

# 1. GENERAL INFORMATION

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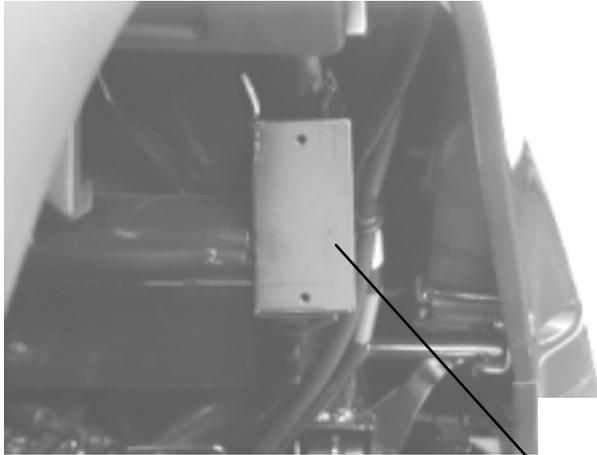
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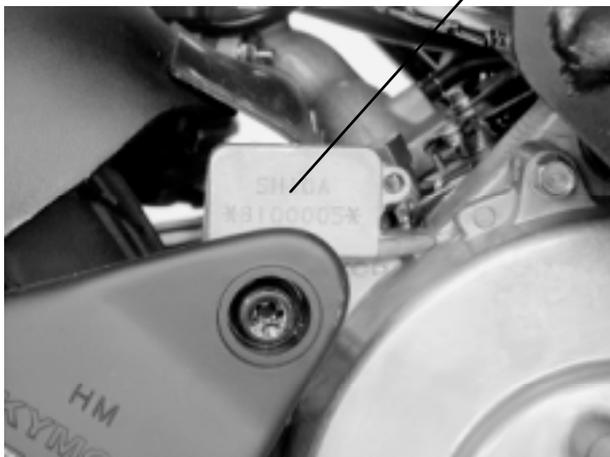
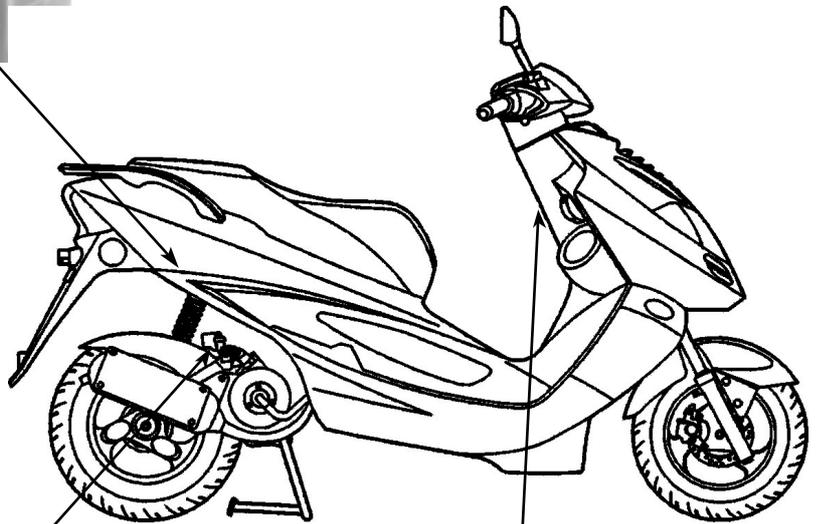
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## ENGINE SERIAL NUMBER



Vehicle Identification Serial Number



Location of Engine Serial Number



Location of Frame Serial Number

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Cooling Type	Water cooling
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## SPECIFICATIONS

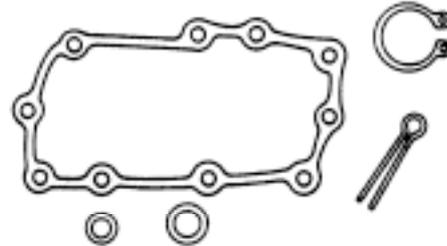
Name & Model No.		B&W50		
Overall length		1940mm		
Overall width		740mm		
Overall height		1173mm		
Wheel base		1352mm		
Engine type		Water cooled 2-stroke		
Displacement		49.4cc		
Fuel Used		nonleaded gasoline		
Net weight (kg)	Front wheel	52.5		
	Rear wheel	67.5		
	Total	120		
Gross weight(kg)	Front wheel	79		
	Rear wheel	114		
	Total	193		
Tires	Front wheel	120/70-12 56J		
	Rear wheel	130/70-12 59J		
Ground clearance		155mm		
Performance	Braking distance (m)	4.4m /30km/H		
	Min. turning radius	2300mm		
Engine	Starting system		Starting motor & Kick starter	
	Type		Gasoline,2-stroke	
	Cylinder arrangement		Single cylinder	
	Combustion chamber type		Semi-sphere	
	Bore x stroke (mm)		39.0 x 41.4	
	Compression ratio		7.2:1	
	Compression pressure (kg/cm <sup>2</sup> -rpm)		11.8	
	Max. output (kw/rpm)		3.09/6500	
	Max. torque (kg-m/rpm)		0.5/6000	
	Port timing	Intake (1mm)	Open	
			Close	
		Exhaust (1mm)	Open	
			Close	
	Valve clearance (cold)	Intake		
		Exhaust		
	Idle speed (rpm)		2000±100rpm	
	Lubrication System	Lubrication type		Separate type
		Oil pump type		Plunger type
		Oil filter type		Full-flow filtration
		Oil capacity		1.1 liters
Exchanging capacity		0.9 liters		

Fuel System	Air cleaner type & No		Sponge wet	
	Gear oil capacity		0.12 liters	
	Fuel capacity		10 liters	
	Carburetor	Type	jet-jet	
Piston dia.		13		
Venturi dia.		14 equivalent		
Electrical	Ignition System	Type	CDI	
		Ignition timing	13.5°±2°/2000rpm	
		Spark plug	NGK BR8HSA	
	Battery	Capacity	12V4AH	
		Spark plug gap	0.6_ 0.7mm	
Power Drive System	Clutch	Type	Dry multi-disc clutch	
		Transmission Gear	Type	Non-stage transmission
	Operation		Automatic centrifugal type	
	Reduction Gear		Type	Two-stage reduction
		Reduction ratio	1st	
Moving Device	Front Axle	Caster angle		
		Connecting rod		
	Tire pressure (kg/cm <sup>2</sup> )	Front	1.75	
		Rear	2.25	
Turning angle	Left	42.5°		
	Right	42.5°		
Brake system type	Front	Disk brake		
	Rear	Drum brake		
Damping Device	Suspension type	Front	Telescope	
		Rear	Unit	
Frame type		Under pipe		

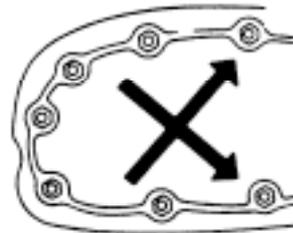
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## SERVICE PRECAUTIONS

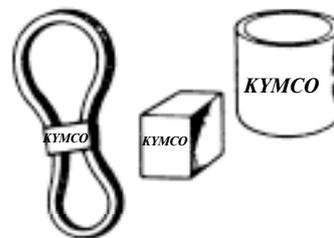
- Make sure to install new gaskets, O-rings, circlips, cotter pins, etc. when reassembling.



- 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 tools for removal and installation.



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



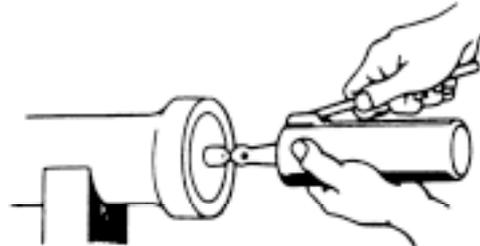
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battery terminals.

- Terminal caps shall be installed securely.

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



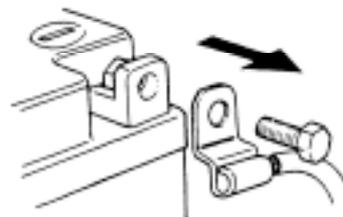
- After reassembly, check all parts for proper tightening and operation.



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



- Disconnect the battery negative (-) terminal before operation.
- When using a spanner or other tools, make sure not to damage the motorcycle surface.

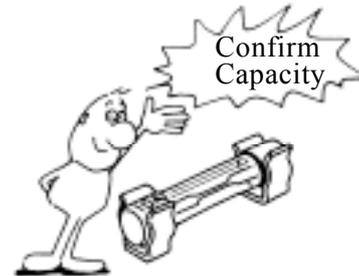


- After operation, check all connecting points, fasteners, and lines for proper connection and installation.
- When connecting the battery, the positive (+) terminal must be connected first.
- After connection, apply grease to the



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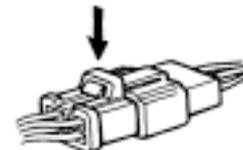
- If the fuse is burned out, find the cause and repair it. Replace it with a new one according to the specified capacity.



- After operation, terminal caps shall be installed securely.



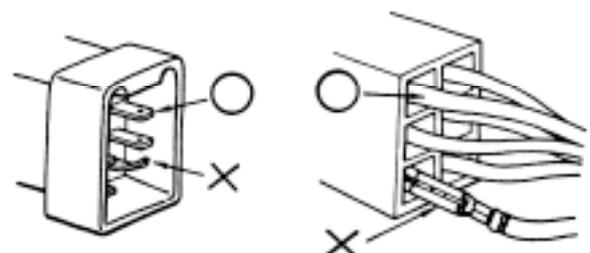
- When taking out the connector, the lock on the connector shall be released before operation.



- Hold the connector body when connecting or disconnecting it.
- Do not pull the connector wire.



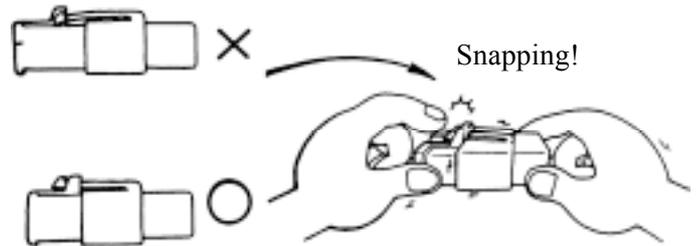
- Check if any connector terminal is bending, protruding or loose.



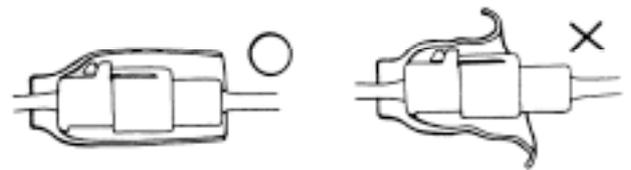
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Tighten the bands so that only the insulated surfaces contact the wire harnesses.

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



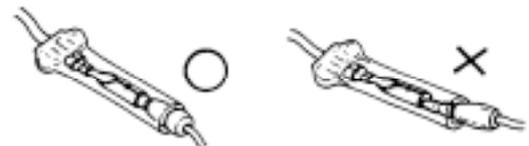
- Before connecting a terminal, check for damaged terminal cover or loose negative terminal.



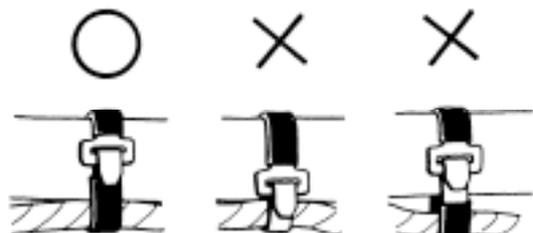
- Check the double connector cover for proper coverage and installation.



- Insert the terminal completely.
- Check the terminal cover for proper coverage.
- Do not make the terminal cover opening face up.



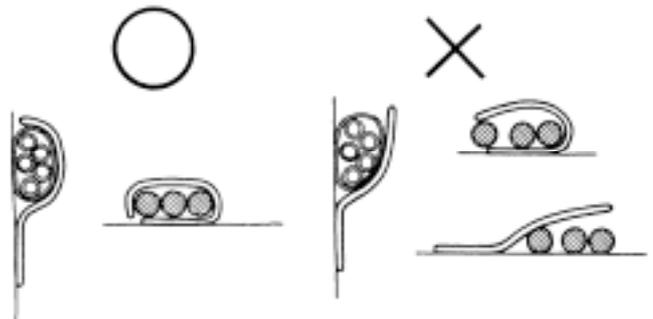
- Secure wire harnesses to the frame with their respective wire bands at the designated locations.



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projected ends of bolts and screws.

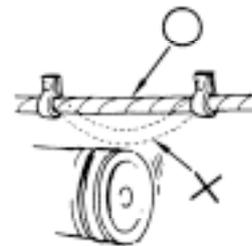
- After clamping, check each wire to make sure it is secure.



