

## **PREFACE**

This manual offers all service specialist with professional techniques and technical skills of maintenance and repairing for PM50 & PM110. It provides a Detailed guide for those whom may concern with how to maintain, repair, Reassemble, and exchange parts of their scooters.

At every section, we illustrate each important point by assembling Procedures, explosive diagrams and photographs.

Although we have tried our best to make this manual as perfect as Possible, please kindly inform us if any fault needs to be corrected in this manual.

Thank you for purchasing our POG scooters.

**FACTORY :**

Motive Power Industry Co.,Ltd.

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## **SCOOTER SPECIFICATION (1)**

Name	PMX SPORT50	FRAME	STEEL
TYPE	PM-50D	SUSPENSION SYSTEM	
DIMENSION		FRONT	TELESCOPIC
TOTAL LENGTH	1820	REAR	UNIT-ABSORBER
TOTAL WIDTH	660	TRANSMISSION	
TOTAL HEIGHT	1090	PRIMARY RATIO	1
WHEELBASE	1220	SECONDARY RATIO	52/13*44/13
DRY WEIGHT	94KG	CLUTCH	C.V.T.
FRONT	37KG	TIRE	
REAR	57KG	FRONT	120/70-12
TOTAL	94KG	REAR	130/70-12
LOAD	2 PERSONS(110KG)	BRAKE SYSTEM	
LOADED WEIGHT		FRONT	DISC BRAKE
FRONT	69KG	REAR	DRUM BRAKE
REAR	135KG	LIGHT	
TOTAL	204KG	HEAD LIGHT(H/L)	12V-18W/18W*2
		TAIL LIGHT	12V-5W
CYCLE	2	BRAKING LIGHT	12V-21W
FUEL	UNLEADED	TURN LIGHT	12V-10W
CYLINDER NUMBER	1		
ARRANGEMENT	HORIZONTAL		
DISPLACEMENT	49C.C.		
BORE	∅40.0mm		
STROKE	39.2mm		
COMPRESSION RATIO	6.8:1		
MAX. POWER/RPM	3.0KW/7000RPM		
AMX. TORQUE/RPM	5.2N.m/6500RPM		
IDLE RPM	1900 ± 100		
IGNITION	CDI		
SPARK PLUG	NGK BP7HS		
COOLING	FORCE AIR		
STARTER	ELECTRIC、 KICK		
FUEL MIXING	OIL PUMP		
LUBRICATION	SEPARATED		
VEHICLT PERFORMANCE			
TOP SPEED	65KM/H		
FUEL CONSUMPTION	43KM/L		
CLIMBING ABILITY	20 °		

## SCOOTER SPECIFICATION (2)

Name	PMX SPORT110	ERAME	STEEL
TYPE	PM-110D	SUSPENSION SYSTEM	
DIMENSION		FRONT	TELESCOPIC
TOTAL LENGTH	1820	REAR	UNIT-ABSORBER
TOTAL WIDTH	660	TRANSMISSION	
TOTAL HEIGHT	1090	RPIMARY RATIO	1
WHEELBASE	1220	SECONDARY RATIO	49*16*43/13
DRY WEIGHT	94KG	CLUTCH	C.V.T.
FRONT	37KG	TIRE	
REAR	57KG	FRONT	120/70-12
TOTAL	94KG	REAR	130/70-12
LOAD	2 PERSONS(110KG)	BRAKE SYSTEM	
LOADED WEIGHT		FRONT	DISC BRAKE
FRONT	69KG	REAR	DRUM BRAKE
REAR	135KG	LIGHT	
TOTAL	204KG	HEAD LIGHT(H/L)	12V-18W/18W*2
		TAIL LIGHT	12V-5W
CYCLE	2	BRAKING LIGHT	12V-21W
FUEL	UNLEADED	TURN LIGHT	12V-10W
CYLINDER NUMBER	1		
ARRANGEMENT	HORIZONTAL		
DISPLACEMENT	106.2C.C.		
BORE	∅52.0mm		
STROKE	50.0mm		
COMPRESSION RATIO	6.6:1		
MAX. POWER/RPM	5.7KW/7000RPM		
AMX. TORQUE/RPM	8.4N.m/6500RPM		
IDLE RPM	1900 ± 100		
IGNITION	CDI		
SPARK PLUG	NGK BP7HS		
COOLING	FORCE AIR		
STARTER	ELECTRIC、 KICK		
FUEL MIXING	OIL PUMP		
LUBRICATION	SEPARATED		
VEHICLT PERFORMANCE			
TOP SPEED	82KM/H		
FUEL CONSUMPTION	38KM/L		
CLIMBING ABILITY	20 °		

## 2. Service information :

- (1) The operation notice
- (2) Locking torque value
  - a. For engine
  - b. For chassis
  - c. Others
- (3) Lubrication instruction
  - a. For engine
  - b. For chassis
  - c. Wheel bearing
- (4) Wiring diagram
- (5) Troubleshooting
  1. Difficult starting or can't
  2. Weak acceleration
  3. Engine running unsmoothly (low speed)
  4. Engine running unsmoothly (high speed)
  5. Clutch, drive, driven pulley
  6. Handlebar steering astrayed when running
  7. Front, rear damper not balanced
  8. Bad braking
  9. Oil indicator malfunction
  10. Fuel indicator malfunction
  11. The starting motor malfunction
  12. No sparking
  13. Charging abnormal

**(1)The operation notice :**

- 1.For parts like the gasket, o-ring, clips and circlets, please change a new part whenever re-assembled.
- 2.When trying to tighten screws or nuts, please lock tightly according to each recommended locking torque and in the sequence of the"X" pattern.
- 3.Please use PGO recommended parts.
- 4.After dismantling, please clean all parts involved or used for checking and grease all contact surfaces when reassembling.
- 5.Use grease recommended by P.G.O.
- 6.When removing battery, please disconnect the negative cable(-) first.  
However, please connect the positive cable(+) first when assembling.
- 7.Before installing a new fuse, please be sure that the specification is correct.
- 8.After reassembling please re-confirm that all connecting point, locking parts, circuits, polar characteristics are functioning well befor selling out.

## (2) Locking Torque Value:

### 1.Engine

No	Locking location	Thread dia (mm)	Locking torque kg-m	Remarks
1	Cylinder head	7	1.0~1.4	When the engine is cold
2	Flywheel plate	10	3.2~4.0	
3	Rear brake lever	6	1.0~1.2	
4	Driving pulley	10	3.2~4.0	
5	Clutch outer	10	3.5~4.0	
6	Right crankcase	6	1.0~1.2	
7	Drive gear box cover	6	1.0~1.2	
8	Left crankcase	6	1.0~1.2	
9	Draining and filler bolt	8	1.8	When the engine is cold
10	Inlet pipe	6	1.0~1.2	
11	Flywheel magneto	6	1.0~1.2	
12	Cooling fan	6	1.0~1.2	
13	Muffler nut on cylinder head	6	1.0~1.2	When the engine is cold
14	Starting motor	6	1.0~1.4	When the engine is cold
15	Spark plug	14	2.5~3.0	
16	Fan cover	6	1.0~1.2	
17	Fixed plate, drive clutch	6	1.0~1.4	
18	Nut of rear wheel axle	16	8.0~10.0	U TYPE NUT
19	Kick starter	6	1.0~1.2	
20	Muffler bolt on crankcase	8		

### 2.chassis

1	Steering stem nut	10mm	3.0~4.0	
2	Front axle nut	12mm	5.0~6.0	
3	Fixed nut fasten eng. and chassis	12mm	5.0~6.0	
4	Fixed bolt fasten hanger and chassis	10mm	3.5~4.5	
5	Rear shock absorber(upper)	10mm	3.0~4.5	
	Rear shock absorber(lower)	8mm	2.4~3.0	
6	Lock nut faster frt. brake disk and frt. wheel rim	8mm	2.0~3.0	
7	Lock bolt between frt. brake caliper and frt. absorber	8mm	2.0~3.0	
8	Lock bolt of frt braking hose	10mm	3.0~3.5	

3. Other parts: Please refer the following table:

Standard torque values:

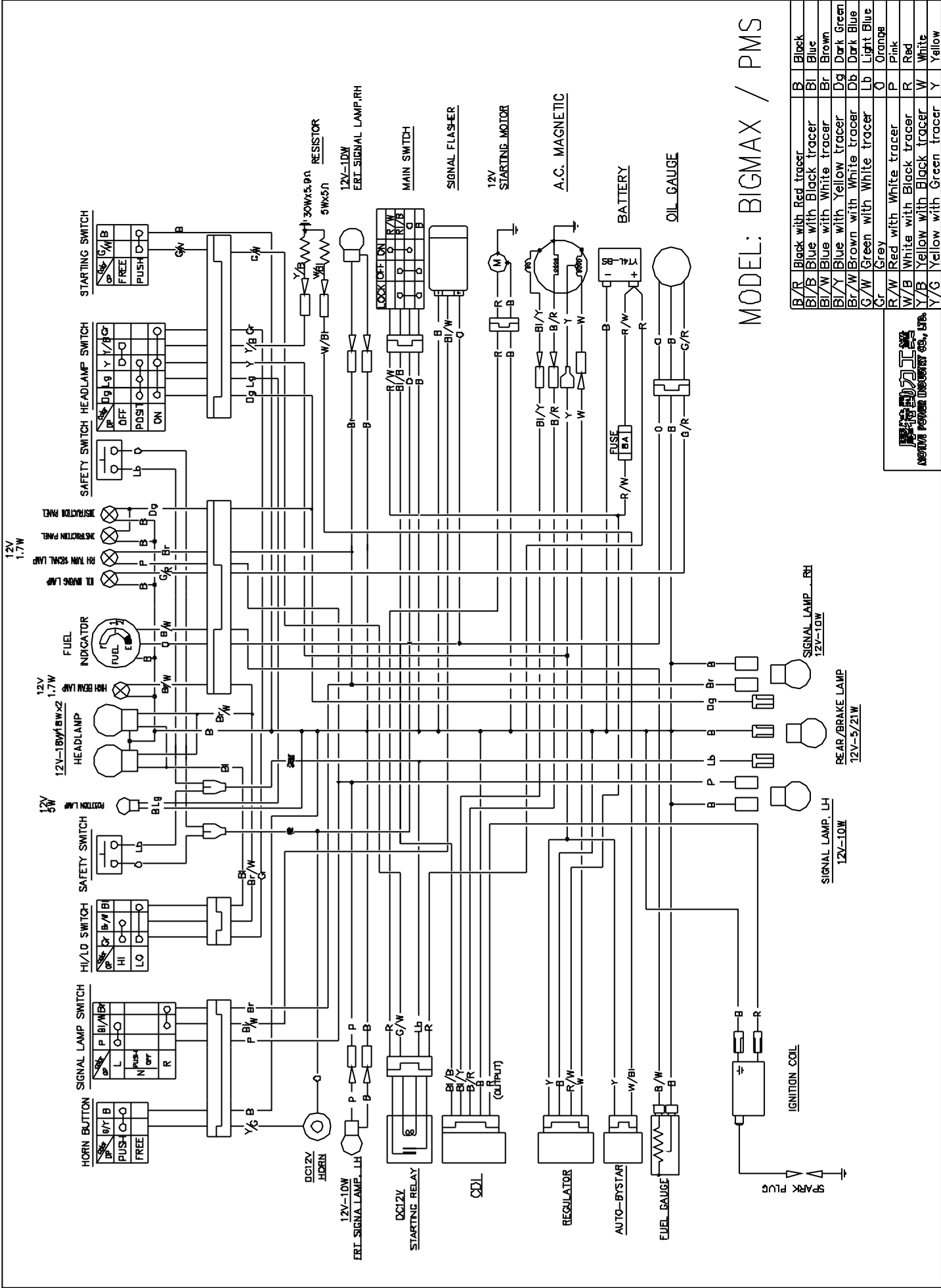
No	Item	Torque kg-m
1	5mm bolt and nut	0.45-0.6
2	6mm bolt and nut	0.8-1.2
3	8mm bolt and nut	1.8-2.5
4	10mm bolt and nut	3.4-4.0
5	12mm bolt and nut	5.0-6.0
6	5mm screw	0.35-0.5
7	6mm screw	0.7-1.1
8	6mm flange bolt and screw	1.0-1.4
9	7mm flange bolt and screw	1.0-1.4
10	8mm flange bolt and screw	2.0-3.0
11	10mm flange bolt and screw	3.0-4.0

## B. Chassis parts



C. Wheel bearing part





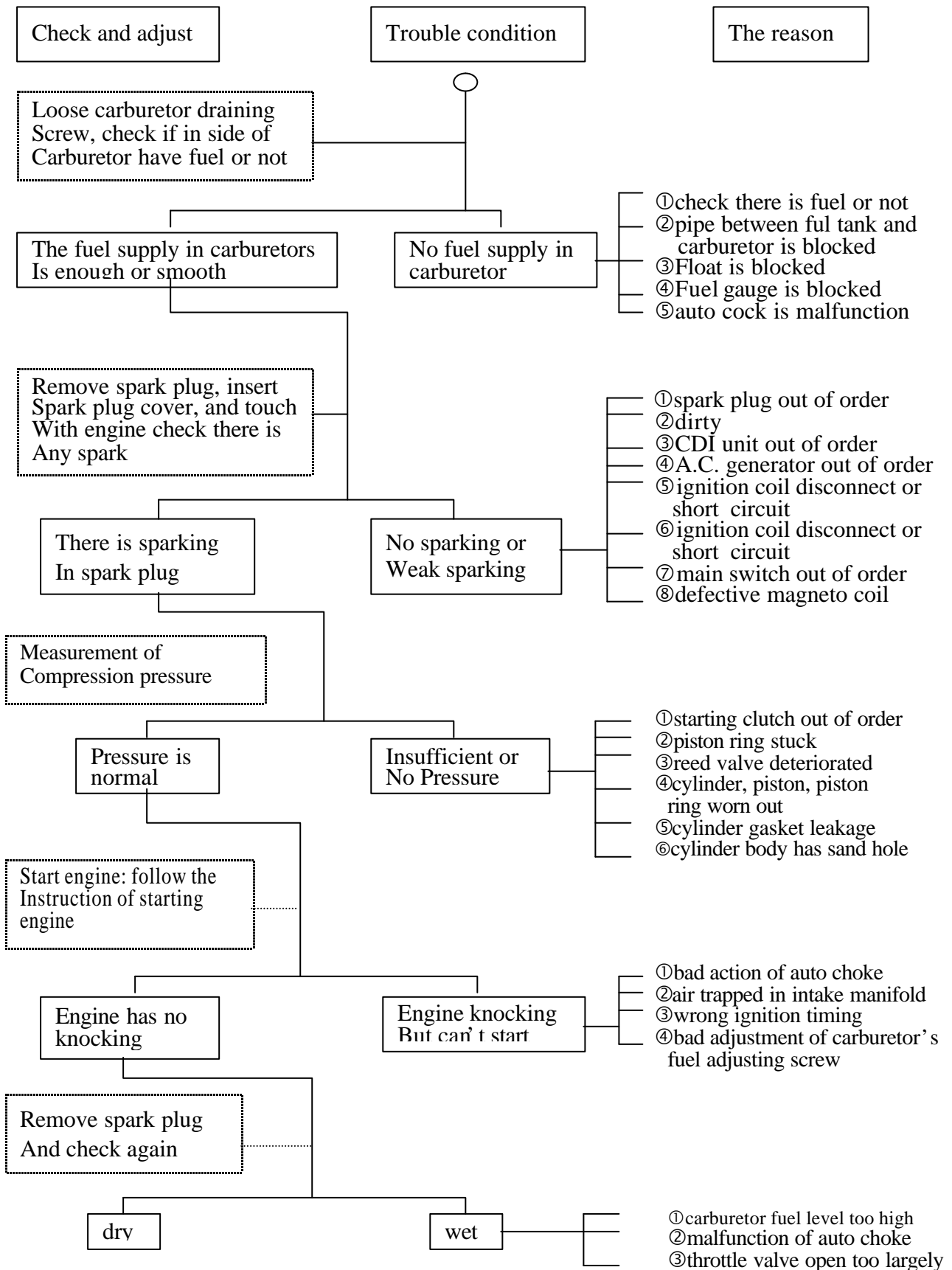
MODEL: BIGMAX / PMS

B/R	Black with Red tracer	B	Black
B/B	Blue with Black tracer	Bl	Blue
B/W	Blue with White tracer	Bl	Brown
Bl/Y	Blue with Yellow tracer	Dg	Dark Green
Br/W	Brown with White tracer	Db	Dark Blue
G/W	Green with White tracer	Lb	Light Blue
Gr	Grey	O	Orange
R/W	Red with White tracer	P	Pink
W/B	White with Black tracer	R	Red
Y/B	Yellow with Black tracer	W	White
Y/G	Yellow with Green tracer	Y	Yellow

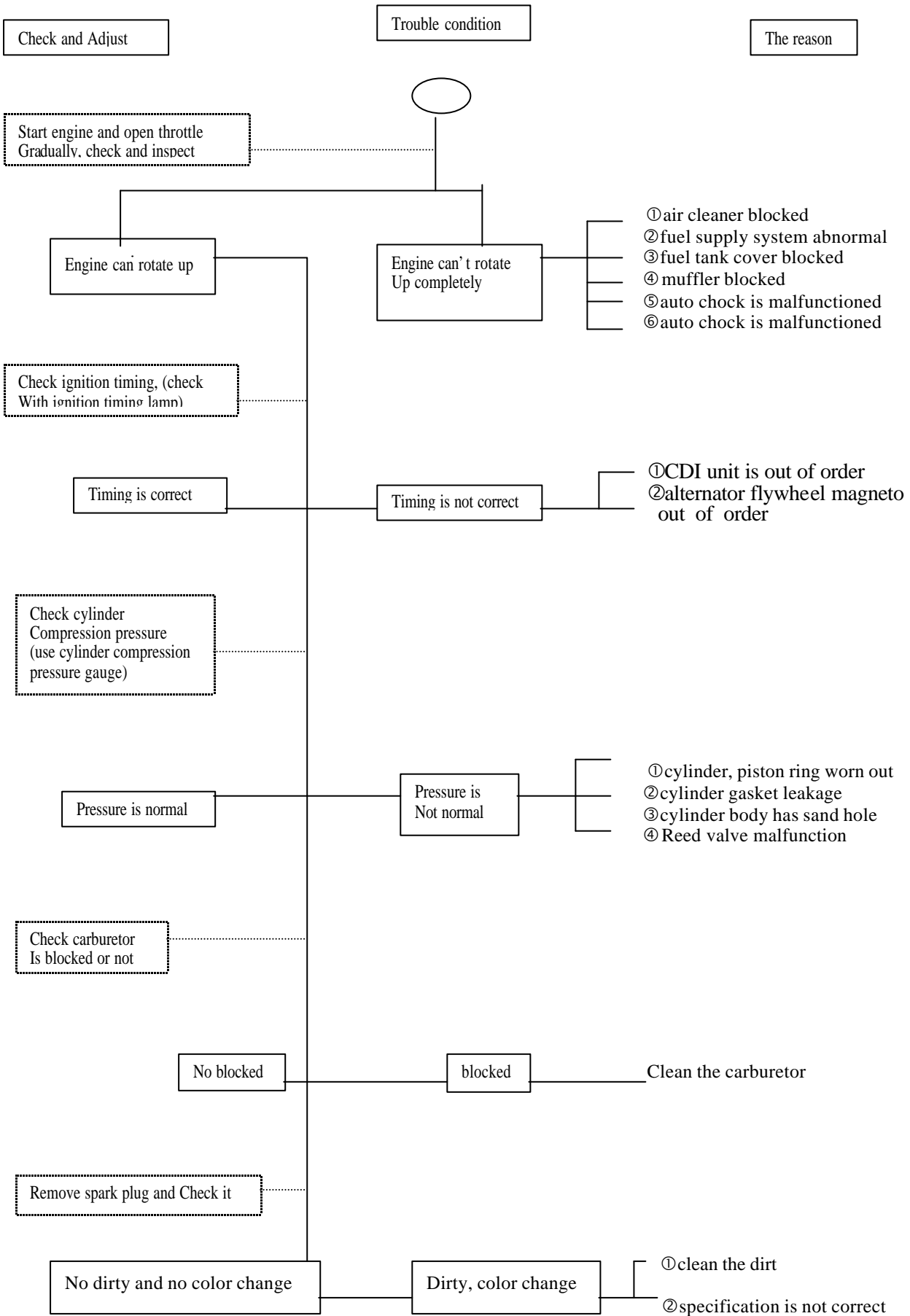


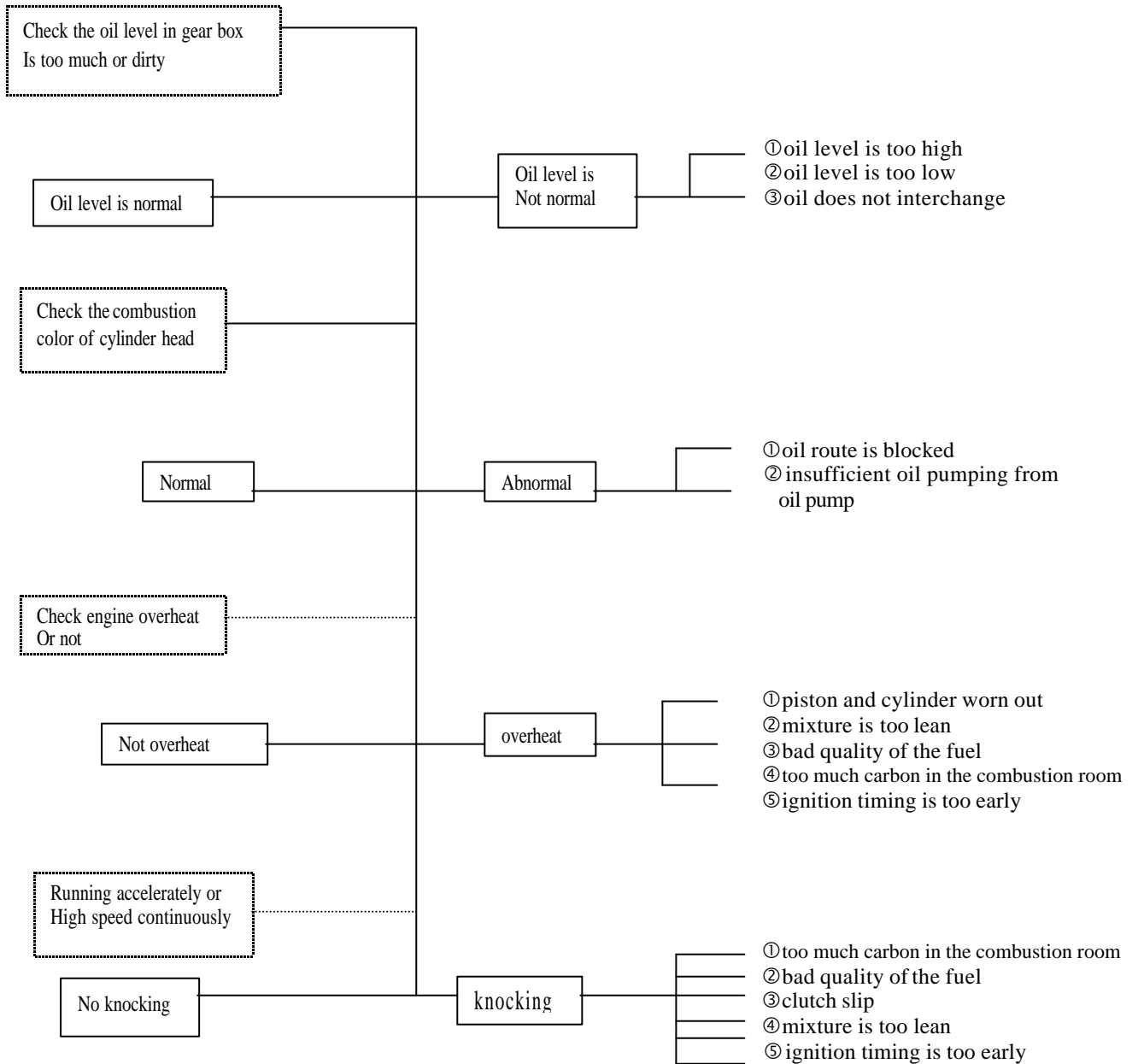
## (5) Trouble shooting:

1. difficult starting or can't start:

