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## Preface

This Manual explains the maintenance of Generic Trigger 50ccm

The documents to be prepared are the maintenance manual and all the operations are included in, please read the manual prior to operation.

Inspection and Adjustment explains the gist of inspection and adjustment; the maintenance of safety of vehicle and the performance of each part should come into force since regular inspection.

After Chapter I is the explanation of the gist of disassembly, assembly and inspection of engine, entire vehicle and electric fittings.

There are exploded view, system diagram, maintenance, fault diagnosis and explanation before each chapter.

### Notice:

For the universal parts of both types of motorcycle, this manual does not separate the explanation.

There is no prior individual notification on the alteration of mode or structure of motorcycle and the actual product shall prevail if there is discrepancy between the photos, pictures or explanation contained in this Manual and the actual product.

## **Documents to be prepared**

**General safety**  
**Specification sheet**

**Maintenance regulation**  
**Troubleshooting**

## **General safety**

### **Carbon monoxide**

The engine should be started in ventilated area other than closed area.

#### **Attention**

The exhaust contains toxic gas, carbon monoxide, which can numb people and may result in death.

The engine should be started in an open area and the exhaust scavenging system should be applied if the engine has to be started in a closed area.

## **Gasoline**

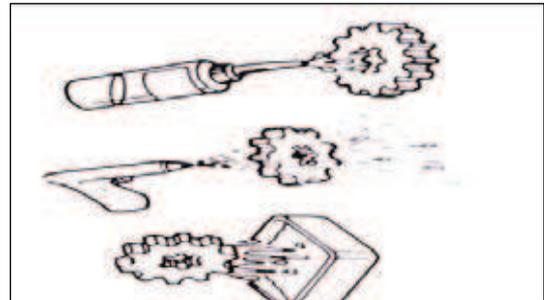
The operation should be made in a ventilated area and smoking or lighting fires should be strictly forbidden in working space or the place stored gasoline.

## Maintenance regulation

As maintaining this vehicle, the instrument of metric system should be applied as possible for the reason that the application of incorrect instrument may damage this vehicle.

Before dismantling from the frame cover of vehicle to maintain the dirt of parts or external subassembly should be purged in order to prevent that falling into engine, chasis or braking system.

After dismantling and before measuring attrition value, please clean parts and purge it with compressor.

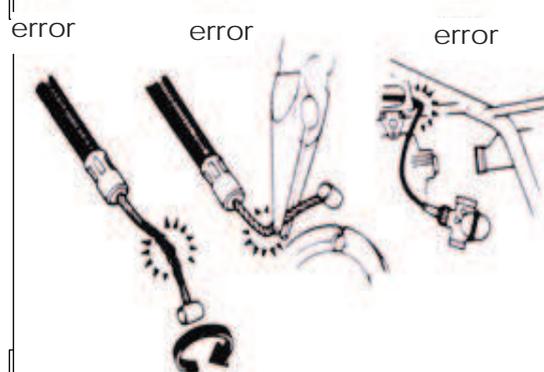


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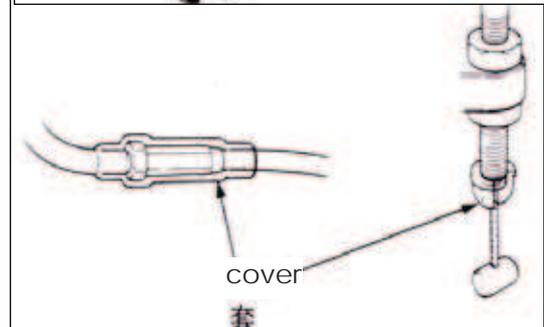
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error

The operation should not be bended or distorted; otherwise it will cause operational difficulties or damage ahead of time.

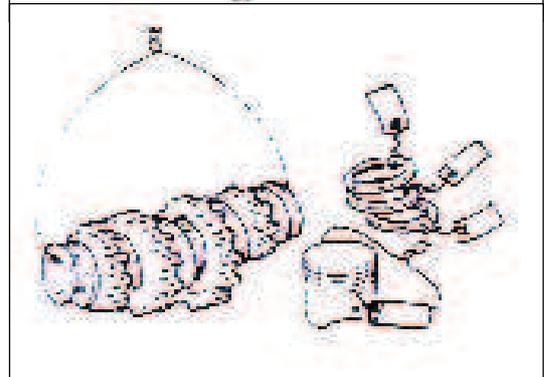


The rubber parts will be deteriorated due to aging which is prone to be damaged by solvent or oil and it should be inspected (if necessary, it should be replaced) before reinstallation.

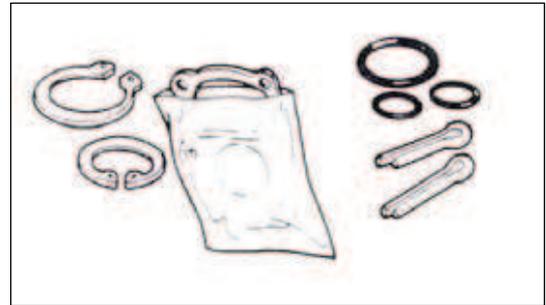


Loosen the parts with multiple assemblies that should be made from outside to inside and started from small one.

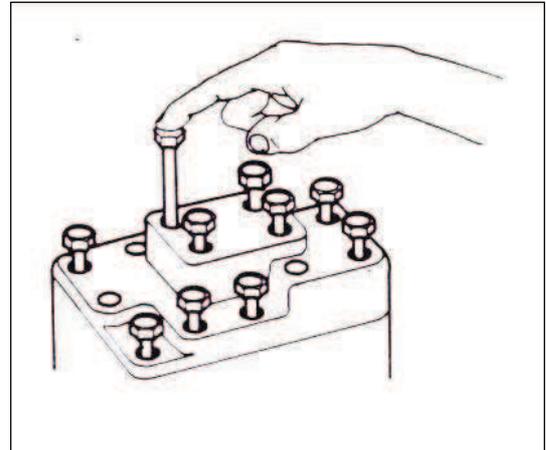
The complicated assembly, transmission case, for instance, should be stored according to proper assembly sequence in order to facilitate the assembly in the future.



For the important assembly position, it should be given special attention before dismantling. The parts out of use should be replaced before dismantling in time.



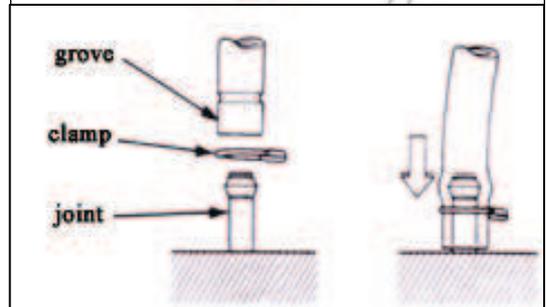
The length of bolts to assemblies and frame cover are different which should be installed in correct position and the bolts may be placed in the hole to find out whether they are suitable if they are mixed.



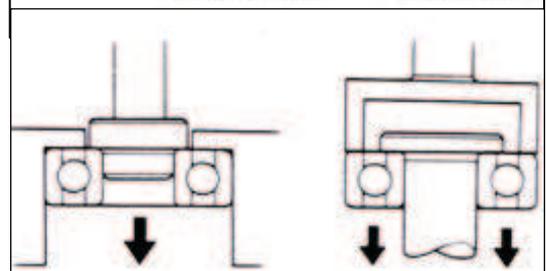
For the installation of oil seal, the grease should be filled in oil seal groove; as installing oil seal, it should check the smoothness of oil seal whether it will likely damage the oil seal.



For the installation of rubber hose (fuel, vacuum or coolant), the ends of which should plug into the bottom of the joint in order to ensure that there is enough space for hose clamp to clamp the joint. The rubber or plastic soldering cup should restore its original design position.



As dismantling ball bearing, please use the tool to withstand one or two (internal and external) bearing runners. If the strength is only applied onto a rolling ring (no matter internal or external), the bearing may be damaged as dismantling and has to be replaced.



In both instances, the bearings will be broken

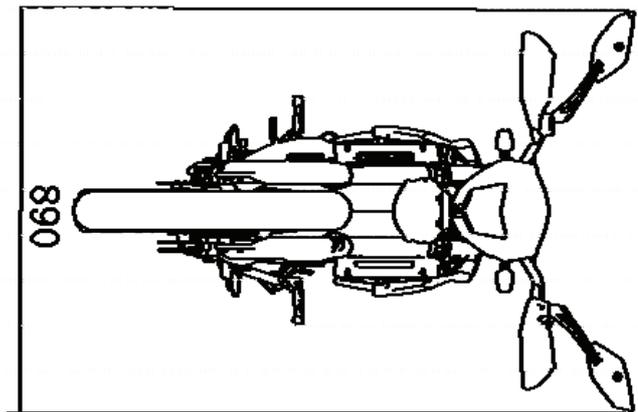
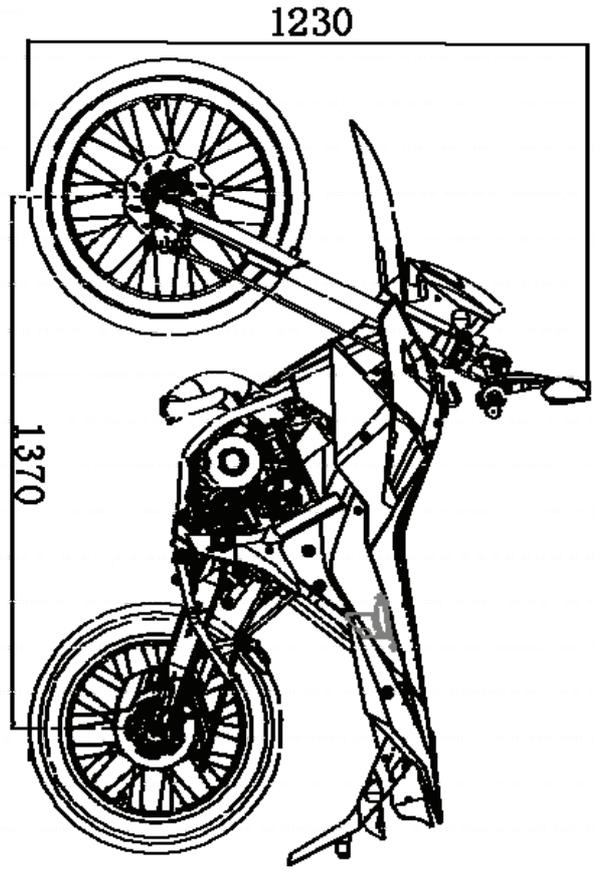
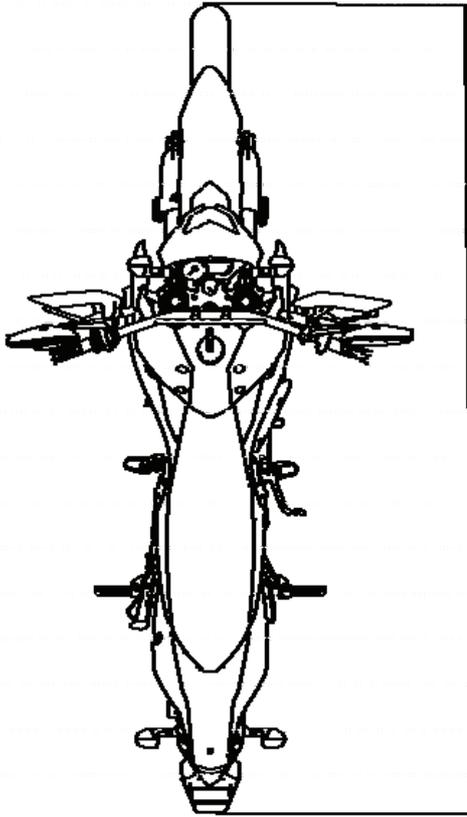
## Specification Sheet Trigger X 50ccm

<b>Model</b>		<b>Trigger 50ccm</b>		<b>Engine</b>	<b>Engine Type</b>	40-2 2-stroke engine
<b>Full length mm</b>		2060			Fuel type	Unleaded gasoline of 95 Octane above
<b>Full width mm</b>		890			Number of cylinders	1
<b>Full height mm</b>		1230			Inside measure * stroke	40.25*39mm
<b>Wheelbase mm</b>		1370			Total flow rate	49.6mm
<b>Vehicle weight kg</b>		<b>Front axle</b>	53		Start mode	Start by electricity/foot
		<b>Rear axle</b>	58		Cooling mode	Water-cooling
		<b>Total</b>	111		Lubrication	Separated lubrication
<b>Tyre specification</b>		Front (internal)	Front (external)		Engine oil capacity	0.8L
		3.00-21	3.00-21		Air cleaner	Sponge
		Rear (internal)	Rear (external)	Petrol capacity	10 (+/-) 0.2 L	
		4.10-18	4.10-18			
<b>Gearing</b>	Clutch type	Wet multidisc brake		<b>Performance</b>	Maximum speed	45km/h
	Transmission	Manual			Climbing capability	Maximum climbing angle no less than 15 degree
	Driving mode	Chain drive			Idling speed - rpm	1400±100rpm/min
<b>Electrical installation</b>	Battery capacity/type	12V 3AH			Maximum torque	2.60Nm/3000rpm
	Generator type	1E40MB-2			Maximum horsepower	1.39KW/5500 rpm
	Spark plug	BR8ES/F10KC			Compression ratio	7.0: 1
	Spark plug gap	0.5-0.7mm			Cylinder pressure	1.1-1.3Mpa/1400rpm
	Ignition mode	CDI		<b>Brake</b>	Front liquid braking disc unit (mm)	φ230mm
			Rear liquid braking disc unit (mm)		φ220mm	

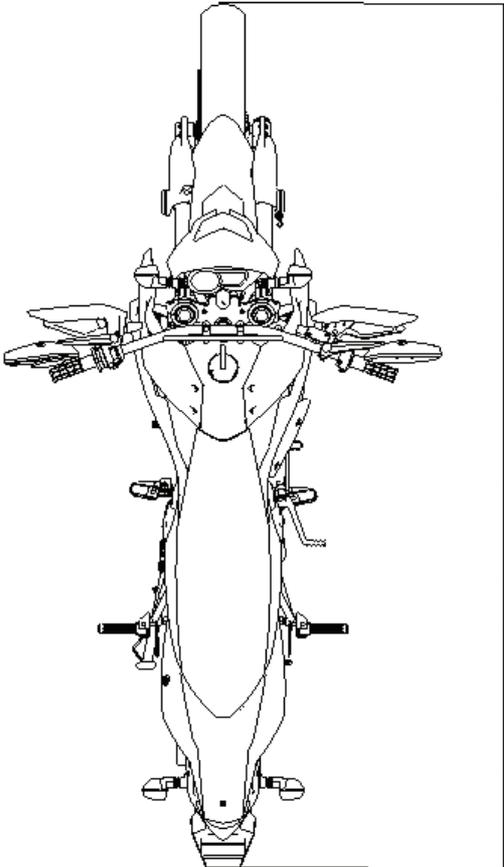
## Specification Sheet Trigger SM 50ccm

<b>Model</b>		<b>Trigger 50ccm</b>		<b>Engine</b>	<b>Engine Type</b>	40-2 2-stroke engine	
<b>Full length mm</b>		2035			<b>Fuel type</b>	Unleaded gasoline of 95 Octane or above	
<b>Full width mm</b>		890			<b>Number of cylinders</b>	1	
<b>Full height mm</b>		1230			<b>Inside measure * stroke</b>	40.25*39mm	
<b>Wheelbase mm</b>		1390			<b>Total flow rate</b>	49.6mm	
<b>Vehicle weight kg</b>		<b>Front axle</b>	55		<b>Start mode</b>	Start by electricity/foot	
		<b>Rear axle</b>	60		<b>Cooling mode</b>	Water-cooling	
		<b>Total</b>	115		<b>Lubrication</b>	Separated lubrication	
<b>Tyre specification</b>		Front (external)			<b>Engine oil capacity</b>	0.8L	
		100/80-17			<b>Air cleaner</b>	Sponge	
		Rear (external)			<b>Petrol capacity</b>	10 (+/-) 0.2 L	
		130/80-17			<b>Maximum speed</b>	45km/h	
<b>Gearing</b>	<b>Clutch type</b>	Wet multidisc brake			<b>Performance</b>	<b>Climbing capability</b>	Maximum climbing angle no less than 15 degree
	<b>Transmission</b>	Manual				<b>Idling speed - rpm</b>	1400±100rpm/min
	<b>Driving mode</b>	Chain drive		<b>Maximum torque</b>		2.60Nm/3000rpm	
<b>Electrical installation</b>	<b>Battery capacity/type</b>	12V 3AH		<b>Maximum horsepower</b>		1.39KW/5500 rpm	
	<b>Generator type</b>	1E40MB-2		<b>Compression ratio</b>		7.0: 1	
	<b>Spark plug</b>	BR8ES/F10KC		<b>Cylinder pressure</b>		1.1-1.3Mpa/1400rpm	
	<b>Spark plug gap</b>	0.5-0.7mm		<b>Brake</b>	<b>Front liquid braking disc unit (mm)</b>	φ280mm	
	<b>Ignition mode</b>	CDI			<b>Rear liquid braking disc unit (mm)</b>	φ220mm	

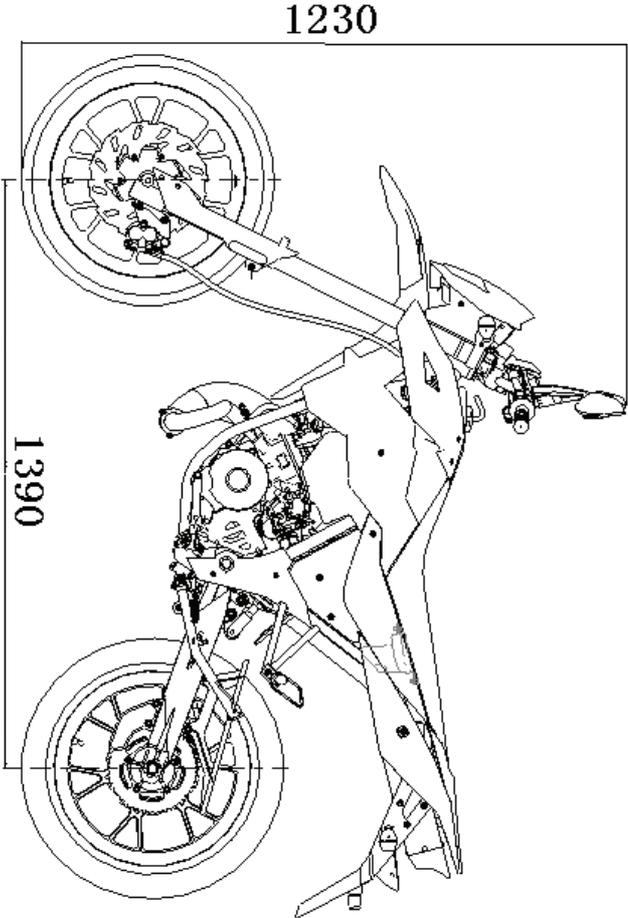
**TRIGGER X 50ccm**



**TRIGGER SM 50cm**

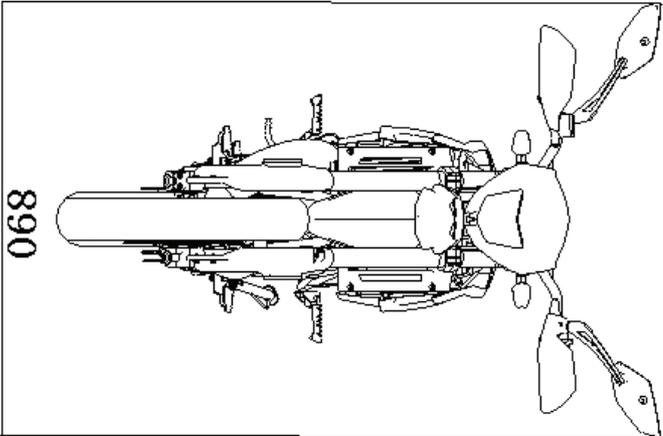


2035



1230

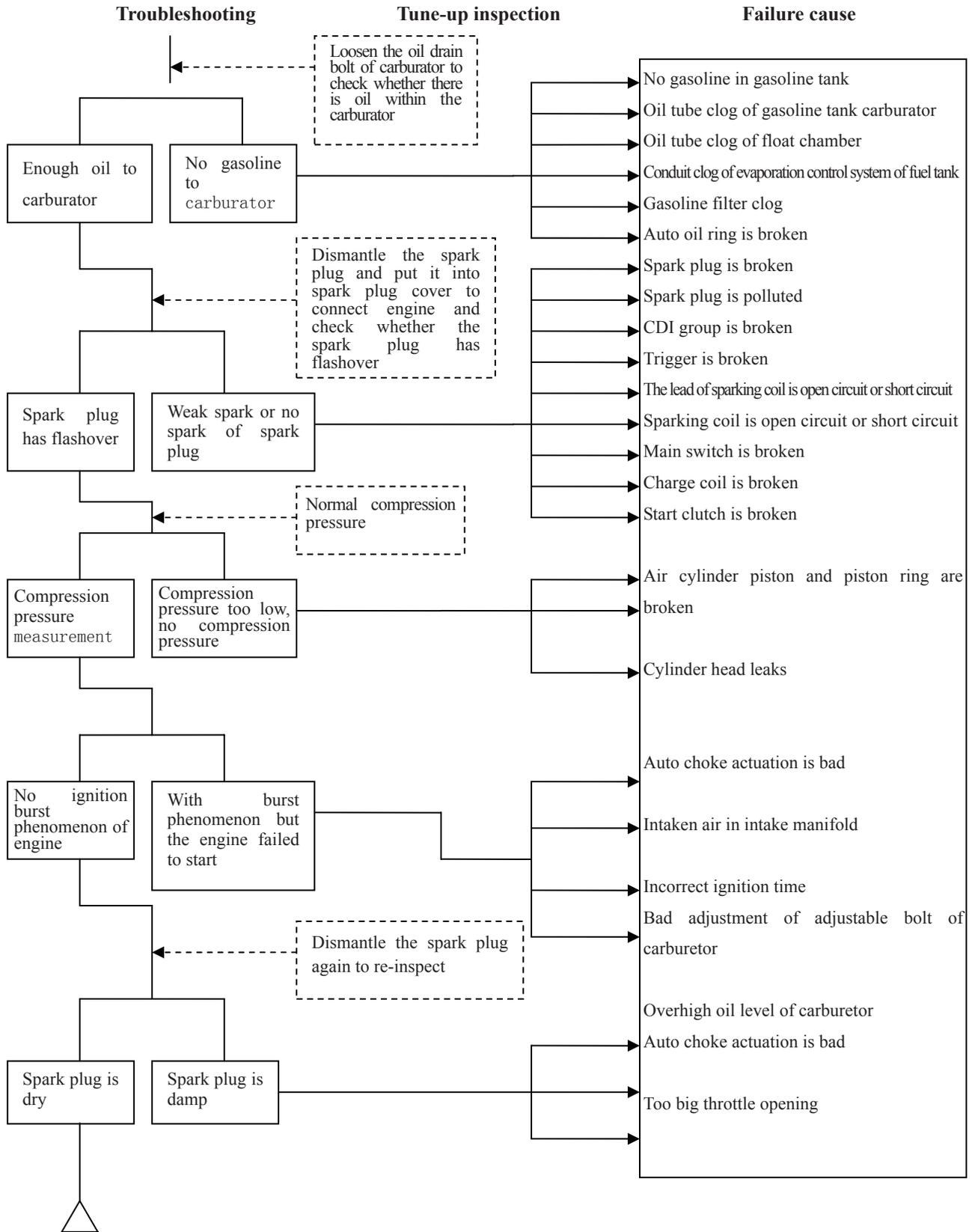
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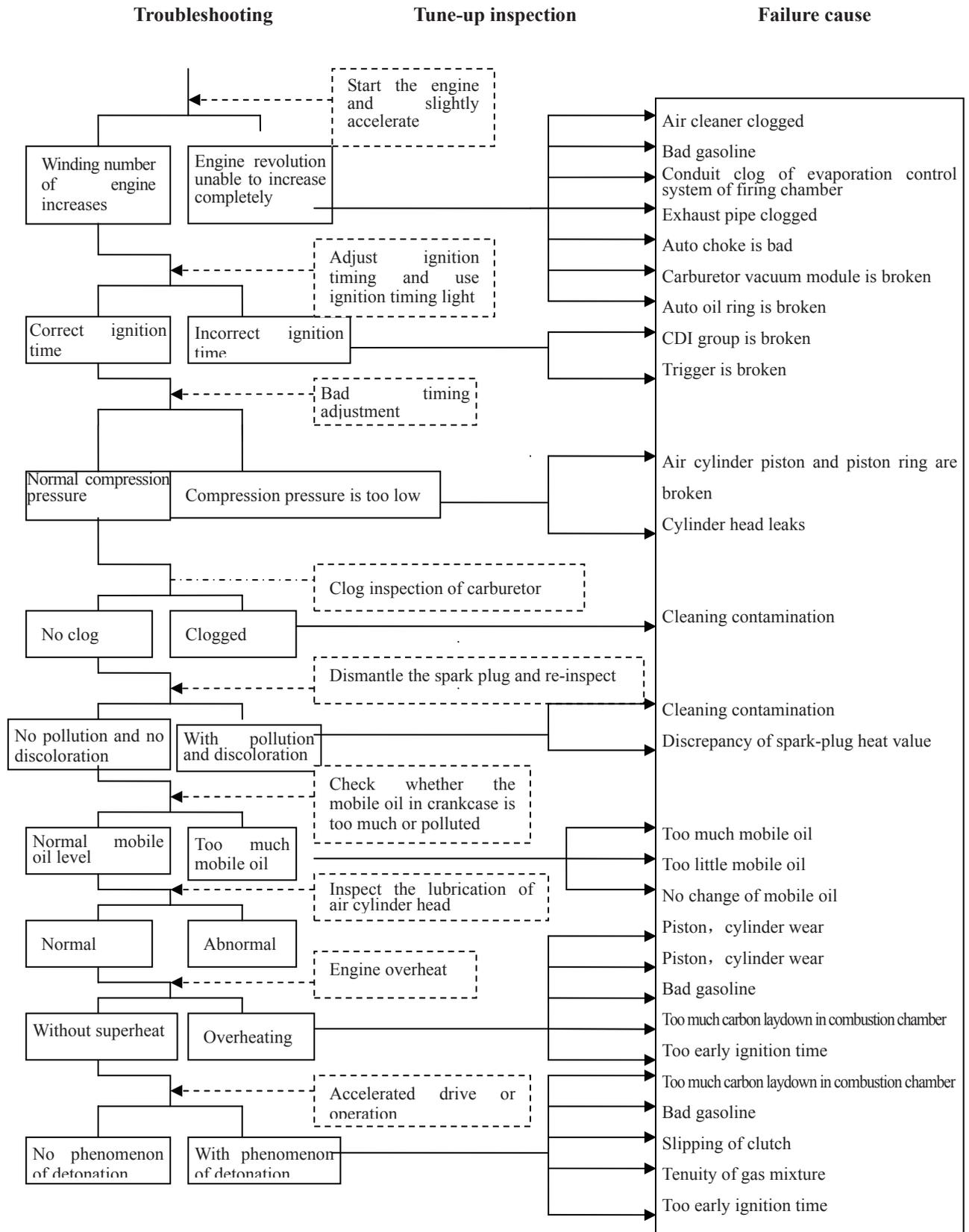
890

