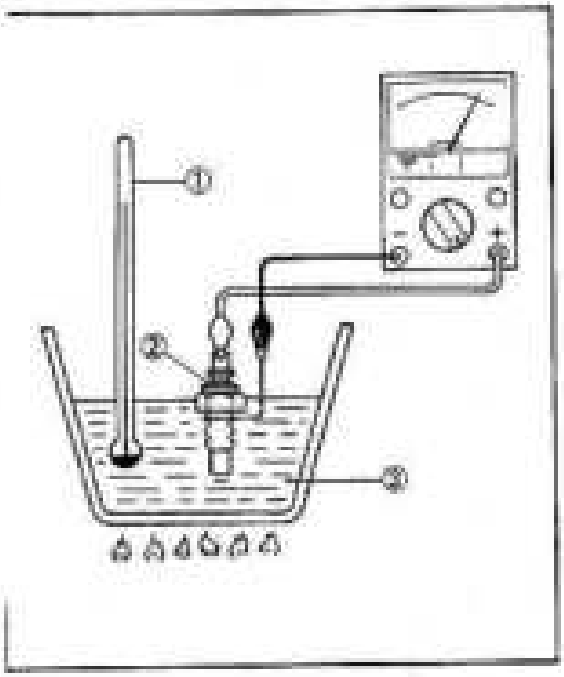
7. Thermo unit resistance check
   •Remove thermo unit ①.

WARNING:

Handle the thermo unit with special care. Never subject it to strong or allow it to be dropped. Should it be dropped, it must be replaced.

•Connect Pocket Tester to thermo unit.

Pocket Tester:
90890-03112



•Measure thermo unit resistance.
If resistance is out of specification, replace it.

Thermo unit resistance measurement steps:
•Immerse the thermo unit ② in coolant ③.
•Measure the resistance at each temperature as tabulated.
① Temperature gauge

Coolant Temperature	Resistance
40°C (104°F)	2400
60°C (140°F)	94 – 1140
80°C (176°F)	32.10
100°C (212°F)	26.2 – 29.30

•After measuring the thermo unit, install the unit.

15 Nm (1.5 m•kg, 11 ft•lb)
Use Water Resistant Sealant.

CAUTION:
Avoid overtightening.

Resistances meet specifications

Out of specification

Thermo unit is faulty, replace it.

8. Check entire cooling system for connection.
Refer to "WIRING DIAGRAM" section.

OK

Poor Connection

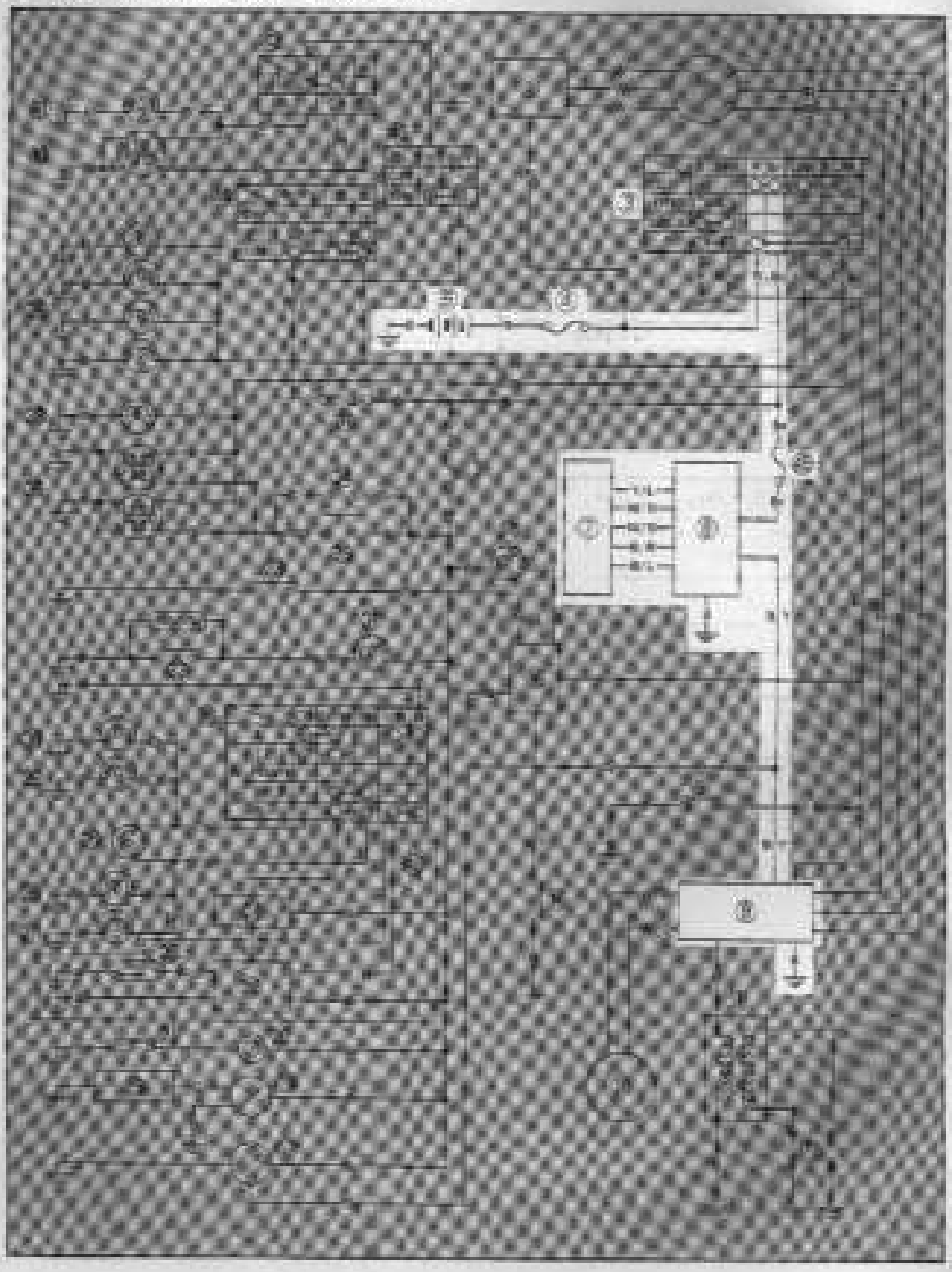
Correct.

