

1. GENERAL INFORMATION

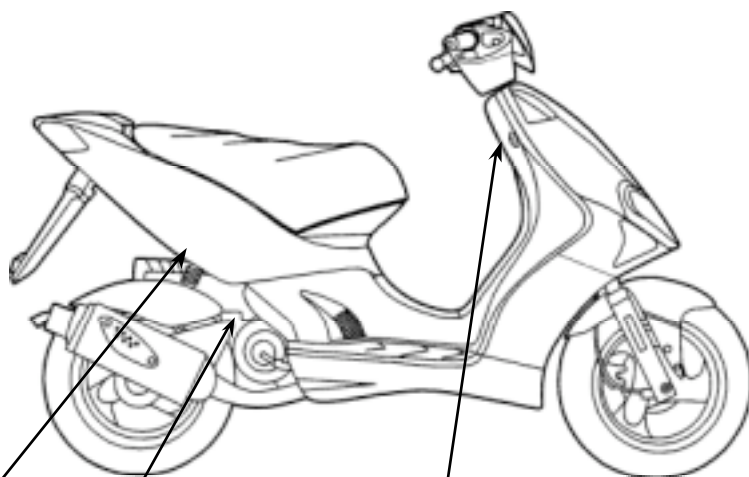
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GENERAL INFORMATION

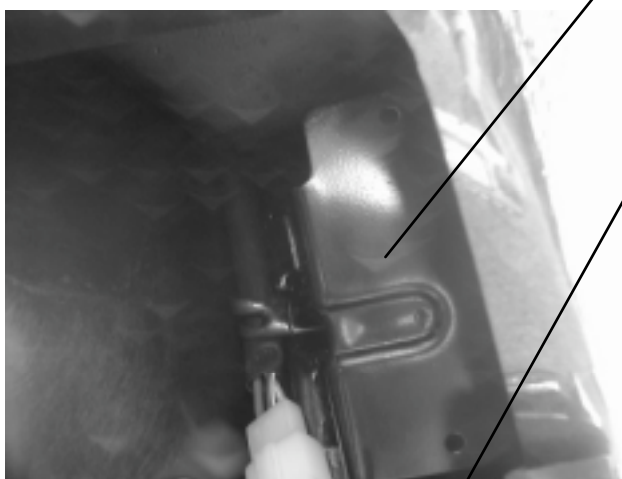
ENGINE SERIAL NUMBER-----	1- 1
SPECIFICATIONS-----	1- 2
SERVICE PRECAUTIONS-----	1- 4
TORQUE VALUES -----	1-14
SPECIAL TOOLS-----	1-15
LUBRICATION POINTS-----	1-16
WIRING DIAGRAM -----	1-22
TROUBLESHOOTING -----	1-24

1. GENERAL INFORMATION

ENGINE SERIAL NUMBER



Vehicle Identification Serial Number



Location of Engine Serial Number



Location of Frame Serial Number

1. GENERAL INFORMATION

SPECIFICATIONS

Name & Model No.		SH10DA		
Overall length		1850mm		
Overall width		700mm		
Overall height		1190mm		
Wheel base		1295mm		
Engine type		Water cooled 2-stroke		
Displacement		49.4cc		
Fuel Used		92# unleaded gasoline		
Net weight (kg)	Front wheel	41		
	Rear wheel	61		
	Total	102		
Gross weight(kg)	Front wheel	95		
	Rear wheel	138		
	Total	233		
Tires	Front wheel	120/70-12		
	Rear wheel	130/70-12		
Ground clearance		160mm		
Performance	Braking distance (m)		4.4m /30km/HV	
	Min. turning radius		2150mm	
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 x 41.4	
	Compression ratio		7.2:1	
	Compression pressure (kg/cm ² -rpm)		11.8	
	Max. output (ps/rpm)		3.6/6500	
	Max. torque (N-m/rpm)		3.92/6000	
	Port timing	Intake (1mm)	Open	Automatic controlled
			Close	Automatic controlled
		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		1.7 liters
		Exchanging capacity		1.4 liters
	Cooling Type		Water cooling	

Fuel System	Air cleaner type & No			Sponge wet	
	Gear oil capacity			0.12 liters	
	Fuel capacity			6.8 liters	
	Carburetor	Type		P B	
		Piston dia.		13	
		Venturi dia.		14 equivalent	
Electrical	Ignition System	Type		CDI	
		Ignition timing		13.5°±2°/2000rpm	
		Spark plug		NGK BR8HSA	
	Spark plug gap		0.6_ 0.7mm		
	Battery	Capacity		12V4AH	
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		
			2nd		
Moving Device	Front Axle	Caster angle			
		Connecting rod			
	Tire pressure (kg/cm_)		Front	1.75	
			Rear	2.25	
	Turning angle		Left	42.5°	
			Right	42.5°	
	Brake svstem type			Front	Disk brake
Rear				Disk brake	
Damping Device	Suspension type	Front	Telescope		
		Rear	Unit swing		
	Shock absorber type	Front	Telescope		
		Rear	Double swing		
Frame type				Under bone	

1. GENERAL INFORMATION

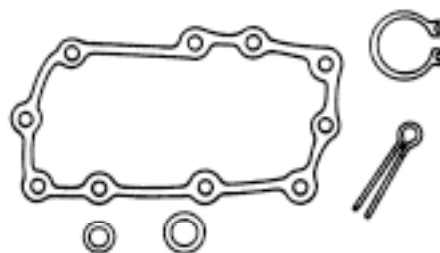
Name & Model No.		SF10DA		
Overall length		1850mm		
Overall width		700mm		
Overall height		1190mm		
Wheel base		1295mm		
Engine type		Air cooled 2-stroke		
Displacement		49.4cc		
Fuel Used		92# unleaded gasoline		
Net weight (kg)	Front wheel	41.5		
	Rear wheel	64.5		
	Total	106		
Gross weight(kg)	Front wheel	83.5		
	Rear wheel	132.5		
	Total	216		
Tires	Front wheel	120/70-12		
	Rear wheel	130/70-12		
Ground clearance		160mm		
Performance	Braking distance (m)		4.4m /30km/HV	
	Min. turning radius		2150mm	
Engine	Starting system		Starting motor & kick starter	
	Type		Gasoline,2-stroke	
	Cylinder arrangement		Single cylinder, flat	
	Combustion chamber type		Semi-sphere	
	Bore x stroke (mm)		39 x 41.4	
	Compression ratio		7.2:1	
	Compression pressure (kg/cm ² -rpm)		11.8	
	Max. output (ps/rpm)		4.2/6500	
	Max. torque (N-m/rpm)		4.9/6000	
	Port timing	Intake (1mm)	Open	Automatic controlled
			Close	Automatic controlled
		Exhaust (1mm)	Open	
			Close	
	Valve clearance (cold)		Intake	
			Exhaust	
	Idle speed (rpm)		1900± 100rpm	
	Lubrication System	Lubrication type		Separate type
		Oil pump type		Plunger type
		Oil filter type		Full-flow filtration
		Oil capacity		1.7 liters
		Exchanging capacity		1.4 liters
	Cooling Type		Air cooling	

Fuel System	Air cleaner type & No			Sponge wet	
	Gear oil capacity			0.12 liters	
	Fuel capacity			6.8 liters	
	Carburetor	Type		P B	
		Piston dia.		13	
		Venturi dia.		14 equivalent	
Electrical	Ignition System	Type		CDI	
		Ignition timing		13.5°±2°/2000rpm	
		Spark plug		NGK BR8HSA	
	Spark plug gap		0.6_ 0.7mm		
	Battery	Capacity		12V4AH	
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		
2nd					
Moving Device	Front Axle	Caster angle			
		Connecting rod			
	Tire pressure (kg/cm_)		Front	1.75	
			Rear	2.25	
	Turning angle		Left	42.5°	
			Right	42.5°	
Brake system type			Front	Disk brake	
			Rear	Expanding brake	
Damping Device	Suspension type		Front	Telescope	
			Rear	Unit swing	
	Shock absorber type		Front	Telescope	
			Rear	Double swing	
Frame type			Under bone		

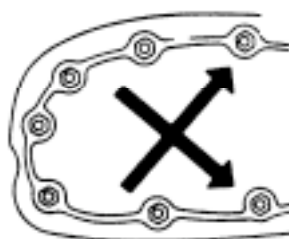
1. GENERAL INFORMATION

SERVICE PRECAUTIONS

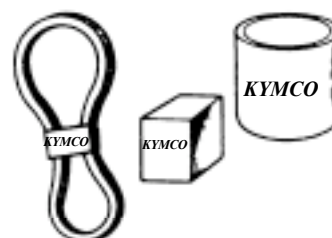
- Make sure to install new gaskets, O-rings, circlips, cotter pins, etc. when reassembling.



- 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.

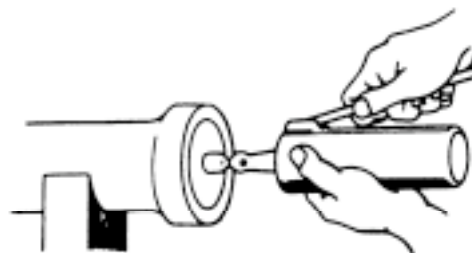


- After disassembly, clean removed parts. Lubricate sliding surfaces with engine oil before reassembly.



1. GENERAL INFORMATION

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



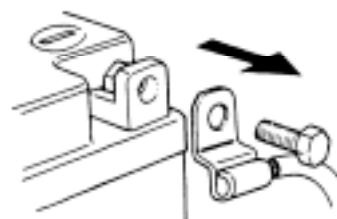
- After reassembly, check all parts for proper tightening and operation.



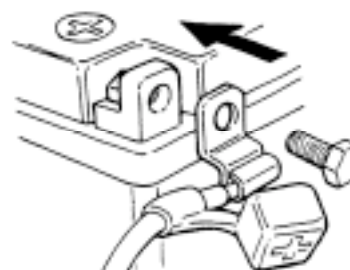
- When two persons work together, pay attention to the mutual working safety.



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

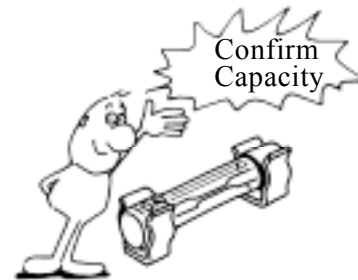


- After operation, check all connecting points, fasteners, and lines for proper connection and installation.
- When connecting the battery, the positive (+) terminal must be connected first.
- After connection, apply grease to the battery terminals.
- Terminal caps shall be installed securely.



1. GENERAL INFORMATION

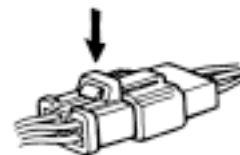
- If the fuse is burned out, find the cause and repair it. Replace it with a new one according to the specified capacity.



- After operation, terminal caps shall be installed securely.



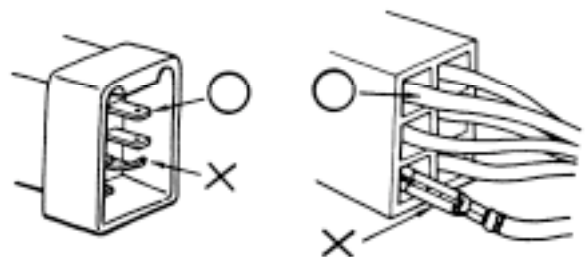
- When taking out the connector, the lock on the connector shall be released before operation.



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

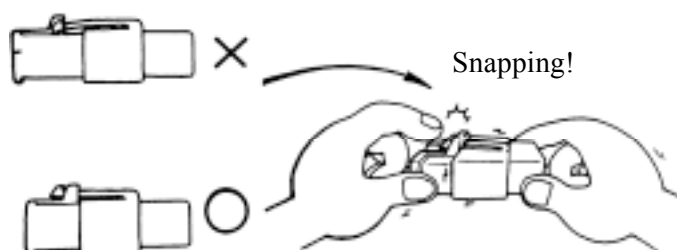


- Check if any connector terminal is bending, protruding or loose.

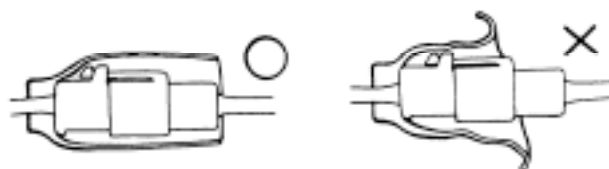


1. GENERAL INFORMATION

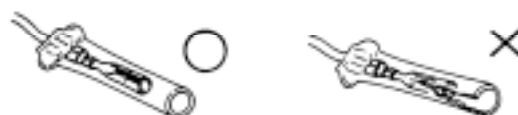
- The connector shall be inserted completely.
- If the double connector has a lock, lock it at the correct position.
- Check if there is any loose wire.



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



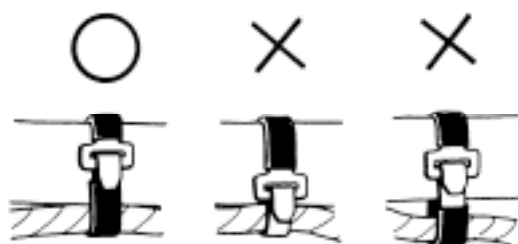
- Check the double connector cover for proper coverage and installation.



