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PREFACE

This service manual describes the servicing procedures and special inspection/ adjustment instructions for the **KYMCO SNIPER 100/50.**

In this manual, many illustrations and drawings are used for better understanding.

The information and contents included in this manual may be different with the motorcycle in case specifications are changed.

KWANG YANG MOTOR CO., LTD.
SERVICE DIVISION
EDUCATION SECTION

Name & Model			
Overall Length (mm)			1725
Overall Width (mm)			625
Overall Height (mm)			1040
Wheel Base (mm)			1180
Engine Type			Single Cylinder 2-Stroke
Displacement (cc)			101.3 cc
Weight (Kg)	Front Wheel		35.5 kg
	Rear Wheel		51.5 kg
	Total		87 kg
Seating Capacity			(110kg)
Dry Weight(Kg)	Front Wheel		70 kg
	Rear Wheel		127 kg
	Total		197 kg
Tires	Front Wheel		3.00-10-4PR
	Rear Wheel		90/90-10(50J)
Ground Clearance (m)			
Braking Distance (m) (Initial Speed Km/h)			
Min. Turning Radius			
Starting System			Starting Motor and Kick Starter
Fuel Type			Gasoline, 2-stroke Motor Oil
Cylinder Arrangement			
Combustion Chamber Type			
Valve Arrangement			Reed Valve used with piston
Bore x Stroke (mm)			51 × 49.6
Compression Ratio			7.1:1
Compression Pressure(kg/cm²rpm)			13kg/cm² 6000
Max. Output (ps/rpm)			8.8/6750 ps/rpm
Max. Torque(kg m/rpm)			0.977/5500 kg m/rpm
Port Timing	Intake	Open	Automatic Controlled
		Close	Automatic Controlled
	Exhaust	Open	———
		Close	———
	Scavenge	Open	———
		Close	———
Idle Speed (rpm)			1800 ± 100rpm
Lubrication Type			Separate Type
Oil Pump Type			Plunger Type
Oil Filter Type			Full-flow Filtration

Lubrication Oil Capacity(ℓ)			1.2ℓ
Air Cleaner Type & No.			
Fuel Capacity (ℓ)			6.8 ℓ
Carburetor	Type		PB2AC
	Piston Dia. (mm)		———
	Venturi Dia. (mm)		16mm equivalent
Ignition System Type			Electromagnetic CDI Ignition
Ignition Timing F Mark			14°±2BTDC/1800rpm
Spark Plug			NGK BR6HSA
			ND ———
Spark Plug Gap (mm)			0.6~0.7mm
Battery Capacity(AH)			12V5AH
Power to Transmission Gear			Power - Transmission Gear - Clutch
Reduction Ratio of Power to Transmission Gear			———
Clutch Type			Dry Multi-disc Clutch
Transmission Gear Operation Type			Automatic Centrifugal Type
Transmission Ratio	1 Speed		
Reduction Gear	Type		2-speed Reduction
	1st Reduction Ratio		———
	2nd Reduction Ratio		———
Transmission Gear Type			Non-stage Transmission
Tire Pressure (kg/cm²)	Front		1.50kg/cm²
	Rear		1.75kg/cm²
Turning Angle			Right & Left
Brake System Type	Front		Expanding Type, Hydraulic Type
	Rear		↑
Suspension Type	Front		TESESCOPIC
	Rear		UNIT SWING
Shock Absorber Type	Front		Cylinder Type
	Rear		Simple Single Action
Frame Type			Back Bone
Exhaust Emission Concentration	Particulates Emission		— %
	CO		Below 4.5%
	HC		Below 7000 ppm

Name & Model			
Overall Length (mm)			1725
Overall Width (mm)			620
Overall Height (mm)			1040
Wheel Base (mm)			1180
Engine Type			Single Cylinder, 2-stroke
Displacement			49.4 cc
Weight (kg)	Front Wheel		35.5 kg
	Rear Wheel		48.5 kg
	Total		84 kg
Seating Capacity			2人(110kg)
Dry Weight(kg)	Front Wheel		70 kg
	Rear Wheel		124 kg
	Total		194 kg
Tires	Front Wheel		3.00-10-4PR
	Rear Wheel		90/90-10(50J)
Ground Clearance (m)			
Brake Distance (m) (Initial Speed km/h)			
Min. Turning Radius (m)			
Starting System			Starting Motor and Kick Starter
Fuel Type			Gasoline, 2-stroke Motor Oil
Cylinder Arrangement			
Combustion Chamber Type			
Valve Arrangement			Reed Valve used with Piston
Bore x Stroke (mm)			39 × 41.4
Compression Ratio			7.2:1
Compression Pressure(kg/cm²rpm)			12kg/cm² 6000
Max. Output (ps/rpm)			5.6/7500 ps/rpm
Max. Torque (kg m/rpm)			0.550/7000 kg m/rpm
Port Timing	Intake	Open	Automatic Controlled
		Close	Automatic Controlled
	Exhaust	Open	———
		Close	———
	Scavenge	Open	———
		Close	———
Idle Speed (rpm)			1800 ± 100rpm
Lubrication Type			Separate Type
Oil Pump Type			Plunger Type
Oil Filter Type			Full-Flow Filtration

Lubrication Oil Capacity(ℓ)			1.2 ℓ
Air Cleaner Type & No.			Wet, Single element
Fuel Capacity (ℓ)			6.8 ℓ
Carburetor	Type		PB2BB
	Piston Dia (mm)		———
	Venturi Dia.		14 mm equivalent
Ignition System Type			Electromagnetic CDI Ignition
Ignition Timing F Mark			17°±2BTDC/3000rpm
Spark Plug			NGK BR8HSA
			ND ———
Spark Plug Gap (mm)			0.6~0.7mm
Battery Capacity (AH)			12V4AH
Power to Transmission Gear			Power- Transmission Gear- Clutch
Reduction Ratio of Power to Transmission Gear			———
Clutch Type			Dry Multi-disc Clutch
Transmission Gear Operation Type			Automatic Centrifugal Type
Transmission Ratio	1 speed		
Reduction Gear	Type		
	1st Reduction Ratio		———
	2nd Reduction Ratio		———
Transmission Gear Type			Non-stage Transmission
Tire Pressure (kg/cm²)	Front		1.50kg/cm²
	Rear		1.75kg/cm²
Turning Angle			Right & Left
Brake System Type	Front		Expanding Type, Hydraulic Type
	Rear		Expanding Type
Suspension Type	Front		TESESCOPIC
	Rear		UNIT SWING
Absorber Type	Front		Cylinder Type
	Rear		Cylinder Single Action
Frame Type			Back Bone
Exhaust Emission Concentration	Particulates Emission		— %
	CO		Below 4.5%
	HC		Below 7000 ppm

2

GENERAL INFORMATION

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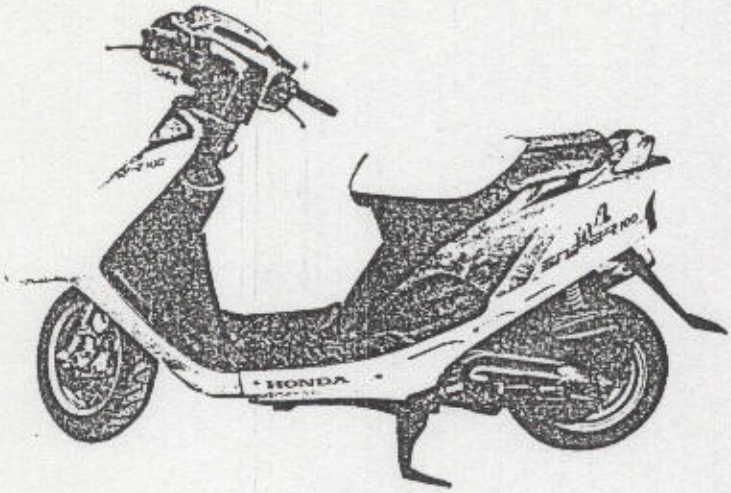
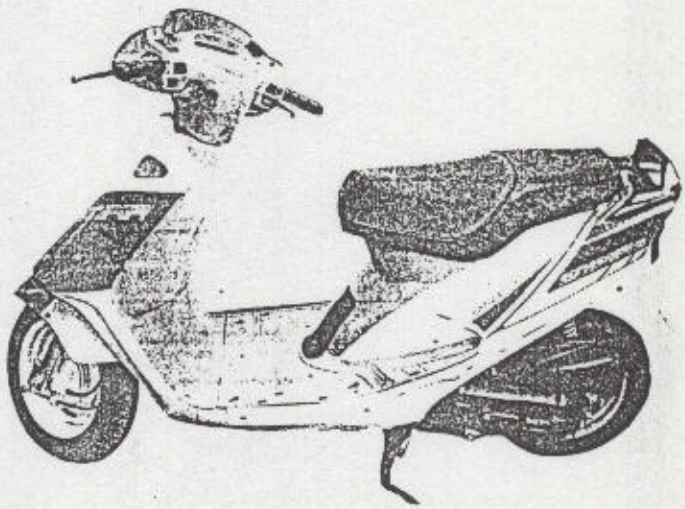
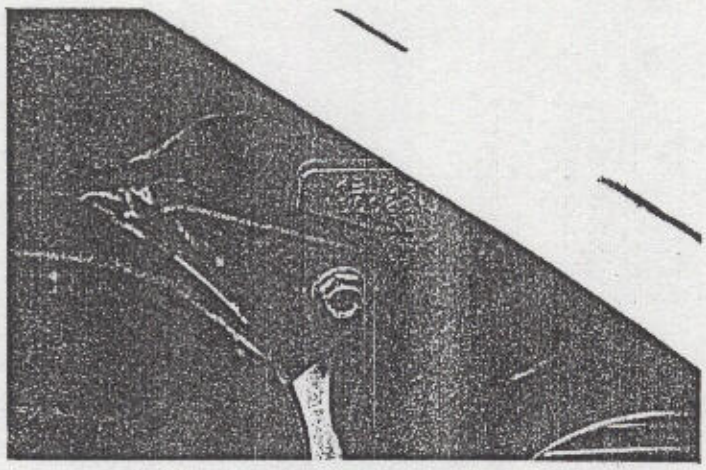
ENGINE SERIAL NUMBER/IDENTIFICATION