Temperature gauge is faulty, replace it.

YAMAHA POWER VALVE SYSTEM

CIRCUIT DIAGRAM

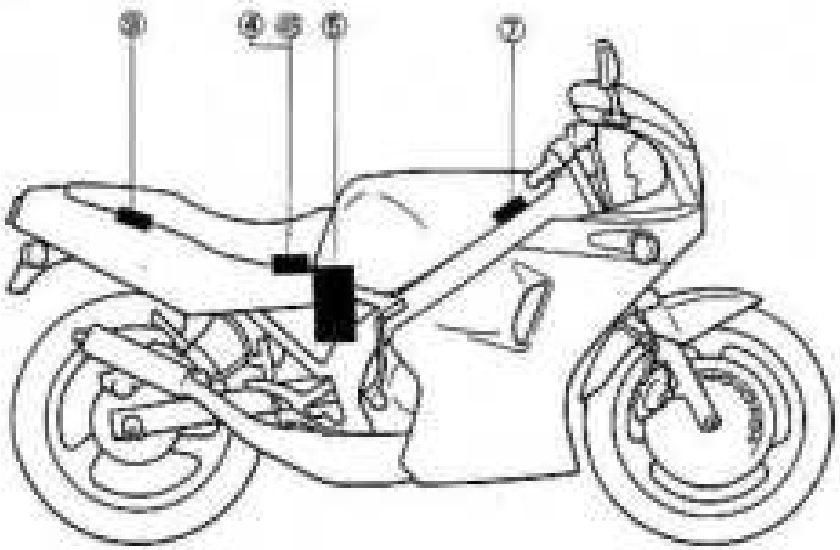
Below circuit diagram shows Y.P.V.S. circuit.

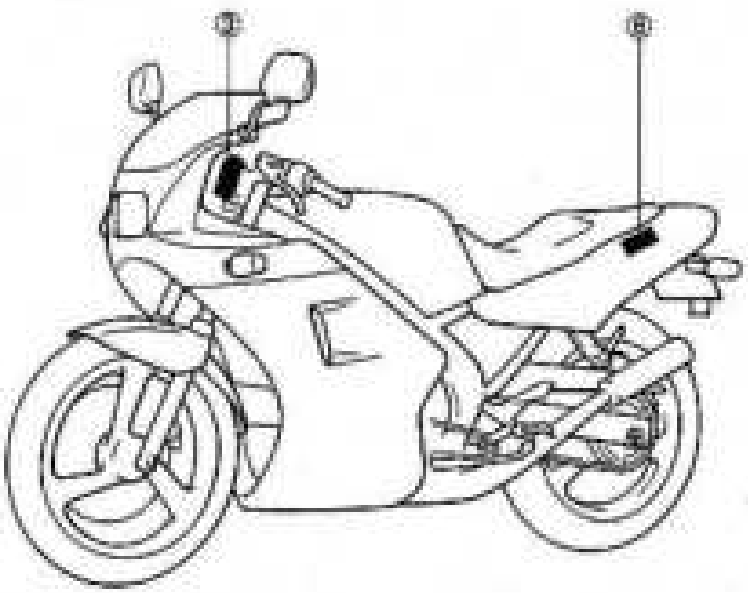


NOTE:

For the color codes, see page 8-2.