# Troubleshooting

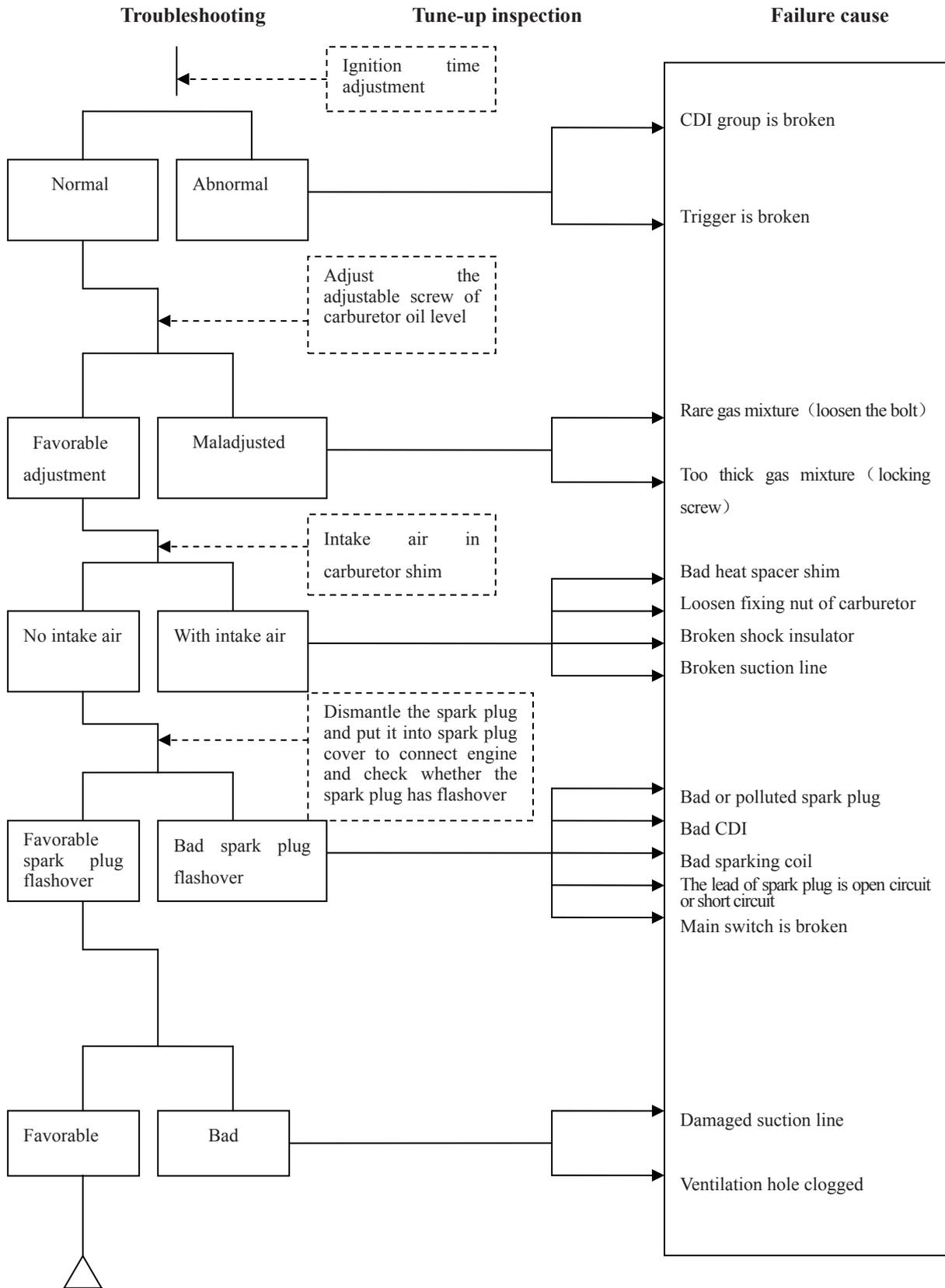
## Difficult to start or unable to start



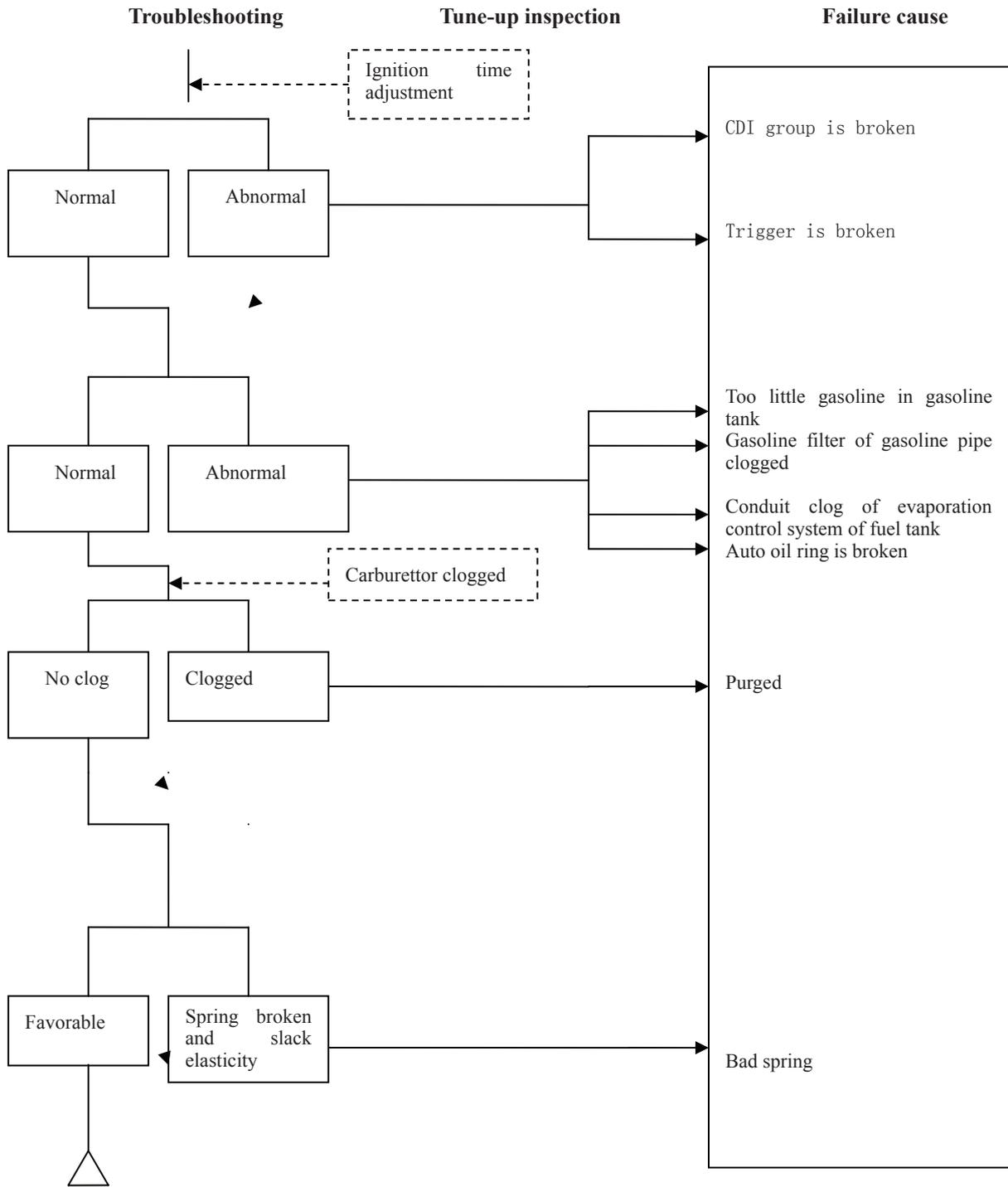
# Improper gyration (impotent velocity)



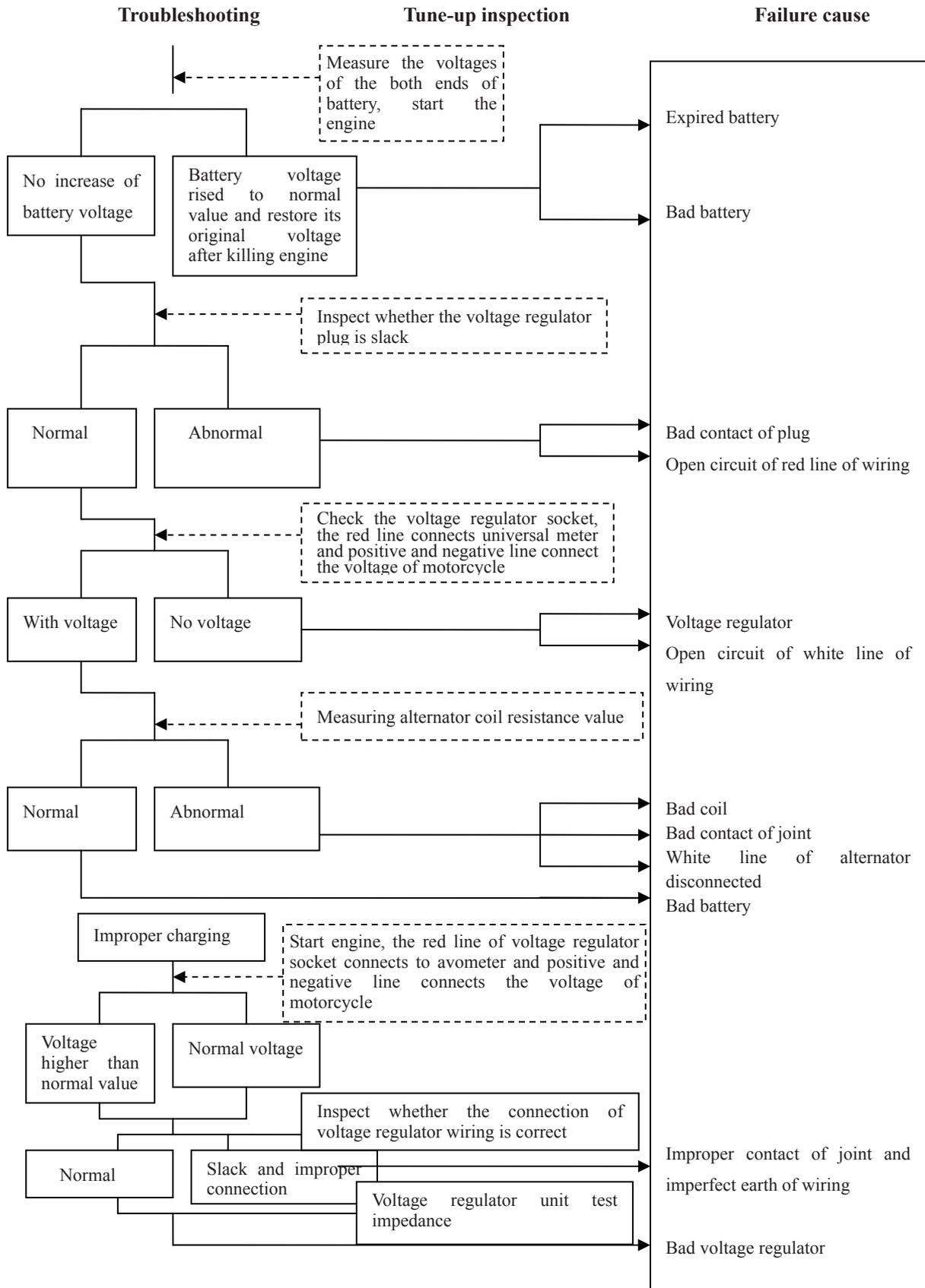
# Improper gyration (especially at low speed)



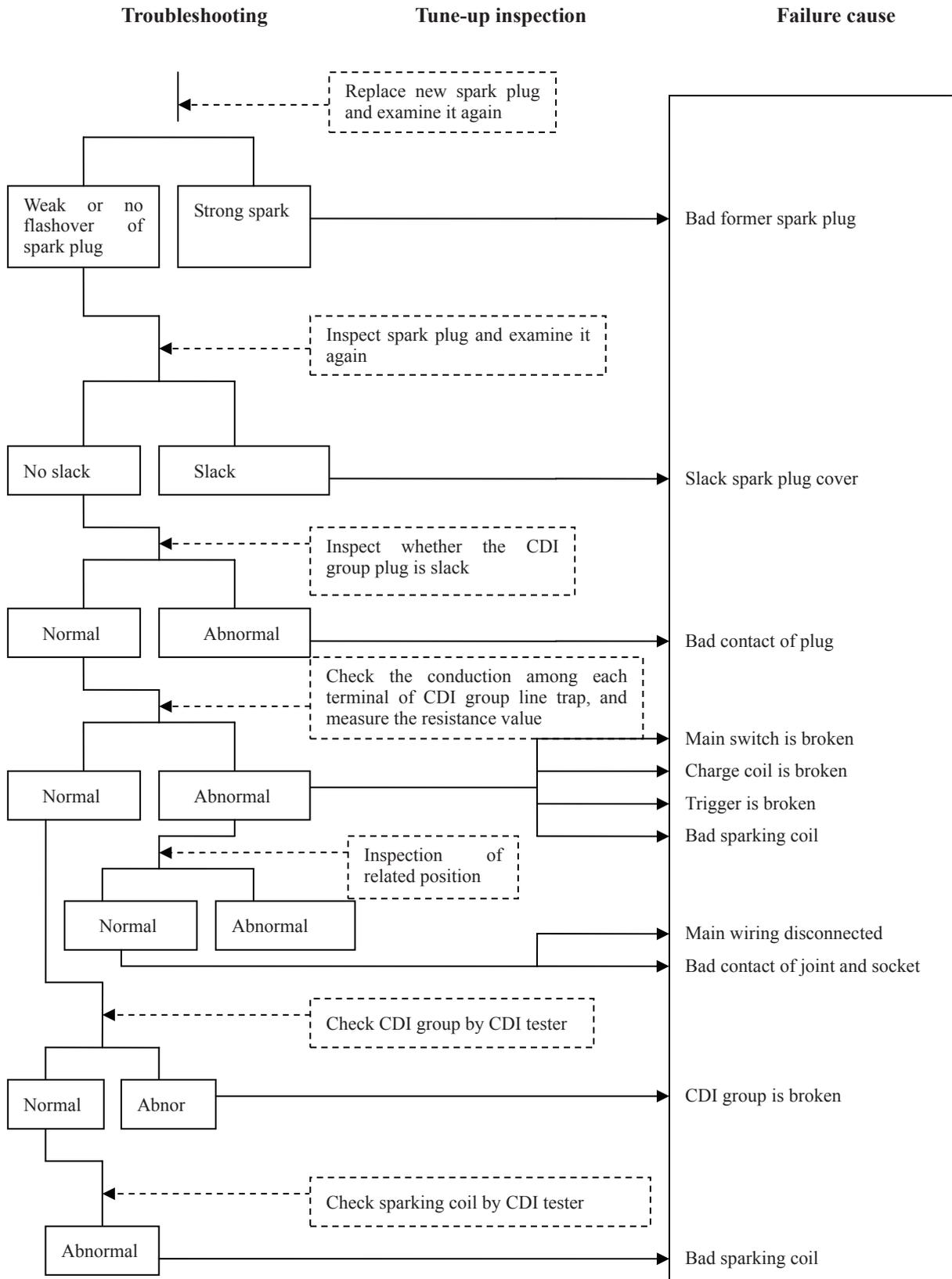
# Improper gyration (high speed)



# Improper charging (overdischarge or over charge of battery)



# Spark plug has no flashover



## Inspection/adjustment

Preparation of documents	Cylinder pressure
Check list of constant maintenance	Gear mobile oil
Engine mobile oil/oil strainer	Changing gear oil
Gasoline filter	Driving chain
Inspection/adjustment of accelerator's pull wire	Clearance of front/rear brake
Air cleaner	Front shoe block abrasion
Spark plug	Head lighting
Battery	Clutch
Carburator	Front/rear suspension system
Ignition timing	Bolt/nut/fixture
Rim/tyre	Tyre specification
Steering post bearing and handle fixture	

## Preparation requirement

### General

#### Warning!

- Before starting engine, please confirm whether there is favorable ventilation and do not start engine in a closed location for that the exhaust gas contains carbon monoxide which may numb or kill people.
- Under certain condition, gasoline is prone to volatilize and explode so that the working place should be ventilated and kill the engine and should be free from smoking and lighting in the working area or oil storage.

## Specification

### Engine

Gyration speed at idle speed	1400±100rpm/min		
Spark plug gap	0.5-0.7mm	Engine oil capacity	0.8L
Spark plug specification	BR8ES/F10KC		
Compression pressure of air cylinder	1.1-1.3Mpa/1400rpm		
Firing time	BTDC12 degree (+/-) 1degree 1400±100rpm		

### Carriage

Free stroke of front brake drawbar		20-30mm			
Free stroke of rear brake drawbar		20-30mm			
Tire pressure unit: Bar		Specification		Tire pressure	
		Front wheel of inside	3.00-21	2,25 Bar	
		Rear wheel of outside	4.10-18	2,25 Bar	
		Front wheel	100/80-17	2,25 Bar	
		Rear wheel	130/80-17	2,25 Bar	
Torque force value	Front wheel spindle	55-62 N·m			
	Rear-wheel spindle nut	85-98 N·m			

## Check list of constant maintenance

	Mileage and time of maintenance Inspection items	Every 300 KM	Every 1000 KM	Every 3000 KM	Every 6000 KM	Every 12000 KM	Every 14500 KM	Tools	
		New motorcycle	One month	3 months	6 months	A year	15 months		
*	Air cleaner	I		C	C	R	C	General purpose tool	
*	Gasoline filter	I			I	R		General purpose tool	
*	Oil cleaner	C			C	C		General purpose tool	
	Changing engine mobile oil	R	Changed every 1000KM						General purpose tool
	Tire pressure	I	I	I	I	I	I	Pressure meter, inflator	
	Battery inspection	I	I	I	I	I	I	Gravimeter, universal meter	
	Clearance inspection	I	I	I	I	I	I	General purpose tool	
	Handle inspection	I			I	I		General purpose tool	
	Shock absorber inspection	I			I	I		General purpose tool	
	Bolt inspection	I	I	I	I	I	I	Torque spanner	
	Oil leak inspection of gear case	I	I	I	I	I	I	General purpose tool	
*	Spark plug inspection or replacement	I		I	R	R	I	General purpose tool	
*	Replacement of gear case oil	I	Changed every 5000KM						General purpose tool
	Lubrication of each part				L	L		Lubrication filler	
	Exhaust pipe	I	I	I	I	I	I	General purpose tool	
*	Ignition timing	I	I	I	I	I	I	Timing lamp	
*	Carburator	A	I	A	A	A	A	Tachometer, CO HC analyser	
*	Inspection of idle speed and exhaust gas	A	I	A	A	A	A		
*	Accelerator inspection	I		I	I	I	I	General purpose tool	
	Fuel line inspection	I		I	I	I	I	General purpose tool	
	Lamp light, instruments, electric installations	I	I	I	I	I	I	Visual universal meter	
	Main rack, side rack	I			I	I		General purpose tool	
	Shock absorber			I	I	I	I	General purpose tool	
*	Torque force of engine bolt	I		I	I	I	I	Torque spanner	

## Pre-inspection

1	Ignition system - maintenance and inspection of ignition malfunction of distinct continuity, engine failed to start and superheat of afterburning.
2	Carbon laydown purging - purging the carbon laydown in the head of air cylinder, piston head and exhaust air system when the horsepower is in distinct deficiency.
3	Piston, air cylinder - excessive wear of air cylinder and cylinder smoothness, please replace.

Please be inspected at the dealer in Generic regularly in order to keep motorcycle under its optimized condition.

The said table is based on that the motorcycle runs 1000km per month.

### I - inspection, A - adjustment, R - replacement, C - clean, L - lubrication

#### Remarks:

1. " \* " for the project of exhaust emission, according to the provisions of State Environmental Protection Administration of China, the maintenance should be implemented according to the specifications of the Instruction Manual of the Company and should not be adjusted or repaired without permission, otherwise the company will not take any responsibility.
2. If the motorcycle is driven on the sandstone road or under the environment of severe contamination, the times of purging air filtrator should be increased to prolong the service life.
3. For the motorcycle which is frequently driven at high speed or the milage is large the frequency of maintenance should be increased.

## Engine mobile oil/filtrator

### Mobile oil level

#### Attention

- The motorcycle of which the mobile oil is to be inspected should be done on the flat floor.
- After running 2-3 minutes, the engine should be stopped for 2-3 minutes for inspecting mobile oil level.

Inspect mobile oil level.

When the mobile oil level is below the lower limit, please supplement it up to the upper limit position.

Changing mobile oil

#### Attention

- Change the mobile oil when the engine is warm for that it is easy to be effuse.

Dismantle the mobile oil drain bolt under the crankcase and discharge the mobile oil.

When the mobile oil is completely discharged, reinstall the mobile oil drain bolt and joint washer after cleaning.

Add mobile oil to specified volume.

**Engine oil capacity: 0.8L**

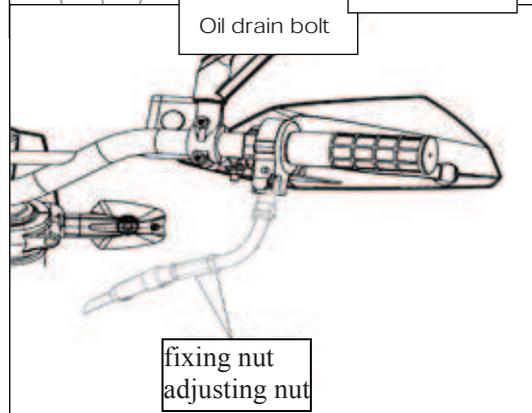
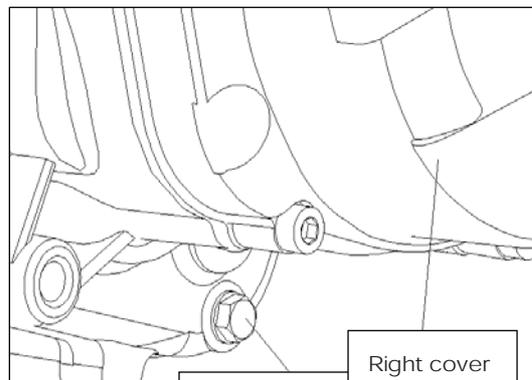
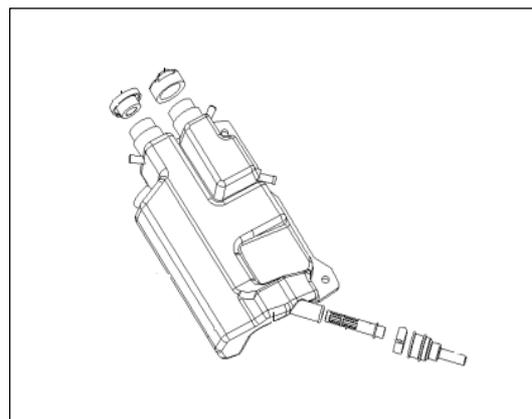
Check mobile oil leakage; start engine at idle speed for several minutes.

Reinspect mobile oil level.

## Gasoline filter

Inspection of the deterioration and damage of fuel manifold.

If there is any deterioration, damage and fuel leak, it should be



replaced with new product.

**Warning!**

Smoking or lighting fires are strictly forbidden.

## Inspection/adjustment of accelerator's pull wire

Check the smoothness of accelerator pull wire.

Check the clearance of accelerator pull wire.

**Clearance: 2 - 6mm**

The main adjusting position is on the carburator side.

Loosen the fixing nut and adjust by turning adjusting nut.

## Air cleaner

Replacement of filterator.

Dismantle the cushion and frame cover.

Dismantle the fastening screw of air cleaner cover and take down strainer cover.

Dismantle bolt and take down filterator.

Dismantle the sponge from the filterator.

Check whether the filterator is polluted or damaged.

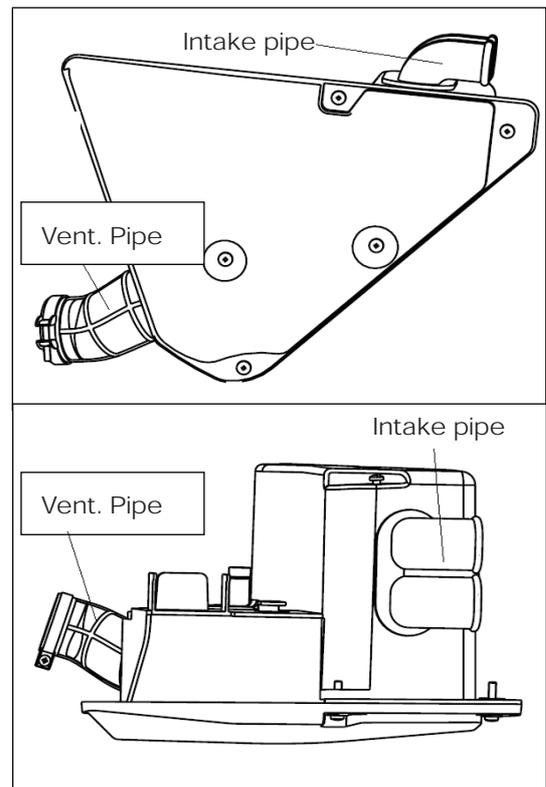
If it is polluted or damaged, please replace with new one.

Changing time

If the motorcycle is frequently driven on bad road or in rain, it should be replaced early.

**\*Attention**

•Please confirm whether the air cleaner is installed as installing air cleaner cover.

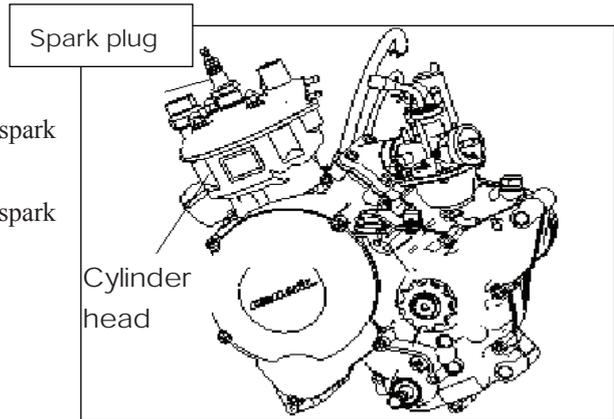


## Spark plug

Dismantle spark plug.

Check the overburning, pollution and carbon laydown of spark plug.

If there is the said problem, please purge it with cleaner of spark plug or steel brush.

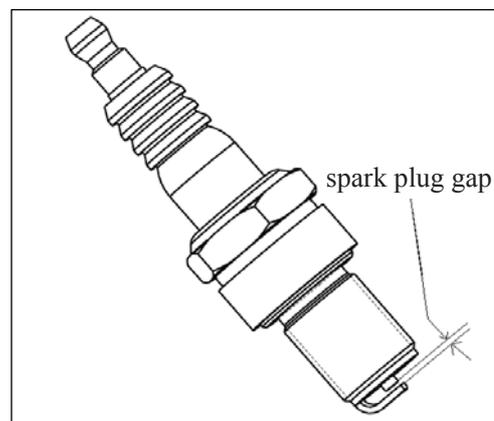


Inspection of spark plug gap

**Clearance: 0.5-0.7mm**

### \*Attention

As installing spark plug, please install it with hands and tighten by spark-plug socket.



## Battery

### Dismantle battery

Open cushion.

Dismantle left guard strip and the top cover of air filter.

Dismantle the negative lead of prior to the positive lead.

Take out battery.

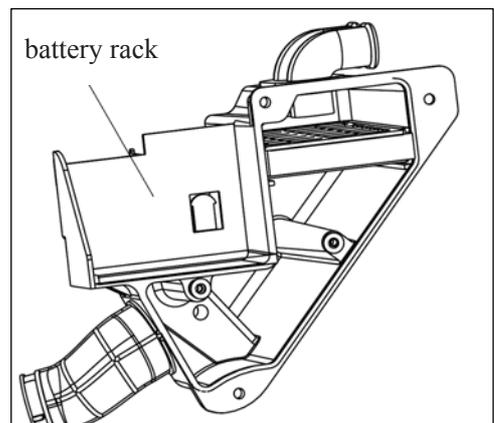
### Warning!

As dismantling positive pole, the tools should not contact the carriage in order to avoid short-circuit spark and igniting gasoline and the battery will be damaged that will be extremely dangerous.

The installation is in the reverse order of dismantling.

### Warning!

In order to prevent short circuit, please connect positive pole prior to the negative one.



## Inspection of charging state (CCU)

Open cushion.

Unclose the top cover of air filter and disconnect the lead of battery.

