YAMAHA

XJ650RJ

J

Supplementary Service Manual

LIT-11616-02-86

5V2-28197-10

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and new data for the XJ650RJ. For complete information on service procedure, it is necessary to use this Supplementary Service Manual together with following manuals:

XJ650G Service Manual (LIT-11616-01-94)

SERVICE DEPT.
INTERNATIONAL DIVISION
YAMAHA MOTOR CO., LTD.

NOTE:
This Supplementary Service Manual contains information regarding periodic maintenance to the emission control system for the XJ650RJ. Please read this material carefully.

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 to motorcycle repair technology. Without such knowledge, attempted repairs or service to this model may render it unfit for use and/or unsafe.

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

Yamaha Motor Company, Ltd. is continually striving to further 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.

Particularly important information is distinguished in this manual by the following notations:

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

CAUTION: A CAUTION indicates special procedure 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.

Starting Serial Number

XJ650RJ 5V2-0000101



MAINTENANCE AND LUBRICATION CHART

Periodic Maintenance Emission Control System

No.	Item	Remarks	INITIAL BREAK-IN		THEREAFTER EVERY	
			1,000 km or 1 month (600 mi)	5,000 km or 7 months (3,000 mi)	4,000 km or 6 months (2,500 mi)	8,000 km or 12 months (5,0000 mi)
1.*	Cam Chain	Adjust chain tension.	○	○		○
2.*	Valve clearance	Check and adjust valve clearance when engine is cold.		○		○
3.	Spark Plug	Check condition. Adjust gap. Clean. Replace after initial 13,000 km (8,000 mi) or 18 months and thereafter every 12,000 km (7,500 mi) or 18 months		○	○	*Replace every* 12,000 km (7,500 mi) or 18 months
4.*	Crankcase Ventilation System	Check ventilation hose for cracks or damage. Replace if necessary.		○		○
5.*	Fuel Line	Check fuel hose (and vacuum pipe) for cracks or damage. Replace if necessary.		○		○
6.*	Exhaust System	Check for leakage. Retighten as necessary. Replace gasket(s) if necessary.		○	○	
7.*	Idle Speed	Check and adjust engine idle speed. Adjust cable free play if necessary.		○	○	
8.*	*Carburetor* Synchronization	*Adjust synchronization of* carburetors.		○	○	

*It is recommended that these items be inspected and service by a Yamaha Dealer or other qualified mechanic.

General Maintenance/Lubrication

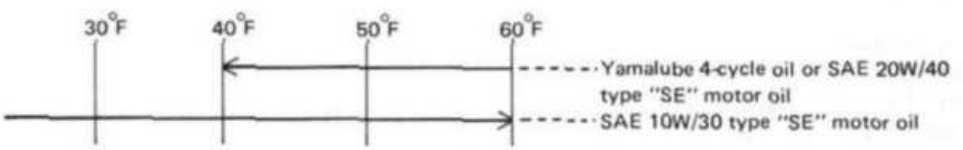
No.	Item	Remarks	Type	INITIAL BREAK-IN		THEREAFTER EVERY		
				1,000 km or 1 month (600 mi)	5,000 km or 7 months (3,000 mi)	4,000 km or 6 months (2,500 mi)	8,000 km or 12 months (5,000 mi)	16,000 km or 24 months (10,000 km)
1.	Engine Oil	Warm-up engine before draining	Refer to NOTE	○	○	○		
2.	Oil Filter	Replace	–	○	○		○	
3.*	Air Filter	Clean with compressed air. Refer to NOTE:	–		○		○	
4.*	Brake System	Adjust free play. Replace pads if necessary. (Front) Replace shoes if necessary. (Rear)	–	○	○	○		
5.*	Clutch	Adjust free play.	–	○	○	○		
6.	Final Gear Oil	Replace	SAE 80 API "GL-4" Hypoid gear oil	○			○	
7.	Control and *Meter Cable*	Apply chain lube thoroughly	Yamaha chain and *cable lube or* SAE 10W/30 motor oil	○	○	○		

No.	Item	Remarks	type	INITAL BREAK-IN		THEREAFTER EVERY		
				1,000 km or 1 month (600 mi)	5,000 km or 7 months (3,000 mi)	4,000 km or 6 months (2,500 mi)	8,000 km or 12 months (5,000 mi)	16,000 km or 24 months (10,000 mi)
8.*	Rear Arm Pivot	Check bearings assembly for looseness. Moderately repack every 16,000 km (10,000 mi)	Medium weight wheel bearing grease					Repack
9.	Center and Side stand Pivots	Apply lightly.	*Yamaha chain and* cable lube or SAE 10W/30 motor oil		○	○		
10.*	Front Fork Oil	Drain completely. Refill to specification.	Yamaha fork oil 10 Wt or equivalent					○
11.*	Steering Ball Bearing and Races	Check bearings assembly for looseness. Moderately repack every 16,000 km (10,000 mi)	Medium weight wheel bearing grease		○	○		Repack
12.*	Wheel Bearings	*Check bearings for* smooth rotation. Replace if necessary.	–		○	○		
13.*	Battery	Check specific gravity. Check breather pipe for proper operation.	–		○	○		
14.	Change/Brake Pedal Shaft Pivot	Apply lightly.	Yamaha chain and *cable lube or SAE* 10W/30 motor oil.		○	○		
15.*	A.C. Generator	Replace generator *brushes.* Replace at initial 13,000 km (8,000 mi) and thereafter every *16,000 km (10,000 mi)*	–					Replace
16.	Brake/Clutch Lever Pivot Shaft	Apply lightly	Yamaha chain and cable lube or SAE 10W/30 motor oil.		○	○		

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

NOTE:

1) Engine oil type



2) Air Filter

The air filter should be cleaned more often than specified intervals if the machine is operated in extremely dust areas.

NEW SERVICE

* ENGINE

ENGINE REMOVAL

NOTE:

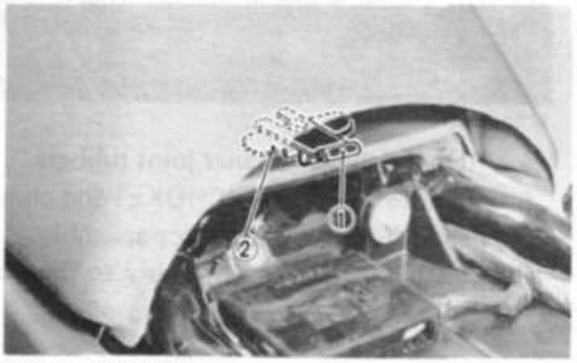
It is not necessary to remove the engine in order to remove the cylinder head, cylinder, or pistons.

A. Preparation for Removal

1. All dirt, mud, dust and foreign material should be thoroughly removed from the exterior of the engine before removal and disassembly. This will help keep harmful foreign material from the engine oil.
2. Before the engine removal and disassembly, be sure that you have the proper tools and cleaning equipment so that you can perform a clean and efficient job.
3. During disassembly of the engine, clean and place all of the parts in trays in order of disassembly. This will speed up assembly time and help insure correct reinstallation of all the engine parts.
4. Place the motorcycle on its center stand. Start the engine and allow it to warm up. Stop the engine and drain the engine and middle gear oil.
5. Remove the oil filter element from the crankcase.
6. Remove the left and right side covers.

B. Fuel Tank

1. Turn the fuel cock to "ON".
2. Open the seat and remove the fuel tank securing clamp and retainer. Lift the rear end of the fuel tank and disconnect the fuel pipe and vacuum pipe from the cock.



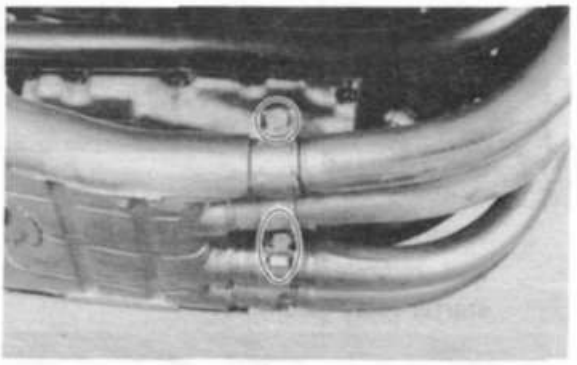
1. Clip 2. Retainer

3. Remove the tool tray.

C. Brake Pedal and Exhaust Pipe

1. Remove the rear brake pedal.
2. Remove the exhaust pipe holding nuts from the cylinder head.
3. Loosen the clamp bolts securing the exhaust pipes to the right and left mufflers. Remove the exhaust pipes.





4. Remove the bolts holding the muffler bracket to the crankcase.



D. Battery Case

1. Remove the negative battery cable from the battery terminal then remove the positive battery plate. Remove the battery.



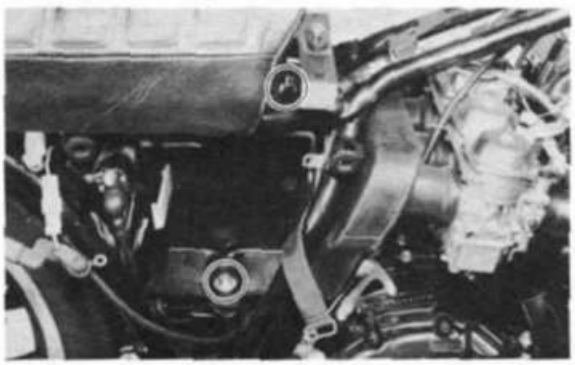
1. Positive battery plate

2. Remove the starter motor lead wire from the starter relay and disconnect the relay leads form the wire harness.



1. Starter motor lead wire
2. Starter relay

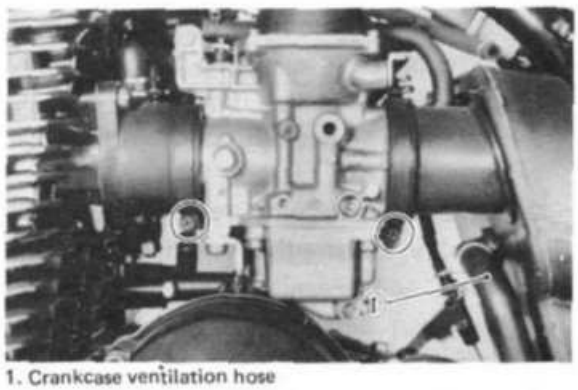
3. Remove the battery case holding bolts and remove the battery case with the starter relay assembly.



E. Air Cleaner Case

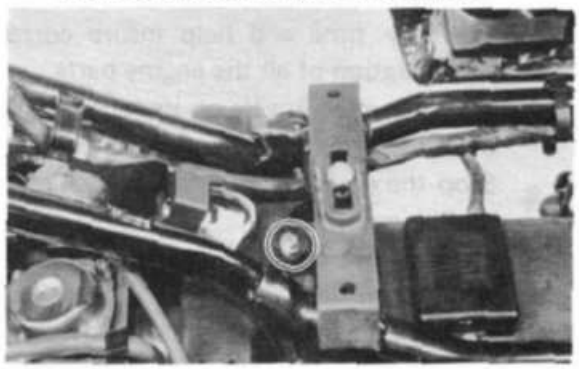
1. Remove the ignitor unit mounting board securing screw and disconnect all connectors. Remove the board assembly.
2. Remove the clamps holding the carburetors to the air cleaner case and intake manifolds. Remove the crankcase ventilation hose at the air cleaner case.





1. Crankcase ventilation hose

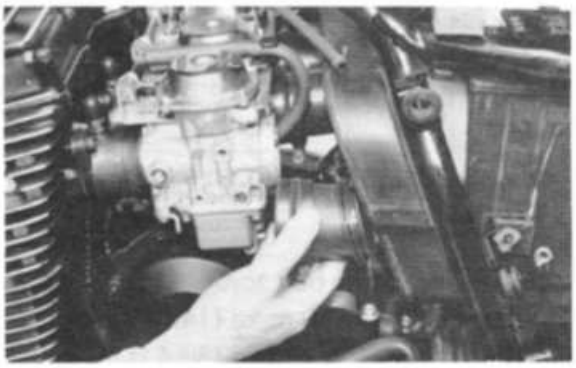
3. Remove the bolts holding the air cleaner case to the frame (left and upper)





1. Engine ground wire

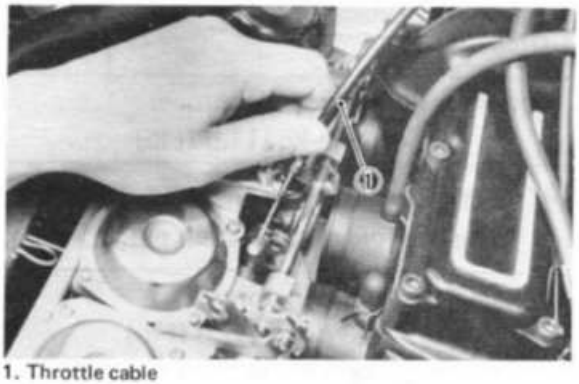
4. Remove the air cleaner joint rubbers.
5. Remove the starter (CHOKE) and clutch cables from the carburetor assembly.
6. Pull the carburetor assembly to the rear.





1. Starter (CHOKE) cable
2. Clutch cable

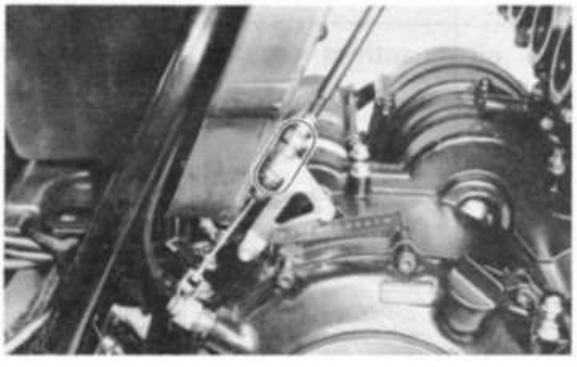
7. Disconnect the throttle cable from the carburetor throttle lever and remove the carburetor assembly to the right.



1. Throttle cable

F. Wiring and Cables

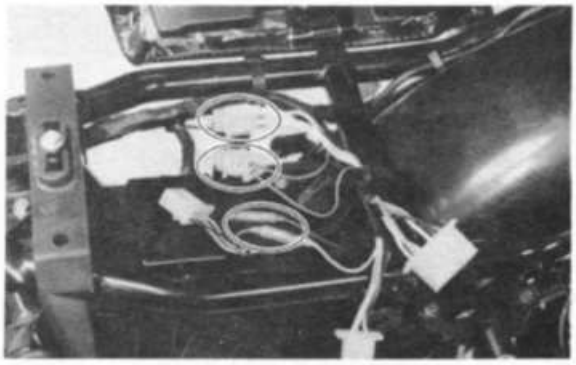
1. Disconnect the clutch cable at the crankcase side.
2. Remove the spark plug lead wires and the tachometer cable.

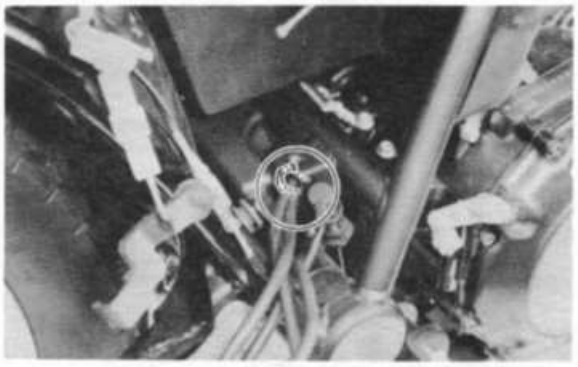


3. Disconnect the pick-up coil and A.C.G. lead wire couplers.
   Position the disconnected wires so they will not be damaged during engine removal.

CAUTION:

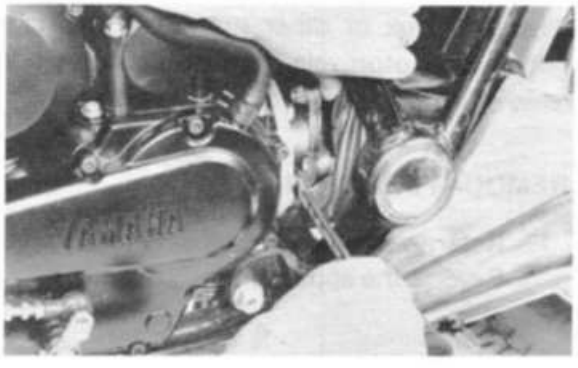
The A.C.G. lead, starter cable, and pick-up lead are clamped at the upper cross tube of the frame. Do not forget to remove this clamp before removing the engine.





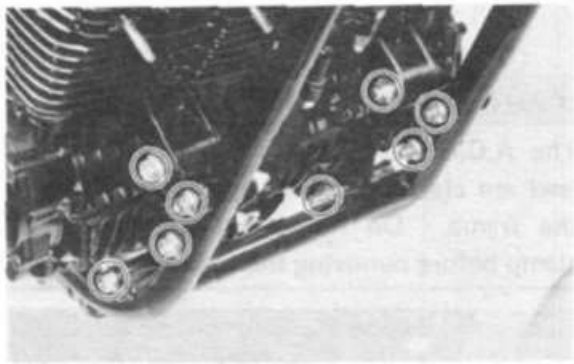
G. Drive Shaft Joint

1. Remove the coil spring holding the rubber boot.
2. Pull the rubber boot from the drive shaft coupling to expose the joint bolts.
3. Remove the joint bolts on the drive shaft coupling.