1. Main switch
2. "MAIN" fuse
3. Battery
4. Y.P.V.S. control unit
5. Servomotor
6. C.D.I. unit
7. "Y.P.V.S." fuse





TROUBLESHOOTING

WHEN MAIN SWITCH IS TURNED TO "ON", SERVOMOTOR DOES NOT OPERATE ONE CYCLE.

1. Remove:
   - Seat

2. Fuse inspection
   - Remove "MAIN" fuse and "Y.P.V.S." fuse.
   - Check fuses for continuity.
     Refer to "FUSE INSPECTION" section in CHAPTER 3.

Continuity

Discontinuity

Fuse is faulty, replace it.

3. Battery inspection
   - Fluid level
   - Battery terminals
   - Fluid specific gravity
     Refer to "BATTERY INSPECTION" section in CHAPTER 3.

OK

No good

Correct or replace battery.



4. Main switch operation check
   •Disconnect main switch leads (Brown, Red, Blue/Red, Blue/White, Black).

   •Connect Pocket Tester to main switch leads.

Pocket Tester:
90890-03112

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

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

•Check main switch for operation.

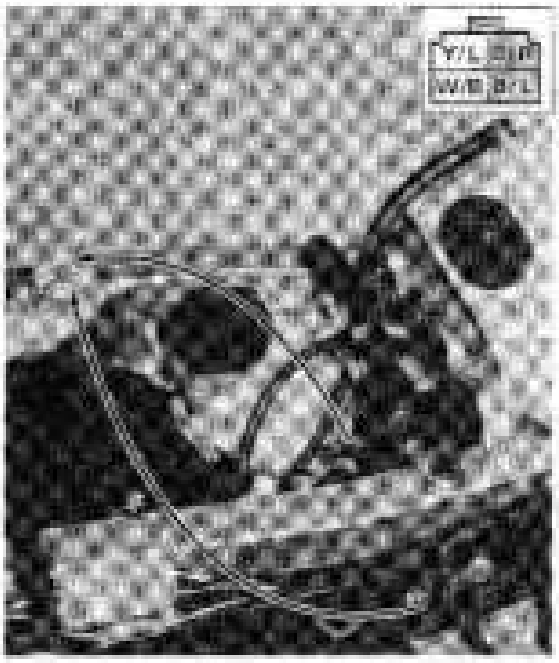
Turn main switch to "ON"	Switch is continued (Ω).
Turn main switch to "OFF"	Switch is discontinued (∞).

Switch operation is correct.

Switch operation is incorrect.

Main switch is faulty, replace it.

5. Remove:
   •Side covers



6. Servomotor operation check
   •Disconnect servomotor leads coupler (Yellow/Blue, White/Black, Black/Red, Black/Blue)
   •Connect battery leads to servomotor leads and check servomotor for operation.

Battery (+) Lead → Black/Blue Lead
Battery (−) Lead → Black/Red Lead

CAUTION:

This test should be performed within a few seconds to prevent further damage.

Servomotor operates.

Servomotor does not operate.

Servomotor is faulty, replace it.

7. Check entire Y.P.V.S. circuit of connection. Refer to "WIRING DIAGRAM" section.

OK

Poor connection

Correct.

8. Start engine and increase revolution to about 7,000 r/min. Check servomotor and tachometer for operation.

CAUTION:

This test should be performed within a few seconds to prevent further damage.

Tachometer operates but servomotor does not.

Neither tachometer nor servomotor operates.

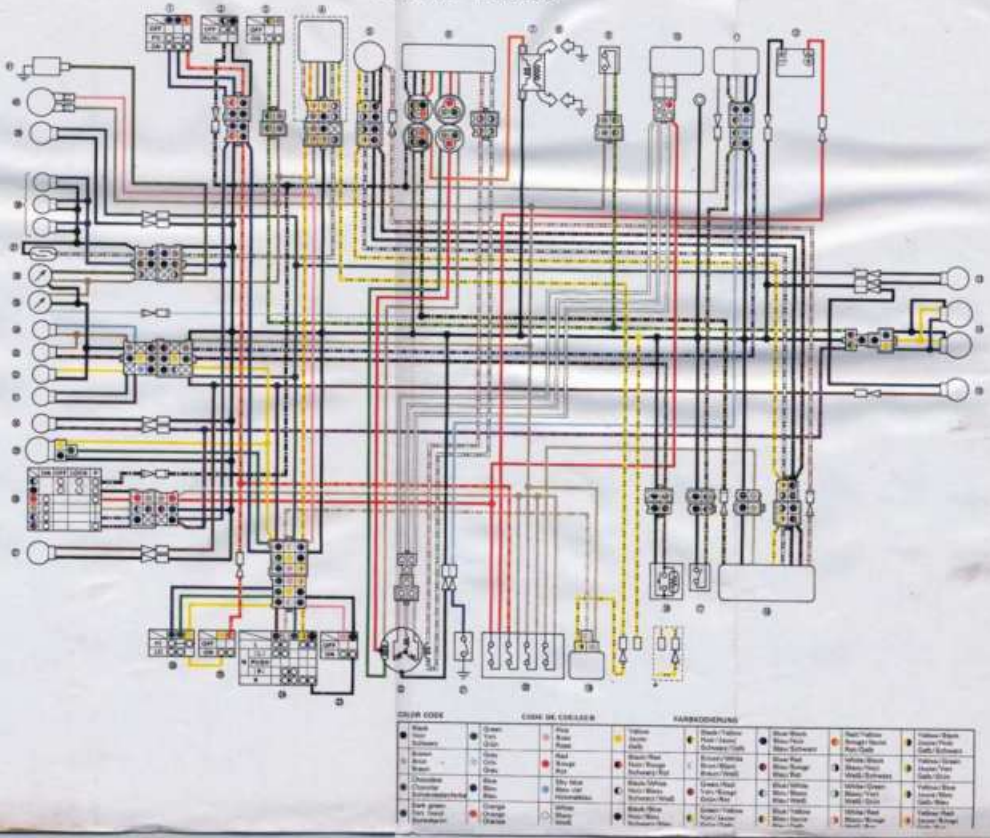
C.D.I. unit is faulty, replace it.