SNIPER 100



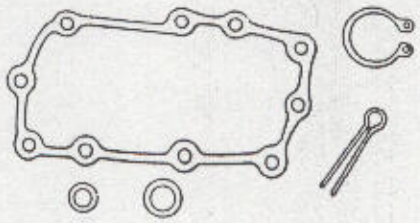
SNIPER 50



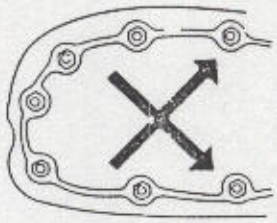
Location of Engine Serial Number

OPERATION PRECAUTIONS

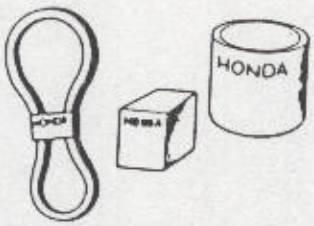
- Make sure to install new gaskets, O-ring, ring clamps, cotter pins, etc. when reassembling.



- When tightening bolts or nuts, begin with larger-diameter to smaller ones at several times, and tighten to the specified torque diagonally.

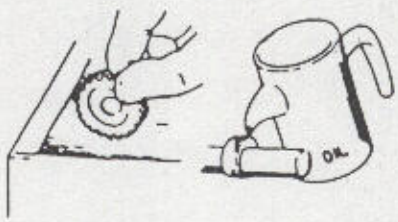


- Use genuine parts and lubricants.

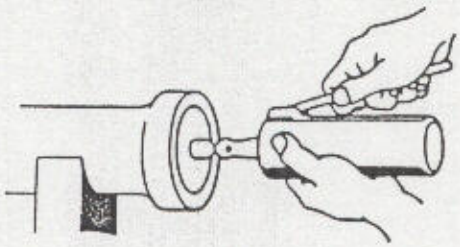


- When servicing the motorcycle, be sure to use special or common tools for removal and installation.

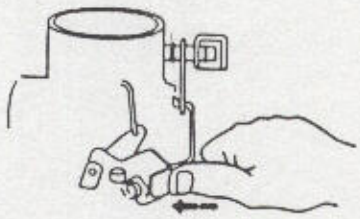
- After disassembly, clean removed parts. Lubricate sliding surfaces with engine oil before reassembly.



■ Apply or add designated greases and lubricants to specified lubrication points.



■ After reassembly, check all parts for proper installation and operation.



■ When two persons work together, pay attention to the mutual working safety.

■ Disconnect battery negative (-) terminal before operation.

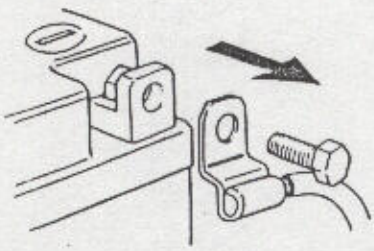
■ When using spanner and other tools, make sure not to damage the motorcycle surface.

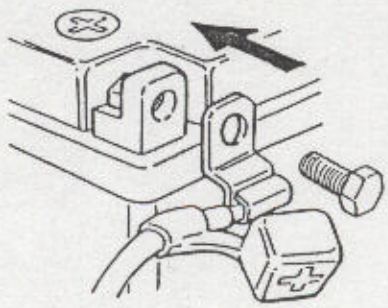
■ After operation, check all connecting points, fasteners and lines for proper connection and installation.

■ When connecting the battery, the positive (+) terminal shall be connected first.

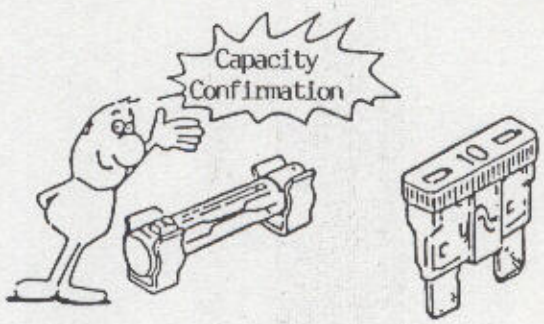
■ After connection, apply grease to battery terminals.

■ Terminal caps shall be securely installed.



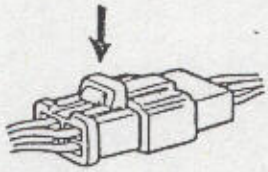


■ If the fuse is burned out, find the cause and repair it. Replace with a new fuse according to designated specification.



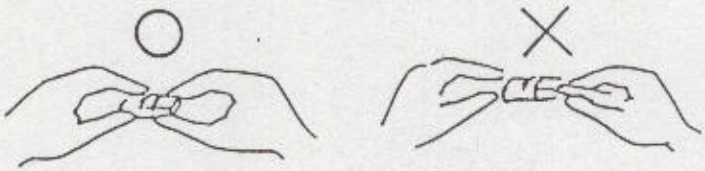
■ After operation, terminal caps shall be securely installed.

■ When taking out the connector, the lock on connector shall be released before operation.

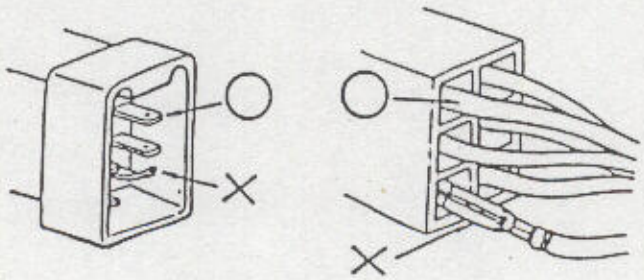


■ Hold the connector body when connecting or disconnecting it.

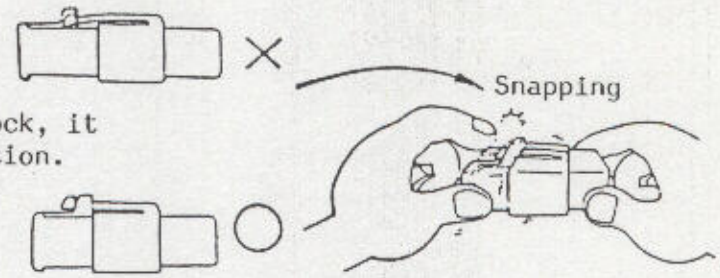
■ Do not pull the connector wire.



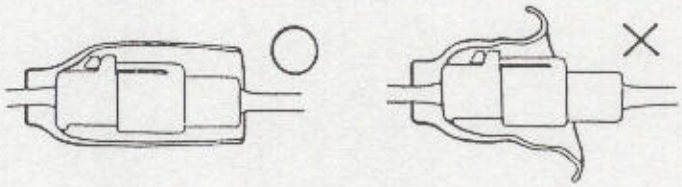
■ Check if any connector terminal is bending, protruding or loose.



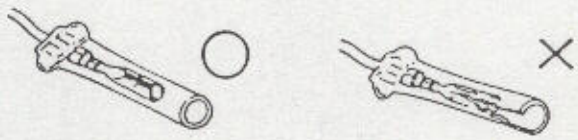
- The connector shall be completely inserted.
- If the double connector has a lock, it shall be locked at correct position.
- Check if there is any loose wire.



- Check the double connector cover for proper coverage and installation.

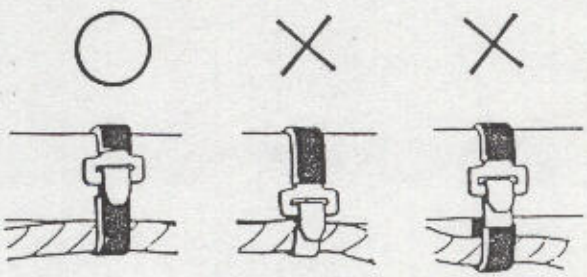


- Before connecting a terminal, check for damaged terminal cover or loose negative terminal.

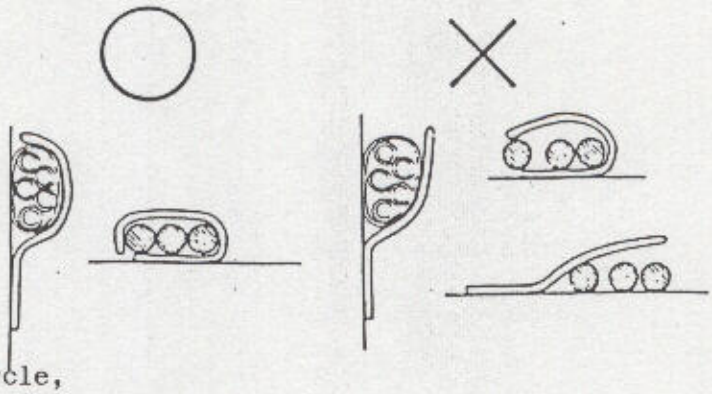


- Completely insert the terminal.
- Check the terminal cover for proper coverage.
- Do not make the opening of terminal cover face up.

- The wire harness binding belt shall be securely fastened on the specified position.
  The insulator on the aluminium binding belt shall be fixed with the wire harness.