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

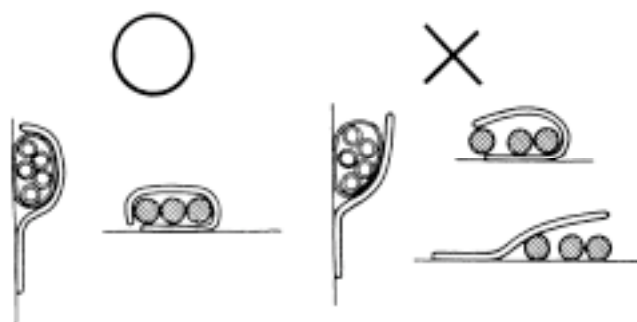


- Secure wire harnesses to the frame with their respective wire bands at the designated locations. Tighten the bands so that only the insulated surfaces contact the wire harnesses.



1. GENERAL INFORMATION

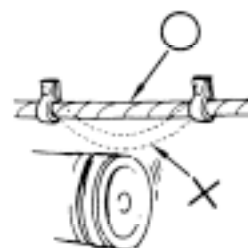
- After clamping, check each wire to make sure it is secure.



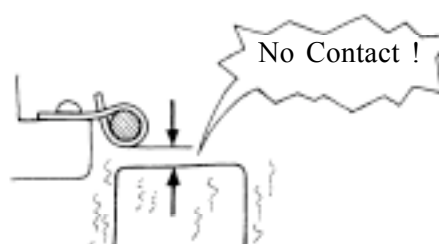
- Do not squeeze wires against the weld or its clamp.



- 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.

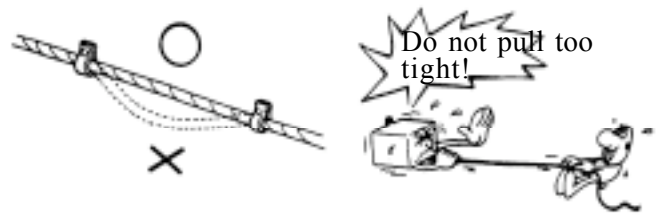


- Route wire harnesses to avoid sharp edges or corners. Avoid the projected ends of bolts and screws.
- Route wire harnesses passing through the side of bolts and screws. Avoid the projected ends of bolts and screws.

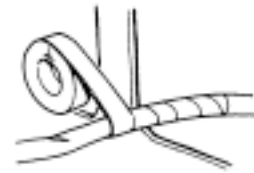


1. GENERAL INFORMATION

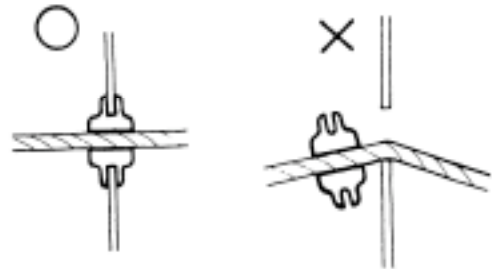
- Route harnesses so they are neither pulled tight nor have excessive slack.



- 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.

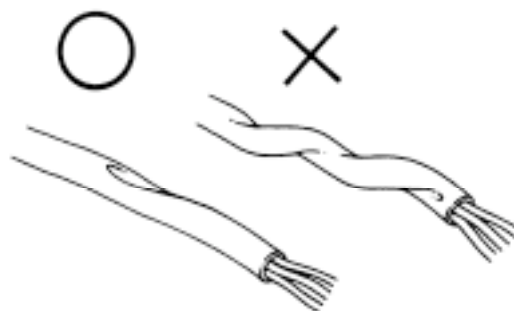


- When installing other parts, do not press or squeeze the wires.



1. GENERAL INFORMATION

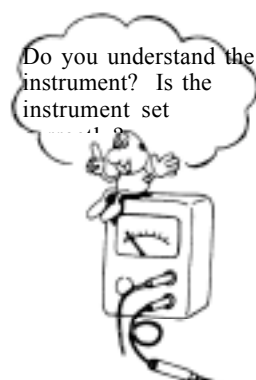
- After routing, check that the wire harnesses are not twisted or kinked.



- 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.



1. GENERAL INFORMATION

■ Symbols:

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



Engine Oil

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



Grease

: Apply grease for lubrication.



Gear Oil

: Transmission Gear Oil (90#)



Special

: Use special tool.



: Caution



: Warning

1. GENERAL INFORMATION

SERVICE INFORMATION

ENGINE	Standard (mm)		Service Limit (mm)	
	SF10DA	SH10DA	SF10DA	SH10DA
Cylinder head warpage	□	□	0.10	0.10
Piston O.D.(5mm from bottom of piston)	38.955_ 38.9	38.955_ 38.9	38.90	38.90
Cylinder-to- piston clearance	0.03_ 0.07		0.10	0.10
Piston pin hole I.D.	12.002_ 12.0	12.002_ 12.0	12.03	12.03
Piston pin O.D.	11.994_ 12.0	11.994_ 12.0	11.98	11.98
Piston-to-piston pin clearance	0.002_ 0.014	□	0.03	□
Piston ring end gap (top/second)	0.10_ 0.25	0.10_ 0.25	0.40	0.40
Connecting rod small end I.D.	17.005_ 17.0	17.005_ 17.0	17.03	17.03
Cylinder bore	39.0_ 39.025	39.0_ 39.025	39.05	39.05
Drive belt width	18	18	17	17
Drive pulley collar O.D.	20.01_ 20.02	20.01_ 20.02	19.97	19.97
Movable drive face I.D.	20.035_ 20.0	20.035_ 20.0	20.21	20.21
Weight roller O.D.	13.0	13.0	12.4	12.4
Clutch outer I.D.	107_ 107.2	107_ 107.2	107.5	107.5
Driven face spring free length	87.9	87.9	82.6	82.6
Driven face O.D.	33.965_ 33.9	□	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	SF10DA	SH10DA
	SF10DA	SH10DA
Venturi dia.	14mm	14mm
Identification number	PB058 [C]	PB093 [C]
Float level	8.6mm	8.6mm
Main jet(Unlimited/limited speed)	#92/#78	#92/#78
Slow jet	#35	#35
Air screw opening	1_ ± _	1_ ± _
Idle speed	1900 ± 100rpm	2000 ± 100rpm
Throttle grip free play	2_ 6mm	2_ 6mm
Jet needle clip notch	1 st notch	1 st notch

1. GENERAL INFORMATION

FRAME

Item		Standard (mm)		Service Limit (mm)	
		SF10DA	SH10DA	SF10DA	SH10DA
Axle shaft runout		□	□	0.2	0.2
Front wheel rim runout	Radial				
	Axial				
Front shock absorber spring free length		221.5	221.5	204.3	204.3
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 disk runout	Front/rear	□	□	0.30	0.30
Rear shock absorber spring free length		214.7	214.7	197.7	197.7

ELECTRICAL EQUIPMENT

			SF10DA	SH10DA
Battery	Capacity		12V4AH	12V4AH
	Voltage		13.0_ 13.2V	13.0_ 13.2V
	Charging current	Standard	0.4A/5H	0.4A/5H
		Quick	4A/0.5H	4A/0.5H
Spark plug	(NGK)		BR8HSA	BR8HSA
Spark plug gap			0.6_ 0.7mm	0.6_ 0.7mm
Ignition coil resistance	Primary coil		0.153_ 0.187□	0.153_ 0.187□
	Secondary coil (with plug cap)		6.99_ 10.21K□	6.99_ 10.21K□
	Secondary coil (without plug cap)		3.24_ 3.96K□	3.24_ 3.96K□
Pulser coil resistance (20℃)			80_ 160□	80_ 160□
Ignition timing			13.5°±2°BTDC/2000rpm	13.5°±2°BTDC/2000rpm

1. GENERAL INFORMATION

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
Rear brake arm bolt				Flange 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)	
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