Y.P.V.S. control unit is faulty, replace it.

TZR250 WIRING DIAGRAM

SCHEMA DE CABLAGE DE LA TZR250

TZR250 SCHALTPLAN



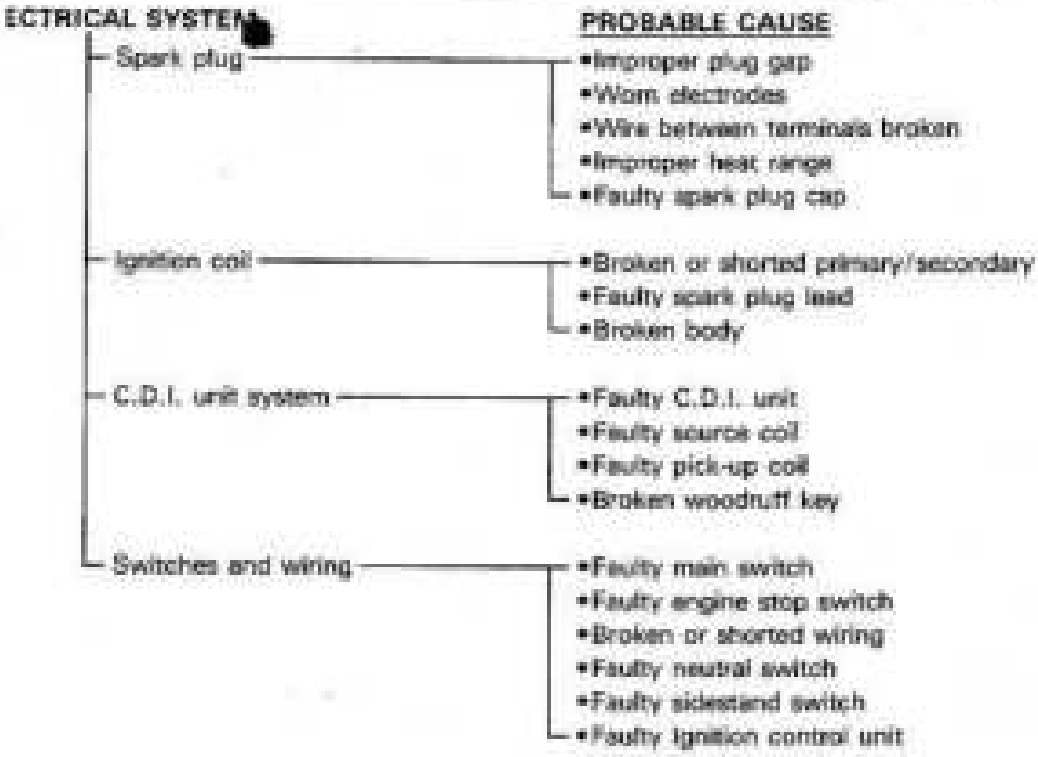
TROUBLESHOOTING

NOTE:

The following troubleshooting does not cover all the possible causes of trouble. It should be helpful, however, as a guide to troubleshooting. Refer to the relative procedure in this manual for inspection, adjustment and replacement of parts.