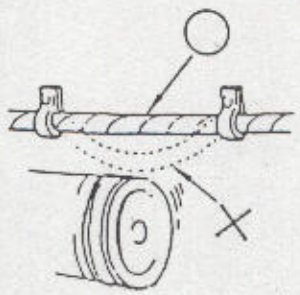


■ The wire harness shall be firmly held by clips.

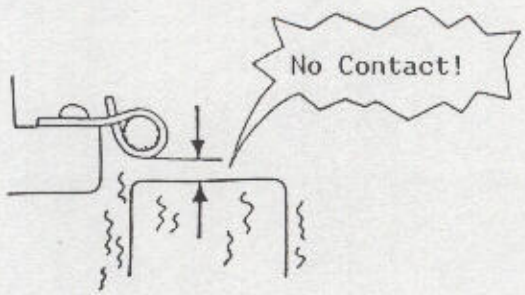


■ For any clip welded on the motorcycle, do not make it hold wire at the welding point.

■ When fixing the wire harness, do not make it contact the rotary, vibrating or movable parts.

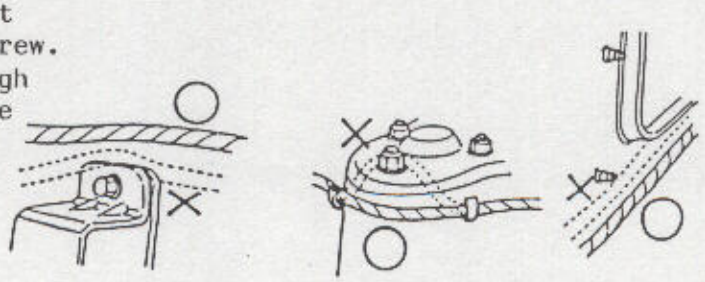


■ When fixing the wire harness, do not make it contact the parts which will generate high heat.

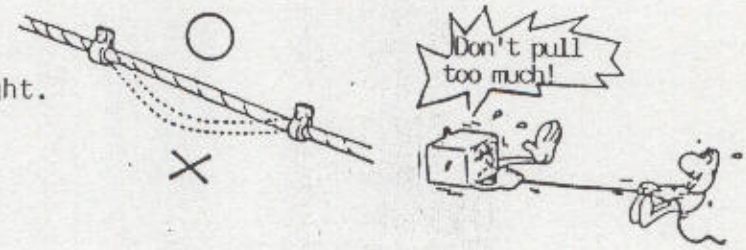


■ The wire harness shall pass through the side of sharp angle and do not place it on the pointed top of screw.

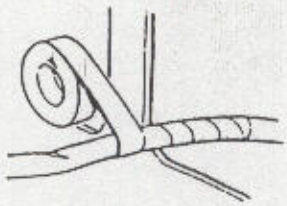
■ The wire harness shall pass through the side of screw and do not place it on the pointed top of screw.



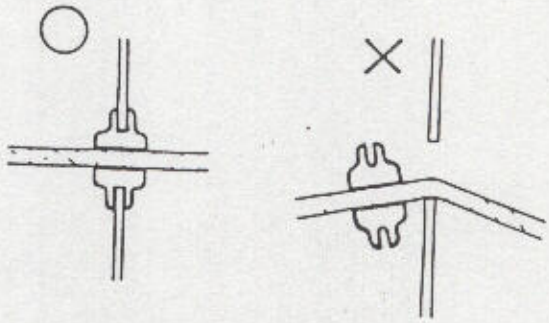
■ The wire harness shall not be installed too loose or too tight.



■ When wire harness has to contact sharp edge or angle, it shall be wrapped by tube or tape for protection.

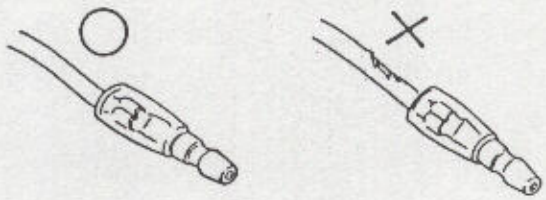


■ When rubber protecting cover is used to protect the wire harness, it shall be securely fixed.



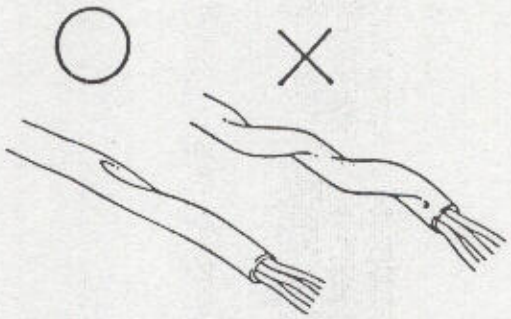
■ Do not break the sheath of wire.

■ If wire sheath is broken, wrap it with tape or replace it with a new one.

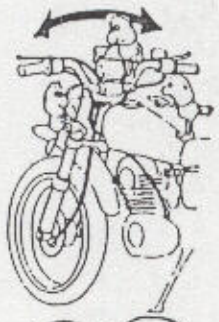


■ When installing other parts, do not press or squeeze the wire.

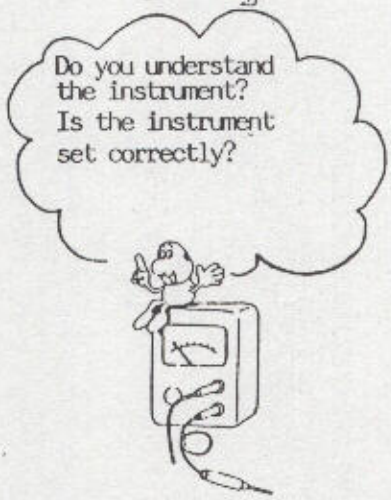
■ Do not twist the wire harness during installation.



■ Check if the wire harness is too loose, too tight, bending or rubbing sharp angle when the handlebar is turned right and left.



■ When a testing device is used, make sure to understand the operating methods thoroughly and operate according to the operating instructions.



■ Be careful not to drop any parts.

■ When rust is found on a terminal, remove the rust with sand paper or equivalent before connecting.

■ Symbols:

The following symbols represent the servicing methods and cautions included in this service manual.

Apply engine oil to the specified points (Use designated engine oil for lubrication)

Common :Use common tool

:Apply grease for lubrication

:Caution

OP Tool :Use OP tool

: Warning

Special :Use special tool

(→12—3.) :Refer to Page 12-3

SERVICE INFORMATION

ENGINE

Item	Standard (mm)		Service Limit (mm)	
	SNIPER 100	SNIPER 50	SNIPER 100	SNIPER 50
Cylinder head warpage	———	———	0.10	0.10
Piston O.D. (4mm from bottom of piston skirt)	50.955~50.97	38.970~38.955	50.90	38.90
Cylinder-to-piston clearance	0.03~0.07	←	0.10	0.10
Piston pin hole I.D.	14.002~14.008	12.002~12.008	14.03	12.03
Piston pin O.D.	13.994~14.0	11.994~12.0	13.98	11.98
Piston-to-piston pin clearance	0.002~0.014	←	0.03	←
Piston ring end gap (top/second)	0.30~0.40	0.10~0.25	0.50	0.40
Connecting rod small end I.D.	19.005~19.017	17.005~17.017	19.03	17.03
Cylinder bore	51.0~51.25	39.0~39.025	51.05	39.05
Drive belt width	17.5	18	16.5	17
Drive pulley bushing I.D.	23.989~24.052	←	24.24	←
Drive pulley boss O.D.	23.974~23.960	20.010~20.025	23.934	19.97
Weight roller O.D.	16.08	13.0	15.4	12.4
Clutch outer I.D.	112.0~112.2	107.0~107.2	112.5	107.5
Driven pulley spring free length	154.6	98.1	149.3	92.8
Driven pulley bushing O.D.	33.965~33.985	←	33.94	←
Driven pulley bushing I.D.	34.0~34.25	←	34.06	←
Connecting rod big end side clearance				
Connecting rod big end radial clearance				
Crankshaft runout A/B				

	SNIPER 100	SNIPER 50
Venturi dia.	16mm equivalent	14mm equivalent
Identification number	PB2AC	PB2BB
Float level	16.3mm	16.3mm
Main jet	88#	78#
Idle jet	35#	40#
Air screw opening	1 ¾ ± ¼	1 ¼ ± ¼
Idle speed rpm	1800±100	2000±100
Throttle grip free play	2~6mm	2~6mm
Jet needle clip notch	1st notch	1st notch

● FRAME

Item		Standard (mm)		Service Limit (mm)	
		SNIPER 100	SNIPER 50	SNIPER 100	SNIPER 50
Axle shaft runout		——	——	0.2	0.2
Front wheel rim runout	Radial			2.0	
	Axial			2.0	
Front shock absorber spring free length		1963	1963	193.2	193.2
Rear wheel rim runout				2.0	2.0
Brake drum I.D.	Front/Rear	110	110	111	111
Brake lining thickness	Front/Rear	4.0/4.0	4.0/4.0	2.0/2.0	2.0/2.0
Brake disc runout	Front/Rear	——	——	0.30	0.30
Rear shock absorber spring free length		232	232	225	225

● ELECTRICAL EQUIPMENT

			SNIPER 100	SNIPER 50
Battery	Capacity		13.0~13.2V	13.0~13.2V
	Voltage		0.5A/5H	0.4A/5H
	Charging rate	Standard	5A/0.5H	4A/0.5H
		Quick	BR8ESA	BR8ESA
Spark plug	(NGK)		0.6~0.7	0.6~0.7
Spark plug gap			0.2~0.3Ω	0.2~0.3Ω
Ignition coil resistance	Primary coil		7.8~9.0KΩ	8.0~9.3KΩ
	Secondary coil (with spark plug cap)		3.0~4.2KΩ	3.0~4.2KΩ
	Secondary coil (without spark plug cap)		90~150Ω	90~150Ω
Pulser coil resistance (20°C)			14°±2BTDC/1800rpm	17°±2BTDC/3000rpm
Ignition timing				