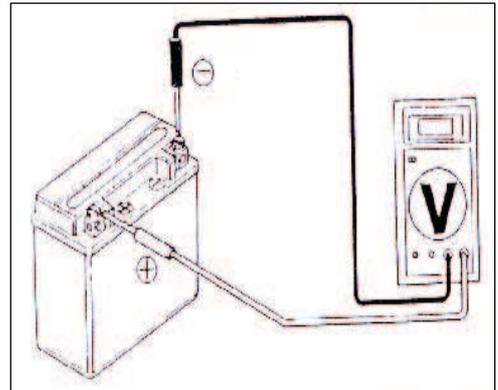
Measure the voltage between the battery terminals.

**Fully charged: 13.1V**

**Undercharge: 12.3V**

### **\*Attention**

The inspection of charging state should be made by voltage meter.



## Charging

### **Connecting method:**

**Connect the positive pole of charger to that of battery.**

**The negative pole of charge connects to that of battery.**

### **Warning!**

- Fire should be strictly prohibited around battery.
- As starting to charge or upon the completion of charge, the switch of charger should be turned off first in order to prevent the sparkle of connecting position from explosion hazard.
- The current time specified on the battery should be the reference for charging.

### **\*Attention**

- If quick charge of battery is abnormal, the battery should not be used.
- The voltage should be measured every 30 minutes after charging.

**Charging current: standard: 0.4A**

**Quick: 4.0A**

**Charging period: standard: 10 - 15 hours**

**Quick: 30 minutes**

**Completion of charge: CCU: above 12.8V**

## Carburator

### Idle adjustment

#### \*Attention

The idle adjustment should be made when the engine is warm.

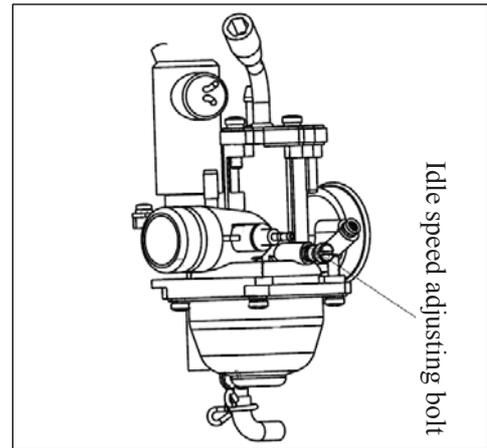
It should be conducted after the warm-up of engine.

Start engine and connect the turnmeter of engine.

Adjust the accelerator pull wire and bolt stopper to specify the winding number.

**Winding number at idle speed : 1400±100rpm/min**

Readjust the idle adjustment bolt when the gyration at idle speed is instable or there is difficulty of slight acceleration.



## Ignition timing

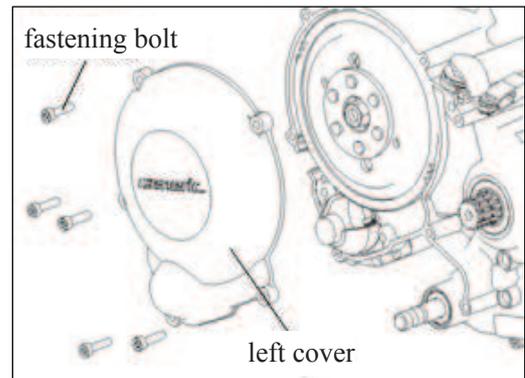
#### \*Attention

The ignition timing requires no adjustment for CDI ignition device.

Check the ignition system if the ignition timing is incorrect.

Dismantle the left cover of engine.

Use the ignition timing light to inspect and confirm ignition timing.



## Cylinder pressure

It should be made when the engine is warm.

Dismantle spark plug.

Install cylinder pressure meter.

Full throttle, press "Start" to run motor and measure the cylinder pressure.

**Compression pressure: 1.1-1.3Mpa/1400rpm**

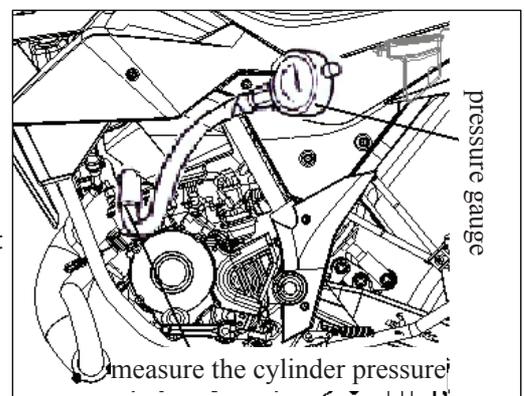
Check the following items if the compression pressure is too low:

—Damage of piston ring

—Ring wear

—Piston, cylinder wear

Check the combustion chamber and the carbon laydown on the top of piston if the compression pressure is too high.



## Gear mobile oil

### Inspection

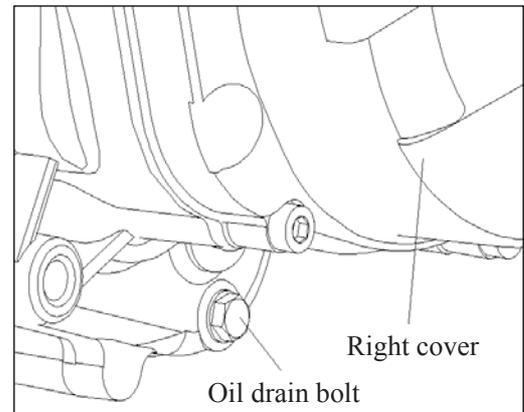
#### \*Attention

Fuel check, let down the middle supporter to be perpendicular to motorcycle on the flat floor.

Dismantle the inspection bolt of gear oil after stopping engine.  
The oil level is below the lower limit of bolt hole is good.  
Please supplement gear oil when the oil level is too low.  
Install the inspection bolt of gear oil.

#### \*Attention

Confirm the airtightness of bolt and whether it is out of clutch and damage.

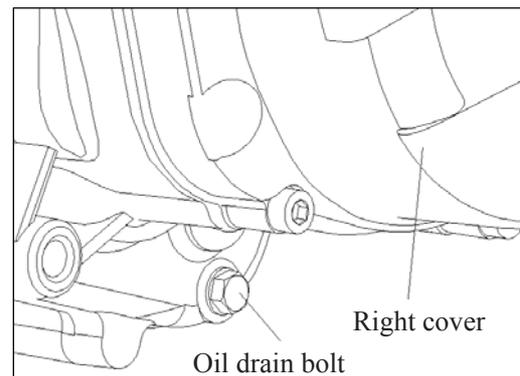


### Changing gear oil

Dismantle the inspection bolt of gear oil.  
Dismantle the oil drain bolt, the gear oil will effuse.  
Install the oil drain bolt.

#### \*Attention

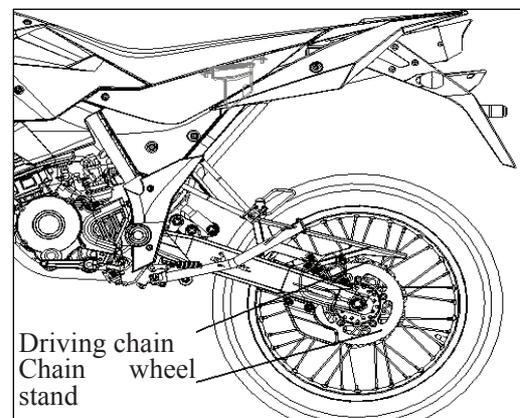
Confirm the airtightness of bolt and whether it is out of clutch and damage.



Supplement gear oil.  
Check the oil leak of each position after operation.

### Driving chain

Dismantle oil seal, check whether the fringe of oil seal is broken.  
Check whether the rear wheel bearing is broken and take out the bearing.  
Take out the bush and dismantle the rear driving chain and the bolt of chain wheel.  
Check whether the rear driving chain and chain wheel exceeds the extreme dimension.



## Clearance of front/rear brake

### Front brake clearance

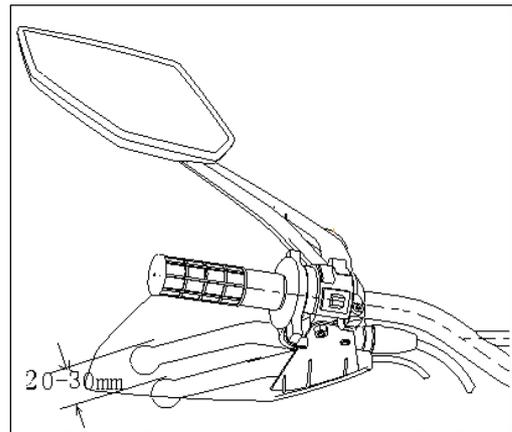
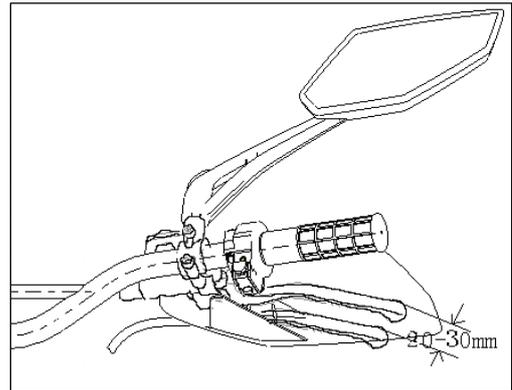
Measure the clearance of the front brake drawbar at the top point of brake drawbar.

**Clearance: 20-30mm**

### Rear brake clearance

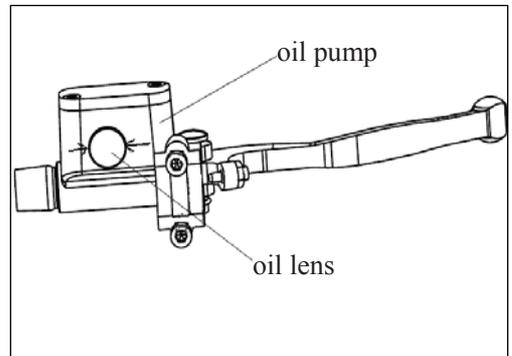
Measure the clearance of the rear brake drawbar at the top point of brake drawbar.

**Clearance: 20-30mm**



## Abrasion of front brake shoe

Check the oil level via oil immersion lens when the brake is down to bottom, if the liquid level of brake fluid is against the arrow in the figure, please replace the brake shoe.



## Head lighting

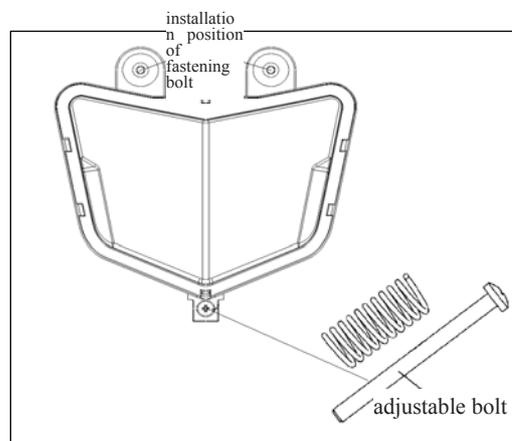
### Adjustment

The optical axis adjustment of head lighting is done by turning after unscrew the rotation adjustable bolt of head lighting.

## Clutch

Start engine and increase the winding number slowly to inspect the actuation of clutch and check the clutch block if the motorcycle does not move or the engine misses.

Replace the new part if necessary.

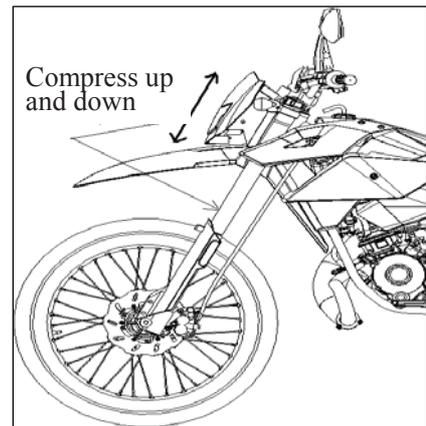


## Front/rear suspension system

### Front

Strain the front brake and compress the front shock absorber up and down to check the actuation.

Check whether the front shock absorber is leak and each part is loosen.

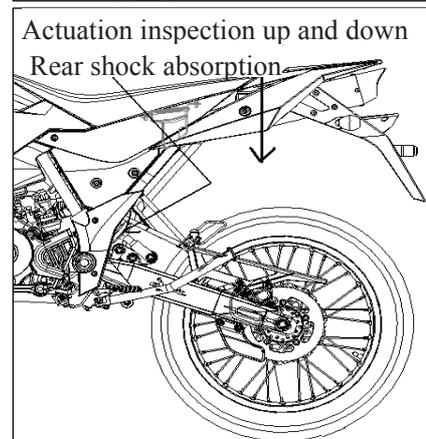


### Rear

Compress the rear shock absorber up and down to check the actuation.

Check whether each part of the rear shock absorber is damaged or loosened.

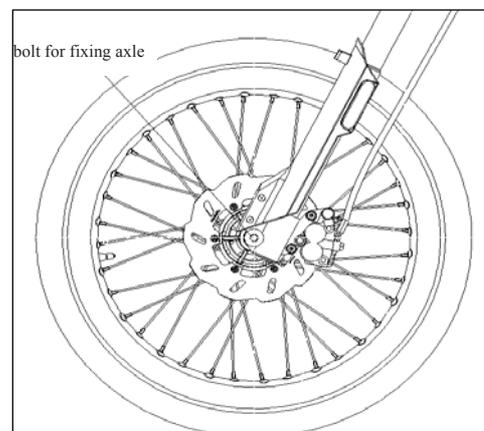
Suspense the rear wheel and swing it to check whether the engine suspension bush is loosened.



### Nut/bolt/fixture

Check whether the bolt, nut and fixture of the motorcycle is loosened.

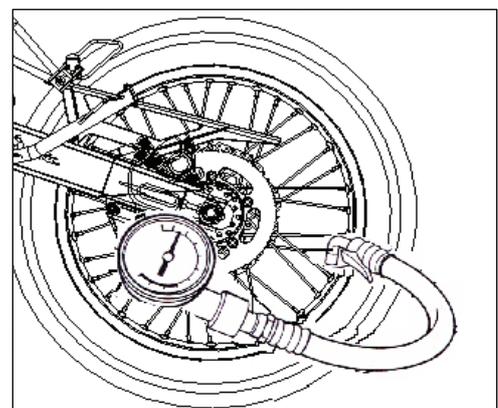
If so, please tighten to specified torque force value.



### Rim/tyre

Check whether there is crack, nail or other damage of the tyre.

Check the tire pressure.

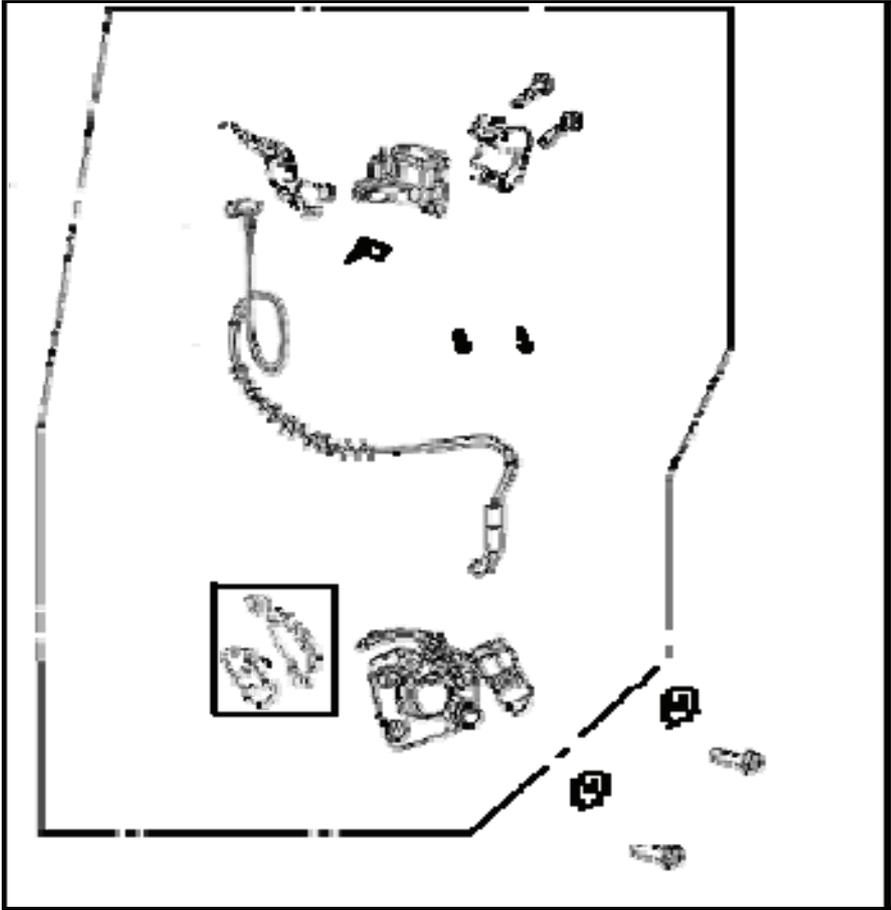


#### \*Attention

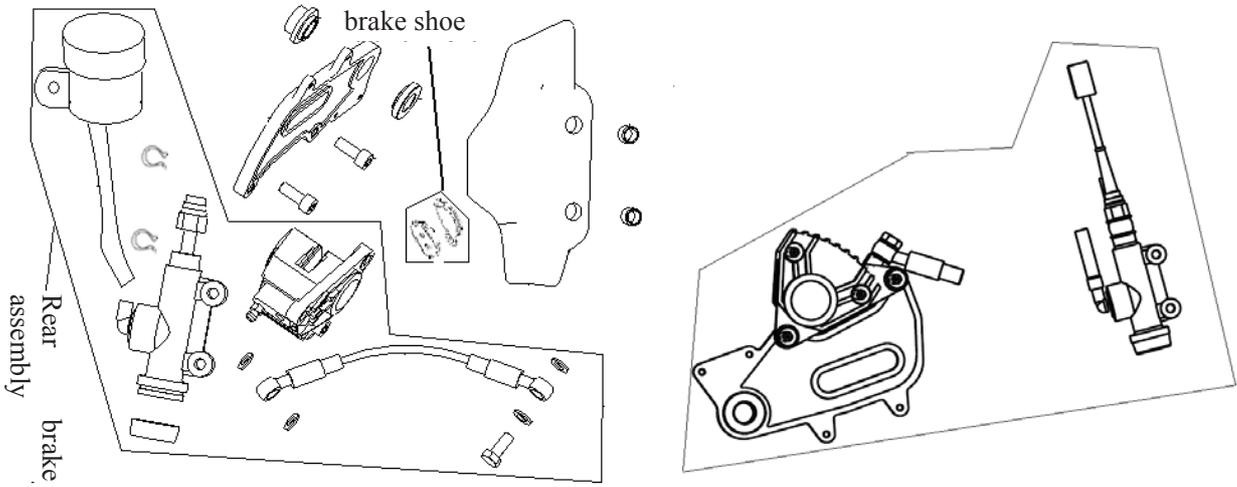
The tire pressure should be measured under cold condition.



# Front liquid brake



# Rear liquid brake



# 1 Brake

Maintenance instruction -----	1.1
Fault diagnosis -----	1.2
Front hydraulic brake -----	1.3
Rear hydraulic brake -----	1.4

## 1.1 Maintenance instruction

### Matters needing attention in operation

#### \* Note

- |   |
|---|
| <ul style="list-style-type: none"><li>•The braking components can not be spoiled by oil stain in installation or disassembly.</li><li>•Rinse with stipulated cleaning agent in order to avoid reduction of braking quality.</li></ul> |
|---|

\*Inspect the brake before riding the motorcycle.\*

#### 1.1.1 Specification

Item	Standard value (mm)	Allowable limit(mm)
thickness of front brake disc	4.0	-
thickness of front brake pad	4.5	3.0
thickness of rear brake disc	4.0	-
thickness of rear brake pad	7.0	3.0

**QJ50-23** diameter of front hydraulic brake  $\phi 230\text{mm}$  Diameter of rear hydraulic brake  $\phi 220\text{mm}$

**QJ50-23A** diameter of front hydraulic brake  $\phi 280\text{mm}$  Diameter of rear hydraulic brake  $\phi 220\text{mm}$

#### 1.1.2 torque value

Fixing bolt of brake disc	<b>22-29 N·m</b>
Mounting bolt of brake caliper	<b>22-29 N·m</b>

## 1.2 Fault diagnosis

### Brake

#### Bad braking quality

1. Unfavorable brake adjustment

#### Slow brake or tight rod

1. Unfavorable brake adjustment

2. Brake pad worn out
3. Improper installation of brake pad
4. Brake pad polluted

2. Brake pad worn out
3. Improper installation of brake pad

## Strange sound in braking

1. Brake pad worn out
2. Brake pad polluted

## 1.3 Front hydraulic brake

### \* Note

- The braking components can not be spoiled by oil stain in installation or disassembly.
- Rinse with stipulated cleaning agent in order to avoid reduction of braking quality.

Disassemble the front wheel spindle.

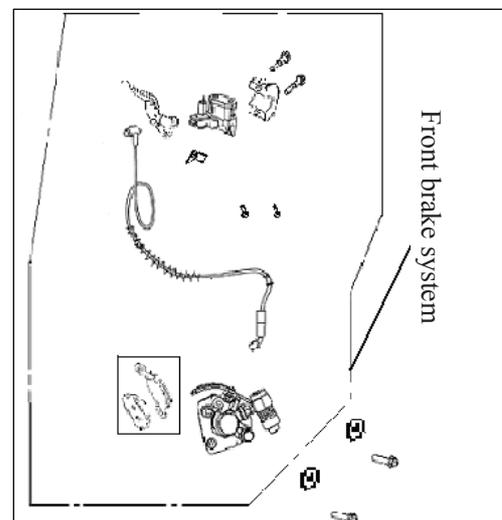
Unload the front wheel.

### 1.3.1 Disassembly

#### \*Note

- Always replace the brake pad in pairs.
- If a brake pad is reused, mark a signal on its side before disassembly so that it can be installed to the original position.

Disassemble the brake cylinder set from the left shock absorber and take out the brake pad from the brake cylinder set.



### 1.3.2 Inspection

Inspect whether the brake pad is worn out and replace it if necessary.

Measure the brake pad and brake disc and put down the maximal value.

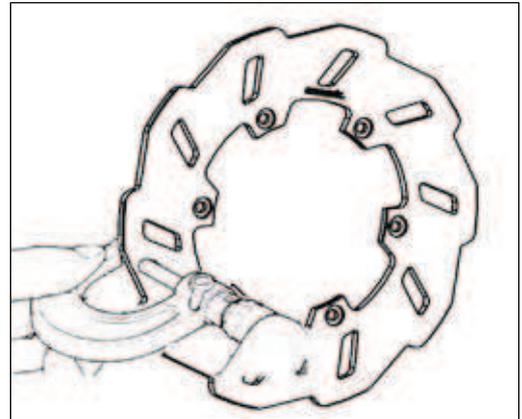
#### Specification

**QJ50-23** diameter of front hydraulic brake  $\phi 230\text{mm}$

**QJ50-23A** diameter of front hydraulic brake  $\phi 280\text{mm}$

#### \*Note

•It must be measured with a bore groove vernier caliper or microcaliper.



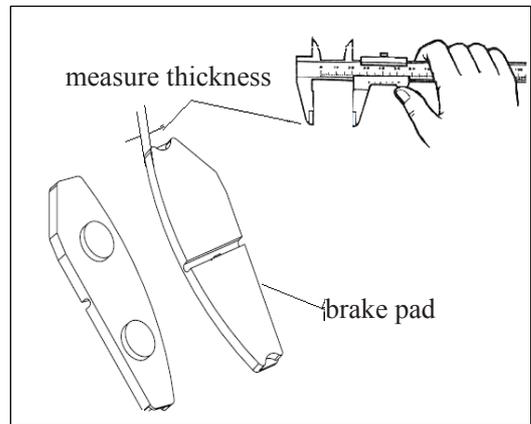
#### Allowable limit: brake disc 3.0mm

If the thickness of brake disc is less than the allowable limit, it should be replaced.

Measure the thickness of brake pad.

If the thickness of brake pad is less than the maintenance value or it is polluted by grease, just replace it.

#### Allowable limit: brake pad 3.0mm



### 1.3.3 Installation

Install the front wheel.

Install the brake cylinder set.

Keep the brake pad free of grease.

#### \* Note

Grease on the brake pad may reduce brake ability and invalidate the brake.

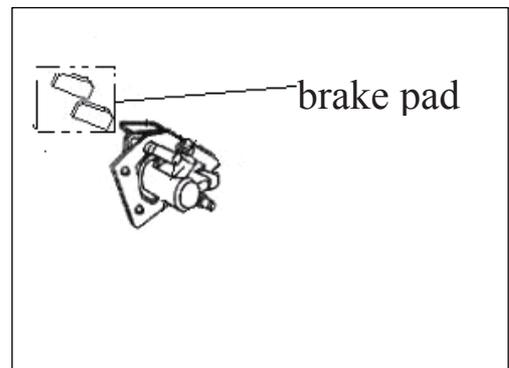
Screw bolt and nut to the stipulated torque force value.

#### Torque value :

<b>Fixing bolt of brake disc</b>	<b>22-29 N·m</b>
<b>Mounting bolt of brake caliper</b>	<b>22-29 N·m</b>

Keep the brake pad free of oil stain.

If the brake pad is polluted with oil, rinse it with brake cleaning fluid.



**\* Note**

Grease on the brake pad may reduce brake ability and invalidate the brake.

## 1.4 Rear hydraulic brake

### 1.4.1 Disassembly

Disassemble the rear brake cylinder set.

Disassemble the rear wheel.

**\* Note**

- Always replace the brake pad in pairs.
- If a brake pad is reused, mark a signal on its side before disassembly so that it can be installed to the original position.

Remove the following components from the rear wheel.

Rear hydraulic brake :

1. Decorative board of rear brake
2. Rear brake system
3. Brake pads

### 1.4.2 Inspection

Inspect whether the brake disc and brake pad are worn out and replace them if necessary.

Measure the brake pad and brake disc and put down the maximal value.

**\* Note**

- Clean the rust off the brake disc with #\_120 sandpaper.
- It must be measured with a bore groove vernier caliper or microcaliper.

Measure the thickness of brake pad.

If the thickness of brake pad is less than the maintenance value or it is polluted by grease, just replace it.

**QJ50-23 and QJ50-23A can be applied to all rear brakes.**

**Diameter of rear hydraulic brake  $\phi 220\text{mm}$**

**Allowable limit: Brake pad 3.0 mm**

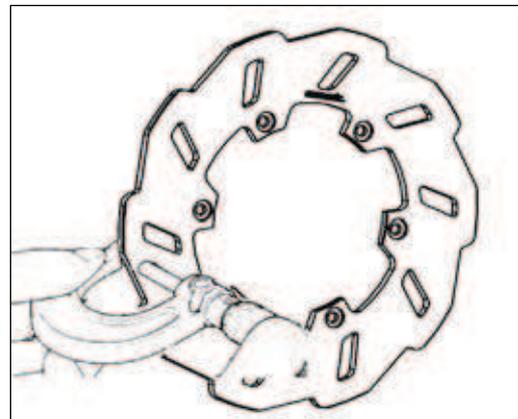
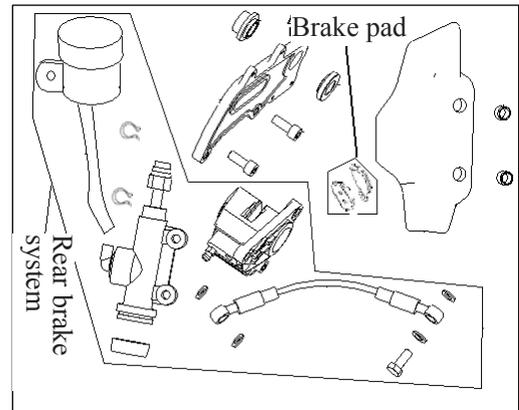
**Brake disc 3.0 mm**

### 1.4.3 Installation

Install the rear wheel.

Install the rear brake cylinder back to the original position.

Install the decorative board of rear brake back to the original position.



**\*Note**

Grease on the brake pad may reduce brake ability and invalidate the brake.