STARTING FAILURE/HARD STARTING

FUEL SYSTEM	PROBABLE CAUSE
Fuel tank	•Empty •Clogged fuel filter •Clogged fuel breather hose •Deteriorated fuel or fuel containing water or foreign material
Fuel cock	•Clogged fuel hose •Clogged or damaged vacuum hose
Carburetor	•Deteriorated fuel, fuel containing water or foreign material •Clogged pilot jet •Clogged pilot air passage •Sucked-in air •Deformed float •Groove-worn needle valve •Improperly sealed valve seat •Improperly adjusted fuel level •Improperly set pilot jet •Clogged starter jet •Starter plunger malfunction •Improperly adjusted starter cable
Air cleaner	•Clogged air filter


ECTRICAL 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
C.D.I. unit system
•Faulty C.D.I. unit
•Faulty source coil
•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 sidestand switch
•Faulty ignition control unit

STARTING FAILURE/HARD STARTING/POOR IDLE SPEED PERFORMANCE

TRBL SHTG ?

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 •Improperly sealed crankcase (Damaged oil seal) •Seized crankshaft
Reed valve	•Deformed reed valve stopper •Improperly seated reed valve •Loose intake manifold •Broken gasket •Broken reed valve

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 synchronized carburetors •Improperly adjusted idle speed (Throttle stop screw) •Improper throttle cable play •Flooded carburetor

POOR MEDIUM AND HIGH SPEED PERFORMANCE

FUEL SYSTEM

	PROBABLE CAUSE
Fuel tank	•Clogged fuel filter •Deteriorated fuel or fuel containing water or foreign material •Clogged fuel breather hose
Fuel cock	•Clogged fuel hose •Clogged or damaged vacuum hose
Carburetor	•Deteriorated fuel, fuel containing water or foreign material •Sucked-in air •Deformed float •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

ELECTRICAL SYSTEM

	PROBABLE CAUSE
Spark plug	•Improper plug gap •Worn electrodes •Wire between terminals broken •Improper heat range •Faulty spark plug cap
C.D.I. unit system	•Faulty C.D.I. unit •Faulty source coil •Faulty pick-up coil

POOR MEDIUM AND HIGH SPEED PERFORMANCE

TRBL SHTG ?

COMPRESSION SYSTEM

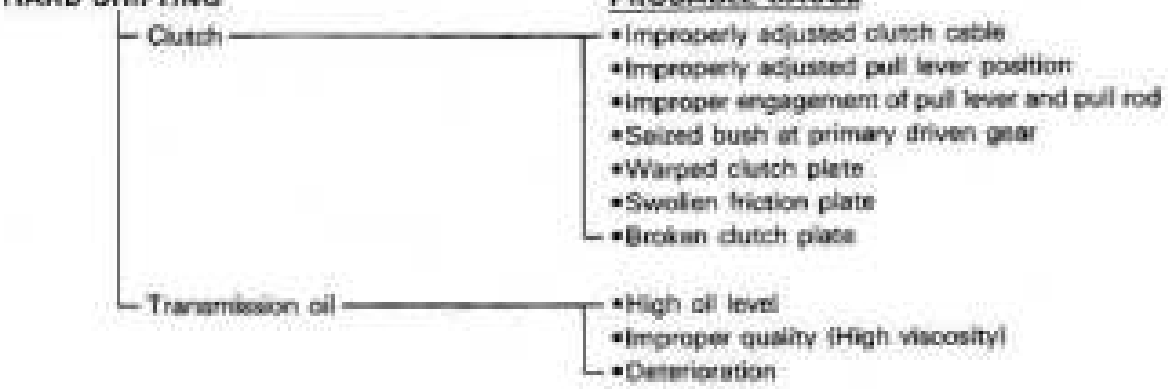
	PROBABLE CAUSE
Cylinder and cylinder head	• Loose spark plug • Broken cylinder head gasket • Broken cylinder gasket • Loose cylinder head or cylinder • Worn, damaged or seized cylinder
Piston and piston ring	• Improperly installed piston ring • Worn, fatigued or broken piston ring • Seized piston ring • Seized or damaged piston
Crankcase and crankshaft	• Improperly seated crankcase • Improperly sealed crankcase (Damaged oil seal) • Seized crankshaft
Reed valve	• Deformed reed valve stopper • Improperly adjusted reed valve stopper height • Improperly seated reed valve • Loose intake manifold • Broken gasket • Broken reed valve

Y.P.V.S.

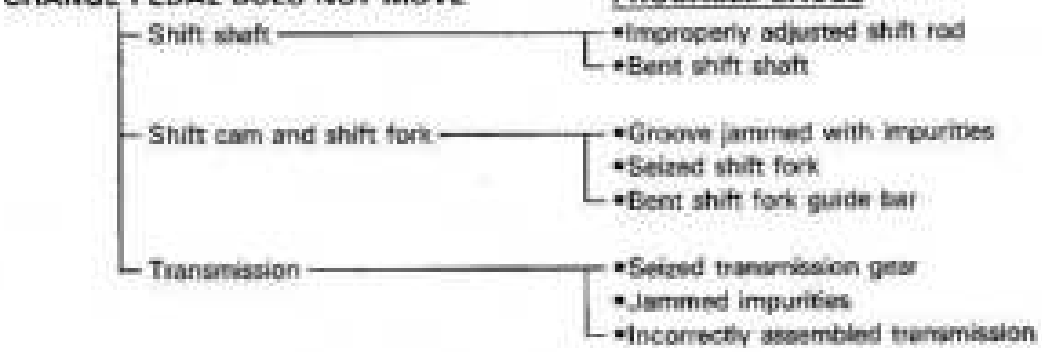
	PROBABLE CAUSE
Power valve	• Seized or damaged power valve • Carbon build-up
Control cable	• Improperly adjusted cable • Seized or discontinuous cable
Electrical parts	• Faulty battery (Improperly charged battery) • Faulty main switch • Faulty servomotor • Faulty C.D.I. unit • Faulty Y.P.V.S. control unit • Broken or shorted wiring