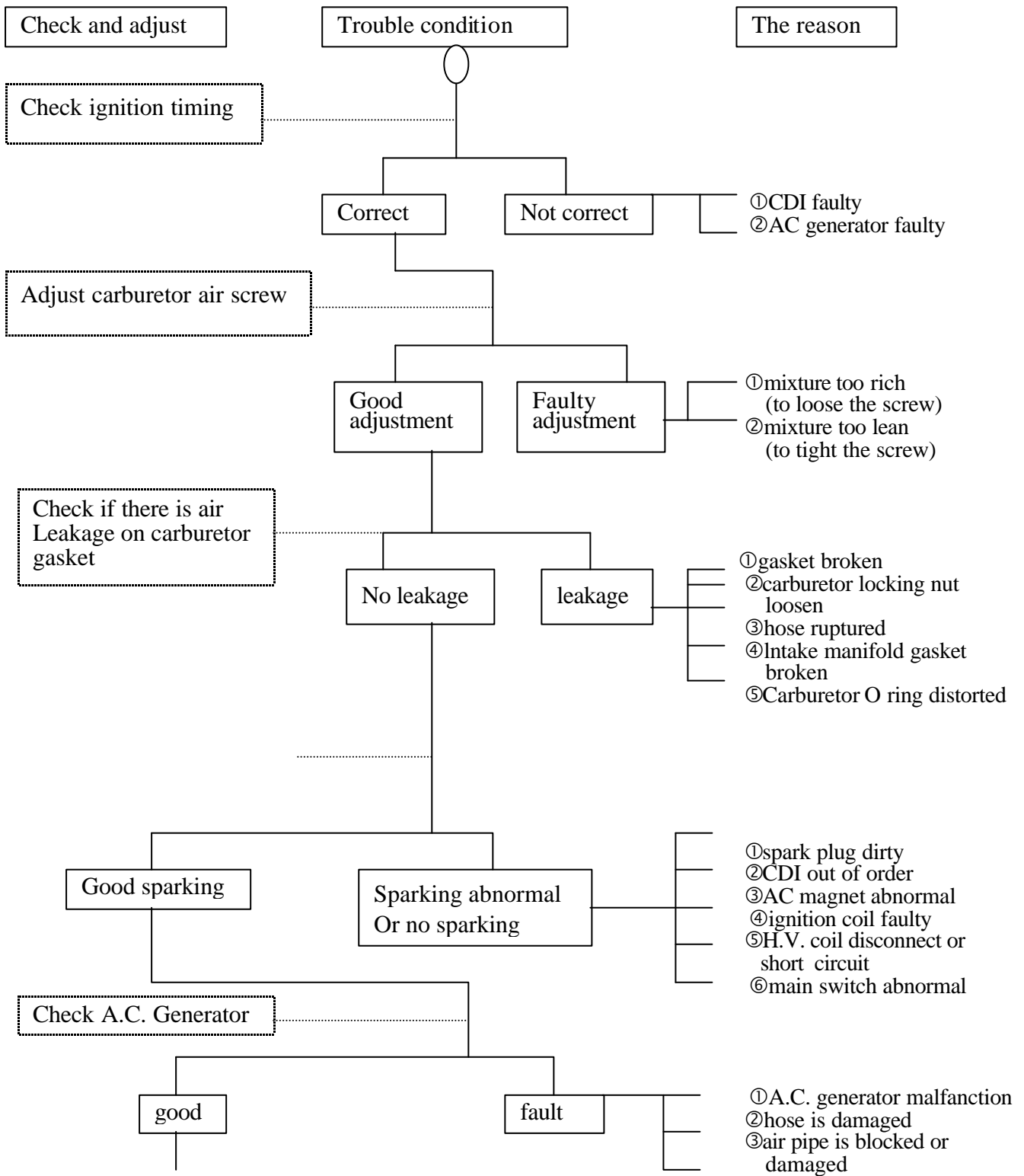


2. Weak acceleration:

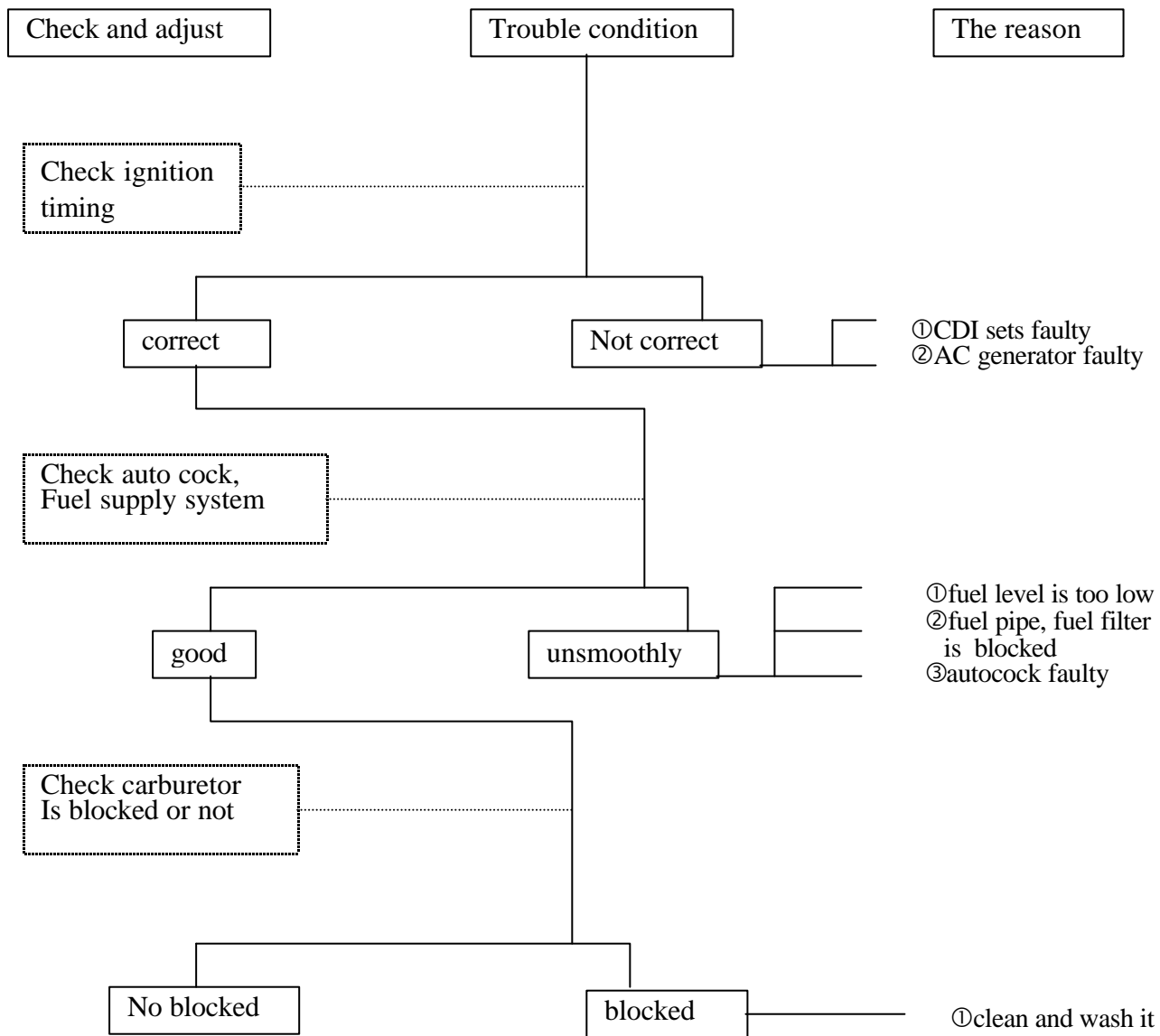




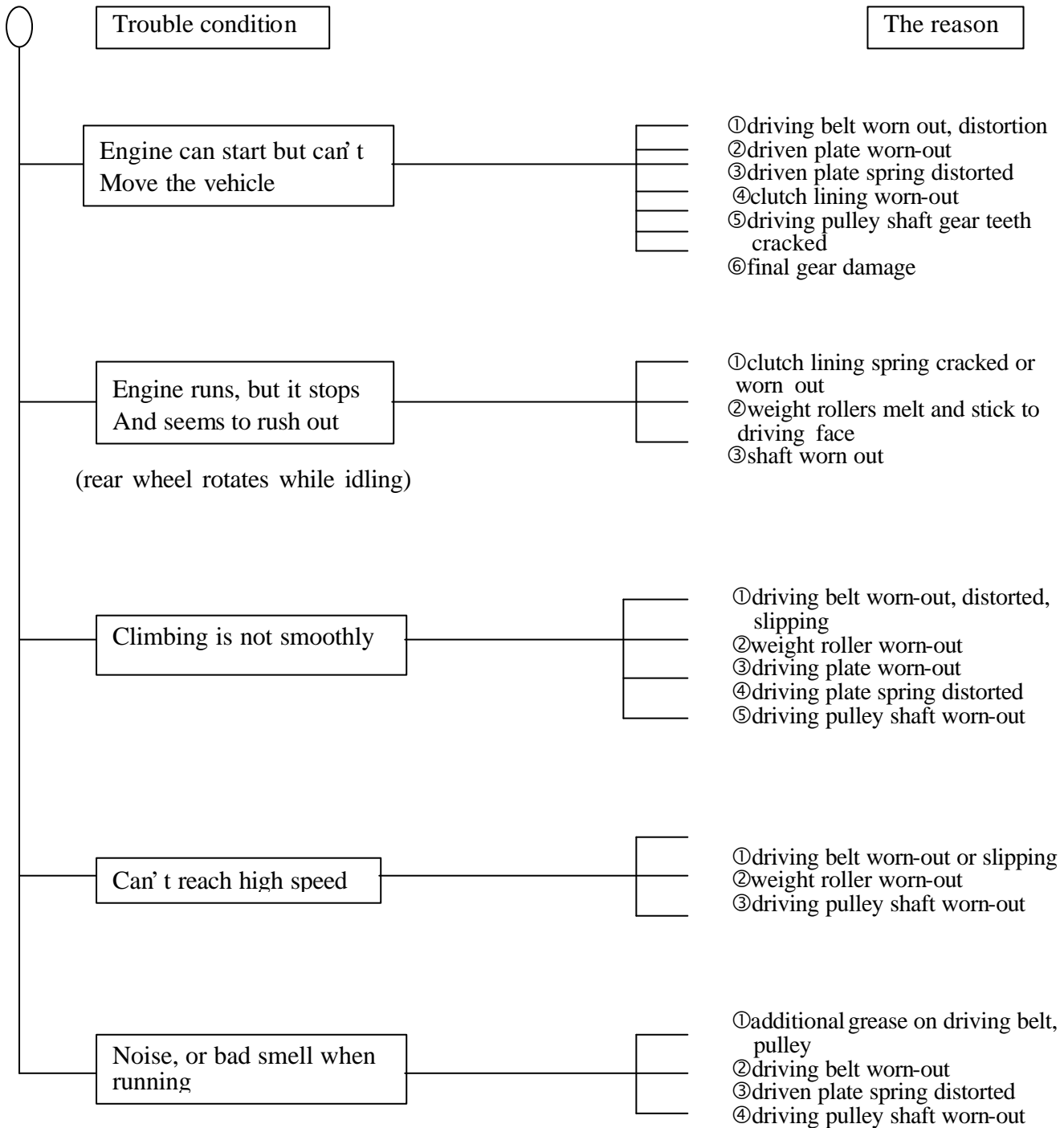
### 3.Engine running unsmoothly (low speed and idling)



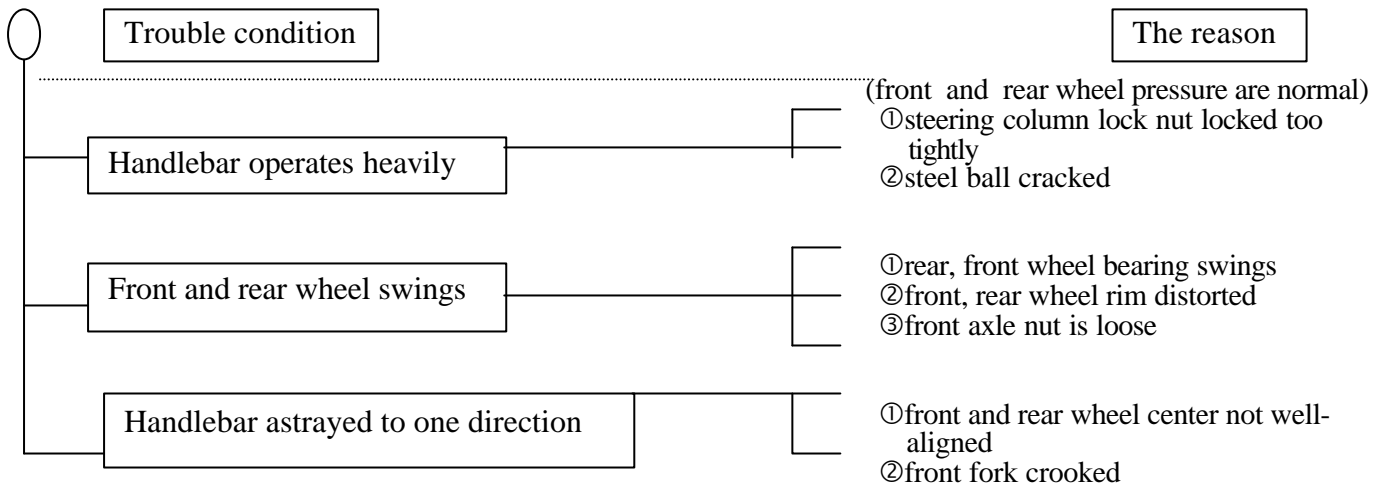
#### 4.Engine running unsmoothly (high speed)



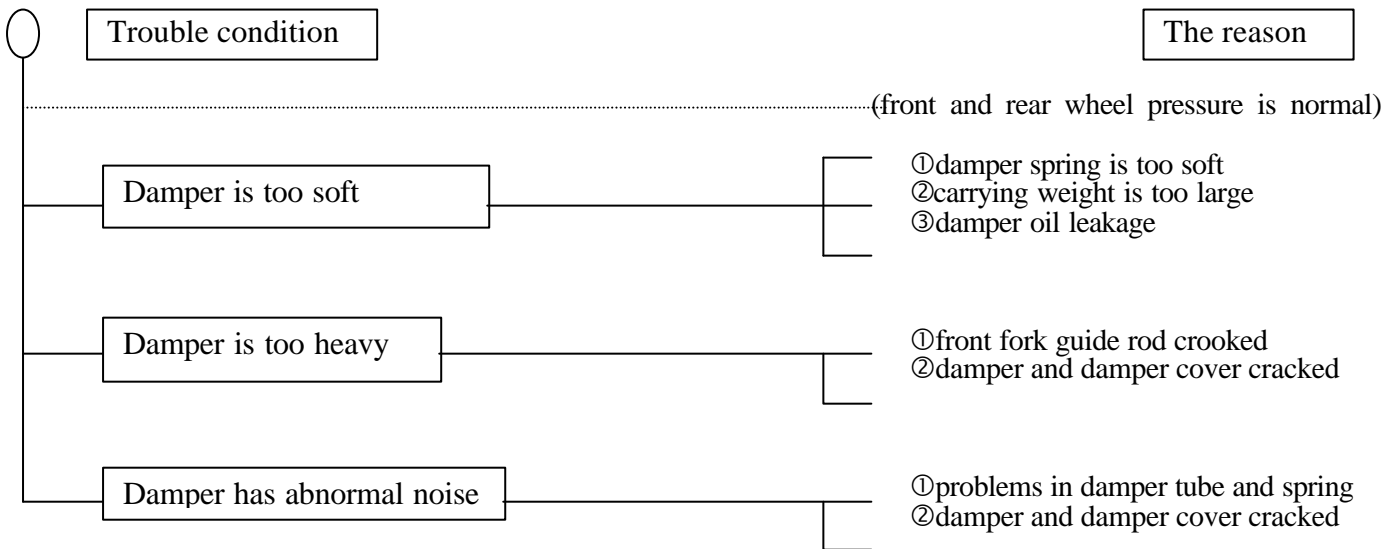
## 5. Clutch, drive and driven pulley



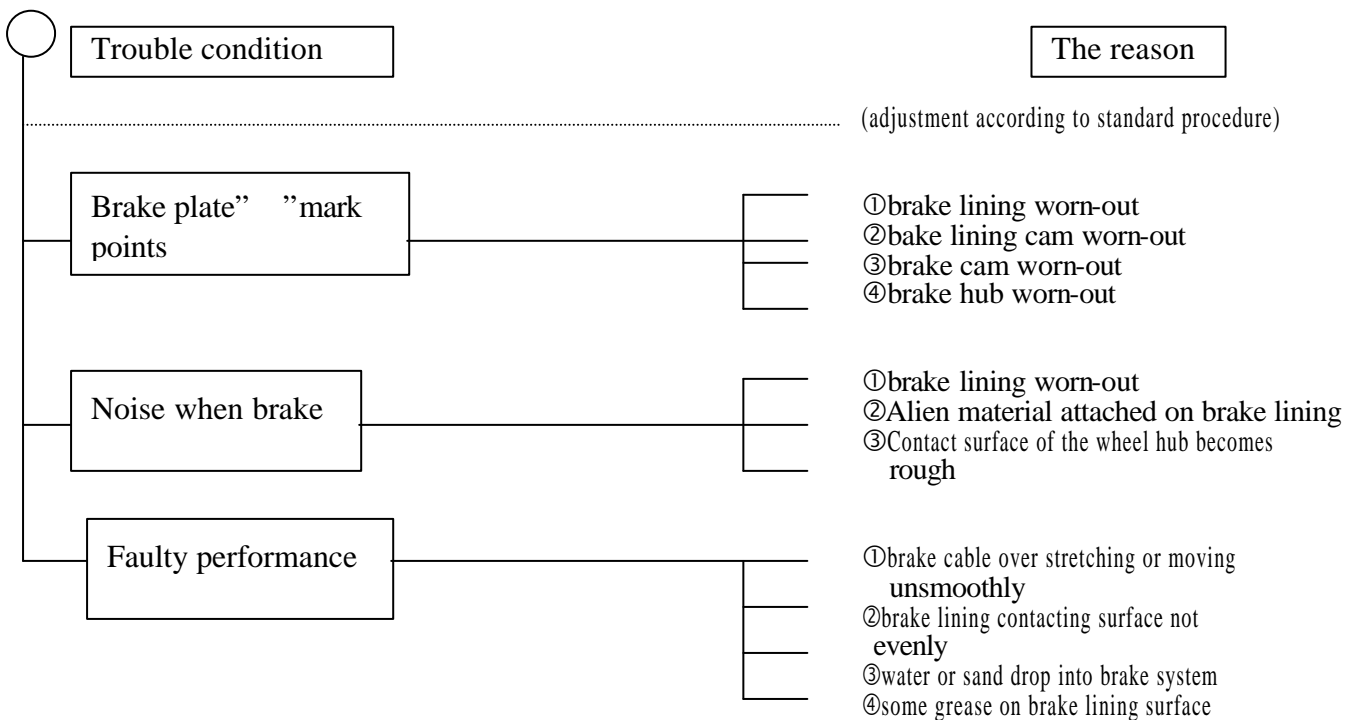
### 6. Handlebar steering astrayed when running.



### 7. Front, rear damper not in balanced

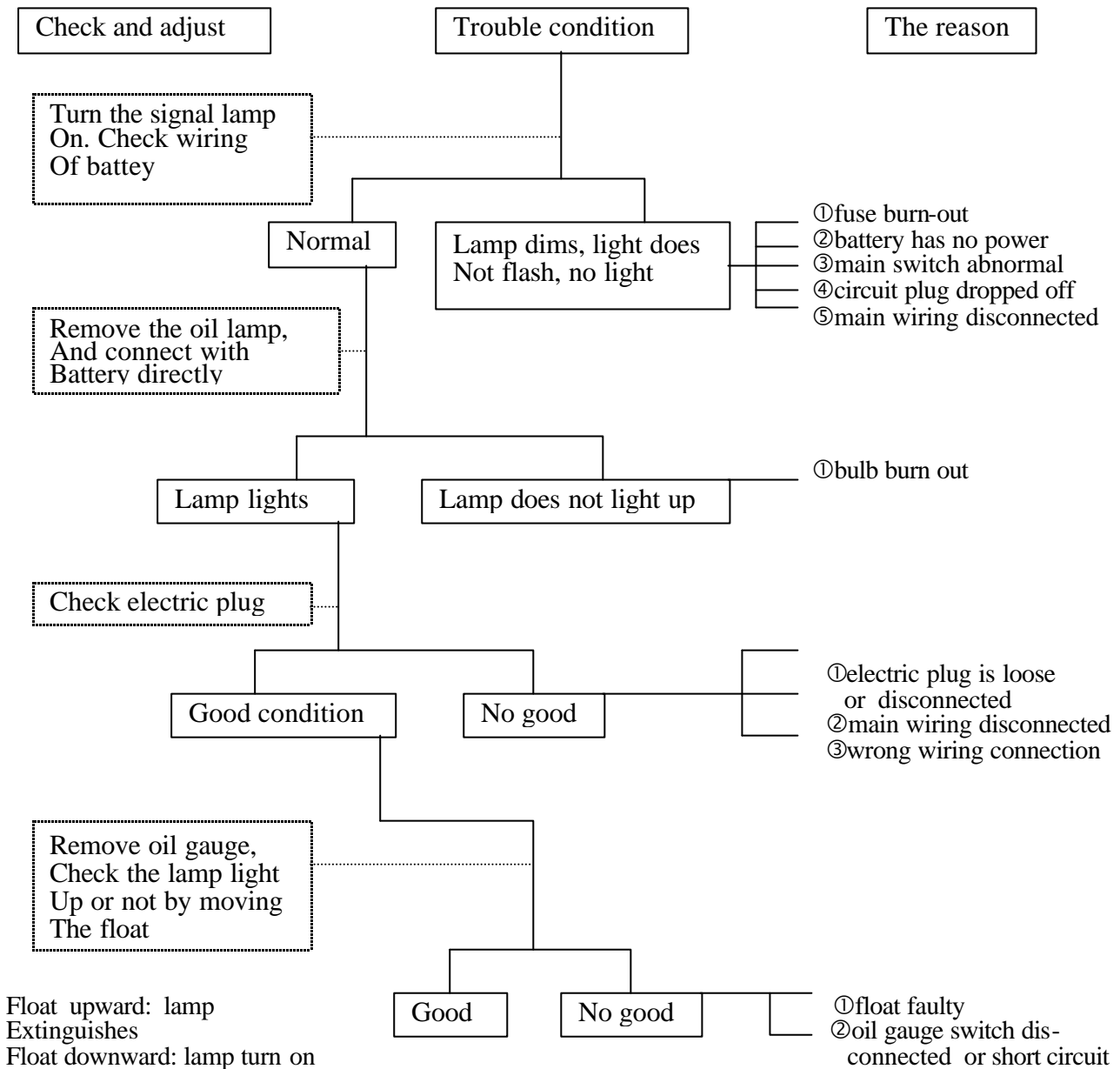


### 8. Brake disorder.

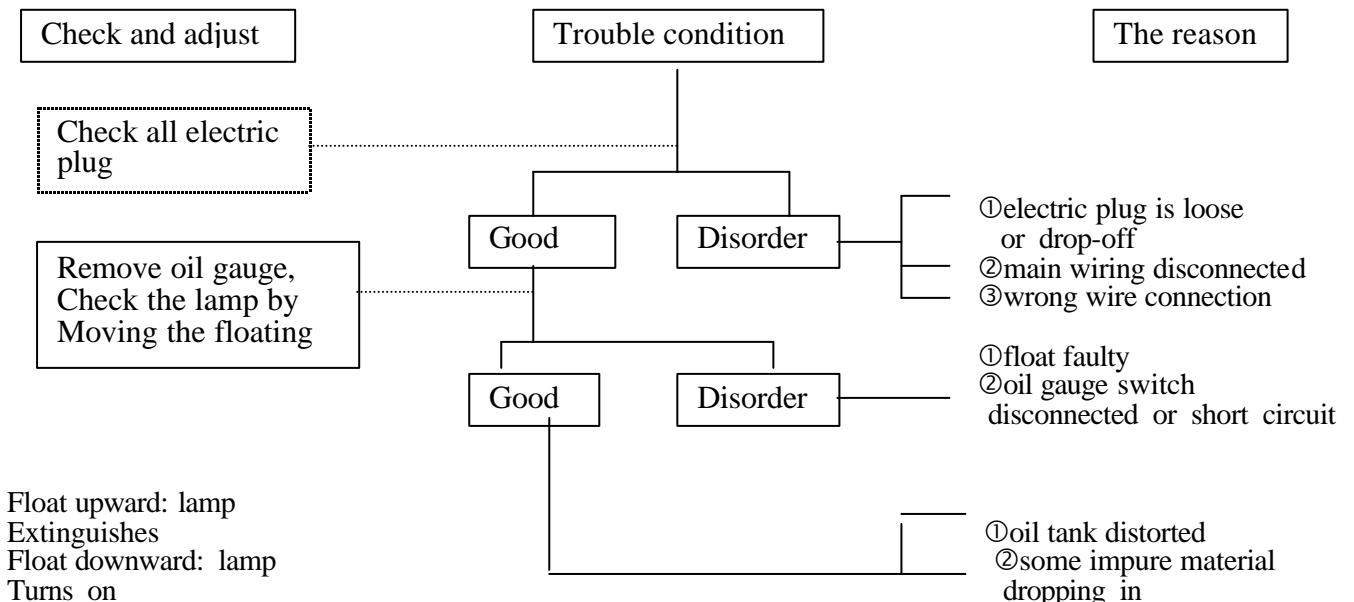


## 9. Oil indicator malfunction

(a) The oil lamp doesn't light up, (when the main switch is at "ON" position)

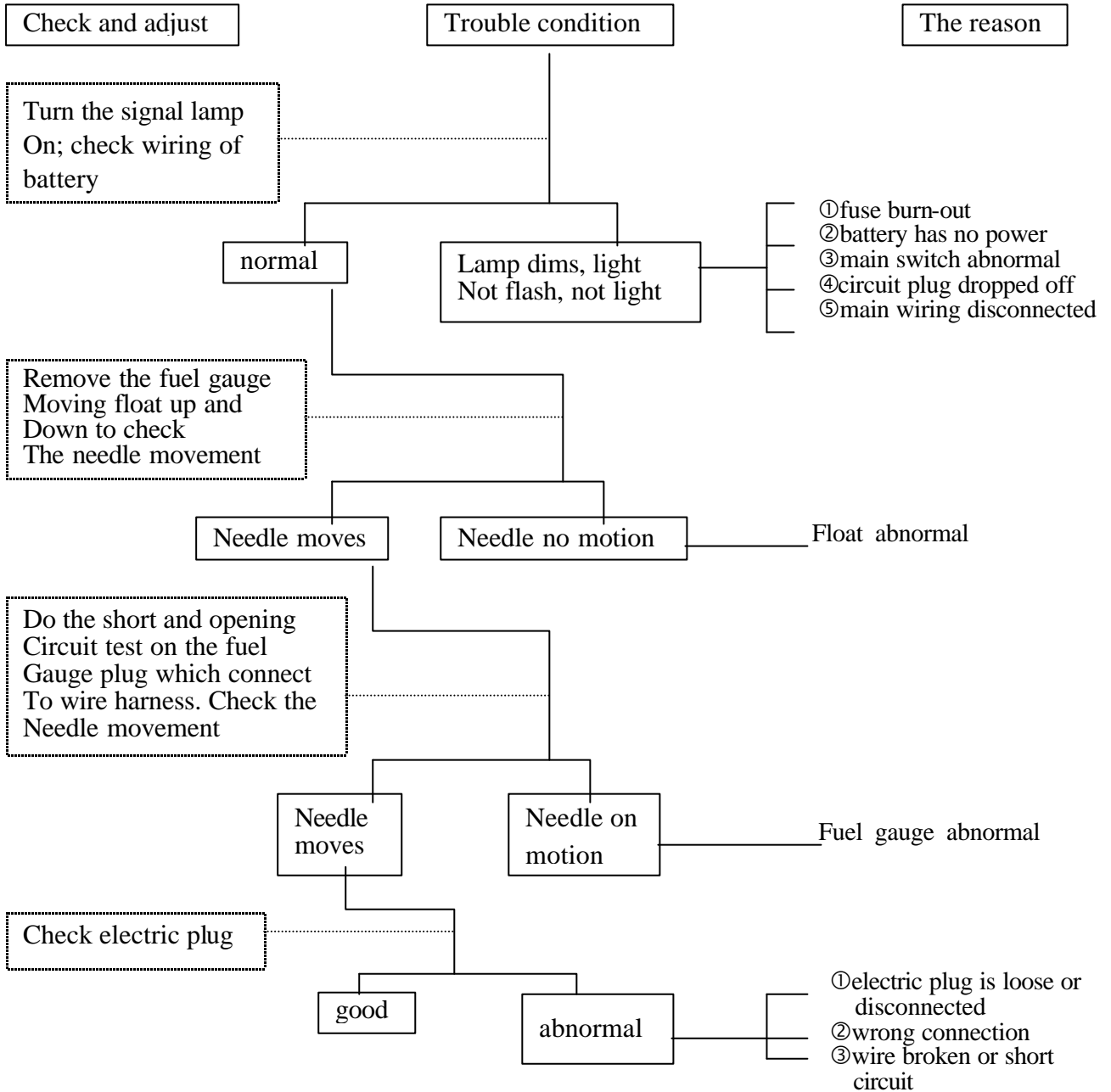


(b) Oil is enough but the indicator turns on all the time (when the main switch is "ON")