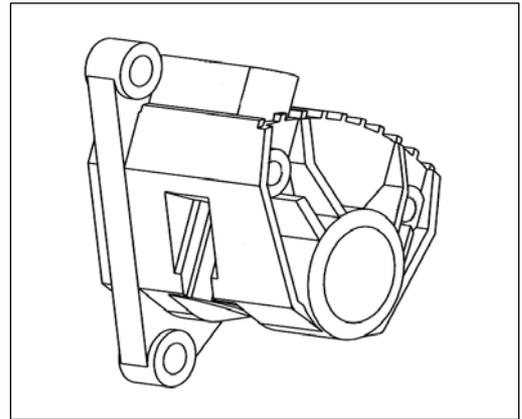
Screw the bolt and nut to the stipulated torque force value.

**Torque value**

**mounting bolt of brake caliper: 22-29 N·m**

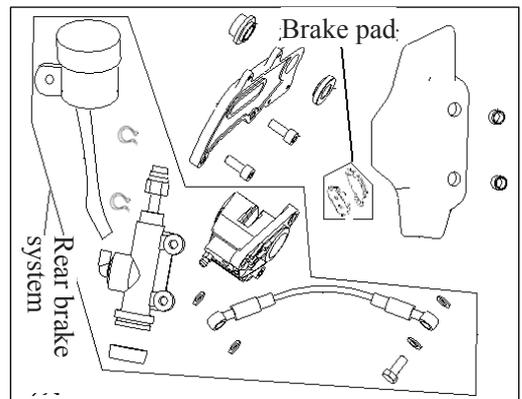
Keep the brake pad and brake disc free of oil stain.

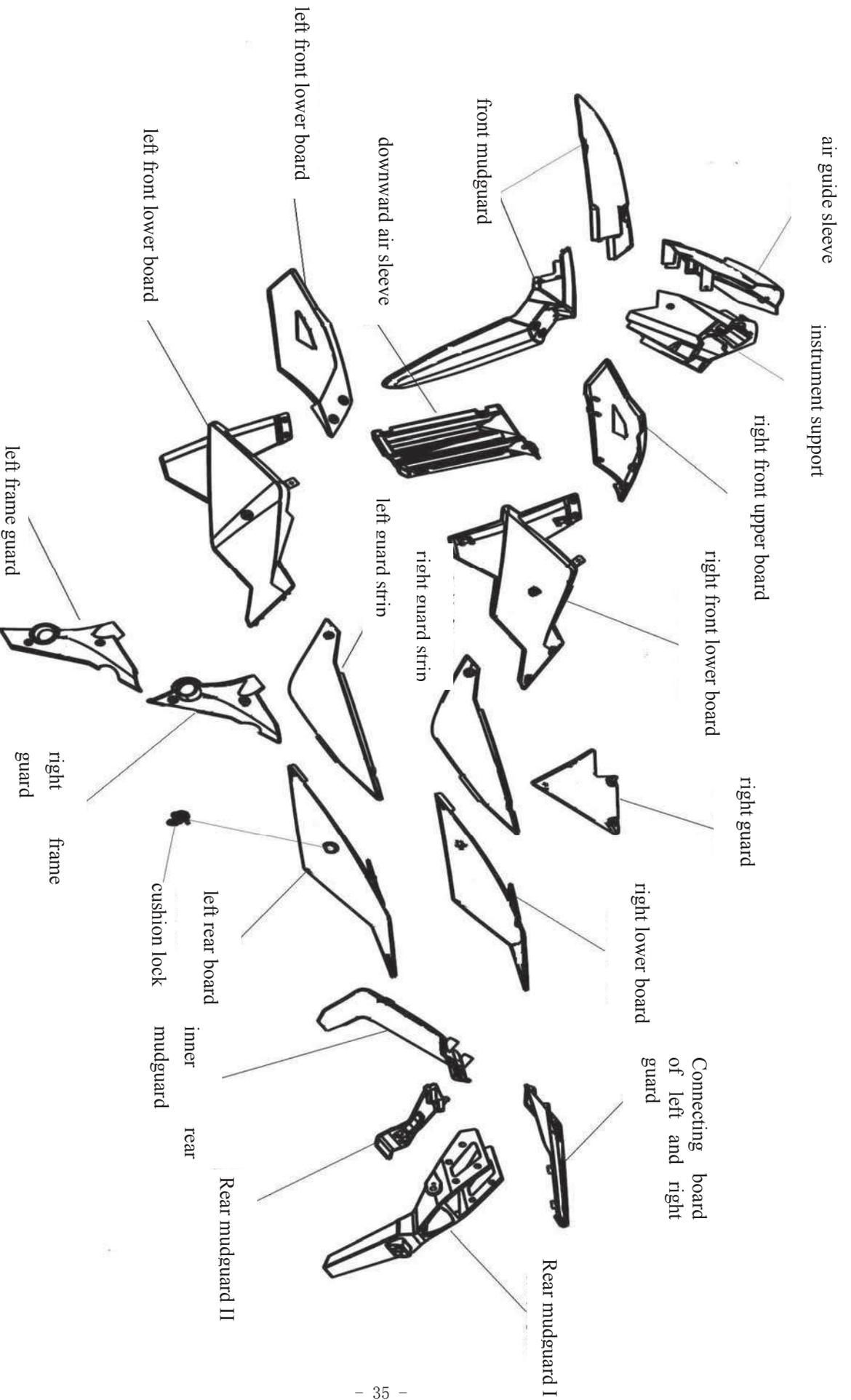
If the brake pad and brake disc are polluted with oil, rinse them with brake cleaning fluid.



**\* Note**

Grease on the brake pad may reduce brake ability.





## 2 Body cover

Disassemble the motorcycle body according to the following order:

Rearview mirror → Air guide sleeve → Instrument support → Instrument → Front mudguard → Front top guards



Front bottom guards → cushion → left, right guard strip → Rear left and right guard → Connecting board of left and right guard



→ Rear mudguard I → Rear mudguard II → Inner Rear mudguard → Left guard → Left and right guard of the frame

### \* Note

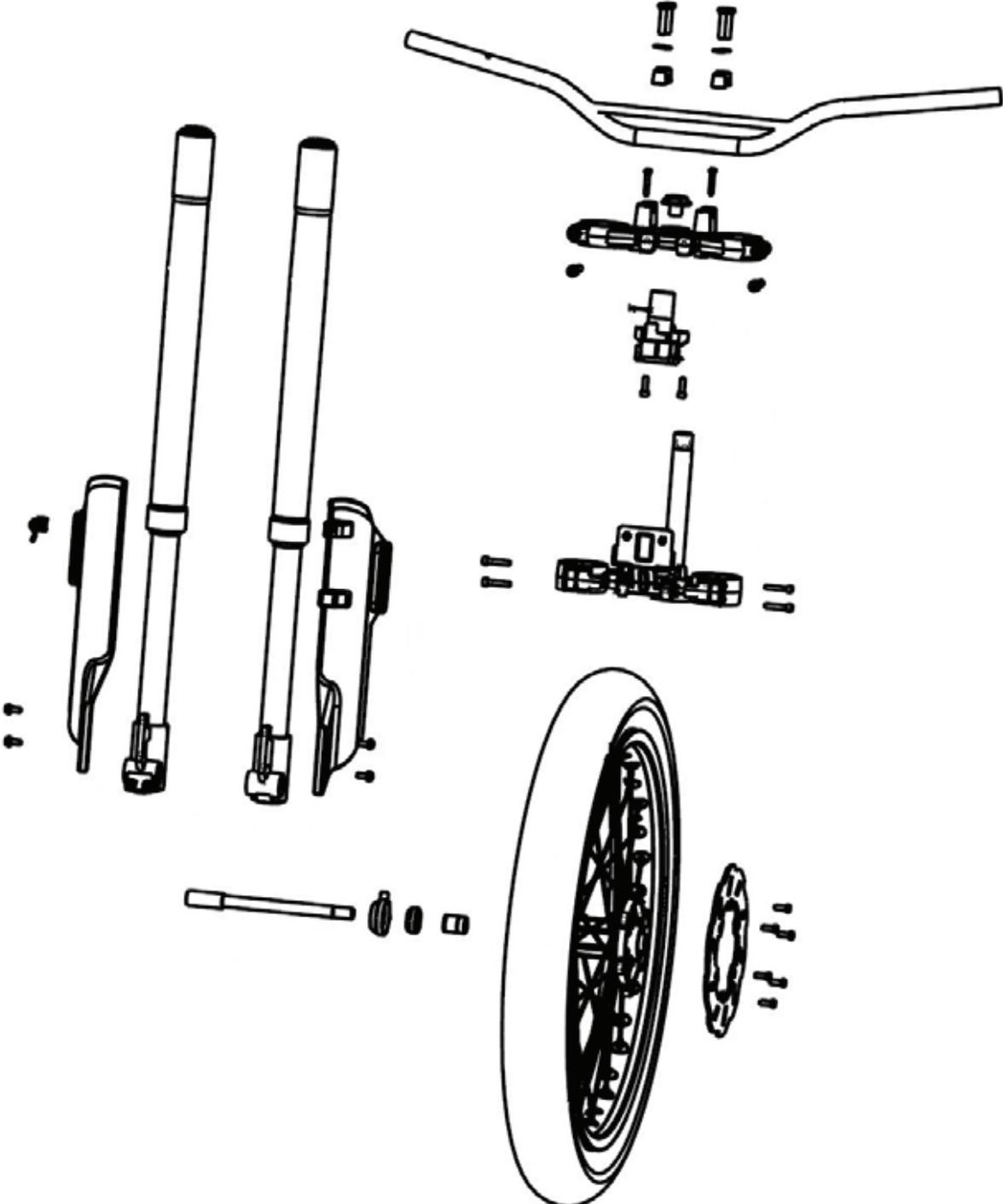
Do not damage any body cover during installation or disassembly.

Do not damage the knuckle on body cover during installation or disassembly. Align the panel and cover plate on the body cover with their own grooves.

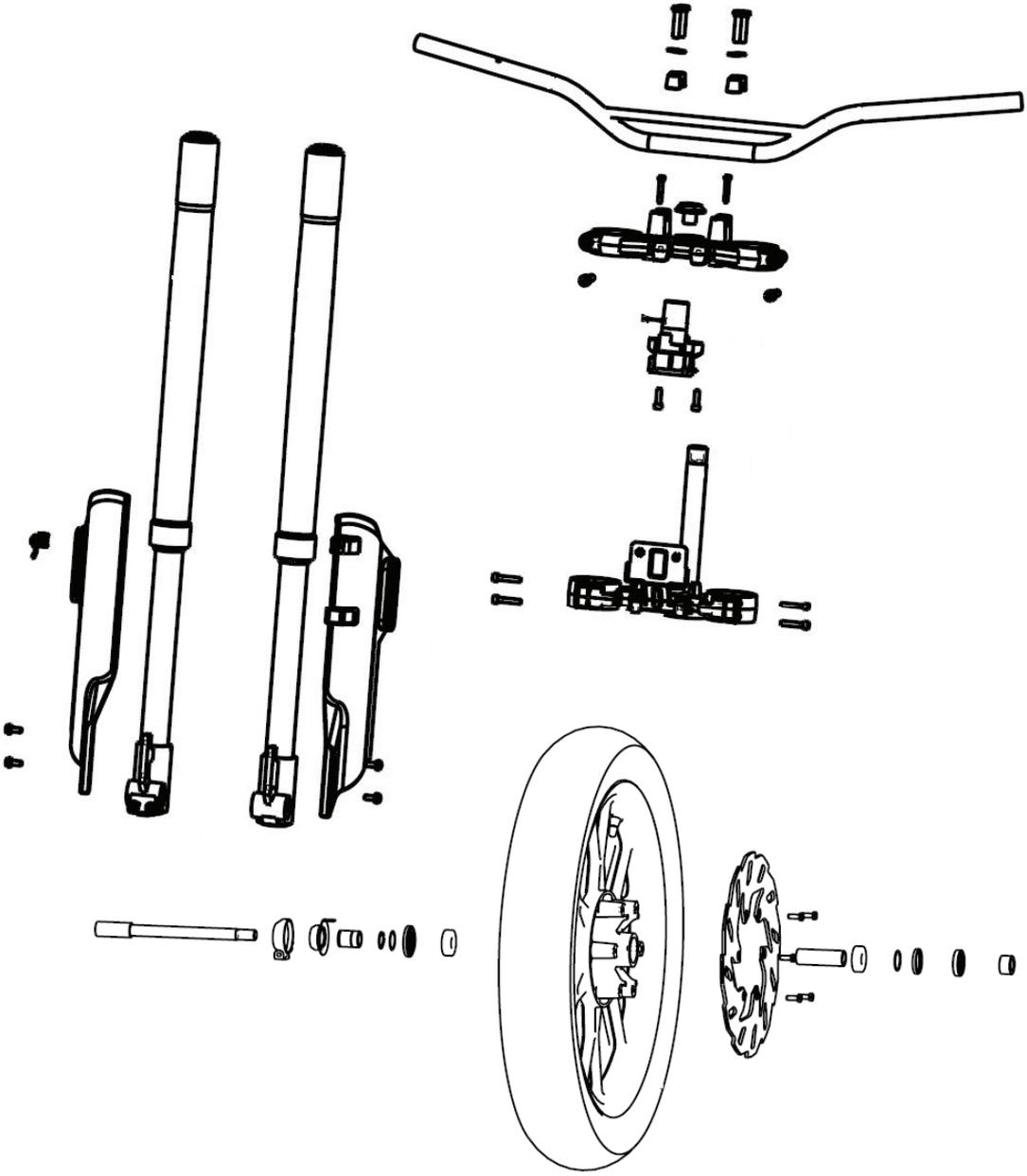
Correctly install the knuckle of each part in assembly.

No spare parts could be damaged in installation of the cover.

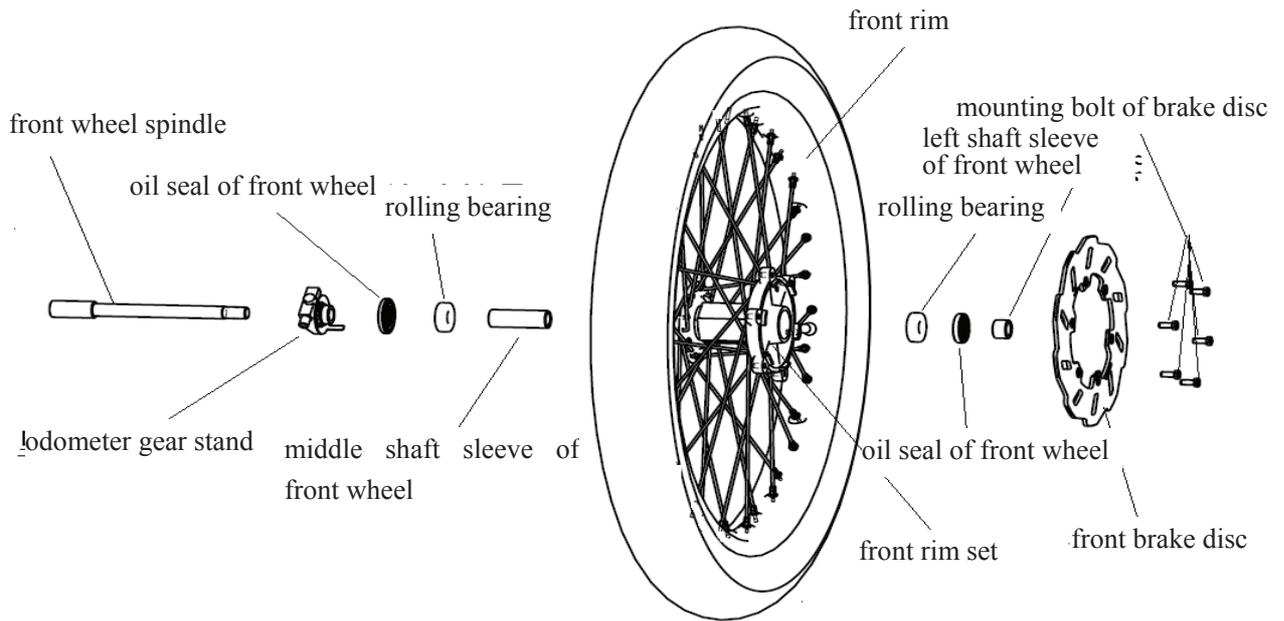
Front wheel/ front suspension (QJ50-23)



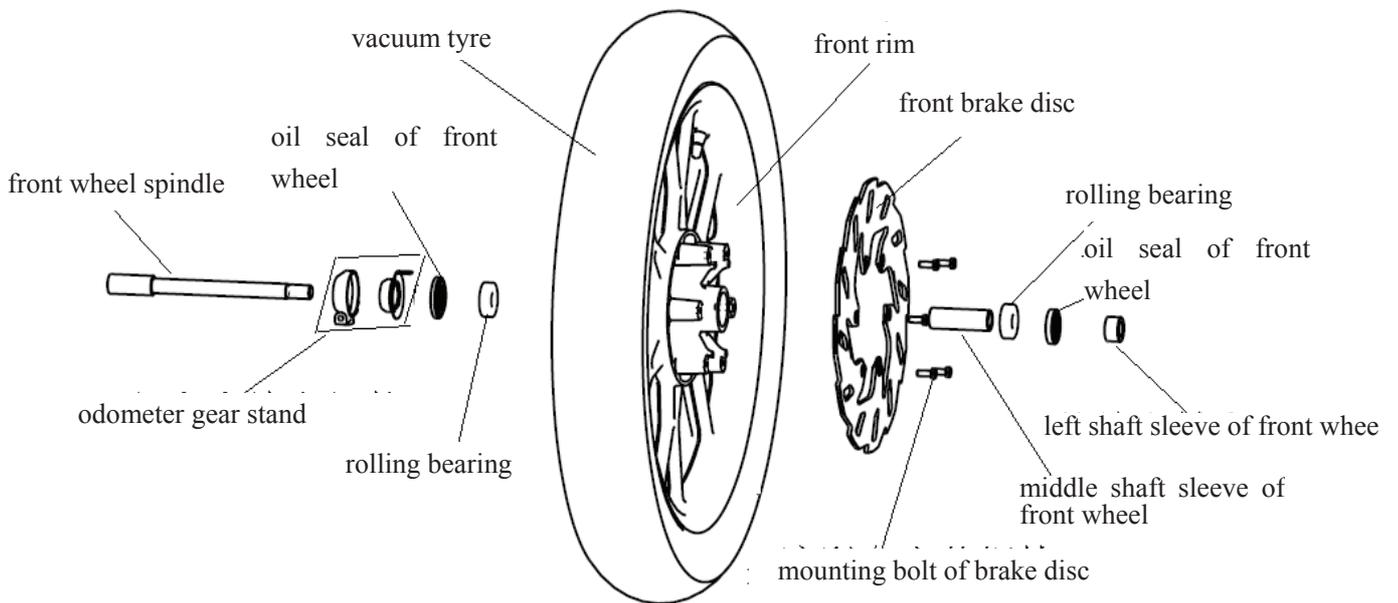
Front wheel/ front suspension (QJ50-23A)



## QJ50-23 Front wheel



## QJ50-23A Front wheel



### 3 Front wheel/ front suspension

Preparation data -----3.1

Fault diagnosis -----3.2

Front wheel -----3.3

Steering handle -----3.4

Front fork -----3.5

#### 3.1 Preparation data

##### Matters needing attention in operation

Support the body bottom with a jack before disassembly so that the front wheel is suspended but couldn't rotate.

Keep the brake pad free of grease in operation.

##### Reference for the entire motorcycle

Measuring position	Item		standard value (mm)	Allowable limit(mm)
front wheel spindle	bending			0.2
front wheel	run-out of rim	vertical direction		2.0
		transverse direction	Within 1.0	2.0

##### Torque value

Fixing bolt of steering lever                      5-9 N·m

Front wheel spindle                                      55-62 N·m

##### Tools

**Bearing puller**

#### 3.2 Fault diagnosis

##### 3.2.1 Actuation difficulty of steering lever

The Steering column nuts are over screwed.

The roller and bearing bracket of the steering column are severely worn out.

The steering column is badly distorted by collision.

The tyre pressure is too low.

### 3.2.2 Deviation of steering lever

The left and right shock absorbers are not balanced.

The front fork is bent.

The front tire is bent and the tyre deviates.

### 3.2.3 Front wheel yawing

The tyre is distorted.

The front wheel bearing is loosened.

The tyre is not good.

### 3.2.4 Front shock absorber too soft

Elasticity fatigue of spring

### 3.2.5 Strange noise in front shock absorber

Friction noise in shock absorber guard

Loosening of bolts in rear shock absorber

## 3.3 Front wheel

### 3.3.1 Disassembly

Hold the body bottom up so that the front wheel can be suspended.

Remove bolts and unload the front mudguard and odometer wire.

Disassemble the front brake wire.

Disassemble the front wheel spindle.

Unload the front wheel.

**\*Remark: please refer to Page 41 for the disassembly and assembly diagram of QJ50-23 and QJ50-23A.**

### 3.3.2 Inspection

#### 3.3.2.1 Inspect bending of the wheel spindle

Place the wheel spindle on the V-shape holder and measure with a micrometer screw caliper.

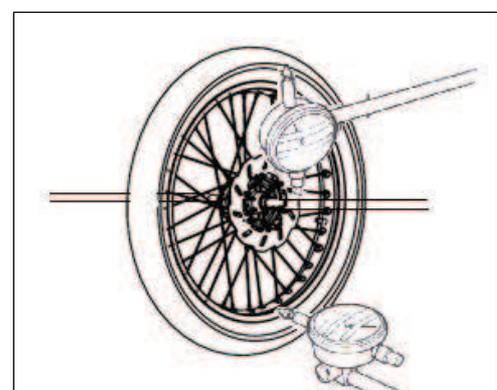
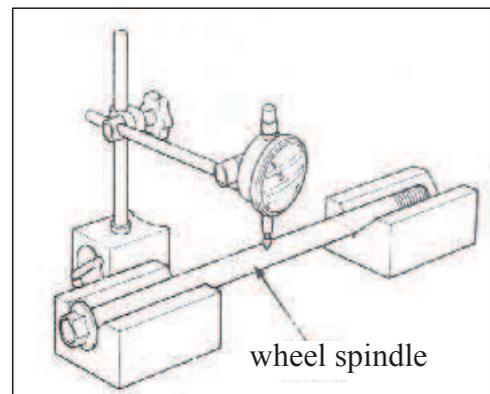
**Allowable limit: replace it when the value exceeds 0.2mm.**

#### 3.3.2.2 Inspect yawing of rim

**Allowable limit:**

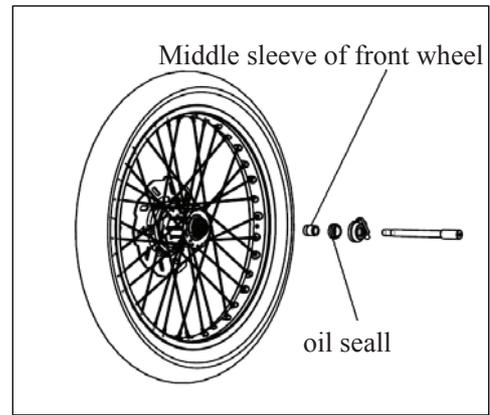
**Vertical orientation: if the value exceeds 2.0mm, replace the rim.**

**Transverse direction: if the value exceeds 2.0mm, replace the rim.**

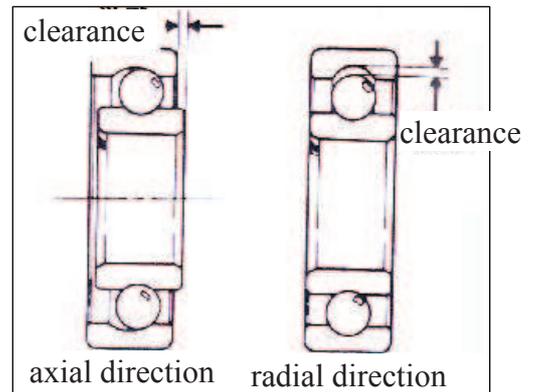


### 3.3.2.3 Inspect the front wheel bearing

Disassemble the middle sleeve of front wheel and remove the oil seal.

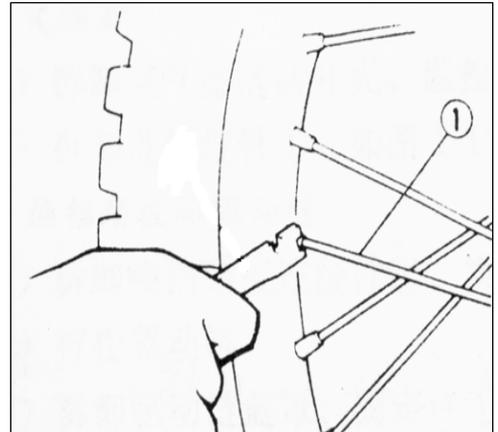


Inspect rolling condition of the inner race of swivel bearing  
If it does not roll or is loosely contacted with the outer race or it is damaged, please replace with a new one.



### 3.3.2.4 Inspect the spoke

Inspect the spoke□, if it is bent, damaged, please change it .  
If it is relaxed, please fasten it.  
Screw up the spoke with the tightening torque on screw cap of  $0.3 \times 10 \text{ N}\cdot\text{m}$ .

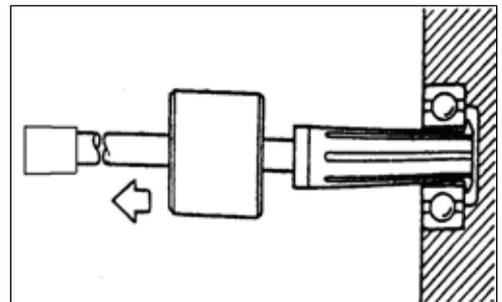


### 3.3.3 Replace the bearing

Unload the front wheel spindle and the sleeve.  
Spread grease on the bearing.  
Punch in the left bearing.  
Reload the sleeve.  
Punch the bearing in.

#### \* Note

- The bearing must be punched in horizontally.
- The oil seal must be punched outward.



### 3.3.4 Installation

Spread grease on the oil seal at the brake disc.

Spread grease on the gearing mesh and the active parts of speed indicator.

Install the brake disc after meshing between gears of speed indicator and the bearing claws.

#### Note

- If the bearing claws do not mesh, the claws may be distorted when screwing up the nuts.
- Rotate the wheel after mounting the wheel spindle to confirm whether the driven shaft of speed indicator rotates.

Mount the wheel spindle nuts and tighten them.

**\*Remark:** please refer to Page 41 for the disassembly and assembly diagram of QJ50-23 and QJ50-23A.

#### Torque force

Front wheel spindle      55-62 N·m

## 3.4 Steering handle

### 3.4.1 Disassembly

Disassemble the steering handle sleeve.

Disassemble the fixing bolts on brake rod and unload the bracket.

Disassemble the bracket of rear brake rod.

Remove the throttle handle and bolts.

Remove the throttle handle and the Throttle cable.

Remove the fixing bolts of handle and unload the handle.

### 3.4.2 Installation

Installation is conducted in the reverse order of disassembly.

#### Fixing bolt

Torque value : 5-9 N·m

## 3.5 Front fork

### 3.5.1 Disassembly

Disassemble the front mudguard.