FAULTY GEAR SHIFTING

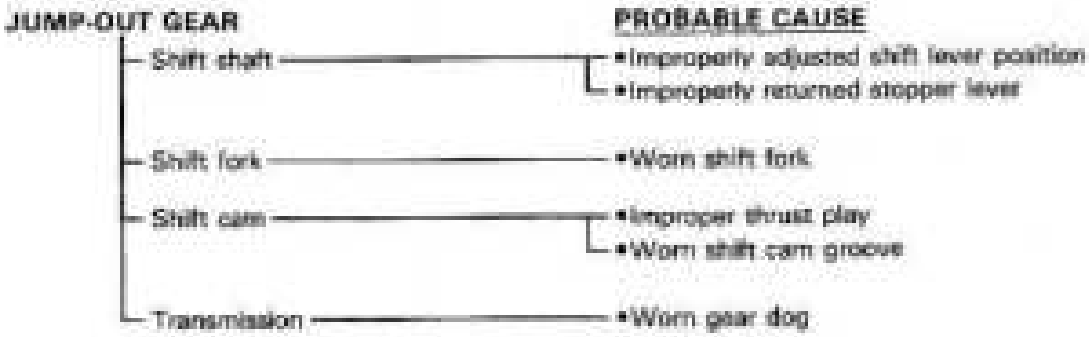
HARD SHIFTING



CHANGE PEDAL DOES NOT MOVE



JUMP-OUT GEAR



CLUTCH SLIPPING/DRAGGING

CLUTCH SLIPPING

	PROBABLE CAUSE
Clutch	•Improperly adjusted clutch cable •Loose clutch spring •Fatigued clutch spring •Worn friction plate •Worn clutch plate
Transmission oil	•Low oil level •Improper quality (Low viscosity) •Deterioration

CLUTCH DRAGGING

	PROBABLE CAUSE
Clutch	•Improperly adjusted clutch cable •Improperly adjusted pull lever position •Improper engagement of pull lever and pull rod •Seized bush at primary driven gear •Warped clutch plate •Swollen friction plate •Broken clutch boss
Transmission oil	•High oil level •Improper quality (High viscosity) •Deterioration

IMPROPER KICKING

SLIPPING

	PROBABLE CAUSE
Kick axle assembly	•Low tension of kick clip •Worn kick axle •Worn or damaged kick idle gear •Worn or damaged kick gear •Damaged kick clip •Kick clip coming off •Damaged kick clip stopper
Transmission oil	•Improper quality (Low viscosity) •Deterioration

HARD KICKING

	PROBABLE CAUSE
Kick axle assembly	•High tension of kick clip •Seized kick gear •Seized kick idle gear
Transmission oil	•Improper quality (High viscosity) •Deterioration
Cylinder, piston and piston ring	•Damaged or seized cylinder •Damaged or seized piston •Damaged or seized piston ring
Crankcase and crankshaft	•Improperly seated crankcase •Improperly seated crankshaft •Damaged or seized crankshaft •Damaged or seized crankshaft bearing

KICK CRANK NOT RETURNING

	PROBABLE CAUSE
Kick axle assembly	•Damaged kick return spring •Kick return spring coming off •Kick clip coming off •Damaged kick return spring stopper