● TIGHTENING TORQUE

● ENGINE

Item	Thread Dia (mm)	Torque (kg-m)	Remarks
Cylinder head bolt	BF7×115	1.5~1.7	(cold)
Driven pulley nut	NH12	5.0~6.0	
Clutch outer nut	NH10	3.5~4.5	
Drive face nut	10	3.5~4.0	
Oil level check bolt	10	1.0~1.5	
Engine lock nut	BF10×70	4.5~5.5	
Engine hanger lock nut	BF10×50	4.5~5.5	
Exhaust pipe joint lock nut	NC 6mm	1.0~1.4	
Exhaust pipe lock bolt	BF8×35	3.0~3.6	
Spark plug		1.1~1.7	(cold)

● FRAME

Item	Thread Dia (mm)	Torque (kg-m)	Remarks
Handlebar lock nut	10	4~5	Flange bolt/U-nut
Steering stem nut	25.4	8.0~12.0	
Top ball race lock nut	25.4	0.5~1.3	
Front axle nut	12	5.0~7.0	Flange U-nut
Rear axle nut	14	10~12.0	Flange U-nut
Rear brake arm nut			Flange Nut
Front shock absorber bolt	8	2.4~3.0	Flange bolt/U-nut
Front shock absorber bottom bolt			Cross head
Front shock absorber bottom nut			
Front damper loct nut	8	1.5~2.5	Apply bolt locking agent
Front rocker shaft bolt			Flange bolt/U-nut
Front shock absorber nut	10	3.5~4.5	Flange nut
Rear shock absorber bottom bolt	8	2.4~3.0	
Rear damper lock nut	8	1.5~2.5	

Torque specifications listed above are for important fasteners. Others should be tightened to standard torque values below.

● STANDARD TORQUE VALUES

SH bolt: 8mm flange 6mm bolt

Item	Torque (kg-m)	Item	Torque (kg-m)
5mm bolt and nut	0.45~0.6	5mm screw	0.35~0.5
6mm bolt and nut	0.8~1.2	6mm screw and SH bolt	0.7~1.1
8mm bolt and nut	1.8~2.5	6mm flange bolt and nut	1.0~1.4
10mm bolt and nut	3.0~4.0	8mm flange bolt and nut	2.4~3.0
12mm bolt and nut	5.0~6.0	10mm flange bolt and nut	3.5~4.5

● SPECIAL AND COMMON TOOLS

● SPECIAL TOOLS

Tool Name	Tool No.	Remarks	Ref. Page
Universal bearing puller	07631-0010000	Crankshaft bearing removal	
Lock nut wrench 39mm	07916-187002	Drive face disassembly/assembly	
Lock socket wrench	07916-1870100	Top ball race holding	
Lock nut wrench	07916-KM10000	Steering stem nut removal/ installation	
Crankcase puller	07935-GK80000	Crankcase disassembly	
Crankcase puller	07935-KG80000	Crankcase disassembly	
Bearing remover set 12mm (Remover set 12mm) (Block)	07936-1660001 (07936-1660100) (07741-0010201)	Drive shaft bearing removal/ installation	
Bearing remover set 15mm (Remover set 15mm) (Remover head 15mm) (Remover shaft 15mm)	(07936-KC10000) (07936-KC10500) (07936-KC10200) (07936-KC10100)	Drive shaft bearing removal	
Bearing outer driver 28x30mm	07946-1870100	Bearing installation	
Bearing driver	07945-GC80000	Driven outer bearing installation	
Clutch spring compressor	07960-KM10000	Driven pulley disassembly/ assembly	
Crankshaft assembly socket	07965-GM00100	Driven shaft, crankshaft and crankcase assembly	
Rear shock absorber remover A	07967-GA70101	Front shock absorber dis-assembly/assembly	
Ball race driver	07946-GA70000	Steering stem bearing race	
Rear shock absorber remover B	07967-GA70200	Rear shock absorber dis-assembly/assembly	
Rear shock absorber remover	07967-KM10100	Front shock absorber dis-assembly/assembly	

● COMMON TOOLS

Tool Name	Tool No.	Remarks	Ref. Page
Float level gauge	07401-0010000	Carburetor fuel level check	
Universal holder	07725-0030000	Flywheel holding	
Flywheel puller	07733-0010000	Flywheel removal	
Driver pilot 12mm	07746-004200	Drive shaft bearing installation	

Tool Name	Tool No.	Remarks	Ref. Page
Bearing outer driver 32x35mm	07746-0010100	Drive shaft bearing and final drive shaft bearing installation	
Driver pilot	07746-0040300	Final drive shaft bearing installation	
Bearing outer driver 37x40mm	07746-0010200	Drive shaft bearing, final drive shaft bearing and crankshaft bearing installation	
Outer remover 24x26mm	07746-0010700	Drive pulley bearing installation	
Driver pilot 10mm	07746-0040100	Front wheel bearing installation	
Bearing driver pilot 17mm	07746-0040400	Drive pulley bearing installation	
		Drive shaft bearing, final drive shaft bearing and crankshaft bearing installation	
Bearing outer driver 42x47mm	07746-0010300	Crankshaft bearing installation	
Driver pilot 20mm	07746-0040500	Crankshaft bearing installation	
Bearing outer driver handle (A)	07749-0010000	Bearing installation Drive in ball race	
Bearing puller head 10mm	07746-0050100	Front wheel bearing removal	
Absorber spring compressor	07746-0050200	Front/rear shock absorber disassembly/assembly	
Bearing puller	07959-3290001	Front wheel bearing removal	
Pressure Tester Set	07410-0010000 (07410-0020100) (07410-0020200)	Cylinder compression gauge	