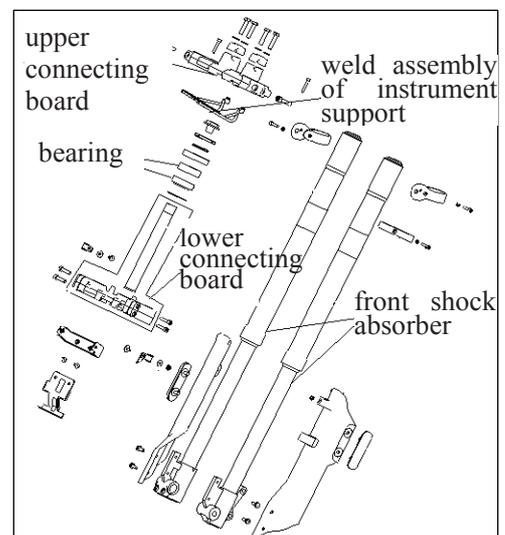
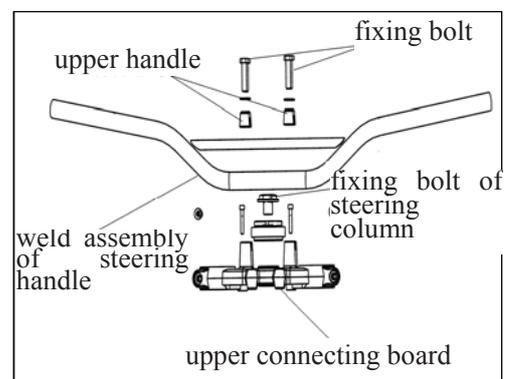
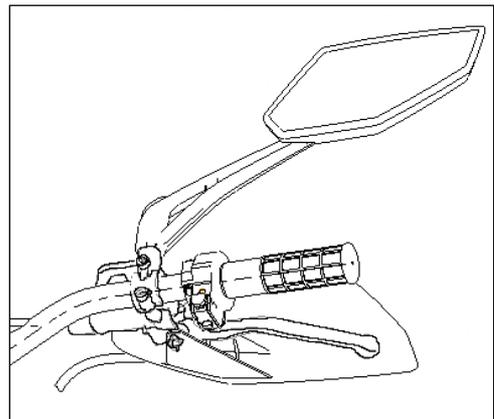
Disassemble the front wheel.

Disassemble the brake wire and speed indicator wire.

Disassemble the front shock absorber.

Disassemble the fixing nut.

Disassemble the steering handle.



Tools:

Fixing spanner of steering lever

Fixing nut spanner

**\*Note:**

•Clean the opening part of the body guard board with rags.

#### Specification of the front shock absorber

**Length: 862.5mm**

**Angle: 64°**

**Compression stroke: 200mm**

### 3.5.3 Installation

Tools:

Fixing nut spanner

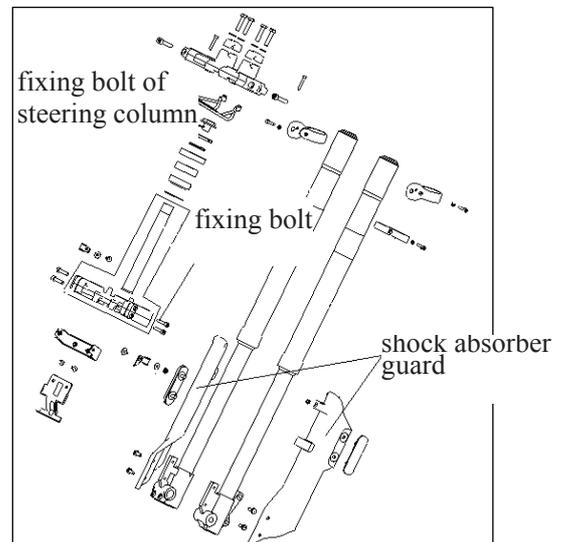
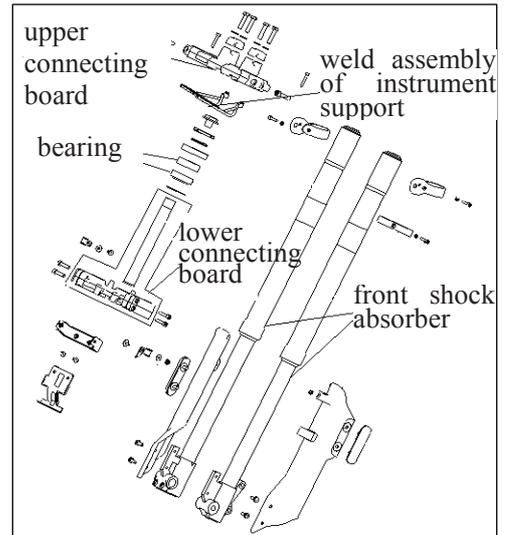
Rotate the front fork left and right to confirm there is no loosening.

Steps:

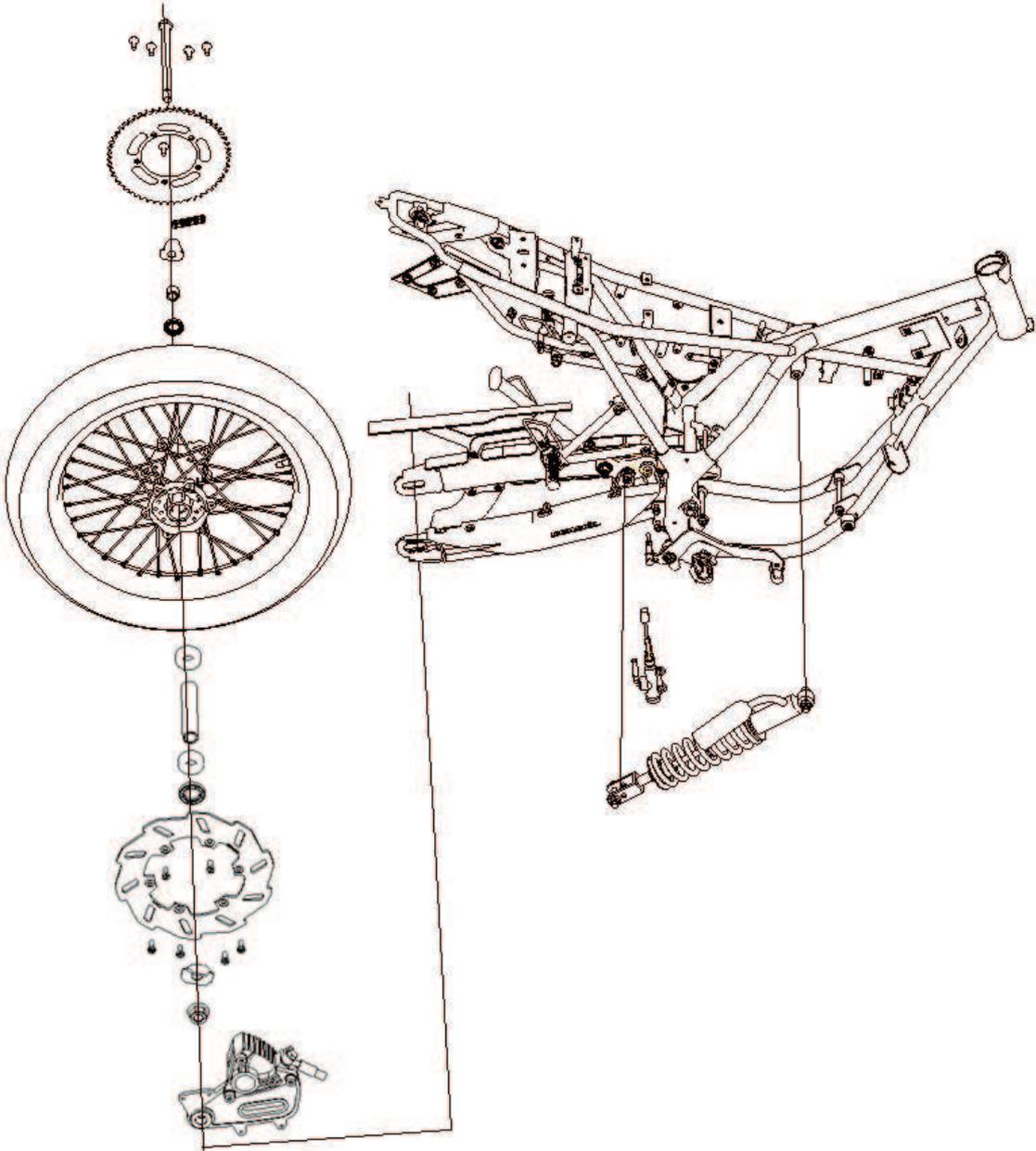
Install the steering handle.

Install the front shock absorber.

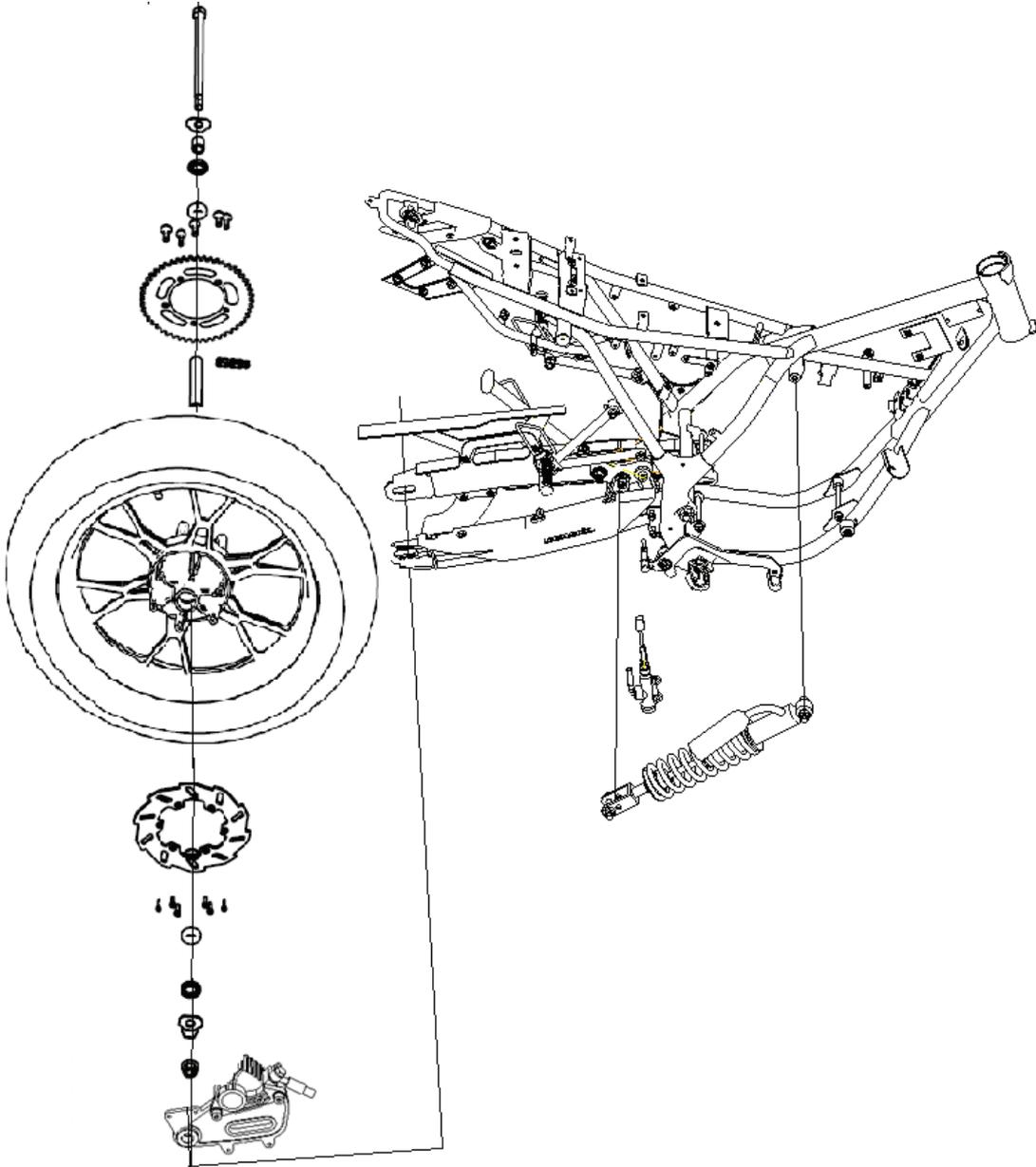
Install the front wheel.



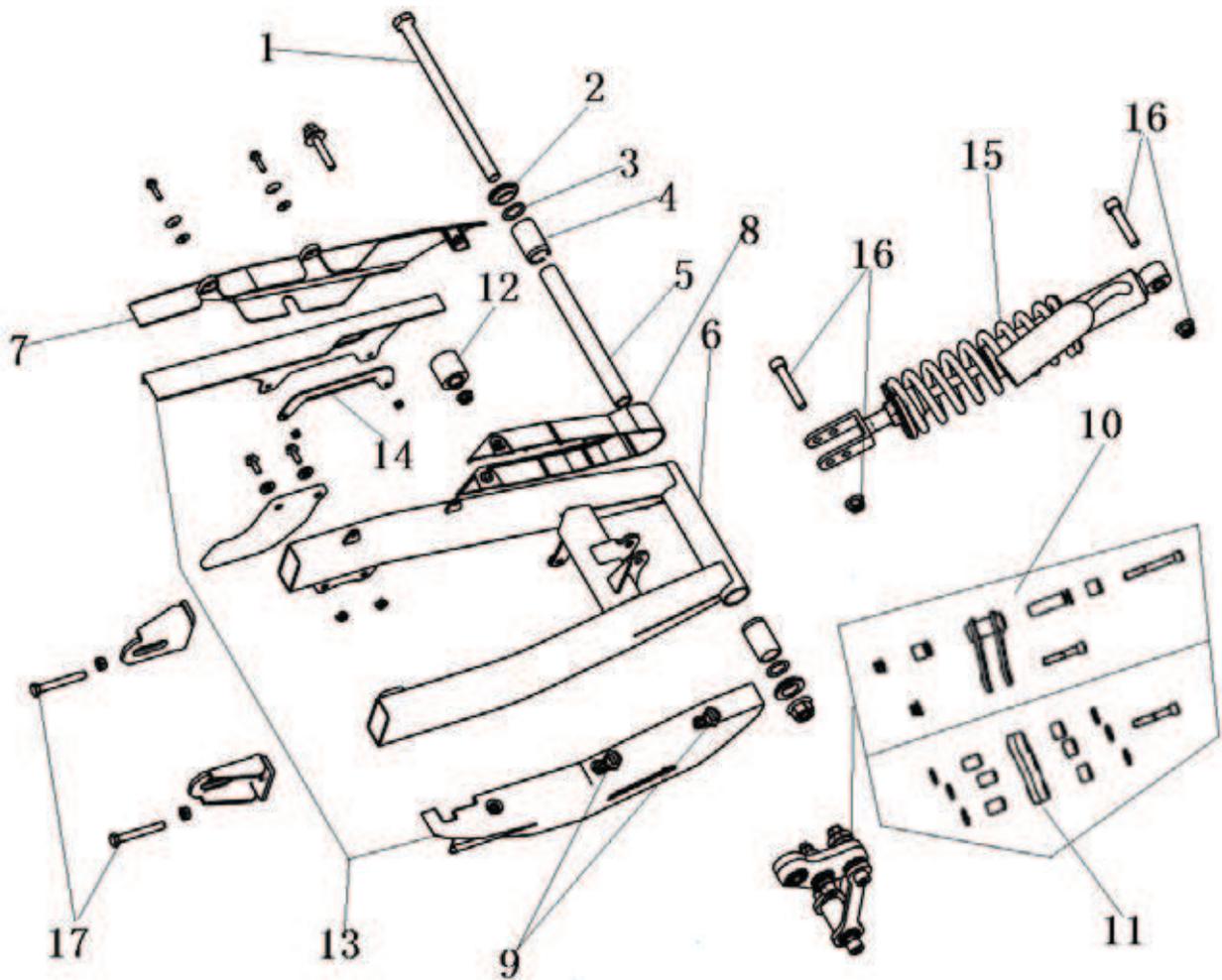
Rear wheel/rear suspension (QJ50-23)



Rear wheel/rear suspension (QJ50-23A)



## Rear shock absorber/rear rocker



1. Mounting shaft of rear rocker
2. Cover of rear rocker
3. O-shape sealing washer
4. Distance sleeve
5. Inner spindle sleeve
6. Weld assembly of rear rocker
7. Chain sleeve
8. Chain guard
9. Wire clamp of hydraulic brake
10. Connecting rod set of rear shock absorber
11. Rocker set of rear rocker
12. Chain tensioner sprocket
13. Decorative board of rear rocker
14. Weld assembly of reinforcing plate
15. Rear shock absorber set
16. Fixing bolt and nut
17. Adjusting bolt

## 4 Rear wheel/rear suspension

Preparation data -----4.1

Fault diagnosis -----4.2

Rear wheel -----4.3

Rear shock absorber/rear rocker -----4.4

Driving chain -----4.5

### 4.1 Preparation data

#### Matters needing attention in operation

There cannot be any oil stain stuck to the surface of the brake disc or brake pad.

#### Preparation reference

Item		Standard value (mm)	Allowable limit (mm)
Run-out of rear wheel	Vertical direction		2.0
	Transverse direction		2.0

#### Torque value

<b>Nut of Rear-wheel spindle</b>	<b>85-98 N·m</b>
<b>Topping nut of the rear shock absorber</b>	<b>37-44 N·m</b>
<b>Bottom nut of the rear shock absorber</b>	<b>37-44 N·m</b>

### 4.2 Fault diagnosis

#### 4.2.1 Run-out of rear wheel

The rim is distorted.

The tyre is not good.

#### 4.2.2 Shock absorber too soft

Elasticity fatigue of spring

## 4.3 Rear wheel

### 4.3.1 Disassembly

Loosen the nuts on rear-wheel spindle.  
Remove the nuts on the rear-wheel spindle and the chain.  
Unload the rear-wheel spindle.  
Unload the rear-wheel.

### 4.3.2 Inspection

Inspect the run-out of rear wheel.

**Allowable limit :**

Vertical direction : **2.0mm or above.**

Transverse direction : **2.0mm or above.**

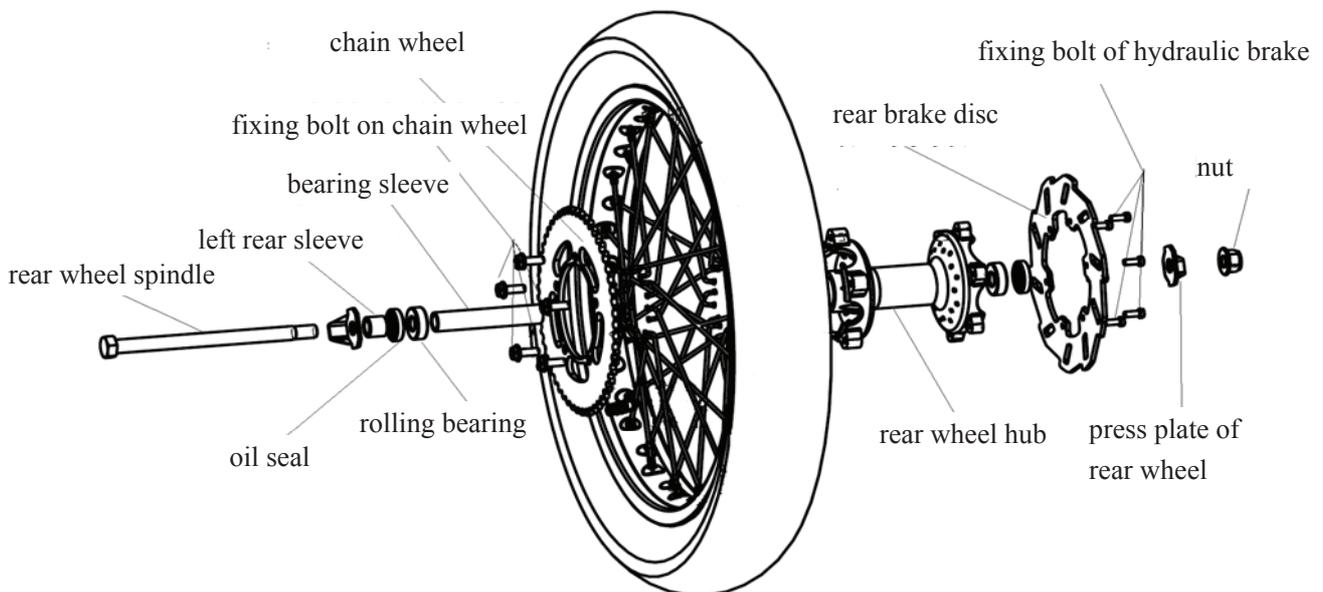
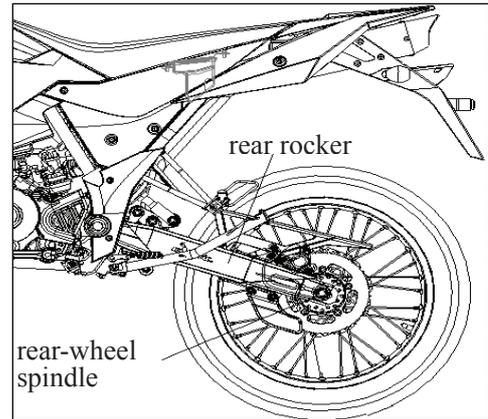
When the run-out of rear wheel exceeds the allowable limit, the bearing of final drive shaft will be loosened, resulting in bending of bearing shafts. Replace the bearing after inspection.

### 4.3.3 Installation

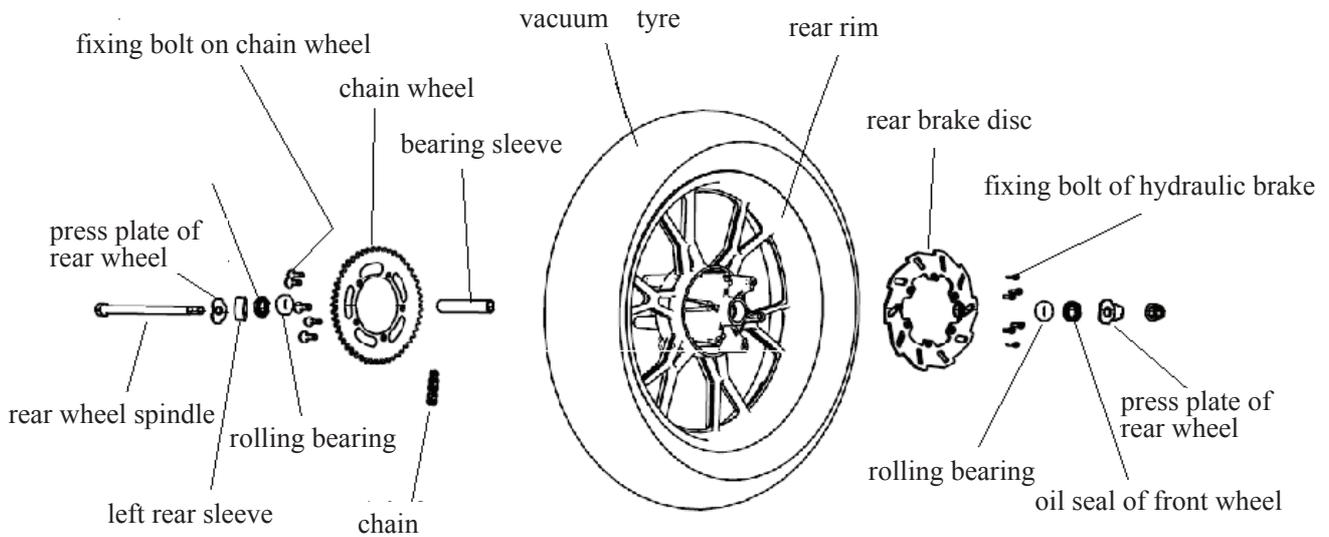
Install the rear wheel in the reverse order of disassembly and screw the spindle nut.

**Locknut of rear-wheel spindle**

**Torque value : 85-98 N·m**



## QJ50-23A rear wheel



### 4.4 Rear shock absorber/rear rocker

#### 4.4.1 Disassemble the rear shock absorber

- Disassemble the body guard.
- Disassemble the rear mudguard.
- Disassemble the tool box.
- Disassemble the air filter.
- Remove the fixing bolts of rear-wheel shock absorber.
- Unload the rear shock absorber.

#### 4.4.2 Installation

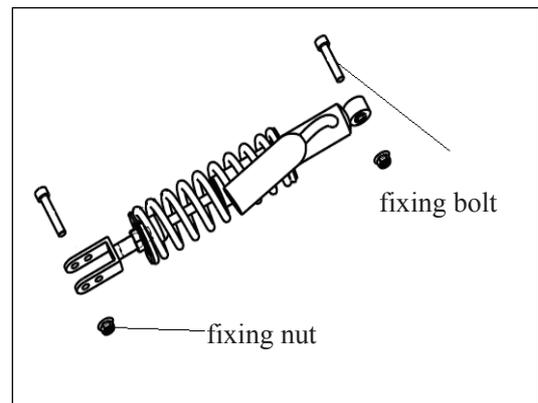
Install the rear shock absorber.

##### Specification of the rear shock absorber

- Length: 418mm**
- Angle: 42°**
- Compression stroke : 60mm**
- Outer diameter of spring : 62mm**

##### Torque value :

- Upper fixing bolt : 37-44 N·m**
- Lower fixing bolt : 37-44 N·m**



- Install the air filter and tool box.
- Install the rear mudguard.
- Install the body guard.

### 4.4.3 Disassemble the rear rocker

Disassemble the chain adjuster, rear-wheel spindle, rear wheel and rear shock absorber.

Remove nuts and rear rocker.

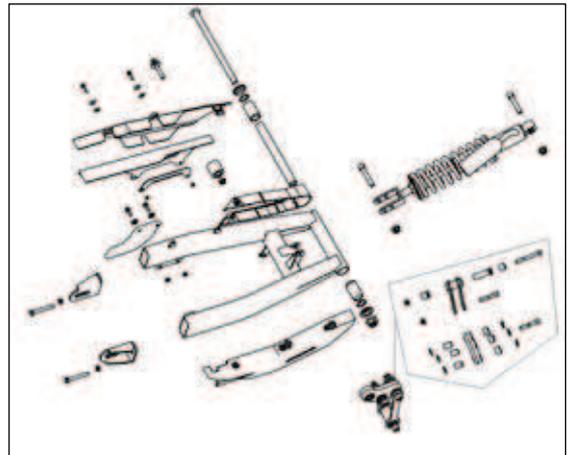
Disassemble the chain guard. Disassemble the rear rocker set and the sleeve of middle shaft.

### 4.4.4 Inspect the rear rocker

Inspect the rear swing shaft by rotating it on flat surface and if it is bent, please replace it.

**\*Note**

Never try to straighten the crooked shaft.



Clean the parts of rear swing shaft in solvent.

Inspect the components of the swing shaft sleeve and middle shaft sleeve. If they are damaged, please replace.

## 4.5 Driving chain

### 4.5.1. Disassembly

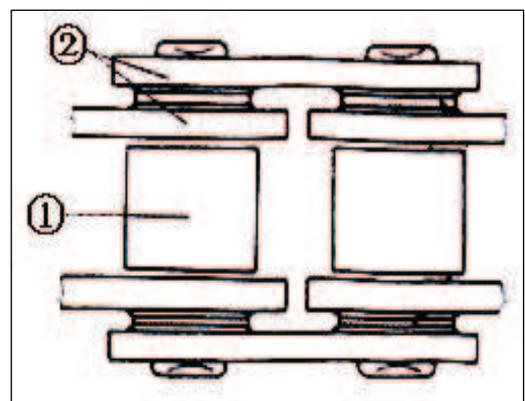
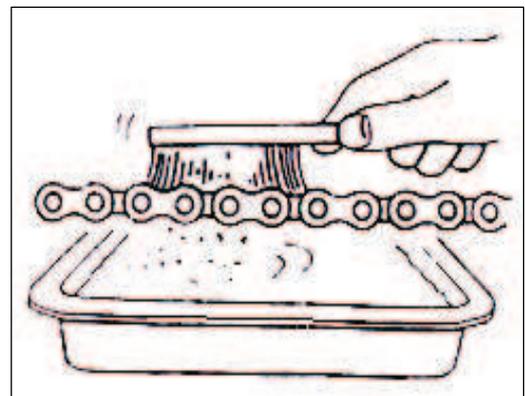
Place the motorcycle on flat ground and tightly fasten it.

Disassemble the shift lever rocker, left rear cover and driving wheel.

Disassemble the rear wheel, chain guard and driving chain.

### 4.5.2. Inspection

Clean the driving chain by dipping it in kerosene and rinse away dust as far as possible. Then take the chain out for air dry.



Inspect the rotor □ and side plate □. If they are damaged or worn out, replace the driving chain.

Lubricate the driving chain with lubricant available at

stores.

Inspect rigidity of the driving chain. If it is hard, please rinse, lubricate or replace it.

Inspect the driving wheel, driven wheel and if 1/4 of the gear teeth<sub>O,A</sub> are worn out, replace the chain wheels. And if gear teeth are bent, replace chain wheels too.