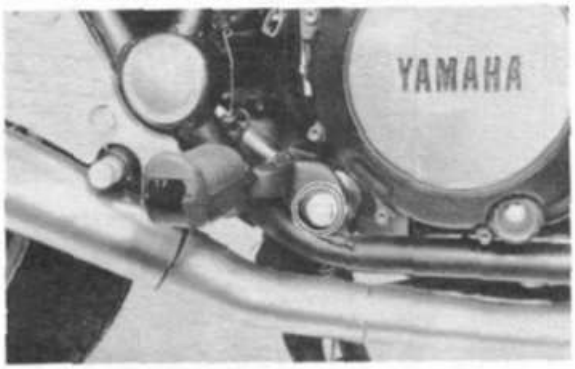
I. Engine Removal

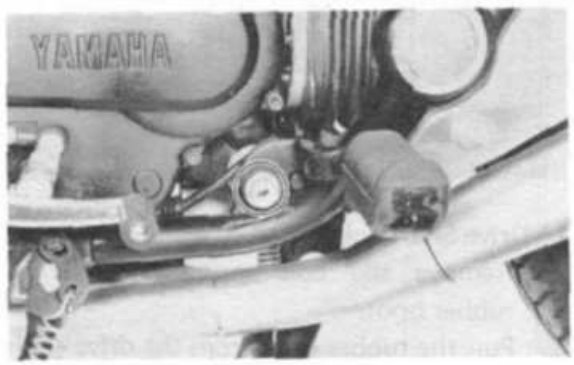
1. Remove the front engine mounting bolts and nuts. Remove the brackets.



1. Front engine mounting bolts

2. Remove the rear engine mounting bolts and right and left footrests.





3. Slide the engine forward slightly and remove the engine to the right.

NOTE:

Position a box or other support to the right side of the motorcycle for the assistance when removing the engine.

REMOUNTING ENGINE

1. Refer to page 3 for engine removal. *Reverse the applicable removal steps.*

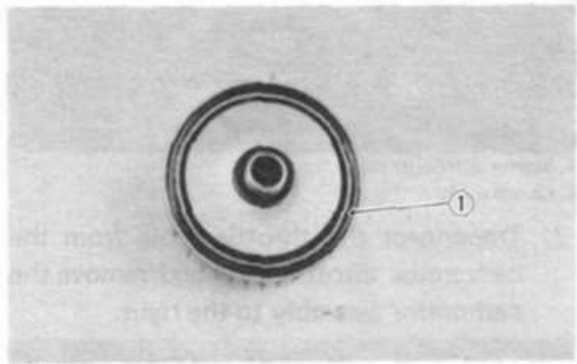
CAUTION:

Always use new bolts in the drive shaft coupling.

2. Install and tighten the engine mounting bolts.

Engine mounting bolt torque:	
8 mm bolt:	2.0 m-kg (14.5 ft-lb)
10 mm bolt:	4.2 m-kg (30.4 ft-lb)
12 mm bolt:	7.0 m-kg (50.6 ft-lb)

3. Install the oil filter element into the filter cover and install a new "O-ring". Make sure the "O-ring" is positioned properly.



1. O-ring

Oil filter mounting bolt torque:
1.5 m-kg (11.0 ft-lb)

4. Install and tighten the engine oil drain plug and middle gear drain plug.

Engine oil drain plug torque:
4.3 m-kg (31.0 ft-lb)
Middle gear drain plug torque:
2.4 m-kg (17.5 ft-lb)

5. Add oil to the engine and middle gear case.

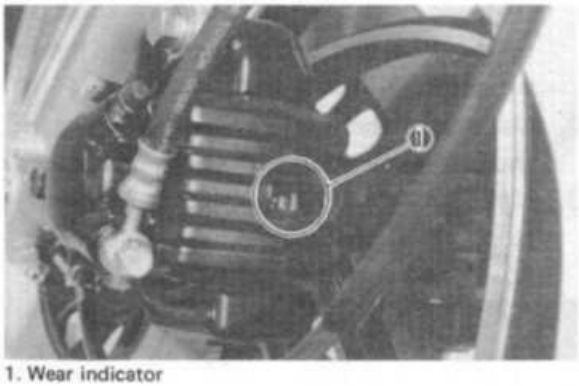
Oil quantities: 3.6 ℓ (3.8 US. qt.)

NOTE:

The oil quantities are for an overhauled engine.

A. Front Brake Pad Check

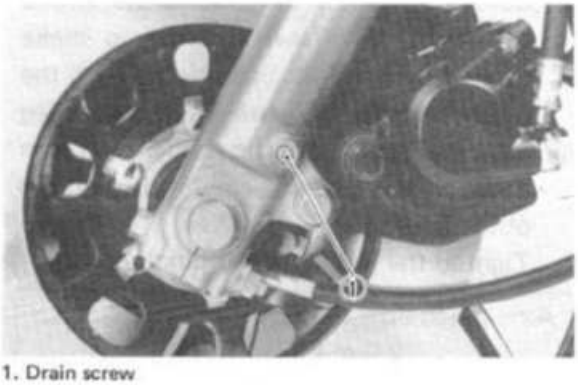
To check pad wear, open the wear indicator cap. If any pad is worn to the red line, replace both pads in the caliper.



1. Wear indicator

B. Front Fork Oil Change

1. Raise the motorcycle or remove the front wheel so that there is no weight on the front end of the motorcycle. Remove the handlebar if necessary.
2. Remove the rubber cap from the top of each fork.
3. The spring seat and fork spring are retained by a stopper ring (spring wire circlip). It is necessary to depress the spring seat and fork spring to remove the stopper ring. Remove the stopper ring by carefully prying out one end with a small screwdriver.
4. Place an open container under each drain hole. Remove the drain screw from each outer tube.



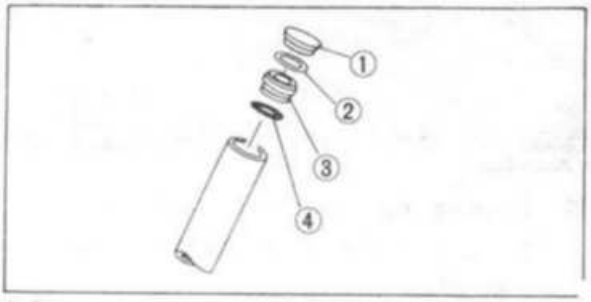
1. Drain screw

WARNING:

Do not allow oil to 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.

5. When most of the oil has drained, slowly raise and lower the outer tubes to pump out the remaining oil. It may be necessary to remove the spring seat and top spring to keep them from falling out when raising fork tubes.
6. Inspect the drain screw gasket. Replace if damaged. Reinstall the drain screw.
7. Pour the specified amount of oil into the fork inner tube.

Front fork oil (each fork):
236 cc (7.98 US oz)
Recommended oil:
YAMAHA FORK OIL 10Wt or equivalent.



1. Cap
2. Stopper ring
3. Spring seat
4. O-ring

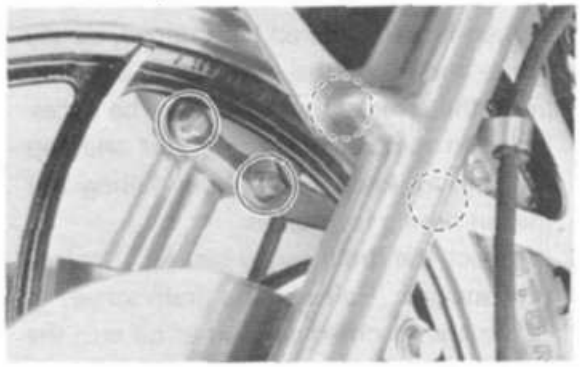
8. After filling, slowly pump the forks up and down to distribute the oil.
9. Inspect the "O-ring" on the spring seat. Replace "O-ring" if damaged.
10. Reinstall the spring seat, stopper ring and rubber cap.

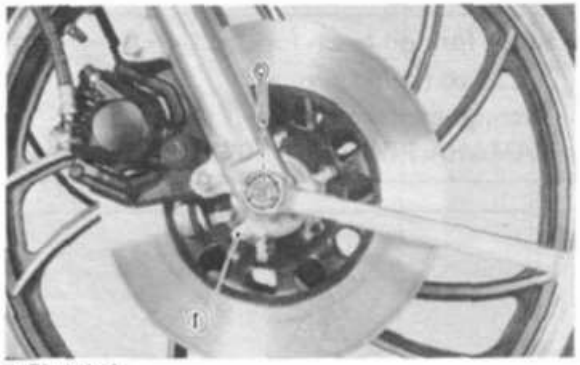
CAUTION:

Always use a new stopper ring (spring wire circlip).

C. Front Wheel Removal

1. Place the motorcycle on the center stand.
2. Remove the front fender securing bolts and remove the fender.
3. Remove the cotter pin and wheel axle nut.
4. Loosen the left and right pinch bolts securing the axle.





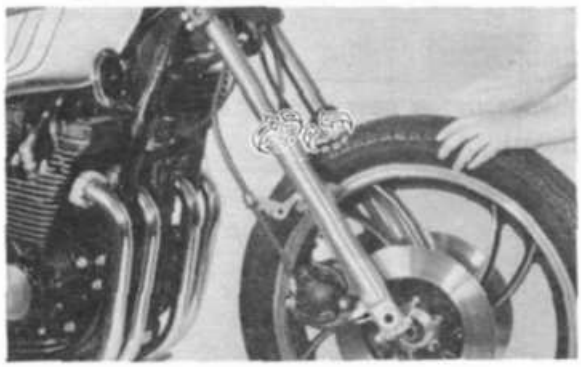
1. Pinch bolt

5. Remove the axle shaft. In this case, make sure the motorcycle is properly supported.

NOTE:

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

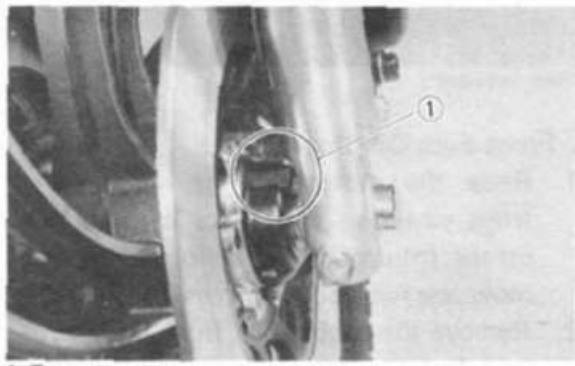
6. Lower the wheel until the brake discs come off the calipers. Turn the calipers outward so they do not obstruct the wheel and remove the wheel.



D. Installing Front Wheel

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

1. Lightly grease the lips of the front wheel oil seals and the gear teeth of speedometer drive and driven gears. Use lightweight lithium soap base grease.
2. Make sure there is enough gap between the disc pads to slide the disc into place.
3. Make sure the projecting portion (torque stopper) of the speedometer housing is positioned correctly.



1. Torque stopper

4. Tighten the axle nut and install a new cotter pin.

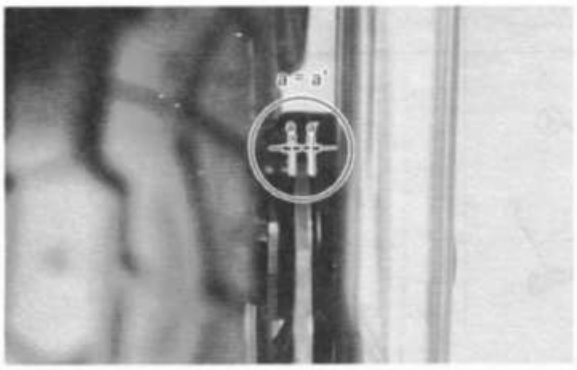
Axle nut torque:
10.7 m-kg (77.4 ft-lb)

NOTE:

Tighten the pinch bolts temporarily before tightening the axle nut.

5. Install the front fender.
6. Before tightening the pinch bolts, stroke the front forks several times to make sure of proper fork operation. With the pinch bolts loose, work the left fork leg back and forth until the proper clearance between the disc and caliper bracket are obtained.
7. Tighten the left and right pinch bolts.

Axle pinch bolt torque:
2.0 m-kg (14.5 ft-lb)



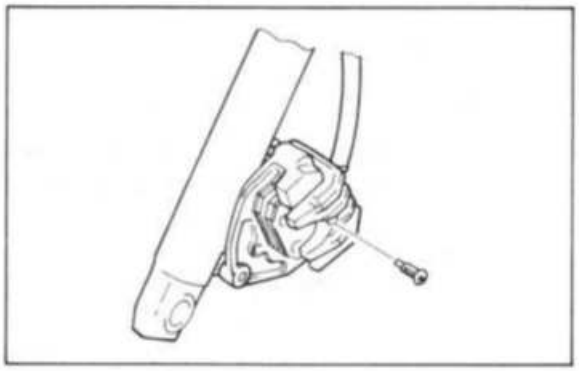
E. Caliper Pad Replacement

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.

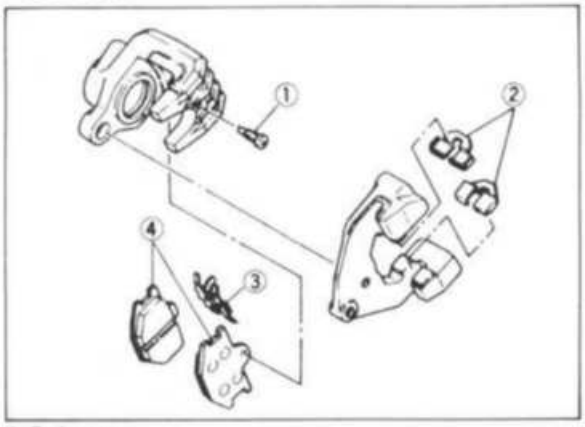
It is not necessary to disassemble the brake caliper and brake hose to replace the brake pads.

1. Remove the front fender and front wheel.
2. Remove the Phillips screw that holds the brake pads.



3. Pull the caliper cylinder out of the caliper frame.
4. Install new brake pads. Always replace pad as a set. Replace the following when pads are replaced.

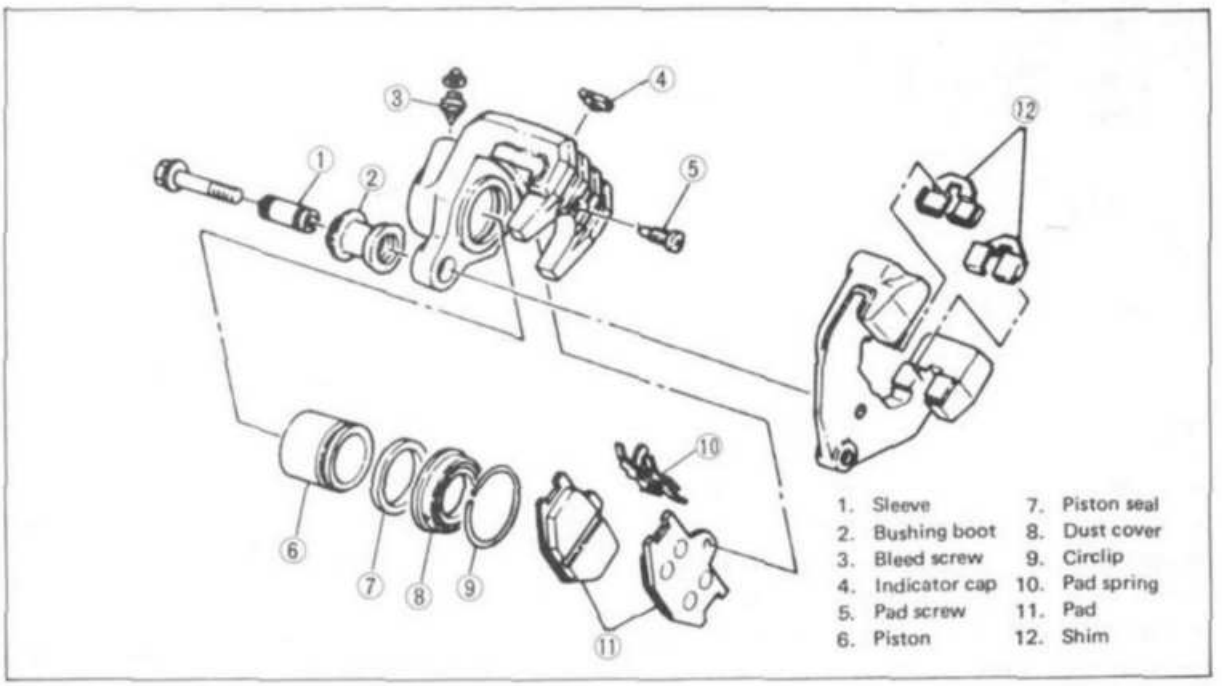
a. Pad screw
b. Shims
c. Pad spring
d. Pads



1. Pad screw
2. Shim
3. Pad spring
4. Pad

5. Lightly grease the surfaces of the shim and of the pad spring where they contact the pad.

F. Caliper Disassembly



1. *Remove the caliper brake hose.* Allow fluid in the caliper assembly to drain into a container.
2. Place the open hose end into the container and pump the old fluid out carefully.
3. Remove the caliper support bolt and the pad securing screw as described in the Caliper Pad Replacement procedure (Page 9).
4. Remove the caliper assembly from the caliper frame.
5. Remove the retaining ring and the dust seal.
6. Remove the piston.

CAUTION:

Cover the piston with a rag. Use care so that the piston does not cause injury as it is expelled from the cylinder.

7. Remove the piston seal.

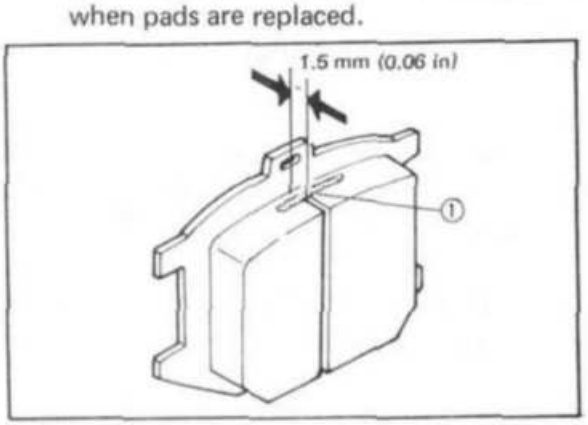
G. Brake Inspection and Repair

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

1. Replace the caliper piston if it is scratched.
2. Replace any brake pad worn beyond limits. Always replace the brake pads as a set.