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

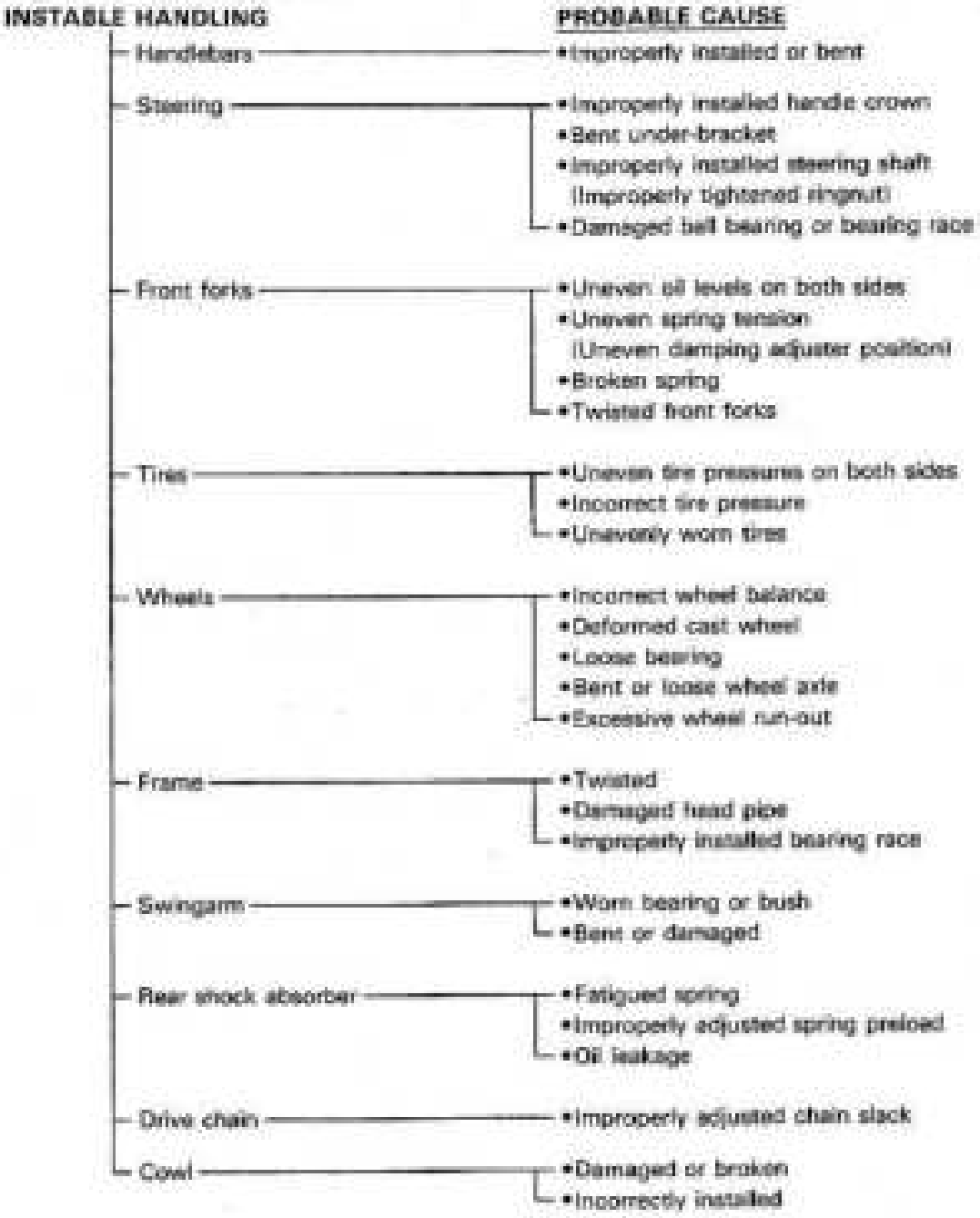
- *Bent, damaged or rusty inner tube
- *Damaged or cracked outer tube
- *Damaged oil seal lip
- *Improperly installed oil seal
- *Improper oil level (too much)
- *Loose damper rod holding bolt
- *Broken cap bolt O-ring
- *Loose drain bolt
- *Damaged drain bolt gasket

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



FAULTY SIGNAL AND LIGHTING SYSTEM

HEADLIGHT DARK

PROBABLE CAUSE
- Improper bulb
- Too many electric accessories
- Hard charging (Broken charging coil and/or faulty rectifier/regulator)
- Incorrect connection
- Improperly grounded
- Poor contacts (main or light switch)
- Bulb life expired

BULB BURNT OUT

PROBABLE CAUSE
- Improper bulb
- Faulty battery
- Faulty rectifier/regulator
- Improperly grounded
- Faulty main and/or light switch
- Bulb life expired

FLASHER DOES NOT LIGHT

PROBABLE CAUSE
- Improperly grounded
- Discharged battery
- Faulty flasher switch
- Faulty flasher relay
- Broken wirehamess
- Loosely connected coupler
- Bulb burnt out

FLASHER KEEPS ON

PROBABLE CAUSE
- Faulty flasher relay
- Insufficient battery capacity (nearly discharged)
- Bulb burnt out

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

FAULTY Y.P.V.S.

FAULTY Y.P.V.S.