Inspect the wheel bearing. If the wheel hubcap has bearing clearance or imbalance in wheel rotation, then replace the bearing. Inspect whether the oil seal is worn out or damaged and replace it if necessary.

#### 4.5.3 Relax adjustment of the driving chain

Place the motorcycle on flat ground and maintain its upright position.

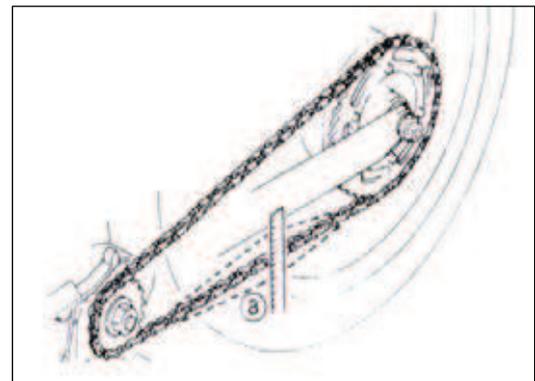
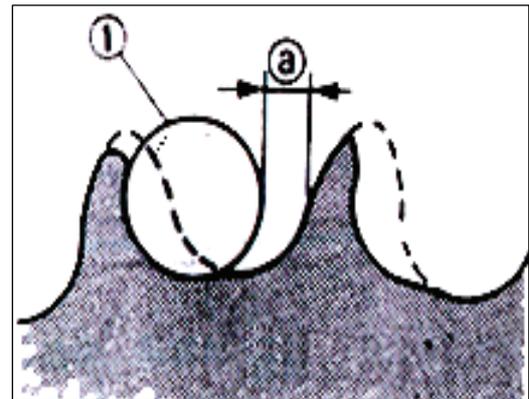
Inspect the relax degree of the driving chain<sub>O,a</sub>, the value of which should be 30 - 40 mm.

If the value is not in line with the specification, please make adjustment. Unscrew the axle nut .

Adjust the relax degree of the driving chain. The adjusting steps are:

Unscrew the locknut and screw or unscrew the adjusting device until the relax degree conforms to specification.

Screw it in, and the relax degree will increase; unscrew it, and the relax degree will decrease.



#### Note:

Coincide the circle number of each adjusting device so that the axle shaft can be correctly installed.

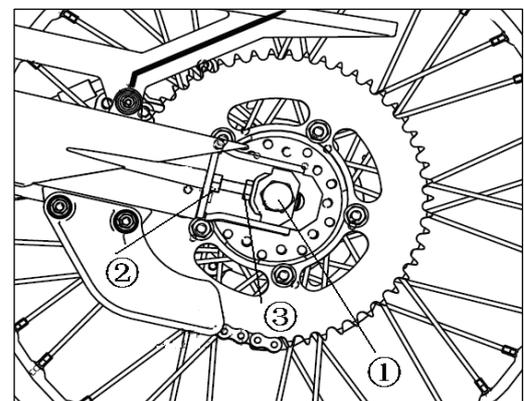
Finally screw up the lock nut.

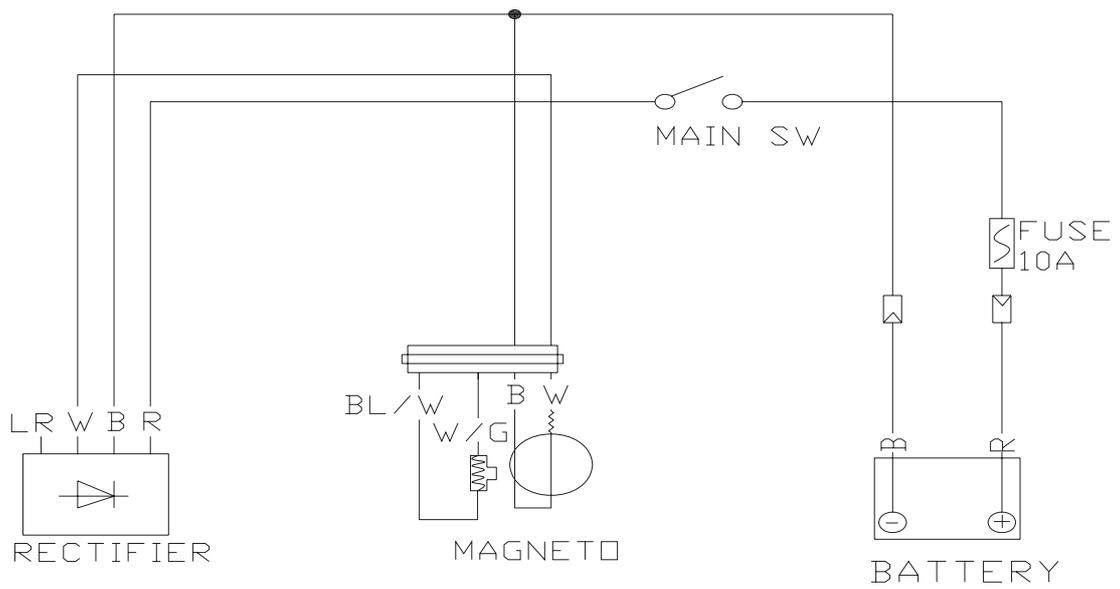
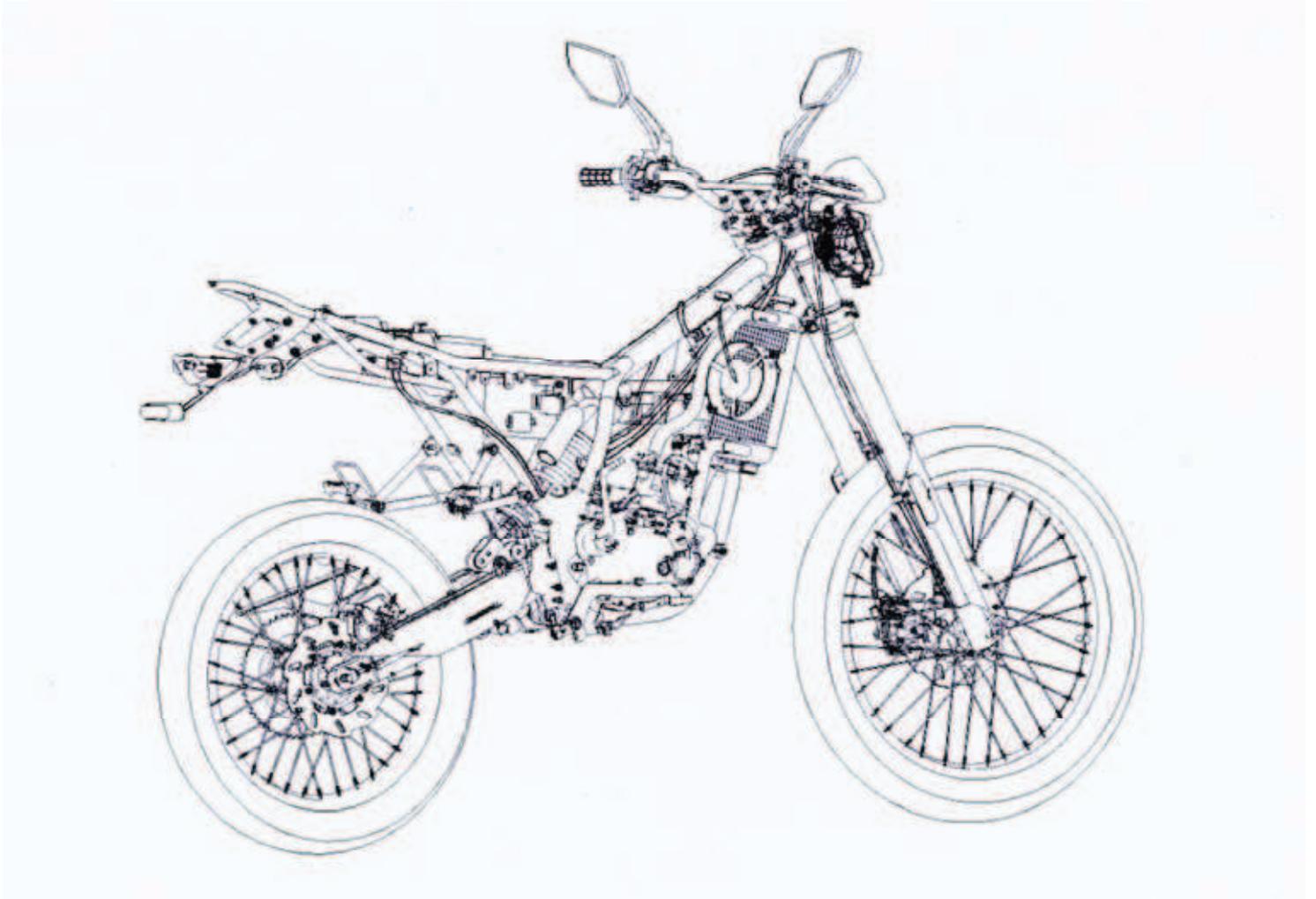
#### 4.5.4. Installation

Installation is conducted in the reverse order of disassembly.

Install the driving chain, housing, rear shock absorber (left), rear wheel and wheel cap of driving chain.

Adjust the relax degree of the driving chain as well as free stroke of the brake pedal; if the relax degree is too low, the engine and other important parts will be overloaded; maintain the relax degree within the specified value limit.





## 5 Battery/charging system

Preparation data -----5.1	Fault diagnosis -----5.2
Battery -----5.3	Charging system -----5.4
Voltage and current regulator -----5.5	Charge coil of the alternator ---5.6
Illuminating coil of alternator ---5.7	Disassembly of alternator -----5.8

### 5.1 Preparation data

#### Matters needing attention in operation

**\* Note**

1. The battery can be charged and discharged over again. If the battery is unused after discharge, the service life will shorten and the performance will degrade. Generally, performance of the battery used for 2 or 3 years will degrade. Such battery (capacity declined) may restore its voltage after charging but the voltage will drop off rapidly when loaded.
2. Surcharge of battery: generally surcharge can be observed from the battery proper. If the battery is cut short inside, no voltage can be tested at the terminal of the battery or the voltage is very low. Invalidation of the regulator: the battery will have too high voltage, which may shorten its service life.
3. Long rest of the battery will result in self discharge and the electric capacity will reduce, therefore, it must be charged every 3 months.
5. Inspect the charging system in accordance with the order stipulated in the fault diagnosis table.
6. If there is electric current passes through an electrical unit, do not disassemble the connector, otherwise, overtension will occur which can damage the electronic parts inside the voltage regulator. The main switch must be pushed to "off" before any operation.
7. Maintenance free (dry charged type) battery does not need inspection, replenish of electrolyte solution or distilled water.
8. Inspect the entire power load.
9. Emergency charging cannot be used except in contingency situations.
10. In emergency charging of the battery, it must be unloaded from the motorcycle before charging.
11. Please do not use liquid type battery when exchanging batteries.
12. A voltage meter must be used when inspecting the charging conditions.

## Preparation reference

Item		Specification
Battery	capacity/ type	
	Voltage (20□)	Fully charged
		Must be charge
Charging current		
Charging time		
Alternator	Capacity	
	Coil impedance value (20□)	
Voltage regulator	Type	
	Clamping voltage	Illumination limit
		Charge limit

### Torque value

<b>Rectifier bolt</b>	<b>5.0 N·m</b>
<b>Fixing bolt of high tension coil</b>	<b>9.0 N·m</b>

### Tools

Multiple-use fixing spanner  
Flywheel dissembler  
Testing instrument  
Avometer

## 5.2 Fault diagnosis

### No power supply

Over-discharge of battery  
Battery wire not connected  
Fuse blown  
Bad act of power switch

### Low voltage

Battery badly charged  
Poor contact  
Bad act of charging system  
Bad act of voltage and current regulator

### Discontinuous current

Poor wiring contact of battery  
Poor contact of discharge system  
Poor contact or short circuit in lighting system

### Bad act of charging system

Poor contact, short line or short circuit of wire terminal  
Bad act of voltage and current regulator  
Bad act of alternator

## 5.3 Battery

### 5.3.1 Disassembly of the battery

#### Unclose the pad.

Disassemble the left guard strip and then the air filter cover.  
Disassemble the negative wire and then the positive wire.  
Take out the battery.

#### Warning!

In the disassembly of positive pole the tools mustn't contact the frame because the short-circuit spark will ignite gasoline and damage the battery.

Installation is conducted in the reverse order of disassembly.

#### \* Note

In order to prevent short circuit, connect positive pole first before the negative pole.

Inspect the charging state (open-circuit voltage) .

Unclose the pad.

Unclose the top cap of the air filter and disassemble the connector wire of the battery.

Measure the voltage between battery terminals. **Fully charged: 13.1V**

**Undercharged : 12.3V (The battery does not work for an hour)**

#### \* Note

Inspection of charging state must be performed with a voltage meter.

### 5.3.2 Charge

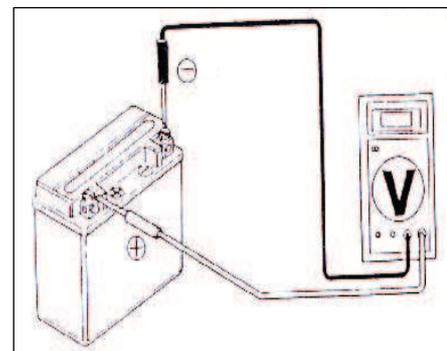
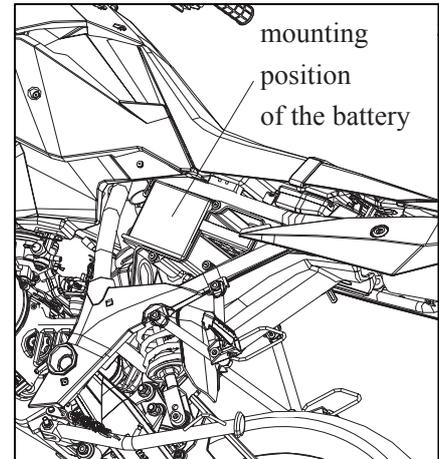
Connecting method:

Connecting the positive pole of charger and the positive pole of battery.

Connecting the negative pole of charger and the negative pole of battery.

#### Warning!

- Keep the battery away from ignition sources.
- Shut off the charger first once charge is started or finished so as to prevent explosion hazard caused by flashes at the interconnecting part.
- Charge operation must follow the marked time on the battery.



**\*Note**

- Fast charging cannot be used except in contingency situations.
- Do not measure the voltage until 30 minutes after the charge.

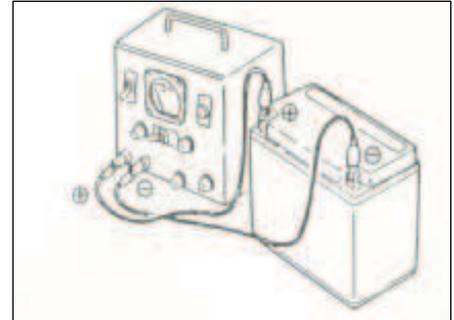
**Charging current : Standard: 0.4A**

**Fast: 4.0A**

**Charging time : Standard: 10-15h**

**Fast: 30m**

**Charge completed: open-circuit voltage: 12.8V or above**



## 5.4 Charging system

### 5.4.1 Short circuit test

Remove the ground wire off the battery, connect the voltmeter between the battery negative pole and ground wire with the switch at OFF and inspect whether there is short circuit.

**\*Note**

Connect the positive pole of avometer with the negative pole of battery.

If there is any disorder, please inspect whether the main switch and main wire are in short circuit condition.

### 5.4.2 Inspect the charging state

Test with an avometer when the battery is fully charged.

Mount the fully charged battery after the engine warms up.

Connect a voltage meter between the battery terminals.

Connect an amperemeter at the position where two terminals are disassembled to the main fuse.

Start the engine and measure the clamping voltage and current when the rotation speed gradually increases.

**Clamping voltage/rotation speed : 14-15V (5.000rpm)**

If the clamping voltage exceeds the specified value range, inspect the voltage regulator.

Inspect the clamping voltage of the lighting system.

**\*Note**

Set the avometer at the alternating voltage position.

**Clamping voltage : 13.1 (+/-) 0.5V/5.000rpm**

If the clamping voltage exceeds the specified value range, inspect the voltage and current regulator.

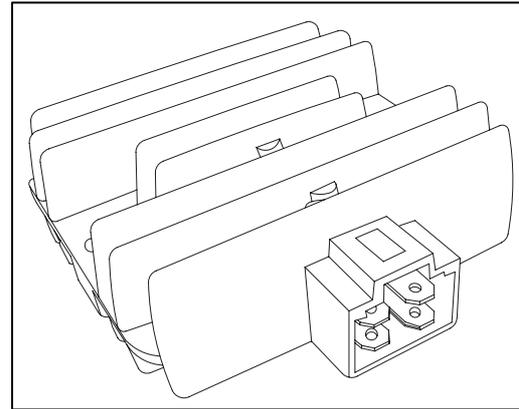
## 5.5 Voltage and current regulator

### 5.5.1 Inspect the main wire circuit

Unload the body guard, pad and oil tank.

Disassemble the 4P plug of the voltage and current regulator, inspect the conduction between main wire terminals with the following methods.

Item (wire color)	Judging method
between the battery (red) and body ground	there being battery voltage
between the ground wire (black) and body ground	there being wire
between the illuminating line (pink) and body ground (inspect the resistor plug and plug of the side auto-starter when the lighting switch is pushed to OFF position)	there being resistance in alternator coil
between the charge coil (white) and body ground	there being resistance in alternator coil



avometer	white (A)	red (L)	pink (B)	black (E)
Positive pole				
Negative pole	Unit: KΩ			
white (A)		13	6.5	8
red (L)	3		1	0.7
pink (B)	2	4		0
black (E)	2	5	1.2	

### 5.5.2 Inspect the voltage and current regulator

If the main wire terminal proves fine after inspection, inspect whether the current regulator plug is in poor contact and measure the resistance value between the terminals of the voltage and current regulator.

#### \*Note

- The metal area of the avometer prod mustn't be touched by fingers during inspection.
- Inspect with an avometer. Different avometers will give different resistance values, and the inspection result is incorrect.

If the resistance value between terminals is abnormal, the voltage regulator should be replaced.

## 5.6 Charge coil of the alternator

#### \*Note

Inspection of the charge coil of alternator may be conducted on the engine.

### Inspection

Disassemble the 4P joint of alternator.

Measure the resistance value between the white coil of alternator and the motorcycle frame with an avometer.

**Standard value : 0.6-1Ω (20□)**

If the measured value exceeds the standard value, replace the alternator coil.

## 5.7 Illuminating coil of alternator

### \*Note

Inspection of the illuminating coil of alternator can be conducted on the engine.

## Inspection

Disassemble the 4P joint of alternator.

Measure the resistance value between the white coil of alternator and the body ground with an avometer.

**Standard value : 0.6-1Ω (20□)**

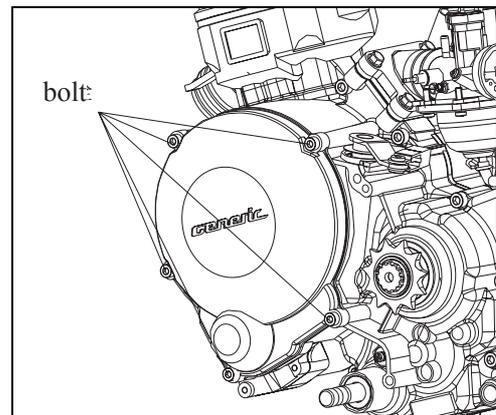
If the measured value exceeds the standard value, replace the alternator coil.

## 5.8 Disassembly of alternator

### 5.8.1 Disassembly

Disassemble the fixing bolts.

Unload the left cover.



Fix the flywheel with a multiple use fixing spanner.

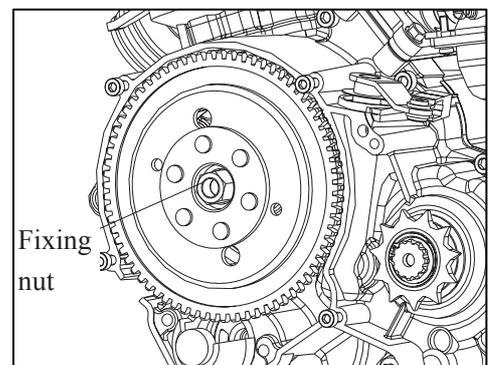
Disassemble the flywheel fixing nut.

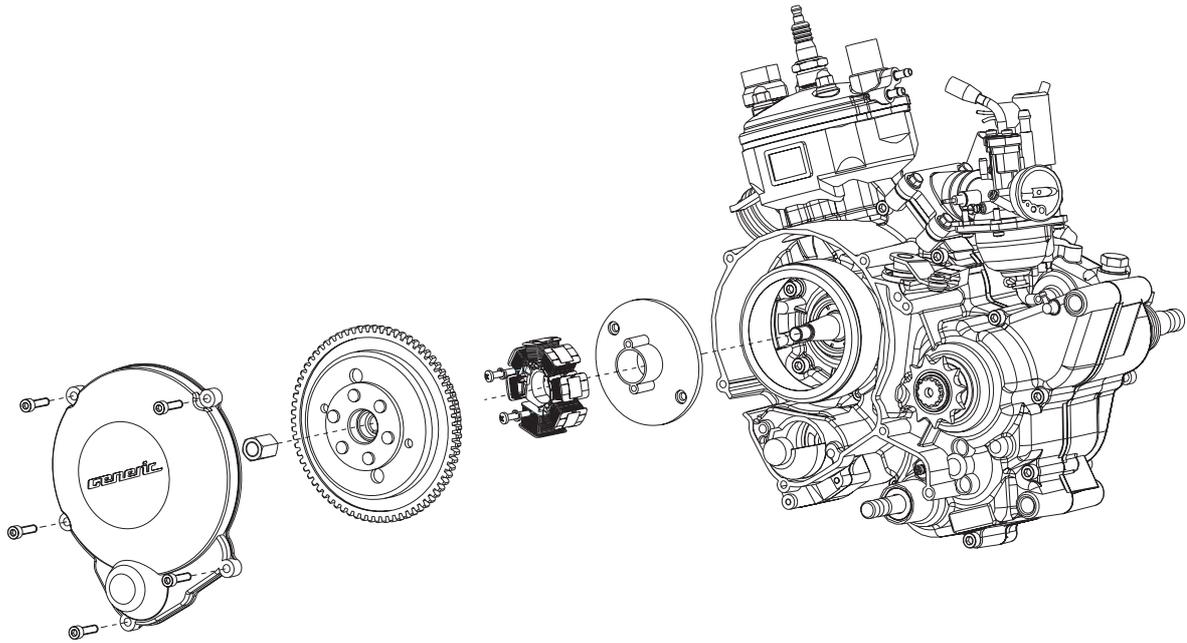
Remove the flywheel with a flywheel puller.

Disassemble the retaining key.

Disassemble the lead connector of the alternator.

Disassemble the alternator stator.





## 5.8.2 Installation

Install the alternator stator to the engine case.  
Connect the lead connector of the alternator.

Clean the tapered part of the crankshaft and flywheel.  
Install the retaining key of flywheel in the key groove on the crankshaft and confirm.  
Align the flywheel groove with the retaining key of the shaft.

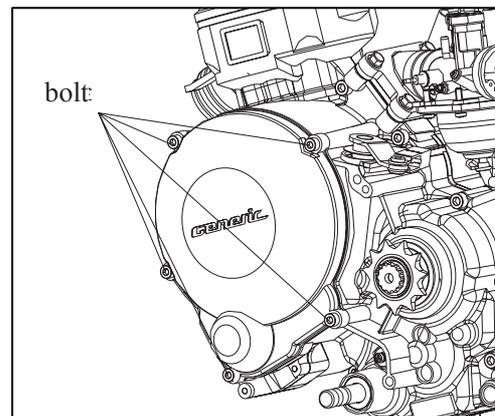
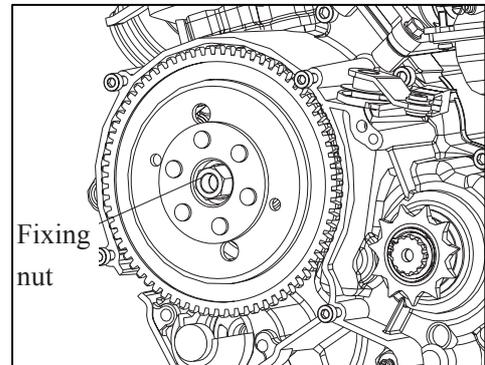
### \*Note

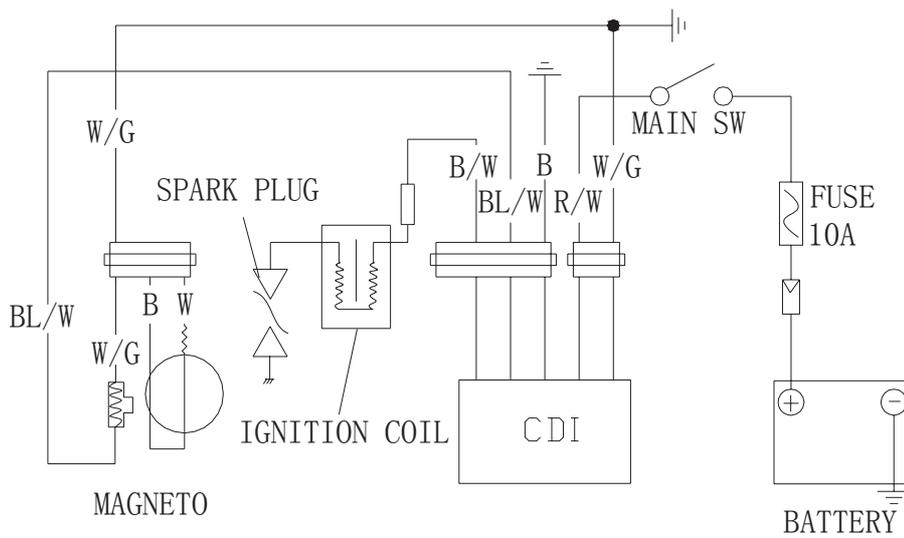
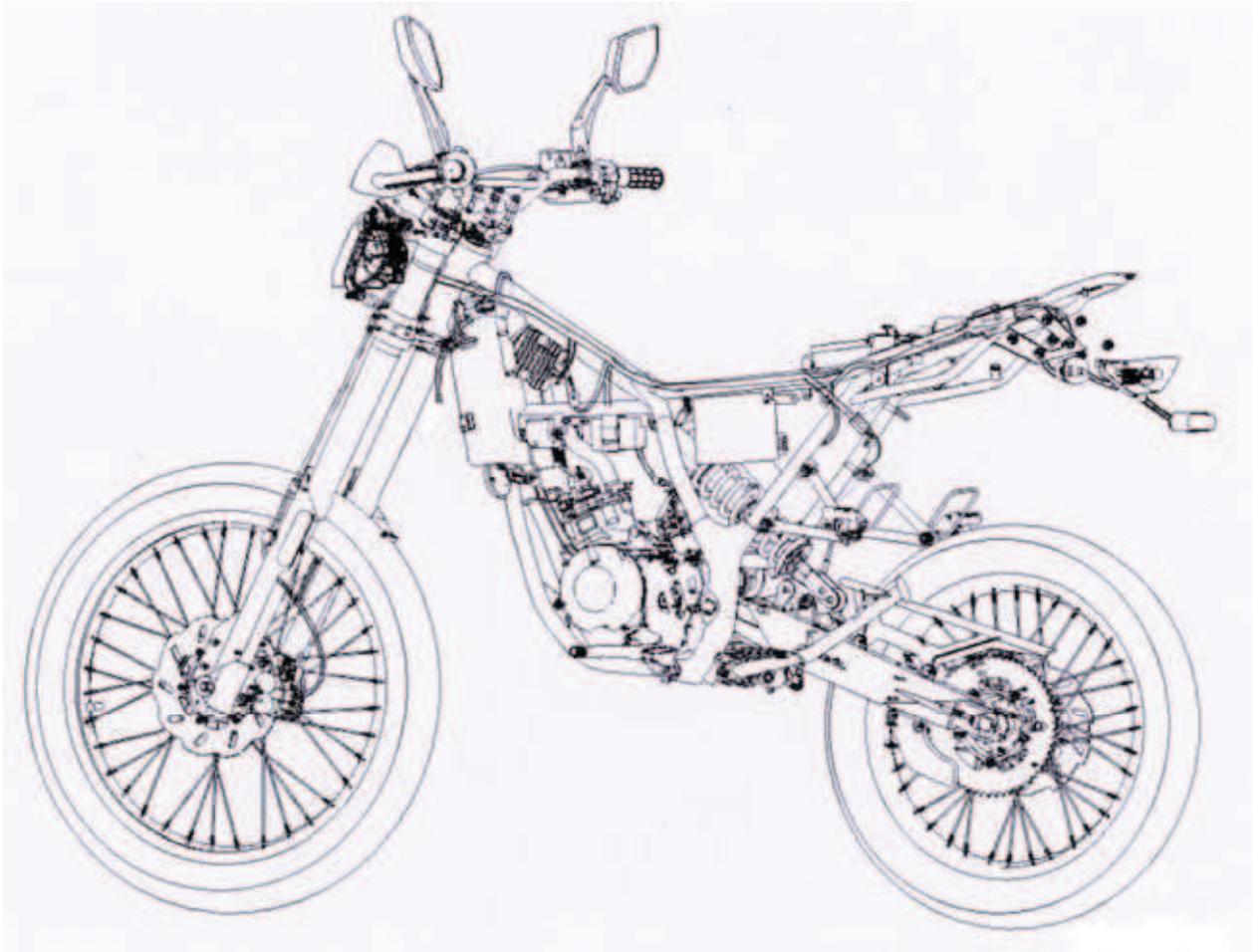
Confirm no bolts are on the inner face of the flywheel because of magnetism of the inner face.