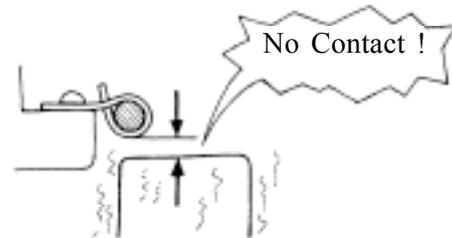
- Do not squeeze wires against the weld or its clamp.



- After clamping, check each harness to make sure that it is not interfering with any moving or sliding parts.



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

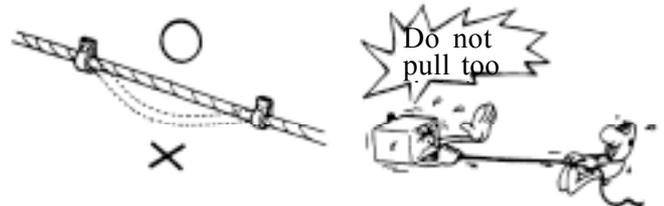


- Route wire harnesses to avoid sharp edges or corners. Avoid the projected ends of bolts and screws.
- Route wire harnesses passing through the side of bolts and screws. Avoid the

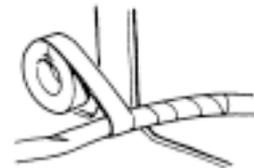


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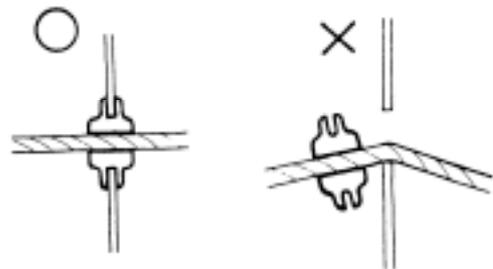
- Route harnesses so they are neither pulled tight nor have excessive slack.



- Protect wires and harnesses with electrical tape or tube if they contact a sharp edge or corner.



- When rubber protecting cover is used to protect the wire harnesses, it shall be installed securely.



- Do not break the sheath of wire.
- If a wire or harness is with a broken sheath, repair by wrapping it with protective tape or replace it.

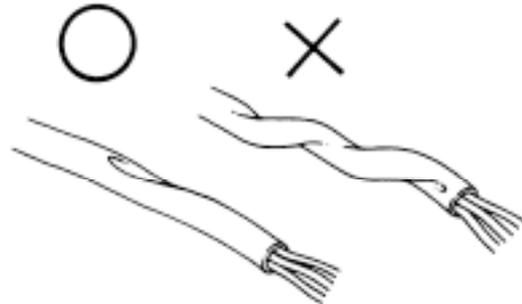


- When installing other parts, do not press or squeeze the wires.



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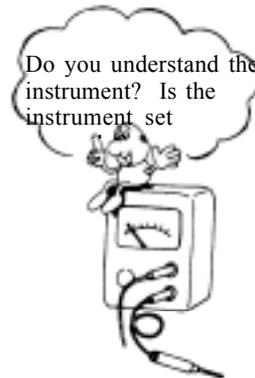
- After routing, check that the wire harnesses are not twisted or kinked.



- Wire harnesses routed along with handlebar should not be pulled tight, have excessive slack or interfere with adjacent or surrounding parts in all steering positions.



- 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.



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■ 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.)



: Apply grease for lubrication.



: Transmission Gear Oil (90#)



: Use special tool.



: Caution



: Warning

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## SERVICE INFORMATION

ENGINE Item	Standard (mm)	Service Limit (mm)
	B&W50	B&W50
Cylinder head warpage	—	0.10
Piston O.D.(5mm from bottom of piston)	38.955_ 38.970	38.90
Cylinder-to- piston clearance		0.10
Piston pin hole I.D.	12.002_ 12.008	12.03
Piston pin O.D.	11.994_ 12.0	11.98
Piston-to-piston pin clearance	0.002_ 0.014	0.03
Piston ring end gap (top/second)	0.10_ 0.25	0.40
Connecting rod small end I.D.	17.005_ 17.017	17.03
Cylinder bore	39.0_ 39.025	39.05
Drive belt width	18	17
Drive pulley collar O.D.	20.01_ 20.025	19.97
Movable drive face ID.	20.035_ 20.085	20.21
Weight roller O.D.	13.0	12.4
Clutch outer I.D.	107_ 107.2	107.5
Driven face spring free length	87.9	82.6
Driven face O.D.	33.965_ 33.985	33.94
Movable driven face I.D.	34.0_ 34.025	34.06
Connecting rod big end side clearance	—	0.60
Connecting rod big end radial clearance	—	0.04
Crankshaft runout A/B	—	L:0.15 R:0.10

CARBURETOR	SH10CA(SP)	SH10CA(IT)	SH10CA(GR)
Venturi dia.	14mm		
Identification number	PB109_	PB103_	PB118_
Float level	8.6mm		
Main jet(Unlimited/limited speed)	#75	#75	#88
Slow jet	#35		
Air screw opening	1_±_		
Idle speed	2000 <sup>o</sup> ±100rpm		

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Throttle grip free play	2_ 6mm
Jet needle clip notch	1 <sup>st</sup> notch

## FRAME

Item		Standard (mm)	Service Limit (mm)
		B&W50	B&W50
Axle shaft runout		—	0.2
Front wheel rim runout	Radial		
	Axial		
Front shock absorber spring free length		221.5	204.3
Rear wheel rim runout			2.0
Brake drum I.D.	Front/rear	110	111
Brake lining thickness	Front/rear	4.0/4.0	2.0/2.0
Brake disk runout	Front/rear	—	0.30
Rear shock absorber spring free length		214.7	197.7

## ELECTRICAL EQUIPMENT

			B&W50
Battery	Capacity		12V4AH
	Voltage		13.0_ 13.2V
	Charging current	Standard	0.4A/5H
		Quick	4A/0.5H
Spark plug	(NGK)		BR8HSA
Spark plug gap			0.6_ 0.7mm
Ignition coil resistance	Primary coil		0.153_ 0.187Ω
	Secondary coil (with plug cap)		6.99_ 10.21KΩ
	Secondary coil (without plug cap)		3.24_ 3.96KΩ
Pulser coil resistance (20±J)			80_ 160Ω
Ignition timing			13.5°±2°BTDC/2000rpm

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## TORQUE VALUES

### ENGINE

Item	Thread dia. (mm)	Torque (N-m)	Remarks
Cylinder head bolt	BF7x115	14.7_ 16.7	(cold)
Clutch drive plate nut	10	34.3_ 39.2	
Clutch outer nut	NH10	34.3_ 44.1	
Drive face nut	NH12	49.0_ 58.8	
Oil check bolt	10	9.8_ 14.7	
Engine mounting bolt	BF10x95	44.1_ 53.9	
Engine hanger bracket bolt	BF10x50	34.3_ 44.1	
Exhaust muffler joint lock nut	NC6mm	9.8_ 13.7	
Exhaust muffler lock bolt	BF8x35	29.4_ 35.3	
Spark plug		10.8_ 16.7	(cold)

### FRAME

Item	Thread dia. (mm)	Torque (N-m)	Remarks
Handlebar lock nut	10	44.1_ 49.0	Flange bolt/U-nut
Steering stem lock nut	25.4	78.4_ 117.6	
Steering top cone race	25.4	4.9_ 12.7	
Front axle nut	12	49.0_ 68.6	Flange U-nut
Rear axle nut	16	107.8_ 127.4	Flange U-nut
Front shock absorber:			
upper mount bolt	8	32.3	Flange bolt/U-nut
lower mount bolt		32.3	Cross head
hex bolt		14.7_ 29.4	Apply locking agent
Front damper nut	8	14.7_ 29.4	
Front pivot arm bolt			Flange screw/U-nut
Rear shock absorber:			
upper mount bolt	10	34.3_ 44.1	Flange nut
lower mount bolt	8	23.5_ 29.4	
lower joint nut	8	14.7_ 24.5	

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 (N-m)	Item	Torque (N-m)
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5mm bolt, nut	4.4_ 5.9	5mm screw	3.43_ 4.9
6mm bolt, nut	7.8_ 11.8	6mm screw, SH bolt	6.86_ 10.8
8mm bolt, nut	17.6_ 24.5	6mm flange bolt, nut	9.8_ 13.7
10mm bolt, nut	29.4_ 39.2	8mm flange bolt, nut	23.5_ 29.4
12mm bolt, nut	49.0_ 58.8	10mm flange bolt, nut	14.7_ 44.1

## SPECIAL TOOLS

Tool Name	Tool No.	Remarks
Universal bearing puller	E030	Crankshaft bearing removal
Lock nut socket wrench	F001	Top cone race holding
Lock nut wrench,	F001	Stem lock nut tightening
Crankcase puller	E026	Crankcase disassembly
Bearing remover set, 12mm (Spindle assy, 15mm) (Remover weight)	E020	Drive shaft bearing removal/installation
Bearing remover set, 15mm (Spindle assy, 15mm) (Remover head, 15mm) (Remover shaft, 15mm)	E018	Drive shaft bearing removal/installation
Bearing outer driver, 28x30mm	E014	Bearing installation
Clutch spring compressor	E027	Driven pulley disassembly/assembly
Crankcase assembly collar	E023	Driven shaft, crankshaft & crankcase assembly
Crankcase assembly tool	E024	Crankshaft & crankcase assembly
Ball race remover	F005	Steering stem bearing races
Rear shock absorber compressor	F004	Rear shock absorber disassembly/assembly
Universal holder	E017	Flywheel holding
Flywheel puller	E001	Flywheel removal
Pilot, 12mm	E020	Drive shaft bearing installation
Bearing outer driver, 32x35mm	E014	Drive shaft bearing installation Final shaft bearing installation
Bearing outer driver, 37x40mm	E014	Drive shaft bearing installation Final shaft bearing installation Crankshaft bearing installation
Outer driver, 24x26mm	E014	Driven pulley bearing installation

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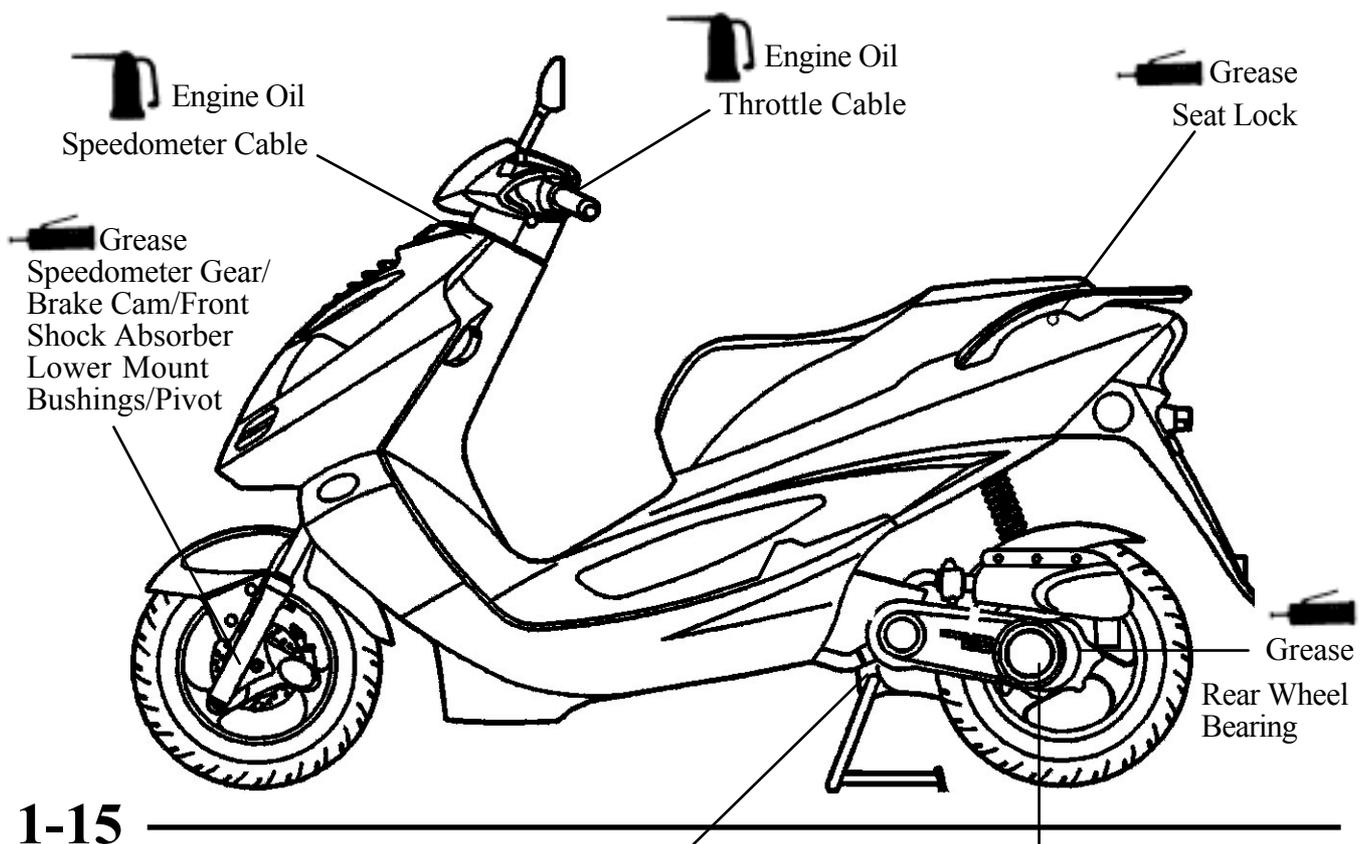
## LUBRICATION POINTS