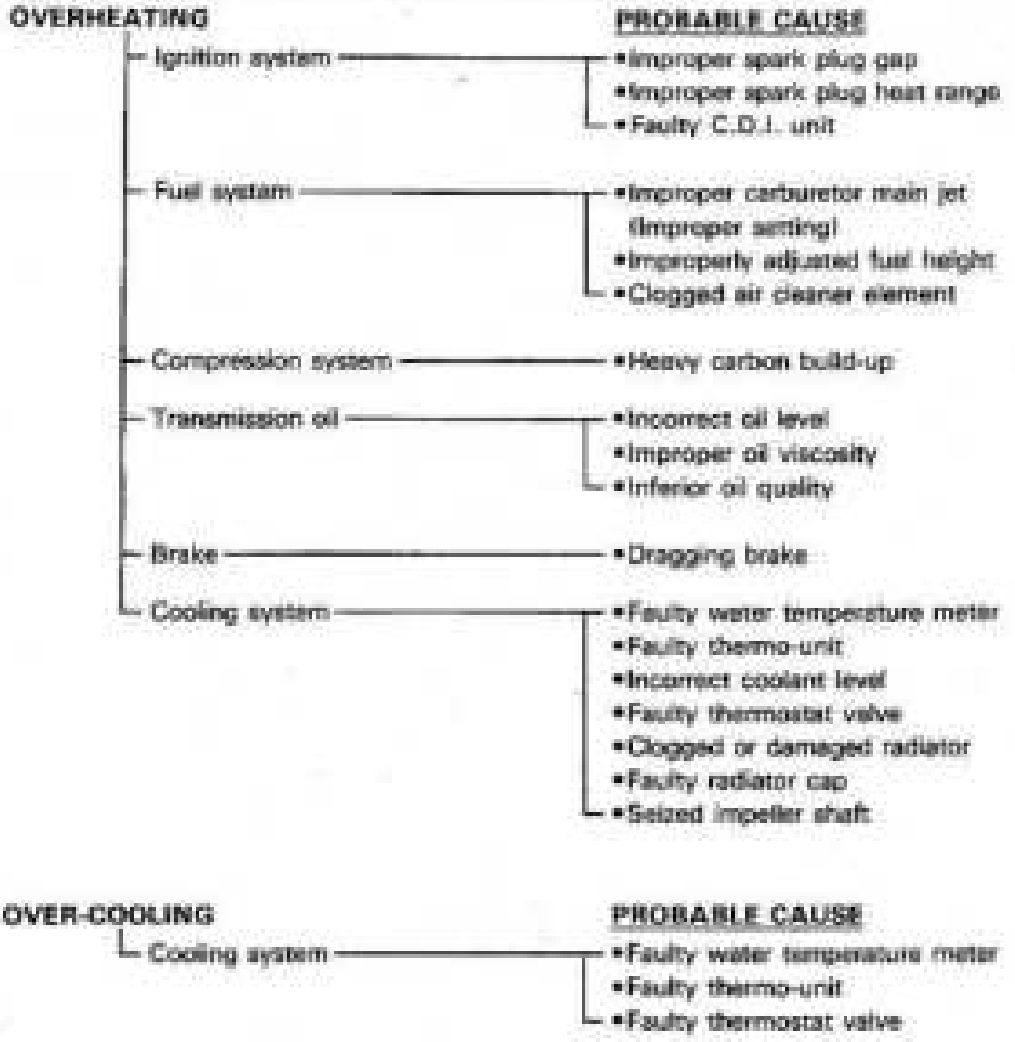
PROBABLE CAUSE

Power valve
- Seized or damaged power valve
- Carbon build-up

Control cable
- Improperly adjusted cable
- Seized or discontinuous cable

Electrical parts
- Insufficient battery capacity (improperly charged battery)
- Faulty main switch
- Faulty servomotor
- Faulty C.D.I. unit
- Faulty Y.P.V.S. control unit
- Broken or shorted wiring

OVERHEATING OR OVER-COOLING



HANDLING OF ASBESTOS PARTS

WARNING:

CERTAIN COMPONENTS USED IN THE CONSTRUCTION OF THIS MACHINE CONTAIN ASBESTOS.
ASBESTOS MAY BE FOUND IN THE FOLLOWING:
BRAKE SHOES, BRAKE PADS, GASKETS, CLUTCH PLATES AND HEAT INSULATORS.
BREATHING ASBESTOS DUST IS HAZARDOUS TO HEALTH.
PLEASE TAKE CARE WHEN WORKING WITH OR SERVICING THE PARTS CONTAINING ASBESTOS.
(1) ALWAYS WORK OUT OF DOORS IN A WELL VENTILATED PLACE.
(2) DO NOT DRILL, FILE OR CUT THE COMPONENT UNLESS ESSENTIAL AND THEN USE ONLY LOW SPEED TOOLS EQUIPPED, IF POSSIBLE, WITH DUST EXTRACTORS.
IF HIGH SPEED TOOLS ARE USED THEY MUST BE EQUIPPED WITH DUST EXTRACTION FACILITY.
(3) WHEN POSSIBLE DAMPEN BEFORE CUTTING TO REDUCE POSSIBILITY OF DUST.
(4) DAMPEN DUST AND PLACE IT IN A PROPERLY SEALED RECEPTACLE AND DISPOSE OF IT SAFELY.