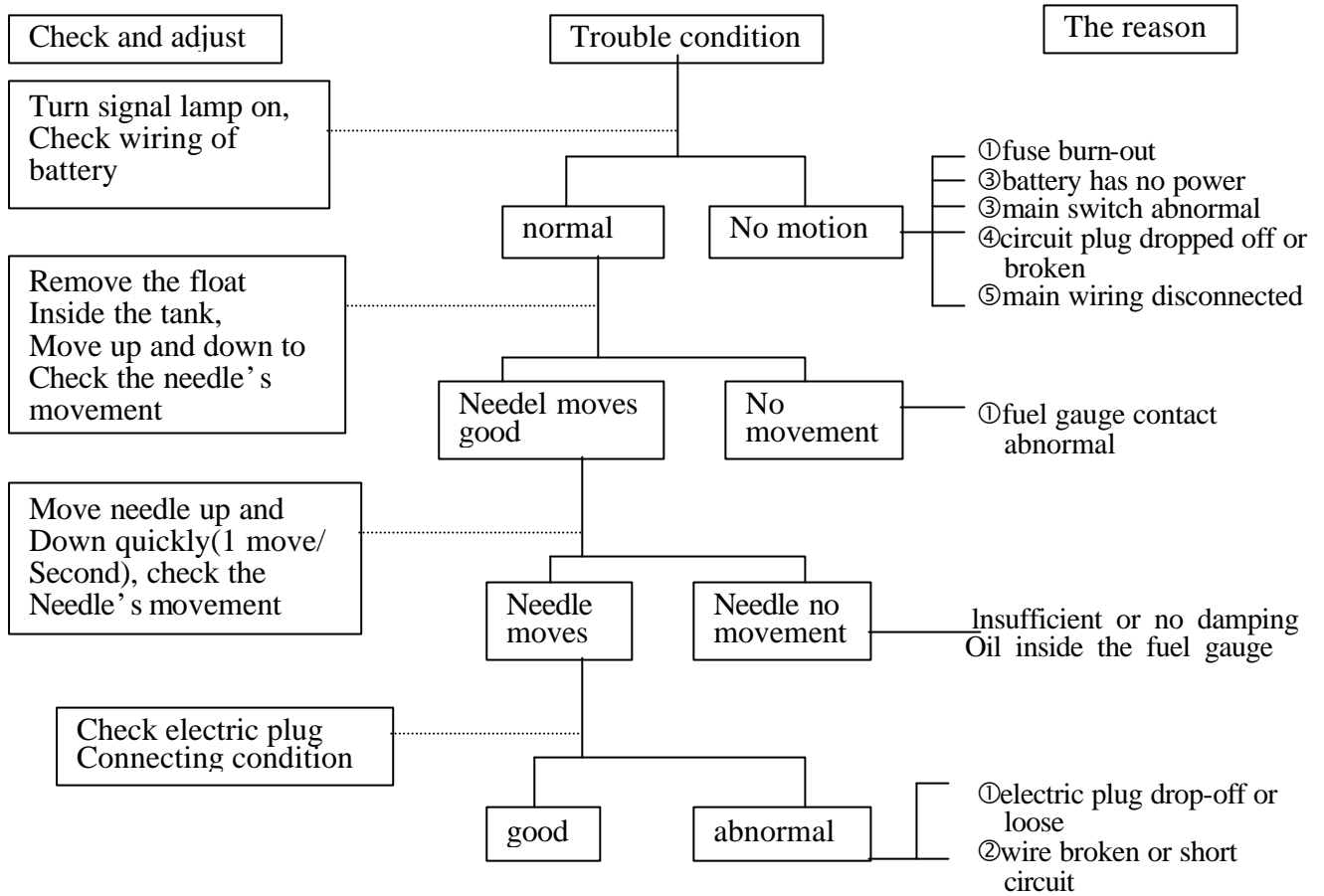


10. Fuel indication malfunction

(a) wrong fuel level indication (when the main switch is "ON")

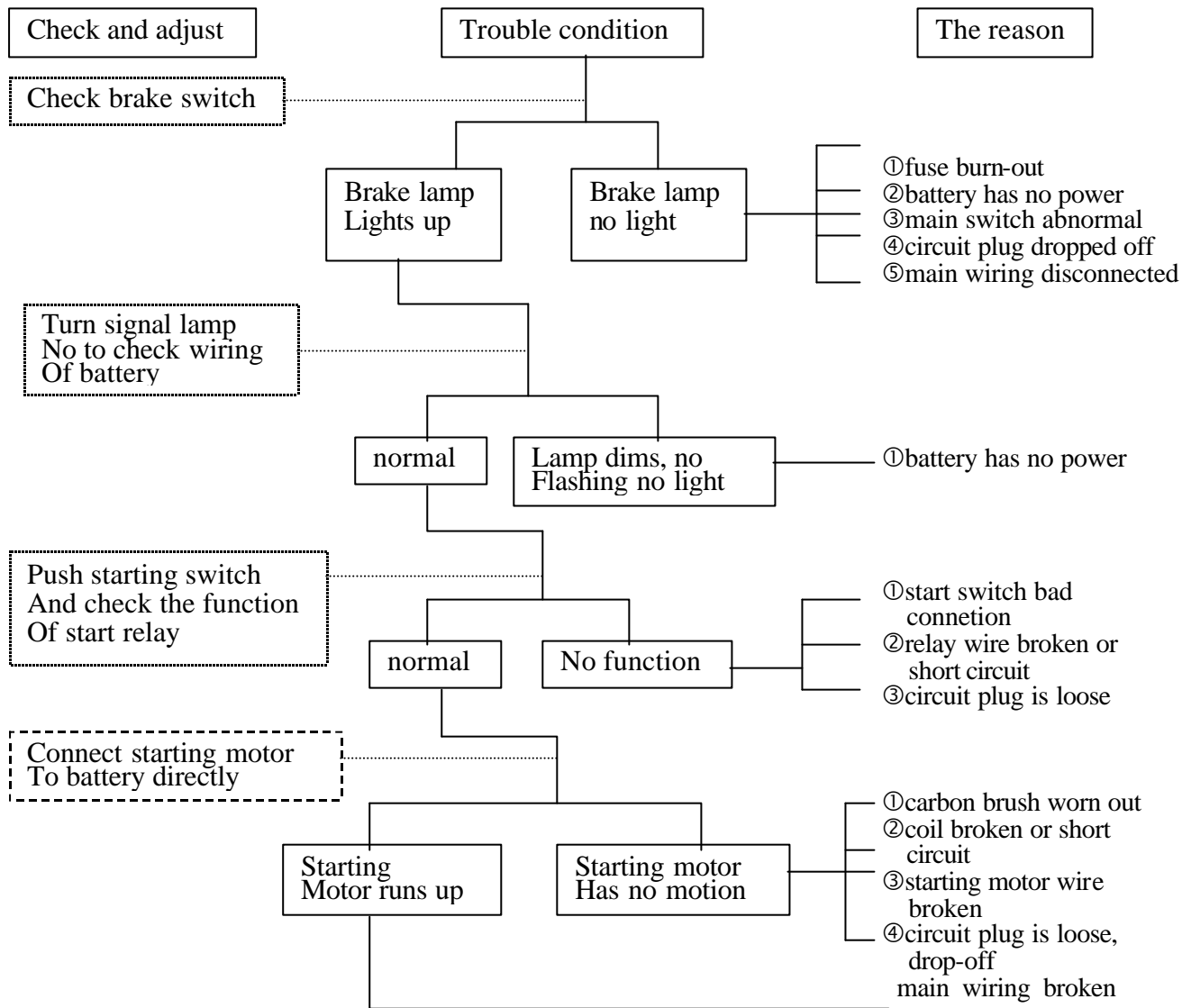


(b) Fuel gauge needle is not steady and sometimes moves up and down (when the main switch is "ON")

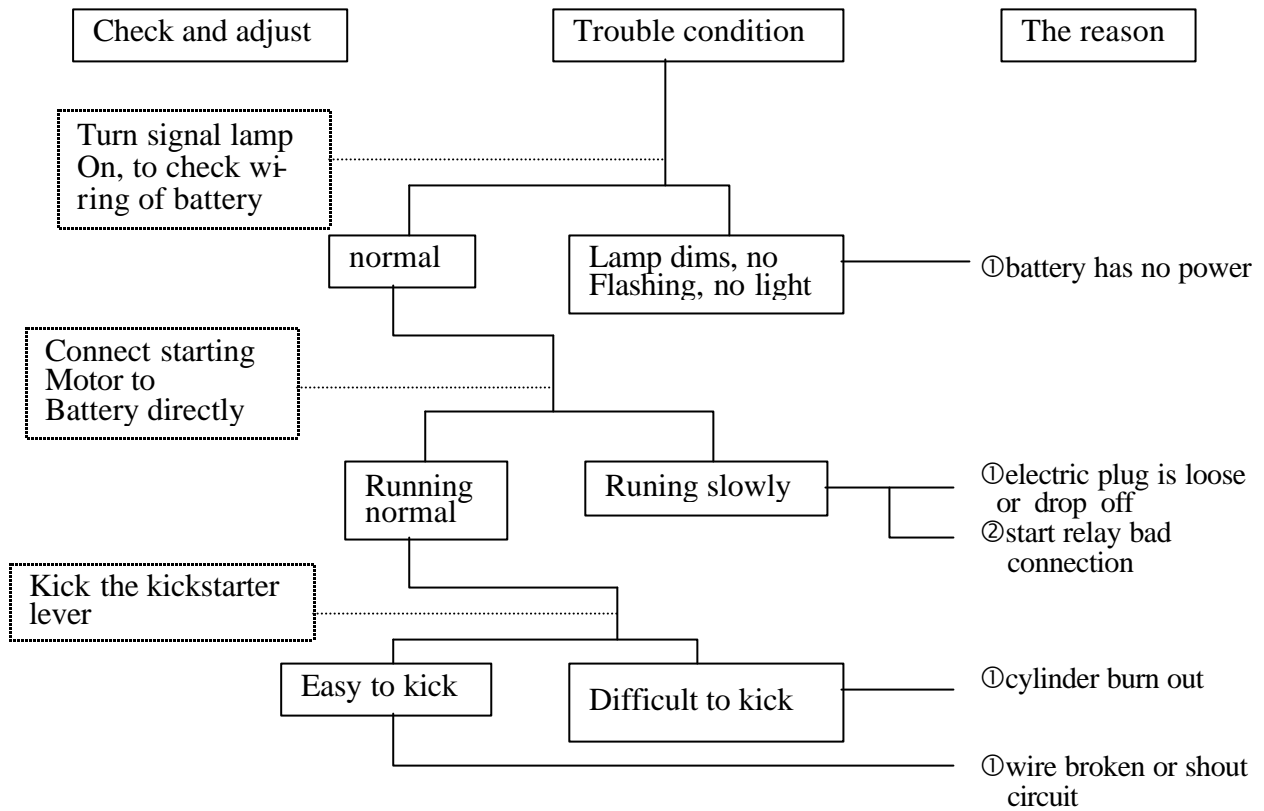


# The starting motor abnormal

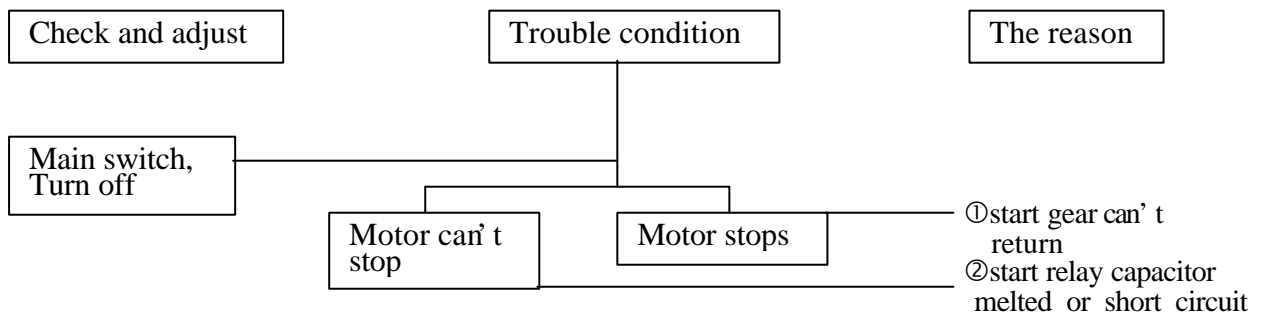
(a) Starting motor can not rotate



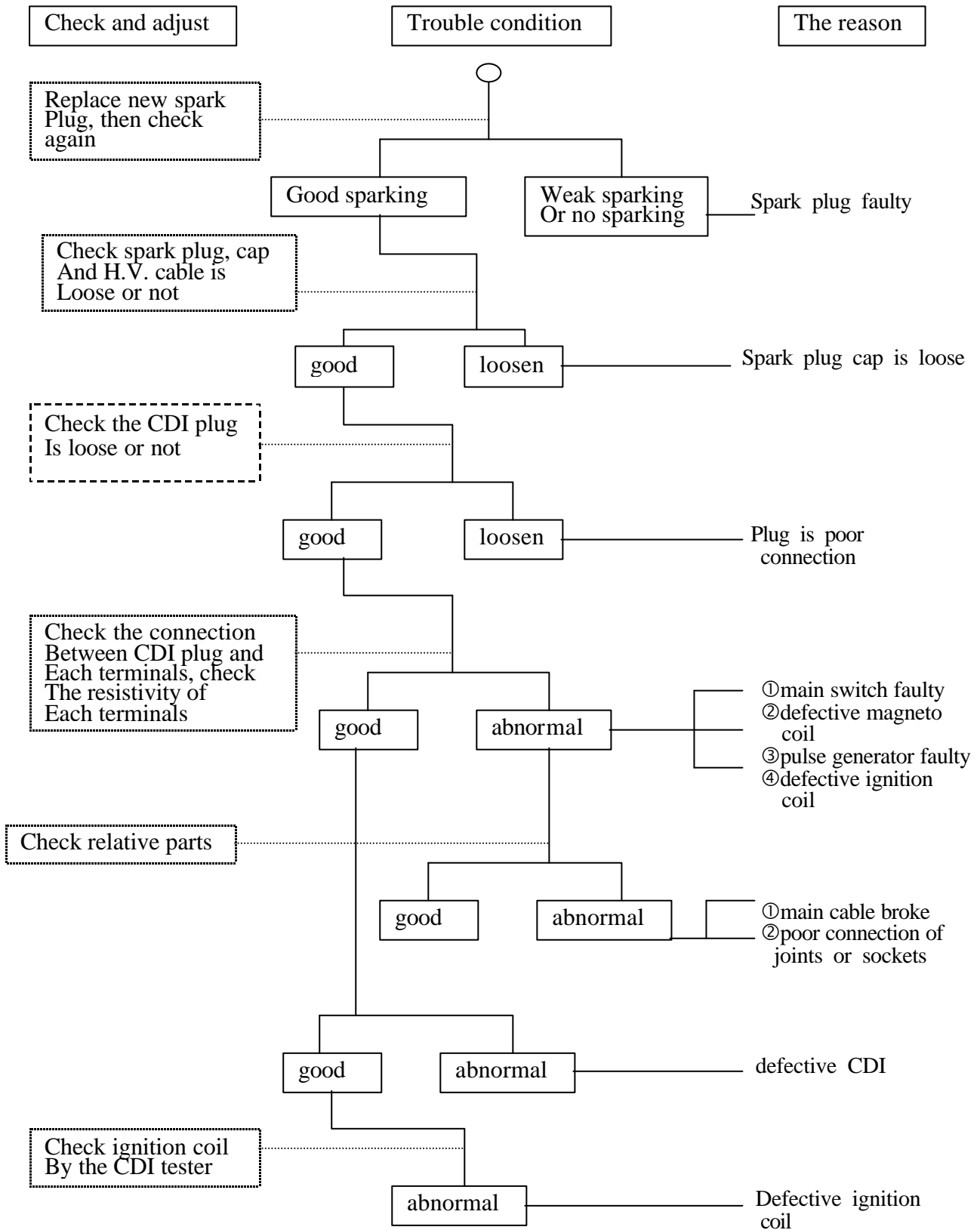
(b) Starting motor running slowly or no pick-up



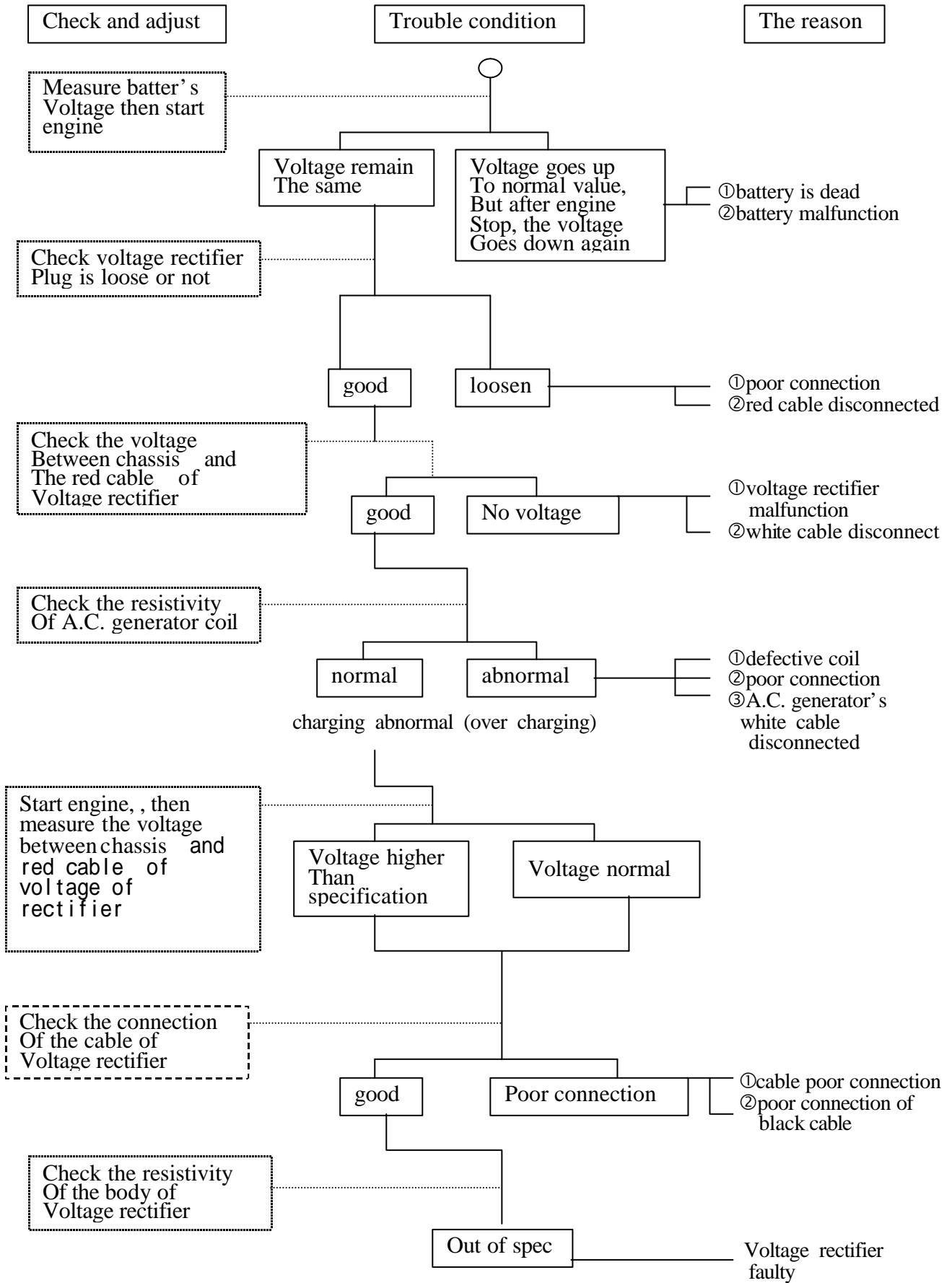
© Starting motor can not stop after starting



# 12.No sparking



### 13.Charging abnormal(battery over charging or over discharging)



### **3. Checking and Adjustment:**

- (1) Regular checking table
- (2) Battery
- (3) Cleaning air cleaner
- (4) The final reduction mechanism oil
- (5) Spark plug
- (6) Compression pressure measurement
- (7) Ignition timing
- (8) Throttle cables adjustment
- (9) Idle adjustment
- (10) Frt brake adjustment
- (11) Rr brake adjustment
- (12) Tire

**(1)Regular checking table:**

1. **【O】** mark indicates periodical checking

2. **【   】** indicates changing the parts

Item			Checking period						Judgement standard	Remark	
			gen-eral che-cki ng	first month or Initial 500km	home		office				
					every6 months or 5000km	every12 months or 10000km	every1 months or 1000km	every3 months or 2500km			every12 months or 10000km
Suspension	Handlebar steering column	Loose or swing									
		Operation									
		Turning angle									
	front fork	Damaged									
		Shaft fixed condition								Check from Stering column	
		Shaft:loose							Check from Stering column		
Brake	Lever	a. clearance							Clearance: Front:5 -7mm Rear :5 -7mm		
		b. movement of brake									
	Brake cable	loose or damage									
		Change brake cable							every 2 ears		
	Brake cam	worn out									
	Wheel hub and brake shoe	a. clearance between hub and lining									
		b. brake shoe and brake lining worn-out									
c. wheel hub worn and damaged								standard dia:rear:110.0mm limit of use:rear:111.0mm			
Wheel	Front wheel axle	damaged or distorsion									
	Rear wheel axle	damaged or distorsion									
	tire	Pressure							unit: kg/c m <sup>2</sup> ;1 driver		
			front tire	rear tire					2.0	2.0	
		Cracked or damaged									
		tire thread worn out							Change tire according to mark		
	tire surface or other intruders										
	Axle	Tighten the bolt and nut							Front axle nut torque 5.6-6.0kg-m rear axle nut torque 11.0-13.0kg-m		
Rim	swingness and damage condit-ion							Swingness limit Vertical: below 2.0mm Horizpmtal:be;pn 2.0mm			

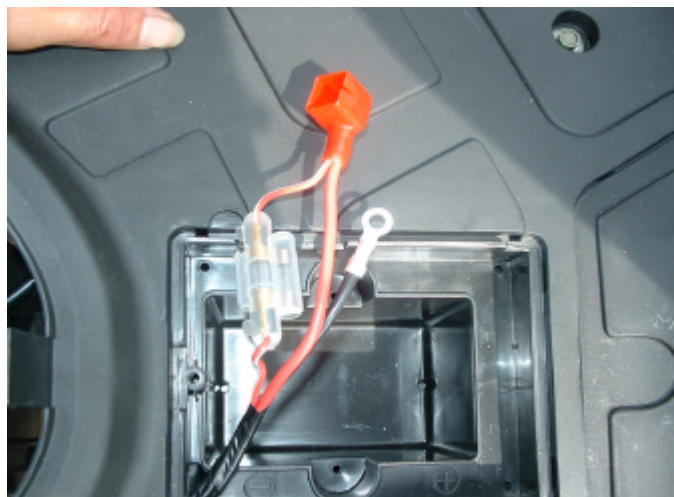






## (2) Battery: Recharge when power is out

1. Open the cover and remove the battery cover.  
→ Take out the battery,
2. Remove the negative cable and then the positive Cable, → take out the battery to recharge.
3. To re-assemble the battery, please follow the opposite Procedure of disassembling after recharging



Note:

A. The battery is totally sealed, do not remove seal bolts when recharging

B. It's no need to add any electrolyte for this re-filling free battery

Please recharging(12V) by the following current

Standard recharging:  $0.5A \times 5-10$  hr or rapid recharging:  $5A \times 30$ min.(110c.c.)

Standard:  $0.4A * 4-10$ Hr or Rapid:  $4A * 30$ min(50cc)

### (3)Cleaning air cleaner

- 1.Remove air cleaner cover
- 2.Take out the air cleaner filter
- 3.Clean the filter by the compressor air
- 4.Assemble the air cleaner by reversing above procedure

Note: Do not start the engine  
When the air cleaner is  
Not installed



### (4)The final reduction mechanism oil

- 1.Change the oil in the gear box:
  - a. Turn off the engine after warm up.
  - b. Put a bowl under the engine.
  - c. Remove the draining bolt and Filler bolt to drain the gear oil off.
  - d. Lock the draining bolt before refill 90c.c. gear oil and then lock the filling bolt.
  - e. Locking torque:1.8kg-m

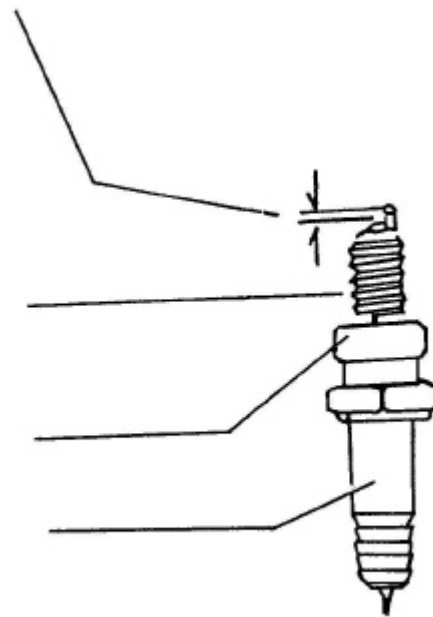


Note: Be sure the crankcase, tire or wheel are cleaned if there is grease/oil on it

## (5) Spark plug

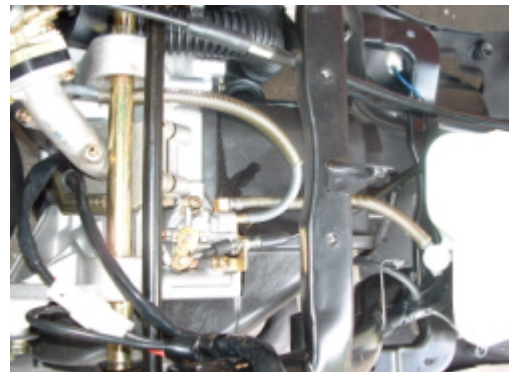
1. Remove spark plug
2. Check the spark plug electrode and check if it is  
Burnt out or not and carbonized or not
3. Clean the electrode, if it is dirty
4. Spark plug specification
  - NGK:BY7HS or same spec.
  - Gap of spark plug:0.6~0.7mm

- Electrode  
Burn out  
Carbon piled up
- Washer is  
Distorted or not
- Procelain is  
Cracked or not



## (6) Compression pressure measurement:

1. Measure it when the engine is warm.
2. Open the seat, remove the luggage.
3. Remove the cover.
4. Remove spark plug then place compression pressure gauge.
5. Fully open the throttle, kick on kickstarter 5 Times continuously, measure the compression Pressure.
6. Compression pressure:  
110cc:  $7\text{kg}/\text{c m}^2$ -500rpm  
50cc:  $6\text{kg}/\text{c m}^2$ -600rpm
7. when the compression pressure is too low, check the following:
  - a. cylinder head gasket cracked.
  - b. piston cylinder worn out.
  - c. piston ring worn out.
8. If the compression pressure is too high it is due To carbon piled up on combustion chamber and Piston tip.