Wear limit:
1.5 mmm (0.06 in)

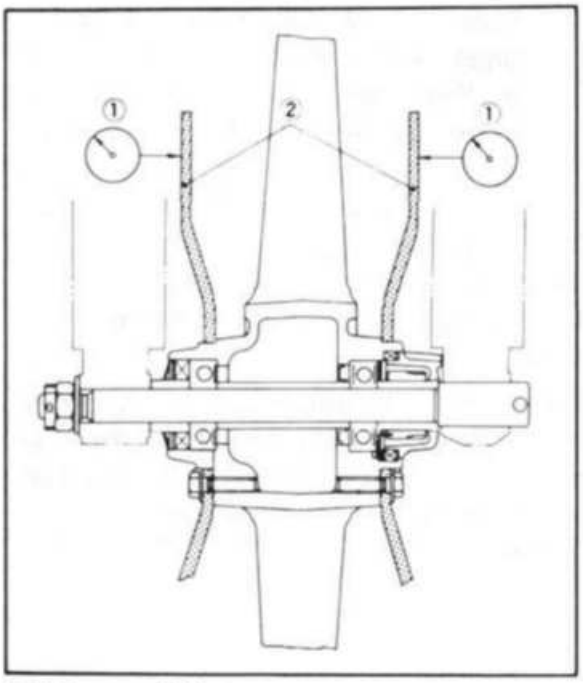
See Caliper Pad Replacement procedure for a listing of the parts to be replaced when pads are replaced.



1. Wear limit

3. Replace piston and dust seals if damaged. Replace seals every two years.
4. Inspect master cylinder body. Replace if scratched. Clean all passages with new brake fluid.
5. Inspect the brake hoses. Replace every four years or immediately if cracked, frayed, or damaged.
6. Check for wear and deflection of disc.

Maximum deflection: 0.15 mm (0.006 in)
Minimum disc thickness: 4.5 mm (0.18 in)



1. Dial gauge 2. Disc

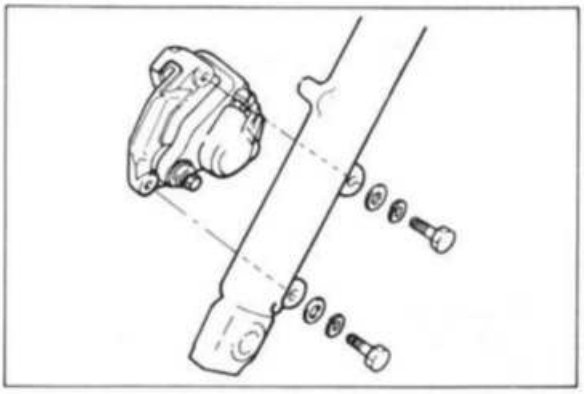
If disc is worn beyond minimum thickness or deflection exceeds specified amount, replace disc.

H. Brake Reassembly

1. All internal parts should be cleaned in new brake fluid only. Internal parts should be lubricated with brake fluid when installed.
2. Caliper Reassembly
   Replace the following parts whenever a caliper is disassembled: bleed screw and cap, boot bushing, piston seal, dust seal, and retaining ring.

a. Install the piston seal and piston. Place the caliper cylinder into the caliper frame.
b. Install the pad spring, shims and pads.
c. Apply a thread locking compound such as "LOCTITE" to the support bolt.
d. Install the caliper assembly on the front fork.

Support bolt (caliper cylinder) torque: 1.8 m-kg (13.0 ft-lb)
Support bolt (caliper bracket) torque: 2.6 m-kg (18.8 ft-lb)



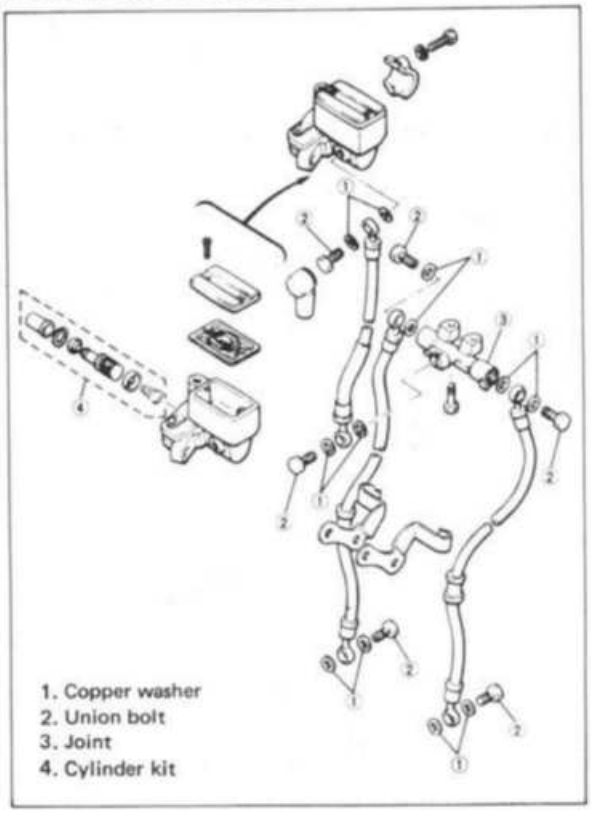
3. Attach the brake hoses.

Brake hose torque: 2.6 m-kg (18.8 ft-lb)

4. Master-cylinder reassembly
   Reasemble master cylinder as shown in illustration.

Brake hose torque: (all brake union bolts) 2.6 m-kg (18.8 ft-lb)

I. MASTER CYLINDER



5. Brake disc assembly
   If the brake disc has been removed from the hub or is loose, tighten the bolts. Use new locking washers and bend over the locking tabs after the bolts are tightened.

Disc bolt torque:
20 m-kg (14.5 ft-lb)

J. Air Bleeding

WARNING:

If the brake system is disassembled or if any brake hose has been loosened or removed, the brake system must be bled to remove air from the brake fluid. If the brake fluid level is very low or brake operation is incorrect, bleed the brake system.
Failure to bleed the brake system properly can result in a dangerous loss of braking performance.

a. Add proper brake fluid to the reservoir. Install the diaphragm, being careful not to spill or overflow the reservoir.

b. Connect the clear plastic tube of 4.5 mm (3/16 in) inside diameter tightly to the caliper bleed screw. Put the other end of the tube into a container.



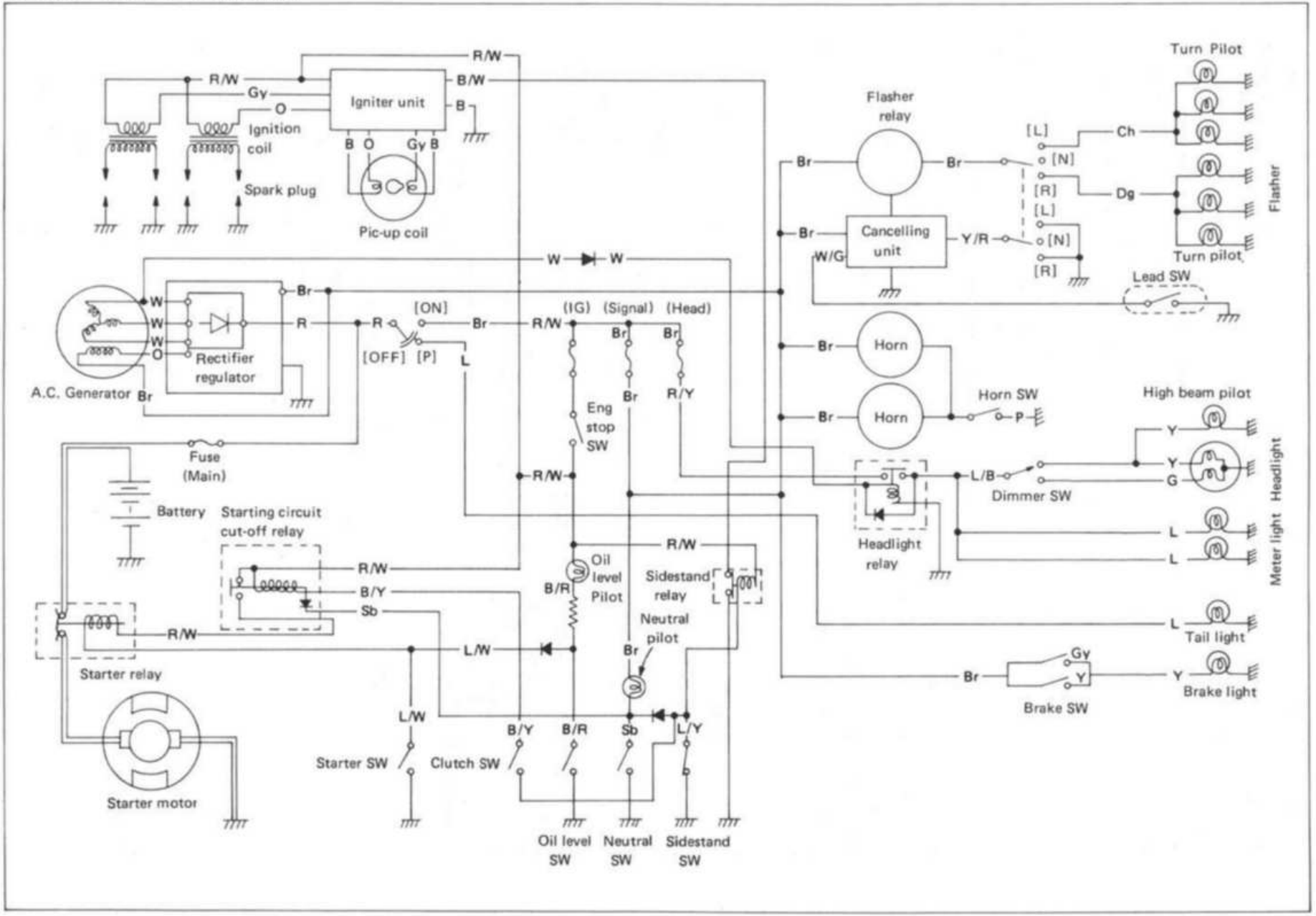
c. Slowly apply the brake lever several times. Pull in the lever. Hold the lever in "on" position. Loosen the bleed screw. Allow the lever to travel slowly toward its limit. When the limit is reached, tighten bleed screw. Then release the lever.
d. Repeat step "c" procedure until all air bubbles are removed from 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 settle out.

*ELECTRICAL

XJ650RJ CIRCUIT DIAGRAM



STARTING CIRCUIT OPERATION

The starting circuit on this model consists of the starter motor, starter relay, and the starting-circuit cut-off relay. If the engine stop switch and the main switch are both on, the starter motor can operate only if:

a. The transmission is in neutral (the neutral switch is on).

or if

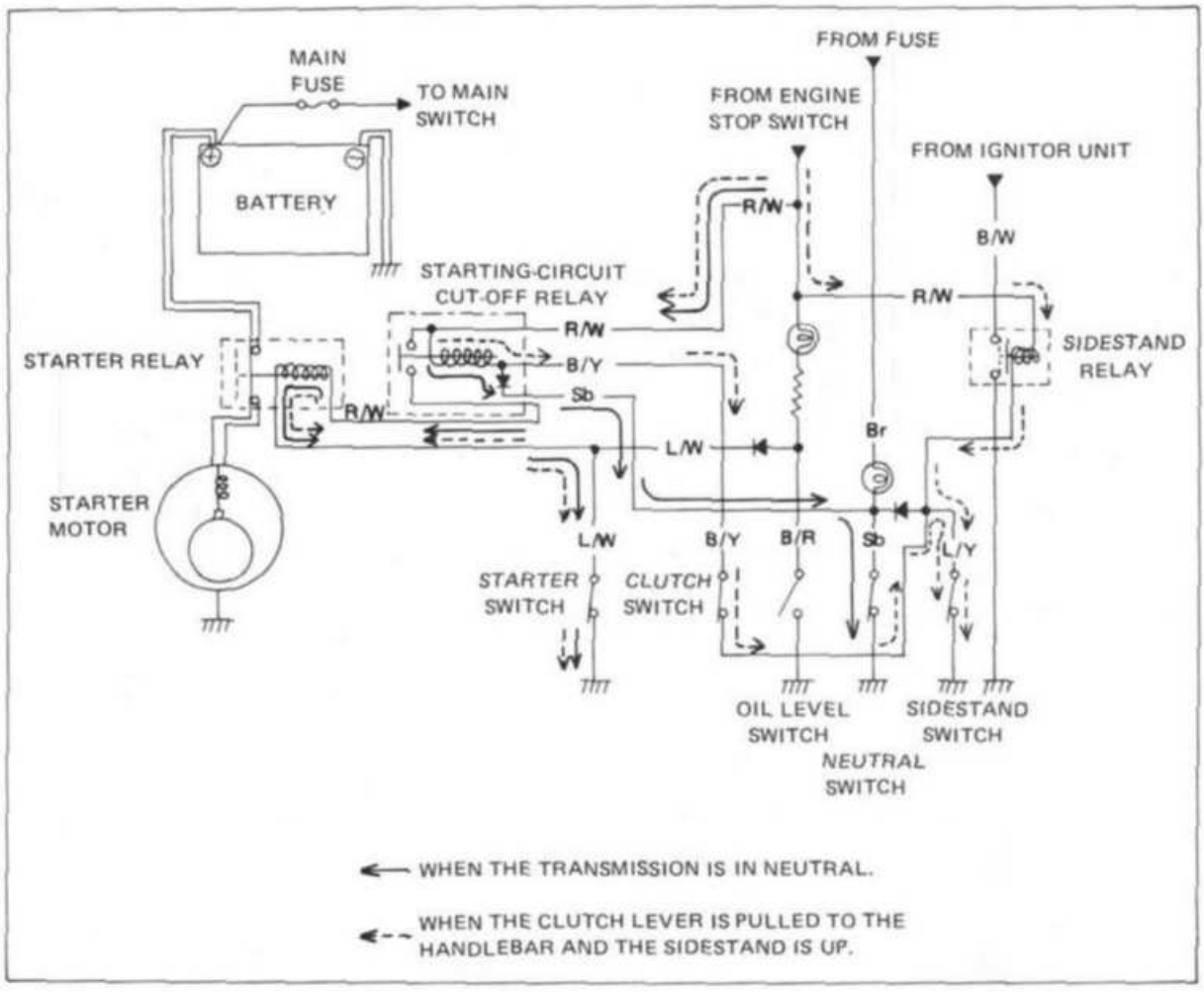
b. The clutch lever is pulled to the handlebar (the clutch switch is on) and the sidestand is up (the sidestand switch is on).

The starting-circuit cut-off relay prevents the starter from operating when neither of these conditions has been met. In this instance, the starting-circuit cut-off relay is off so current cannot reach the starter motor.

When one or both of the above conditions have been met, however, the starting-circuit cut-off relay is on, and the engine can be started by pressing the starter switch.

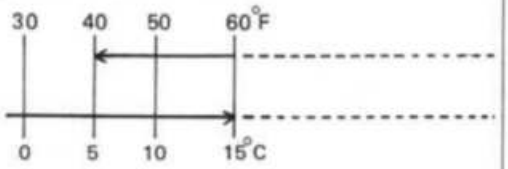
A. Sidestand Relay

The sidestand relay operates by shorting the TCI control current. When the sidestand is down, the sidestand relay is closed, and the TCI control current is grounded through the sidestand relay. Thus, the engine will not run with the sidestand down unless the transmission is in neutral.