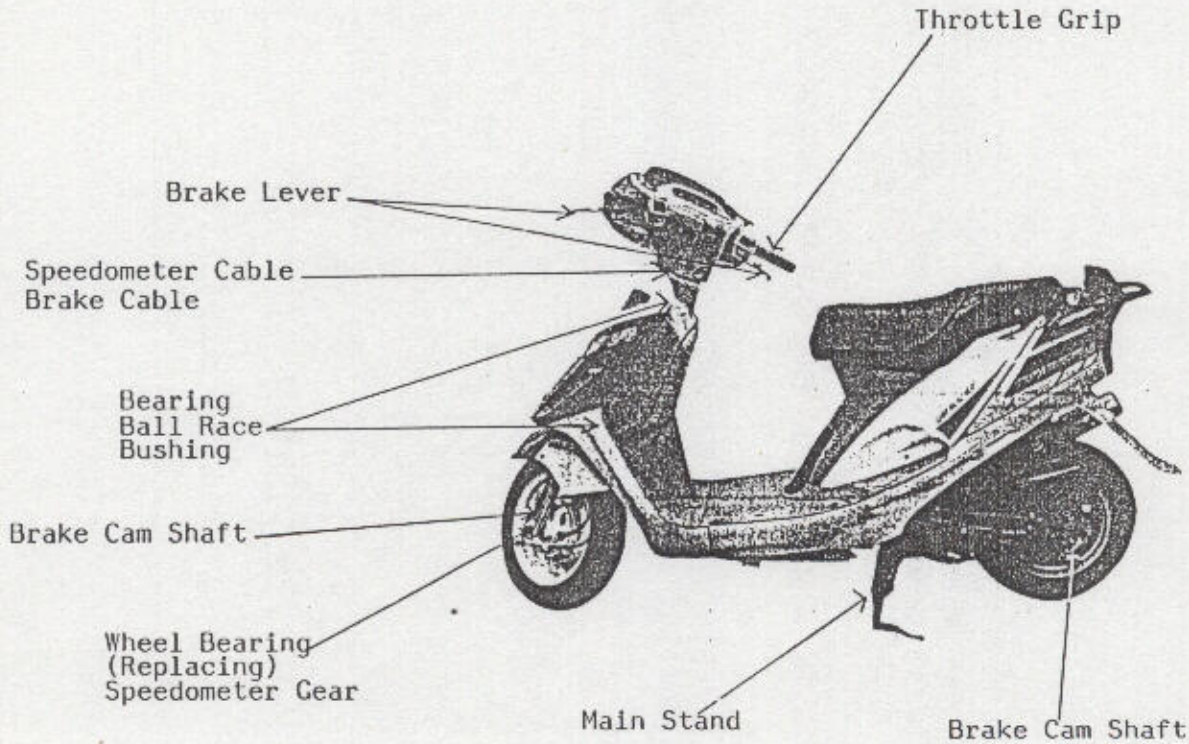
LUBRICATION CHART

ENGINE

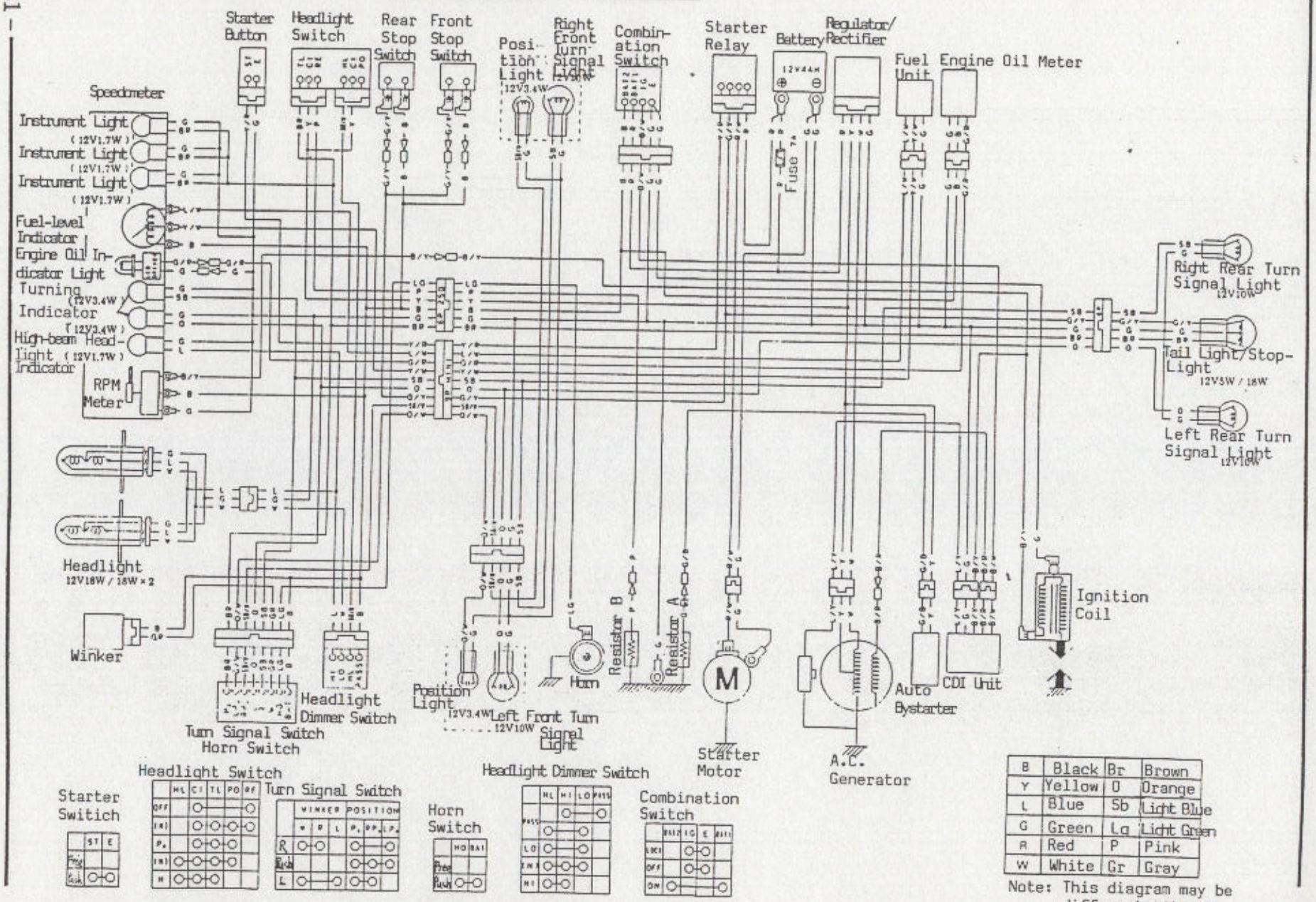
NO	Lubrication Points	Lubricant	Remarks
1	Crankcase sliding & movable parts	KYMCO ULTRA 2-stroke Motor Oil	
2	Cylinder sliding parts		
3	Drive gearbox (Final gear)	KYMCO SIGMA Gear Oil 90#	
4	Kick starter spindle bushing	Grease	
5	Drive pulley sliding parts	Grease	
6	Drive pinion sliding parts	Grease	

FRAME

Apply clean engine oil or grease to movable parts not specified. This will avoid abnormal noise and rise the durability of the motorcycle.



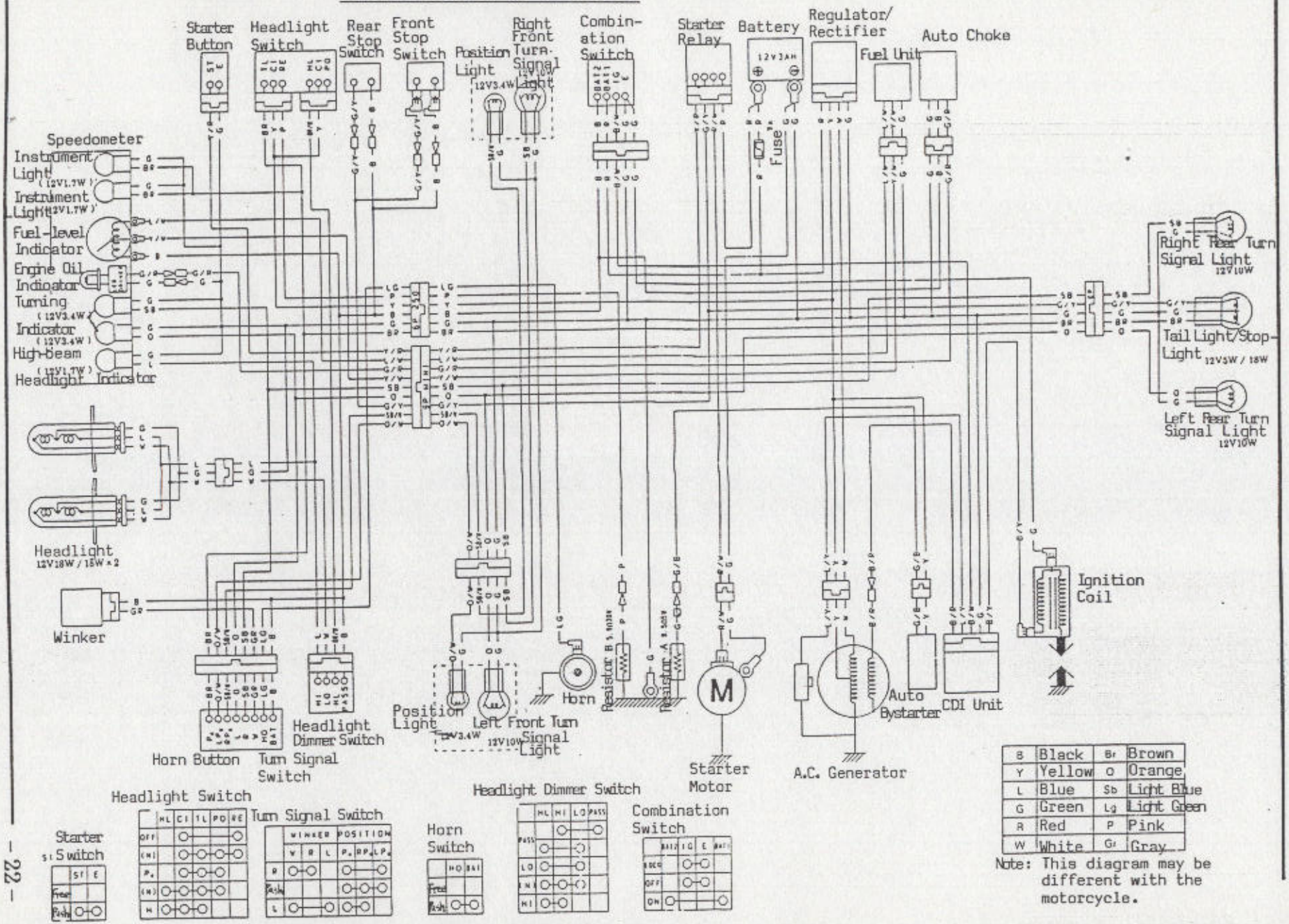
WIRING DIAGRAM OF SNIPER 100



B	Black	Br	Brown
Y	Yellow	O	Orange
L	Blue	Sb	Light Blue
G	Green	Lg	Light Green
R	Red	P	Pink
W	White	Gr	Gray

Note: This diagram may be different with the motorcycle.