### ENGINE

NO.	Lubrication Points	Lubricant	Remarks
1	Crankcase sliding & movable parts	JASO-FC or API-TC	
2	Cylinder movable parts		
3	Transmission gear (final gear)	SAE-90#	
4	Kick starter spindle bushing	Grease	
5	Drive pulley movable parts	Grease	
6	Starter pinion movable parts	Grease	

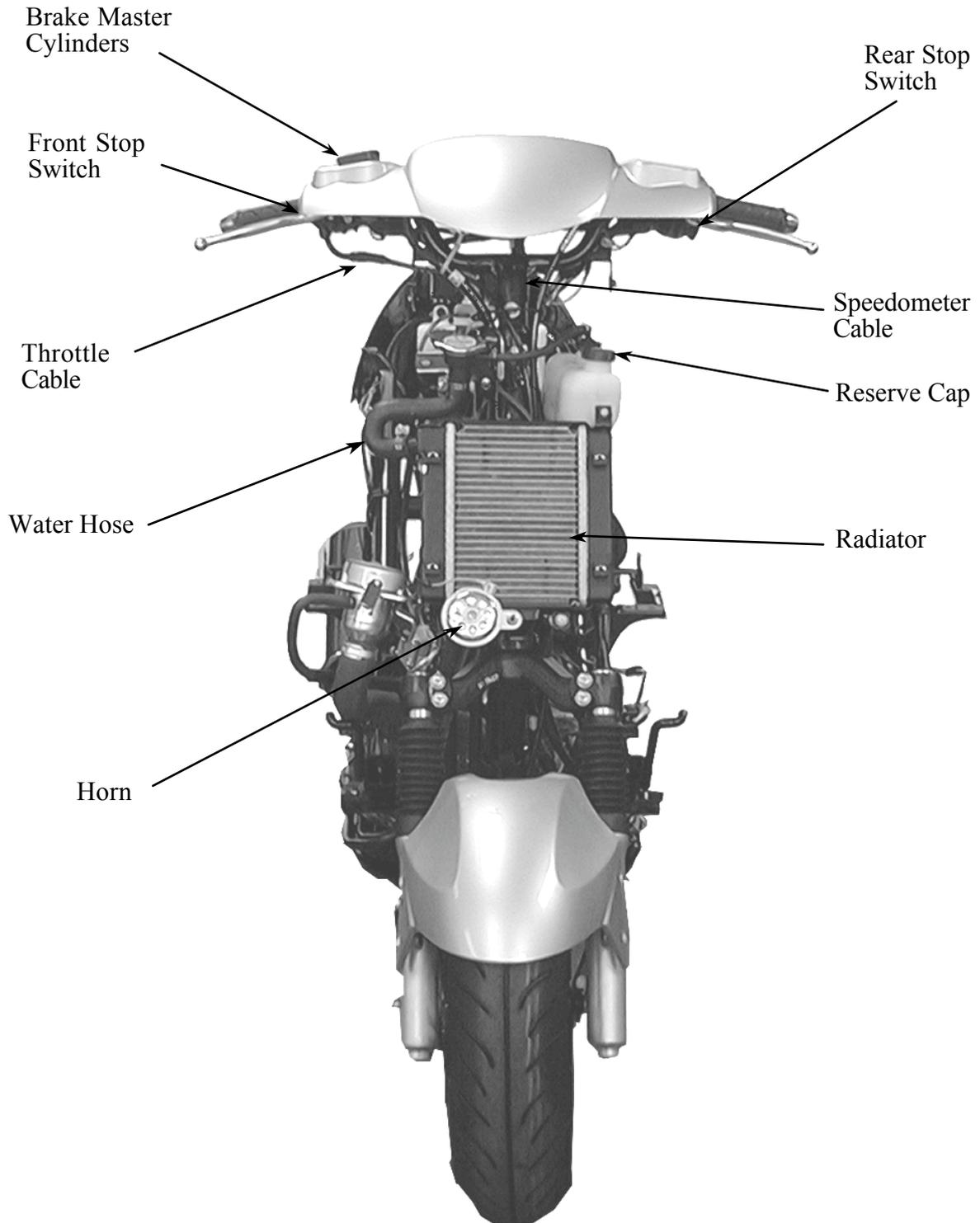
### FRAME

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



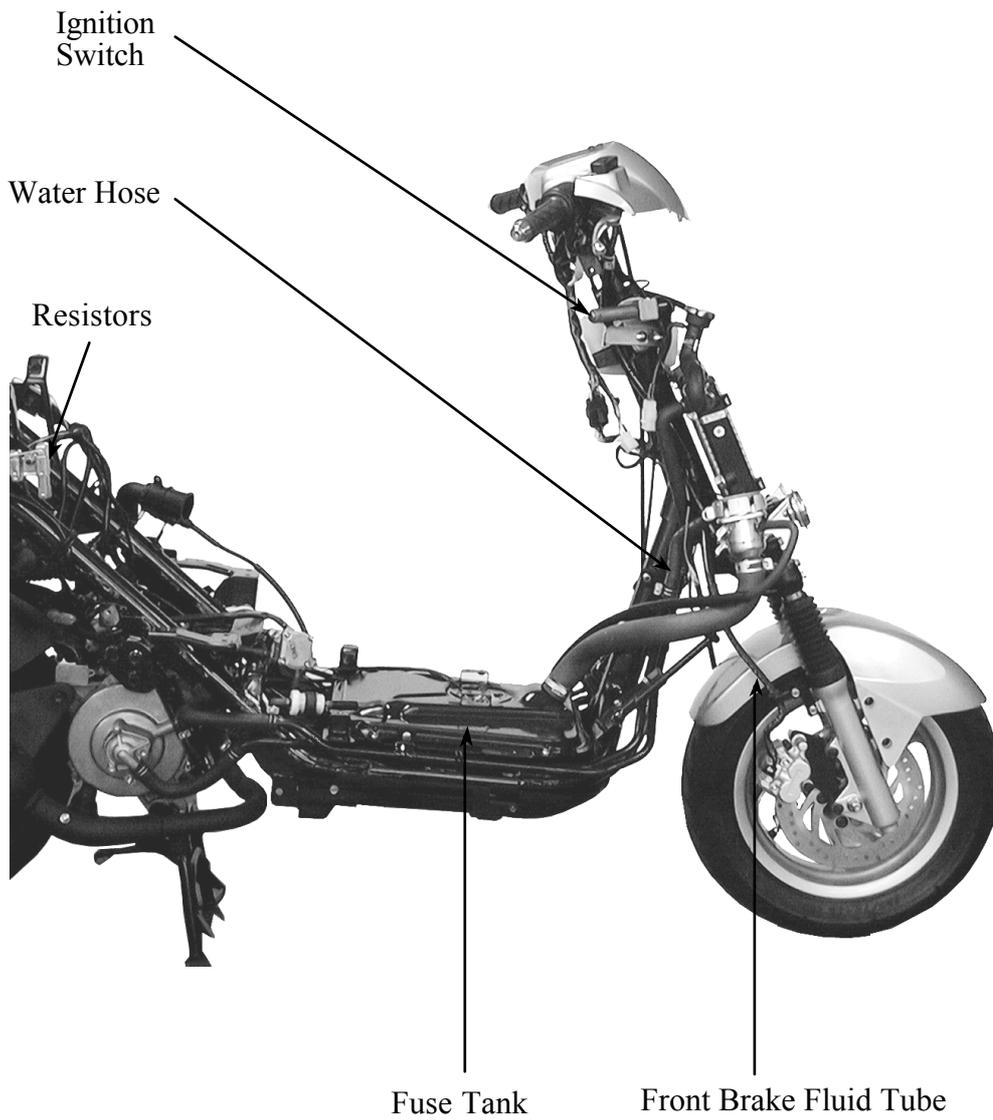
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 Grease  
Main Stand Pivot Engine Oil  
Rear Brake  
Control Cable