SPECIFICATIONS

I. GENERAL SPECIFICATIONS

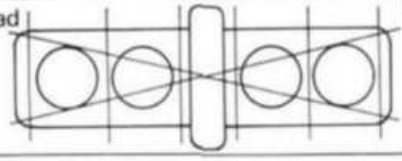
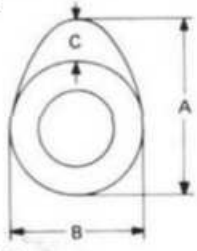
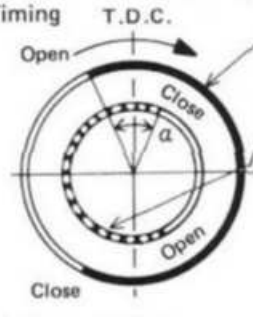
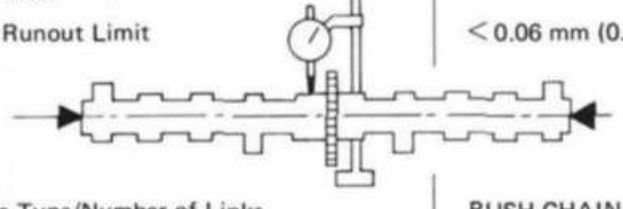
1.	Model Code Number	5V2
2.	Federal V.I.N. Number	JYA5N800*CA000101
3.	Frame Starting Number	5V2-0000101
4.	Engine Starting Number	5V2-0000101
5.	Dimensions:	
a.	Overall length	2,170 mm (85.4 in)
b.	Overall Width	730 mm (28.7 in)
c.	Overall Height	1,130 mm (44.5 in)
d.	Seat Height	780 mm (30.7 in)
e.	Wheelbase	1,435 mm (56.5 in)
f.	Minimum Ground Clearance	140 mm (5.5 in)
6.	Weight:	
a.	With Oil and Full Fuel Tank	227 kg (500 lb)
b.	Engine Dry Weight	95 kg (209 lb)
7.	Minimum Turning Radius	2,400 mm (94.5 in)
8.	Engine:	
a.	Engine Type	D.O.H.C., air-cooled, gasoline
b.	Cylinder Arrangement	Forward-incline, parallel 4-cylinder
c.	Displacement	653 cc (39.85 cu.in)
d.	Bore x Stroke	63,0 x 52.4 mm (2.480 x 2.063 in)
e.	Compression Ratio	9.2 : 1
f.	Compression Pressure	9.5 ~ 11 kg/cm^2 (135 ~ 156 psi)
g.	Starting System	Electric
9.	Lubrication System	Pressure lubricated, Wet sump
10.	Engine Oil Type or Grade	 Yamalube 4-cycle oil SAE 20W/40 type "SE" motor oil SAE 10W/30 type "SE" motor oil
11.	Engine Oil Capacity	
a.	Periodic Oil Change	2.65 lit (2.80 US. qt)
b.	Oil Filter Replacement	2.95 lit (3.12 US. qt)
c.	Total Amount	3.5 lit (3.70 US. qt)
12.	Middle/Final Gear Oil	
a.	Grade or Type	SAE 80 API "GL-4" Hypoid gear oil
b.	Final Gear Case Oil Amount	0.2 lit (0.21 US. qt)
13.	Air Filter	Dry type element

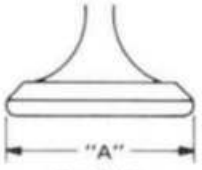
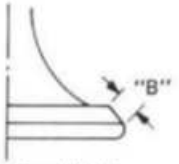
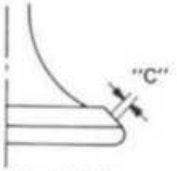
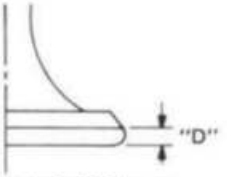
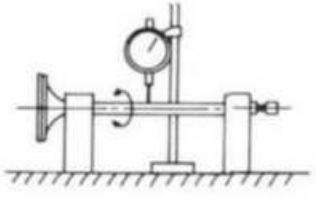
14.	Fuel	
a.	Type	Regular gasoline
b.	Tank Capacity	19.5 lit (5.2 US. gal)
c.	Reserve Amount	3.8 lit (1.0 US. gal)
15.	Carburetor	
a.	Type	HSC32
b.	Manufacturer	HITACHI
16.	Spark Plug	
a.	Type	BP7ES, W22EP
b.	Manufacturer	(NGK) (ND)
c.	Gap	0.7 ~ 0.8 mm (0.023 ~ 0.032 in)
17	Clutch Type	Wet, multiple disc
18.	Transmission:	
a.	Primary Reduction System	Gear
b.	Primary Reduction Ratio	97/58 (1.672)
c.	Secondary Reduction System	Shaft drive
d.	Secondary Reduction	
	Transmission output	
	Type/teeth/ratio	Spur gear, 49/36 (1.361)
	Middle gear case	
	Type/teeth/ratio	Bevel gear, 19/18 (1.055)
	Final gear case	
	Type/teeth/ratio	Bevel gear, 32/11 (2.909)
e.	Transmission Type	Constant mesh, 5-speed, drum shifter
f.	Operation	Left foot operation
g.	Gear Ratio	
	1st	35/16 (2.187)
	2nd	30/20 (1.500)
	3rd	30/26 (1.153)
	4th	28/30 (0.933)
	5th	26/32 (0.812)
19.	Chassis:	
a.	Frame Type	Tubular steel double cradle
b.	Caster Angle	27°45'
c.	Trail	115 mm (4.53 in)
20.	Tire	
a.	Tire Type	Tubeless
b.	Tire Size (F)	3.25H19-4PR
c.	Tire Size (R)	120/90-18 65H
21.	Tire Pressure	(Cold tire pressure)
a.	Up to 90 kg (198 lb) load* (F)	1.8 kg/cm^2 (26 psi)
	(R)	2.0 kg/cm^2 (28 psi)
b.	90 kg (198 lb) ~ 160 kg (353 lb) load* (F)	2.0 kg/cm^2 (28 psi)
	(R)	2.3 kg/cm^2 (32 psi)

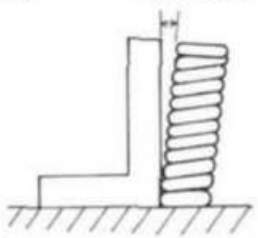
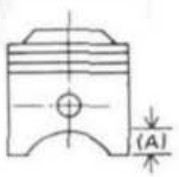
c.	160 kg (353 lb) ~ 230 kg (507 lb) load* (F)	2.0 kg/cm^2 (28 psi)
	(Maximum load) (R)	2.8 kg/cm^2 (40 psi)
d.	High-speed Riging (F)	2.3 kg/cm^2 (32 psi)
	(R)	2.5 kg/cm^2 (36 psi)
	* Total weight of accessories, etc. excepting motorcycle.	
22.	Brake	
a.	Front Brake Type	Dual hydraulic disc
b.	Operation	Right hand
c.	Rear Brake Type	Drum brake
d.	Operation	Right foot
23.	Suspension	
a.	Front Suspension	Telescopic fork
b.	Rear Suspension	Swingarm
24.	Shock Absorber	
a.	Front Shock Absorber	Oil damper, coil spring
b.	Rear Shock Absorber	Oil damper, coil spring
25.	Wheel Travel	
a.	Front Wheel Travel	150 mm (5.91 in)
b.	Rear Wheel Travel	96 mm (3.78 in)
26.	Electrical:	
a.	Ignition System	Battery ignition (Full transistor ignition)
b.	Generator System	A.C. generator
c.	Battery Type or Model	12N12A
d.	Battery Capacity	12V 12AH
27.	Headlight Type	HALOGEN (Antivibratory bulb)
28.	Bulb Wattage x Pcs	
a.	Headlight	60W/55W 1 pcs.
b.	Turn light	27W x 4 pcs.
c.	Tail/Stop light	8W/27W x 2 pcs.
d.	Meter light	3.4W x 2 pcs.
29.	Indicator light Wattage x Pcs.	
a.	" Neutral "	3.4W x 1 pcs.
b.	" High Beam "	3.4W x 1 pcs.
c.	" Oil "	3.4W x 1 pcs.
d.	" Turn "	3.4W x 1 pcs.

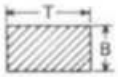
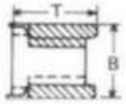
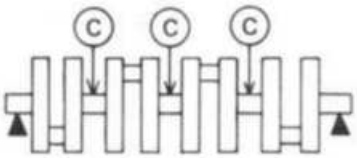
II. MAINTENANCE SPECIFICATIONS

A. Engine

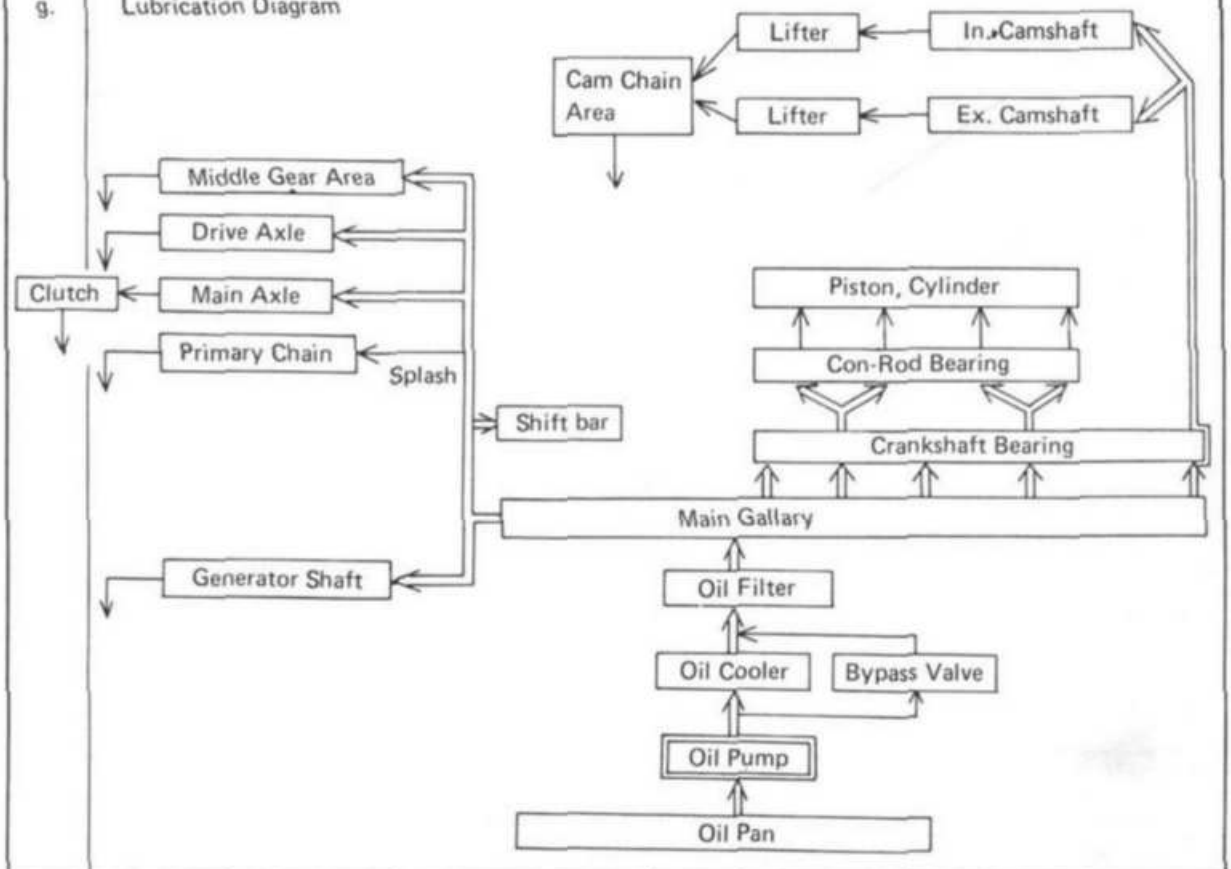
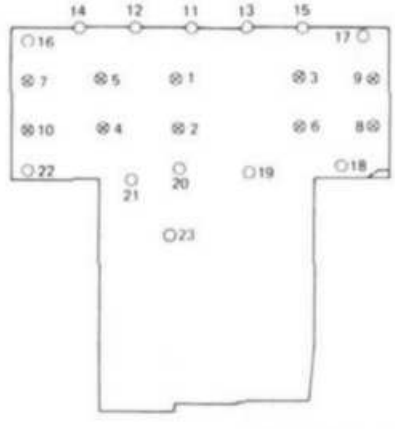
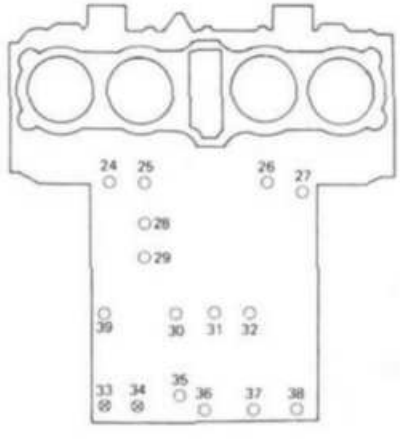
1.	Cylinder Head	
a.	Volume	24.2 cc
b.	Warp Limit 	< 0.03 mm (0.0012 in) > *Lines indicate straightedge measurement
2.	Cylinder	
a.	Material	Aluminum alloy with cast iron sleeve
b.	Bore Size	63.0 mm (2.480 in)
c.	Taper Limit	< 0.05 mm (0.0020 in) >
d.	Out-of-round Limit	< 0.01 mm (0.0004 in) >
3.	Camshaft	
a.	Drive Method	Chain drive Center
b.	Cam Cap Inside Diameter	$25^{+0.021}_{-0}$ mm ($0.98^{+0.008}_{-0}$ in)
c.	Camshaft Outside Diameter	$25^{-0.020}_{-0.033}$ mm ($0.98^{-0.0008}_{-0.0013}$ in)
d.	Shaft-to-cap Clearance	0.020 ~ 0.054 mm (0.0008 ~ 0.0021 in)
e.	Cam Dimensions	
	Intake  "A"	36.50 mm (1.437 in)
	"B"	28.00 mm (1.102 in)
	"C"	8.50 mm (0.335 in)
	Exhaust "A"	35.80 mm (1.409 in)
	"B"	28.00 mm (1.102 in)
	"C"	7.80 mm (0.307 in)
f.	Valve Timing 	B.T.D.C. 34° A.B.D.C. 58° B.B.D.C. 66° A.T.D.C. 26° α = 60°
g.	Camshaft Runout Limit 	< 0.06 mm (0.0024 in) >
h.	Cam Chain Type/Number of Links	BUSH-CHAIN/120
i.	Cam Chain Adjustment Method	Manual

4.	Valve, Valve Seat, Valve Guide	
a.	Valve Clearance (Cold)	
	IN.	0.16 ~ 0.20 mm (0.0063 ~ 0.0079 in)
	EX.	0.16 ~ 0.20 mm (0.0063 ~ 0.0079 in)
b.	Valve Dimensions	
	 Head Dia.  Face Width  Seat Width  Margin Thickness	
	"A" Head Dia.	
	"A" Head Dia. IN.	33 ± 0.1 mm (1.30 ± 0.0039 in)
	EX.	28 ± 0.1 mm (1.10 ± 0.0039 in)
	"B" Face Width IN.	2.3 mm (0.091 in)
	EX.	2.3 mm (0.091 in)
	"C" Seat Limit Width IN.	1 ± 0.1 mm (0.0394 ± 0.039 in)
	EX.	1 ± 0.1 mm (0.0394 ± 0.039 in)
	"D" Margin Thickness Limit	
	IN.	0.7 mm (0.028 in)
	EX.	0.7 mm (0.028 in)
c.	Stem Outside Diameter	
	IN.	$7^{-0.010}_{-0.025}$ mm ($0.2756^{-0.0004}_{-0.0010}$ in)
	EX.	$7^{-0.010}_{-0.040}$ mm ($0.2756^{-0.0010}_{-0.0016}$ in)
d.	Guide Inside Diameter	
	IN.	$7^{+0.012}_{-0}$ mm ($0.2756^{+0.0005}_{-0}$ in)
	EX.	$7^{+0.012}_{-0}$ mm ($0.2756^{+0.0005}_{-0}$ in)
e.	Stem-to-guide Clearance	
	IN.	0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in)
	EX.	0.025 ~ 0.052 mm (0.0010 ~ 0.0020 in)
f.	Stem Runout Limit	< 0.03 mm (0.0012 in) >
		
g.	Valve Seat Width Standard	1.0 mm (0.039 in)
	< Limit >	< 2.0 mm (0.080 in) >
6.	Valve Spring	
a.	Free Length	
	Inner Spring IN.	35.9 mm (1.413 in)
	EX.	35.9 mm (1.413 in)
	Outer Spring IN.	39.5 mm (1.555 in)
	EX.	39.5 mm (1.555 in)

b.	*Spring Rate*		
	Inner Spring	IN.	2.36 kg/mm (132 lb/in)
		EX.	2.36 kg/mm (132 lb/in)
	Outer Spring	IN.	4.58 kg/mm (256 lb/in)
		EX.	4.58 kg/mm (256 lb/in)
c.	Compressing Length (Valve Closed)		
	Inner Spring	IN.	31.0 mm (1.220 in)
		EX.	31.0 mm (1.220 in)
	Outer Spring	IN.	34.0 mm (1.339 in)
		EX.	34.0 mm (1.339 in)
d.	Compressed Force (Valve Closed)		
	Inner Spring	IN.	9.0 kg (20 lb)
		EX.	9.0 kg (20 lb)
	Outer Spring	IN.	19.1 kg (42.1 lb)
		EX.	19.1 kg (42.1 lb)
e.	Tilt Limit		
	Inner Spring	IN. & EX.	2.5°
	Outer Spring	IN. & Ex.	2.5°
			
f.	Direction of Winding (Top View)		Intake: Outer / Inner; Exhaust: Outer / Inner
7.	Piston		
a.	Piston Size/ Measuring Point (A)		63.0 mm (2.48 in)/ 7.5 mm (0.295 in) (From bottom line of piston skirt)
b.	Clearance between Piston & Cylinder		0.03 ~ 0.05 mm (0.0012 ~ 0.0020 in)
	< Limit >		< 0.1 mm (0.0039 in) >
c.	Oversize	1st	63.25 mm (2.49 in)
		2nd	63.50 mm (2.50 in)
		3rd	63.75 mm (2.51 in)
		4th	64.00 mm (2.52 in)
d.	Piston Pin Hole Off-Set		0.5 mm (0.02 in)/In-side

8.	Piston Ring		
a.	Sectional Sketch		
		Top Ring	B = $1.2^{-0.01}_{-0.03}$ mm ($0.047^{-0.0004}_{-0.0012}$ in) T = 2.6 ± 0.1 mm (0.102 ± 0.0004 in)
		2nd Ring	B = $1.5^{-0.01}_{-0.03}$ mm ($0.059^{-0.0004}_{-0.0012}$ in) T = 2.8 ± 0.1 mm (0.110 ± 0.0004 in)
		Oil Ring	B = 2.5 mm (0.098 in) T = 2.8 ± 0.15 mm (0.110 ± 0.0059 in)
b.	End Gap (Installed)		
	Limit	Top Ring	0.15 ~ 0.35 mm (0.0059 ~ 0.0138 in) < 1.0 mm (0.039 in) >
		2nd Ring	0.15 ~ 0.35 mm (0.0059 ~ 0.0138 in) < 1.0 mm (0.039 in) >
		Oil Ring	0.3 ~ 0.9 mm (0.012 ~ 0.035 in) < 1.5 mm (0.0591 in) >
c.	Side Clearance		
	Limit	Top Ring	0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in) < 0.15 mm (0.0059 in) >
		2nd Ring	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in) < 0.15 mm (0.0059 in) >
		Oil Ring	–
d.	Plating or Coating		
		Top Ring	Chrome, Ferox
		2nd Ring	–
		Oil Ring	Chrome, Ferox
9.	Connecting Rod		
a.	Oil Clearance		0.03 ~ 0.09 mm (0.0012 ~ 0.0035 in)
b.	Color Code		1. Blue, 2. Black, 3. Brown, 4. Green
10.	Crankshaft		
			
a.	Runout Limit "C"		< 0.04 mm (0.0016 in) >
b.	Oil Clearance		0.020 ~ 0.044 mm (0.0008 ~ 0.0017 in)
c.	Color Code		1. Blue, 2. Black, 3. Brown, 4. Green, 5. Yellow
d.	Connecting Rod Length		115.5 ± 0.05 mm (4.55 ± 0.002 in)
11.	Balancer Drive Method		Chain, Gear