1. GENERAL INFORMATION

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

1. GENERAL INFORMATION

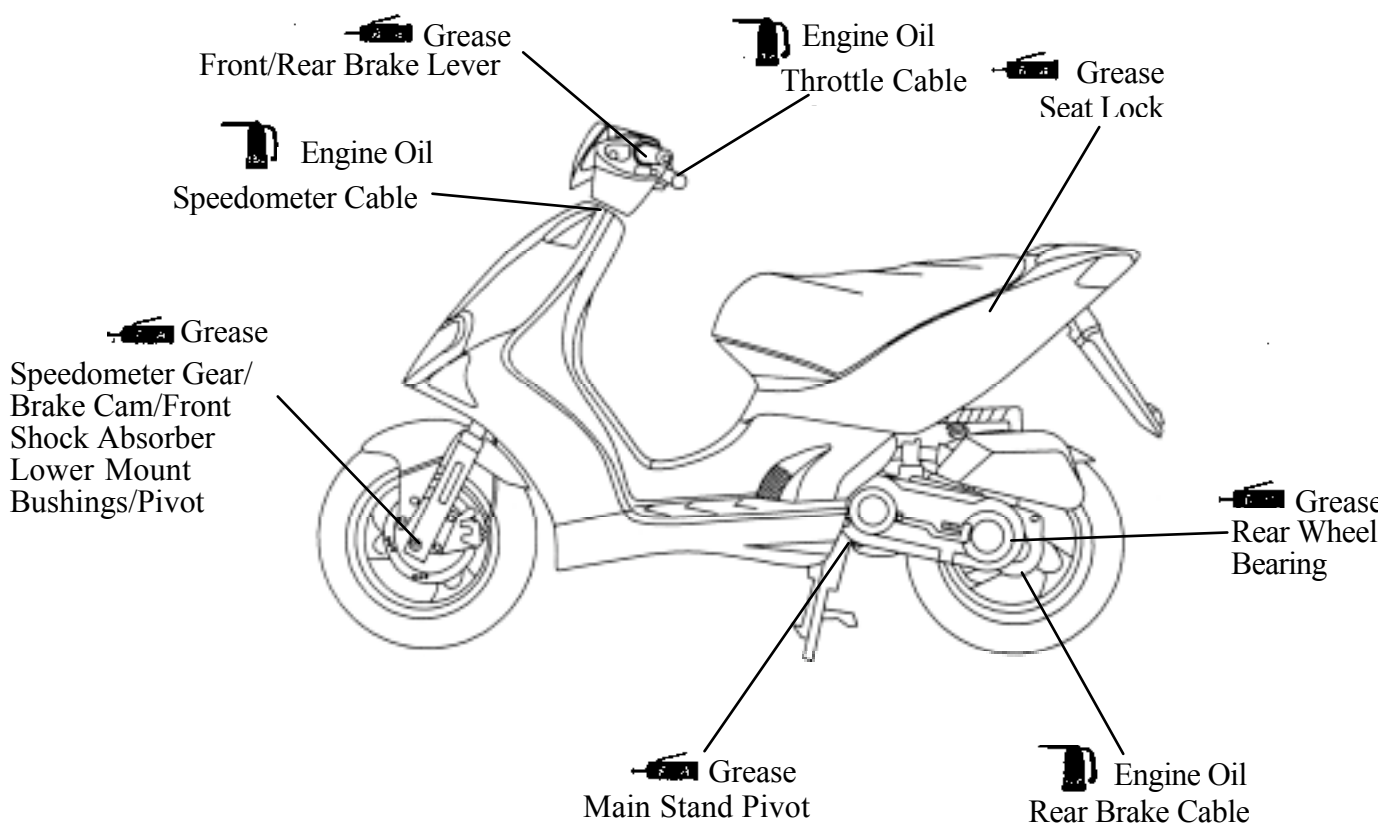
LUBRICATION POINTS

ENGINE

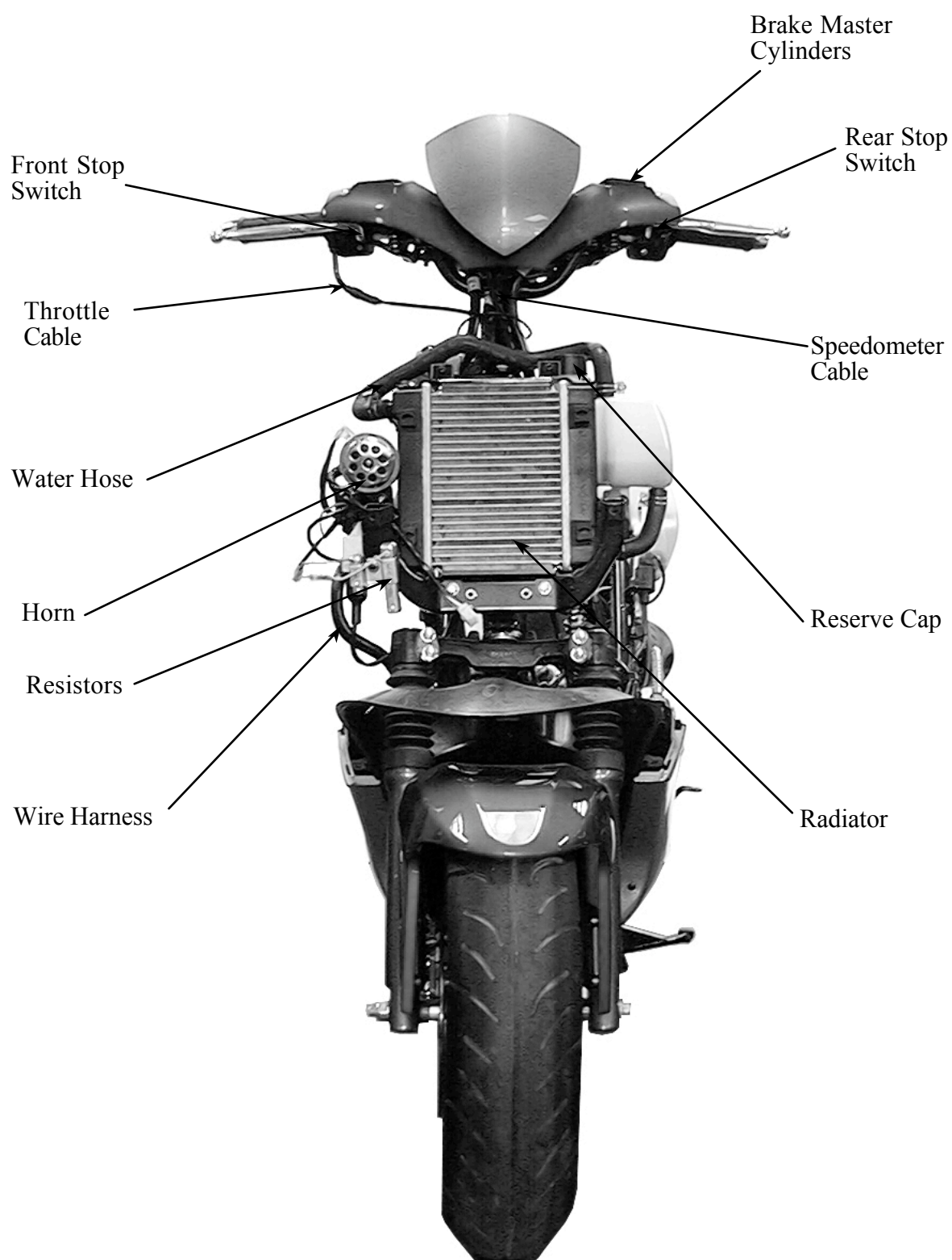
NO.	Lubrication Points	Lubricant	Remarks
1	Crankcase sliding & movable parts	JASO-FC or API-TC	
2	Cylinder movable parts		
3	Transmission gear (final gear)	SAE-90#	
4	Kick starter spindle bushing	Grease	
5	Drive pulley movable parts	Grease	
6	Starter pinion movable parts	Grease	

FRAME

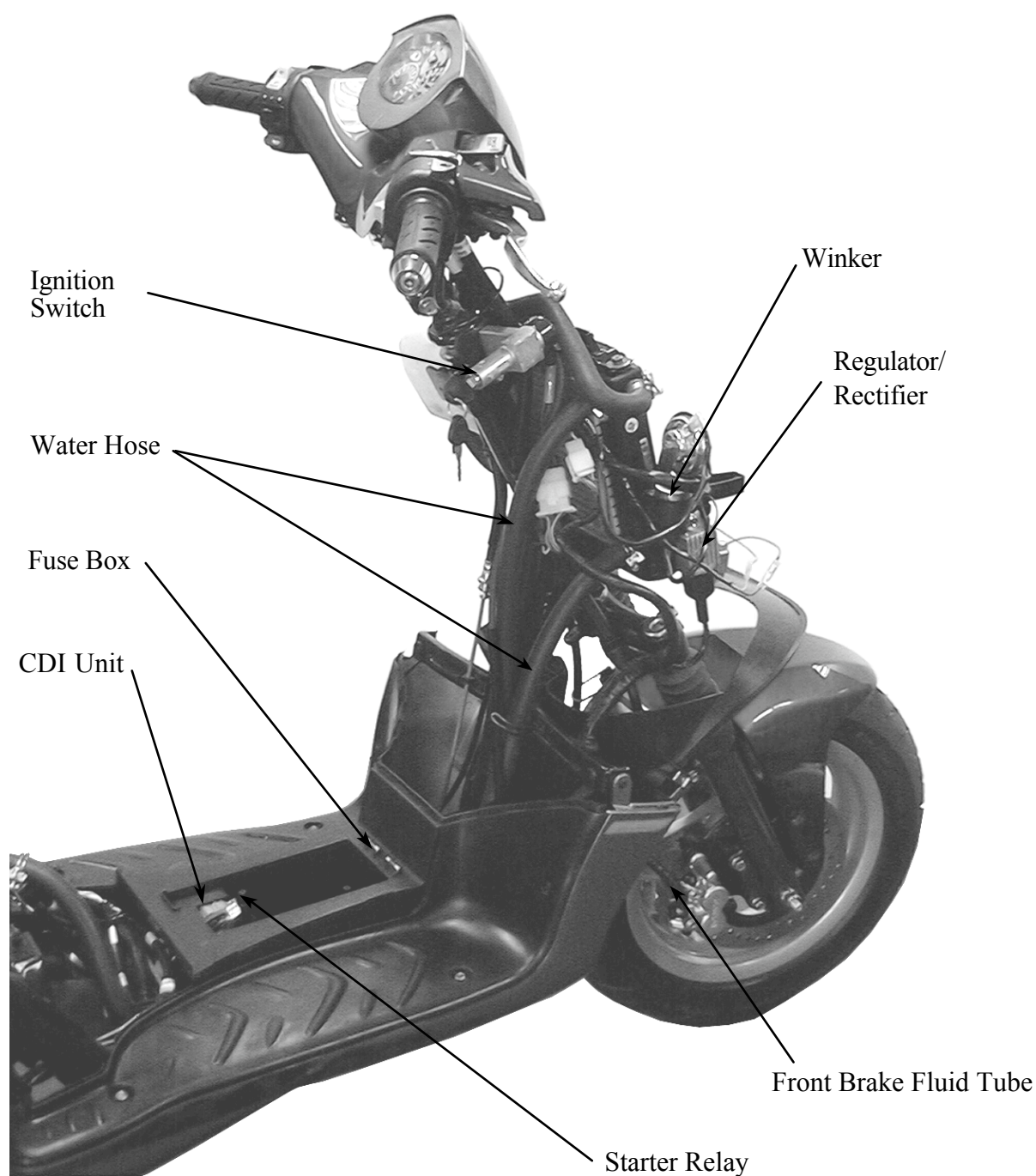
Apply clean engine oil or grease to cables and movable parts not specified. This will avoid abnormal noise and rise the durability of the motorcycle.