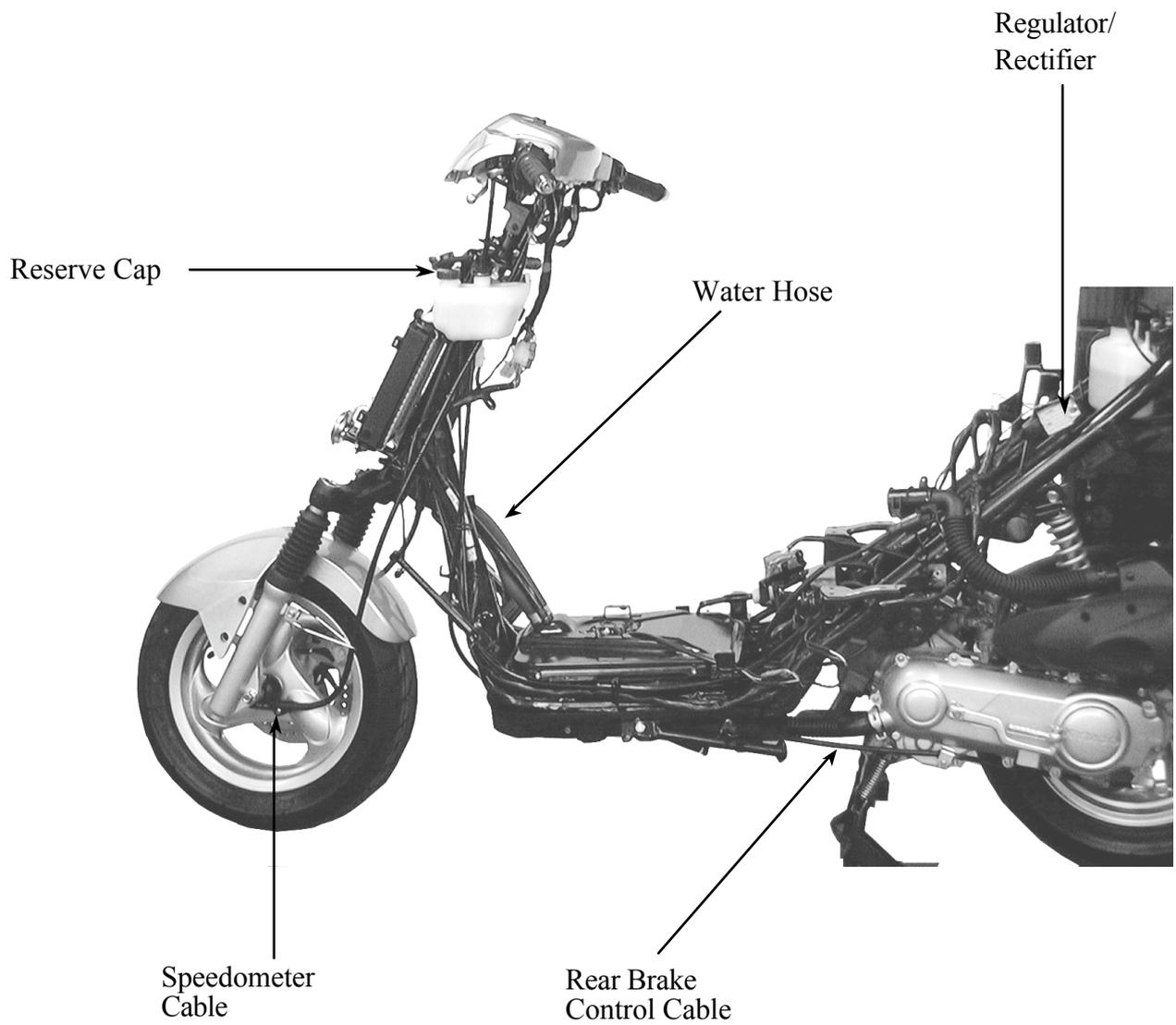
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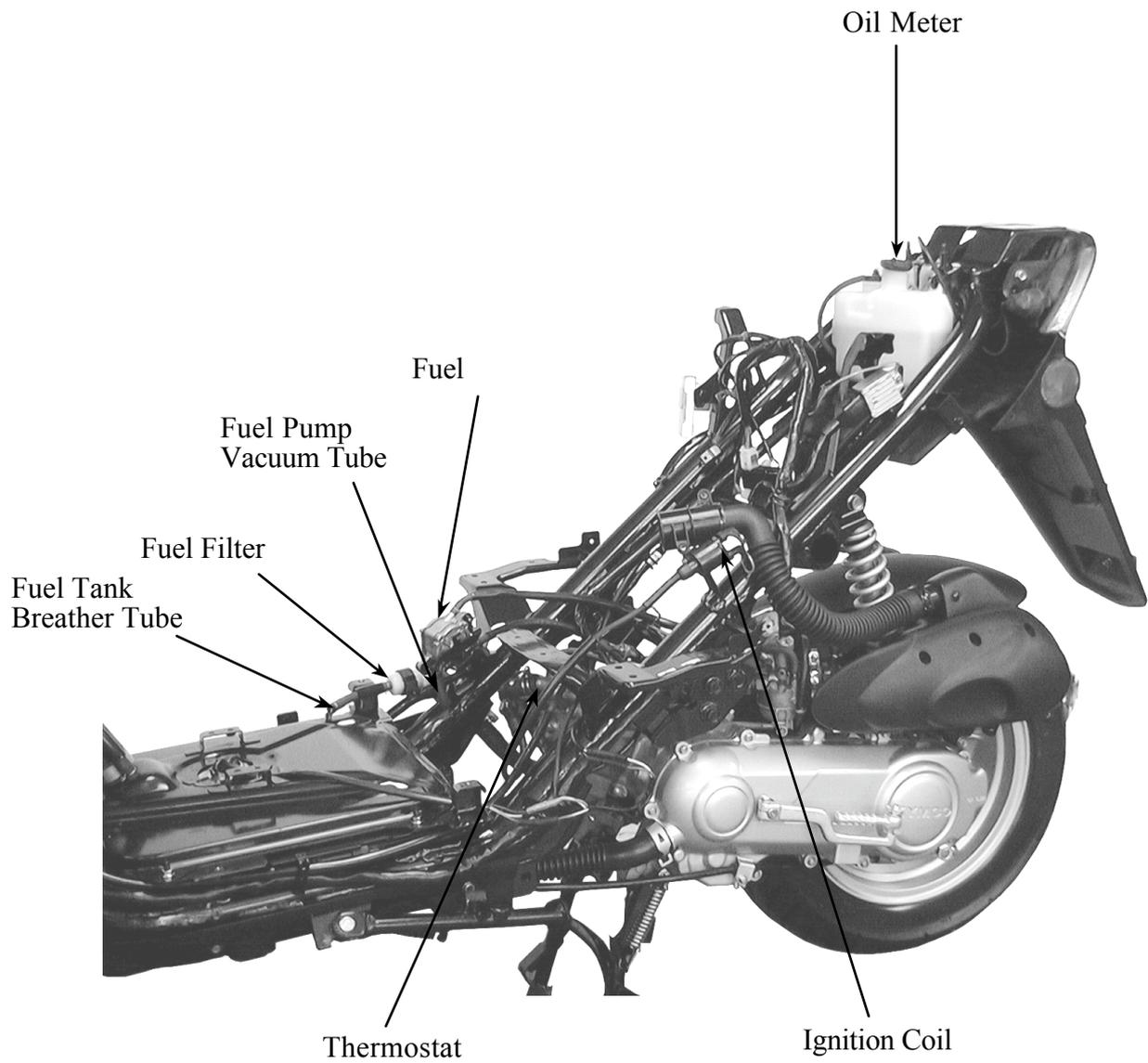
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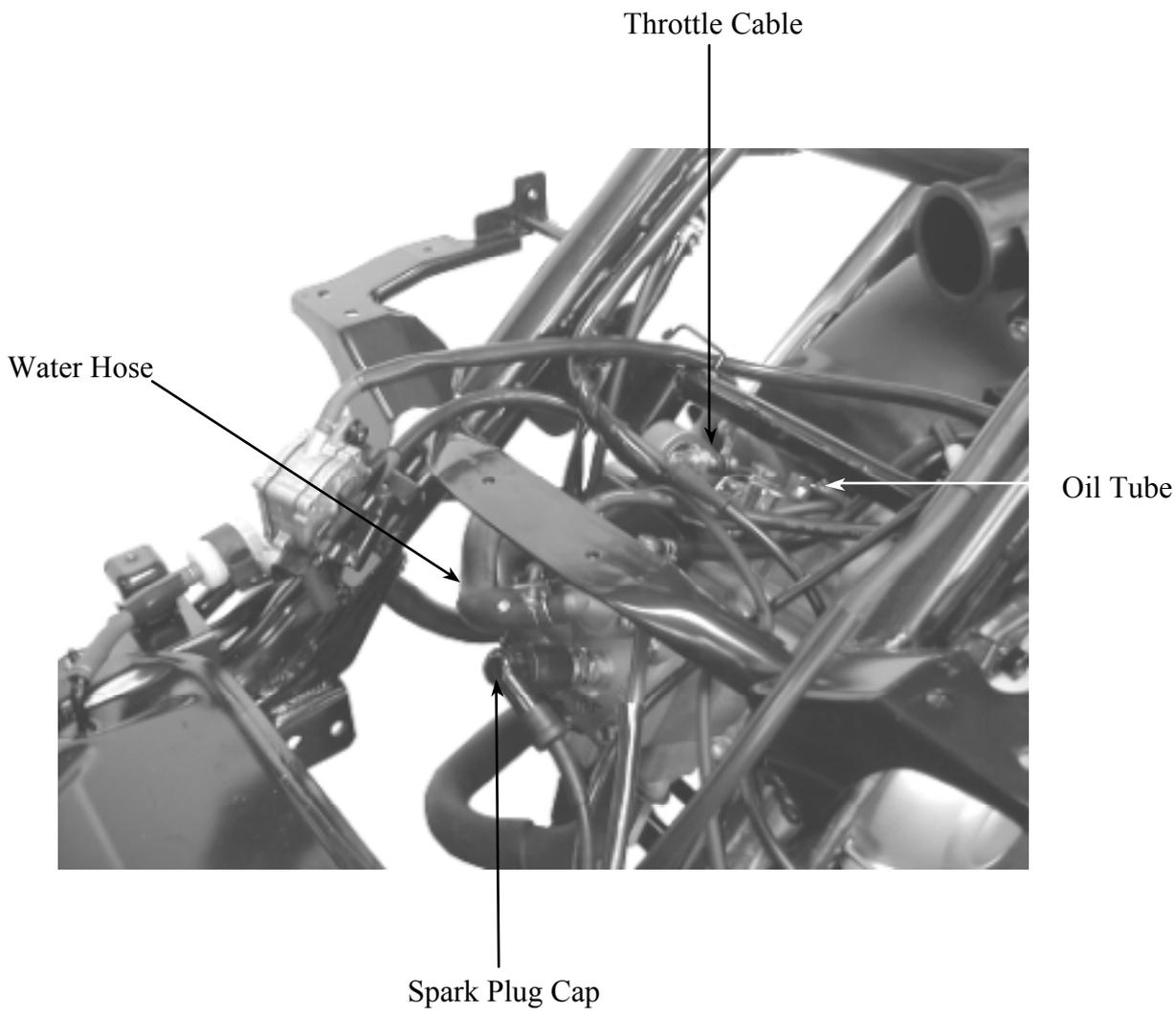
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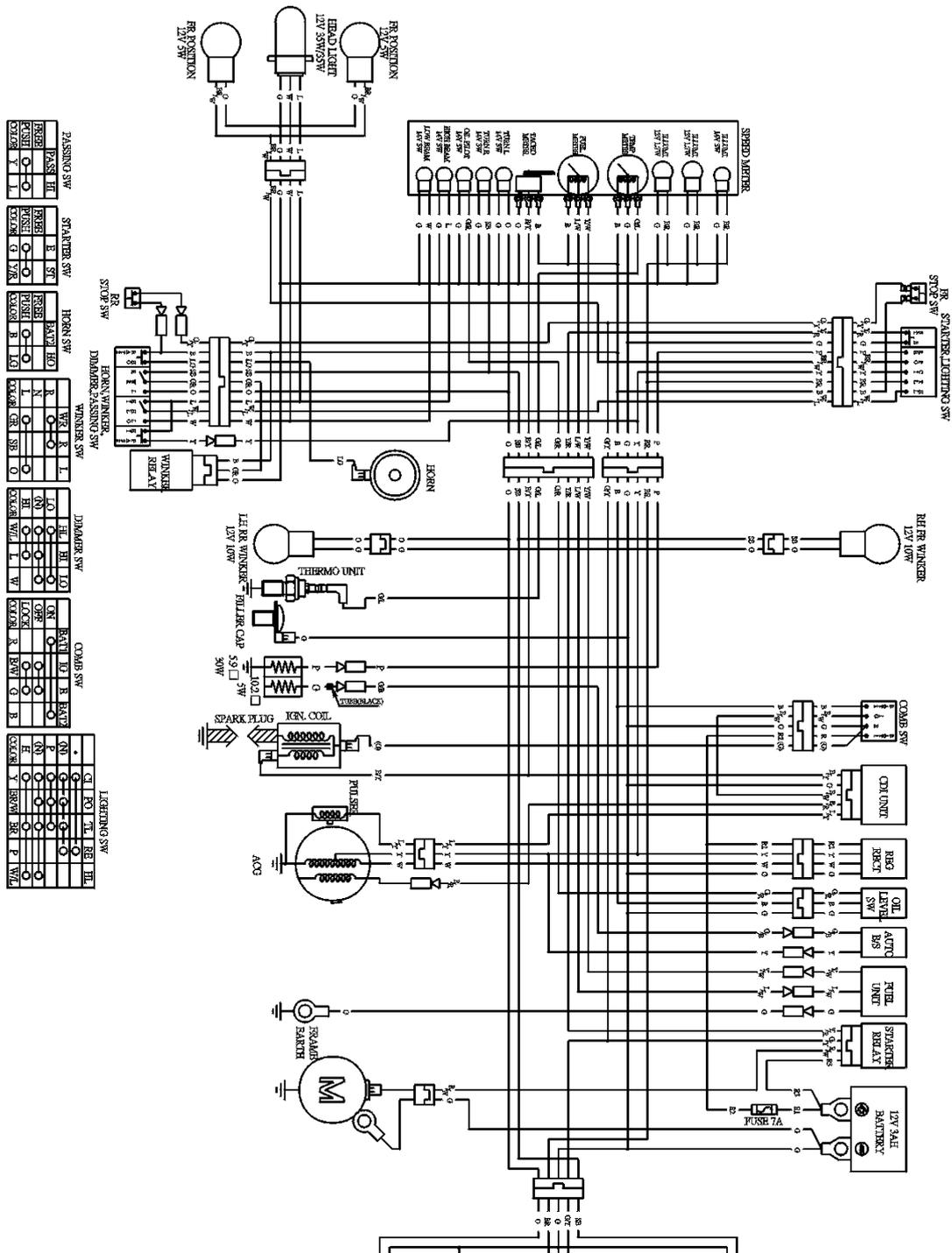
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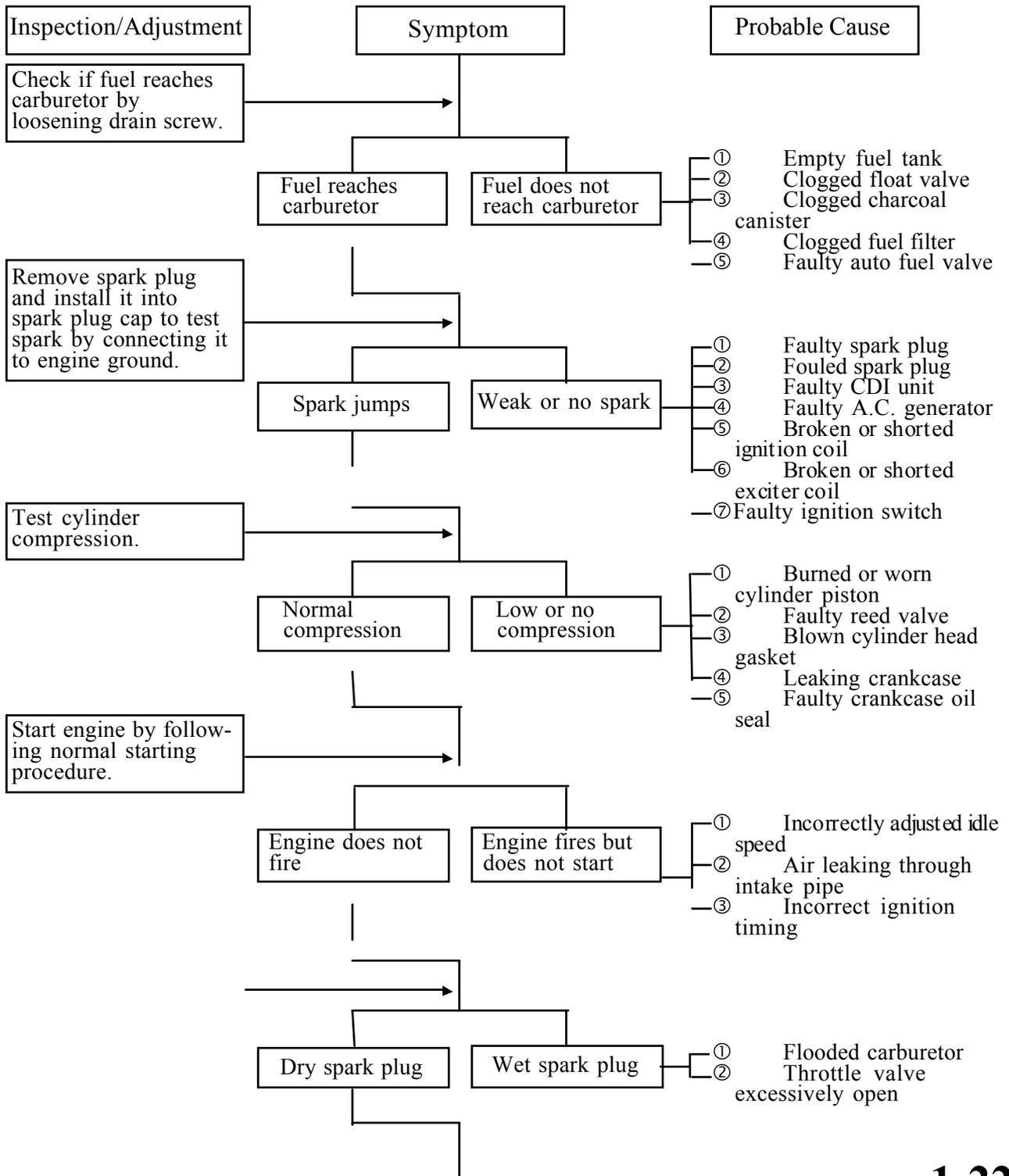
## WIRING DIAGRAM