12.	Clutch		
a.	Friction Plate Thickness/Quantity		3.0 ± 0.1 mm (0.12 ± 0.004 in)/8 pcs.
b.	Wear Limit		< 2.8 mm (0.11 in) >
c.	Clutch Plate Thickness/Quantity		1.6 mm (0.06 in)/7 pcs.
d.	Warp Limit		< 0.05 mm (0.002 in) >
e.	Clutch Spring Free Length/Quantity		40.1 mm (1.58 in)/
	< Limit >		< 0.1 mm (0.0004 in)>
f.	Minimum Length		39.1 mm (1.539 in)
g.	Primary Reduction Gear Backlash Tolerance		118
h.	Primary Drive Gear		
	Backlash Number		87~ 91
i.	Primary Driven Gear		
	Backlash Number		27~ 32
j.	Clutch Release Method		Rack & Pinion pull, Outer pull
13.	Transmission		
a.	Main Axle Run-out Limit		< 0.08 mm (0.0031 in) >
14.	Shifter		
a.	Shifter Type		Cam drum
15.	Carburetor		
a.	Type/Manufacturer/Quantity		HSC32/HITACHI/4 pcs.
b.	I.D. Mark		4H700
c.	Throttle Valve Size		ϕ 32 mm (ϕ 1.26 in)
d.	Venturi Size		ϕ 27.4 mm (ϕ 1.08 in)
e.	Main Jet	(M.J.)	# 110
f.	Main Air Jet	(M.A.J.)	# 50
g.	Jet-Needle	(J.N.)	Y-10
h.	Needle Jet	(N.J.)	ϕ 3.2
i.	Throttle Valve	(Th.V.)	13
j.	Pilot Jet	(P.J.)	# 40
k.	Pilot Air Jet	(P.A.J.)	# 195
l.	Pilot Screw (turns out)	(P.S.)	2 and 1/2
m.	Pilot Outlet Size	(P.O.)	ϕ 0.9
n.	Starter Jet	(G.S.)	# 40
o.	Valve Seat Size	(V.S.)	ϕ 2.0
p.	Fuel Level	(F.L.)	3 ± 1 mm (0.12 ± 0.04 in)
q.	Float Height	(F.H.)	17.5 ± 0.5 mm (0.7 ± 0.02 in)
r.	Engine Idling Speed		1,050 ± 50 r/min
s.	Vacuum Pressure at Idling Speed		Above 180 mmHg
16.	Lubrication System:		
a.	Oil Filter Type		Paper filter
b.	Oil Pump Type		Trochoid pump
c.	Tip Clearance		0.03 ~ 0.09 mm (0.001 ~ 0.004 in)
d.	Side Clearance		0.03 ~ 0.08 mm (0.01 ~ 0.003 in)
e.	Bypath Valve Setting Pressure		1.0 ± 0.2 kg/cm (14.2 ± 2.8 lb/in)
f.	Relief Valve Operating Pressure		5.0 ± 0.6 kg/cm (7.1 ± 8.5 lb/in)

g.	Lubrication Diagram	
17.	Middle Gear Backlash	0.1 ~ 0.2 mm (0.0039 ~ 0.0079 in)
18.	Final Gear Backlash	0.1 ~ 0.2 mm (0.0039 ~ 0.0079 in)
19.	Crankcase Tightening Sequence LOWER CASE  UPPER CASE  Tightening torque: ⊗ ..... 8 mm bolt: 24 Nm (2.4 m-kg, 17.5 ft-lb) ○ ..... 6 mm bolt: 12 Nm (1.2 m-kg, 8.7 ft-lb)	

20. Tightening Torque

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m-kg	ft-lb	
ENGINE							
Cylinder head	Nut	M10 P1.25	12	32	3.2	23.1	Apply oil.
Cylinder head cover	Bolt	M6 P1.0	20	10	1.0	7.2	
Spark plug	–		4	20	2.0	14.5	
Cylinder	Nut	M8 P1.25	2	20	2.0	14.5	*Cam chain case* Front & Rear
Cam shaft cap	Bolt	M6 P1.0	20	10	1.0	7.2	Tighten in 3-stages.
Cam sprocket	Bolt	M7 P1.0	4	20	2.0	14.5	
Cam chain tensioner adjustment lock nut	Nut	M8 P1.25	1	9	0.9	6.5	
Cam chain tensioner adjustment lock bolt	Bolt	M6 P1.0	1	6	0.6	4.3	
Connecting rod	Nut	M7 P0.75	8	25	2.5	18.1	
Generator (rotor)	Bolt	M10 P1.25	1	55	5.5	39.8	
Drain plug	Bolt	M14 P1.5 M8 P1.25	1 1	43 24	4.3 2.4	31.0 17.5	Crankcase drain
Oil filter	Bolt	M20 P1.5	1	15	1.5	11.0	
Pump cover	Screw	M6 P1.0		7	0.7	5.1	
Strainer cover	Bolt	M6 P1.0	13	10	1.0	7.2	
Crankcase	Flange Bolt	M8 P1.25 M6 P1.0	12 27	24 12	2.4 1.2	17.5 8.7	
Clutch boss	Nut	M20 P1.0	1	72	7.2	52.0	
Clutch spring screw	Bolt	M6 P1.0	5	10	1.0	7.2	
Change Pedal	Bolt	M6 P1.0	1	10	1.0	7.2	
Neutral switch	–	M10 P1.25	1	20	2.0	14.5	
Exhaust pipe	Nut	M6 P1.0	8	10	1.0	7.2	
SHAFT DRIVE:							
– Middle Gear –							
Drive Shaft	Nut	M34 P1.5	1	110	11	80.2	Stake.
Mount cover	ScrewM	M8 P1.25	4	25	2.5	18.1	Stake.
Driven shaft	Nut	M14 P1.5	1	120	12	87.0	Use LOCTITE: Stake.
Bearing cap	Flange Bolt	M8 P1.25	4	25	2.5	18.1	
– Final Gear –							
Drive Shaft	Nut	M14 P1.5	1	110	11	80.0	
Bearing housing	Flange Bolt	M10 P1.25	2	23	2.3	16.6	
Bearing housing	Nut	M8 P1.25	6	23	2.3	16.6	
Oil mount screw	Plug	M14 P1.5	1	23	2.3	16.6	
Oil drain screw	Plug	M14 P1.5	1	23	2.3	16.6	
Bearing retainer	–	M65 P1.5	1	110	11	80.0	Left hand screw

B. Chassis

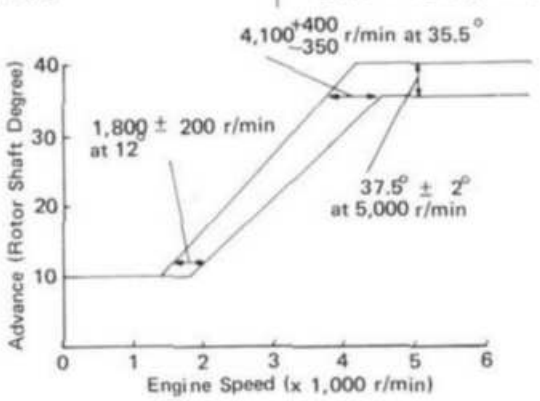
1.	Steering System	
a.	Steering Bearing Type	Ball Bearing
b.	No./Size of Steel Balls	
	Upper	19 pcs/1/4 in
	Lower	19 pcs/1/4 in
c.	Lock-to-lock Angle	42°
2.	Front Suspension	
a.	Front Fork Travel	150 mm (5.9 in)
b.	Fork Spring Free Length	540.5 mm (21.28 in)
c.	Spring Rate/Stroke	K_1 = 0.421 kg/mm 0 ~ 100 mm K_2 = 0.581 kg/mm 100 ~ 150 mm
d.	Optional Spring	No.
e.	Oil Capacity	236 ± 4 cc (7.98 ± 0.14 US oz)
	or	
	Oil Level	400 mm (15.7 in) (From top of inner tube fully compressed without spring.)
f.	Oil Grade	Yamaha fork oil (10) wt or equivalent
3.	Rear Suspension	
a.	Shock Absorber Travel	80 mm (3.15 in)
b.	Spring Free Length	236.5 mm (9.31 in)
c.	Spring Rate/stroke	K_1 = 1.7 kg/mm (95.2 lb/in)/ 0 ~ 55 mm (0 ~ 2.17 in) K_2 = 2.1 kg/mm (117.6 lb/in)/ 55 ~ 80 mm (2.17 ~ 3.15 in)
d.	Optional Spring	No.
4.	Rear Arm	
a.	Swing Arm Free Play Limit	
	– End	0 mm (0 in)
	– Side	0 mm (0 in)
5.	Wheel	
a.	Front Wheel Type	Cast Wheel
	Rear Wheel Type	Cast Wheel
b.	Front Rim Size/Material	MT1.85 x 19/Steel, Aluminum
	Rear Rim Size/Material	MT2.15 x 18/Steel, Aluminum
c.	Rim Runout Limit	
	– Vertical	< 0.5 mm (0.02 in) >
	– Lateral	< 1.0 mm (0.04 in) >
6-1.	Disc Brake	
a.	Type Front	Dual disc
b.	Outside Dia. x Thickness	
	Front	267 x 5 mm (10.5 x 0.2 in)

c.	Pad Thickness < Limit > * 	6.5 mm (0.26 in) < 1.5 mm (0.06 in) >
d.	Master Cylinder Inside Dia. Front	15.87 mm (0.62 in)
e.	Caliper Cylinder Inside Dia. Front	38.18 mm (1.50 in)
f.	Brake Fluid Type	DOT # 3
6-2.	Drum Brake	
a.	Type Rear	Leading trailing
b.	Drum Inside Dia. Rear	200 mm (7.87 in)
c.	Lining Thickness < Limit>	4 mm (0.16 in) < 2 mm (0.08 in) >
d.	Shoe Spring Free Length Rear.	68 mm (2.68 in)
7.	Brake Lever & Brake Pedal	
a.	Brake Lever Free Play	5.0 ~ 8.0 mm (0.2 ~ 0.3 in)
b.	Brake Pedal Free Play	20 ~ 30 mm (0.8 ~ 1.2 in)
c.	Brake Pedal Position	40 mm (1.6 in) (Vertical height below footrest too.)
8.	Clutch Lever Free Play	2 ~ 3 mm (0.08 ~ 0.12 in)

9. Tightening Torque

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m-kg	ft-lb	
CHASSIS:							
Engine Mounting Bolt — Front, upper	Nut	M10 P1.25	1	42	4.2	30.4	
Engine Mounting Bolt — Front, under	Bolt	M10 P1.25	2	42	4.2	30.4	
Engine Mounting Bolt — Rear	Nut	M12 P1.25	1	70	7.0	50.6	
Engine Mounting Stay — Front	Bolt	M8 P1.25	4	20	2.0	14.5	
Handle crown & Steering shaft	Bolt	M14 P1.25	1	54	5.4	39.1	
	Bolt	M8 P1.25	1	20	2.0	14.5	
Handle crown & Inner tube	Nut cap	M8 P1.25	1	20	2.0	14.5	
Handle crown & Handle holder	Bolt	M8 P1.25	2	20	2.0	14.5	
Front fork							
Under bracket & Inner tube	Bolt	M8 P1.25	4	20	2.0	14.5	
Front wheel shaft	Nut castle	M14 P1.5	1	107	10.7	77.4	
Front wheel Axle pinch bolt	Nut salf	M8 P1.25	2	20	2.0	14.5	
Pivot shaft	Bolt	M22 P1.5	1	5.5	0.55	4.0	Taper roller bearing
Rear wheel shaft	Nut castl	M14 P1.5	1	107	10.7	77.4	
Rear shock absorber (Upper)	Nut cap	M10 P1.25	2	30	3.0	21.7	
Rear shock absorber (Lower)	L Nut cap R Bolt	M10 P1.25	2	30	3.0	21.7	
Footrest	Nut	M10 P1.25	2	42	4.2	30.4	
Tension bar & Brake plate	Bolt	M8 P1.25	1	20	2.0	14.5	
Tension bar & Rear arm	Bolt	M8 P1.25	1	20	2.0	14.5	
Camshaft lever & Camshaft	Bolt	M6 P1.0	1	9	0.9	6.5	
Disc brake section							
Brake disc & Hub (Front)	Bolt	M8 P1.25	12	20	2.0	14.5	Lock washer
Master cylinder & Brake hose (Front)	Bolt union	M10 P1.25	1	26	2.6	18.8	
Brake hose & Joint	Bolt union	M10 P1.25	1	26	2.6	18.8	
Caliper & Brake hose	Bolt union	M10 P1.25	1	26	2.6	18.8	
Caliper & Front fork (Front)		M8 P1.25	1	26	2.6	18.8	
Caliper bleed screw (Front)		M8 P1.26	1	6	0.6	4.3	
Front fender	Bolt	M8 P1.25	4	10	1.0	7.2	
Master cylinder cap	Screw	M5 P0.8	2	1.8	0.18	1.3	
Pivot shaft	Bolt	M22 P1.5	1	100	10.0	72.3	Lock washer
Final gear & Rear arm	Nut	M10 P1.25	4	42	4.2	30.4	
Cross Joint	Hexagon bolt with washer	M8 P1.25	4	44	4.4	31.8	
Muffler bracket & Frame	Bolt	M10 P1.25	3	43	4.3	31.1	
Rear fender	Bolt	M10 P1.25	2	32	3.2	23.1	
Muffler bracket & Muffler	Bolt	M10 P1.25	2	25	2.5	18.1	
Master cylinder & Master cylinder bracket	Bolt	M6 P1.0	2	9	0.9	6.5	

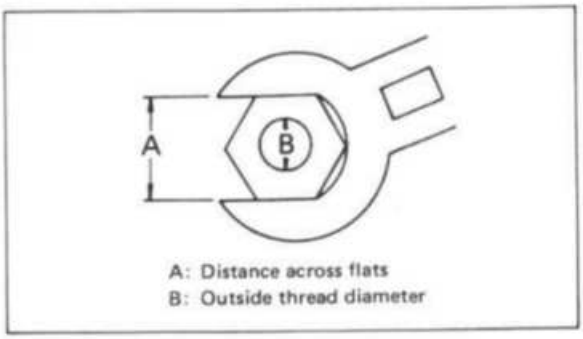
C. Electrical

1.	Voltage	12V
2.	Ignition System	
a.	Ignition Timing (B.T.D.C.)	10° /1,050 r/min
	Advanced iTiming (B.T.D.C.)	37.5° ± 2°/5,000 r/min
		
b.	Advancer Type	Electrical
3.	T.C.I.	
a.	Pick up Coil Resistance (Color	700Ω ± 20% at 20°C (68°F) (O – B, Gy – Br)
b.	T.C.I. Unit-Model/Manufacturer	TID14-08/HITACHI
4.		
a.	Ignition Coil-Model/Manufacturer	CM-12-09/HITACHI
b.	Minimum Spark Gap	6 mm (0.24 in) or more at 500 r/min (19 KV/100 r/min at 6V, 16KV/9,500 r/min at 14V)
c.	Primary Winding Resistance	2.5Ω ± 10% at 20°C (68°F)
d.	Secondary Winding Resistance	11KΩ ± 20% at 20°C (68°F)
5.	Charging System	
a.	Type	A.C. Generator
b.	Model/Manufacturer	LD119-08/HITACHI
c.	OutPut	14V 19A at 5,000 r/min
d.	Field (Inner) Coil Resistance (Color)	4.0Ω ± 10% at 20°C (68°F) (G – B)
e.	Armature (Outer) Coil Resistance (Color)	0.46Ω ± 10% at 20°C (68°F) (W – W)
f.	Brush-Overall Length	17 mm (0.67 in)
g.	– Wear Limit	10 mm (0.39 in)
h.	– Spring Pressure	360 g (12.7 oz)
6.		
a.	Voltage Regulator – Type	I.C. type
b.	– Model/Manufacture	S8534/SHIBAURA
c.	– No Load Regulated Voltage	14.5V
7.		
a.	Rectifier – Model/Manufacturer	S8534/SHIBAURA
b.	– Capacity	15A
c.	– Withstand Voltage	300V

8.	Battery	
a.	Capacity	12V 12AH
b.	Specific Gravity	1.280
9.	Electric Starter System	Constant mesh type
a.	Starter Motor – Model/Manufacturer	ADB4D4/ND
b.	– Output	0.6 kw
c.	Armature Coil Resistance	0.014 Ω ± 6/% at 20°C (68°F)
d.	Brush-Overall Length	12 mm (0.47 in)
e.	<Limit>	<8.5 mm (0.33 in)>
	– Spring Pressure	800 ± 150 g (28.22 ± 5.29 oz)
f.	Commutator Dia.	28 mm (1.1 in)
g.	<Wear Limit>	<27 mm (1.06 in) >
	Mica Undercut	0.6 mm (0.024 in)
h.	Starter Switch Manufacturer	HONDA LOCK
i.	Amperage Rating	150 A
10.	Horn	
a.	Type	Plane type
	Quantity	2 pcs.
b.	Model/Manufacturer	SFH-12, SFL-12/Nikko
c.	Maximum Amperage	2.5A
11.	Flasher Relay	
a.	Type	Condenser type
b.	Model/Manufacturer	4H7/ND
c.	Self Cancelling Device	Yes
d.	Flasher Frequency	85 ± 10 cycle/min
e.	Wattage	27W x 2 + 3.4W
12.	Self Cancelling Unit	
a.	Model/Manufacturer	1A0/MATSUSHITA
13.	Oil Level Switch	
a.	Manufacturer	N.D
14.	Starting Circuit Cut Off Relay	Yes
a.	Model/Manufacturer	4H7-01/TATEISHI
b.	Coil Winding Resistance	100Ω ± 10% at 20°C (68°F)
15.	Headlight Relay	Yes
a.	Model/Manufacturer	3H5-00/TATEISHI
b.	Coil Winding Resistance	100Ω at 20°C (68°F)
16.	Side Stand Relay	Yes
a.	Model/Manufacturer	4U8/TATEISHI
b.	Coil Winding Resistance	100Ω at 20°C (68°F)
17.	Circuit Breaker	
a.	Type	Fuse
b.	Amperage for Individual Circuit	
	Main	10A/1 pc.
	Headlight	10A/1 pc.
	Signal	10A/1 pc.
	Ignition	10A/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 criss-cross 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: Distance across flats
B: Outside thread diameter