## (7) Ignition timing:

This scooter is using CDI set, it is no need to adjust ignition timing.

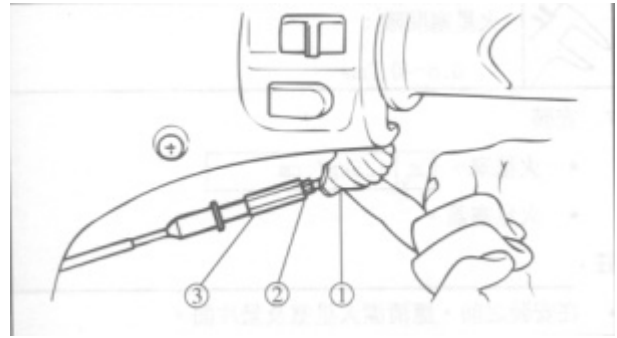
If ignition timing is not correct, check the CDI sets AC magneto, change it if it is abnormal.

checking ignition timing:

1. Open the seat, remove the luggage compartment
2. Remove the body cover
3. Remove fan case.
4. Check with ignition timing lamp.  
keep the engine running at  $1,900 \pm 100$  r.p.m  
If the checking mark should lay in  $\pm 3$  apart  
From "F", mark.
5. ignition timing: B.T.D.C.  
 $17^\circ \pm 3^\circ / @ 1900\text{rpm}$

### **(8)Throttle cables adjustment:**

- 1.check the clearance of throttle twist grip.
- 2.Normal clearance:1.5-3.5mm
- 3.Adjust it by :  
take away the rubber  
loosen the nut  
rotating the adjuster nut to adjust the clearance , change it if the throttle cables can' t be adjusted.



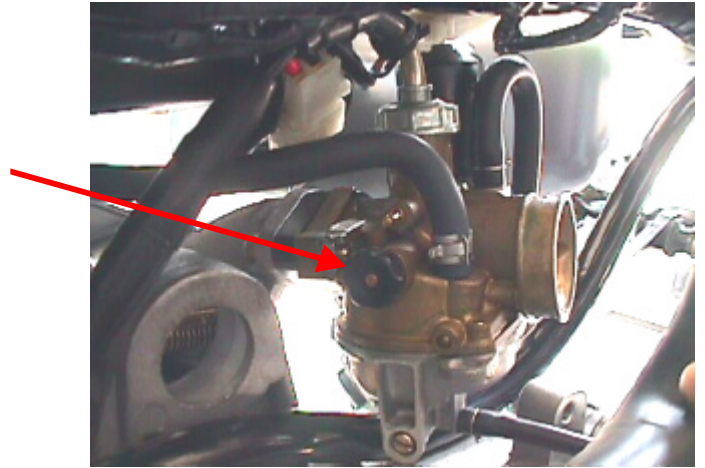
## (9) Idle adjustment:

- 1.remove left body cover
- 2.start the engine and connect the tachometer
- 3.adjust the throttle valve screw to the specified revolution  $1900 \pm 100\text{rpm}$
- 4.if the idling rpm is still unsteady or fuel up is not smooth, please adjust it by followings.

- a. Screw in the air adjust screw clockwise, then screw out counterclockwise.

Recommended loop:

- b. Rotate air adjust screw clockwise and counterclockwise to find out the highest revolution location.
- c. Rotate the throttle valve screw to idling condition.
- d. Fuel up gradually until the idling running rpm is steady.
- e. If the rpm is still not steady please repeat above procedure.



## (10) front brake adjustment:

- 1.check the clearance of front brake lever.  
Clearance:2-5mm
- 2.if the clearance is beyond, check whether:
  - a. The air mix into the pipe/caliper.
  - b. The disk brake system is leaking.

Note:

Try brake lever to see if it's loose.  
Check the brake fluid. Once air mixed in the fluid pipe, which will reduce or damage the brake efficiency or even its function.



- 3.check the brake fluid level:

- a. Refill the brake fluid when the fluid level is under the LOWER line.
- b. Brake fluid specification:SAEJ-1703F-DOT3&DOT4.

Note:

- a. To prevent the fluid splashing onto the parts or clothes, put a piece of cloth on the bottom when refilling.
- b. Be caution not to mix water or particles into the master cylinder when refilling.
- c. Never use the fluid not complied with spec.
- d. In case the fluid stains on the eyes, wash with water at once and then ask for medical care immediately.

## (11)Rear brake adjustment

1.Check the clearance

Of rear brake lever.

Clearance: 10-20mm

2.If the clearance is

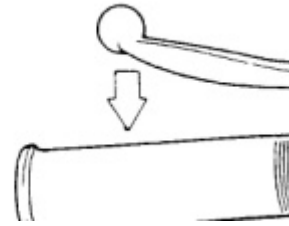
Beyond the above standard,

Adjust it by rotating the

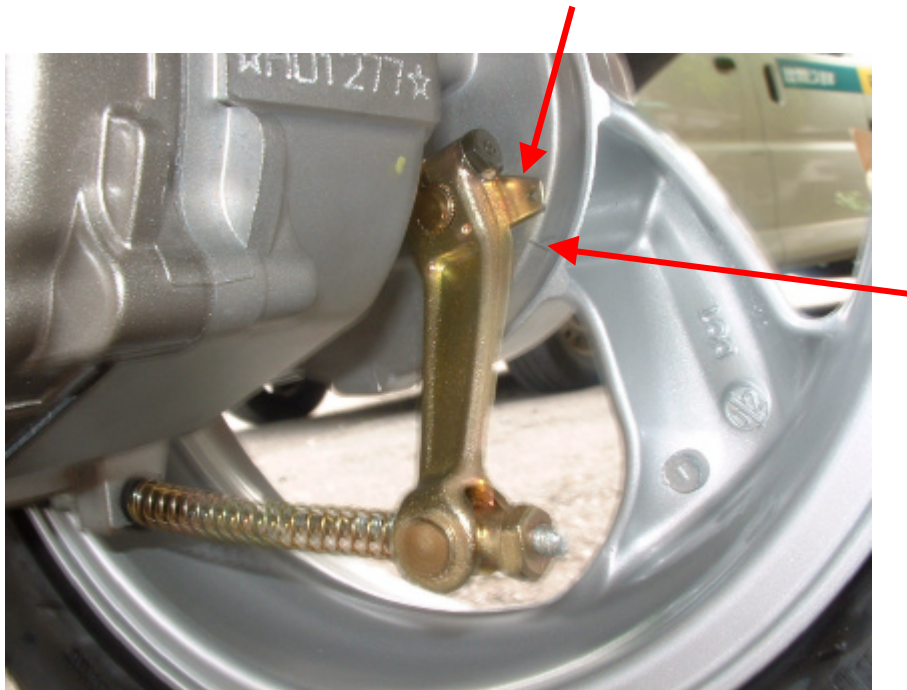
Adjuster nut.

a. Lefthanded rotation enlarge  
the clearance.

b. Righthanded rotation  
reduce the clearance.



Note:  
When the arrow of rear brake indicator lay in  
The arrow of left crankcase, change the brake  
Lining.



## (12) Tire:

1. Check the tire air pressure

Notice:

Check the tire before running

2. Tire pressure:

Front tire: 2.0 kg/c m<sup>2</sup>

Front tire: 2.0 kg/c m<sup>2</sup>

3. Tire dimension:

Front tire: 120/70-12

Rear tire: 130/70-12

4. Check if there are any sharp

objects that pierce the tire.

5. Check the depth of tire

thread.

- a. Depth (front & rear):

According to the mark of the tire

“ ” to change a new tire



Note:

- a. Check and adjust the tire pressure when it is too low.

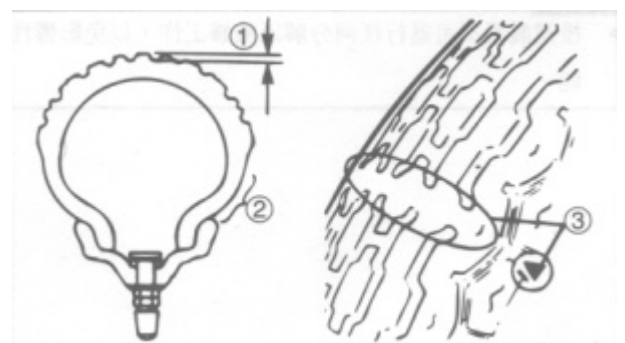
The pressure is according to the carrier, driver, passenger, accessories, and cruise speed.

- b. Proper loading is very important for steering, riding, braking, performance, and safety.

- c. Never carry any parcel unfastened.

- d. Load the heaviest parcel on the center of the vehicle, balancing the weight on both sides.

- e. Beware of the weight loaded properly and check the tire pressure. The total weight of carrier, driver, passenger, and accessories cannot exceed the approved limit. An overloaded vehicle is easy to cause tire damage and an accident for the rider.

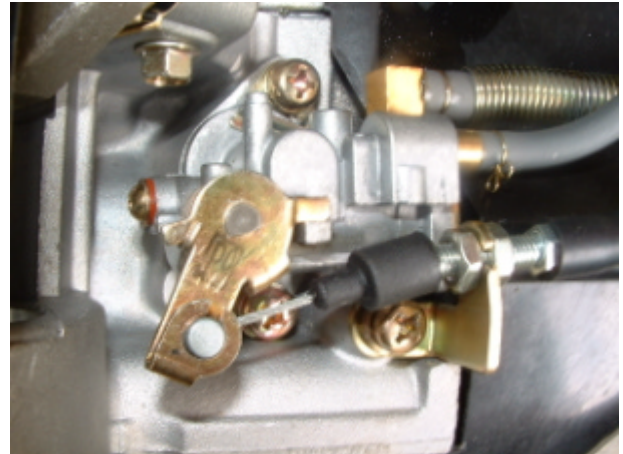
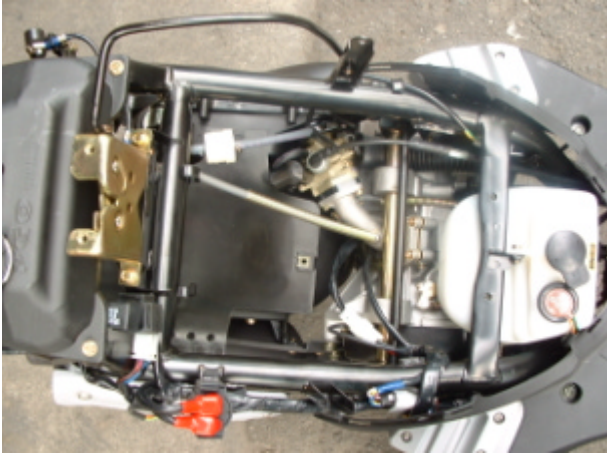


#### **4.Dismantling, maintaining, repairing and assembling operation:**

- (1)Lubrication system
- (2)Plastic parts
- (3)Engine dismantling
- (4)Drive pulley, starter, clutch, driven pulley
- (5)Cylinder head, cylinder, piston
- (6)AC Generator flywheel magneto
- (7)Final transmission mechanism
- (8)Crankcase, crankshaft.
- (9)Carburetor, reed valve, auto cock
- (10)Steering column, front wheel, front damper, front fork
- (11)Rear wheel, rear brake, rear damper
- (12)Fuel tank, oil tank

## (1) Lubrication system:

### 1. Lubrication system diagram.



### 2. Troubleshooting.

- A. If there is too much white fume from exhaust system, which means too much Carbon piled up on the spark plug or the oil quality is not good.
- B. Engine over heating:
  - a. The adjustment of oil pump is not properly.(lack of oil)
  - b. The quality of oil is not good.
- C. Piston over burning.
  - a. There is air in the oil pump system.
  - b. Oil pump is out of order.
- D. The route from oil tank to oil pump is blocked.
  - a. Ventilation hole on the tank cover is blocked.

Note:1. When removing oil pump, do not drop any unexpected objects into the oil pipe.

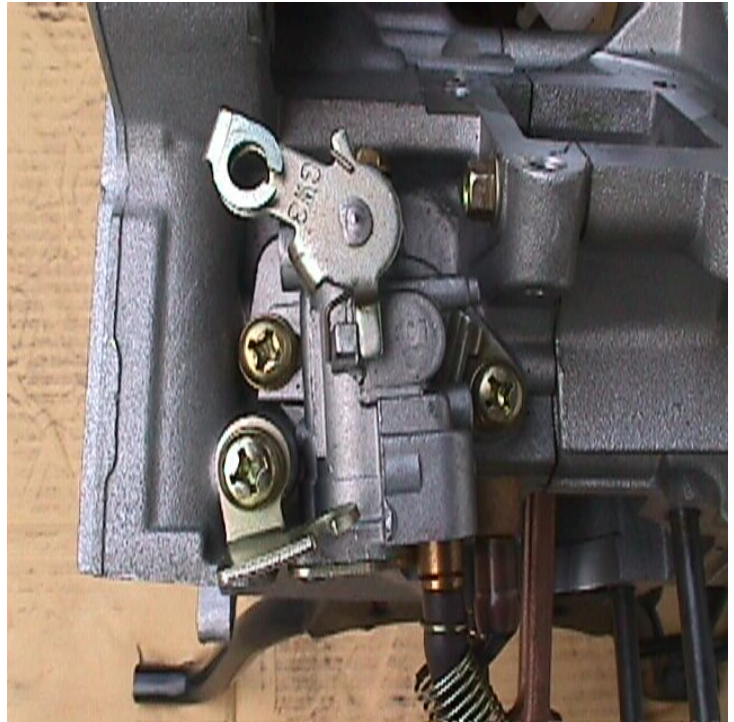
2. Please release the air if there is air trapped in the oil pipe.

3. Locking torque of oil pump: 0.8-1.2kg-m

### 3. Removing oil pump.

Clean the oil pump and Crank case before operation

- a. Remove the luggage and rear bracket.
- b. Remove the input/output oil pipe.
- c. Take out the oil pump by removing The locking screw on oil pump and Oil gauge cable.



### 4. check oil pump.

Remove oil pump and check:

- a. O-ring is distorted or not.
- b. contactpart of crankcase is injured or not.
- d. Oil pump body is damaged or not
- e. The gears are damaged or not.
- f. Check seal and see if there Is oil leakage or not.
- g. Never dismantle oil pump it Can not function well after Dismantling.



## 5. Assemble the oil pump.

- a. Assemble the oil pump by reversing Above procedure.  
O-ring of oil pump should be lubricated by Grease or oil, then place on crankcase.  
The contact surface of oil pump and crank Case should be assembled firmly.  
The gears of oil pump should be lubricated by grease.
- b. Be sure oil pump screw is tightened tightly  
Locking torque: 0.8~1.2kg-m

After assembling, check the following:

- a. the adjustment of control cables
- b. Is there air in oil pipe.
- c. oil leakage at any location.

## 6. Releasing air in the oil pump.

- a. If there is air in the oil pipe, it will cause engine lubrication trouble
- b. Releasing air operation means the release of air trapped in the air pipe, oil pipe and oil pump. Please firstly release air from the oil pipe

- (a) Fill up specific amount of oil to oil tank.
- (b) Place dry cloth under the oil pump.
- © Remove oil pipe.
- (d) Use injector to fill up the oil in the oil pump body and oil pipe. Be sure the oil pipe and oil pump are full of oil before assembling.
- (e) After assembling, check if there is still air trapped in the oil pipe.



3.Screwing out the screws of the rear carrier

→take off the rear carrier



4.Open the seat, screwing out the 9 screws of luggage compartment

→take off the luggage compartment.



5.Screwing out the screws of front body cover

→take off the front body cover.



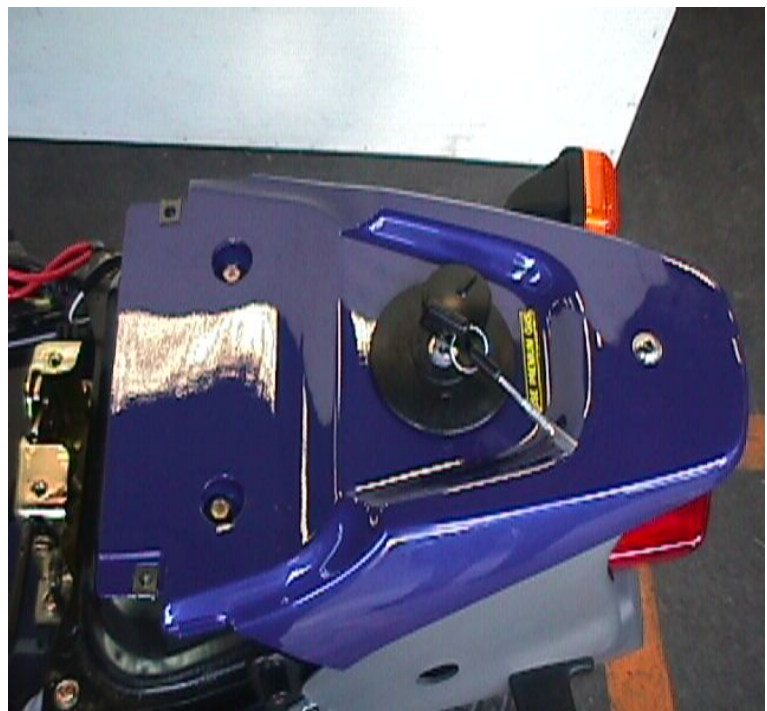
6.Screwing out the screws of left side cover  
→take off the left side cover.



7.Screwing out the screws of right side cover  
→take off the right side cover.



8.Screwing out the screws of rear cover  
→take off the rear cover.



9. Take off the upper & lower handle cover firstly, then screwing off the screws of front fender.



10. screwing out the screws of front inner cover.



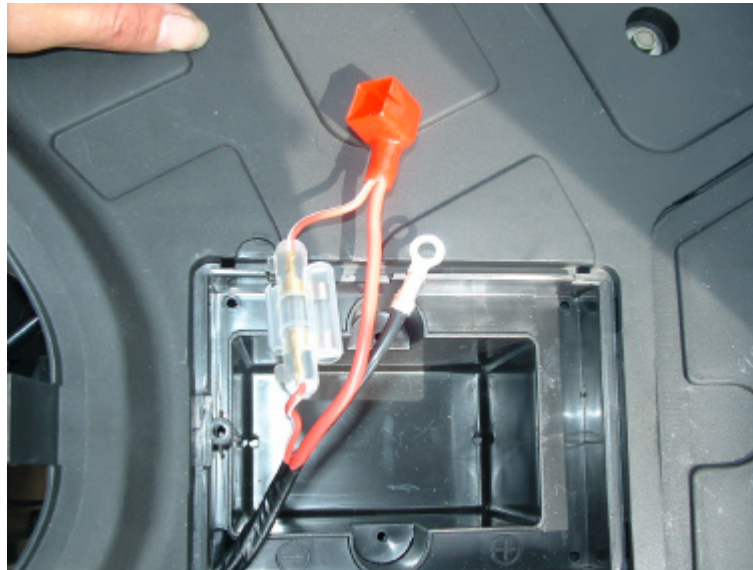
11.screwing out the screws of front mudguard.



12.Before taking off the step floor, screwing out the screws of battery cover firstly  
→take off the battery cover.



13. Disconnect the negative cable firstly, then positive cable  
→take out the battery.



14. Screwing out the four screws of the step plate  
→take off the step plate.

15. Screwing out the screws of step floor & lower mudguard  
→take off the step floor & lower mudguard.



Locking torque:  
M6:0.7-1.1kg-m  
M5:0.35-0.5kg-m

Note: Pay attention not to clamp or scraping the cables by the plastic parts when assembling.

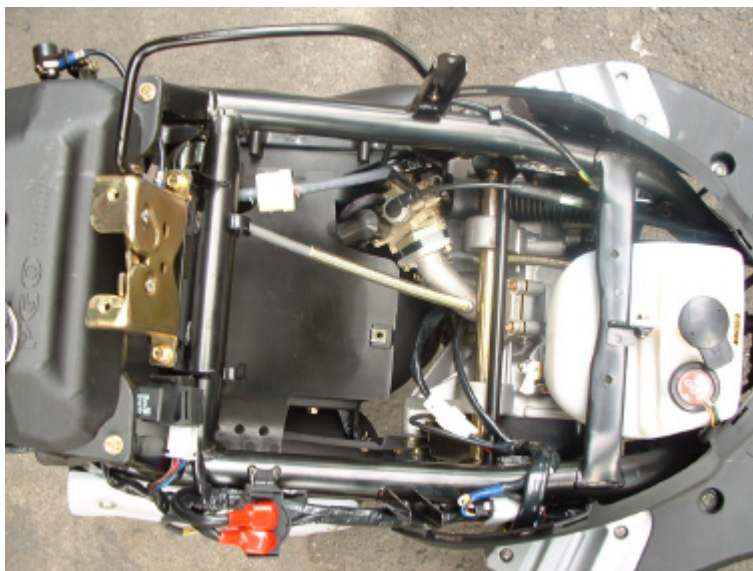
### **(3)Dismantling Engine**

A. Dismantling engine.

1. Take off the luggage compartment.



2. Remove vacuum pipe, fuel pipe, oil pipe. Cable of auto choke and carburetor.



4.Remove the cap of spark plug.



5.Remove engine hanger shelf's nut, rear damper blot and rear brake cable.



6.Remove the engine.



B. installing engine.

1. Install engine please reverse above procedure.

2. Locking torque:

M8: 2.0~3.0kg-m

M10: 3.0~4.0kg-m

M12: 5.0~6.0kg-m

3. After installing, inspect and adjust the following:

a. the wire connecting.

b. throttle cable, oil control cable.

c. fuel and oil route.

d. rear brake adjustment.

#### (4) Drive pulley, starter, clutch, driven pulley

##### A. Troubleshooting:

- a. Engine starts, but vehicle does not move.
  1. driving belt worn out
  2. driven plate worn out
  3. clutch lining worn out
- b. The vehicle stops or trembles when running,
  1. clutch lining spring cracked or broken.
- c. Can't reach high speed, no pick-up
  1. driving belt worn out.
  2. Driving plate spring distortion.
  3. Weight roller worn out.
  4. Driving plate abnormal.

Note:

No grease and oil allowed stain on the driving belt and driven plate.

##### B. Measurement data

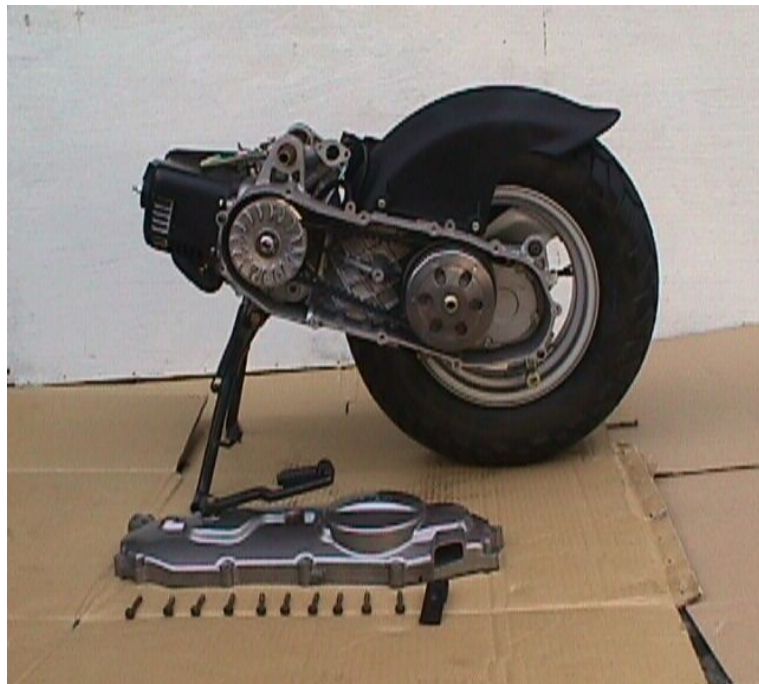
Item	Standard value(mm)	Limit of use(mm)
	110cc	110cc
The bush inner dia of Slide driving plate	23.98-24.052	24.240
Driving plate's boss Outer dia	23.974-23.960	23.934
Weight roller outer Dia	15.992-16.008	15.500
Clutch cover	120.0-120.2	120.500
Driven plate spring Free length	154.600	149.300
Driving plate sets Outer dia	33.965-33.985	33.940
Slide driven plate Inner dia	34.000-34.025	34.050

C. Driving pulley.

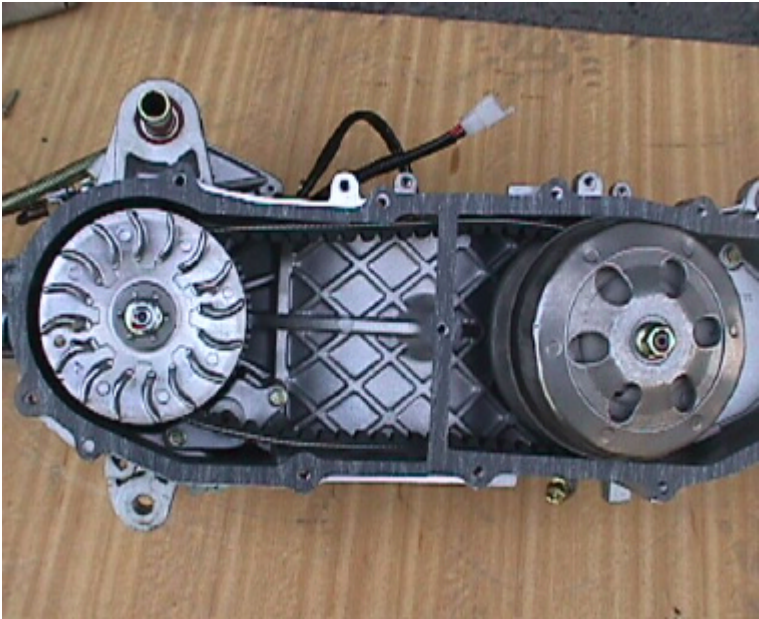
1.Remove the 10 screws of left cover.



2.Take off the left cover.