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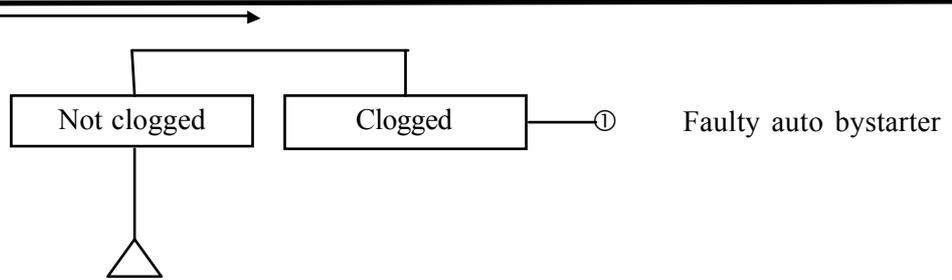
## TROUBLESHOOTING

### ENGINE WILL NOT START OR IS HARD TO START

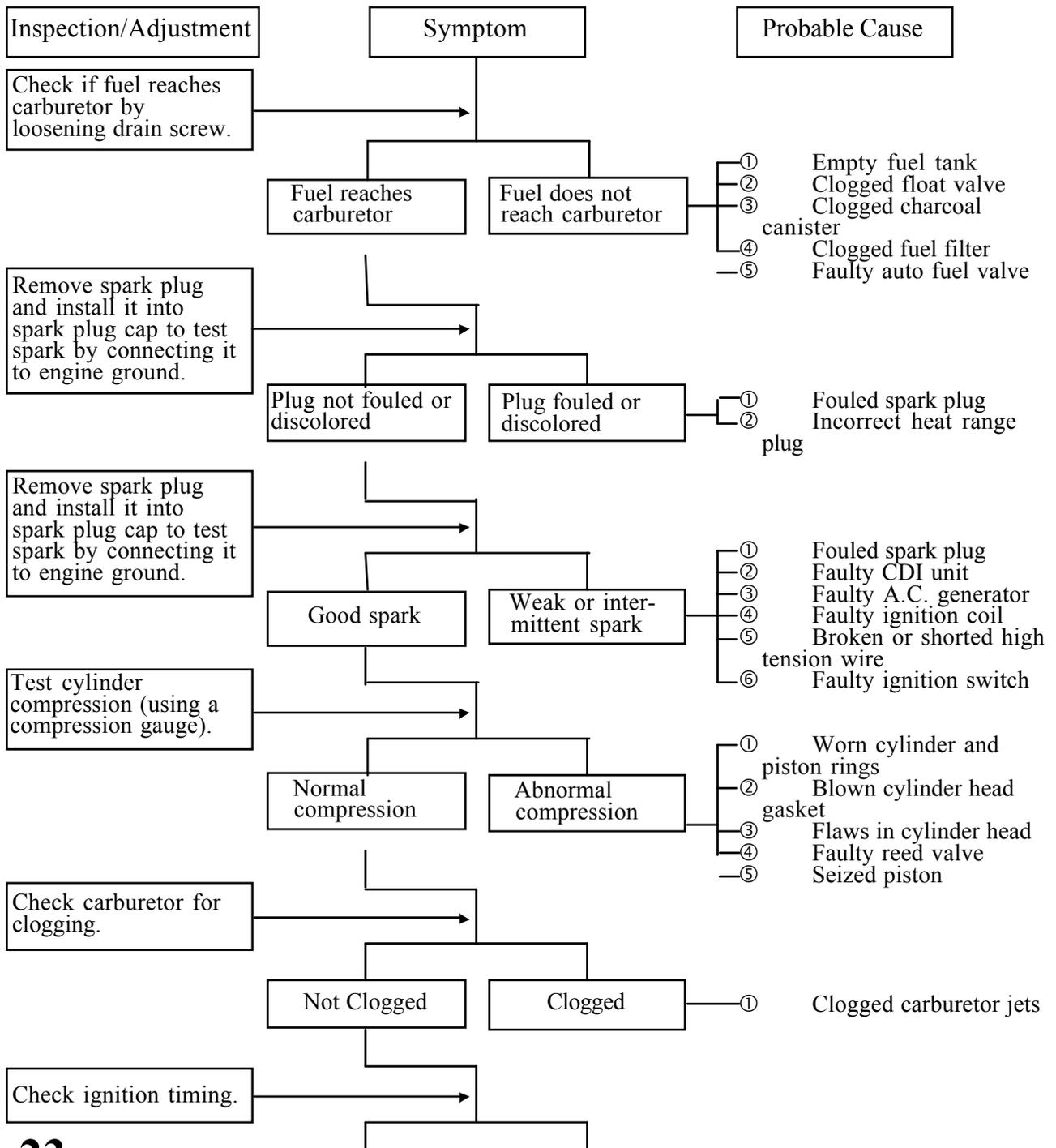


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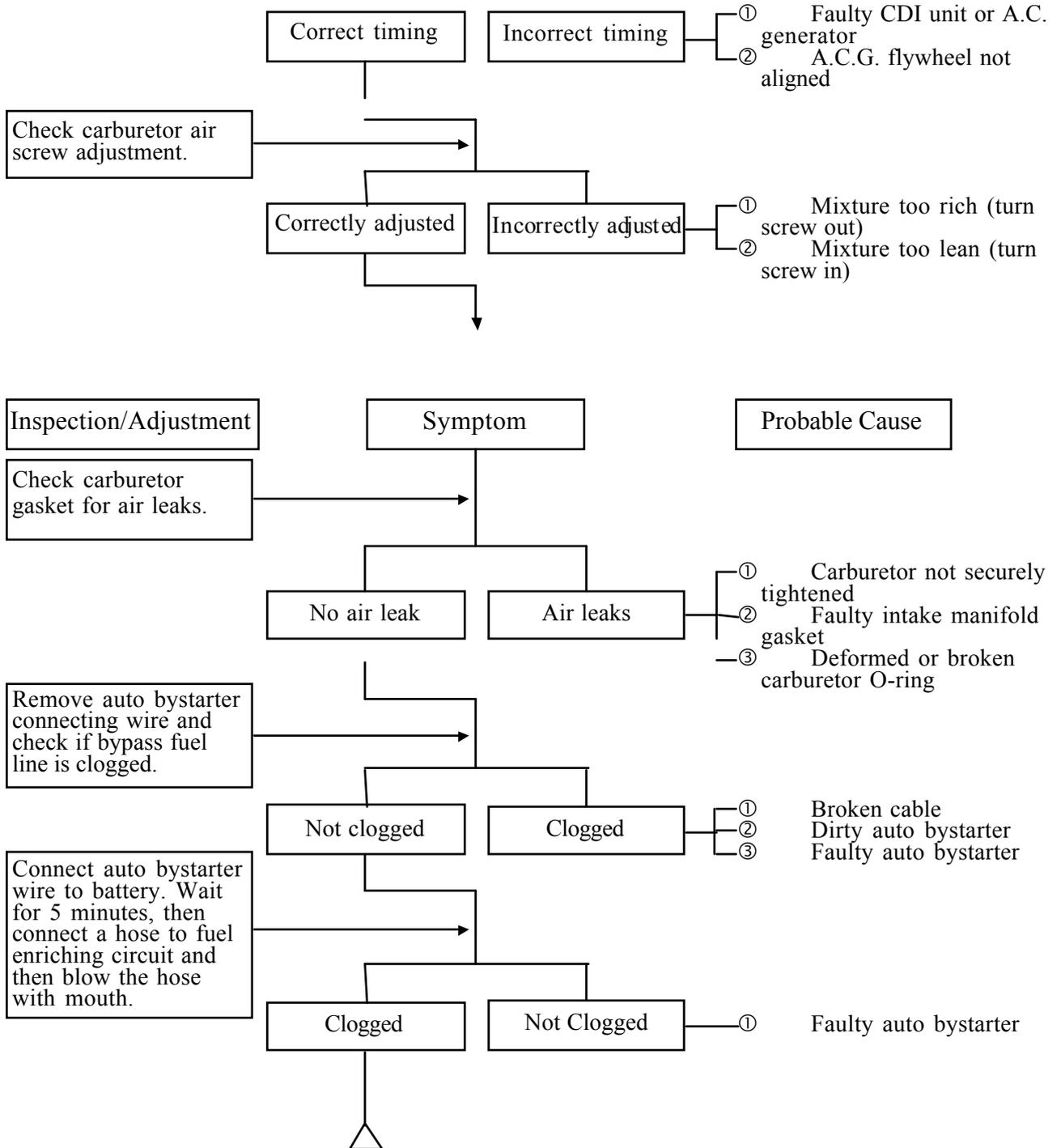
Wait for 30 minutes and then remove the carburetor auto choke circuit hose and blow the hose with mouth.