A (Nut)	B (Bolt)	General torque specifications	
		m-kg	ft-lb
10 mm	6 mm	0.6	4.5
12 mm	8 mm	1.5	11
14 mm	10 mm	3.0	22
17 mm	12 mm	5.5	40
19 mm	14 mm	8.5	51
22 mm	16 mm	13.0	94

CONVERSION TABLES

	METRIC TO INCH SYSTEM		
	KNOWN	MULTIPLIER	RESULT
TORQUE	m-kg	7.233	ft-lb
	m-kg	86.80	in-lb
	cm-kg	0.0723	ft-lb
	cm-kg	0.8680	in-lb
WT.	kg	2.205	lb
	g	0.03527	oz
FLOW/DISTANCE	km/lit	2.352	mpg
	km/hr	0.6214	mph
	km	0.6214	mi
	m	3.281	ft
	m	1.094	yd
	cm	0.3937	in
	mm	0.03937	in
VOL./ CAPACITY	cc (cm^3)	0.03382	oz (US liq)
	cc (cm^3)	0.06102	cu.in
	lit (liter)	2.1134	pt (US liq)
	lit (liter)	1.057	qt (US liq)
	lit (liter)	0.2642	gal (US liq)
MISC.	kg/mm	56.007	lb/in
	kg/cm^2	14.2234	psi (lb/in^2)
	Centigrade (°C)	9/5(°C) + 32	Fahrenheit (°F)

	INCH TO METRIC SYSTEM		
	KNOWN	MULTIPLIER	RESULT
TORQUE	ft-lb	0.13826	m-kg
	in-lb	0.01152	m-kg
	ft-lb	13.831	cm-kg
	in-lb	1.1521	cm-kg
WT.	lb	0.4535	kg
	oz	28.352	g
FLOW/DISTANCE	mpg	0.4252	km/lit
	mph	1.609	km/hr
	mi	1.609	km
	ft	0.3048	m
	yd	0.9141	m
	in	2.54	cm
	in	25.4	mm
VOL./ CAPACITY	oz (US liq)	29.57	cc (cm^3)
	cu.in	16.387	cc (cm^3)
	pt (US liq)	0.4732	lit (liter)
	qt (US liq)	0.9461	lit (liter)
	gal (US liq)	3.785	lit (liter)
MISC.	lb/in	0.017855	kg/mm
	psi (lb/in^2)	0.07031	kg/cm^2
	Fahrenheit (°C)	5/9 (°F−32)	Centigrade (°F)

DEFINITIONS OF UNITS

m-kg	=	Meter-Kilogram(s)(usually torque)
g	=	Gram(s)
kg	=	Kilogram(s) (1000 grams)
lit	=	Liter(s)
km/lit	=	Kilometer(s) per liter (fuel consumption)
cc	=	Cubic centimeter(s) (cm^3) (volume or capacity)
kg/mm	=	Kilogram(s) per millimeter (usually spring compression rate)
kg/cm^2	=	Kilogram(s) per square centimeter (pressure)

COLOR CODES

Dark green	Br:	Brown	L/W:	Blue/White
Chocolate	O:	Orange	Br/W:	Brown/White
Black	L:	Blue	Y/G:	Yellow/Green
Yellow	P:	Pink	B/W:	Black/White
Light green	L/B:	Blue/Black	W/G:	White/Green
Green	R/W:	Red/White	W/R:	White/Red
White	R/Y:	Red/Yellow	G/Y:	Green/Yellow
Sky blue	L/Y:	Blue/Yellow	Y/R:	Yellow/Red
Red	L/G:	Blue/Green	Y/B:	Yellow/Black

CONSUMER INFORMATION

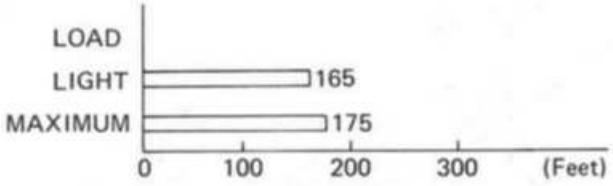
NOTICE

The information presented represents results obtainable by skilled drivers under controlled road and vehicle conditions, and the information may not be correct under other conditions.

STOPPING DISTANCE

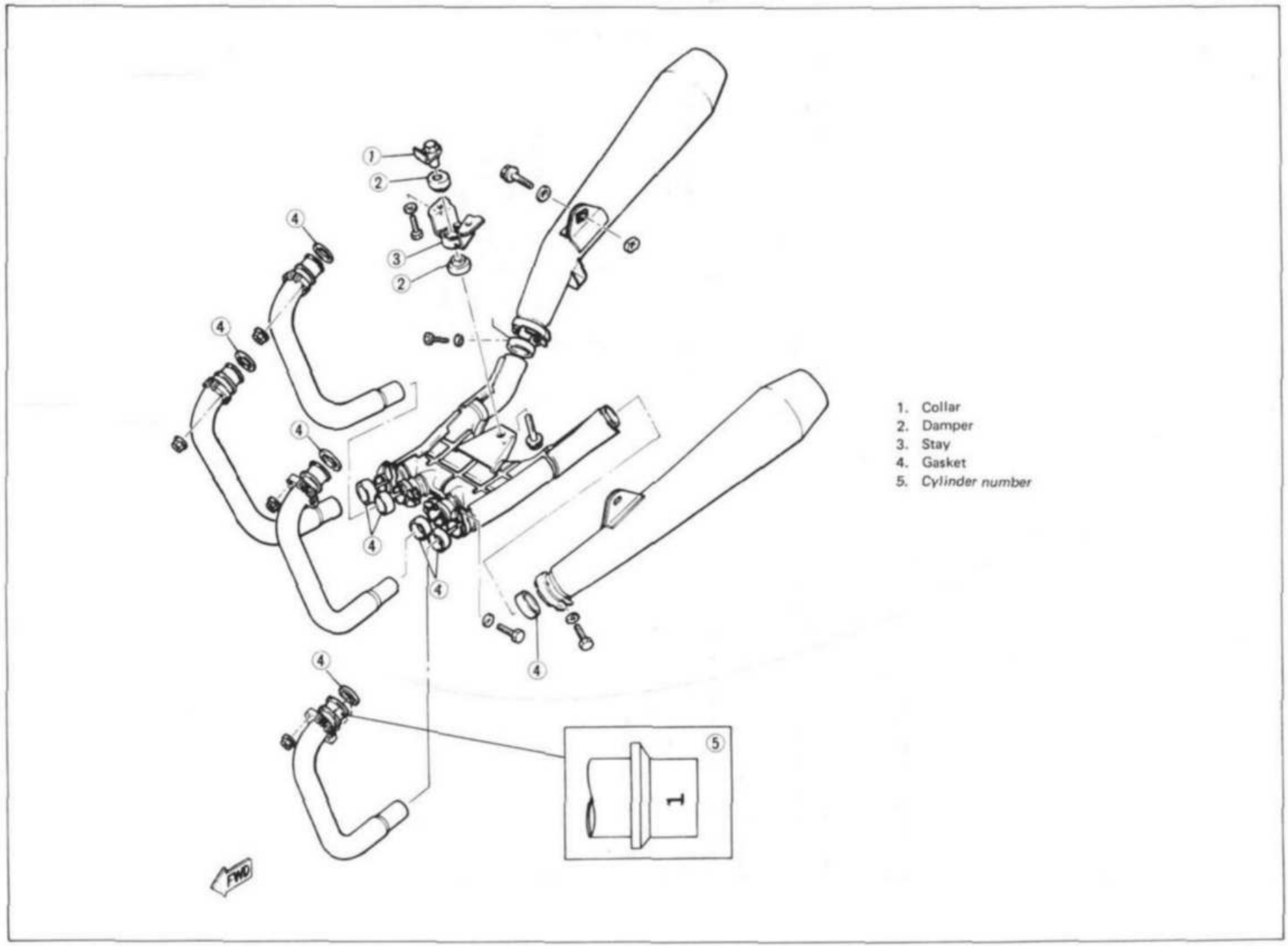
This figure indicates braking performance that can be met or exceeded by the vehicles to which it applies, without locking the wheels, under different conditions of loading and with partial failures of the braking system.

FULL OPERATIONAL SERVICE BRAKE



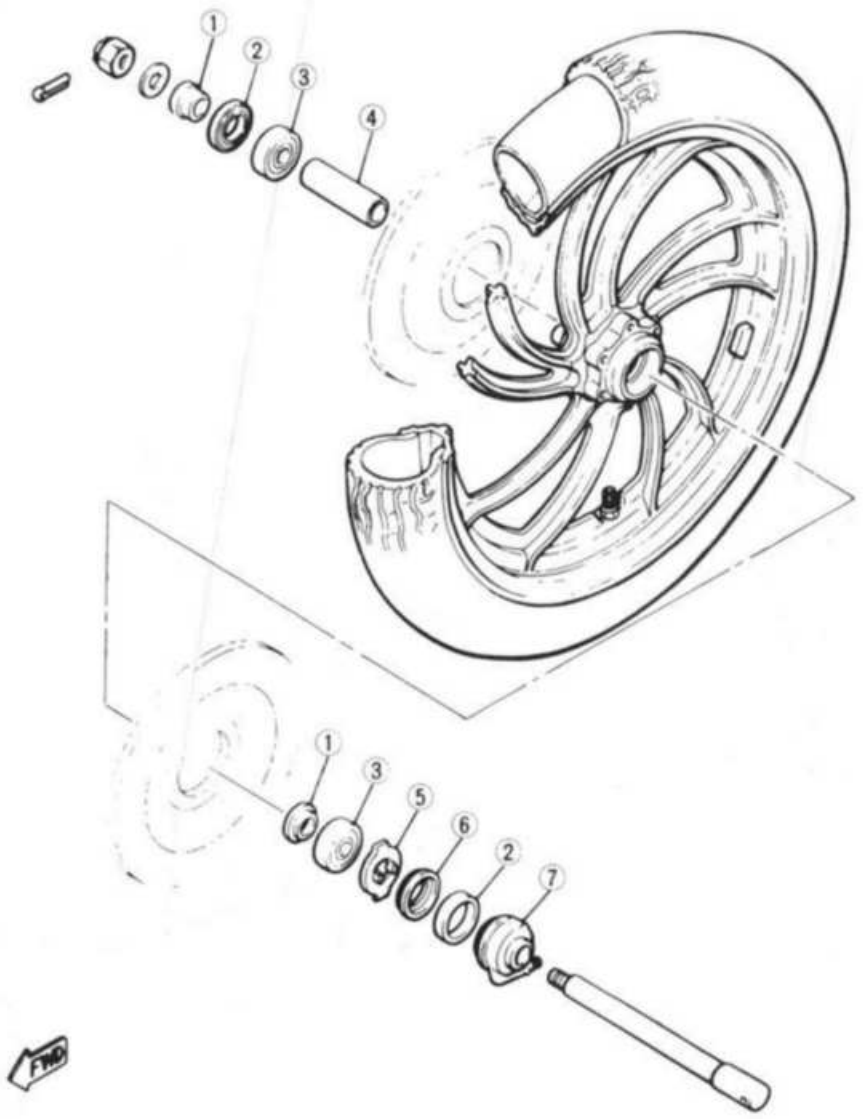
Stopping Distance in Feet from 60 mph, using the fully operational Service brake System, at lightly loaded and maximum loaded vehicle weight.

A. Exhaust



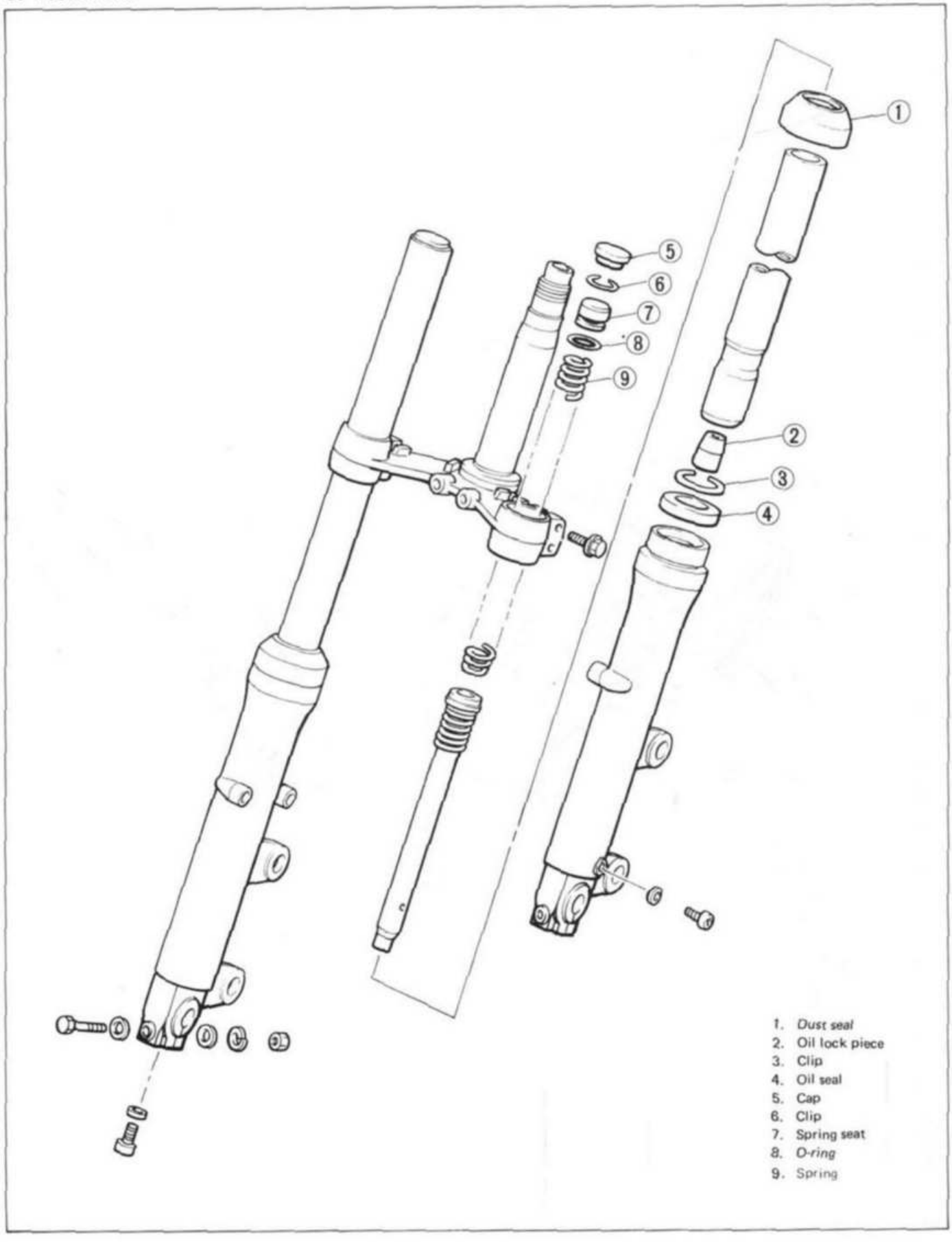
1. Collar
2. Damper
3. Stay
4. Gasket
5. *Cylinder number*

B. Front Wheel



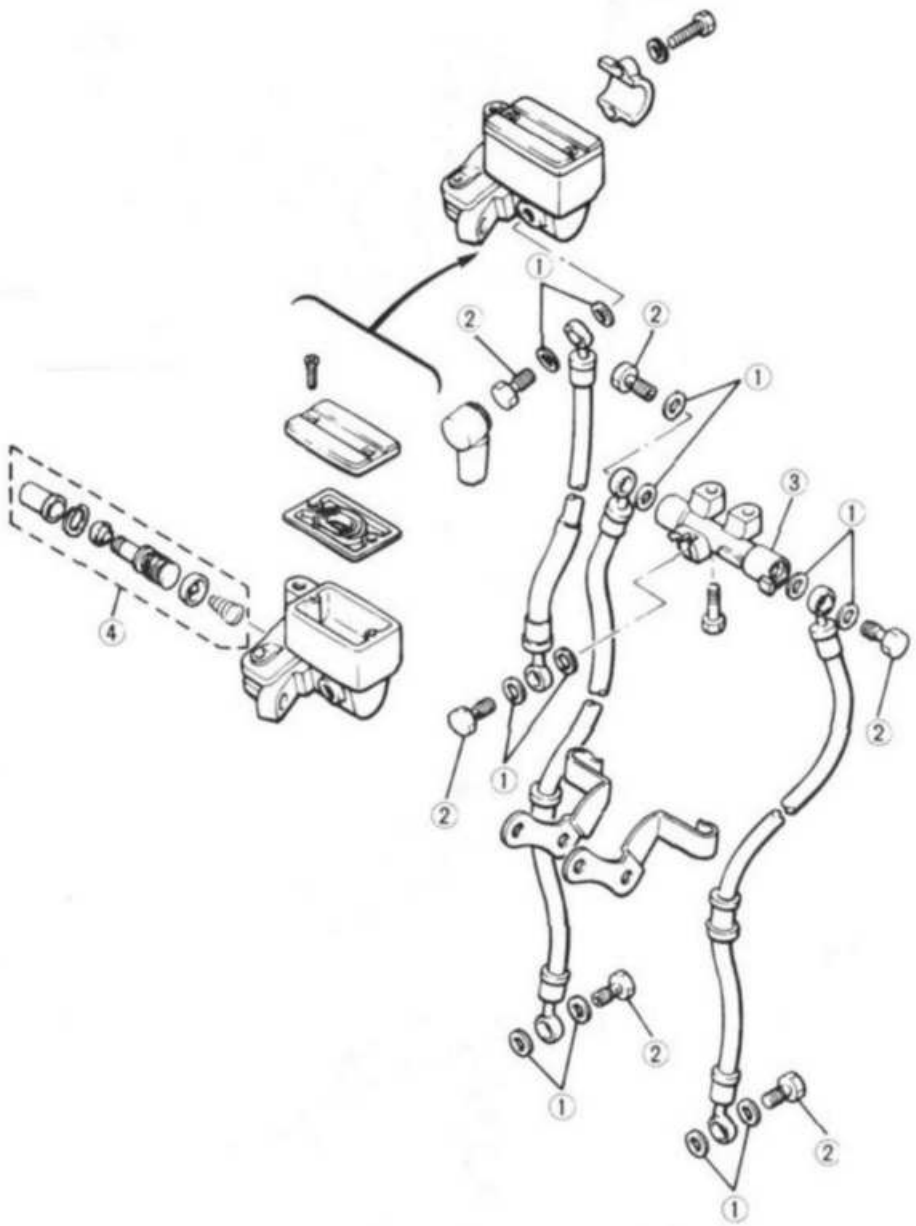
1. Collar
2. Oil seal
3. Bearing (B6302Z)
4. Spacer
5. Meter clutch
6. Clutch retainer
7. Gear unit assembly