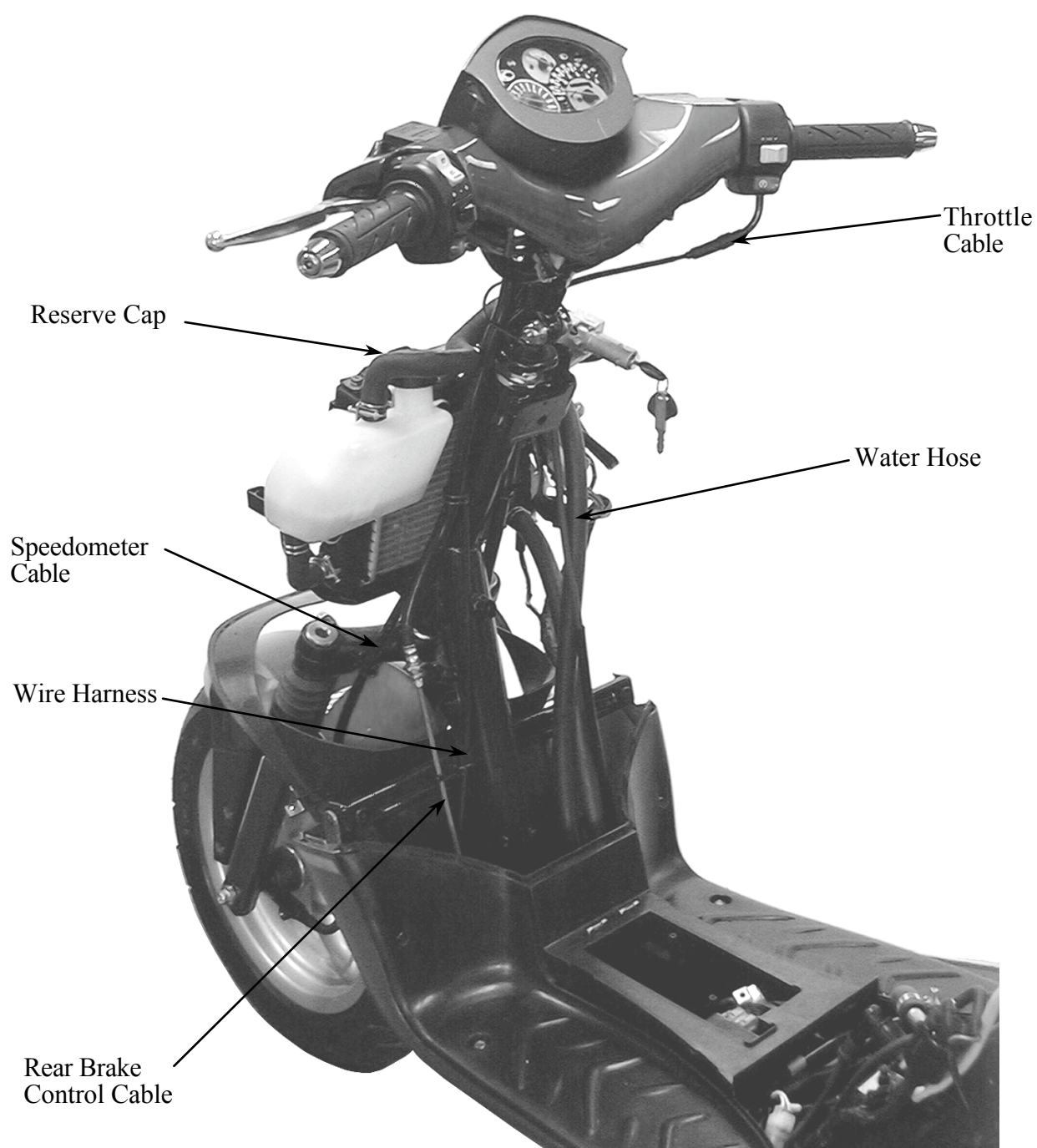
1. GENERAL INFORMATION



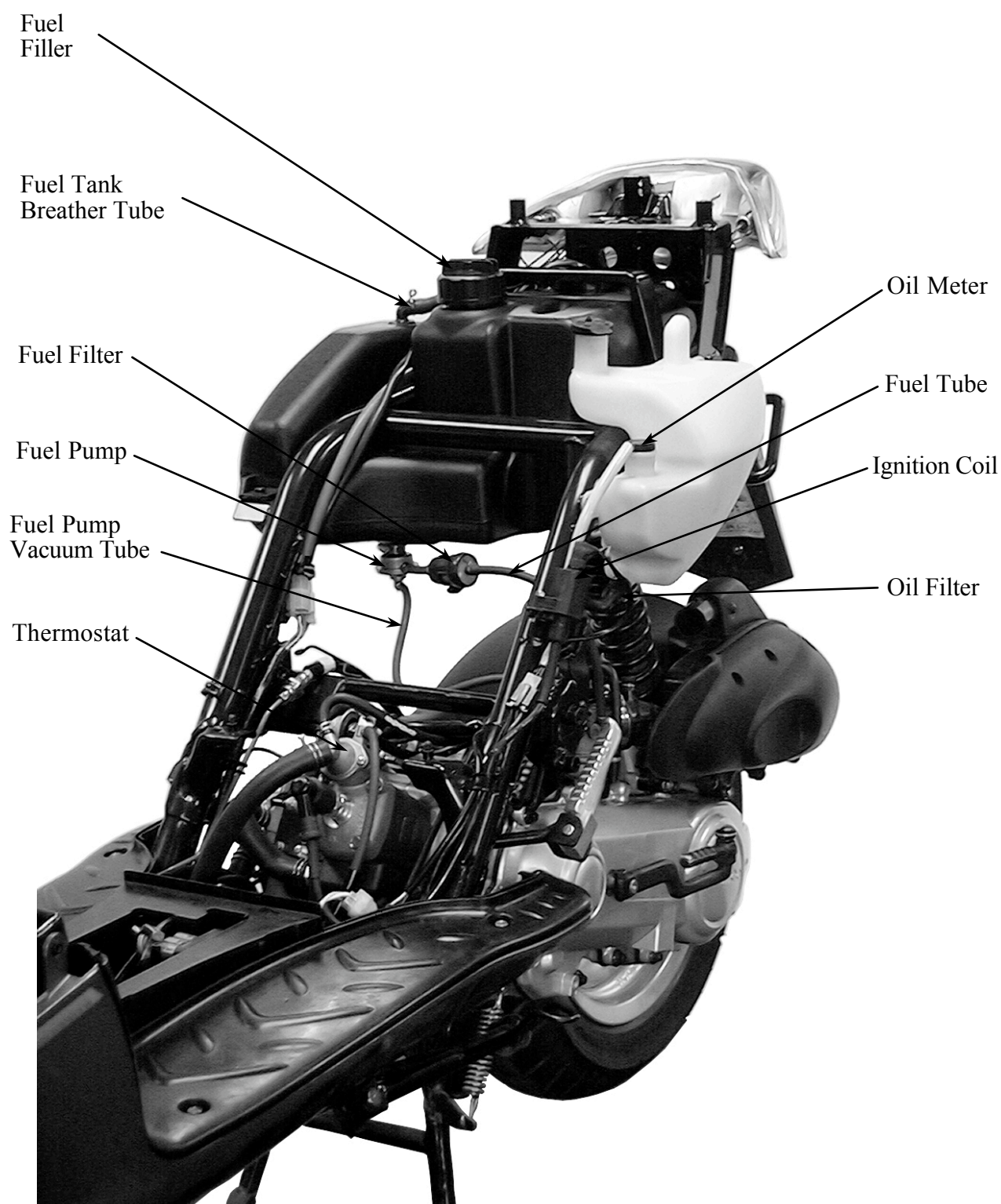
1. GENERAL INFORMATION



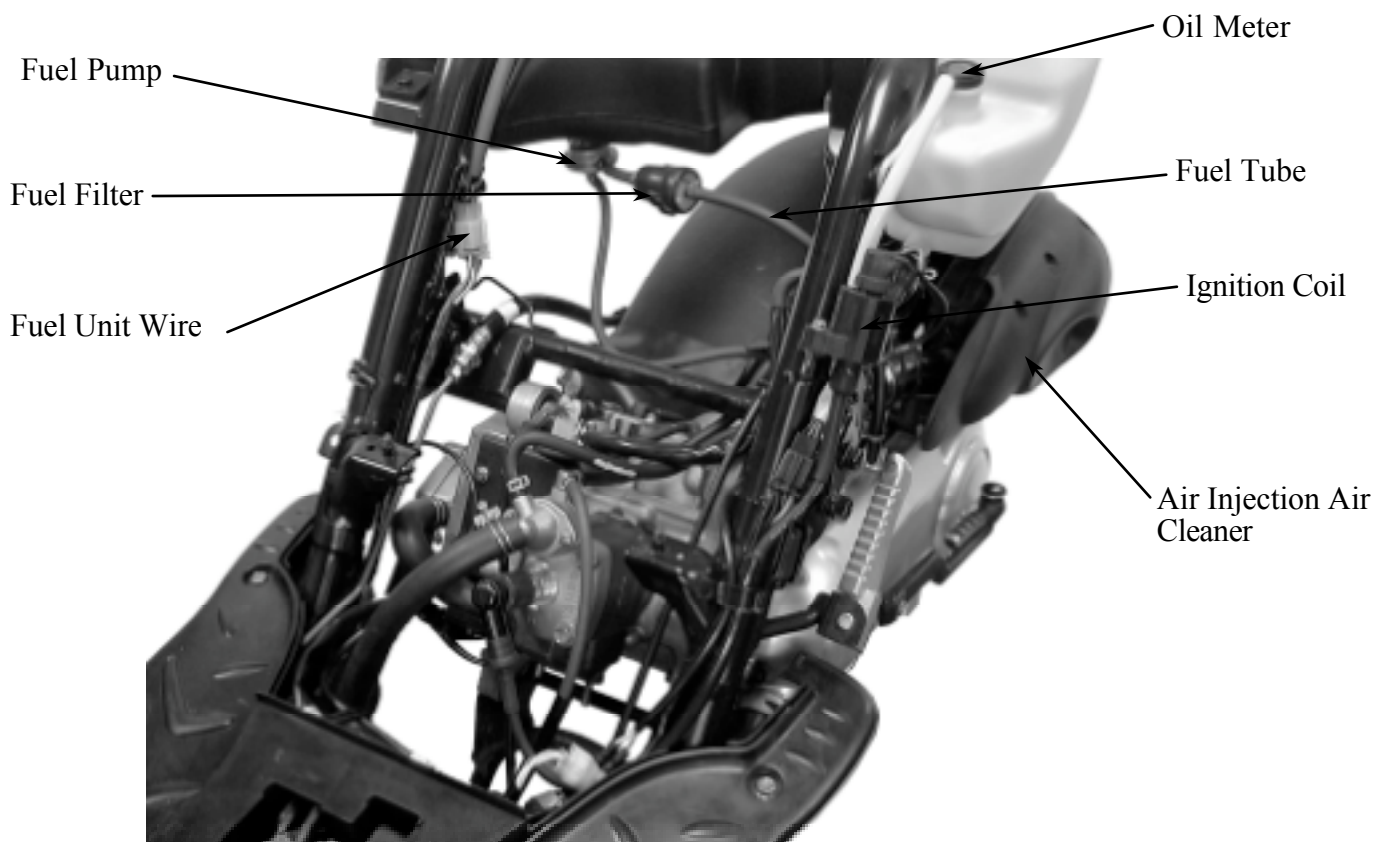
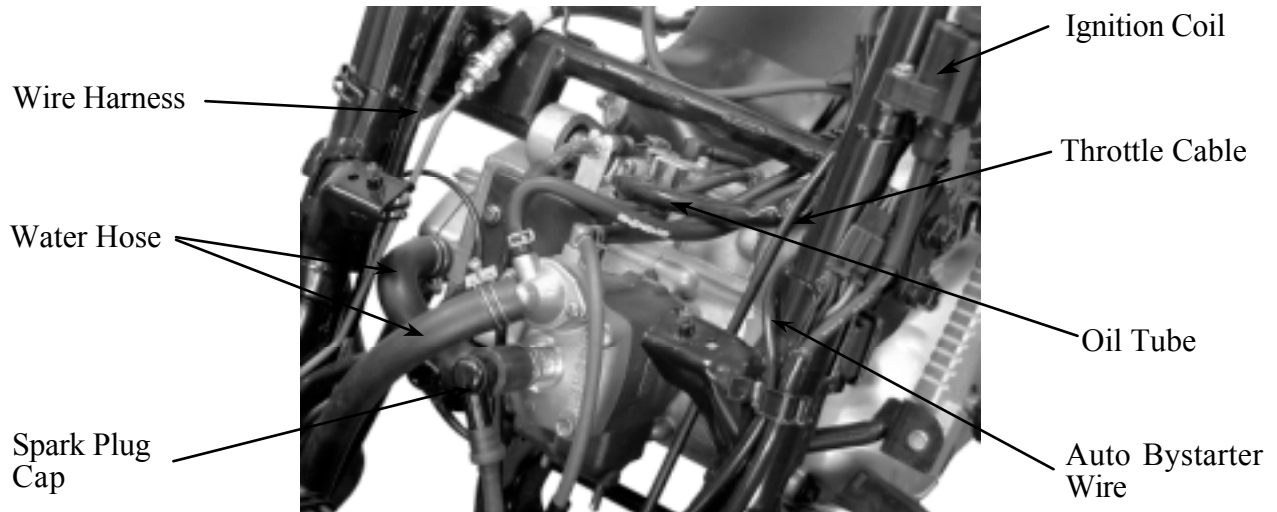
1. GENERAL INFORMATION