## ENGINE STOPS IMMEDIATELY AFTER IT STARTS

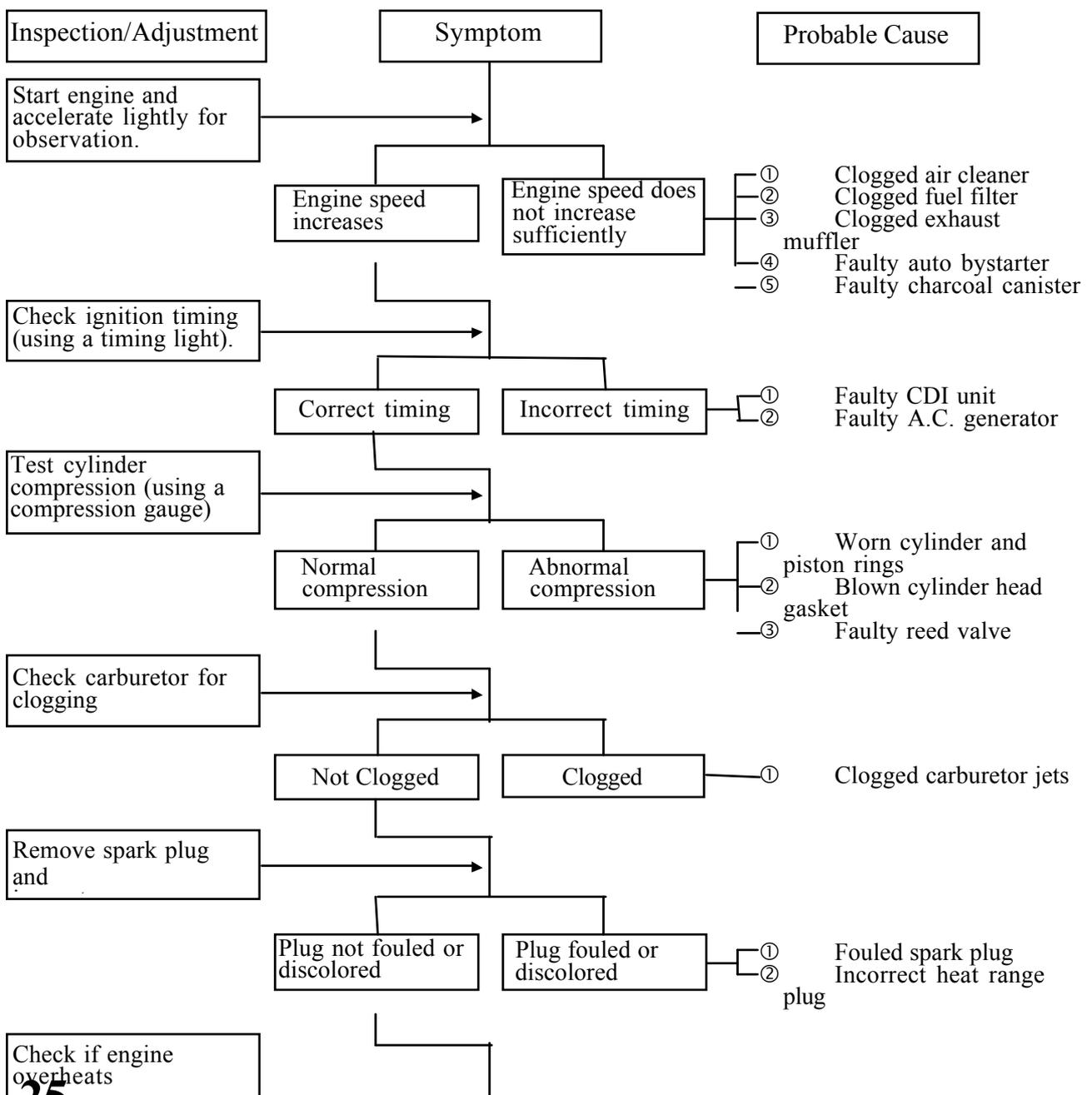


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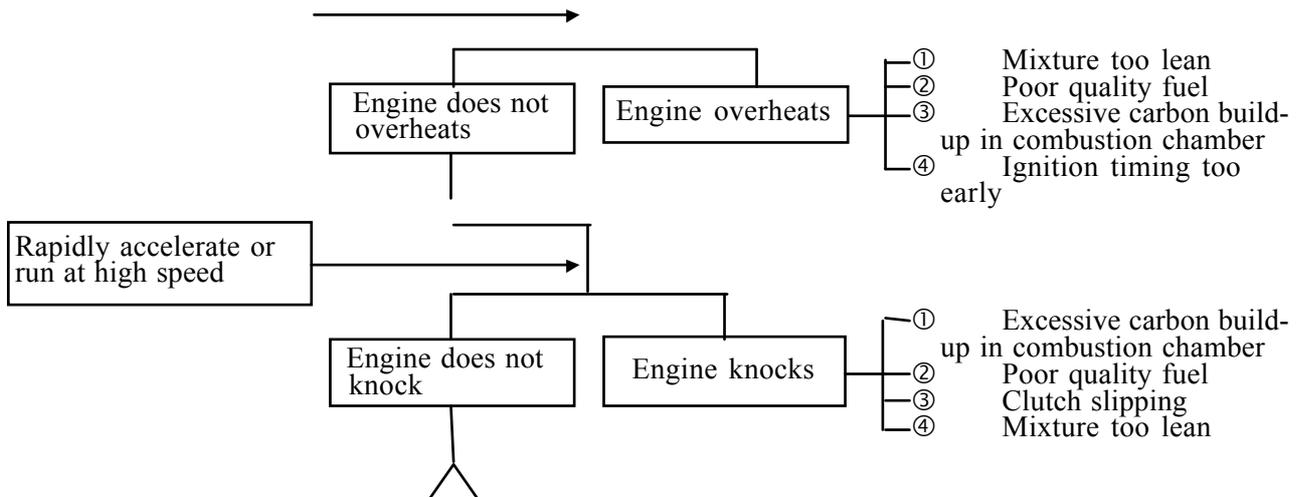


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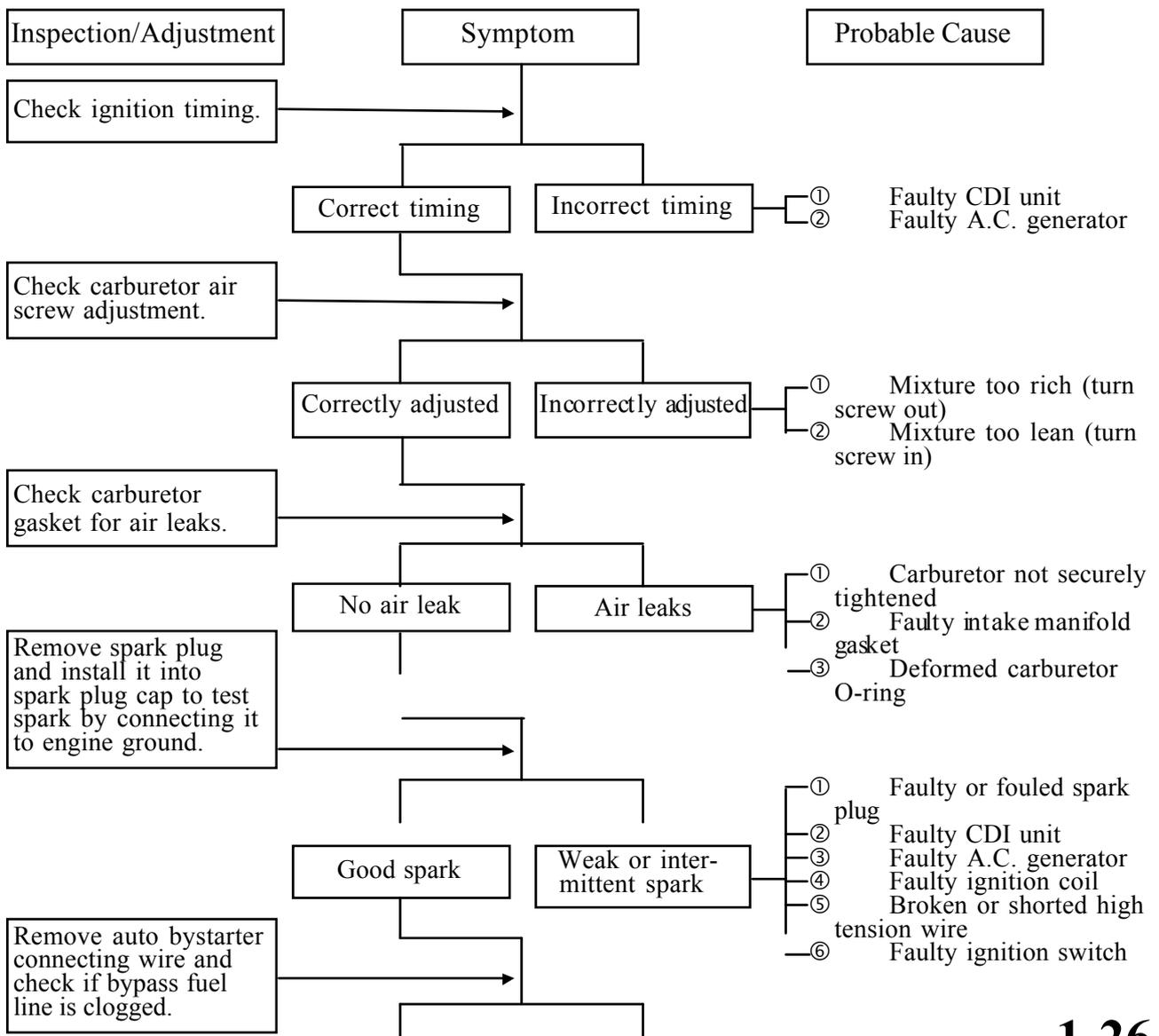
## ENGINE LACKS POWER



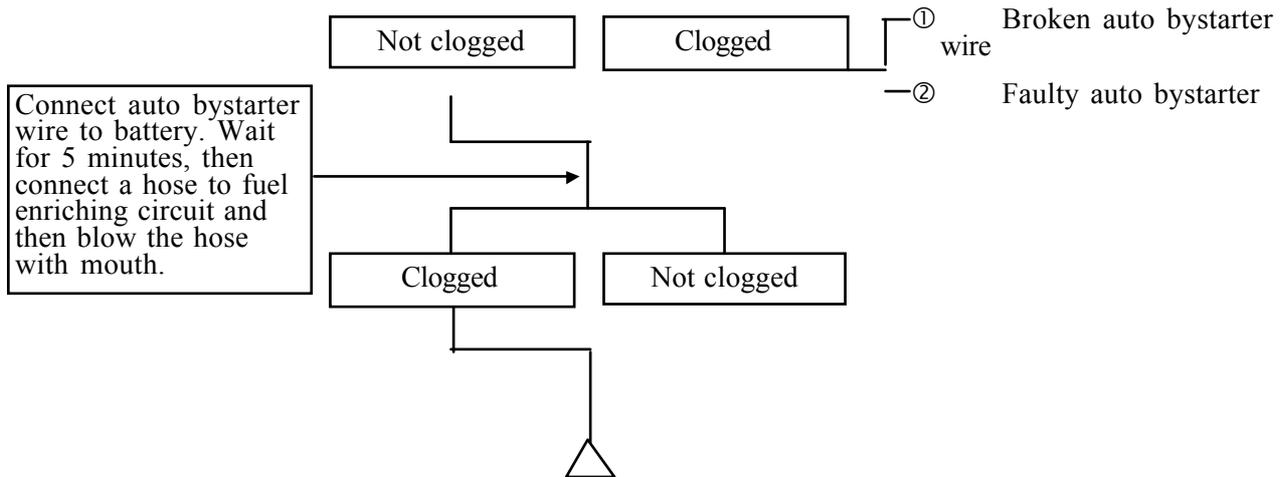
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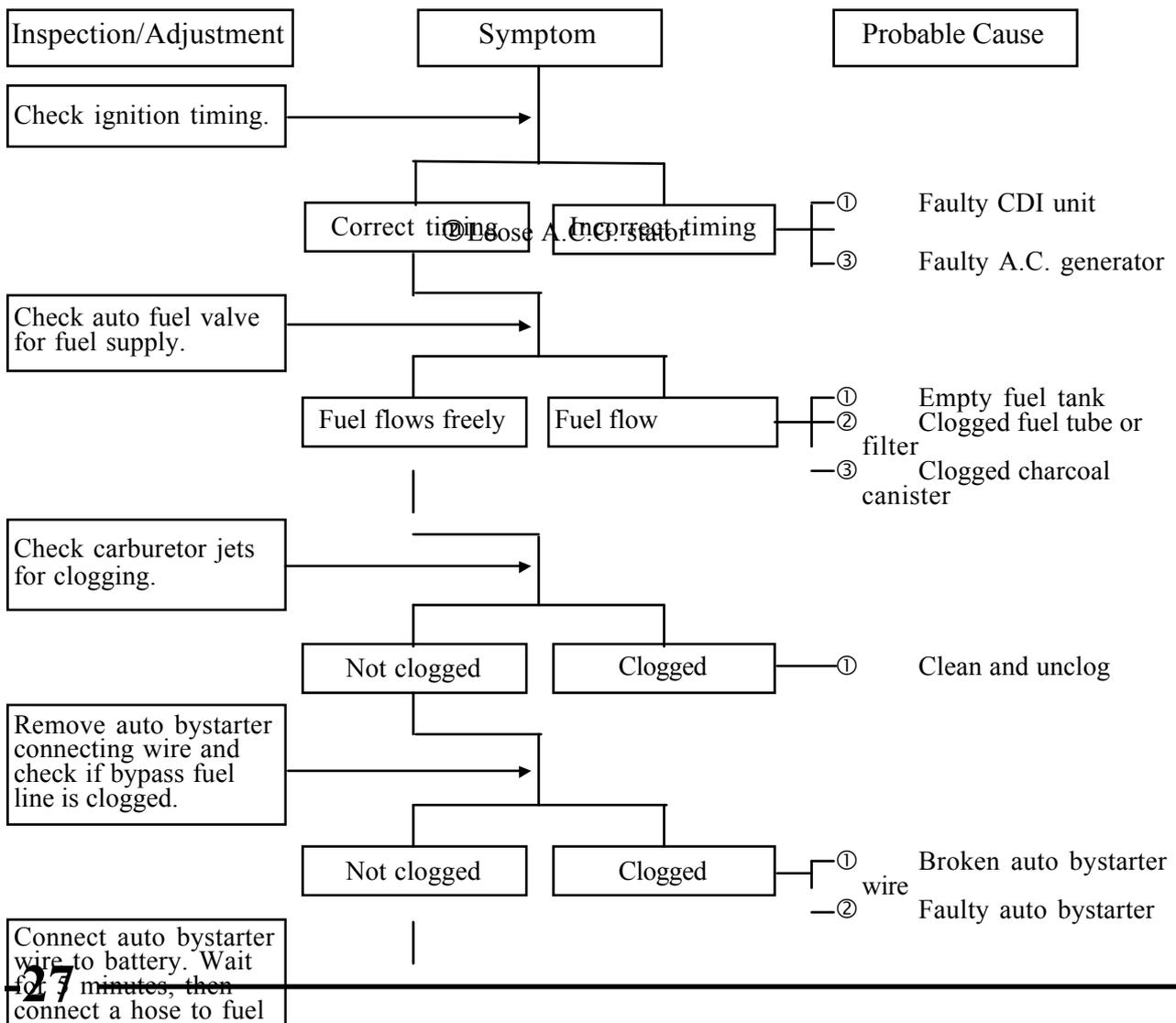
## POOR PERFORMANCE (ESPECIALLY AT IDLE AND LOW SPEEDS)