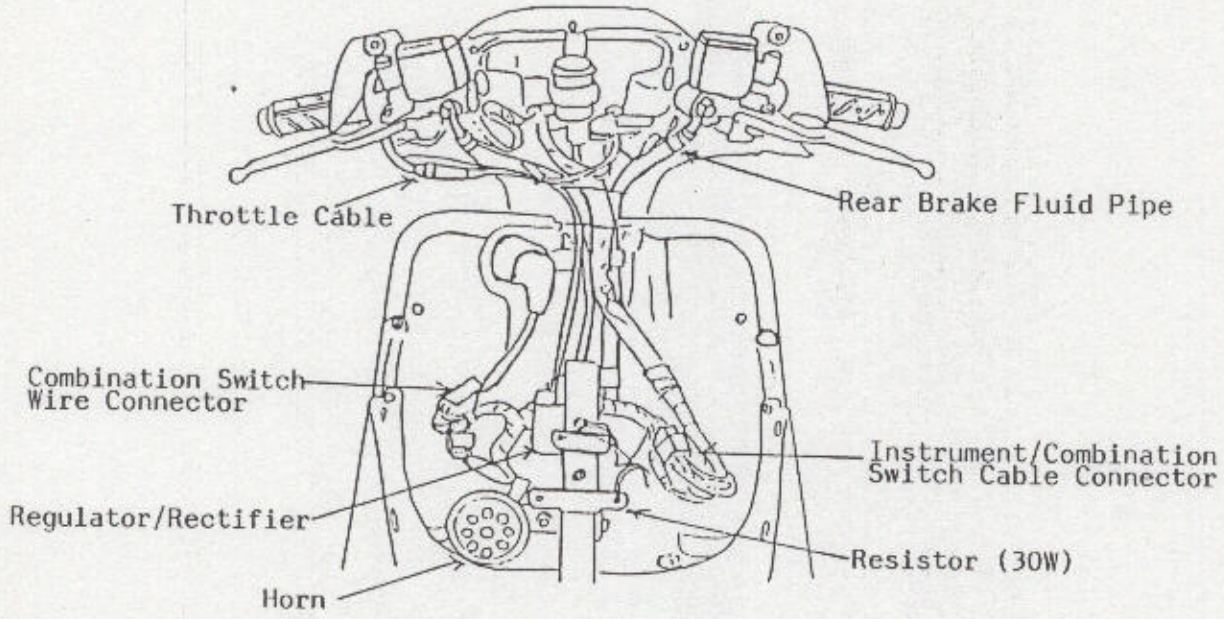
WIRING DIAGRAM OF SNIPER 50

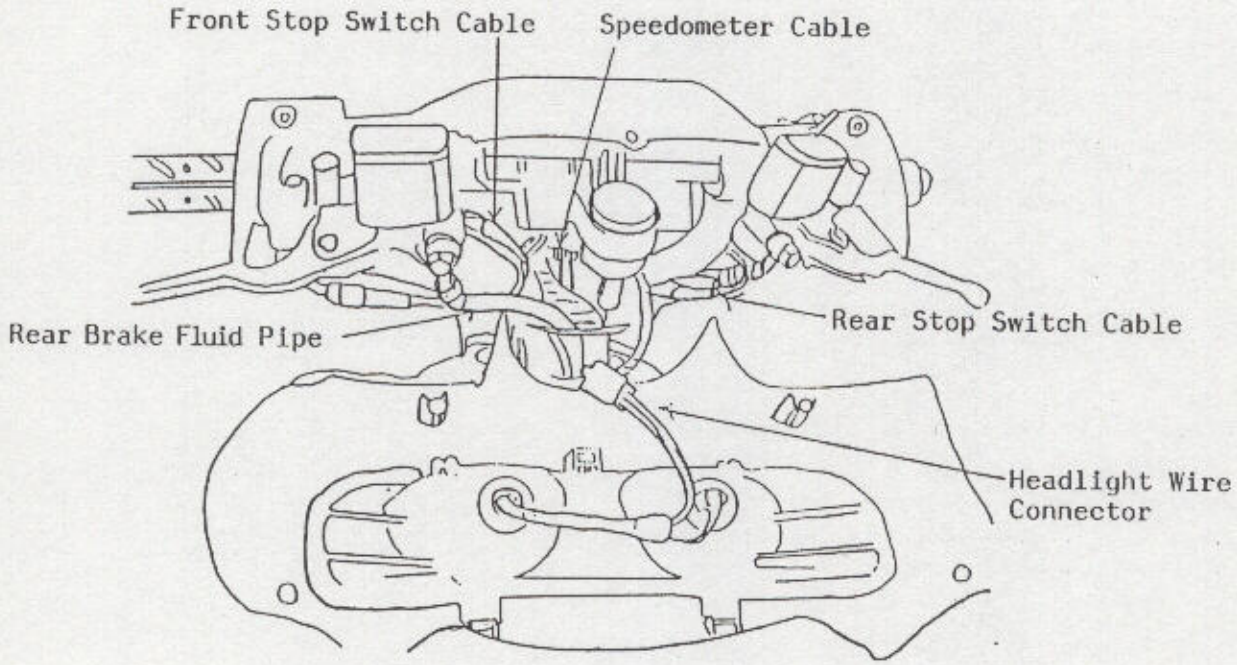


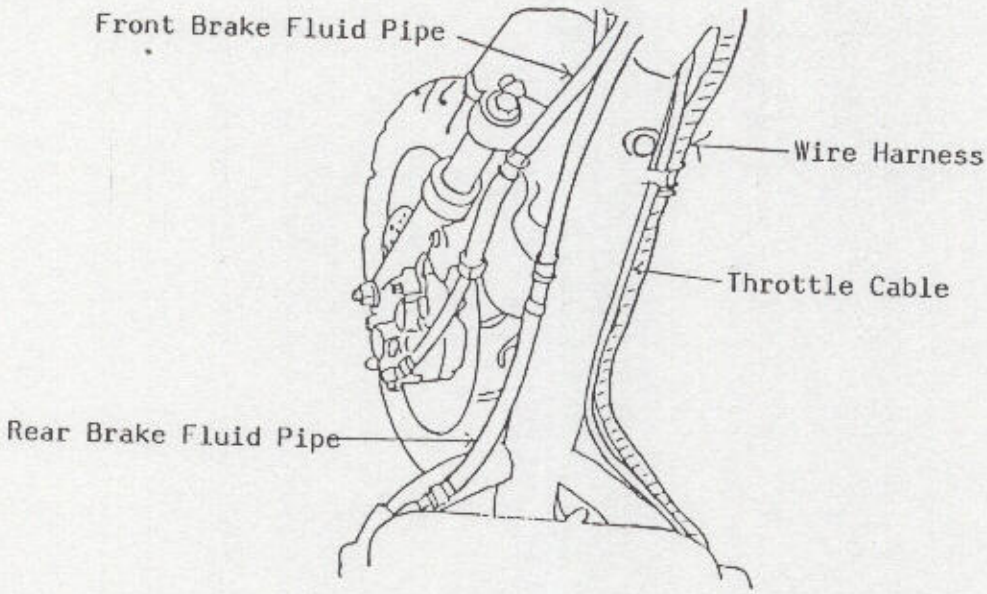
B	Black	Br	Brown
Y	Yellow	O	Orange
L	Blue	Sb	Light Blue
G	Green	Lg	Light Green
R	Red	P	Pink
W	White	Gr	Gray

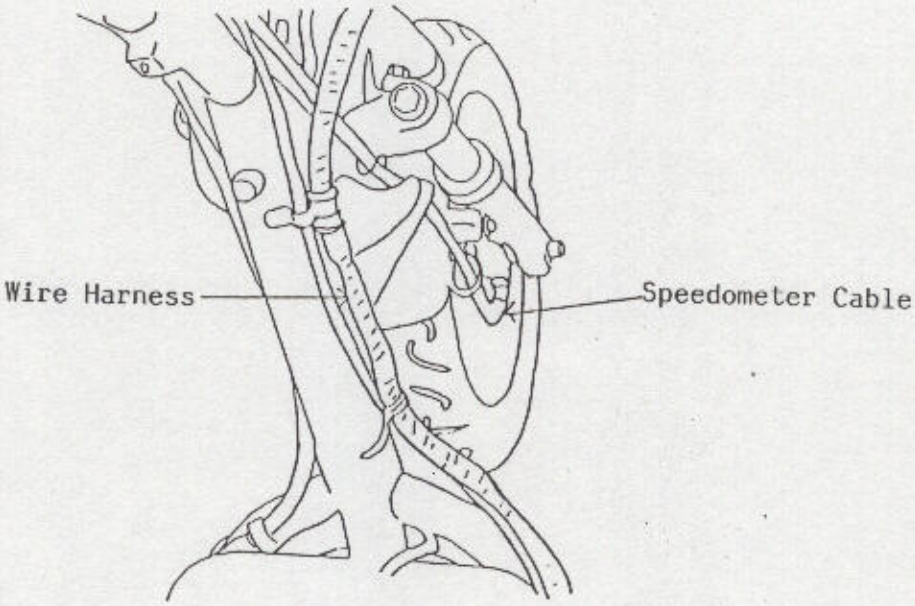
Note: This diagram may be different with the motorcycle.