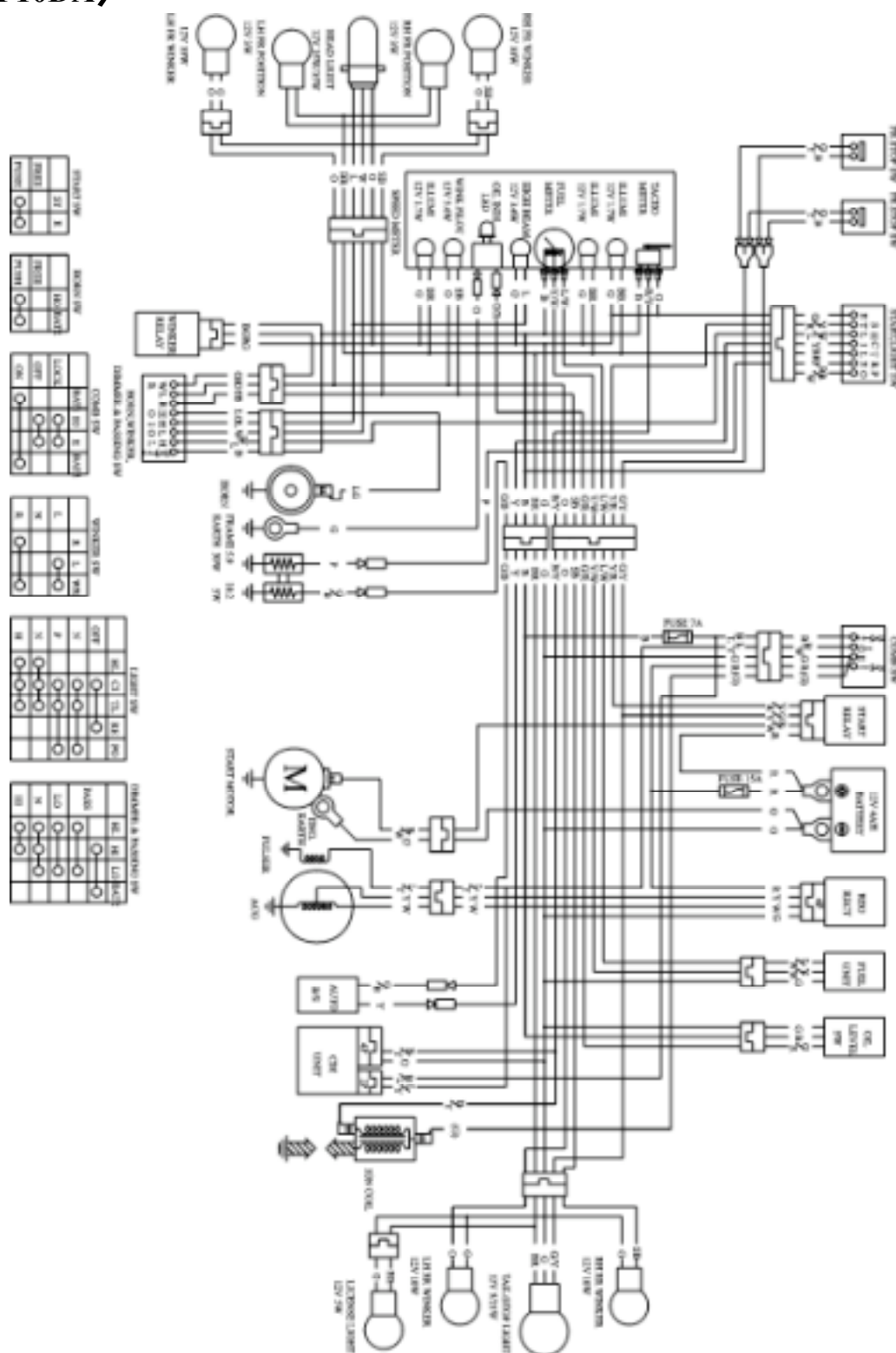
1. GENERAL INFORMATION



1. GENERAL INFORMATION

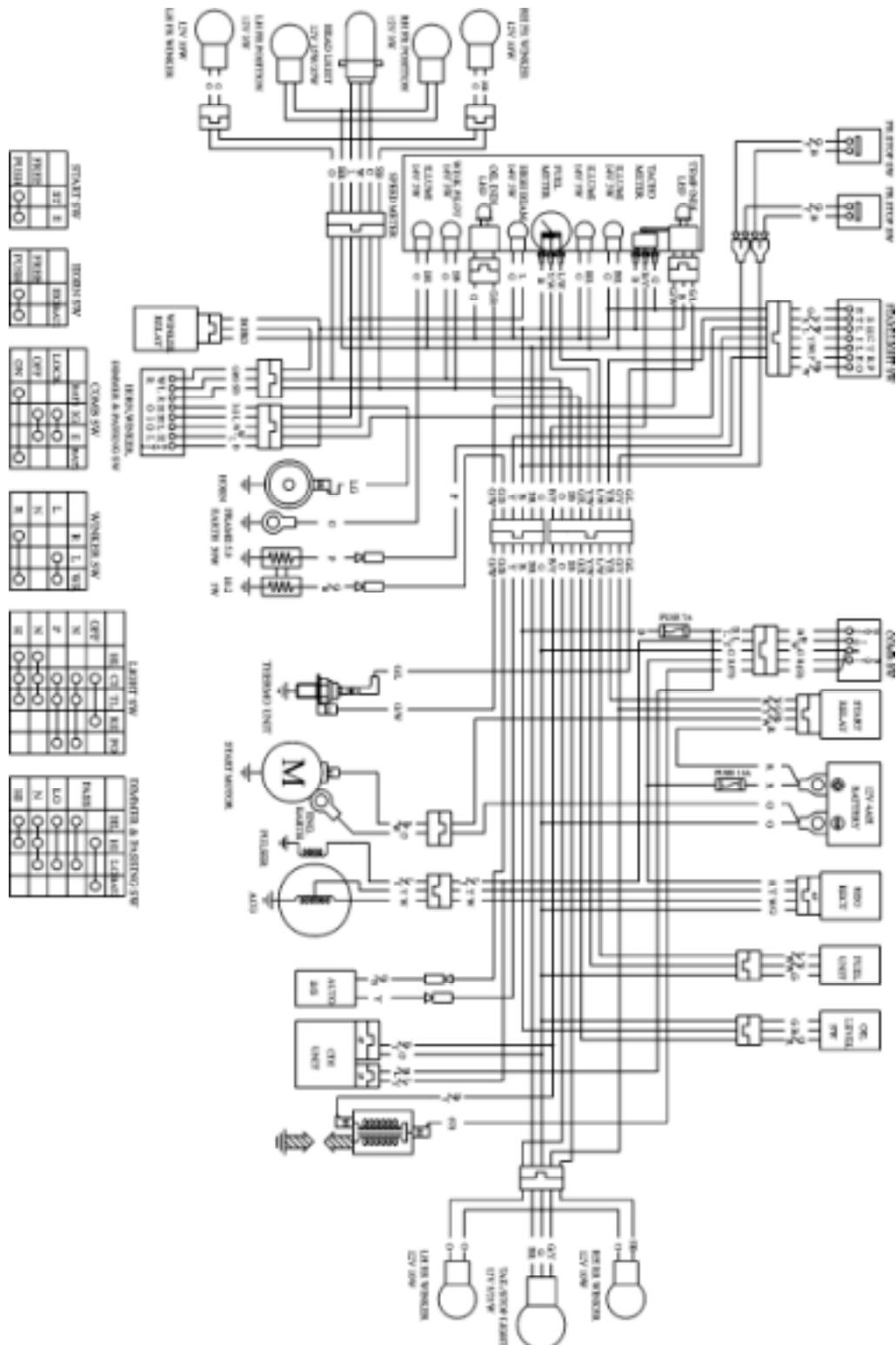


WIRING DIAGRAM 〈 SF10DA 〉



1. GENERAL INFORMATION

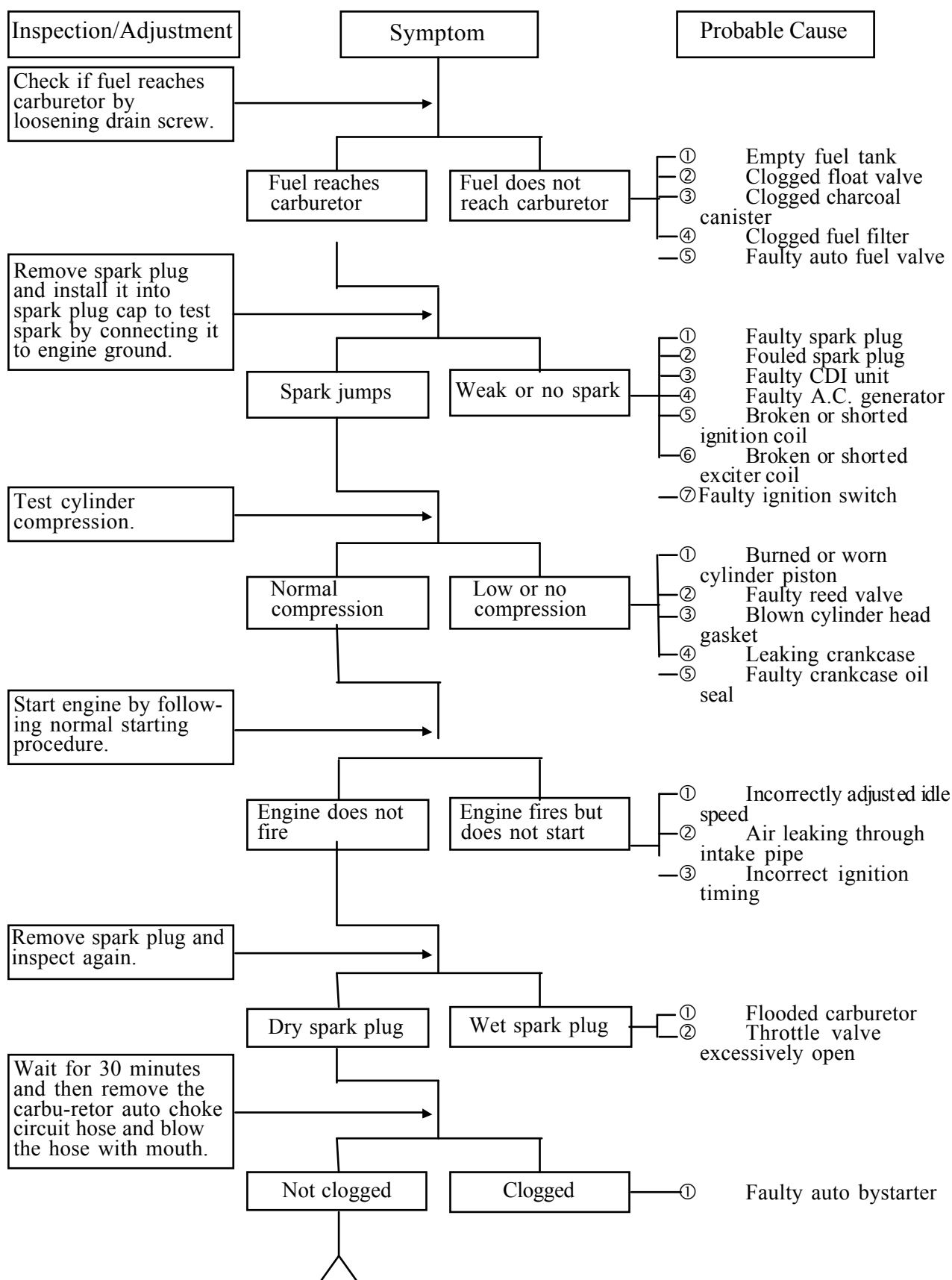
〈 SH10DA 〉



1. GENERAL INFORMATION

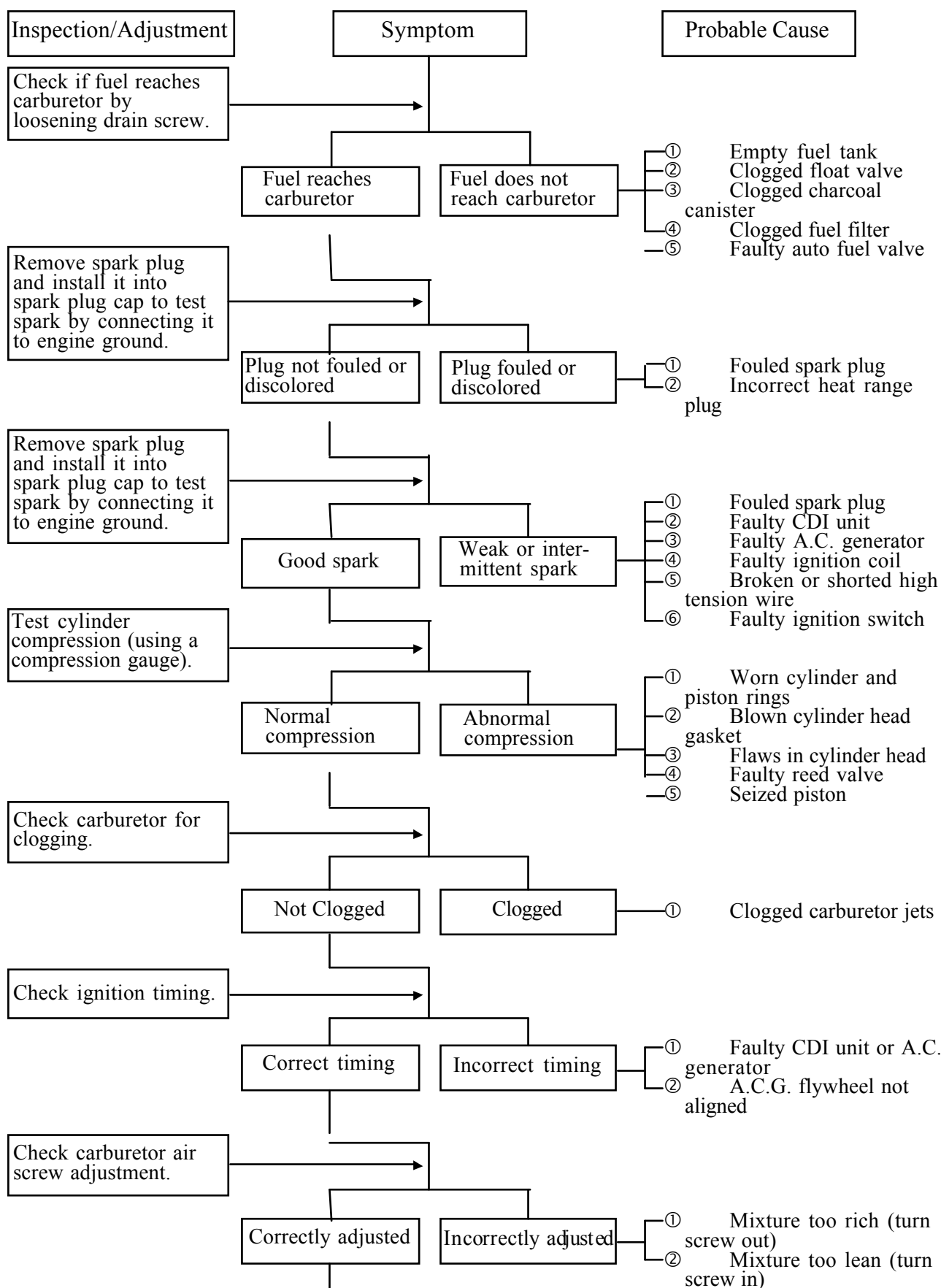
TROUBLESHOOTING

ENGINE WILL NOT START OR IS HARD TO START

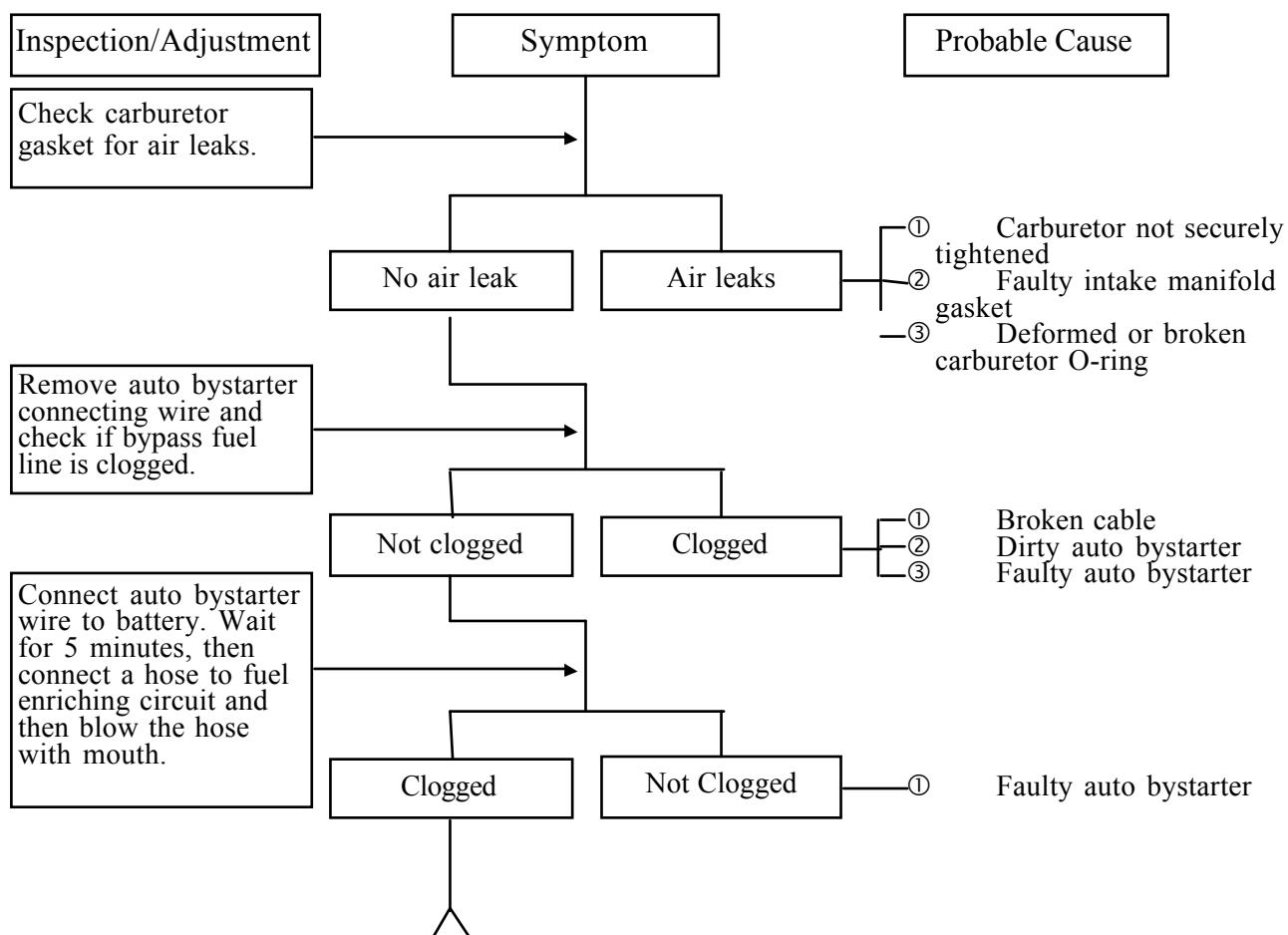