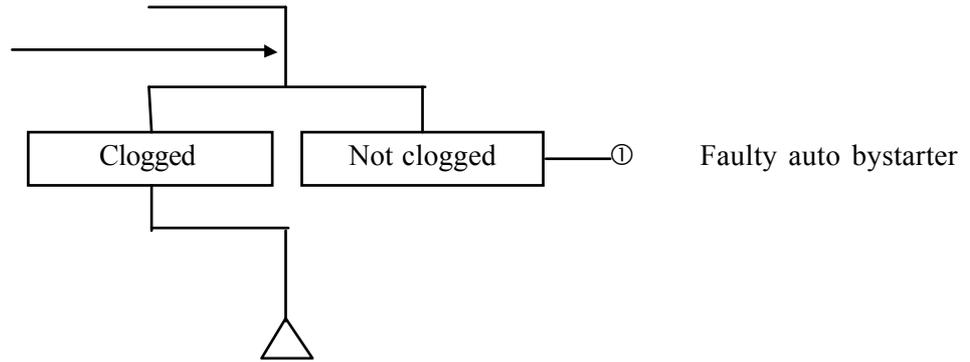
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## POOR PERFORMANCE (AT HIGH SPEED)



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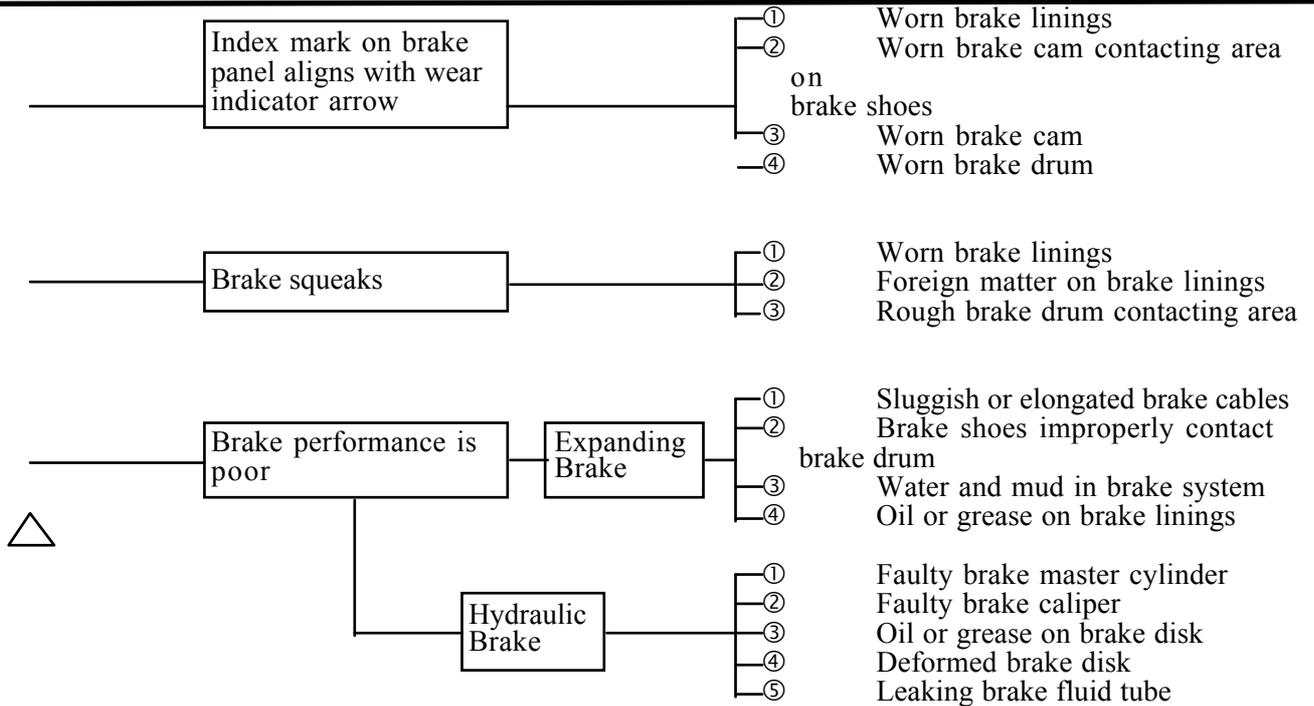


## CLUTCH, DRIVE AND DRIVEN PULLEYS

Symptom	Probable Cause
Engine starts but motor-cycle does not	<ul style="list-style-type: none"> <li>① Worn or slipping drive belt</li> <li>② Broken ramp plate</li> <li>③ Broken driven face spring</li> <li>④ Separated clutch lining</li> <li>⑤ Damaged driven pulley shaft splines</li> <li>⑥ Damaged final gear</li> <li>⑦ Seized final gear</li> </ul>
Motorcycle creeps or engine starts but soon stops or seems to rush out (Rear wheel rotates when engine is idling)	<ul style="list-style-type: none"> <li>① Broken shoe spring</li> <li>② Clutch outer and clutch weight stuck</li> <li>③ Seized pivot</li> </ul>
Engine lacks power at start of a grade (poor slope performance)	<ul style="list-style-type: none"> <li>① Worn or slipping drive belt</li> <li>② Worn weight rollers</li> <li>③ Seized drive pulley bearings</li> <li>④ Weak driven face spring</li> <li>⑤ Worn or seized driven pulley bearings</li> </ul>
Engine lacks power at high speed	<ul style="list-style-type: none"> <li>① Worn or slipping drive belt</li> <li>② Worn weight rollers</li> <li>③ Worn or seized driven pulley bearings</li> </ul>