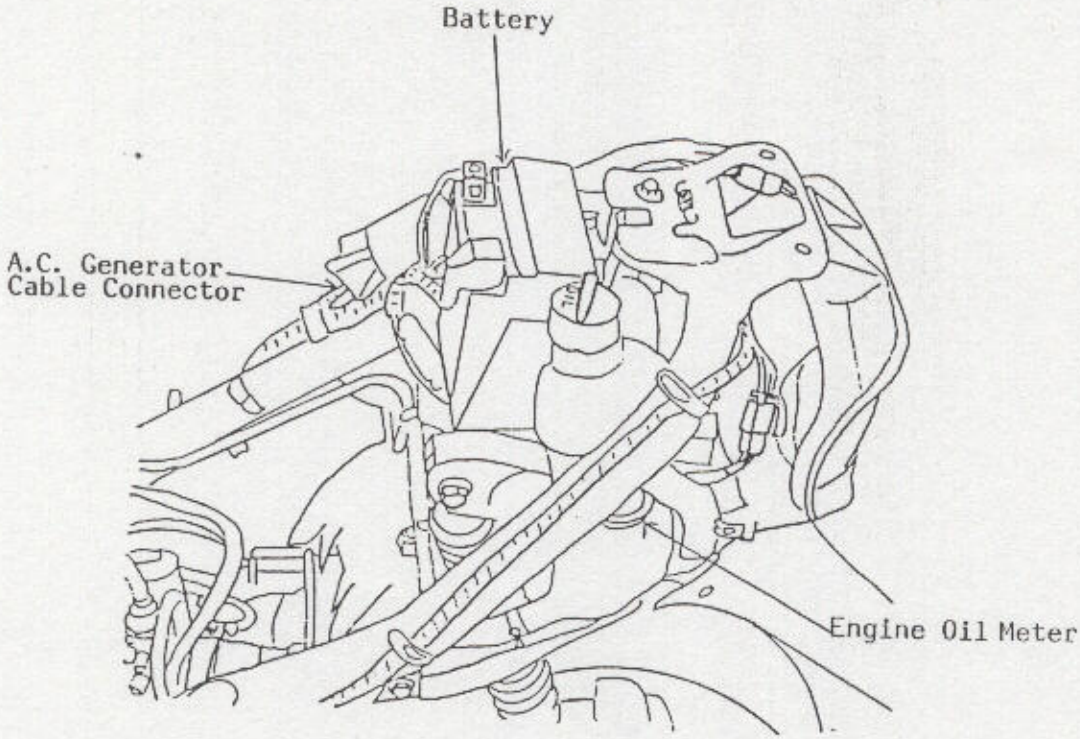
CABLE & HARNESS ROUTING

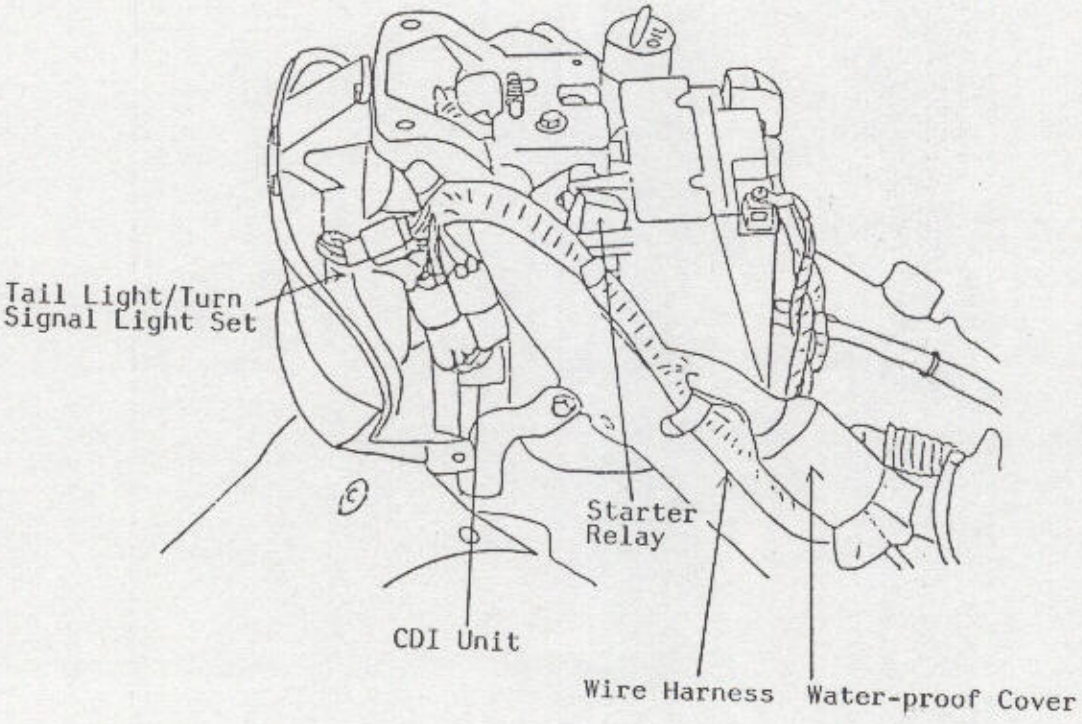


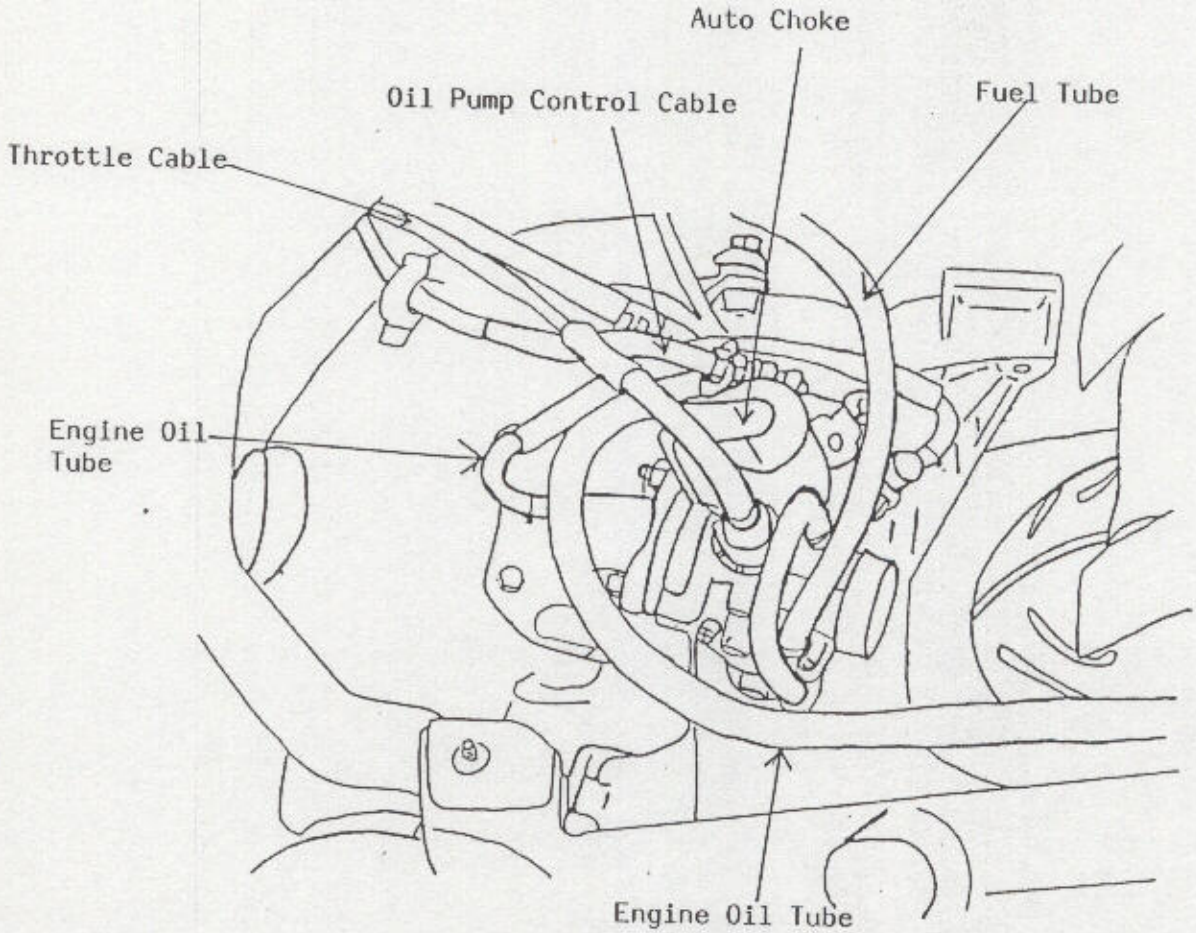



Front Brake Fluid Pipe
Wire Harness
Throttle Cable
Rear Brake Fluid Pipe


Wire Harness
Speedometer Cable

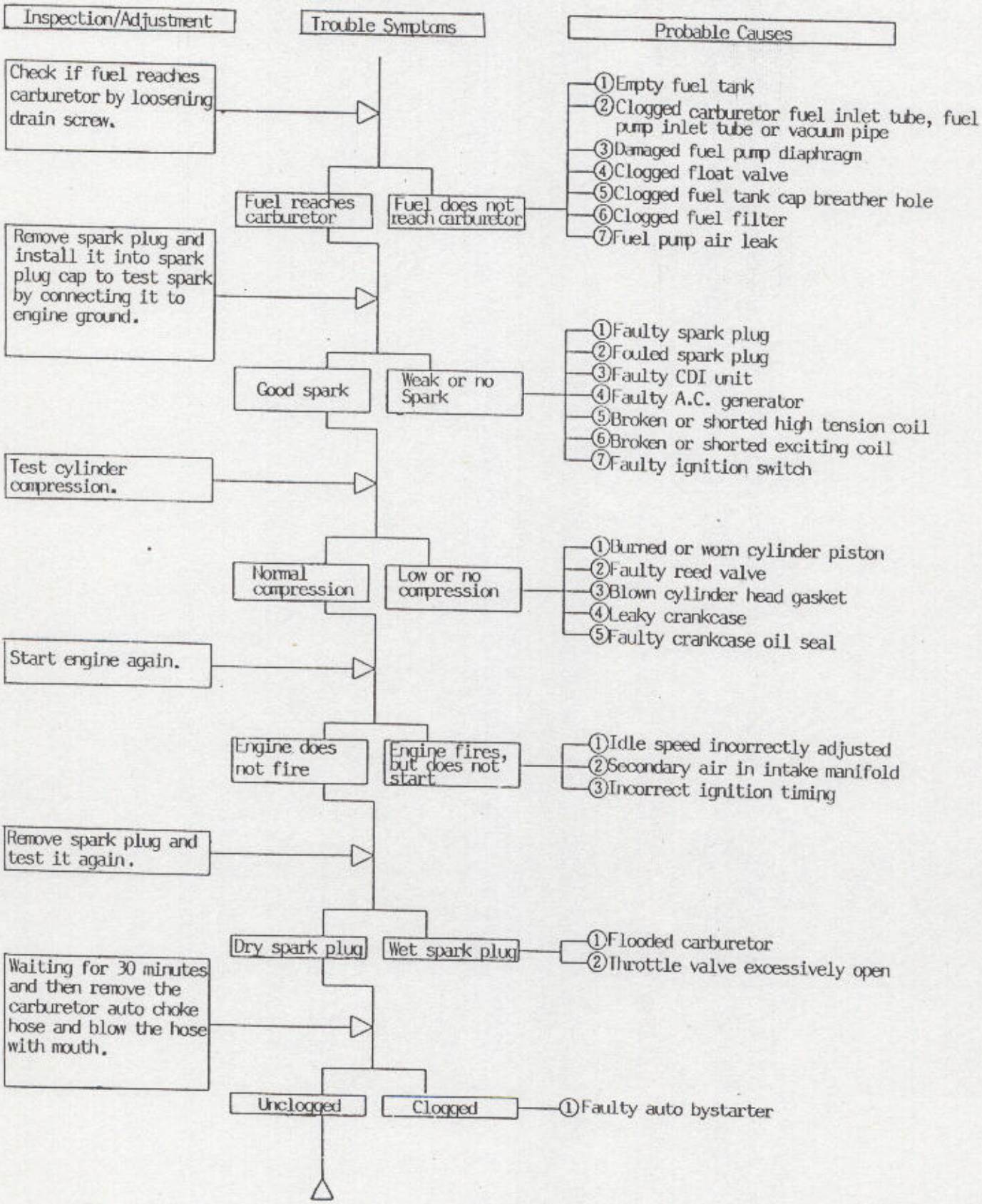

Battery
A.C. Generator
Cable Connector
Engine Oil Meter


Tail Light/Turn
Signal Light Set
Starter
Relay
CDI Unit
Wire Harness
Water-proof Cover