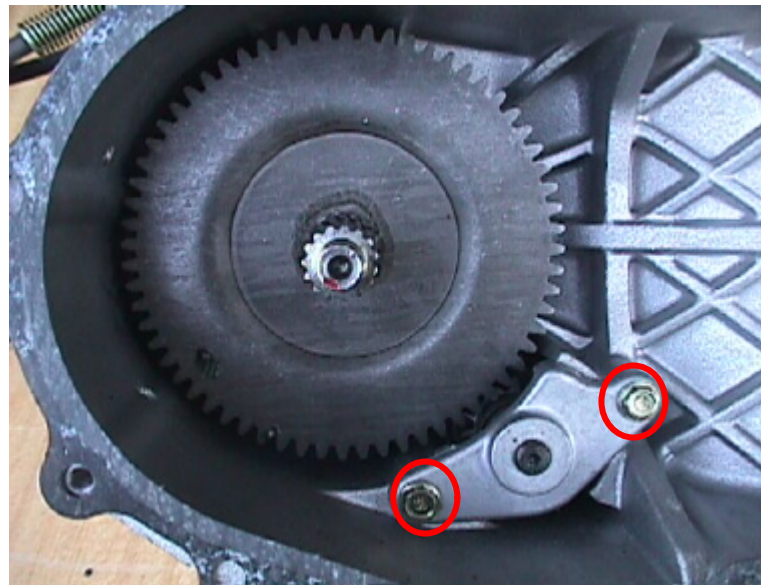
3.Remove the fixing nut of clutch.



4. Take off the ramp plate, belt & rear clutch, and the driving plate.



7. Loosen 2 hexagon screws, and take off the driving gear starter fixing plate set.



8. Remove the start idle gear set.



9. Assemble driving pulley, please reverse above procedure.

Locking torque:  
1.M10 nut of driving pulley:3.5~4.0kg- m  
2.M10 nut of clutch outer:3.5~4.0kg- m

10. Checking the driving belt

(1)check whether it is cracked or its rubber and fiber are loose or not  
also check if they are extraordinarily worn out.

(2)driving belt width:

limit of use : change it when below 16.5mm.

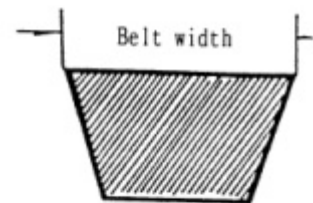
11. Disassemble slide driving plate set

(1)Remove bush of slide driving plate

(2)Remove screw, and disassemble the cover  
of slide driving plate.

(3)Remove ramp plate.

(4)Remove weight rollers.



12. Checking list:

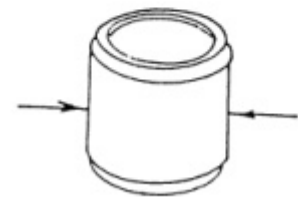
(1)Check the wearing condition of weight roller.

limit of use:change it when below 15.5mm.

(2)Check inner dia of slide driving plate's gasket.

Limit of use:  
Change it when above 20.068 mm

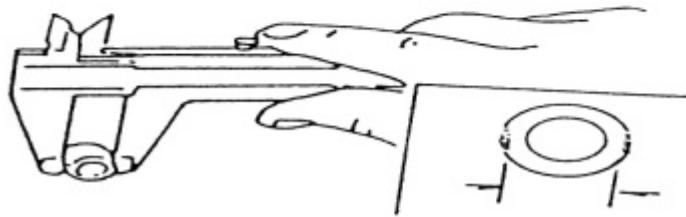
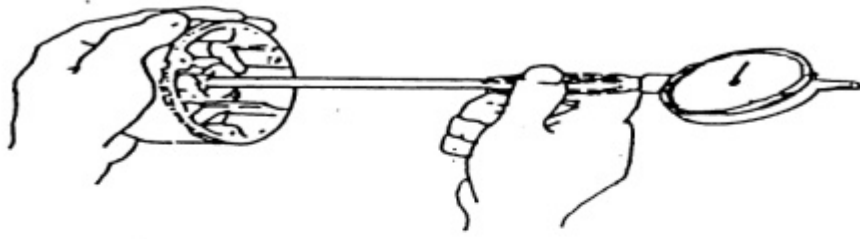
(3)Check the wearing condition for driving pulley surface.



Check the wearing condition

(4)Check the outer diameter of the driving plate's boss.

Limit of use: change it when  
Below 23.934mm



13. Assemble the slide driving plate.

- (1) Clean the inner surface of slide driving plate, then assemble the roller.
- (2) Assemble the ramp plate.
- (3) Please reverse the procedures of disassembling to finish assembling.

#### D. Starter dismantling

1. Dismantle the left crankcase cover
2. Remove the hexagon nut, then remove the starter lever.
3. Remove five screws of partition plate.
4. Remove the stator spring from the start returning positioner.
5. Remove the driven gear comp of kick starter.
6. Remove the retaining c-type clip
7. Remove the spindle comp.

Of kick starter.

#### 8. Checking the starter

- a. Check the wearing condition of the outer diameter of the spindle comp and the inner diameter of bush and gear.
- b. Check the wearing condition of the shaft of driven gear comp, gear sets and ratchet.

#### 9. Assembling the starter

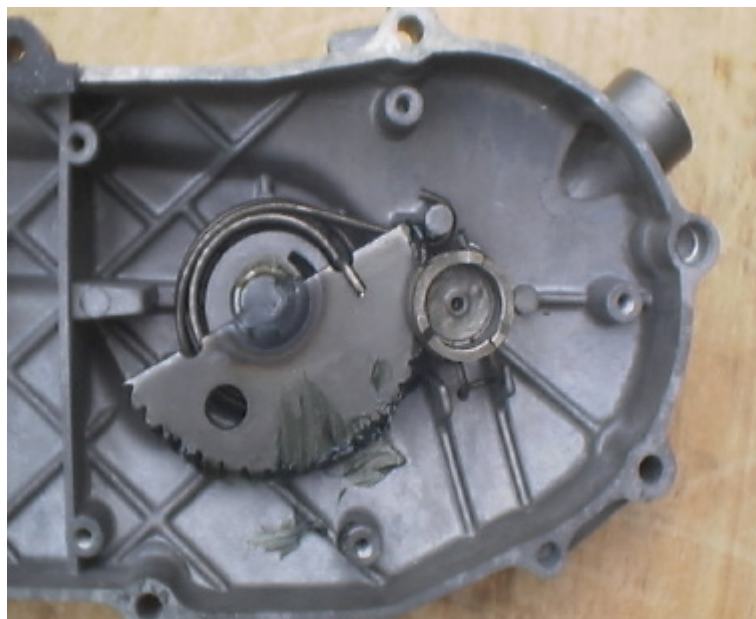
To assemble the starter, follow the opposite procedures of dismantling.

Locking torque: M6: 1.0~1.2kg·m

#### Note:

① Make sure that one end of the torsion spring is hooked on the groove of driven gear, and another end of the torsion spring is hooked on the pole inside the left crank case.

② Put some grease on shaft and gear sets before assembling.



## E. Clutch driven pulley

### 1. Dismantle the clutch

- a. Remove left crankcase cover.
- b. Remove driving plate.
- c. Remove driving belt.
- d. Remove M10 locking nut, then the clutch.

2. Assembling the clutch: please follow the opposite procedure of dismantling.

Locking torque:  
M10: 3.5~4.0kg-m

### 3. Checking the clutch:

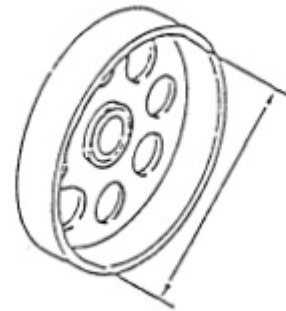
Dismantling the clutch needs the special Tool, please contact your dealers.

- a. Check the clutch driven face.

Check the clutch cover about its wearing

Condition and inner diameter measurement.

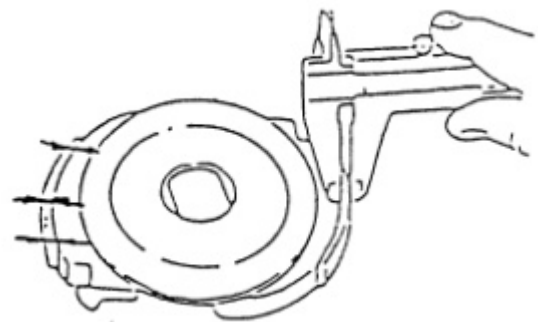
Limit of use:  
Change it when above 120.5mm



- b. Check the clutch lining wearing condition

and measure the lining thickness

limit of use: change it below 2.5mm.



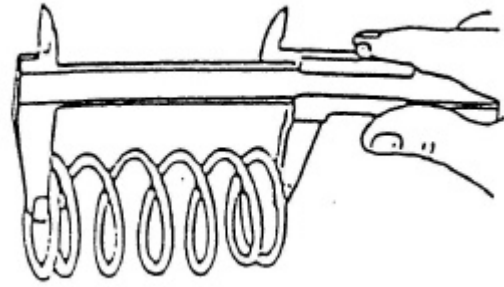
c. Check driven spring free  
length:standard:154.6mm  
Limit of use:change it as it  
Is below 149.3mm

d. Check wearing condition of  
driving plate set.  
Outer diameter measurement:  
Limit of use:change it as it  
Is above 33.940mm

e. Check wearing condition of  
slide driven plate.  
Inner diameter measurement:  
Limit of use:change it as it  
Is above 34.060mm

f. Check is there any wearing  
occur to the ditch area.

g. Check wearing condition of  
seal location, if necessary  
change a new one.



## (5)Cylinder head, cylinder, piston:

### A. Troubleshooting.

- a. compression pressure is too low, difficult to start engine, low RPM running unsmoothly.
  1. Cylinder washer cracked.
  2. Spark plug not being locking well.
  3. Piston ring worn out or cracked.
  4. Cylinder, piston worn out or injured.
  5. Reed valve is out of order.
- b. compression pressure is too high, engine overheating or knocking.  
cylinder head or piston tip too much carbon accumulated.
- c. piston noise
  1. cylinder, piston worn out.
  2. Piston pin hole, piston pin worn out.
  3. Connecting rod small end or bearing worn out.
- d.piston, cylinder noise
  - 1.piston ring worn out or cracked.
  - 2.Cylinder worn out or injured.

### B.The operation notice:

- 1.clean before operation to avoid other object drop in engine.
- 2.The connecting washer must be washed cleanly.
- 3.Dismantle cylinder and cylinder head, don't injure the contact surface.
- 4.Cylinder inner surface and piston outer face can't be injured.
- 5.The dismantling part should be washed cleanly when checking, the contact surface  
Should lubricate by specified oil.

### C-1. The operation data information for 110cc:

Item	Standard Value(mm)	Limit of use(mm)
	110cc	110cc
Cylinder head flatness	-	0.100
Piston outer diameter(measure At the skirt area where is 12mm From the skirt lower end)	51.960-51.980	51.905
Clearance between cylinder and Piston	0.035-0.045	0.100
Piston pin hole inner dia	14.004-14.010	14.032
Piston pin outer diameter	13.998-14.000	13.074
Clearance between piston pin And pin hole	0.006-0.012	0.030
Piston ring gap (1st ring/2 <sup>nd</sup> ring)	0.15-0.35	0.450
Connecting rod small end inner Dia	18.002-18.010	18.02
Cylinder bore	52.000-52.020	52.05

## C-2. PISTON & CYLINDER DATAS for 50cc:

Part name/description		Standard Value (mm)	Limit of use (mm)
Cylinder head	Flatness		0.100
cylinder	Bore	39.995~40.015	40.050
Piston/ Piston ring	Clearance b/w Piston ring piston and	Lst ring	0.05~0.06
		2 <sup>nd</sup> ring	0.05~0.06
	Piston outer diameter	39.950~39.970	39.895
	Measuring location of piston outer dia. (12mm from the lower end of skirt)		
	Clearance b/w piston and cylinder	0.045~0.065	0.10
	Piston pin hole inner dia	13.022~13.013	13.045
Piston pin hole inner diameter		10.002~10.008	10.025
Piston pin outer diameter		9.994~10.000	9.970
Clearance between piston and piston pin		0.004~0.018	0.030
Connecting rod small end inner dia		13.996~14.007	14.025

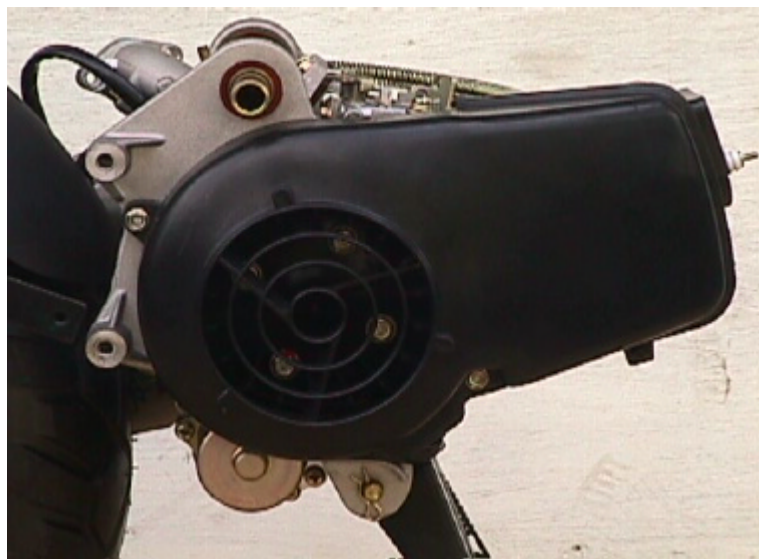
## D. dismantle cylinder head, cylinder, piston

- 1.Remove the engine.
- 2.Screwing out the two M6-bolt of cooling cowl.
- 3.Screwing out the two M6-blot of fan cover.



4.Remove the cooling cowl and fan cover.

5.Remove the spark plug.

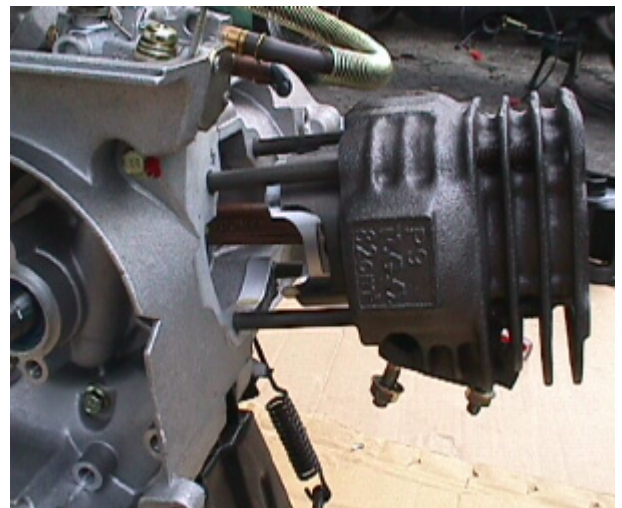
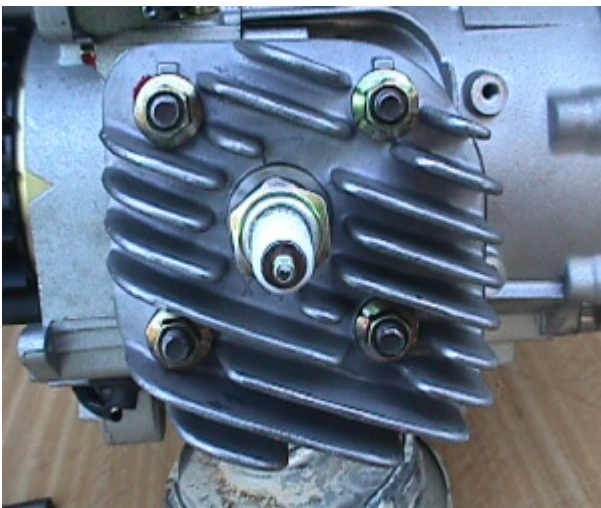


6.Screwing out the two M6-nut of muffler and cylinder, and the two M8-bolt of crankcase.

7.Remove muffler.

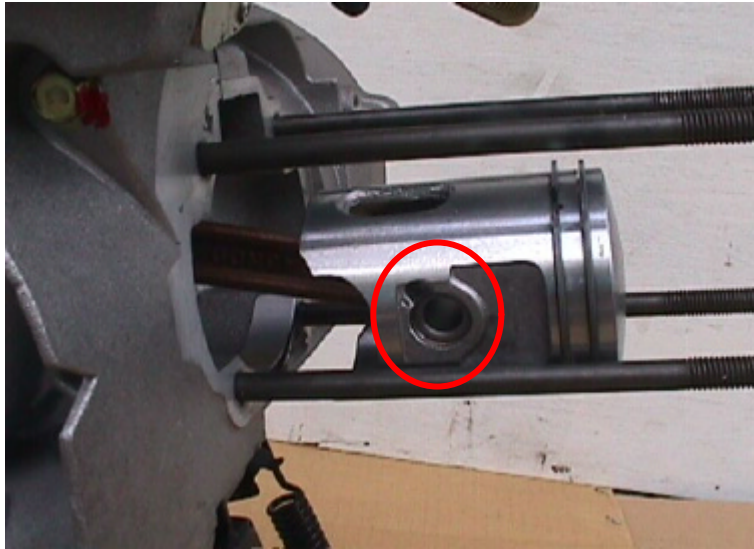


8.Remove the four M7-nut of cylinder head, then remove cylinder head and cylinder head gasket.



9.Remove the C-type clip on the piston and piston pin by the nipper.

Take off piston.

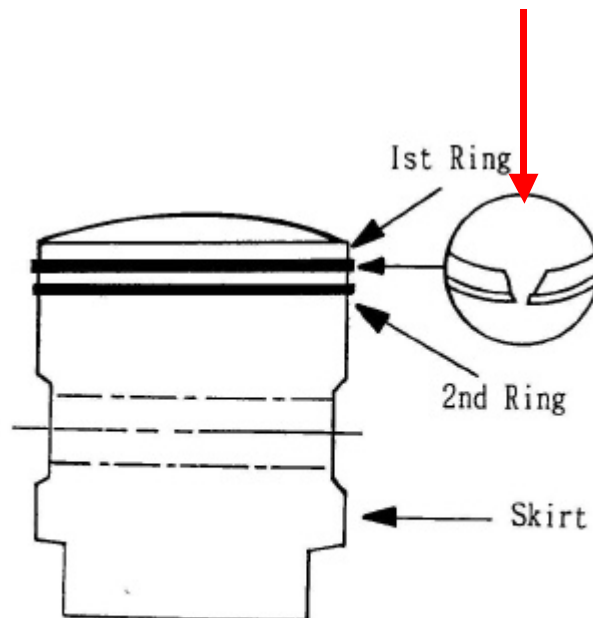


10.Dismantling of the piston ring Remove the 1st ring, then 2<sup>nd</sup> ring.

11.When assembling, please reverse the procedures of dismantling

Locking torque: M7:1.0-1.4kg- m M6:1.0-1.2kg- m
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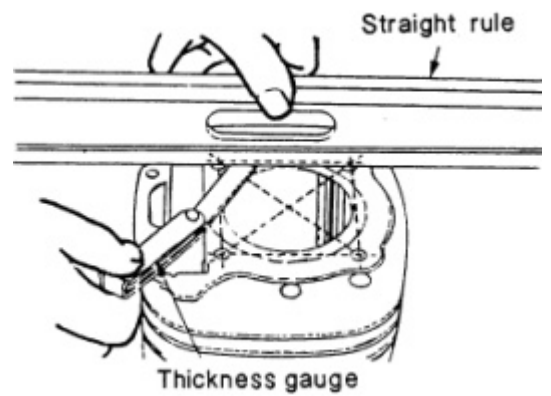
Opening end of piston ring



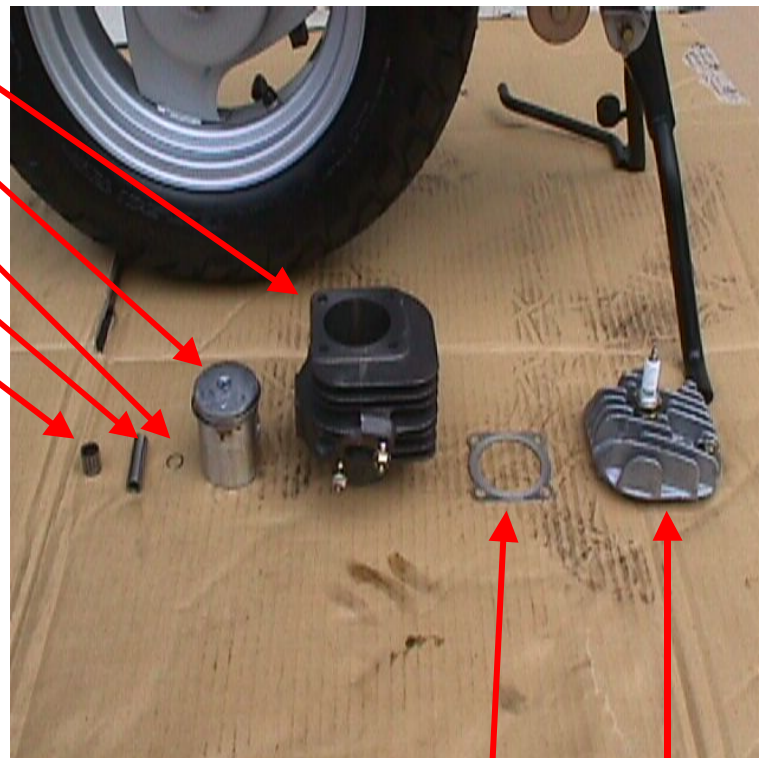
## E. Check for the flatness of cylinder head.

Check the flatness of contact surface of cylinder head.

Limit of use: If it exceeds 0.1mm  
Change a new one.



- cylinder
- piston
- piston pin snap
- piston pin
- needle bearing



Head gasket

head

## F. Combustion chamber cleaning

- Clean out the carbon piled up in combustion chamber.
- Do not scratch the combustion chamber and contact surface of cylinder during cleaning operation

## G. Check cylinder and piston:

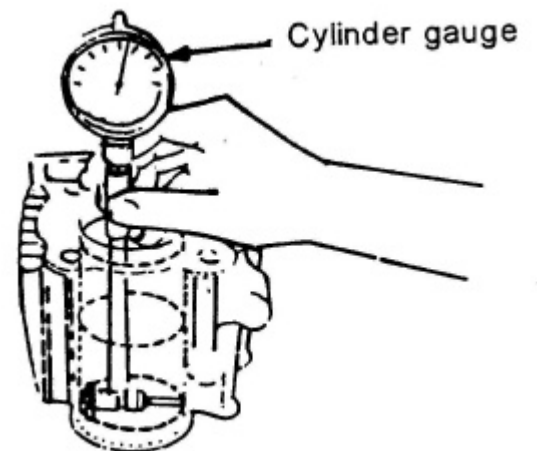
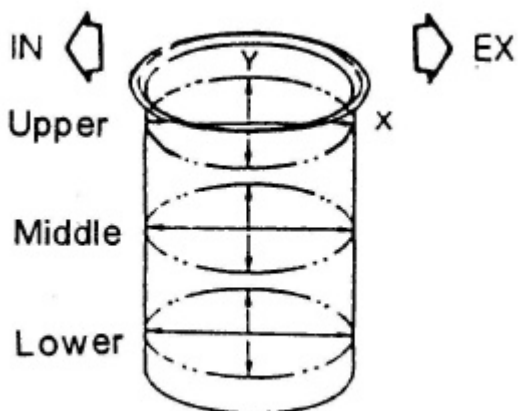
1. Check the wearing and damage condition on the contact surface of cylinder and piston.
2. Clean out the carbon on the cylinder exhausting port.

Be careful not to scratch the inner surface of cylinder.



### 3. Cylinder bore measurement:

- (1) Measure each point : upper, middle, lower orderly, and in X.Y. axis to find the smallest value.
- (2) Limit of use: it when over 52.050mm(110cc)



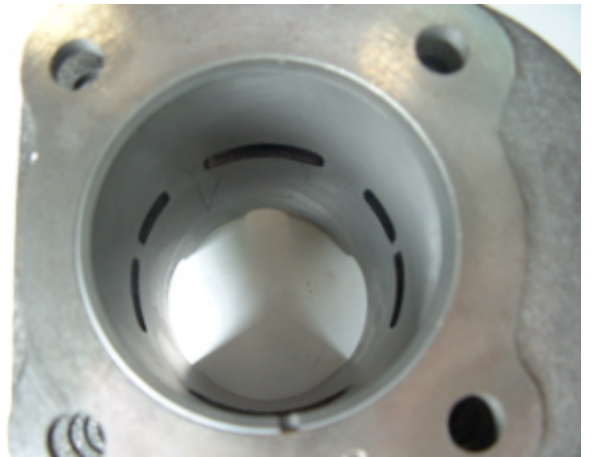
#### 4. Piston outer diameter measurement:

- (1) Measure at the skirt area where is 12 mm from the skirt lower end.
- (2) Limit of use: change if when below 51.905mm(110cc)



- (3) Calculate the clearance between cylinder and piston.