Fix the flywheel with a multiple use fixing spanner and screw the fixing nut.

**Torque value : 9.0 N·m**

Install the left body guard.





Ignition system

## 6 Ignition system

Preparation data -----	6.1	Ignition coil -----	6.5
Fault diagnosis -----	6.2	Trigger -----	6.6
Ignition system inspection -----	6.3	Charge coil -----	6.7
CDI group -----	6.4		

### 6.1 Preparation data

#### Matters needing attention in operation

1. Inspect the ignition system in accordance with the order stipulated in the fault diagnosis table.
2. The ignition system is an electronic auto-advance device integrated in the CDI group, therefore the ignition time needs no adjustment.
3. Inspect the ignition system in accordance with the order stipulated in the fault diagnosis table.
4. Take particular care in disassembly that the CDI group of ignition system should not fall off and drop down or should not be stricken with might (which is the main cause of fault)
5. Bad socket contact is the main cause of the ignition system fault, so inspect whether the joint of each part is in poor contact or not.
6. Inspect whether the spark plug is utilized at a proper thermal value. Improper spark plug may lead to unsmooth operation of engine or burn-out of the spark plug.
7. Inspection in the chapter is based on explanation of peak voltage and the judgment whether the resistance value of ignition coil is OK or not according to records after the inspection.
8. Inspection of the main switch should be performed in accordance with the conduction table.
9. The disassembly of the alternator and stator should be conducted in accordance with the disassembly explanation.

#### Preparation reference

Item		Standard value	
Recommended spark plug	Standard	C5HSA(NGK)	
	Hard plug	C6HSA(NGK)	
	Soft plug	C7HSA(NGK)	
Spark plug gap		0.5-0.7mm	
resistance value of ignition coil (20□)	Primary coil		0.4Ω (+/-) 10%
	Secondary coil	with plug cover	8-11KΩ
		without plug cover	4.5-5.5KΩ
resistance value of the trigger (20□)		100-200Ω	
measured peak voltage of ignition coil at one go		95-400V	
Trigger voltage		1.7V or above	

#### Tools

Accessory of peak voltage meter  
Avometer

## 6.2 Fault diagnosis

### No flashover in spark plug

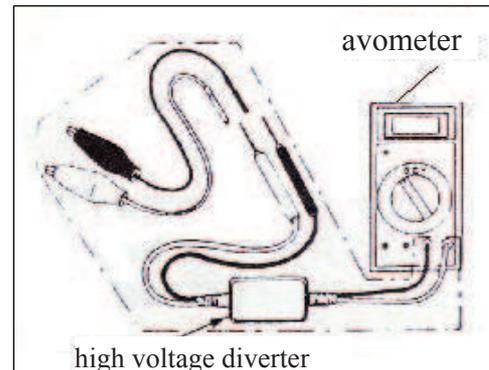
	Abnormal circumstance	Cause of badness (confirm in order from 1)
ignition coil	high voltage too low	<input type="checkbox"/> The interior resistance is too low and test it with a designated tester. <input type="checkbox"/> The cranking speed is too low. <input type="checkbox"/> The tester is disturbed (if the voltage measured for several times is above standard, then the value is normal) . <input type="checkbox"/> poor contact of ignition system wire <input type="checkbox"/> bad act of the ignition coil <input type="checkbox"/> bad act of the charge coil ( peak voltage test)
	no high voltage , off-and-on high voltage	<input type="checkbox"/> connecting error in tester <input type="checkbox"/> bad act of the main switch <input type="checkbox"/> poor contact of CDI joint <input type="checkbox"/> short circuit or poor contact of CDI ground wire <input type="checkbox"/> bad act of charge coil (peak voltage test) <input type="checkbox"/> bad act of trigger (peak voltage test). <input type="checkbox"/> bad act of connector for high voltage wire <input type="checkbox"/> bad act of CDI group (when item□-□ is abnormal or when there is no spark in the sparkplug)
side voltage	Normal high voltage, no spark	<input type="checkbox"/> bad act of spark plug or power leak in secondary coil <input type="checkbox"/> bad act of ignition coil
	no high voltage	<input type="checkbox"/> The interior resistance is too low and test it with a designated tester. <input type="checkbox"/> The cranking speed is too low. <input type="checkbox"/> The tester is disturbed (if the voltage measured for several times is above standard, then the value is normal) . <input type="checkbox"/> bad act of the charge coil ( no abnormality in Item □-□)
charge coil	no high voltage , off-and-on high voltage	<input type="checkbox"/> bad act of the ignition coil <input type="checkbox"/> bad act of the charge coil
	high voltage too low	<input type="checkbox"/> The interior resistance is too low and test it with a designated tester. <input type="checkbox"/> The cranking speed is too low. <input type="checkbox"/> The tester is disturbed (if the voltage measured for several times is above standard, then the value is normal) . <input type="checkbox"/> bad act of the charge coil ( no abnormality in Item □-□)
trigger	no high voltage , off-and-on high voltage	<input type="checkbox"/> bad act of the ignition coil <input type="checkbox"/> bad act of the trigger

## 6.3 Ignition system inspection

### \*Note

- When there is no spark in the spark plug, inspect whether the wire or part is loosen or in poor contact and confirm whether each voltage value is normal.
- Since there are a great many of avometer brands with different interior resistance, the values tested will differ accordingly.

Connect the avometer with a high voltage diverter or an electric meter with input resistance above  $10M\Omega$ 10CV.



### 6.3.1 Primary voltage of ignition coil

Replace the spark plug with a good one and connect it with the engine. \*Note

- Correctly connect each circuit before the test.
- Normal compression pressure of the air cylinder is achieved in the test when the spark plug is installed on the cylinder head.

Remove the middle cover.

Connect the wire of ignition coil and connect the primary coil terminal (black / white) with the diverter at the Ground. Press the startup electrical machinery or step on the actuating lever to measure the primary peak voltage of the ignition coil. **Minimum voltage: 95V or above.**

### \*Note

- The metal area of the avometer prod mustn't be touched by fingers to prevent electroshock.

### 6.3.2 Charge coil

### \*Note

- Install the spark plug on the air cylinder head and inspect with normal compression pressure.

Remove the 4P and 2P joint of CDI group, and connect a High Voltage diverter between the charge coil of the 2P joint (red / white terminal) to the wire and the 4P joint (black terminal). Press the startup motor or step on the actuating lever to measure the peak voltage of the charge coil.

Connecting method: positive pole connected with red / white line, and negative pole connected with black line.

**Minimum voltage: 95V or above.**

**\*Note**

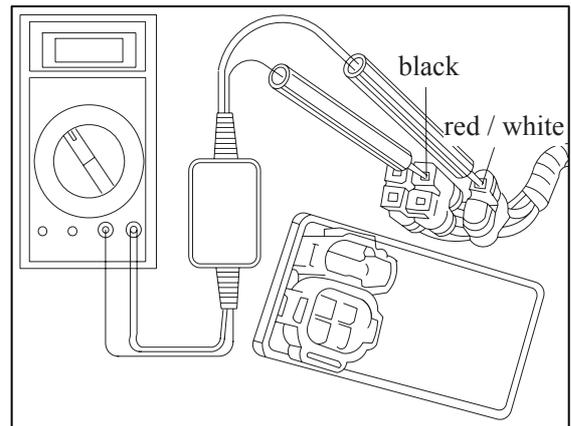
The metal area of the avometer prod mustn't be touched by fingers to prevent electroshock.

If the peak voltage of the CDI terminal has an abnormal value, disassemble the alternator connector.

Connect the charge coil (red / white) with the diverter.

•If the tested voltage of CDI is abnormal whereas the tested voltage at the alternator is normal, poor contact or broken line can be determined.

•If both are abnormal, bad act of charge coil can be determined. Please refer to inspection of the charge coil table.

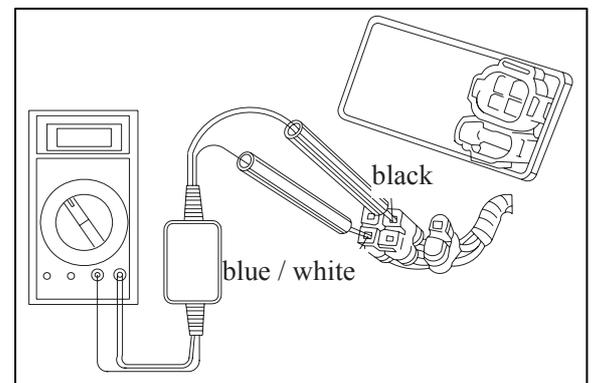


### 6.3.3 Trigger

**\*Note**

Install the spark plug on the air cylinder head and inspect with normal compression pressure.

Remove the 4P joint of CDI group, and connect a peak voltage diverter between the trigger of 4P joint (blue/white terminal) to the wire and the 4P joint (black terminal) . Press the startup electrical machinery or step on the actuating lever to measure the peak voltage of the trigger.



Connecting method: positive pole connected with blue/white line, and negative pole connected with black line.

**Minimum voltage: 1.7V or above.**

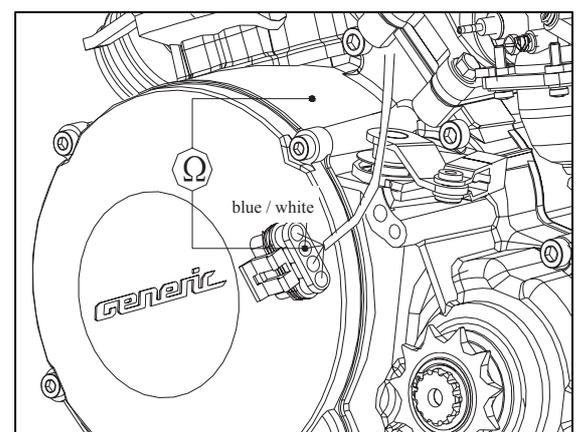
**\*Note**

The metal area of the avometer prod mustn't be touched by fingers to prevent electroshock.

If the tested peak voltage at CDI terminal is abnormal, disassemble the alternator joint.

Connect the trigger (blue / white) with the diverter. •If the tested voltage of CDI is abnormal whereas the tested voltage at the alternator is normal, poor contact or broken line can be determined.

•If both are abnormal, bad act of trigger can be determined. Please refer to inspection of the charge coil table.



## 6.4 CDI group

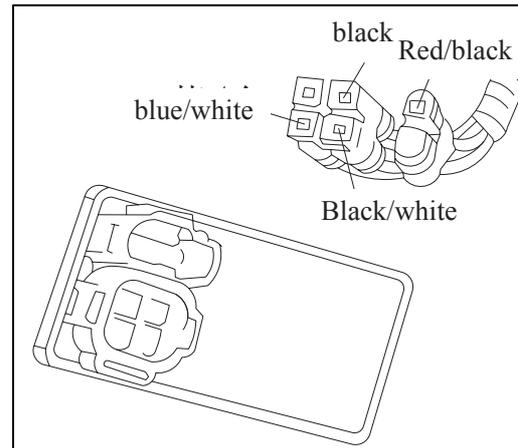
### 6.4.1 System inspection

System inspection.

Disassemble the CDI group and inspect the parts related with the ignition system at the wire terminal.

### 6.4.2 Inspection

Disassemble the CDI group and inspect whether the joint is loosen or eroded.



Inspection item	Testing terminal	Standard value (20℃)
Main switch	red—red/white	Conducted when main switch at "OFF"
Trigger	red--Ground	100-200Ω
primary ignition coil	black/white—black	0.4Ω (+/-) 10%
Secondary ignition coil	black—spark plug cover (spark plug not included)	4.5-5.5KΩ (+/-) 10%

## 6.5 Ignition coil

### 6.5.1 Disassembly

Disassemble the body cover.

Disassemble the spark plug cover.

Disassemble the primary ignition coil.

Disassemble the ignition coil fixing bolts and unload the ignition coil.

Installation is conducted in the reverse order of disassembly.

#### \*Note

The primary coil is installed in accordance with the black/ white wire.

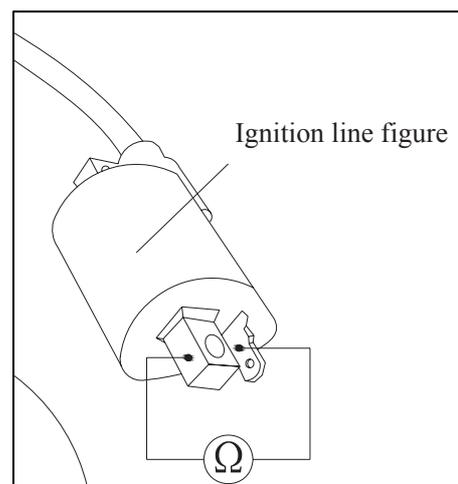
### 6.5.2 Inspect the primary coil

Measure the resistance between terminals of primary coil.

**Standard value : 0.4Ω (+/-) 10% (20℃)**

If the resistance value is within standard value range, the primary coil is good.

The resistance value "∞" stands for broken line in the coil, so replace with a new product.



### 6.5.3 Secondary coil

Measure the resistance value between the wire of spark plug cover (with the spark plug) and the terminal.

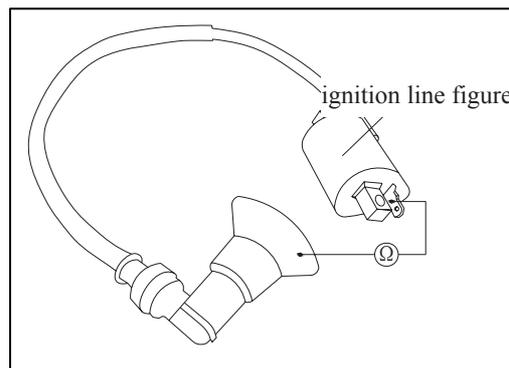
**Standard value : 8-11K $\Omega$  (20□)**

If the resistance value is within standard value range, the primary coil is good.

The resistance value " $\infty$ " stands for broken line in the coil.

Remove the spark plug cover and measure the resistance value between the primary wire of ignition coil and the negative terminal.

**Standard value : 4.5-5.5K $\Omega$  (+/-) 10% (20□)**



## 6.6 Trigger

### \*Note

Inspection of the trigger can be conducted on the engine.

### Inspection

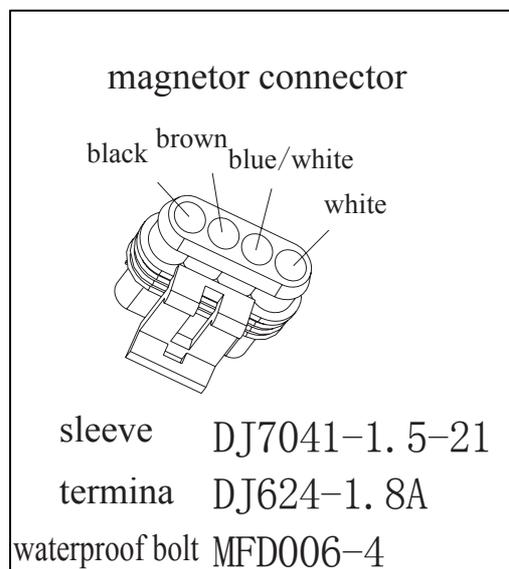
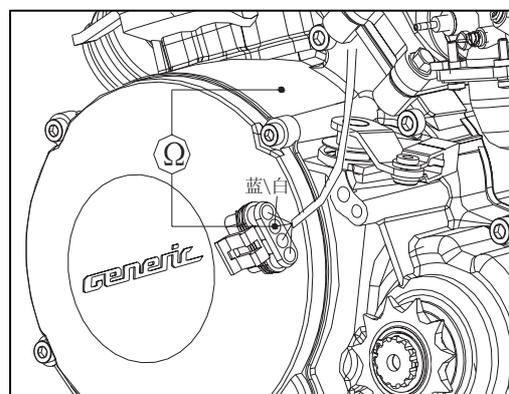
Disassemble the body guard.

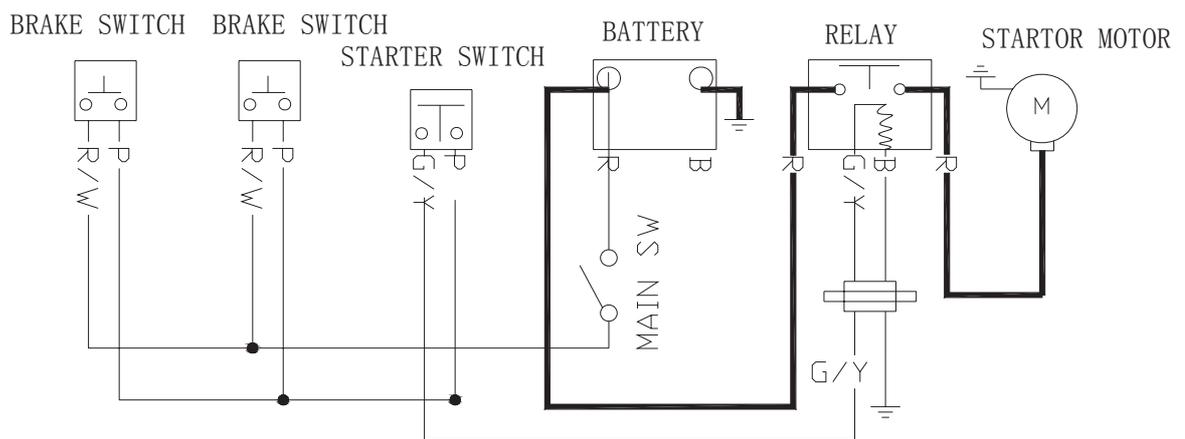
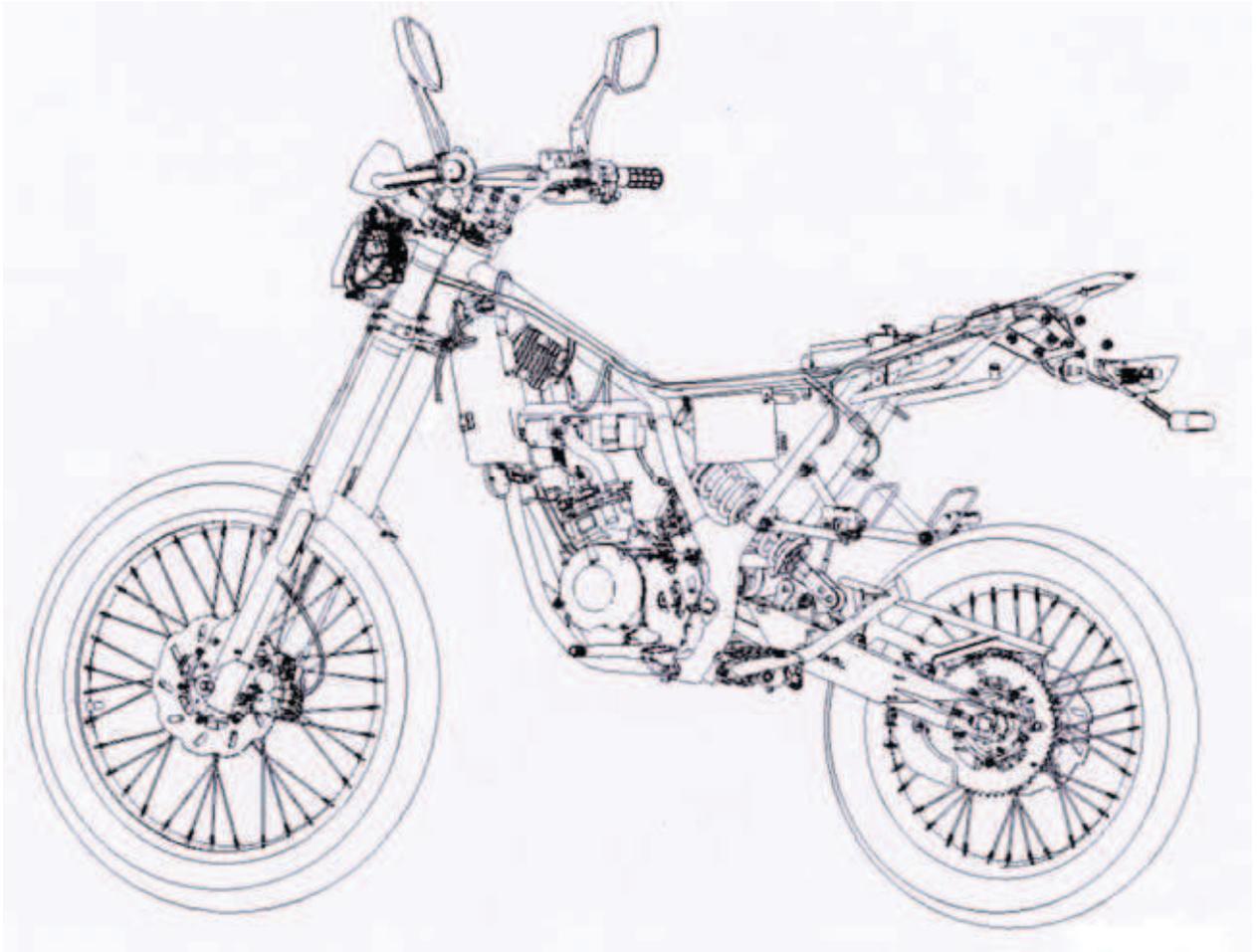
Disassemble the lead connector of the trigger.

Measure the resistance value between the blue/white terminal at the engine side and the body ground.

**Standard value : 100-200 $\Omega$  (20□)**

If the measured value exceeds the standard value, replace the alternator.





startup diagram

## 7 Startup system

Preparation data -----7.1

Fault diagnosis -----7.2

Start electrical machinery -----7.3

Start relay -----7.4

### 7.1 Preparation data

#### Matters needing attention in operation

Disassembly of the start electrical machinery may be conducted on the engine.  
Please refer to disassembly operation in disassembly.

#### Preparation reference

Item	Standard value	Allowable limit
Brush length of startup motor	12.5mm	8.5mm
Liner of startup idler shaft		8.3mm
Outer diameter of startup idler shaft		7.94mm

#### Torque value

**Bolt in the clutch cover of the startup electrical machinery**      **12 N·m**  
**Fixing nut in the clutch of the startup electrical machinery**      **95 N·m**

#### Tools

Fixing nut spanner

Multiple-use fixing spanner

## 7.2 Fault diagnosis

Unable to startup

- Fuse blown
- Power shortage in battery
- Bad acts of main switch
- Bad act of startup clutch
- Bad act of brake switch
- Bad act of start relay
- Poor contact of connecting wire
- Bad act of startup electrical machinery

Rotating force of start machinery too weak

- Power shortage in battery
- Poor contact of connecting wire
- Gear of the startup machinery jammed with foreign body

No revolution in the RE Rotary Engine

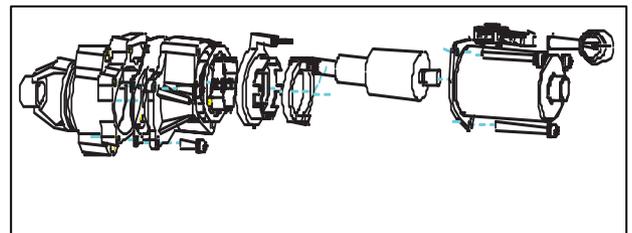
- Bad act of startup clutch
- Reverse revolution of startup electrical machinery
- Power shortage in battery

## 7.3 Start electric machinery

### 7.3.1 Disassembly

#### \*Note

The main switch must be switched to "OFF" before disassembly of the startup electrical machinery. Dismantle the bonding strip of the battery and turn on the power supply to see whether the startup electrical machinery will run so as to confirm security.



First take down the wire clamp of the startup electrical machinery  
Disassemble the fixing bolts on the startup electrical machinery and unload the electrical machinery.

Roll up the rubber waterproof jacket and disassemble the joint of startup electrical machinery.

### 7.3.2 Dismantling

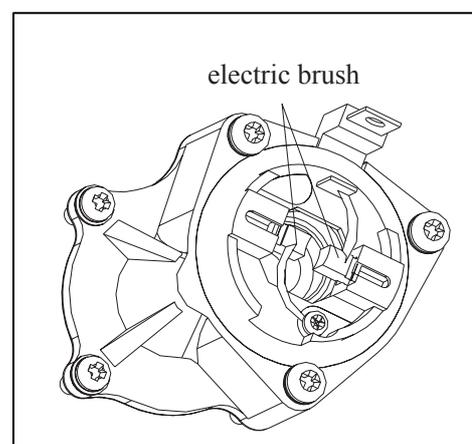
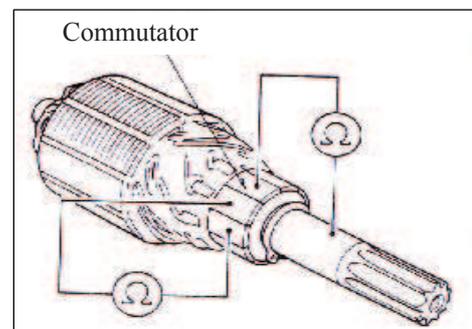
Disassemble the housing bolts, front cover, motor housing and others.

### 7.3.3 Inspection

Inspect other spare parts.

If uneven wear, damage or burning is detected on the surface, replace it with a new one.

The adhesive metal powder between commuator surfaces must be cleaned away.



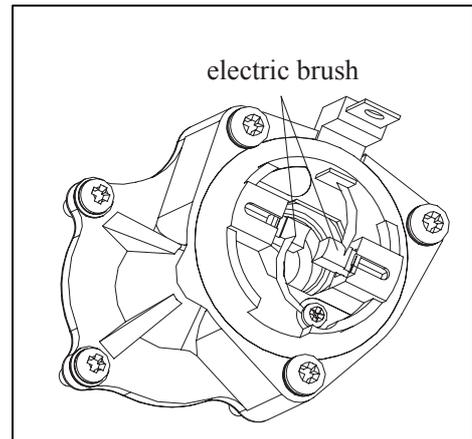
Inspect conduction of contact surfaces between other assemblies.  
Confirm the armature shafts between each surface of the commutator cannot be connected.

Inspect conduction of the housing of startup Confirm the terminal and housing of the startup electric machinery cannot be connected.

Confirm the terminal and housing of the startup electric machinery cannot be connected.

Inspect conduction of the terminal and electric brush. If there is disorder, replace is with a new one.

Inspect conduction of the brush holder. If there is conduction, replace is with a new one. Measure the length of the electric brush.



**Allowable limit: 8.5mm(under the value, replace it)**

Inspect whether the needle shaft in the front cover is flexible in rotation and whether it is loosen when pressed in.

If there is disorder, replace is with a new one.