1. GENERAL INFORMATION

ENGINE STOPS IMMEDIATELY AFTER IT STARTS

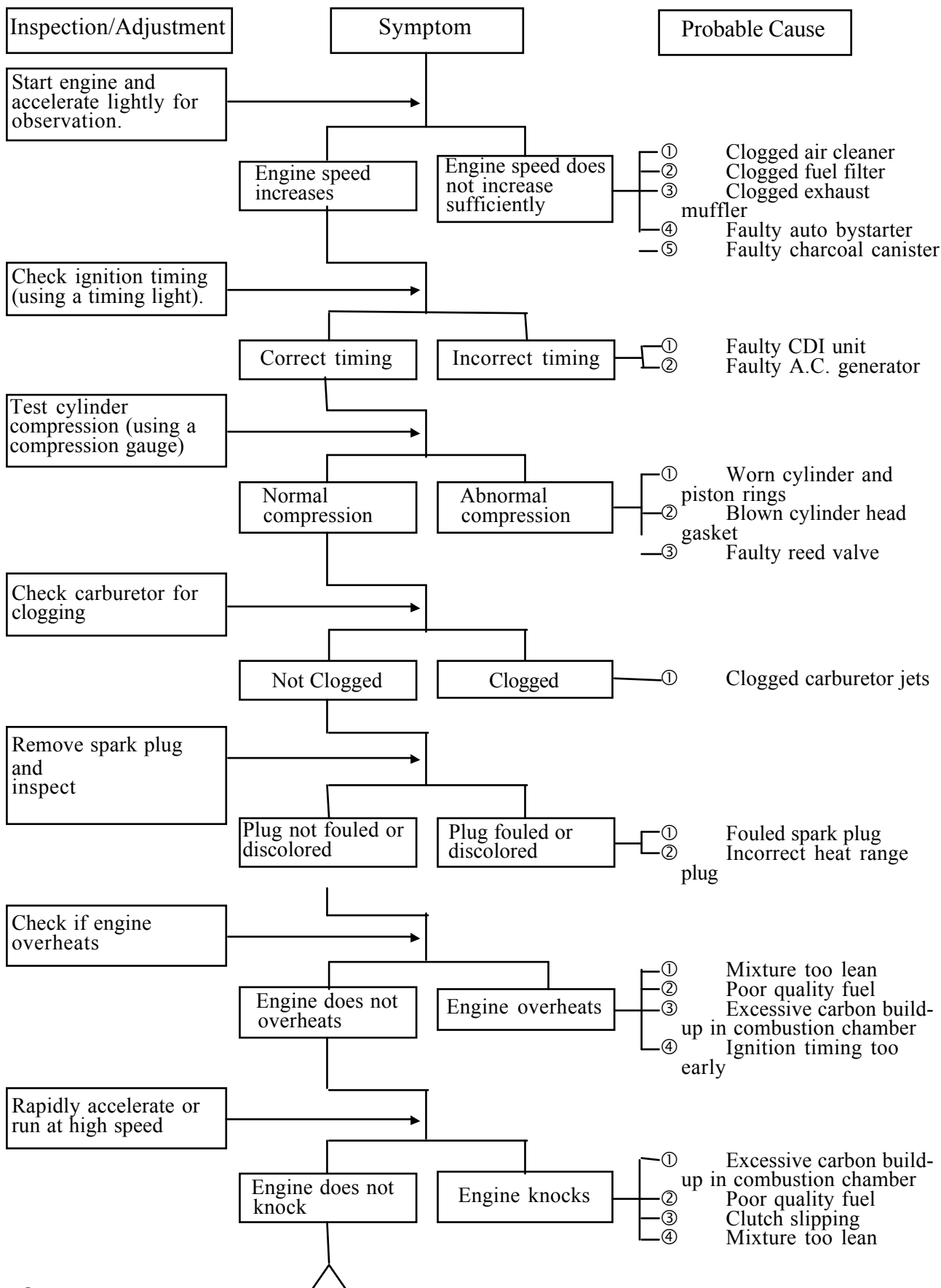


1. GENERAL INFORMATION



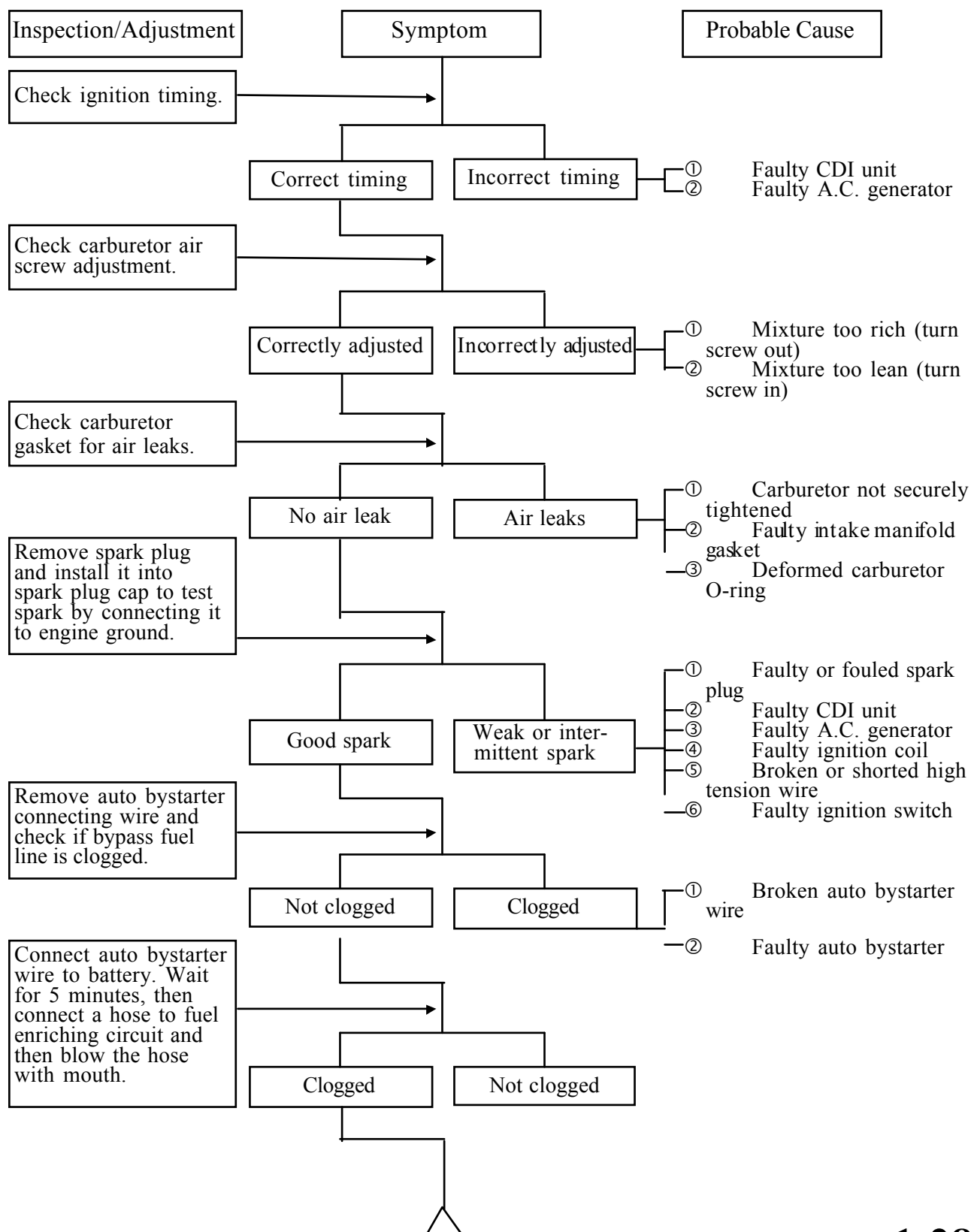
1. GENERAL INFORMATION

ENGINE LACKS POWER



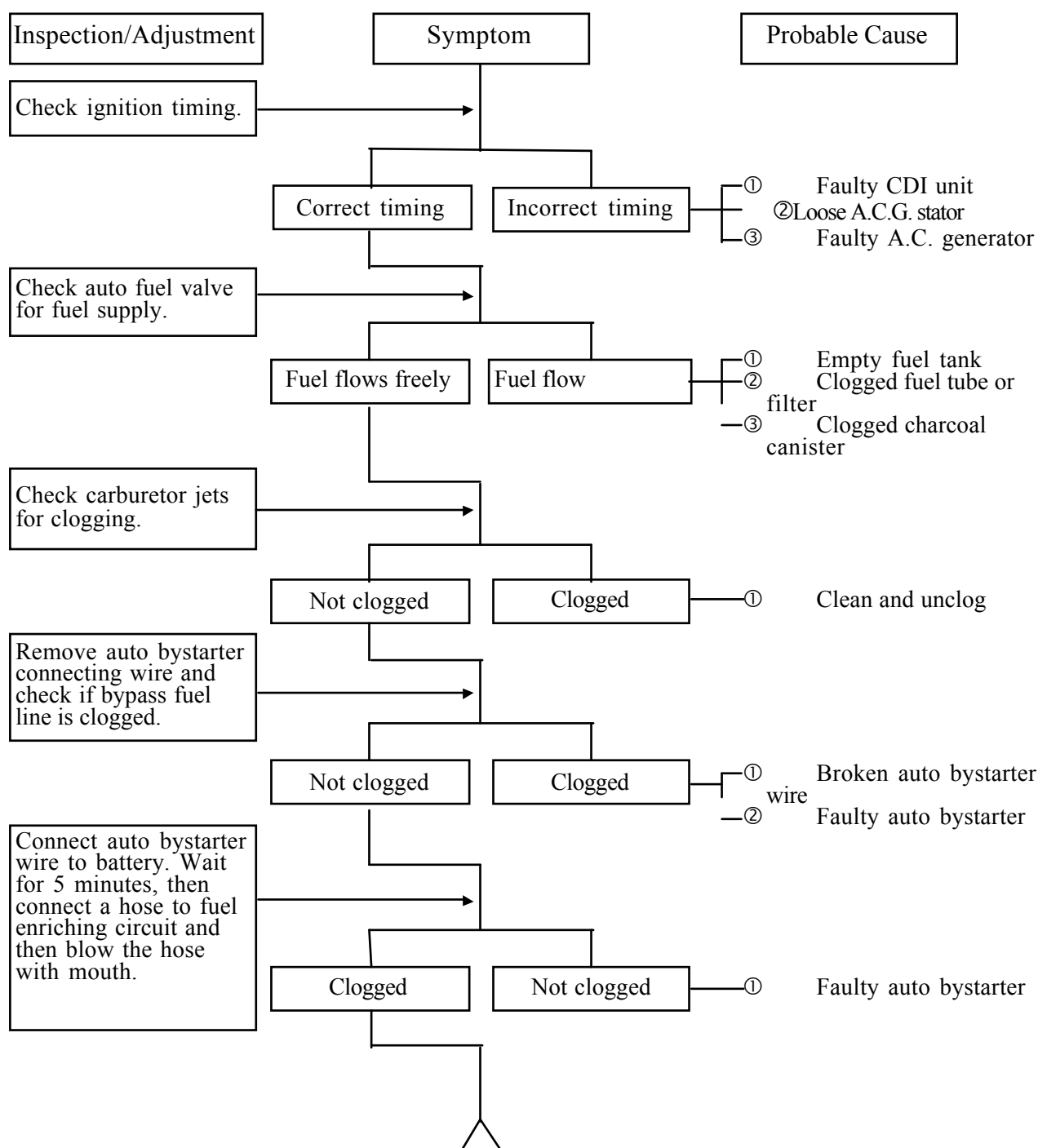
1. GENERAL INFORMATION

POOR PERFORMANCE (ESPECIALLY AT IDLE AND LOW SPEEDS)



1. GENERAL INFORMATION

POOR PERFORMANCE (AT HIGH SPEED)