Limit of use: change it when over 0.100mm



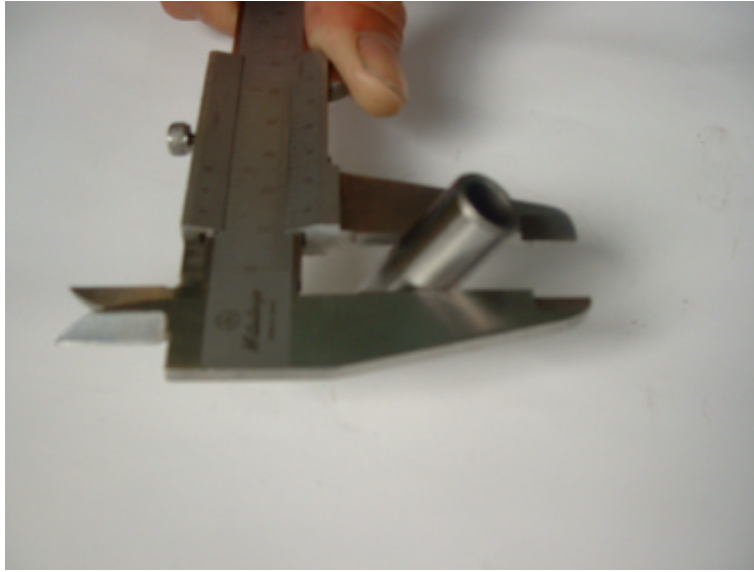
#### 5. Inner diameter measurement of the piston pin hole

Limit of use: change it when over 14.032mm(110cc)



## 6. Outer diameter measurement of the piston pin

limit of use: change it when under 13.074mm(110cc)

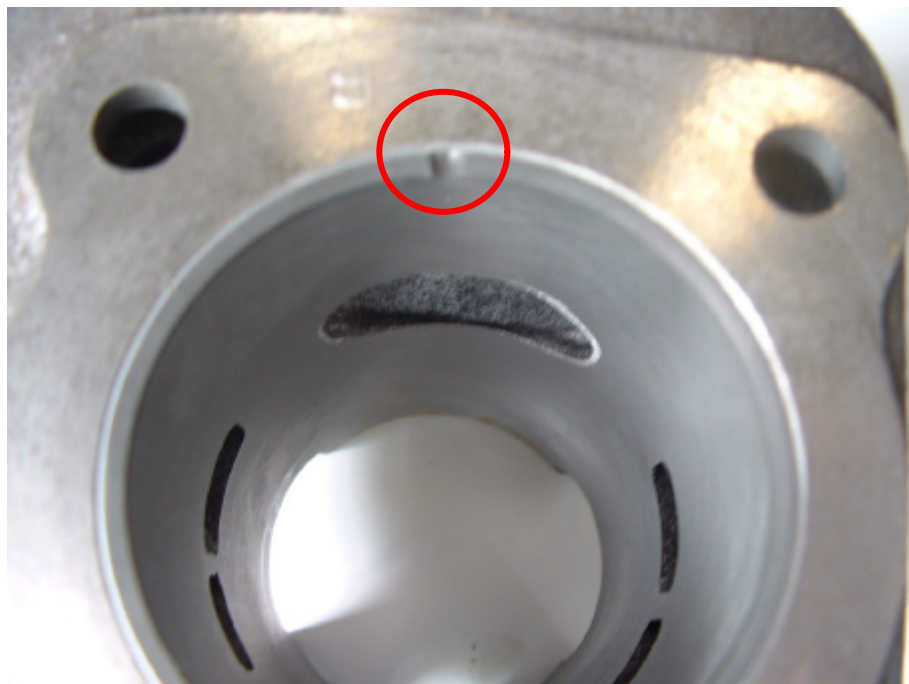


## 7. Check piston ring:

Measure piston ring gap inside cylinder:

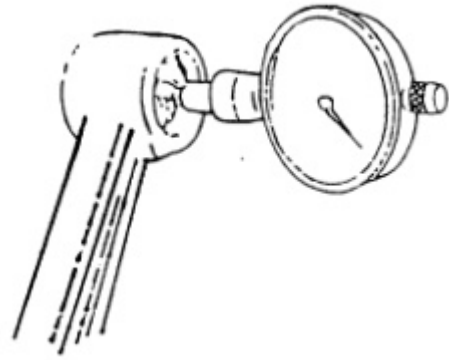
Limit of use: change new ones when the first ring and second ring are over 0.4mm

Push the piston ring into the cylinder  
By piston, then measure the gap



## 8. Check connecting rod small end

- (1) Install piston pin, bearing onto the connecting rod small end, then check the looseness of the piston pin.
- (2) Measure the inner diameter of the connecting rod small end.



Limit of use: replace a new one when over 18.020mm. (110cc)

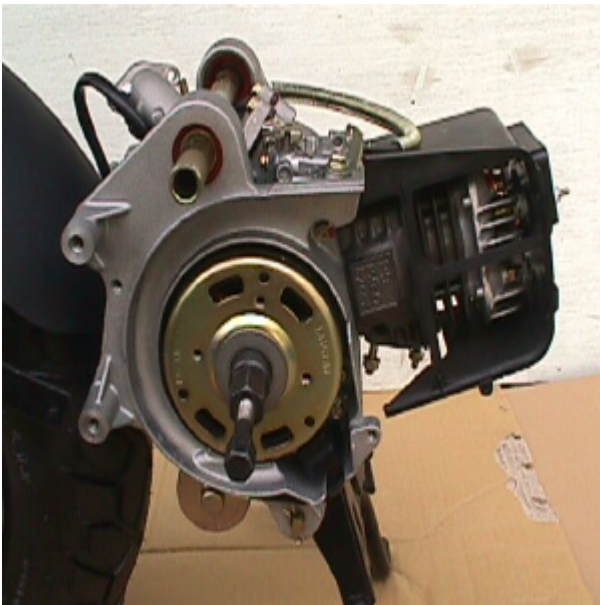
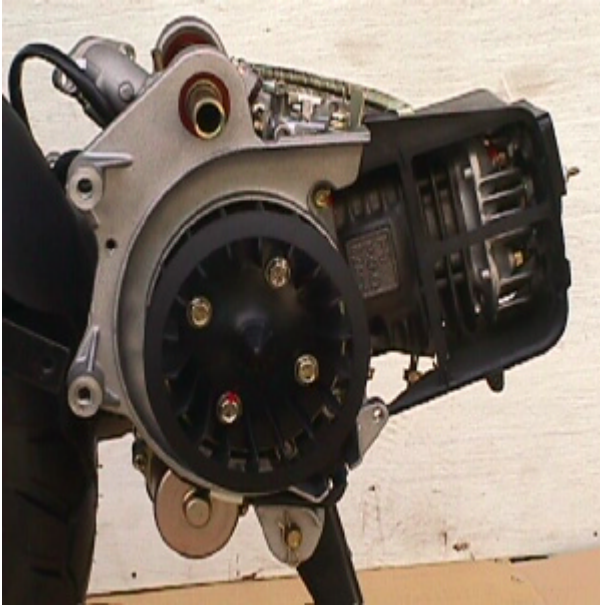
## H. Installing cylinder and piston

1. Place the piston ring into the second ring ditch first, then install the piston ring into the first ditch.
2.
  - a. Piston ring should be installed into piston ring ditch by even force
  - b. After assembling, be sure that the piston ring sliding surface is at the same height as the piston outer surface.
  - c. If the piston ring can not fit into the ditch, please clean up the carbon in the piston ring ditch or piston ring itself.
3.
  - a. Piston ring must be installed in the correct location.
  - b. After installing the piston ring, it should be able to rotate freely.
  - c. If it is necessary to change the new piston ring, it must change the whole set.
4.
  - a. The location of the piston ring gap and the lock pin must be in opposite side.
  - b. The mark "→" on the piston tip must be pointing to the exhausting port.
  - c. Lubricate the piston pin before installation.
5. Please follow the opposite procedure of dismantling to install cylinder and cylinder head.

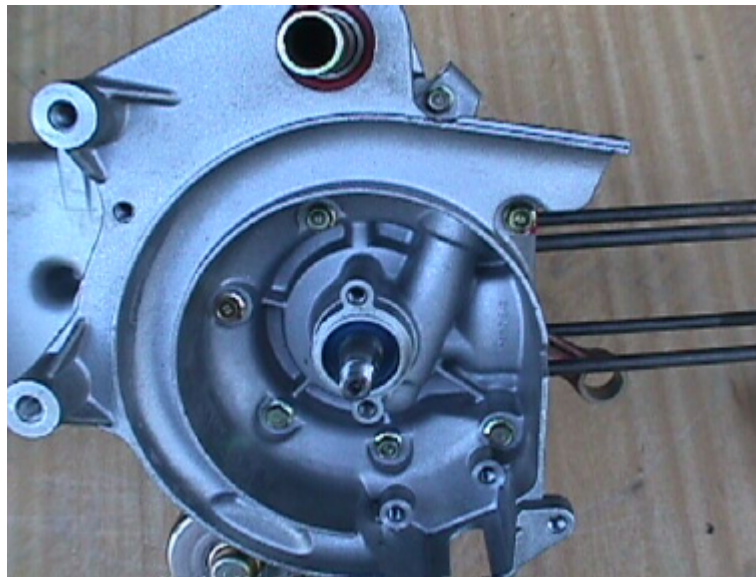
## (6) A.C. Generator, Flywheel Magneto

A. Dismantling AC alternator flywheel magneto.

1. Remove fan cowl.
2. Screwing out the four M6-bolt of fan.
3. Screwing out the nut on flywheel.
4. Remove the AC flywheel magneto by special tool.



5.Remove the flywheel.



6.Remove the electric plug of AC Flywheel magneto.  
Take out the magneto.

## **B. Install AC generator**

To install, please reverse the dismantling procedures.

Locking torque: M6:1.0~1.2kg-m M10:3.2~4.0kg-m
--



## (7)Final Transmission Mechanism

### A. Trouble shooting

- Engine can be started, but vehicle doesn' t move.

- 1.Gear worn-out or cracked.
- 2.Gear burnt out.

- Noise occurs when running.

- 1.Gear worn out, burnt or gear surface damaged.
- 2.Bearing worn out or loosen.

- Oil leakage

- 1.Too much oil.
- 2.Seal worn out or damaged.

### B. Disassemble the final transmission mechanism.

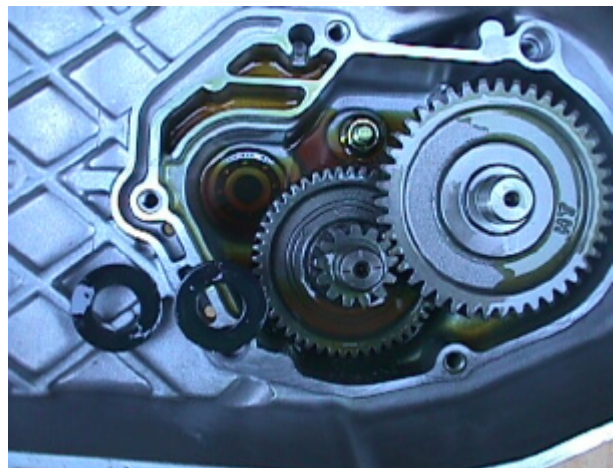
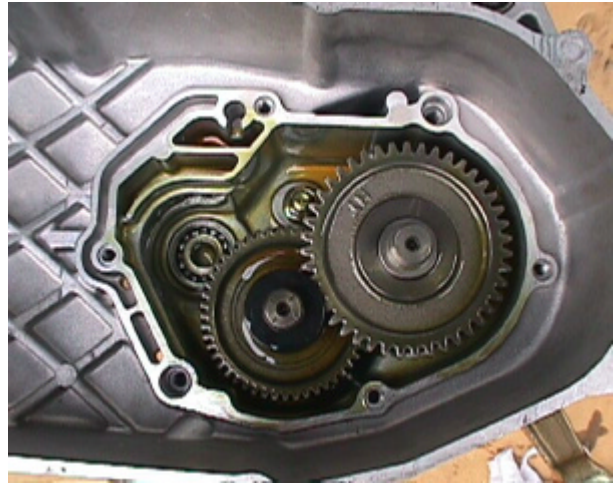
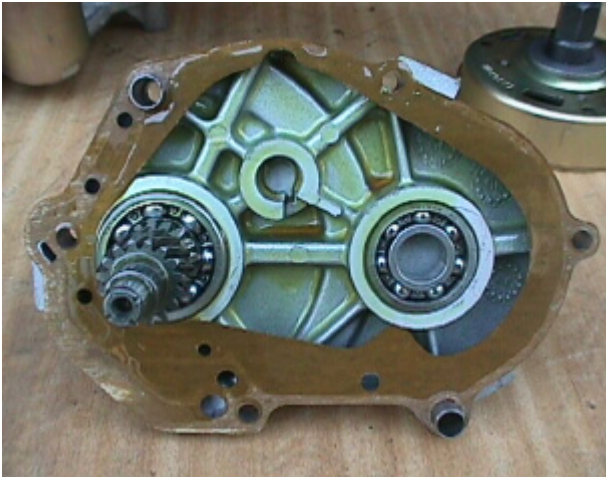
- 1.Remove the rear wheel.



- 2.Drain off the oil in the gear box.



3. Remove the bolt in gear box cover, take off the gear box.
4. Remove final reduction gear and idle gear shaft.

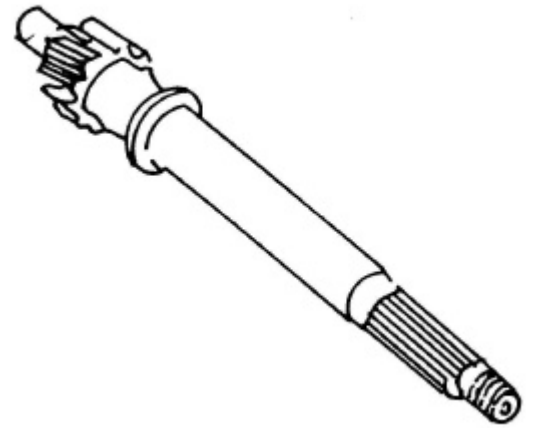


5. Clean up the gear box

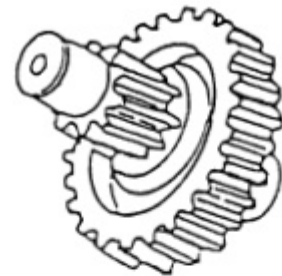


C. Check the final transmission mechanism

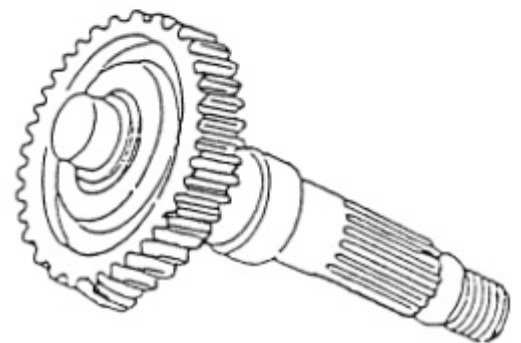
1. Check the wearing condition of the driving shaft and gears.



2. Check the wearing condition of the idle gear shaft and idle gears.



3. Check the wearing condition of the final reduction gear.



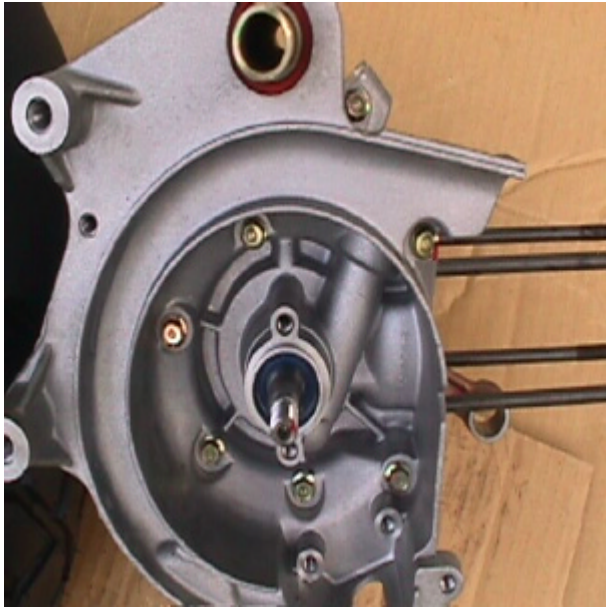
4. Check the wearing condition of the oil seal and bearing.

**D. Assemble the final transmission mechanism: please follow the opposite procedures Of disassembling. After locking the drain bolt, refill 110c.c of gear oil, SAE 140.**

Locking torque: M6: 1.0~1.2 kg-m
M10: 3.5~4.0 kg-m
Drain bolt:        M8: 1.8 kg-m

### (8)Crankcase, Crankshaft:

A. Disassembling diagram



## B. Troubleshooting.

Engine noise:

- 1.The bearing of final transmission mechanism is loose.
- 2.Crank pin bearing is loose.
- 3.The bearing of gear box is loose.

## C. Data

Item	Standard value	Limit of use.(mm)
Clearance of connecting rod big end (Parallel direction to rod)	0.20-0.50	0.76
Clearance of connecting rod big end (Perpendicular direction to rod)	-	0.04
Swingness of the crank shaft journal	0.03	0.10

D. Dismantle the crankcase and crankshaft.

1.Remove the engine from the chassis.

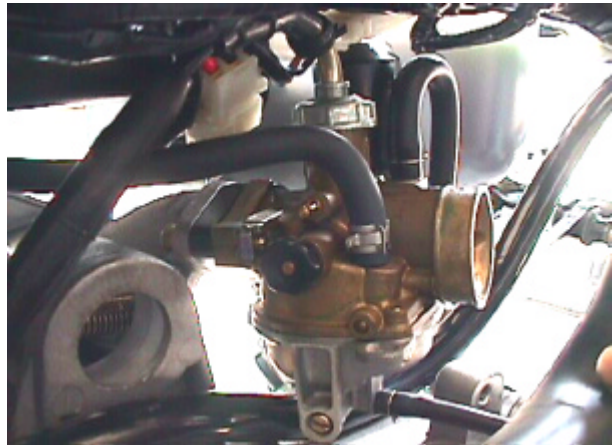


2.Remove left E/G case, driving pulley (driving plate) clutch and belt.

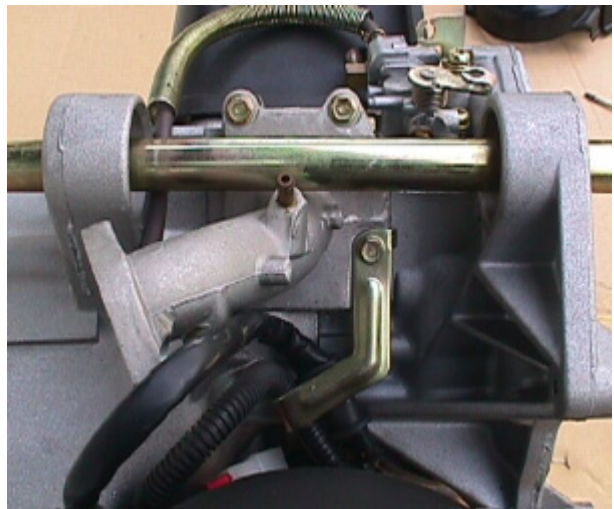
3.Remove air cleaner.



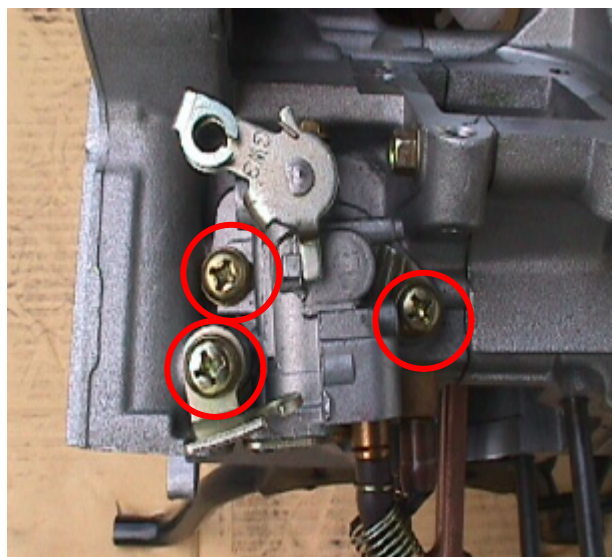
4.Remove carburetor.



5.Remove intake manifold and reed valve.



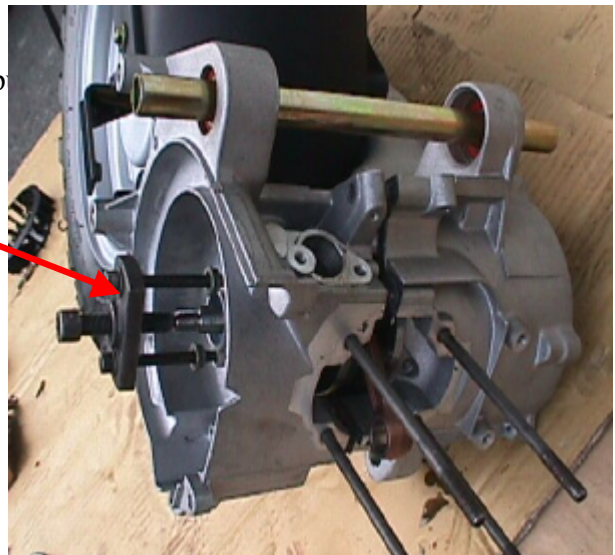
6.Remove oil pump, fan cowl and fan cover.



7.Remove cylinder, AC flywheel magneto.



8.Remove the left and right crankcase with special p

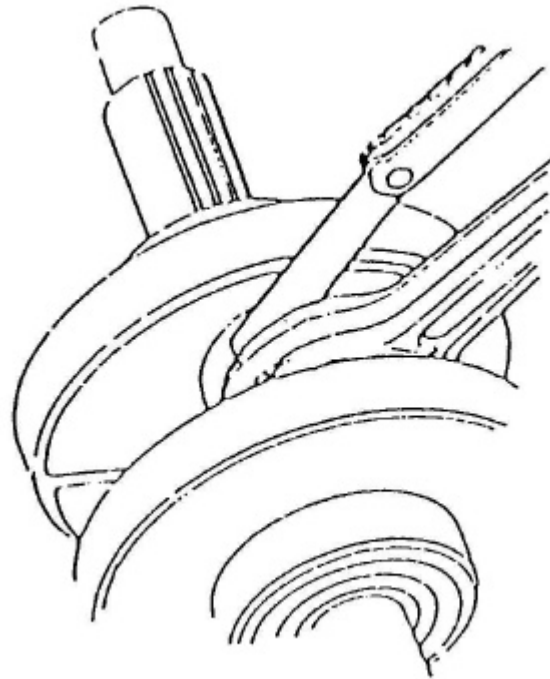


9.Remove center stand, separate RH/LH crankcase, take out crankshaft.



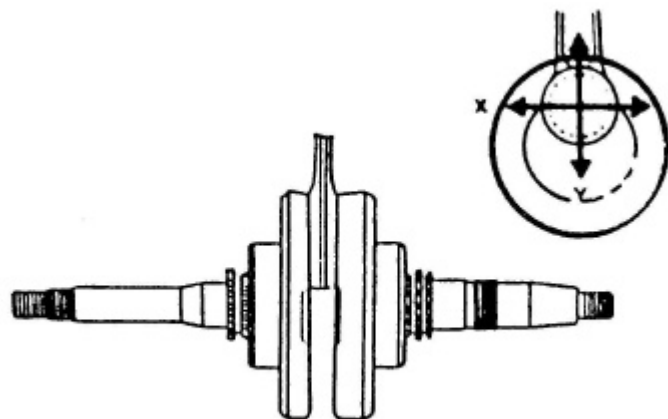
E. Check crankshaft:

1. measure the clearance between crank shaft and co-rod big end. (Parallel direction to rod)



Limit of use: change it when above 0.76mm

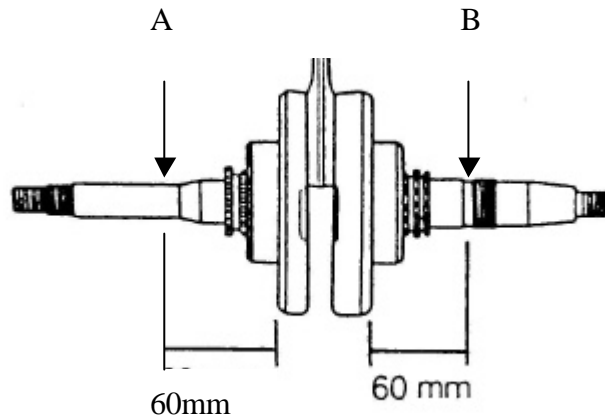
2. check the looseness on X.Y. axis of the connecting rod big end (Perpendicular directions to rod)



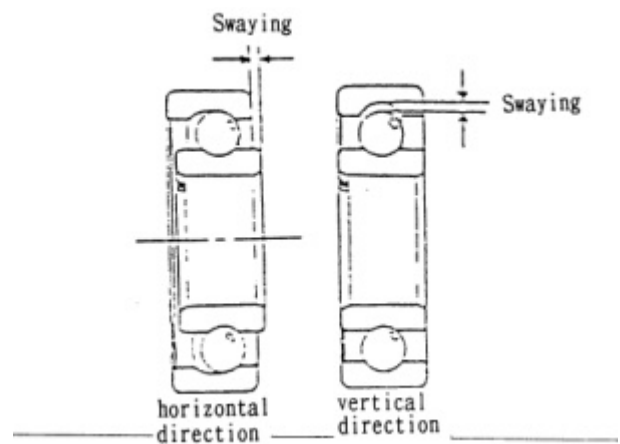
Limit of use: change it when above 0.04mm

3. measure the swingness of crank shaft neck.

Limit of use	
A	B
Change it when Above 0.1mm	Change it when Above 0.1mm



4. check the slackness of crankshaft bearing, if it is slack, change a new one.



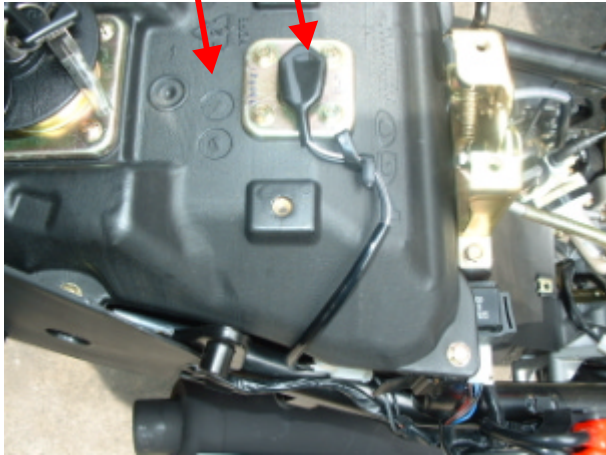
F. Assemble the crankcase.

1. To assemble the crankcase, please reverse the procedures of disassembly.
2. The locking torque value for bolts and nuts are all described in the previous chapters. Please refer.