C. Front Fork



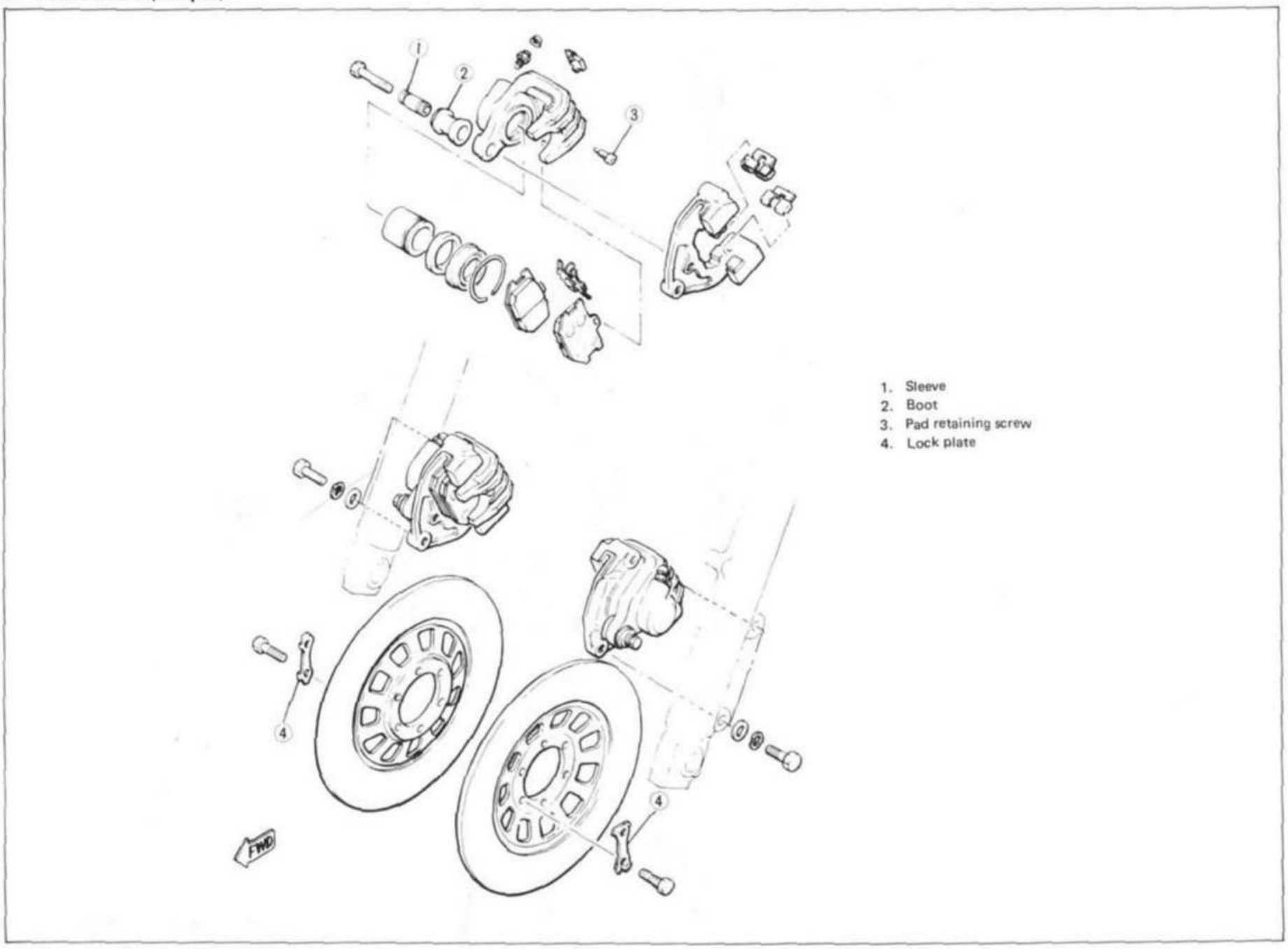
1. *Dust seal*
2. Oil lock piece
3. Clip
4. Oil seal
5. Cap
6. Clip
7. Spring seat
8. *O-ring*
9. Spring

D. Front Brake (Master Cylinder)



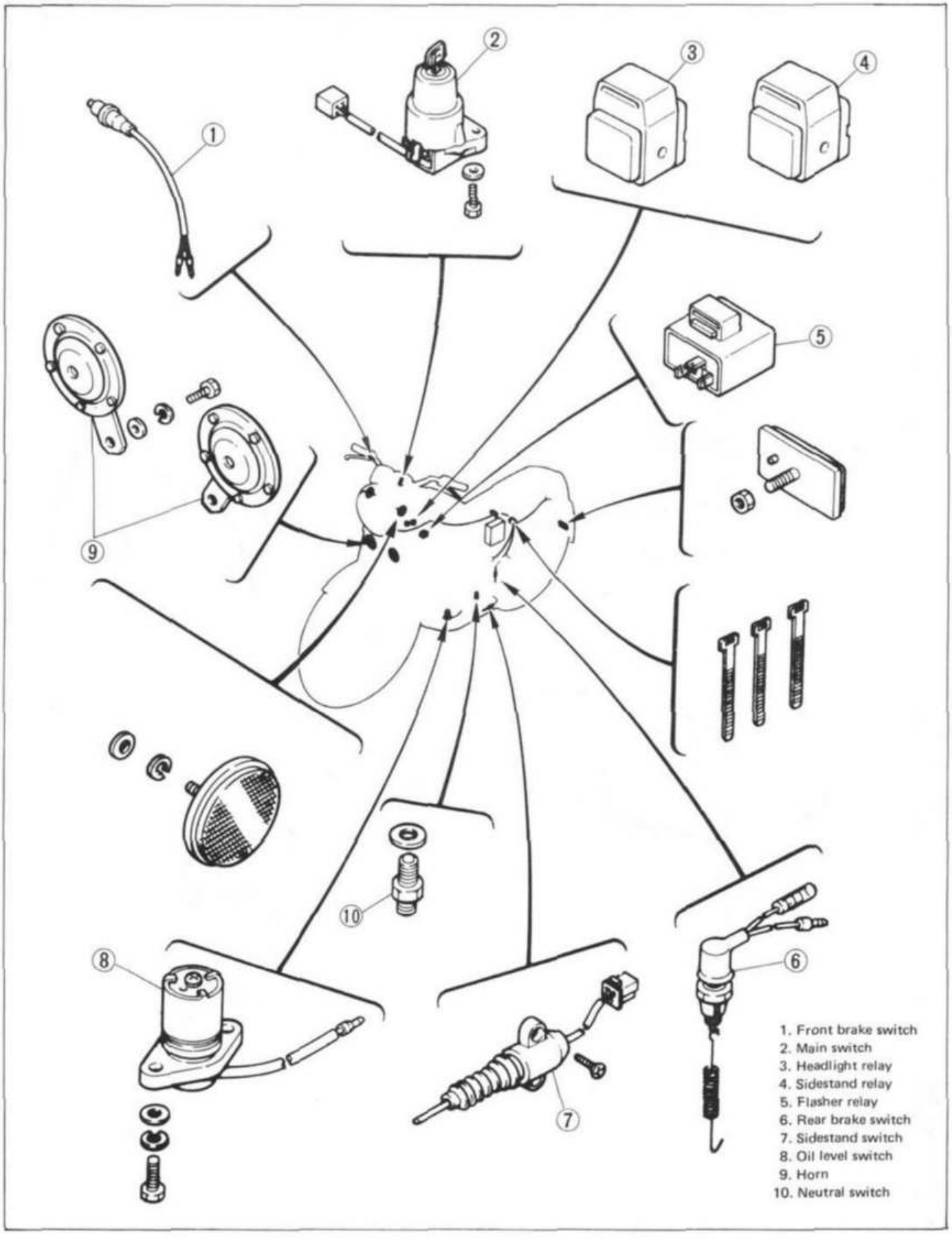
1. Copper washer
2. Union bolt
3. Joint
4. Master cylinder kit

E. Front Brake (Caliper)

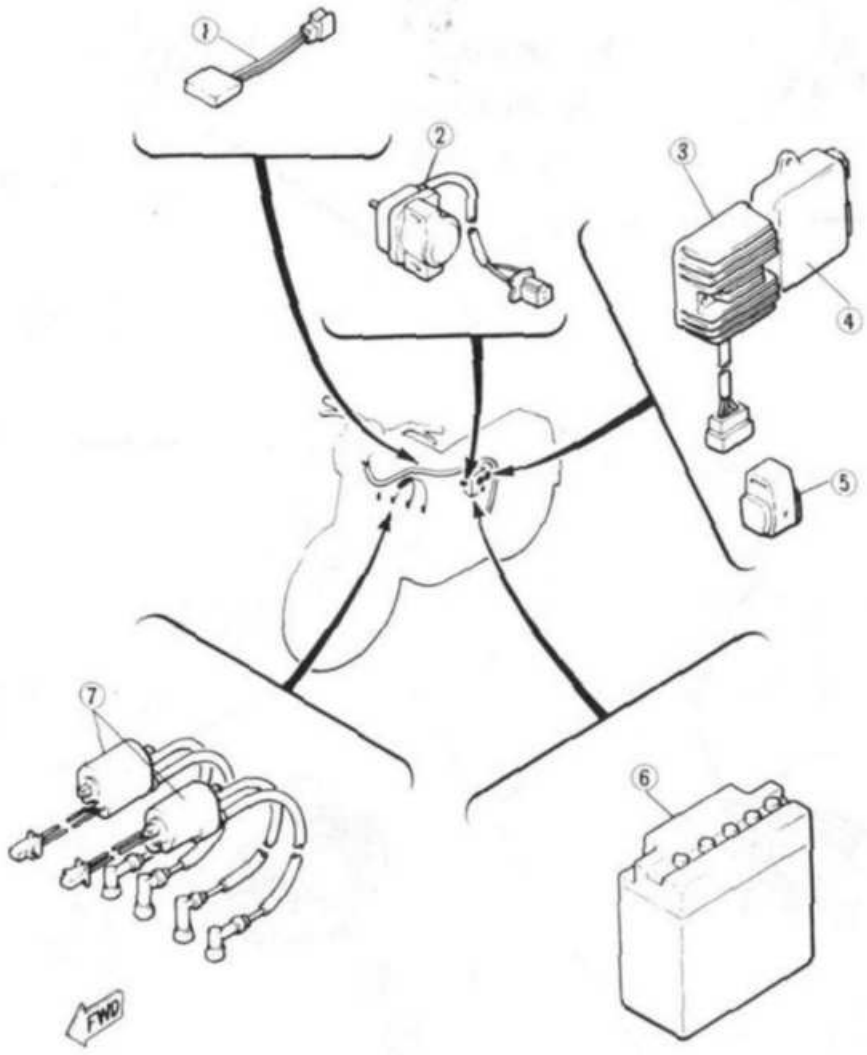


1. Sleeve
2. Boot
3. Pad retaining screw
4. Lock plate

F. Electrical (1)

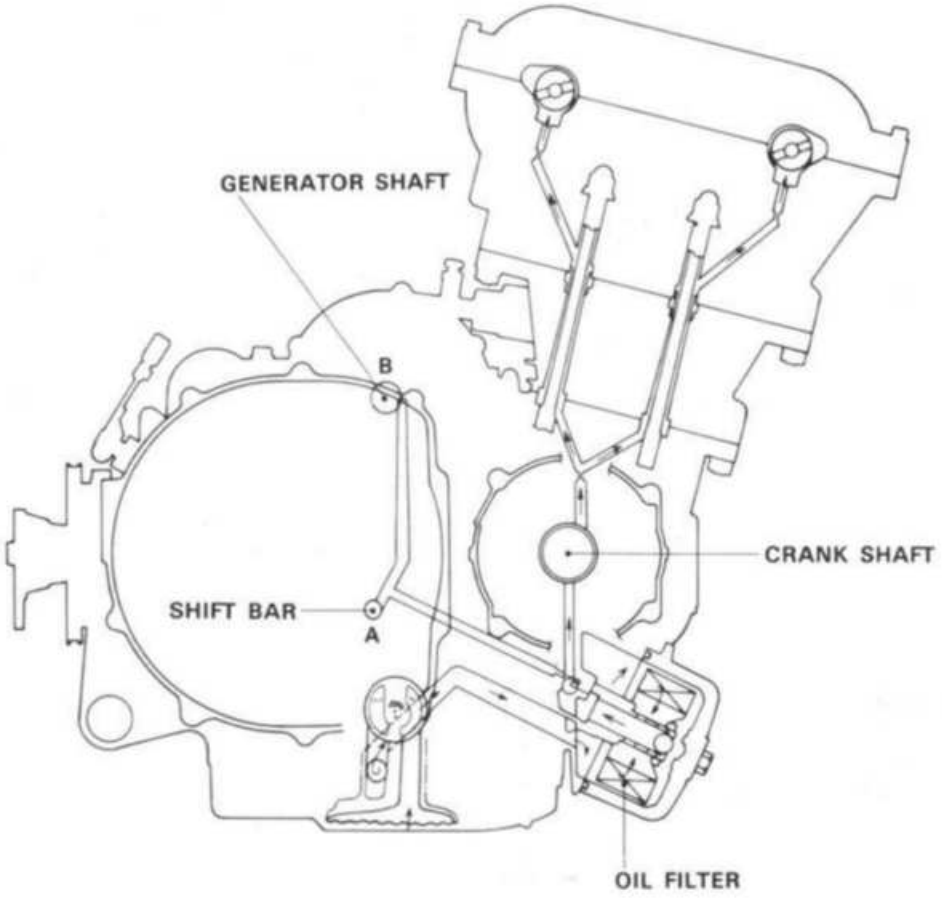


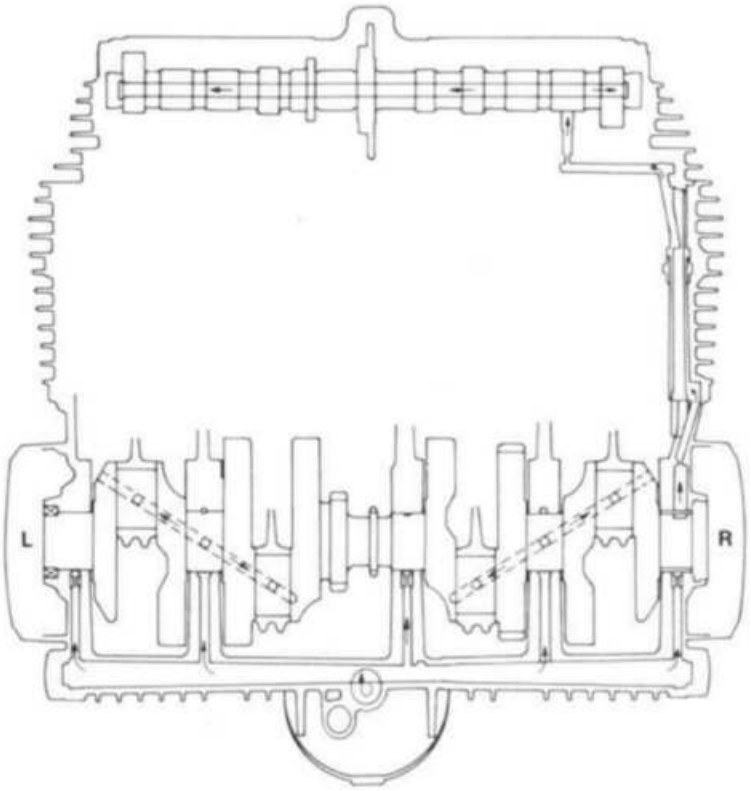
G. Electrical (2)