1. GENERAL INFORMATION

CLUTCH, DRIVE AND DRIVEN PULLEYS

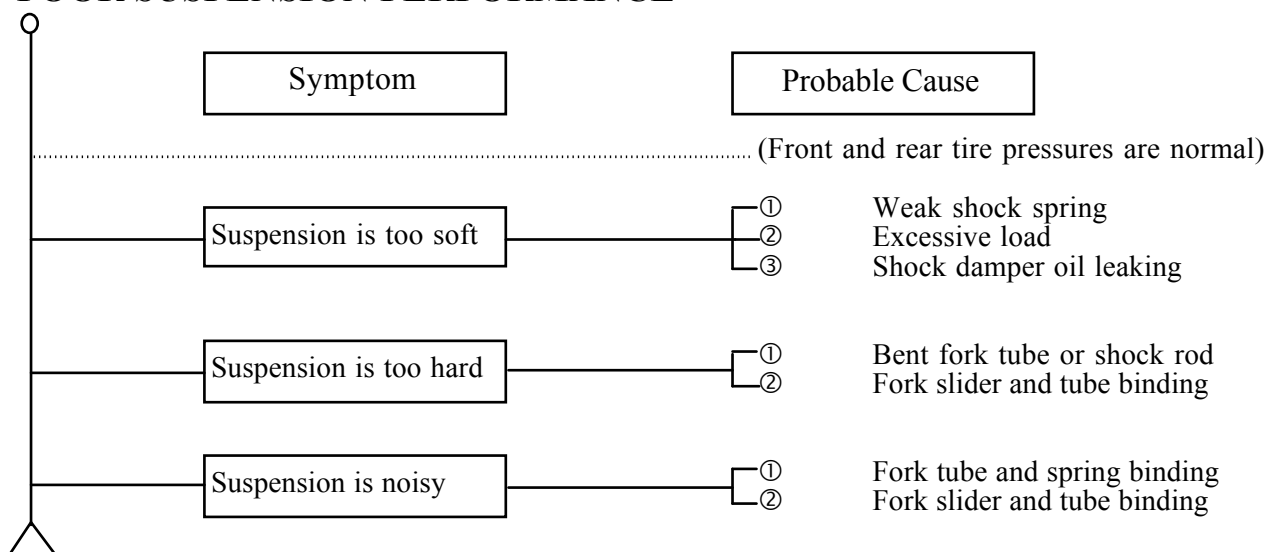
Symptom	Probable Cause
Engine starts but motor-cycle does not move	<ul style="list-style-type: none"> ① Worn or slipping drive belt ② Broken ramp plate ③ Broken driven face spring ④ Separated clutch lining ⑤ Damaged driven pulley shaft splines ⑥ Damaged final gear ⑦ Seized final gear
Motorcycle creeps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

STEERING HANDLEBAR DOES NOT TRACK STRAIGHT

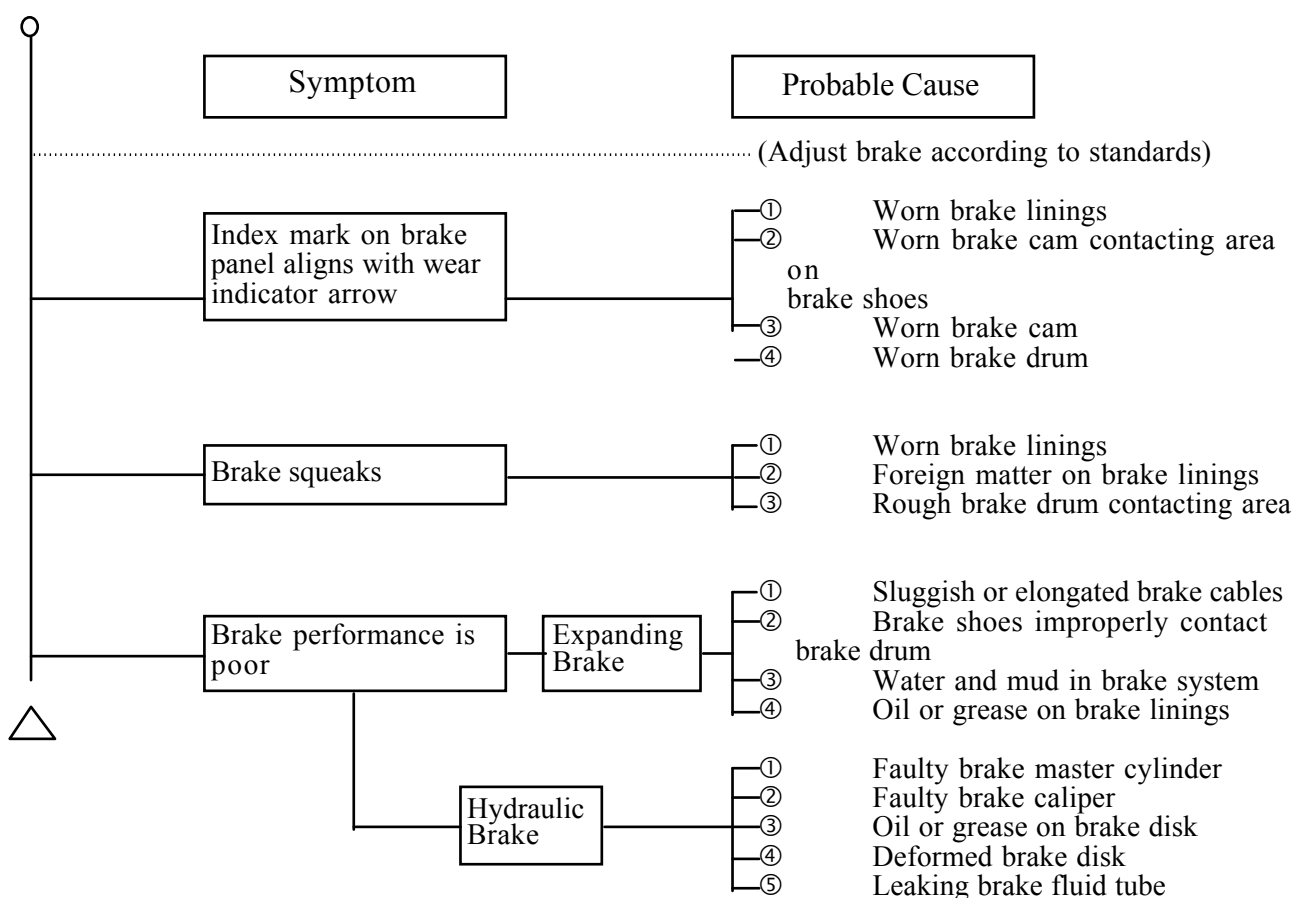
Symptom	Probable Cause
(Front and rear tire pressures are normal)	
Steering is heavy	<ul style="list-style-type: none"> ① Steering stem nut too tight ② Broken steering steel balls
Front or rear wheel is wobbling	<ul style="list-style-type: none"> ① Excessive wheel bearing play ② Bent rim ③ Loose axle nut
Steering handlebar pulls to one side	<ul style="list-style-type: none"> ① Misaligned front and rear wheels ② Bent front fork