## (9) Carburetor, Reed Valve and Auto cock

A. Fuel system diagram

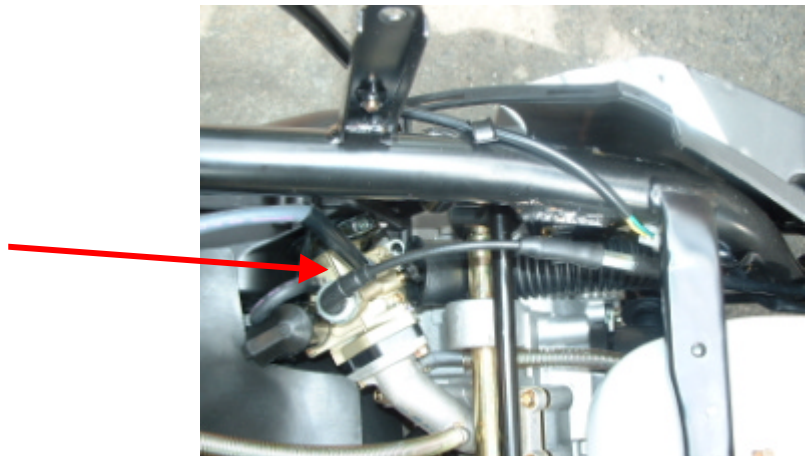
Fuel tank fuel gauge



autocock



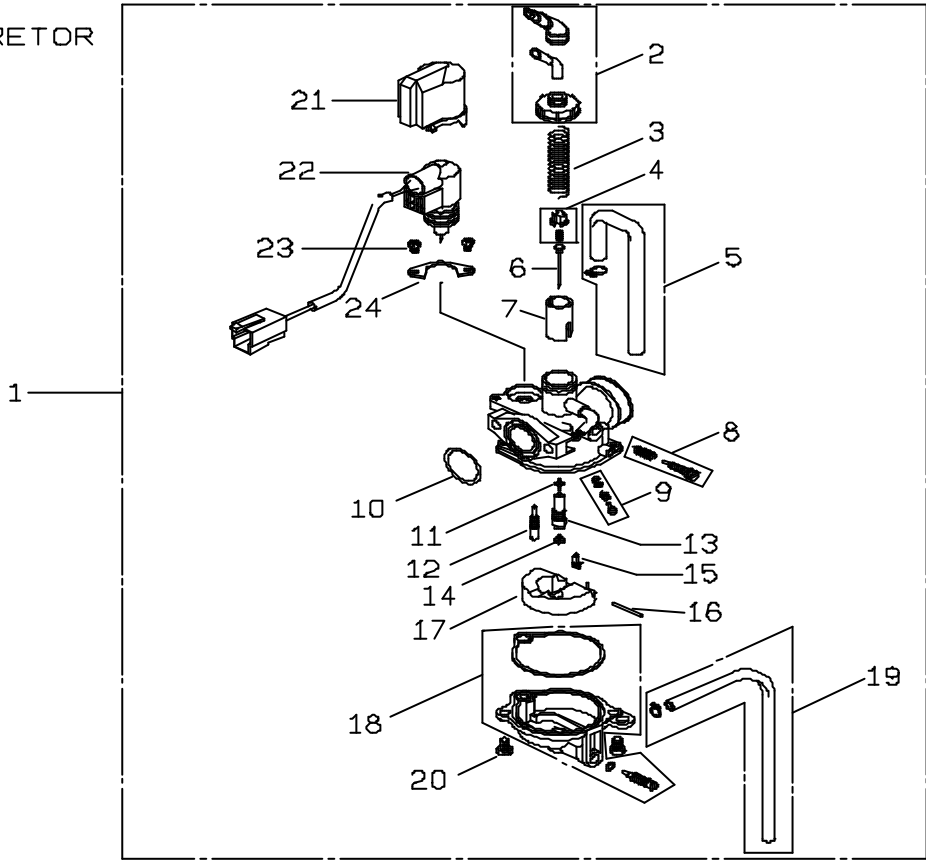
Fuel supplied to Carburetor



B: Carburetor dismantling diagram

E9.1 XR50 化油器  
CARBURETOR

- 01 CARBURETOR ASSY.
- 02 TOP SET
- 03 SPG., COMP.
- 04 PLATE SET
- 05 TUBE SET
- 06 JET NEEDLE
- 07 THROTTLE VALVE
- 08 SCREW SET
- 09 SCREW SET (A.S)
- 10 O RING
- 11 NEEDLE JET
- 12 SLOW JET
- 13 HOLDER, NEEDLE JET
- 14 MAIN JET
- 15 FLOAT VALVE SET
- 16 PIN, ARM
- 17 FLOAT SET
- 18 FLOAT CHAMBER SET
- 19 TUBE SET
- 20 "SCREW, WASHER"
- 21 CAP HOLDER



C. Troubleshooting:

a. Engine can not be started.

- 1.No fuel in the fuel tank.
- 2.Fuel pipe is blocked.
- 3.There is too much fuel in the cylinder.
- 4.Air cleaner is blocked.

b. Engine idling(RPM)unsteady, running not smoothly

- 1.Improper adjustment of the carburetor idling.
- 2.Ignition disorder.
- 3.Compression pressure is too low.
- 4.Air mixture is too thick.
- 5.Air mixture is too lean.
- 6.Air cleaner is blocked/
- 7.Air injection is not in good function.
- 8.Fuel is dirty.

c. Air mixture is too lean.

- 1.Carburetor main jet is blocked
- 2.The ventilation hole of the fuel tank cover is blocked.
- 3.Fuel filter is blocked.
- 4.Fuel pipe bended, squeezed or blocked.
- 5.Float valve is abnormal.
- 6.Fuel level is too low.
- 7.Air pipe is blocked.

d. Air mixture is too thick

- 1.Float valve is abnormal.
- 2.Fuel level is too high.
- 3.Air jet is blocked.

#### D. Dismantling carburetor

1. Remove the luggage box.
2. Loosen the hose clamp between the carburetor and the air cleaner.  
Then remove the air cleaner.
3. Unscrew the fuel draining screw of the carburetor. Drain off the fuel inside the carburetor.
4. Remove the fuel pipe and the vacuum pipe on the carburetor.
5. Remove the oil pipe on the carburetor.
6. Remove the bolts on the intake manifold and carburetor.



#### E. Dismantling float, nozzle

**Note:**

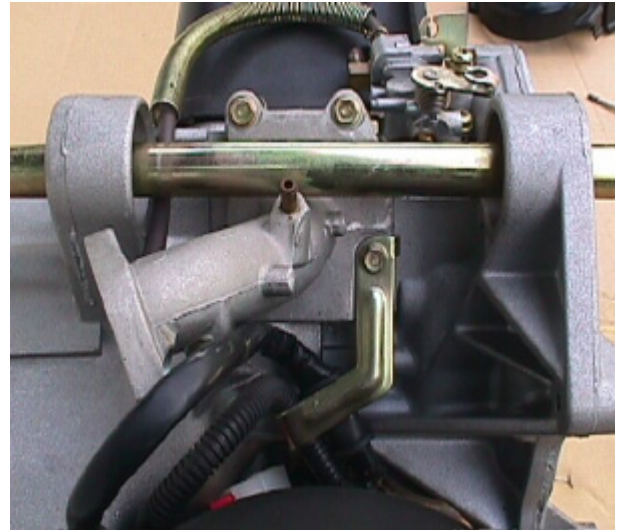
The auto choke has been properly adjusted already. Please do not adjust it further.  
When there is blockage in the carburetor, please clean it by air compressor.



## F. Reed valve

### 1. Dismantling reed valve.

- (1) Take off the luggage box
- (2) Remove the air cleaner
- (3) Remove the carburetor.
- (4) Unscrew the locking screw of the manifold intake.



- (5) Remove the manifold intake.

- (6) Remove the reed valve.

### 2. checking for the reed valve.

- change a new one when the reed valve is worn out or distorted.
- change a new one too when the base of the reed valve is cracked, injured or distorted.

### G. Check the auto cock

1. When the engine stop, remove the fuel pipe from carburetor and check if there is fuel flow Out or not.

It means auto cock functions well if the residue fuel(for the amount of 5-10cc)flows out From the auto cock and fuel pipe. However, if it continues to flow out, it means that the Vacuum pipe is blocked. please clean it.

2. Remove the vacuum pipe from the carburetor and suck it to produce a vacuum to have the Fuel flow out from the fuel pipe. The fuel will stop flowing out if the vacuun disappear.

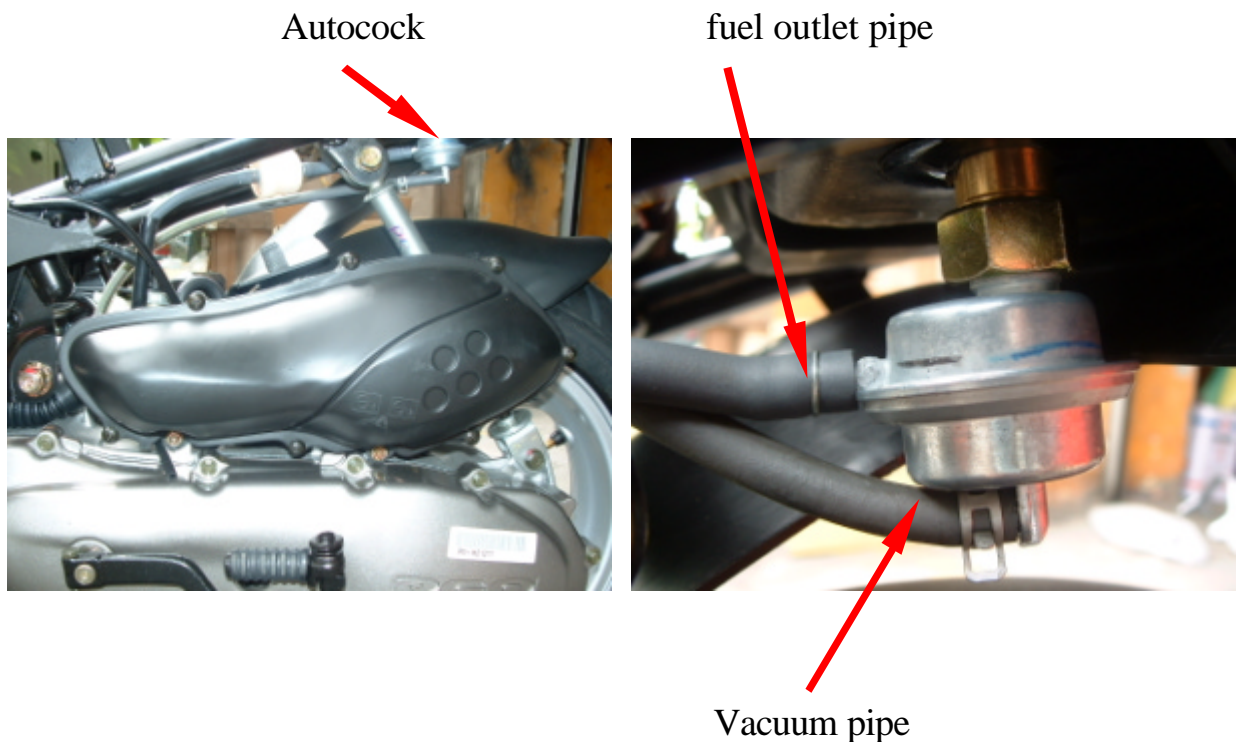
If the fuel does not flow out by the above operation, please check the followings:

- (a) Clean out blockage in the vacuum pipe.
- (b) Blow air into the inlet pipe of the auto cock.

3. Note:

Please remember to use a bowl to catch the flow-out at the end of the fuel pipe.

Keep away from fire or even spark during operation.



(10)Steering column, front wheel, frt disc brake comp, front fork:

A. Troubleshooting

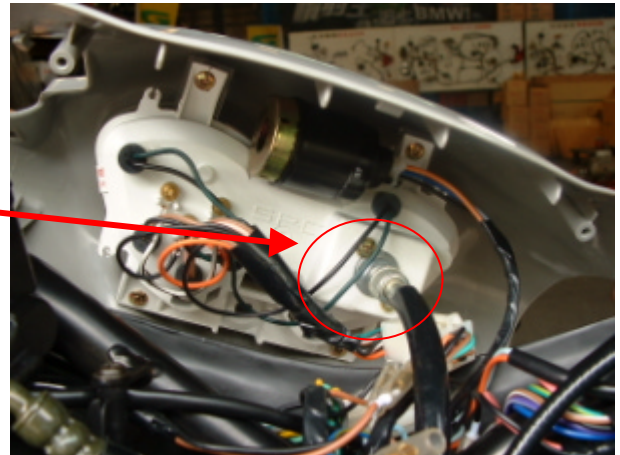
- 1.steering handlebar is abnormal, too tight.
  - a.steering mechanism; washer of conical bush locked too tightly.
  - b.steering mechanism; steel ball is cracked.
  - c.steering mechanism; steel ball base and washer of conical base is injured.
- 2.steering handlebar is aslant.
  - a.left and right damper are not even.
  - b.Front fork is crooked.
  - c.The axle of front fork is crooked or the wheel is aslant.
- 3.front wheel swings.
  - a.wheel rim is distorted.
  - b.bearing of front axle is loose.
  - c.wheel spoke is distorted.
  - d.Tire worn out.
  - e.The wheel axle is improperly assembled.
- 4.front damper is too soft, or spring fatigue.
- 5.Noise in front damper.
  - a.noise comes form the shock absorber tube.
  - b.locking screw of damper is loose.

B. Data

Item	Standard value	Limit of use.(mm)
Lining of frt brake pad	4.0	2.0
Disk of frt brake	3.6	3.1
Swingness of frt/rr wheel	-	2
The lining of frt/rr Brake	4.0	2.0

C. Change speedometer cable:

1.Remove the front handle cover.



2.Remove the nut of the speedometer cable.



3.Remove the fixed screw of the speedometer cable on the front wheel.

4.Pull out the damaged speedometer cable.

5.To assemble the new cable, please follow the opposite of dismantling procedures.

Note: Put some grease onto the inner cable before assembling.

#### D. Steering handlebar.

- 1.Remove the LH/RH back mirrors.
- 2.Remove the front handle cover.
- 3.Remove the rear handle cover, the speedometer and plugs of switch.



- 4.Remove the terminal of rear brake and the switch plug of the rear brake lamp.
- 5.Loose the throttle cable pulley's cover.
- 6.Remove the throttle cable and RH grip assembly.
- 7.Remove the locking blot of the front brake's master cylinder on the steering, handlebar,  
Then remove front brake's master cylinder.



8. Remove the bolts and nuts fixed the handlebar on the front damper.

9. Remove the steering handlebar.

10. To assemble the handlebar, please follow the opposite dismantling procedures.

Locking torque:

M6: 1.0-2kg-m

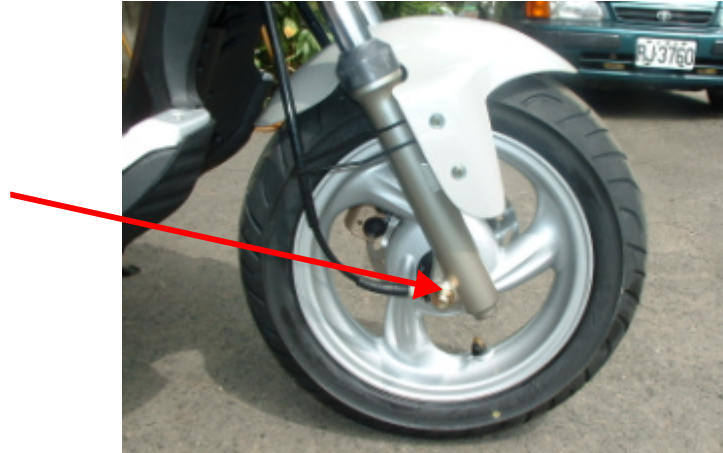
M10: 3.0-4.0kg-m

11. Before assembling, please put the grease onto the cables.



F. Front wheel:

- 1.Remove the locking nut of front wheel on the right side.



- 2.Pull out the axle of front wheel Remove the spacer ring and take off the gear sets of the speedometer.
- 3.Remove the front wheel assembly.
- 4.To assemble, please reverse the procedures of dismantling.

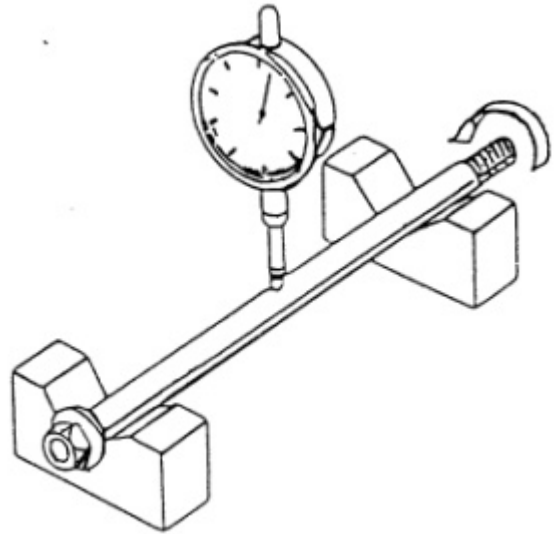
Locking torque:M10:3.0~4.0kg·m



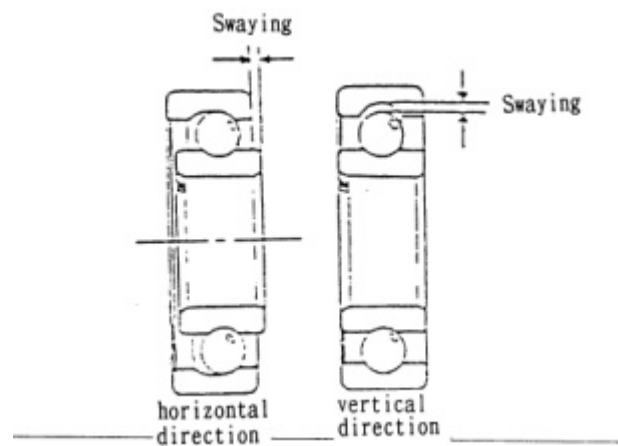
- Note:1.Put the movement-stop block of the speedometer gear assy above extruded block Of the front fork.
- 2.Please put the grease onto the gear sets of the speedometer before assembling.

## 5. Checking front axle

- a. Check the bending degree of the front axle.
- b. Limit of use: change it when above 0.22mm

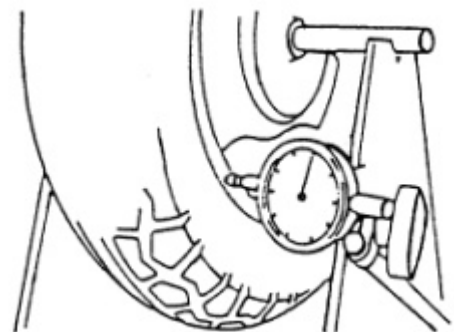


6. Check the front wheel bearing. Rotate the wheel. If any noise or slackness is found, Please change a new one.



## 7. Front wheel rim checking.

- (a) check the swingness of the front wheel rim.
- (b) Limit of use:
  - Horizontal direction: change a new one when above 2.0mm.
  - Vertical direction: change a new one when above 2.0mm.



## F. Front Brake

### 1. Disassembling and assembling the front brake comp.

- a. Remove the two bolts fixed on the front brake comp from the front fork.
- b. To assemble the front brake comp, please reverse the disassembling procedures.

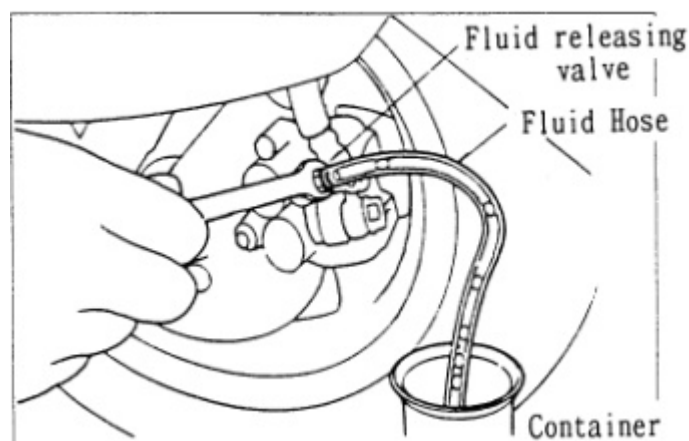
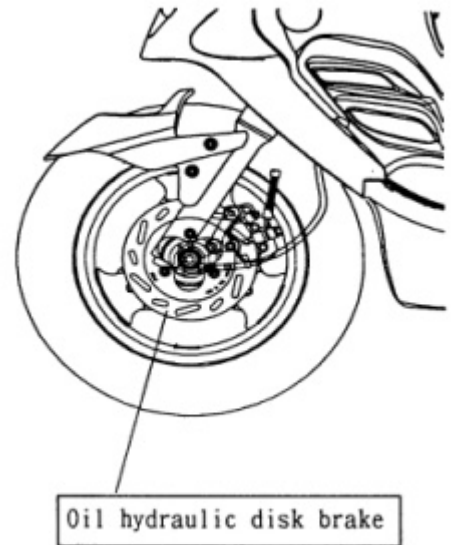
Locking torque:  
M8:2.0~3.0kg-m

### 2. The releasing of air from the front brake comp.

The procedures:

- a. Fill in the appropriate brake fluid to the storage tank.
- b. When assembling the master cylinder cover, do not let the brake fluid overflow from the master cylinder of storage tank.
- c. Put the spanner upon the drain screw of the caliper.
- d. Lock and unlock the screw repeatedly to drain off the bubble.
- e. Operate slowly the brake lever several times.
- g. Loosen the drain screw, then release the lever fully opened.
- h. Lock the drain screw when the lever is fully opened.
- i. Repeat the above procedures until all air within the brake system is released completely.

Locking torque of leaking screw:0.6kg-m



#### 4. Disassembling and assembling the front brake disk.

- a. Remove the front wheel.
- b. Remove the three nuts on the disk.
- c. Remove the disk.
- d. To assemble the disk, please reverse the disassembling procedure.

Locking torque M8:2.0~3.0kg-m



#### 5. Checking for the front brake-disk. Standard thickness:3.6mm

Limit of use:  
Replace a new one when below 3.1mm



#### 6. Check the front brake lining.

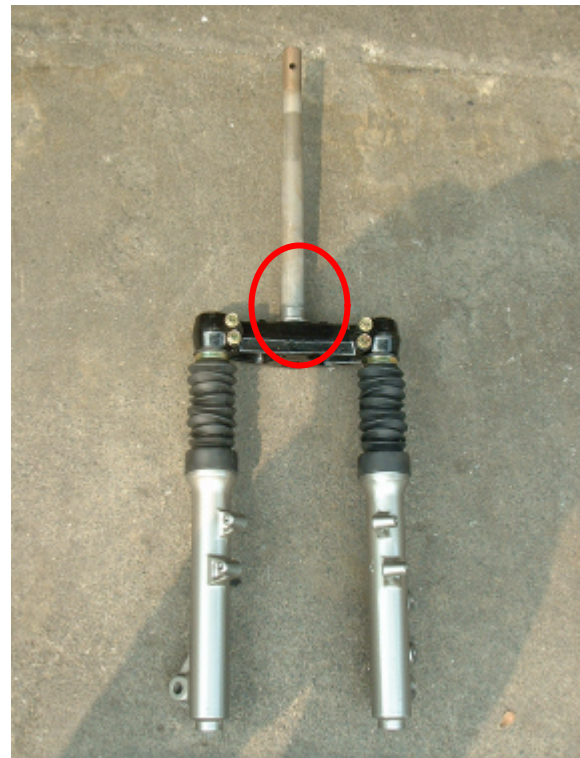
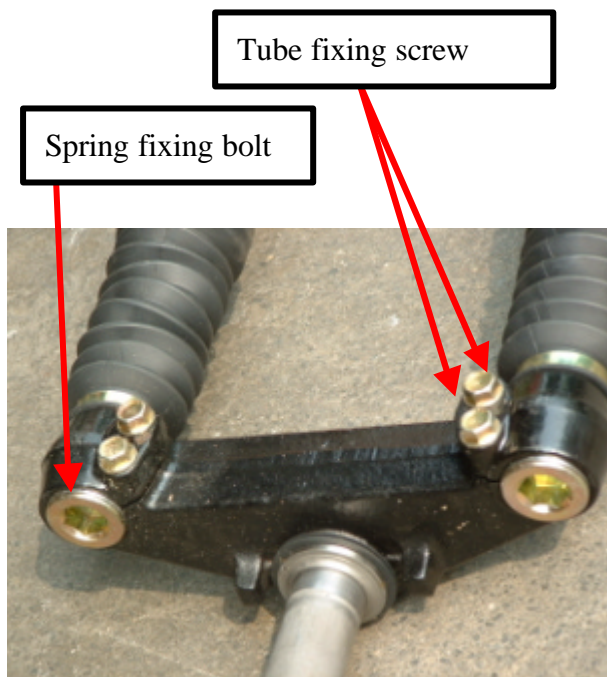
- a. Standard thickness:4.0mm.

Limit of use: Replace a new one when the thickness is below 2.0mm.

Note: No grease allowed on the lining.

## G. Front fork

### 1. Front fork system diagram.



### 2. checking front fork:

Please change a new one if it is distorted.

### 3. Checking front damper:

Check the guiding rod of damper if it is bended. Also check if there is abnormal worn out or damage.

Change a new guiding rod if it is bended

**(11)Rear wheel, rear brake, rear damper:**

A. Troubleshooting.

1.Rear wheel swings.

- a. Wheel rim is distorted.
- b. Tire worn out.
- c. The wheel axle is improperly assembled.

2.rear damper is too soft.

- a. Spring fatigue.

3.Bad braking

- a. The adjustment of brake is not proper.
- b. The brake lining is dirty.
- c. The brake lining worn out.
- d. The cam of brake lining is worn out.
- e. The brake cam lever worn out.
- f. The wheel hub worn out or damage.
- g. The operation on the brake arm tooth is not good.

B. Data

Item	Standard value(mm)	Limit of use(mm)
The swingness of rear wheel	-	2.0
Wheel hub inner diameter	110	111.0
Thickness of brake lining	4.0	2.0

### C. Disassembling and assembling the the rear wheel.

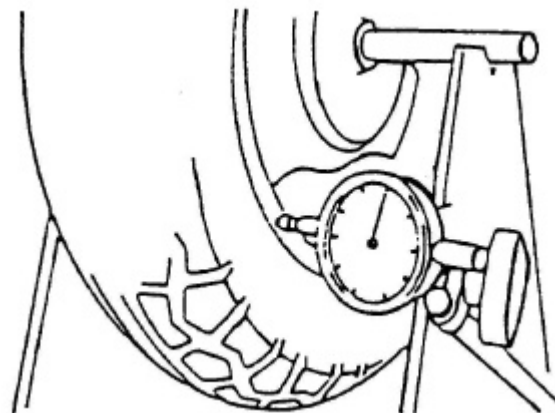
- 1.Remove the rear mudguard.
- 2.Remove the muffler.
- 3.Remove the nut on the rear wheel
- 4.Remove the rear wheel.
- 5.Assemble the rear wheel please reverse the dismantling procedure.