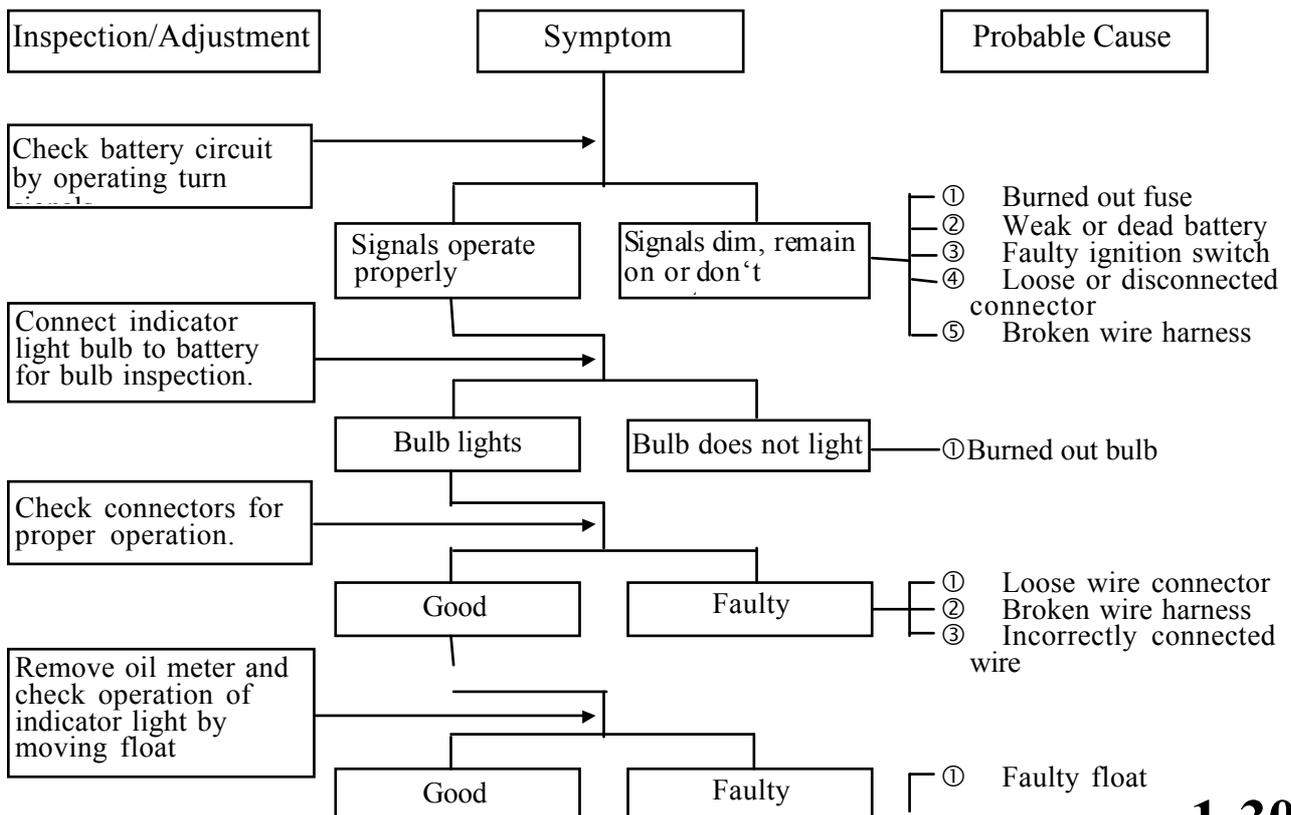


# 1. GENERAL INFORMATION



## OIL METER

1. Motor oil indicator light does not come on when there is no motor oil (Ignition switch ON)



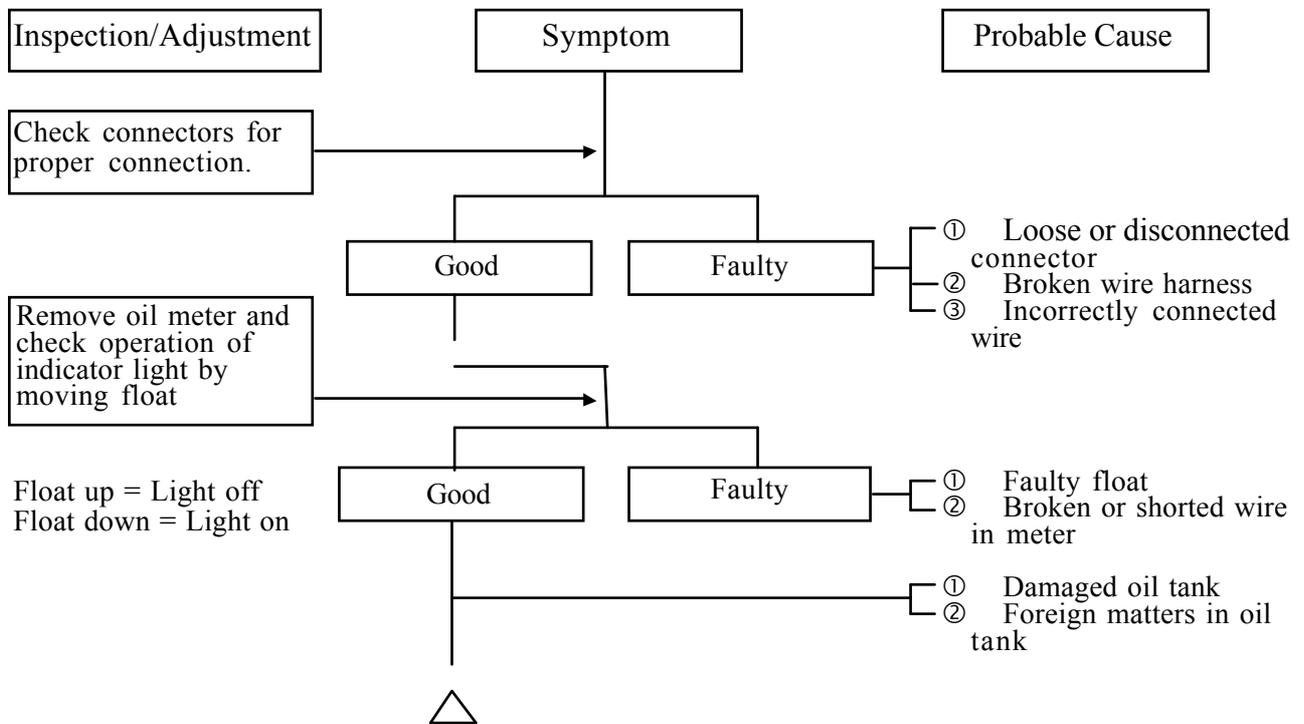
# 1. GENERAL INFORMATION

Float up = Light off  
 Float down = Light on

② Broken or shorted wire  
 in  
 meter

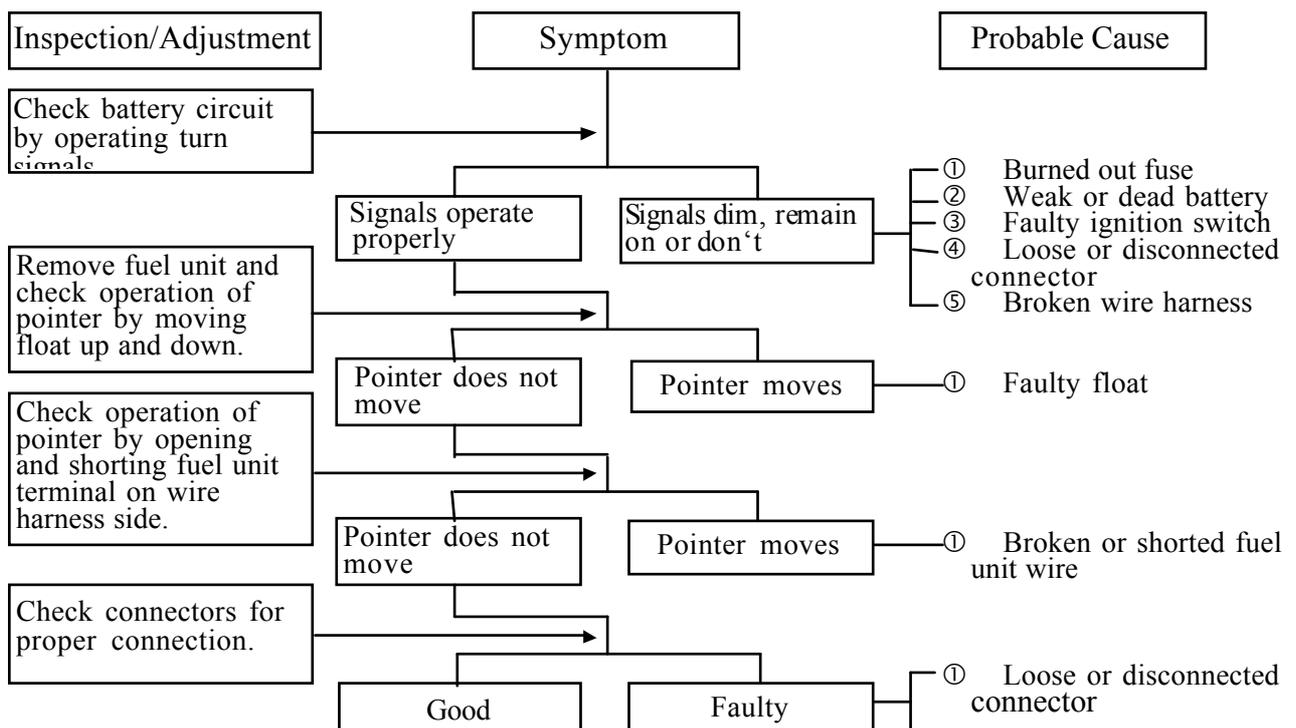


## 2. Motor oil is sufficient but the indicator light remains on (Ignition switch ON)



## FUEL GAUGE

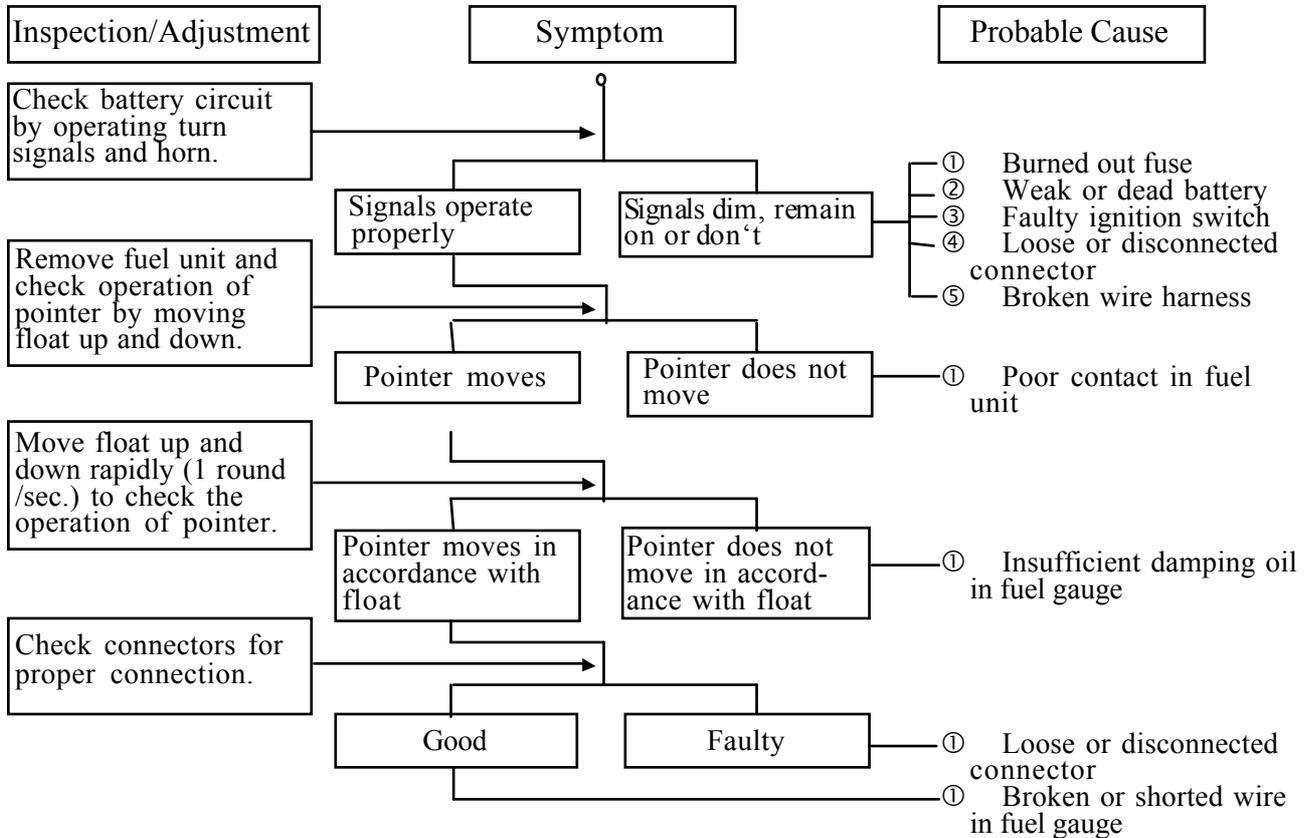
### 1. Pointer does not register correctly (Ignition switch ON)



# 1. GENERAL INFORMATION

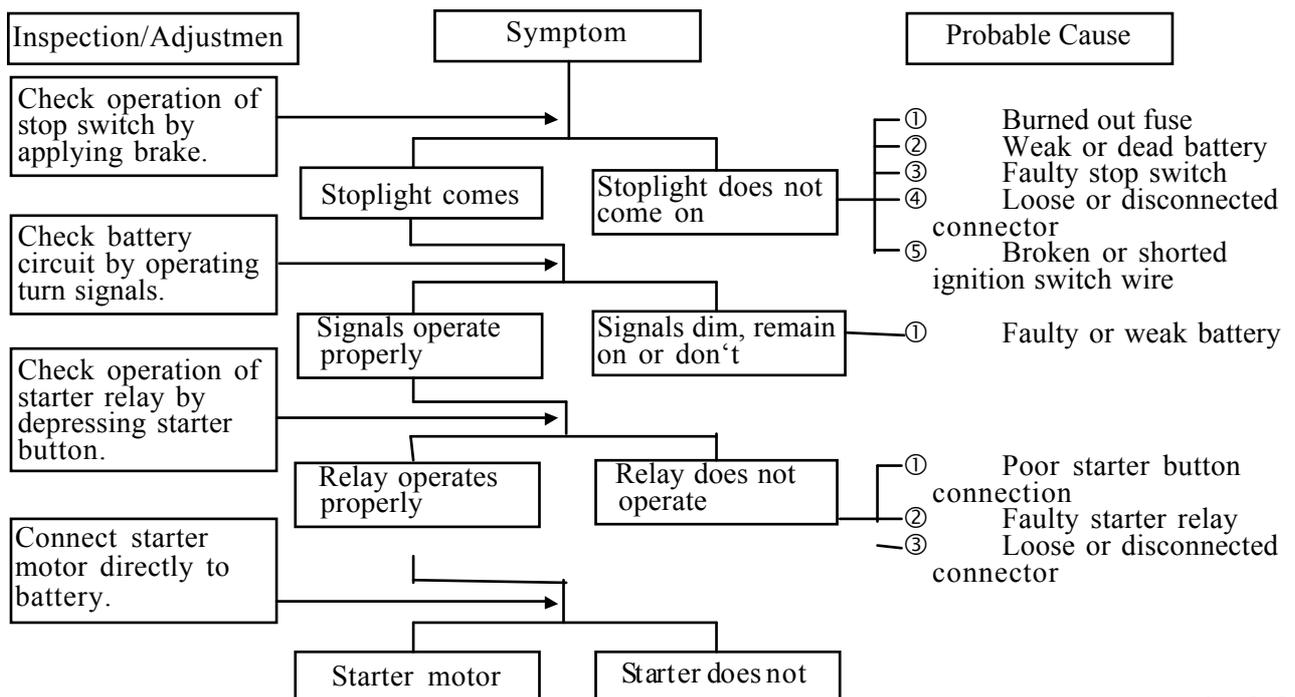
- ② Incorrectly connected connector
- ① Broken or shorted wire in fuel gauge

## 2. Pointer fluctuates or swings (Ignition switch ON)



## STARTER MOTOR

### 1. Starter motor won't turn

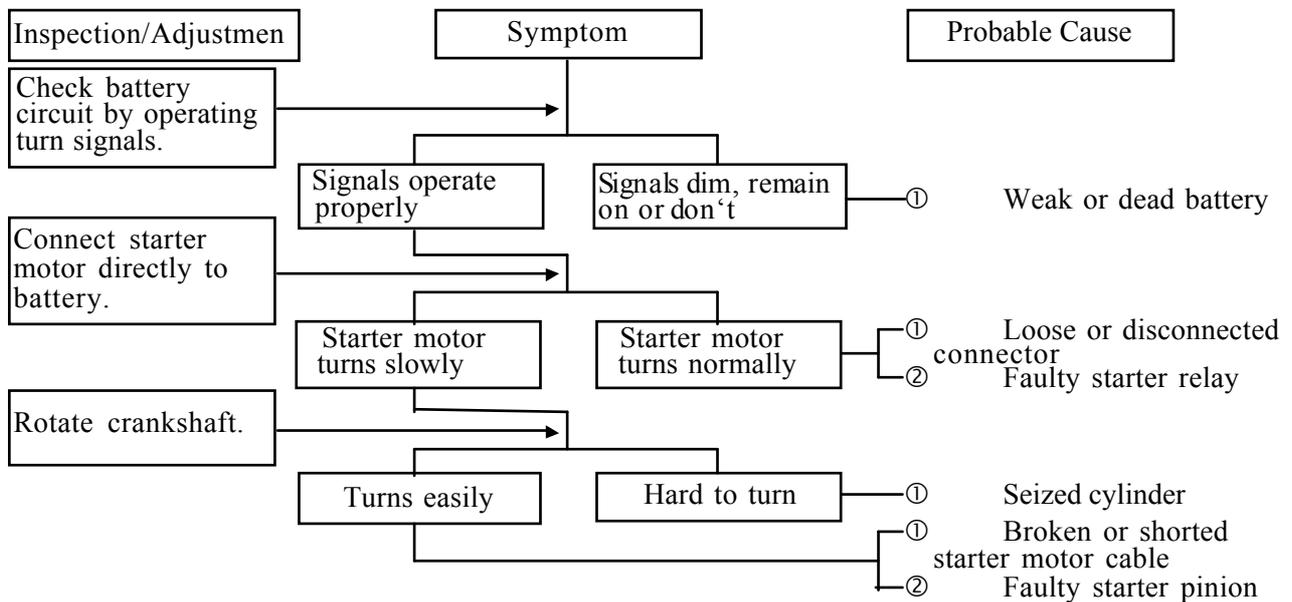


# 1. GENERAL INFORMATION

① Faulty starter motor

② Faulty wire harness

## 2. Starter motor turns slowly or idles



## 3. Starter motor does not stop turning