1. GENERAL INFORMATION

POOR SUSPENSION PERFORMANCE



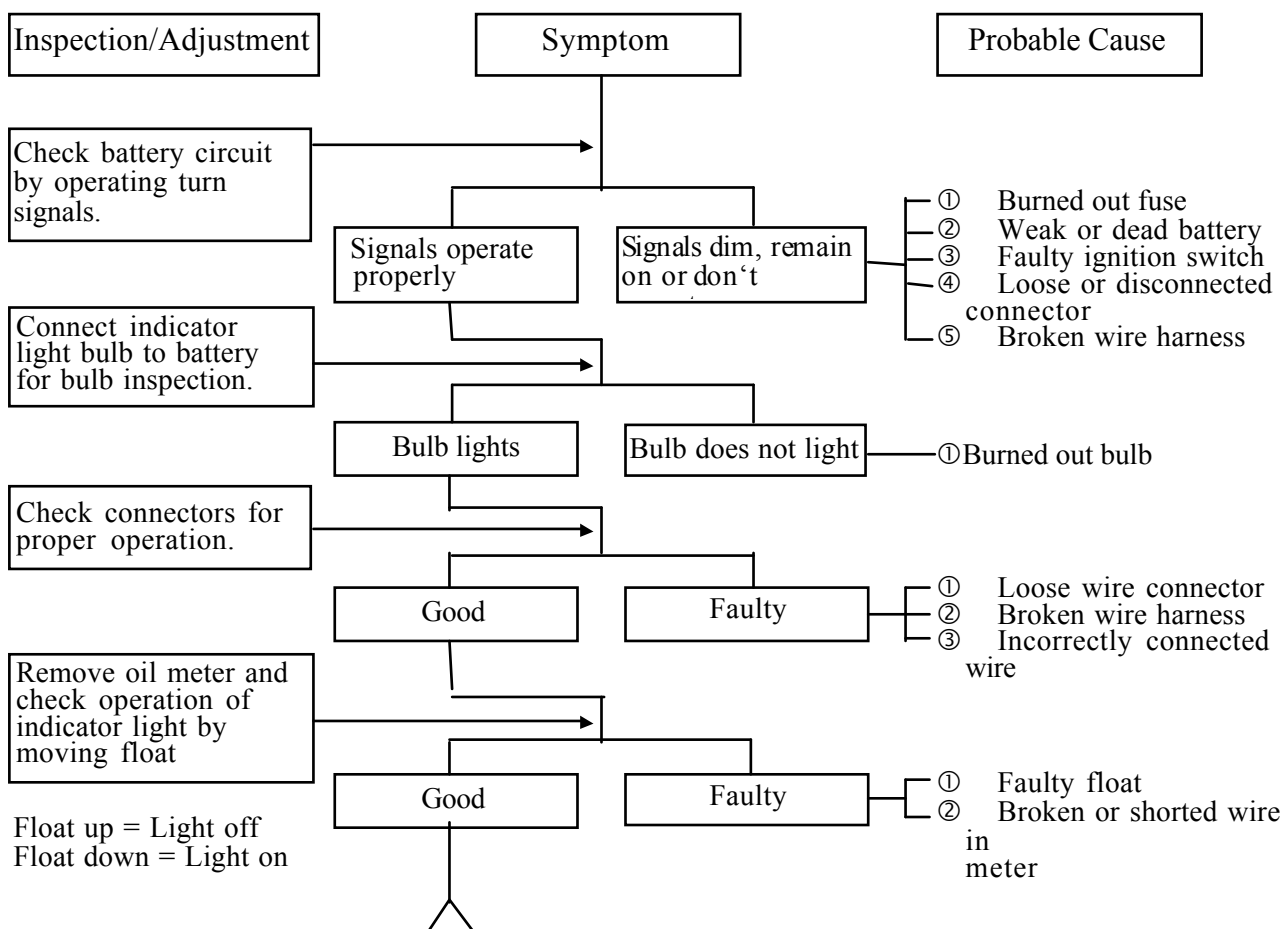
POOR BRAKE PERFORMANCE



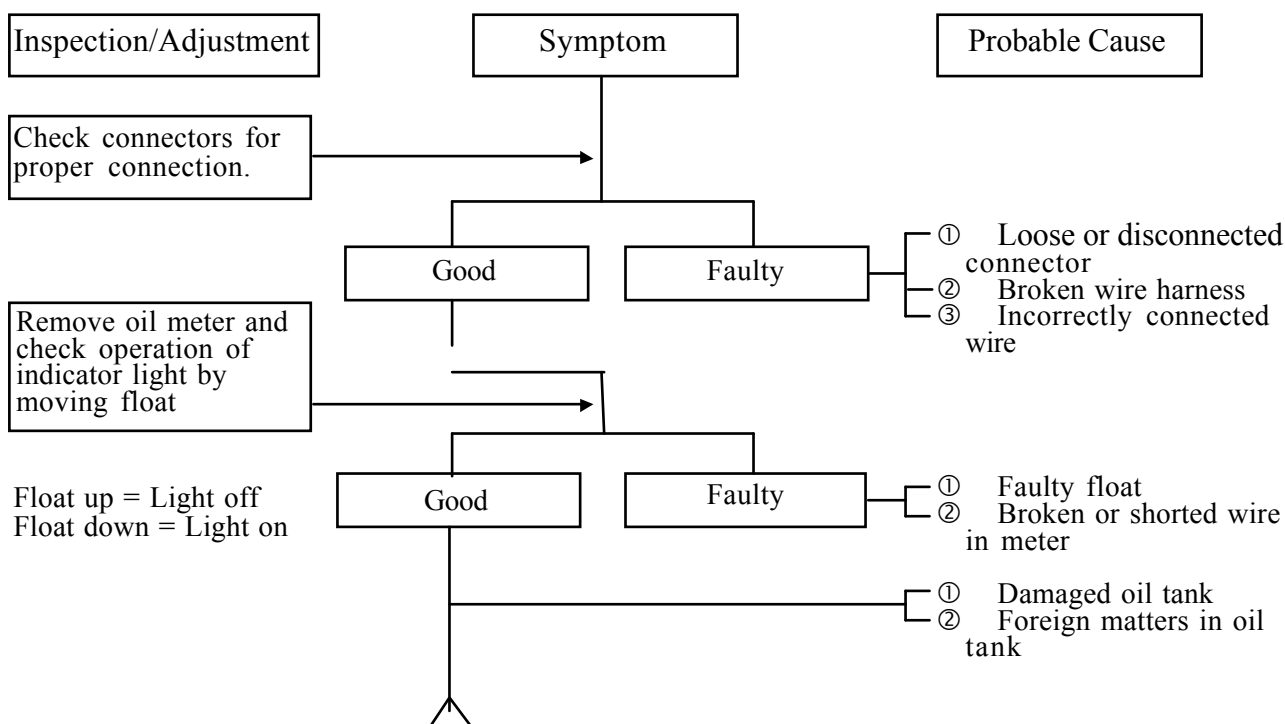
1. GENERAL INFORMATION

OIL METER

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



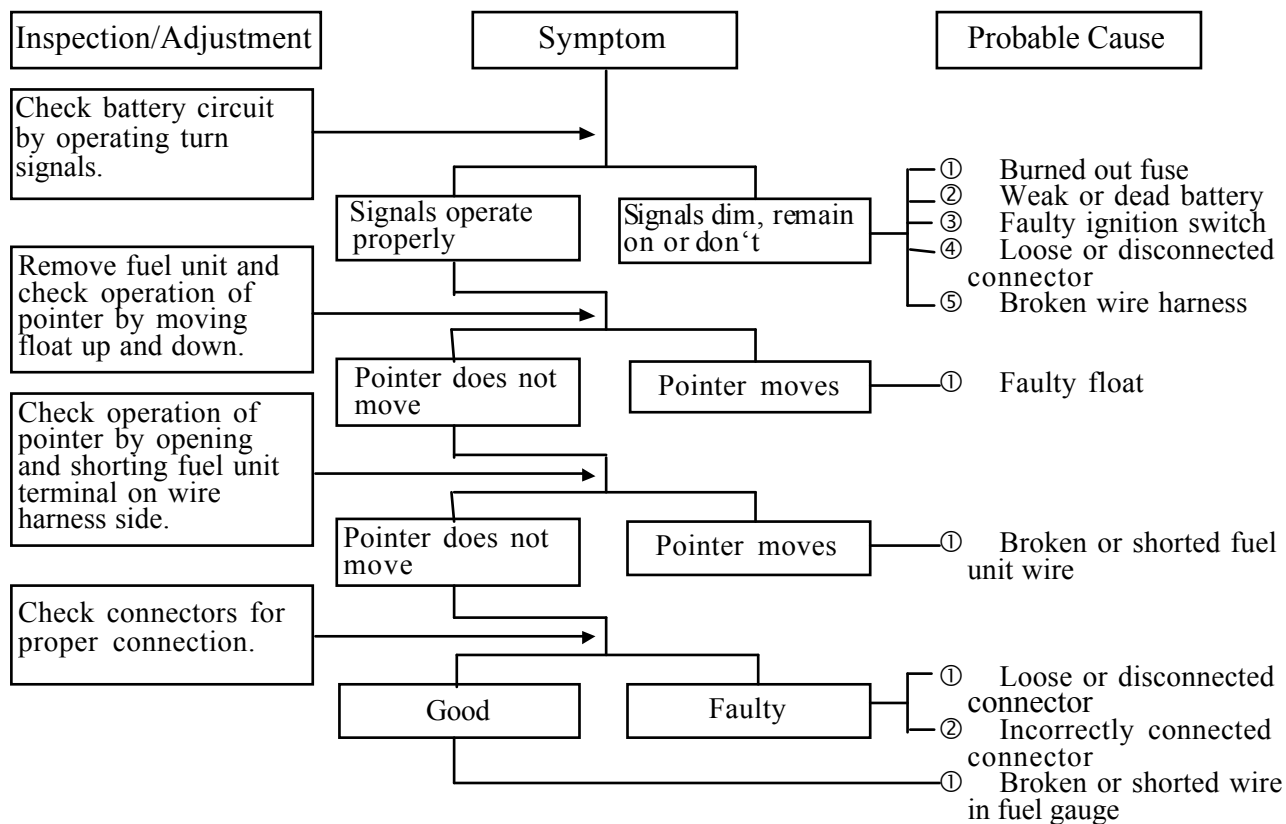
2. Motor oil is sufficient but the indicator light remains on (Ignition switch ON)



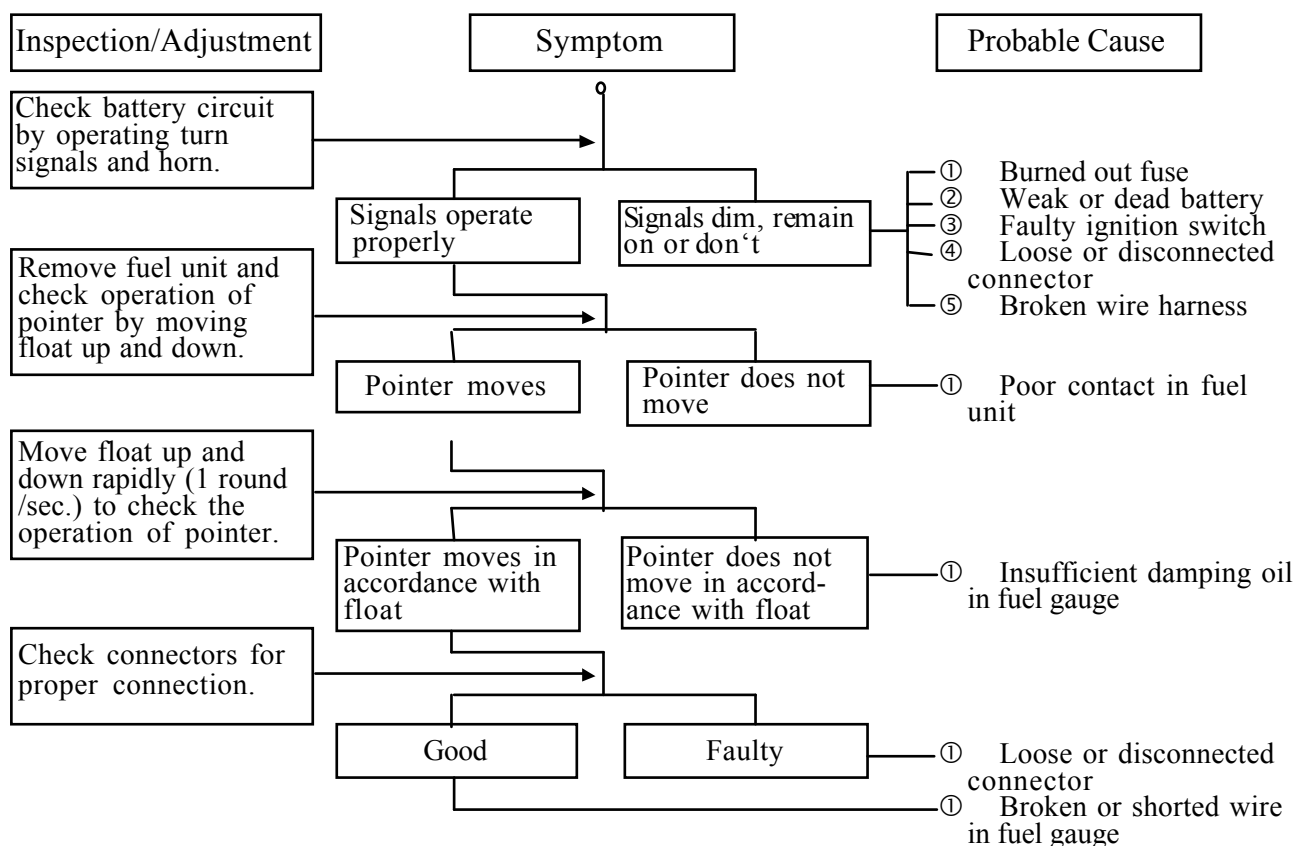
1. GENERAL INFORMATION

FUEL GAUGE

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



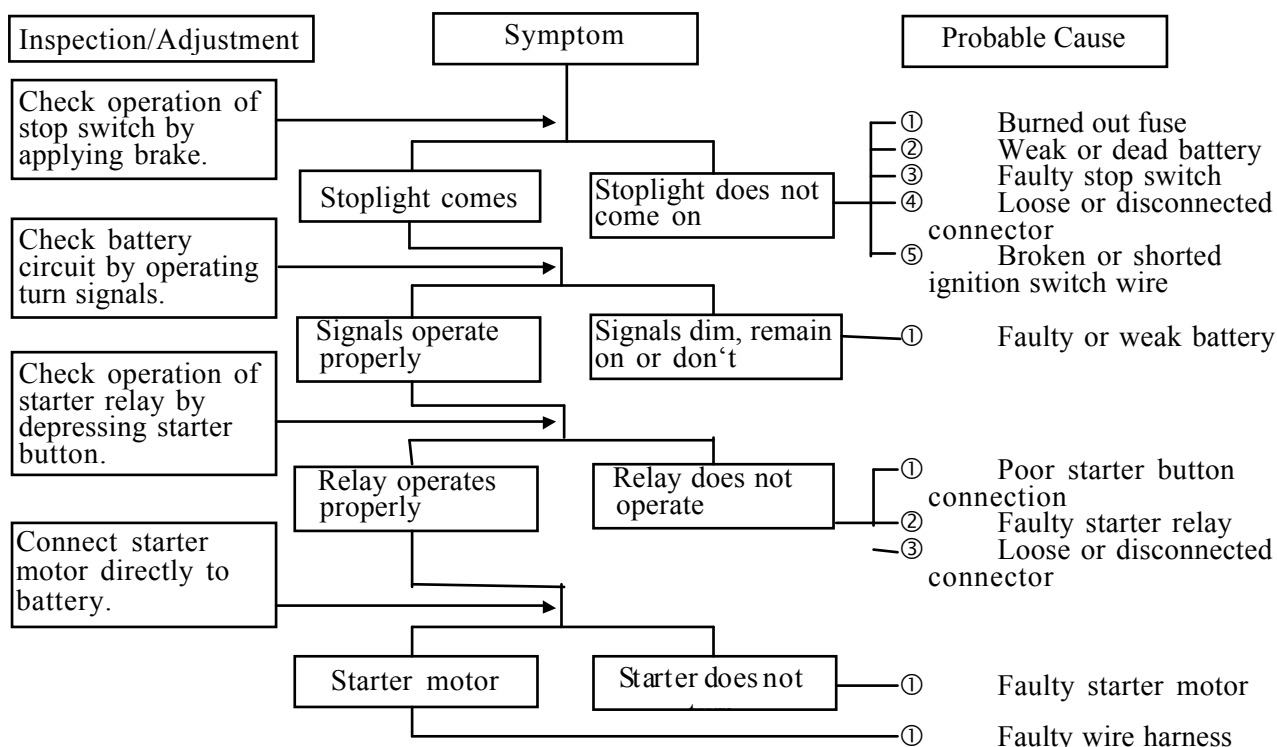
2. Pointer fluctuates or swings (Ignition switch ON)



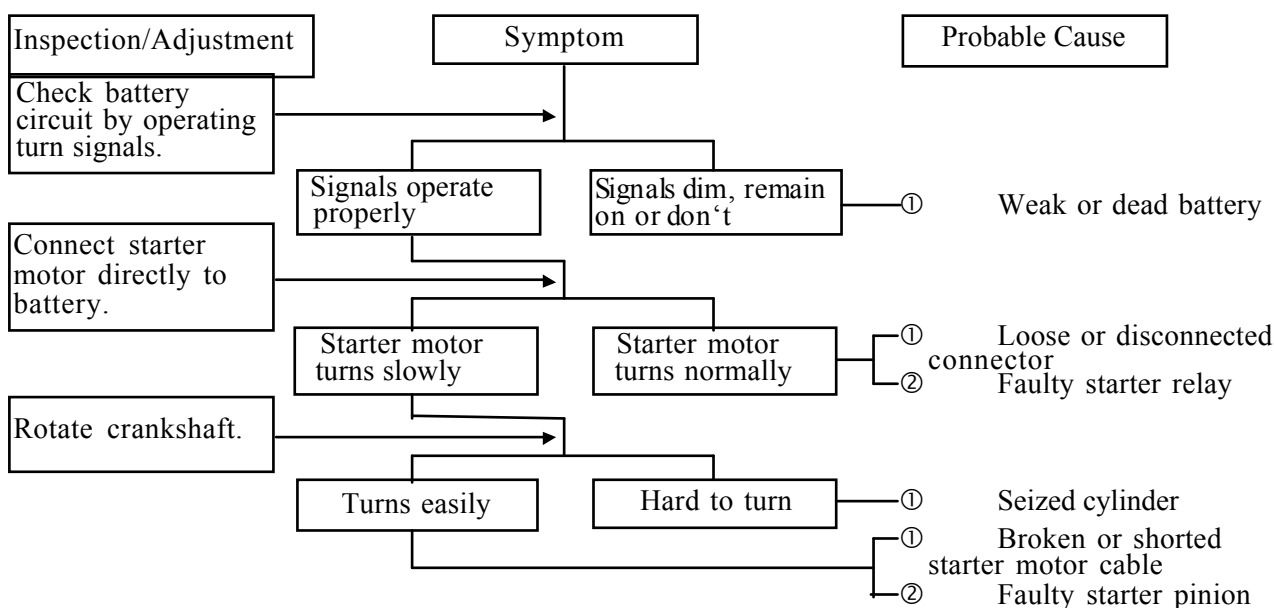
1. GENERAL INFORMATION

STARTER MOTOR

1. Starter motor won't turn



2. Starter motor turns slowly or idles



3. Starter motor does not stop turning