Locking torque:M6:0.7-1.1kg·m  
M14:8.0-10.0kg·m

### D. Checking the rear wheel

- check the swingness of rear wheel.
- vertical direction:  
change it when above 2.0mm
- horizontal direction:  
change it when above 2.0mm



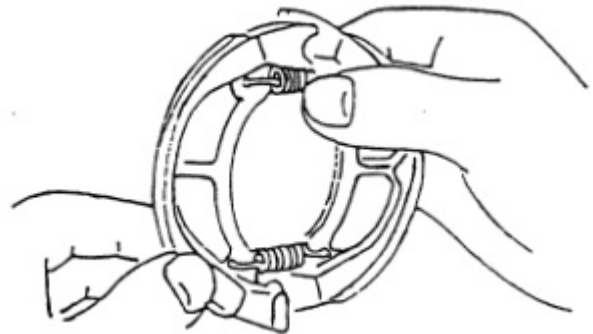
E. Rear brake:



1. Rear brake disassembling diagram.

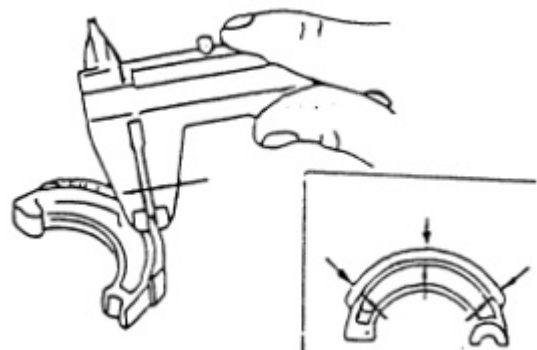
(1) Checking rear brake hub:

- a. measure the inner diameter of rear brake hub.
- b. Limit of use: change it when above 111.0mm



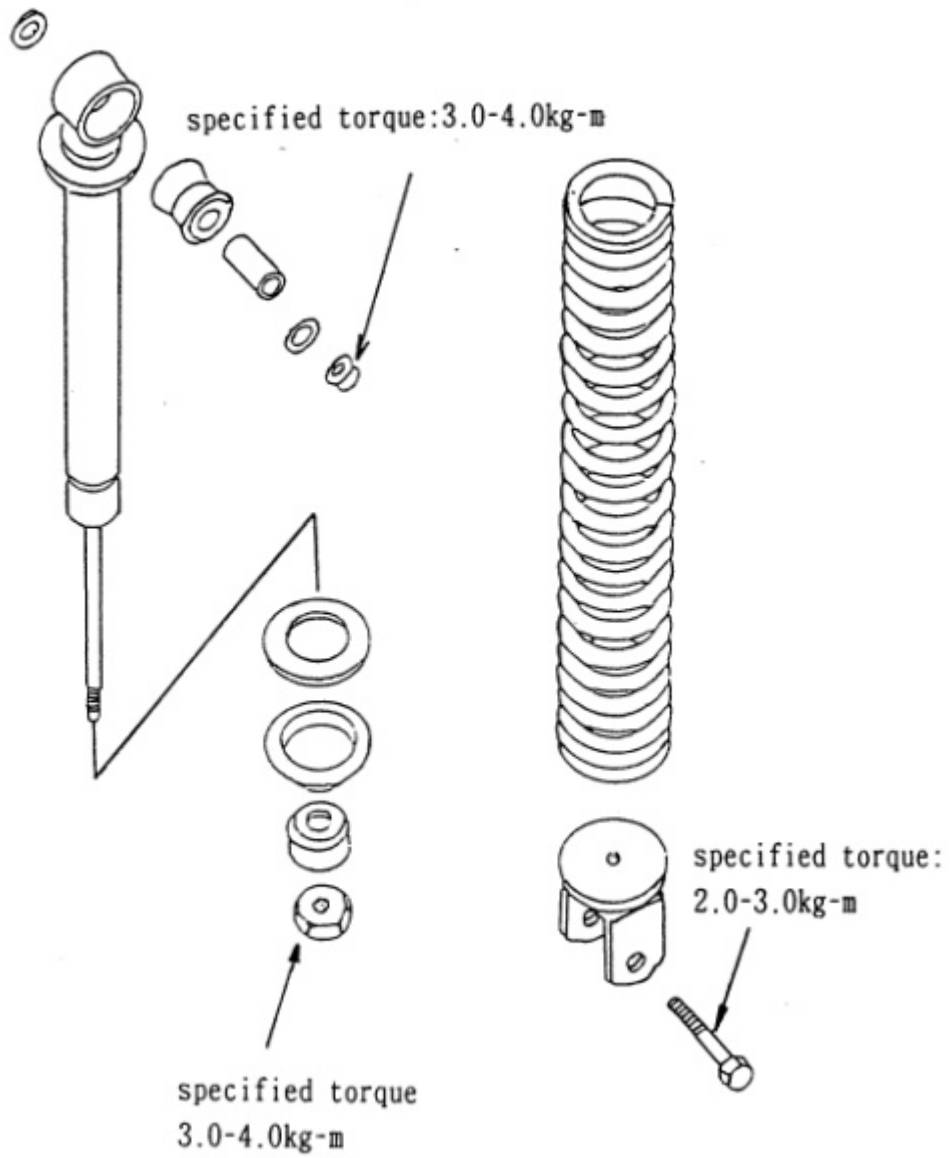
(2) Checking brake lining:

- a. measure the thickness of rear brake lining.
- b. limit of use: As the thickness is less than 2mm, change it.



F. Rear damper

1. Rear damper disassembling diagram:





C. Fuel tank dismantling and assembling

1.Remove the rear carrier.(rear protector)

2.Remove luggage box.



3.Remove front body cover.

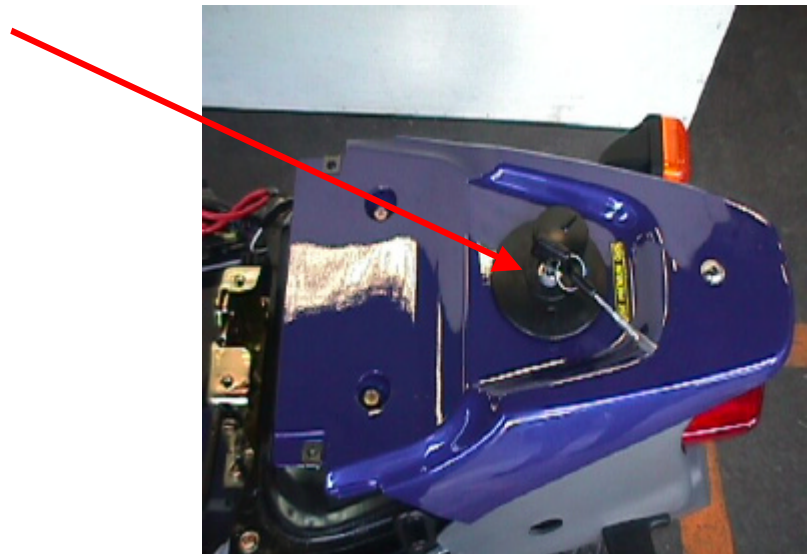


4.Remove the side cover.



5.Remove the rear cover.

6.Remove the fuel tank cover.



7.Remove the vacuum pipe and fuel pipe from the fuel tank and carburetor to drain off the fuel.

8.Remove the fixing bolts from fuel tank.

9.Remove the fuel tank.

#### D. Oil tank disassembling diagram:

Dismantling and assembling oil tank:

1. Drain the oil off.
2. Disconnect plug of oil gauge.
3. Remove oil tank.
4. Clean the oil tank.
5. To assemble the oil tank, please reverse the procedures of dismantling.



## **5. Electric equipment:**

(1) Troubleshooting

(2) Battery

1. recharge

2. check specific gravity of electrolyte

(3) Recharge system

1. the wiring diagram of recharge system

2. check A.C. flywheel magneto.

3. Check regulator/rectifier.

(4) Ignition system

1. the wiring of ignition

2. check spark plug

3. check H.T. cable and H.V. coil

4. check C.D.I. set

(5) Starting system

1. the wiring of starting

2. checking the starter

3. dismantling the starting motor

4. checking the starting motor

(1) Troubleshooting:

A. Recharge system:

• No power:

1. Battery over discharging
  - ① No electrolyte in battery.
  - ② Battery is bleached
  - ③ Short circuit in Battery.
  - ④ Regulator malfunction
2. The battery wires are disconnected.
3. Fuse is broken.
4. Ignition switch is abnormal.

• Voltage is too low:

1. Battery recharges insufficiently.
2. The bad connection on wiring system.
3. Recharge system is abnormal.
4. Regulator malfunction.

B. Ignition system:

• The sparking of spark plug is abnormal:

1. Spark plug is dead.
2. Wire connection is broken or short Circuit.
  - ① between A.C. generator and CDI sets
  - ② between CDI sets and High Voltage coil.
  - ③ between CDI sets and main switch.
  - ④ between main switch and spark plug.
3. Main switch is out of order.
4. H.V. coil is not in good function.
5. CDI sets is out of order.
6. A.C. generator is not in good function.

C. Starting system:

• Starting motor can't rotate:

1. The fuse is broken.
2. Battery recharges insufficiently.
3. Main switch is out of order.
4. Starting motor switch is out of order.
5. Front/rear brake switch is out of order.
6. Starter relay is out of order.
7. Wire disconnects or broken.
8. Starting motor is out of order.

• Currency is broken:

1. The wiring of battery connection is not good.
2. Ignition system connection is not good.
3. Ignition system is short circuit.
4. Lamp system connection is not good or short circuit.

• Abnormal recharge system:

1. The plug connection is not good.  
The wire broken or short circuit.
2. Rectifier is out of order.
3. A.C. flywheel magneto is abnormal.

D. Engine running unsmoothly:

1. Ignition primary circuit.

- ① the wire or plug of wiring connection is not good.
- ② main switch disconnects.

2. Ignition secondary circuit.

- ① Ignition coil is not in good function
- ② Spark plug is dead.
- ③ H.V. coil is not in good function.
- ④ The spark plug cap is not in good function.

3. Ignition timing

- ① A.C. generator is out of order.
- ② A.C. coil is not in good function.
- ③ C.D.I. sets is out of order.

• Starting motor runs weakly.

1. Battery recharges insufficiently.
2. Wiring system disconnects.
3. The alien objects drop in the motor or gear.

• Starting motor can rotate, but engine can't start up.

1. Starting gear is abnormal.
2. Starting motor is reversedly rotating.
3. Battery is out of order.

## (2)Battery:

Always remove the battery negative Cable(-)first, then remove positive Cable(+). But connect the positive Cable(+)first, then connect the Negative cable(-) when assembling.

### 1.Recharge

- Connection procedure:

connect the positive cable(+) of the recharger to the positive cable(+) of the battery, and the negative cable(-) of the recharge to the negative cable(-) of the battery.

- Recharging currency:

Please recharge (12V) according to the following currency and time.

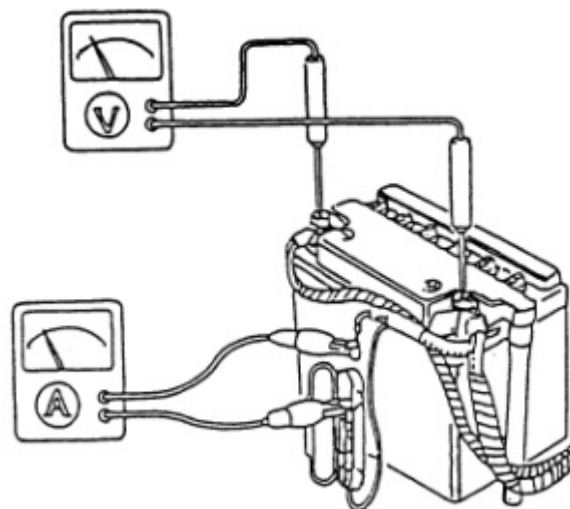
Standard: 0.5A X-10Hr or Rapid:5A X 30min

**NOTICE:**

This battery is totally sealed. Do not remove seal bolt when recharging.

**Notice:**

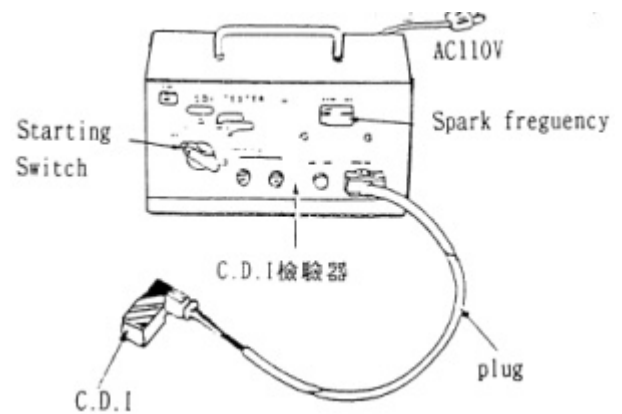
- Keep away from fire when recharging.
- The “ON” or “OFF” of recharging currency must be operated by the switch of recharge. It will cause spark or explosive if plug or unplug the cable directly.



## 2. Testing the recharging performance

- This test needs to be done when the battery is fully recharged.
- This test needs to be done after engine is warm-up.
  - a. Disconnect the orange cable of regulator.
  - b. Open the fuse box, to remove the white cable.
  - c. Connect currency meter between red/white cable and fuse.

While testing, the red wire cable must not touch the frame.



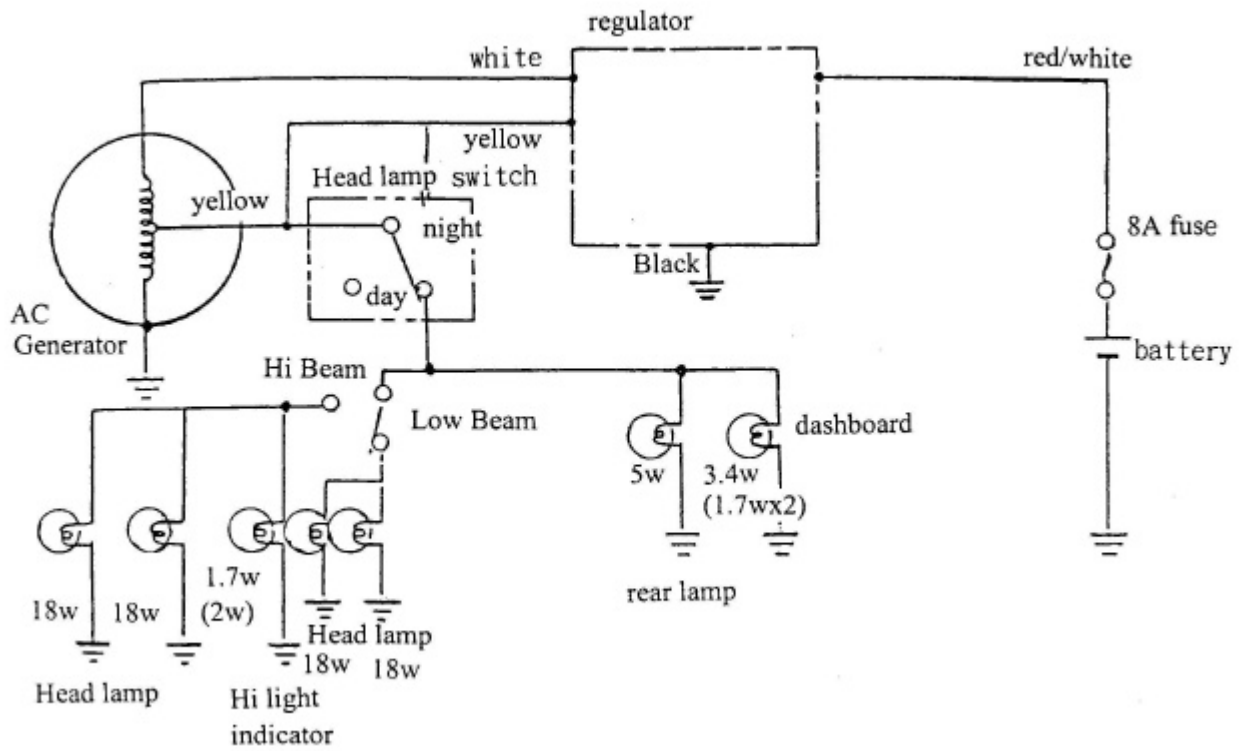
- d. Set the head lamp switch at “OFF”, engine revolution is at 2000 rpm while testing. Then increase the rpm slowly.

Head Lamp Switch	Recharging rpm	2,500rpm	6,000rpm
OFF(DAY)	Under 2,000rpm	Over 0.6A	1.5A(MIN)
ON(NIGHT)	Under 2,000rpm	Over 0.6A	1.5A(MIN)

- e. If the testing result does not match the standard value, check the regulator.

(3)Recharge system:

1.Recharge system diagram

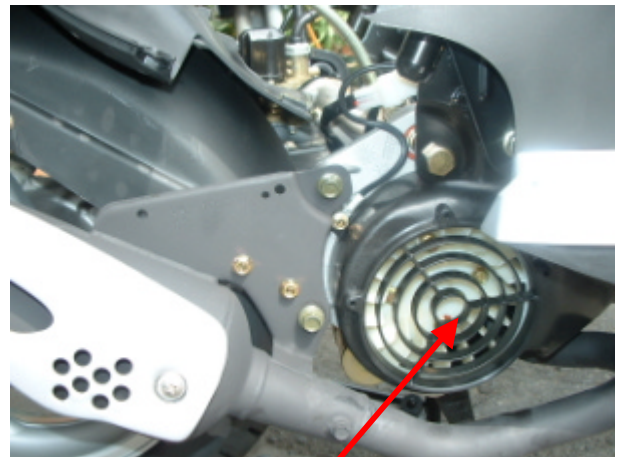
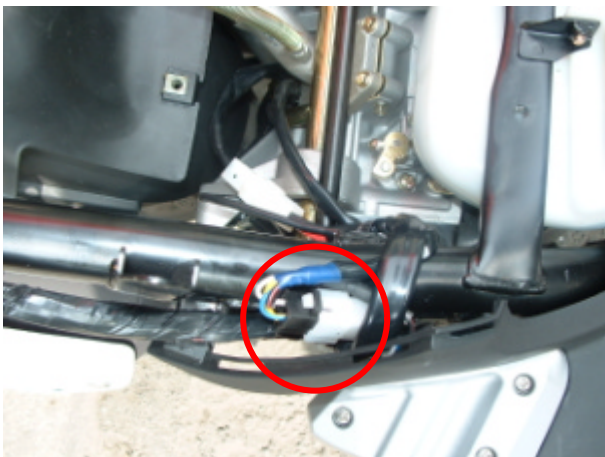


## 2. Check A.C. Generator

- a. Open the seat and remove the luggage box.
- b. Measure the resistance value of terminals.

Yellow/black 0.1-1.0

White/black 0.2-2.0

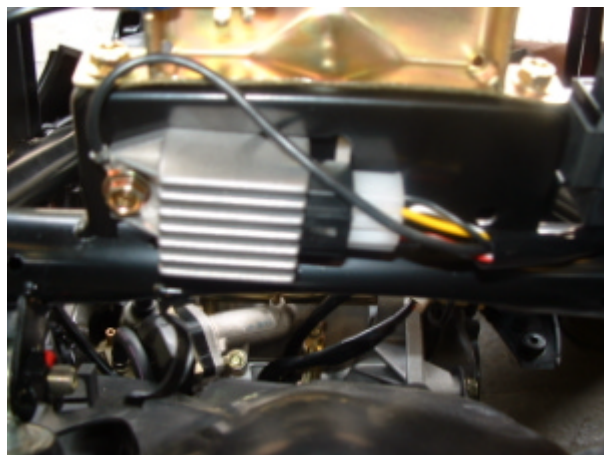


ACG inside

## 3. Check regulator

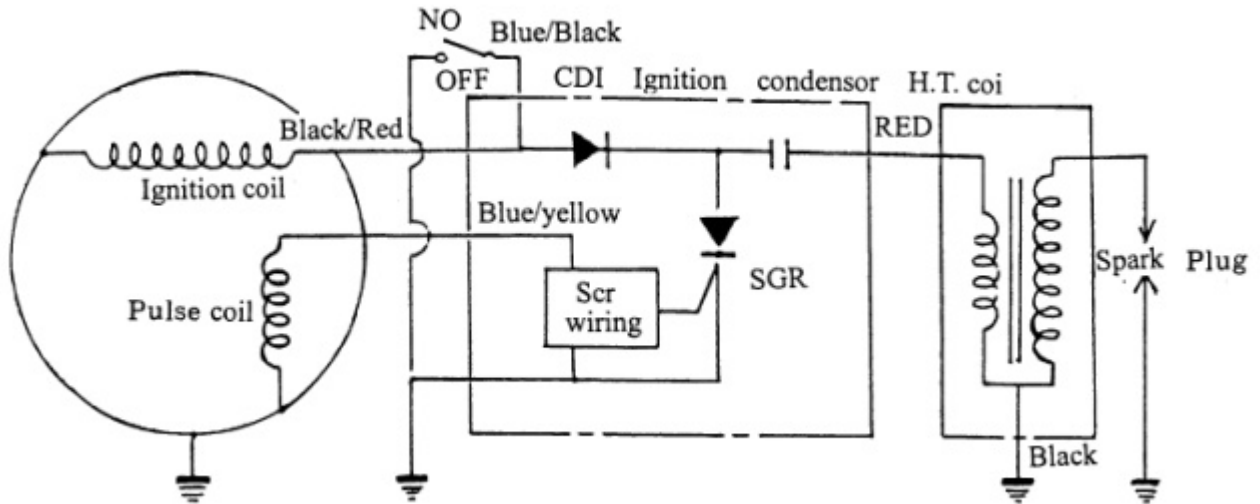
Measure the resistance value between each terminal,

It should be in the specified range, otherwise change a new one.



(4) Ignition system:

1. the wiring or ignition



2. check spark plug.

3. Check H.V. cable and H.V. coil.

Check with CDI tester, follow the instruction manual.

4. check CDI sets.

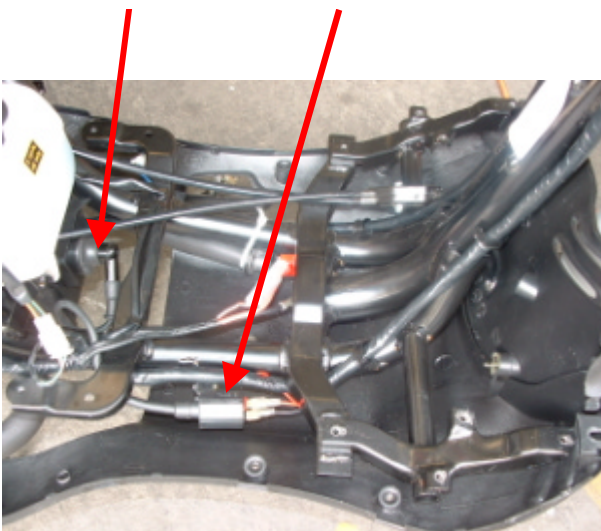
Check with CDI tester and follow the instruction manual.

If CDI test failed, please change a new one.

Spark plug

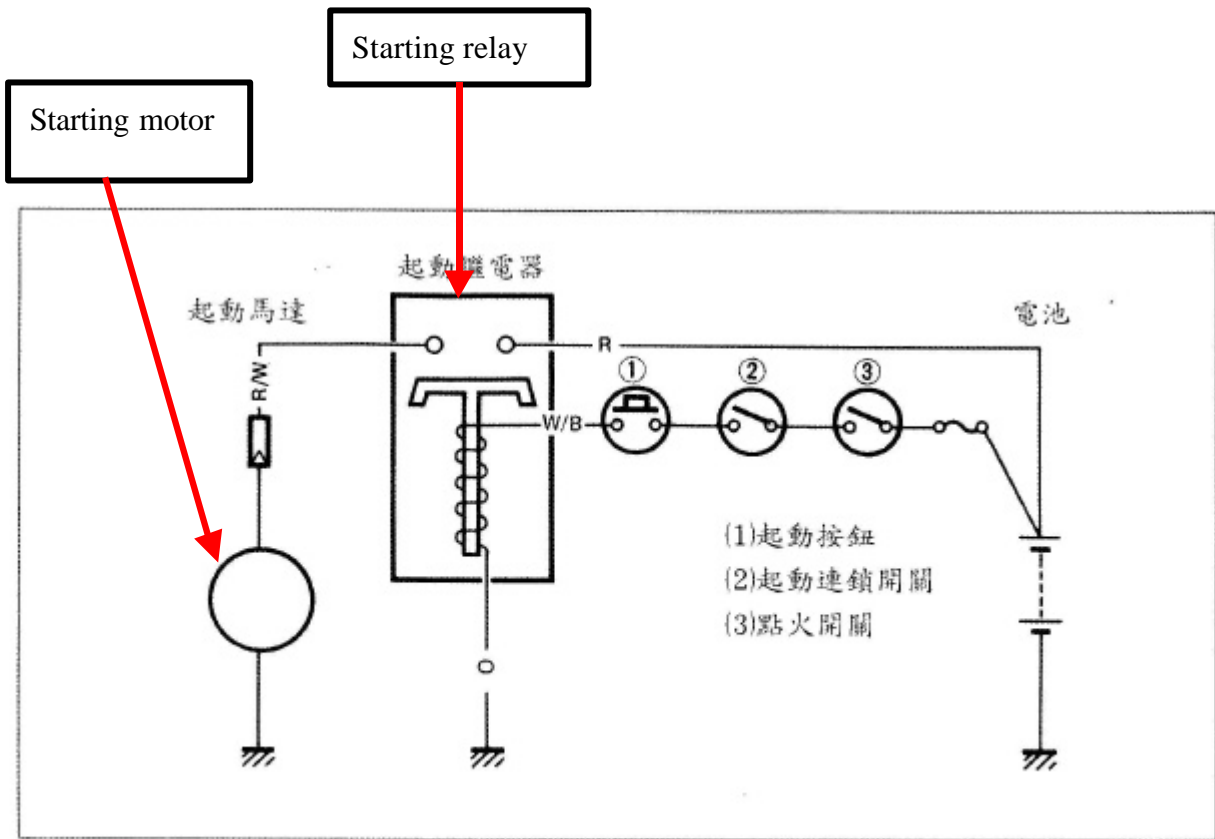
Ignition coil

CDI



(5)The starting system:

1.The wiring of starting



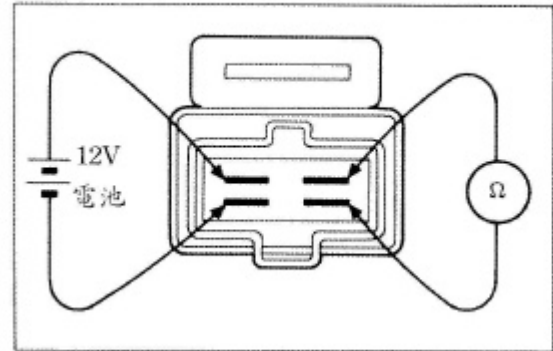
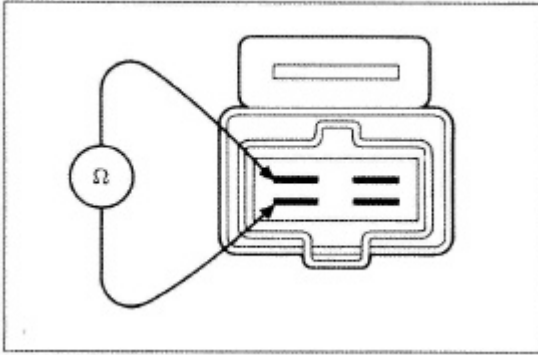
starting button

safety switch

main switch

## 2. check the starter

- Connect green/white cable to positive pole of battery, connect black cable of negative pole of battery, It means starter is function well if above connection and both Red/Black cable of starting motor have currency passing through.



## 3. Dismantling the starting motor

- Remove 2 screws on starting motor.
- Remove starting motor cables.



## 4. Checking the starting motor

- Check the function by connecting the starting motor to battery.  
(Check if it is rotating counterclockwise)

Do not operate starting motor for a long time.