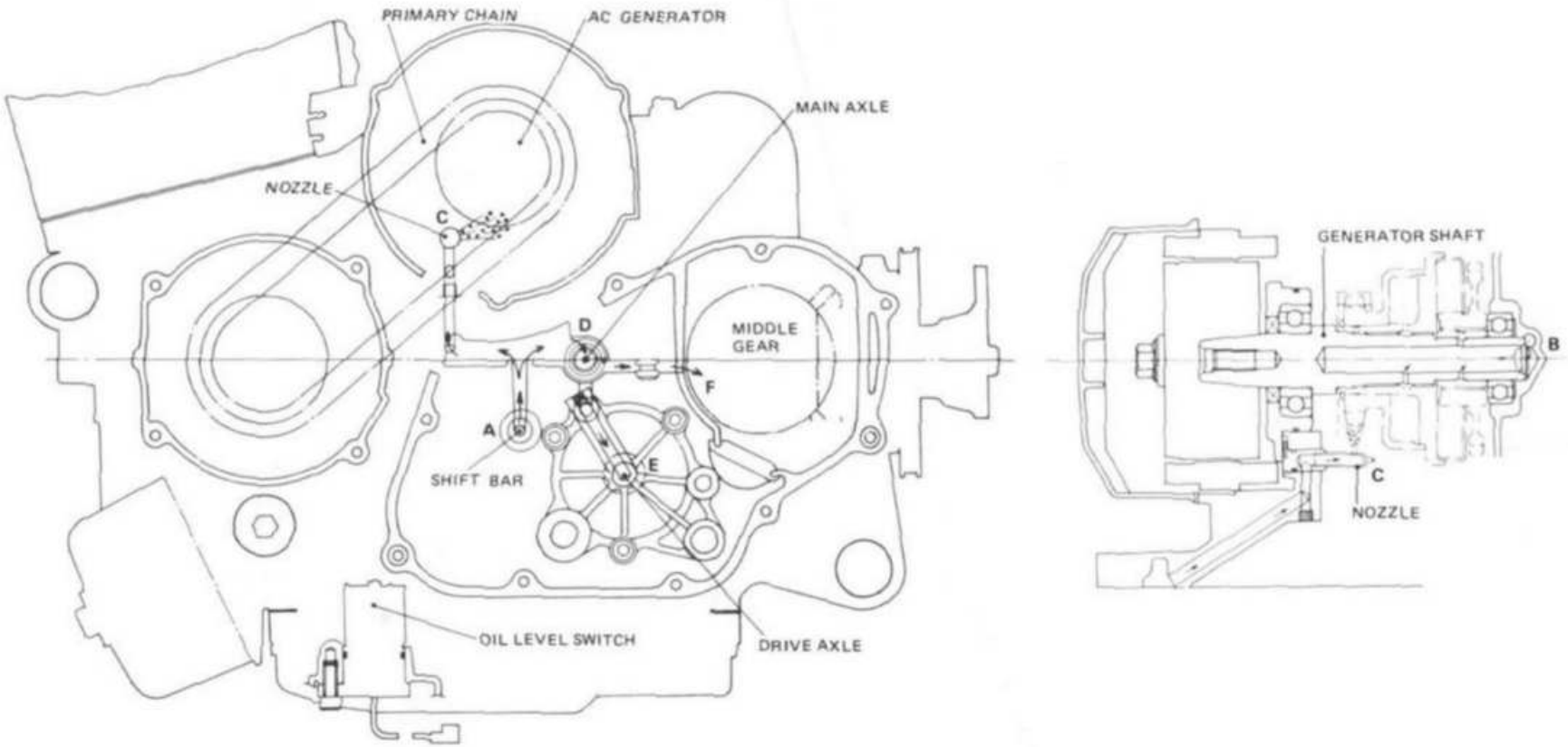


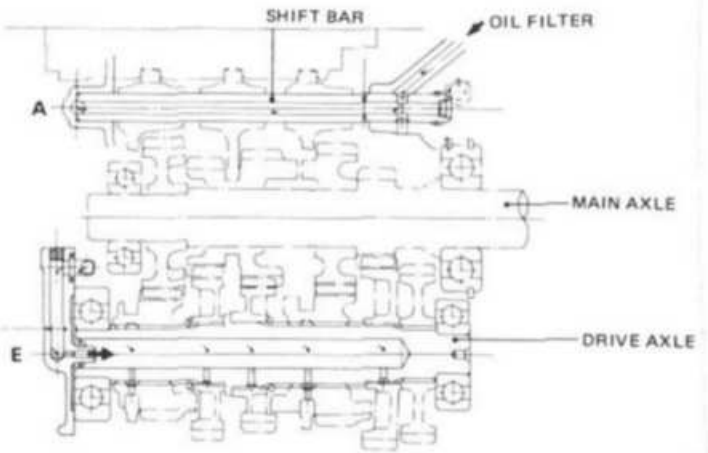
1. Diode block
2. Starter relay
3. Regulator
4. T.C.I. unit
5. Starting circuit cut-off relay
6. Battery
7. Ignition coil

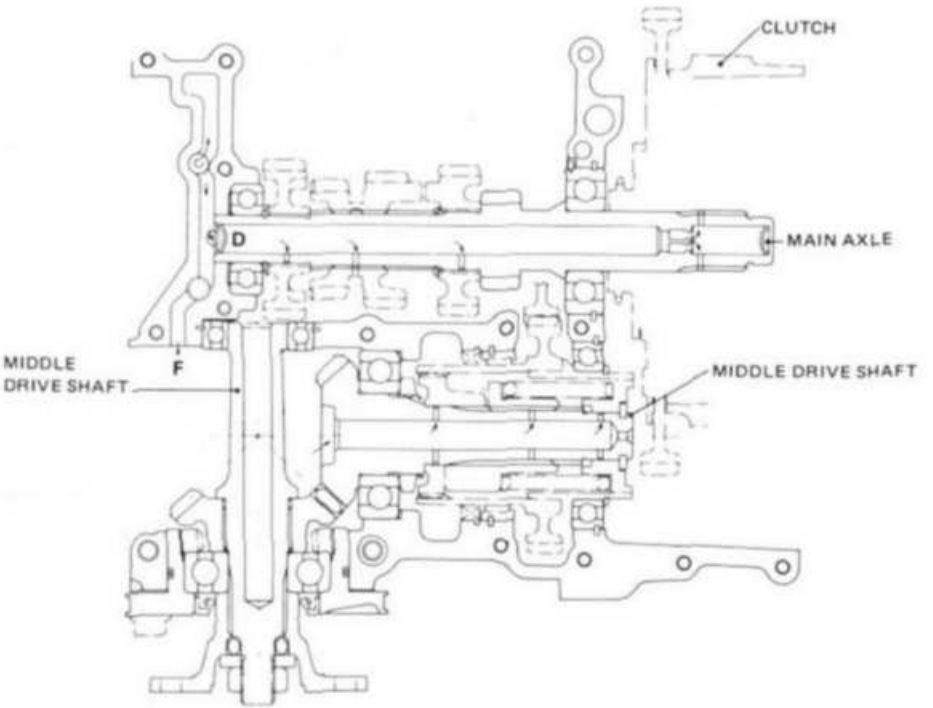
LUBRICATION DIAGRAM



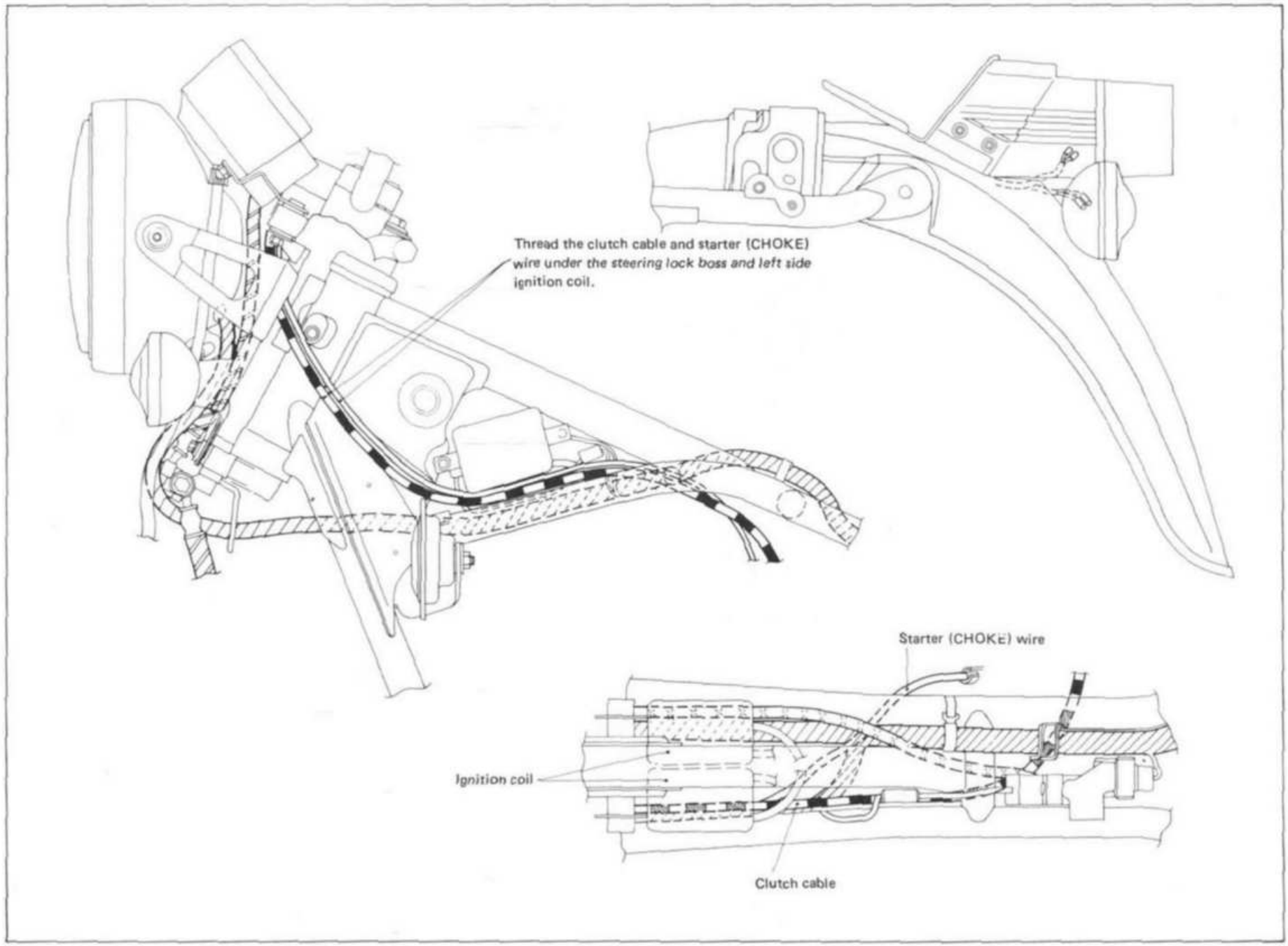


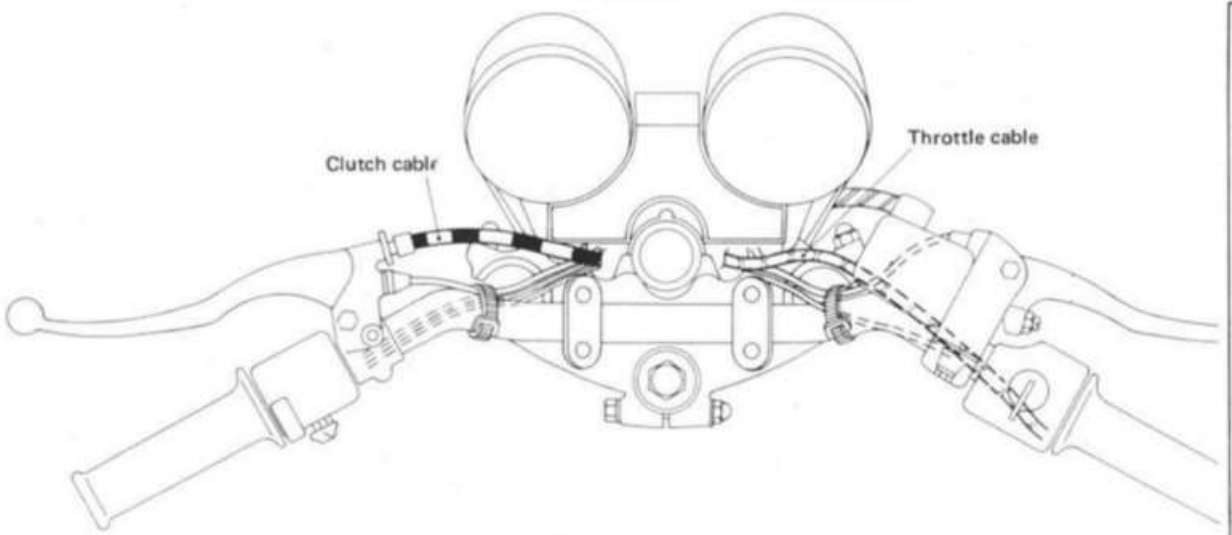

PRIMARY CHAIN
AC GENERATOR
MAIN AXLE
NOZZLE
C
D
MIDDLE GEAR
F
A
SHIFT BAR
E
OIL LEVEL SWITCH
DRIVE AXLE
GENERATOR SHAFT
B
C
NOZZLE

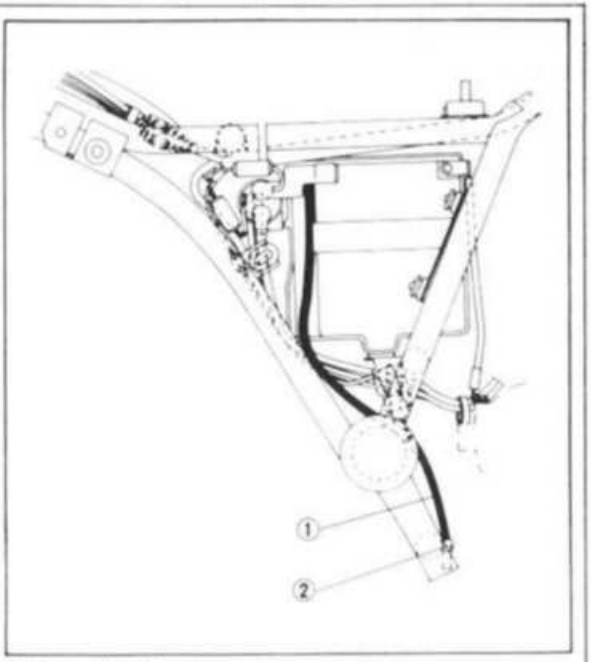

SHIFT BAR
OIL FILTER
A
MAIN AXLE
E
DRIVE AXLE


CLUTCH
D
MAIN AXLE
MIDDLE
DRIVE SHAFT
F
MIDDLE DRIVE SHAFT

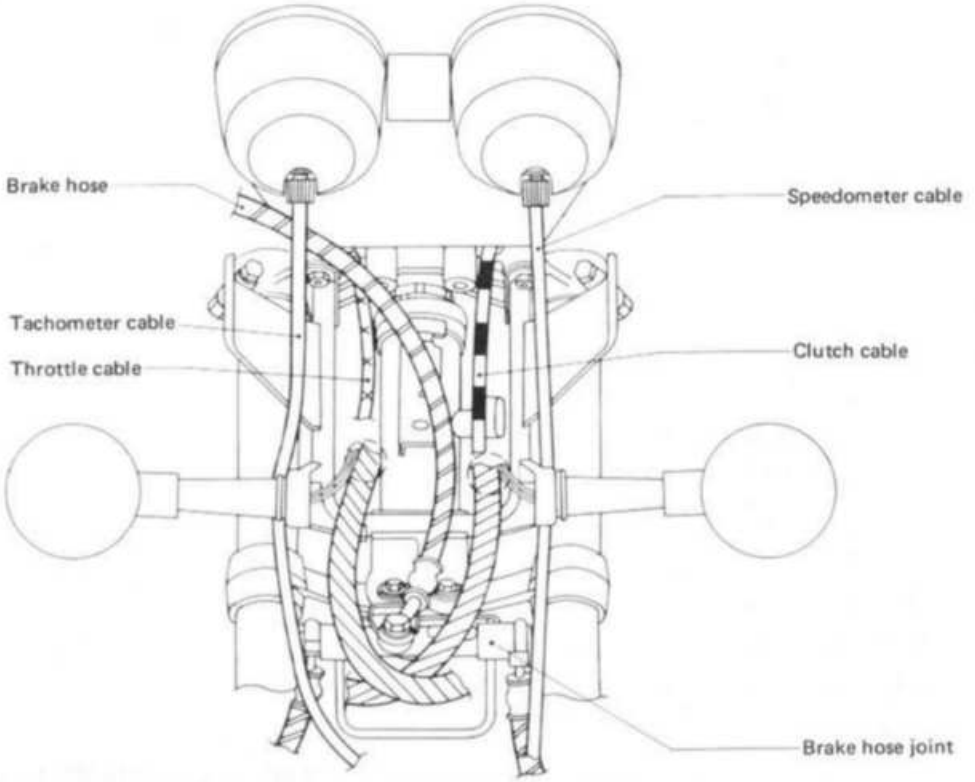
CABLE ROUTING

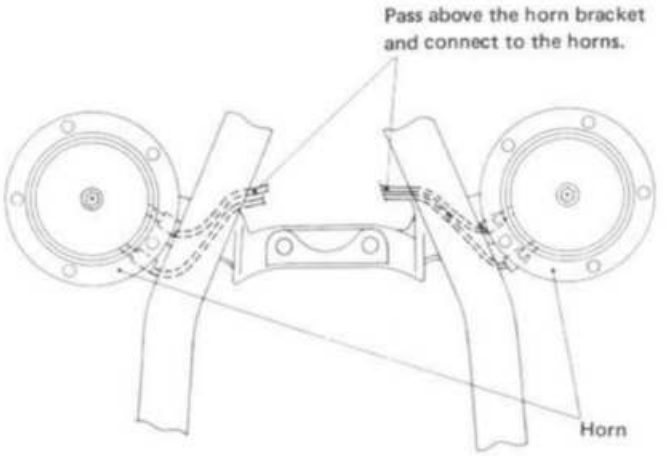






1. Battery breather pipe
2. Clamp





XJ650RJ WIRING DIAGRAM