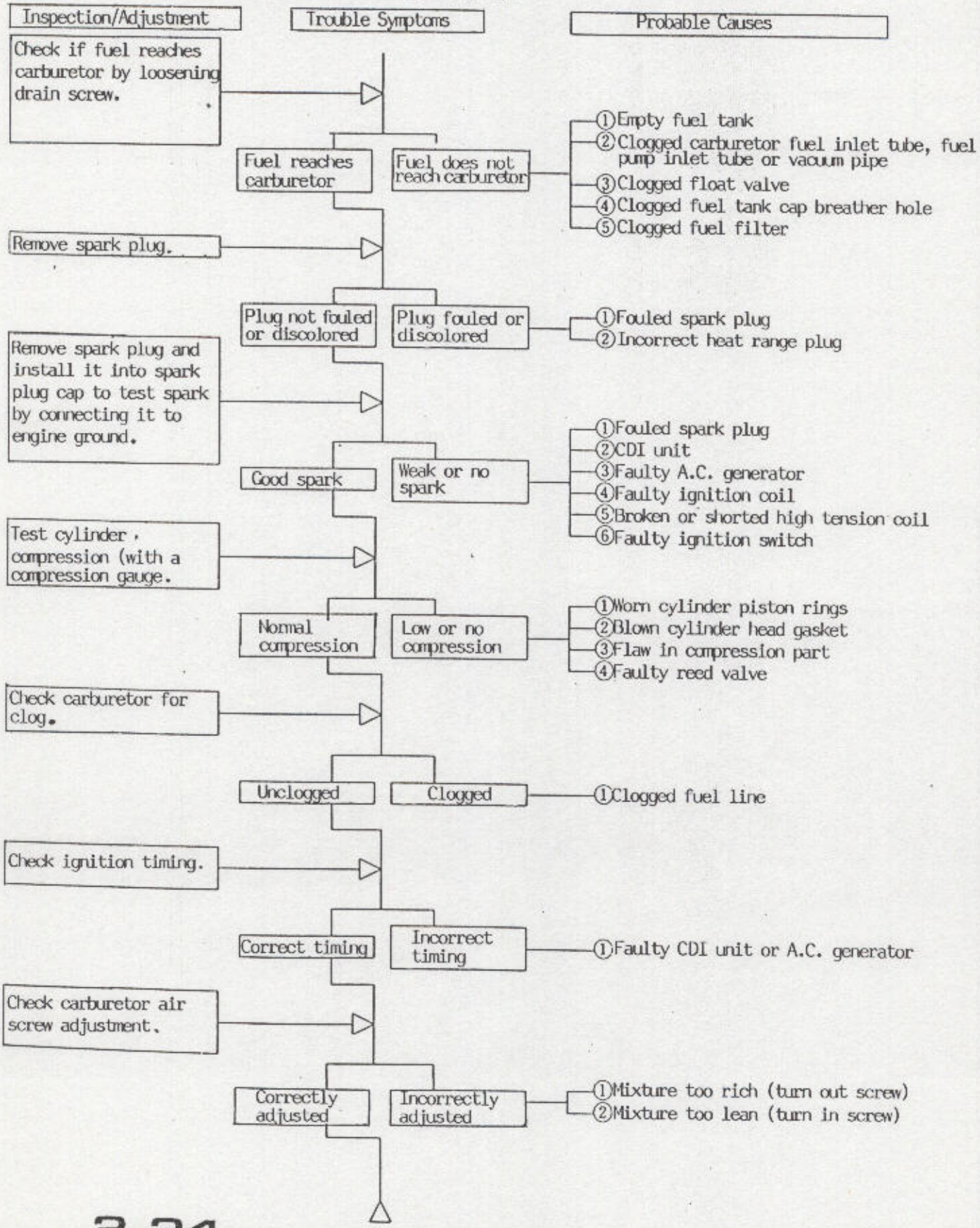

Auto Choke
Oil Pump Control Cable
Fuel Tube
Throttle Cable
Engine Oil Tube
Engine Oil Tube

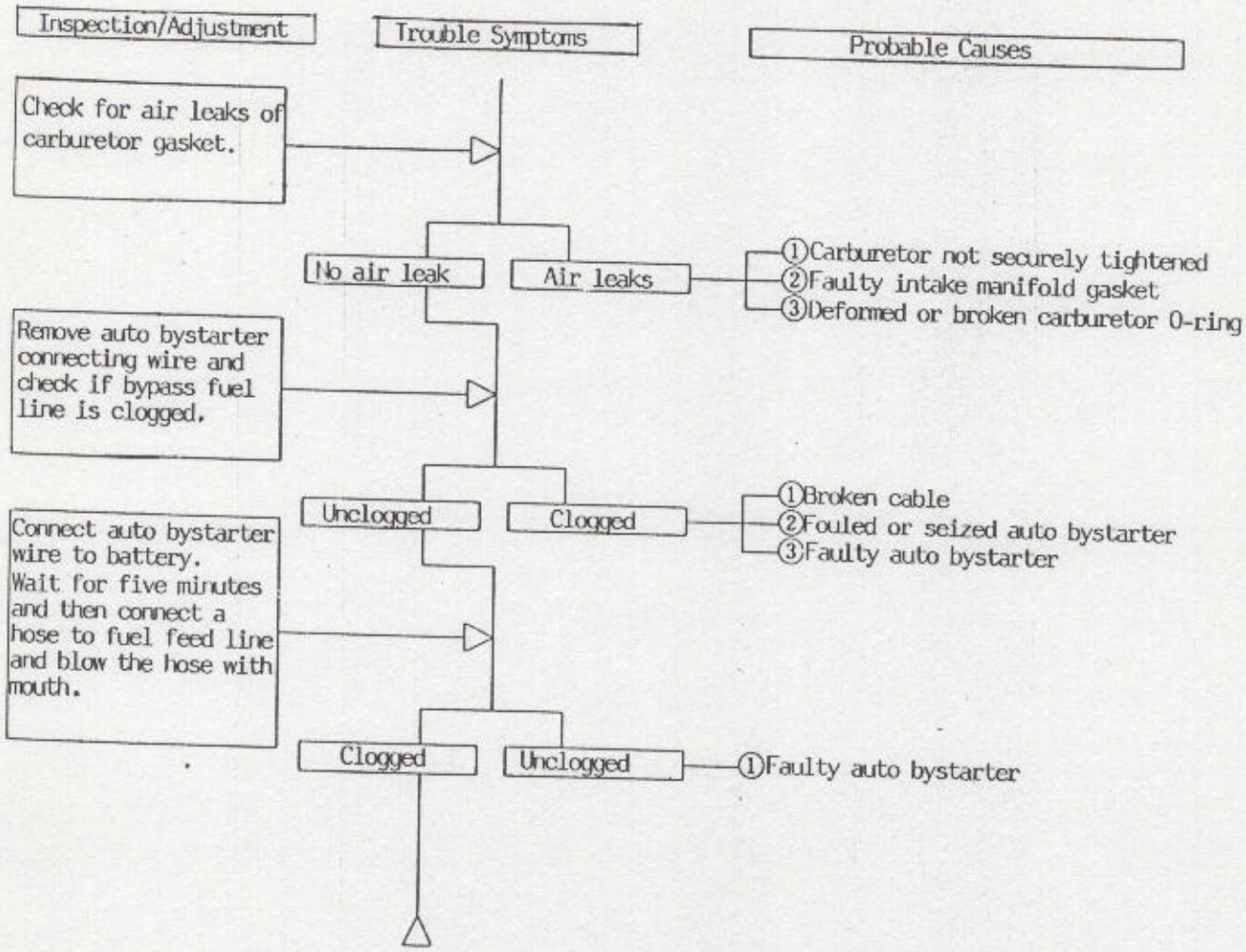
● TROUBLESHOOTING

●ENGINE WILL NOT START OR IS HARD TO START



●ENGINE STOPS IMMEDIATELY AFTER IT IS STARTED




Inspection/Adjustment
Trouble Symptoms
Probable Causes
Check for air leaks of carburetor gasket.
No air leak
Air leaks
①Carburetor not securely tightened
②Faulty intake manifold gasket
③Deformed or broken carburetor O-ring
Remove auto bystarter connecting wire and check if bypass fuel line is clogged.
Unclogged
Clogged
①Broken cable
②Fouled or seized auto bystarter
③Faulty auto bystarter
Connect auto bystarter wire to battery. Wait for five minutes and then connect a hose to fuel feed line and blow the hose with mouth.
Clogged
Unclogged
①Faulty auto bystarter

● ENGINE LACKS POWER