Inspect whether the oil seal is worn out or damaged.

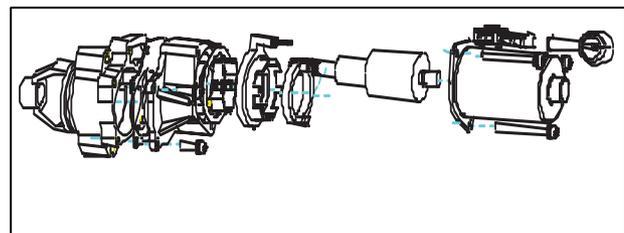
### 7.3.4 Assembly

Oil seal in the front cover and coating of grease

Mount the electric brush on the brush holder.

Spread grease on the active parts of the electric brush ends.

Press each electric brush into the holder and mount the front cover.



**\*Note**

- Take particular care that the contact surface of the electric brush and armature can not be damaged.
- Take care in case the mounting shaft of the armature should damage the oil seal lip.

Mount the new gasket ring to the front cover.

Install the motor housing by aligning its bolt holes with those in the front cover.

Screw the housing bolts.

**\*Note**

When the housing and front cover is assembled together, the armature is easy to pull up with a magnet attracting the front cover and can be put together with slight press down by hand.

### 7.3.5 Installation

Mount the wire of the startup electrical machinery and confirm the soldering cup is installed.

Then install the startup electrical machinery.

Install the wire clamp of the rear brake.

## 7.4 Start relay

### 7.4.1 Actuation inspection

Disassemble the body guard.

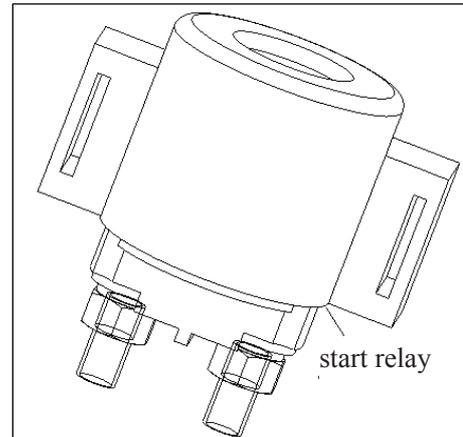
Push the main switch to "ON" and press the startup electrical machinery with a "click".

Inspect by sound.

Sound means normal.

no sound:

- Inspect voltage of the start relay
- Inspect the earth line of the start relay.
- Inspect actuation of the start relay



### 7.4.2 Inspect voltage of the start relay

Erect the main stand and measure the voltage between the earth line of the frame and the negative polar of the green/yellow line of the starting relay connector.

Push the main switch to "ON" to pick up the brake rod. The battery voltage should conform to regulations.

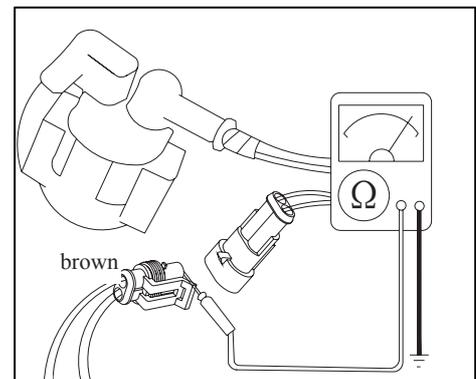
If there is no voltage on the starting relay line, inspect the wire and conduction of the brake switch.

### 7.4.3 Inspect the earth line of the start relay

Inspect conduction between the gray line at the lead connector terminal and the body ground.

When pressing the start button, the gray line of the connector and the body ground are in good conduction.

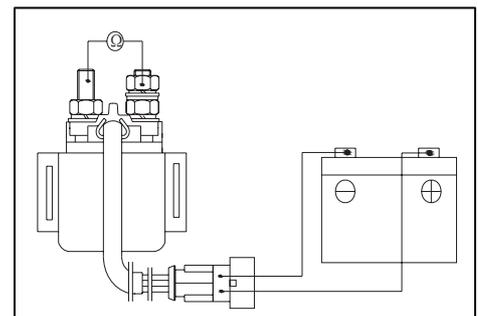
If no conduction occurs, inspect the wire and conduction performance of the start button.



### 7.4.4 Actuation inspection

Connect the starting relay with the battery and connect the terminal of startup electric machinery with the avometer.

Connect the fully charged battery between the black line and green/yellow line of the relay. At this point, the relay should give out a "Click" sound and the avometer resistance reads "0".



## 8 Bulbs/ switch/instrument

Preparation data -----8.1	Instrument-----8.6
Fault diagnosis -----8.2	Main switch -----8.7
Replace the head light bulb -----8.3	Horn-----8.8
Replace bulb of the front turning light-----8.4	Handle switch -----8.9
Replace the bulb of the taillight / licence light / rear turning light -----8.5	

### 8.1 Preparation data

Matters needing attention in operation

The conduction of switches may be measured after disassembled from the motorcycle.

### 8.2 Fault diagnosis

Main switch is pushed to "ON" but the light doesn't work.

- Bad act of the bulb
- Bad act of the switch
- Poor contact of the connector or broken line

### 8.3 Replace the head light bulb

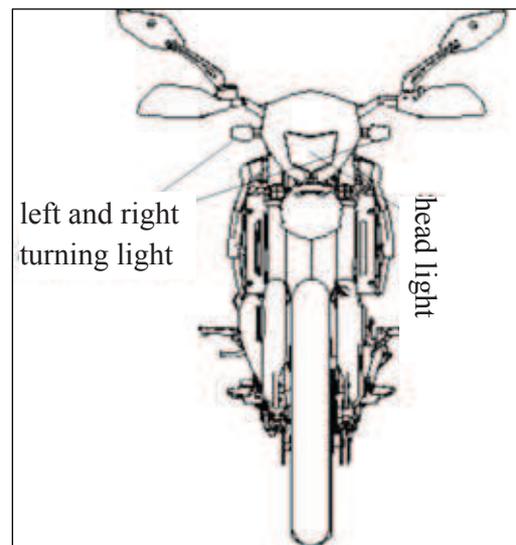
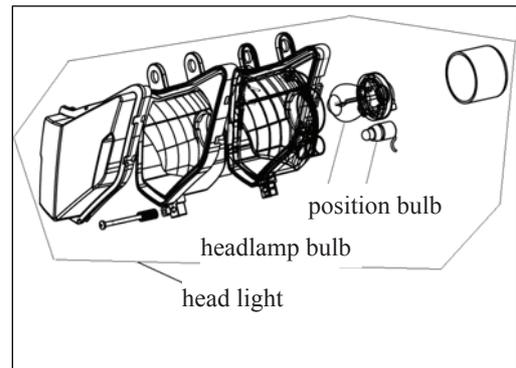
#### 8.3.1 Disassembly

Disassemble the air guide sleeve.

Disassemble the bolts so that the head light could be disassembled.

Disassemble the glass sheet on the head light.

Fix the head light and turn the socket clockwise so that the bulb can be removed.



### 8.3.2 Installation

Install the bulb back to the original position in the reverse order of disassembly.

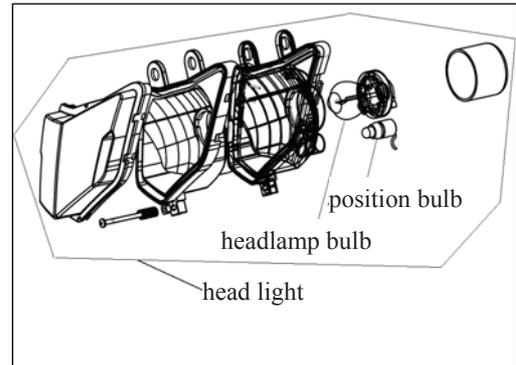
## 8.4 Replace bulb of the front turning light

### 8.4.1 Disassembly

Unscrew the setscrew on the turning light.  
Remove the bulb socket from the light.

### 8.4.2 Installation

Install the bulb back to the original position in the reverse order of disassembly.



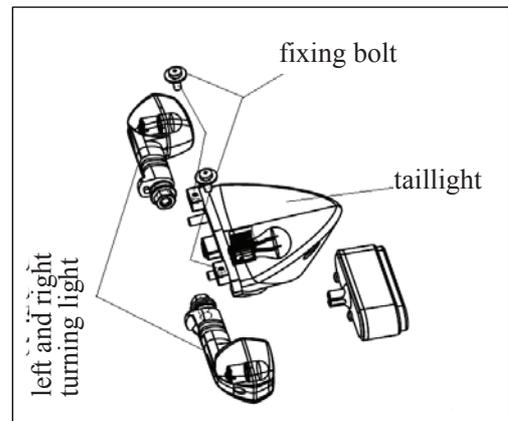
## 8.5 Replace the bulb of the taillight / licence light / rear turning light

### 8.5.1 Disassembly

Disassemble the bolts so that the taillight cover can be disassembled.  
Remove the bulb from the socket.

### 8.5.2 Installation

Install the bulb back to the original position in the reverse order of disassembly.



### 8.5.3 Replace the bulb of the rear turning light

#### 8.5.3.1 Disassembly

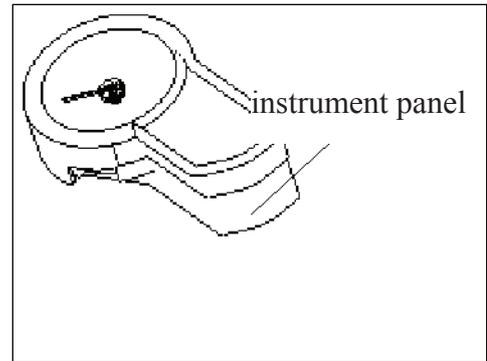
Disassemble the bolts so that the turning light cover can be disassembled.  
Remove the bulb from the socket.

#### 8.5.3.2 Installation

Install the bulb back to the original position in the reverse take turns of disassembly.

## 8.6 Instrument

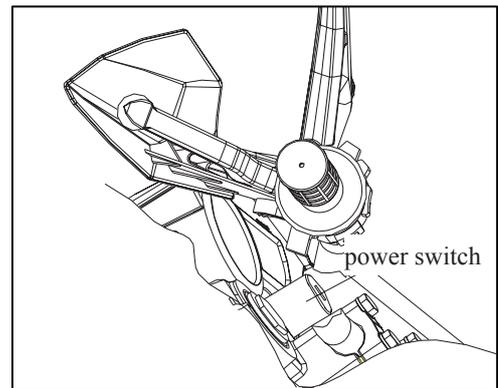
Disassemble the rearview mirror;  
Disassemble the faucet shield and unplug the waterproof connector.  
Disassemble the bolts.  
Disassemble the instrument case so that the instrument could be disassembled.  
Install the speed indicator back to the original position in the reverse order of disassembly.



## 8.7 Main switch

### 8.7.1 Inspection

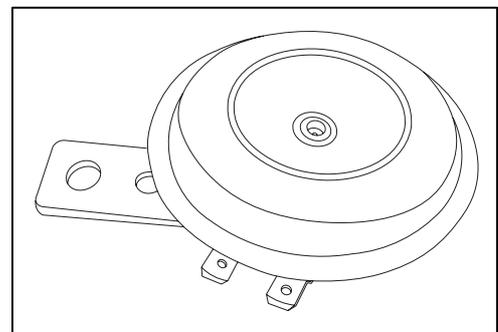
Disassemble the setscrews.  
Unload the fixing pad of the main switch.  
Disassemble the setscrews and replace the main switch.



## 8.8 Horn

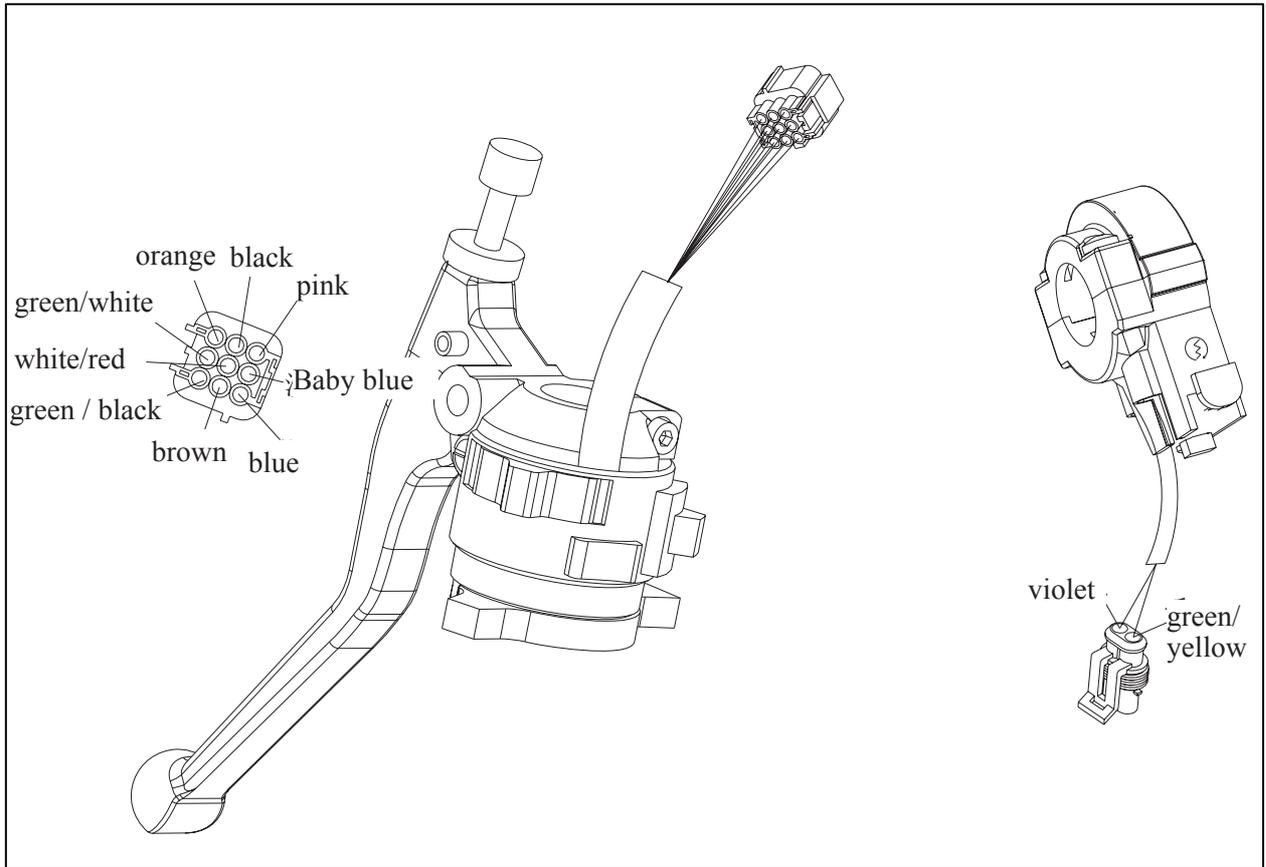
### Inspection

Disassemble the horn wire.  
If the horn rings when the horn wire is connected with the battery, then it is in fine conditions.



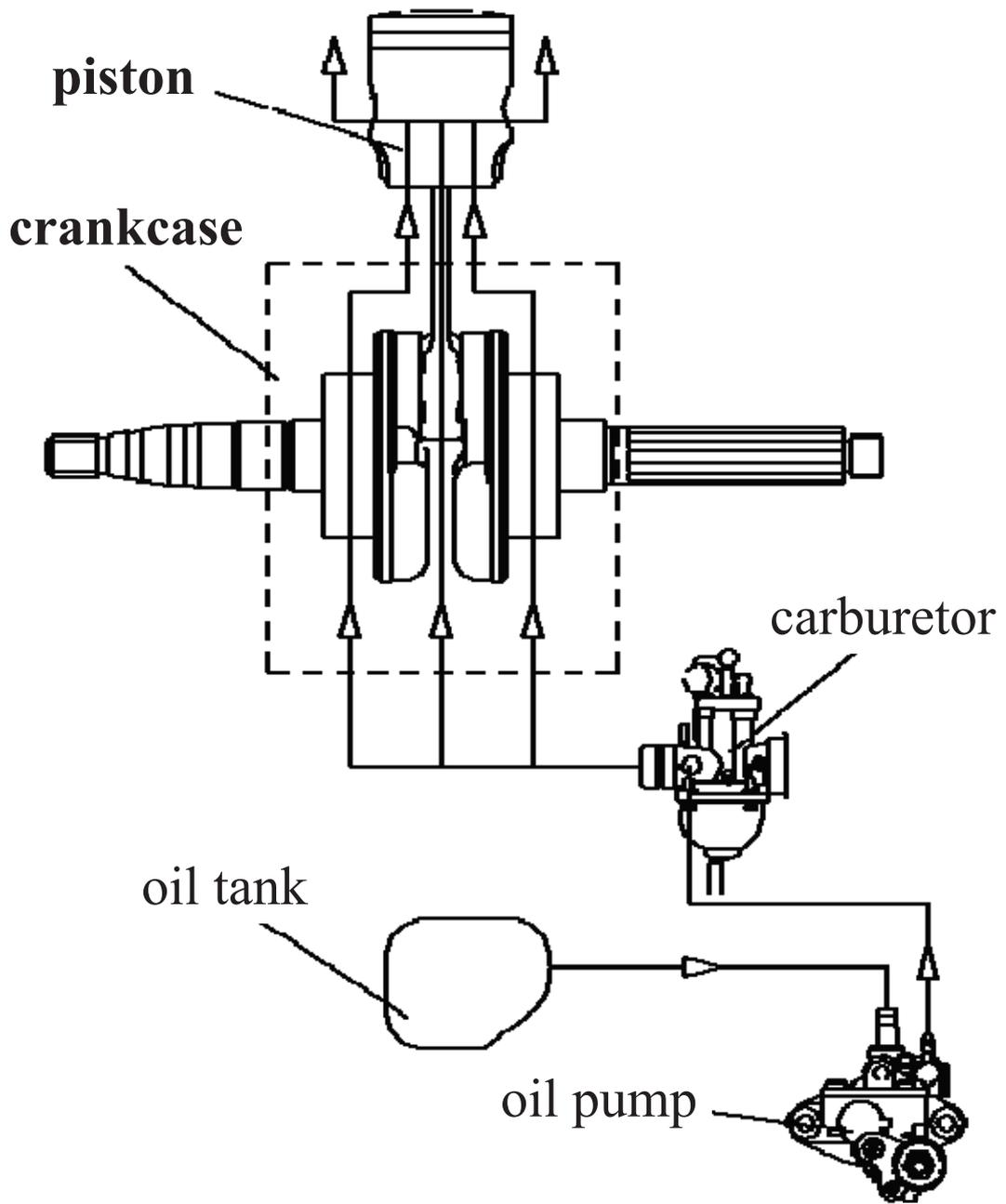
## 8.9 Handle switch

Disassemble the rearview mirror and the handle cover.  
Disassemble the handle switch connector.  
Inspect the terminal of connector.



## Table of torque value of engine fastener

Fastening area and fastener name	Tightening torque (N·m)
Cylinder cover nut	18~22
Fixing nut in the power gear of the clutch	50~60
Stud bolt of air cylinder	18~22
Clutch locknut	50~60
Lock bolt of flywheel	35~40
Spark plug	10~15
Limiting screw of the feet starting lever	40~50
Shift positioned bolt	10~16
Mould assembling bolt	10~12
Bolt on the right and left crankcase cover	10~12
Loop bolt	10~12
Motor fixing bolt	10~12
Separating disk bolt of clutch	10~16
Fixing bolt of inlet valve	10~12
Setscrew of shift display	4~7
Setscrew of constant temperature set	4~7
Setscrew of electric wire clamp	4~7
Fixing bolt of water pump	10~12



## 9 Lubrication system

Preparation data -----9.1

Fault diagnosis -----9.2

Oil pump -----9.3

### 9.1 Preparation data

#### Matters needing attention in operation

The operation of engine in this chapter can be conducted on the motorcycle body.

When disassembling the oil pump, see to it that no foreign objects could enter into the engine.

After installation of oil pump, inspect whether machine oil leaks in each part.

**Function of the lubrication system:** supplying lubricating oil to the wear surface to reduce part wear by turning dry friction between surfaces into liquid friction between lubricating oil particles; cooling high-load parts; absorbing impact from the bearing and other parts and reducing noises; increasing air tightness between the piston ring and cylinder wall; cleaning and carrying away impurities on part surfaces.

### 9.2 Fault diagnosis

Decrease of machine oil

Natural loss of machine oil

Machine oil leak

Wear and improper installation of the piston ring

Engine burnt out

Absence of oil or oil pressure too low

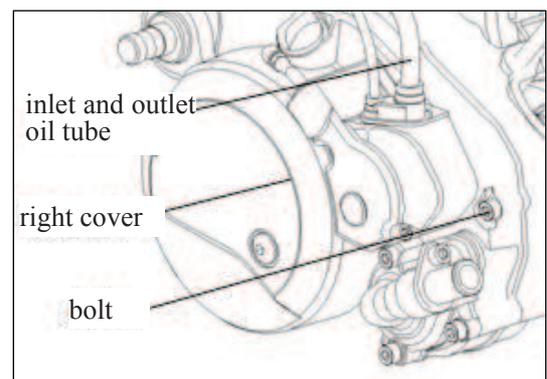
Oil path blocked

Machine oil not used

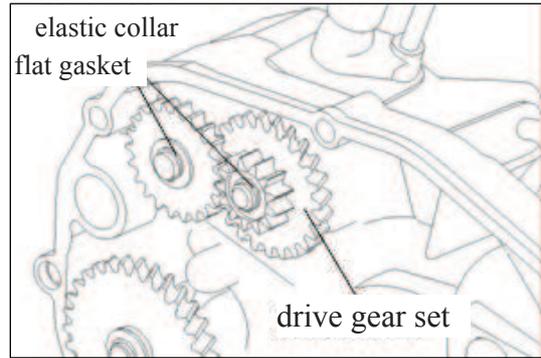
### 9.3 Oil pump

#### 9.3.1 Disassembly

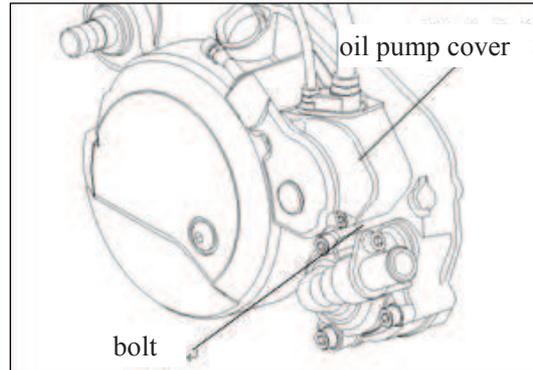
Pull out the inlet and outlet oil tube, unscrew the bolt and disassemble the right cover.



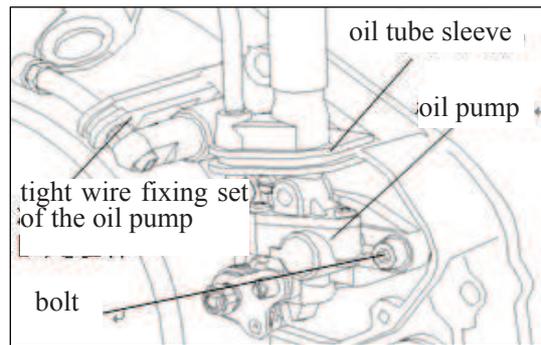
Take down the elastic collar and flat gasket.  
 Take down the drive gear set of the oil pump.



Unscrew the bolts and take down the oil pump cover.

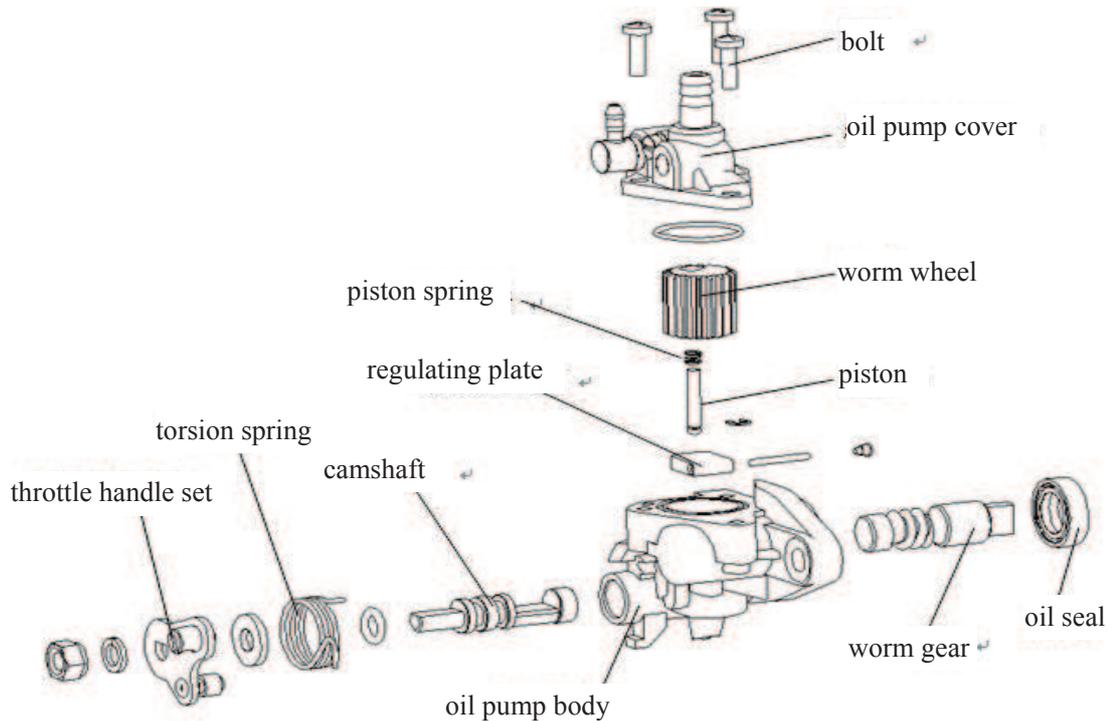


Disassemble the tight wire of the oil pump and unload the tight wire fixing set as well as the oil tube sleeve.  
 Unscrew the bolts and take down the oil pump.



### 9.3.2 Dismantling

Dismantle the oil pump as shown in the diagram.



### 9.3.3 Inspection

Inspect wear and tear of the worm wheel and worm gear.

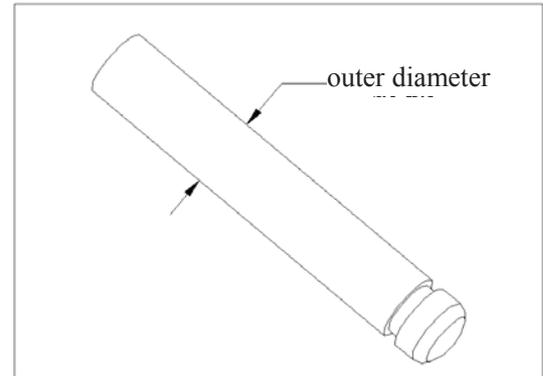
Severe wear and replace.

Inspect wear and tear of the camshaft.

Severe wear and replace.

Measure the outer diameter of the piston.

Allowable limit : 2.45mm.



### 9.3.4 Assembly

Assembly of the oil pump is conducted in the reverse order of disassembly.

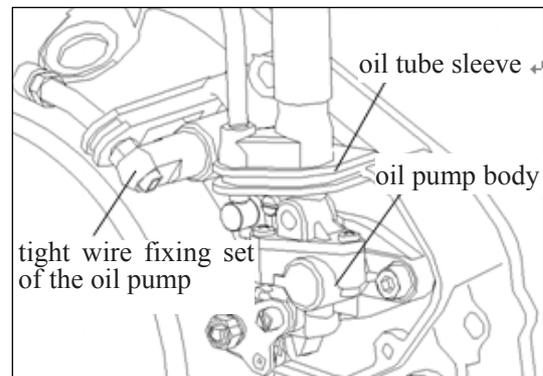
**Note:**

When in assembly, inspect and ensure there's no oil leaking in each part of the oil pump.  
The oil seal should be in good shape.  
After assembly, the gear wheel and gear should be flexible in rotation without clamping stagnation.

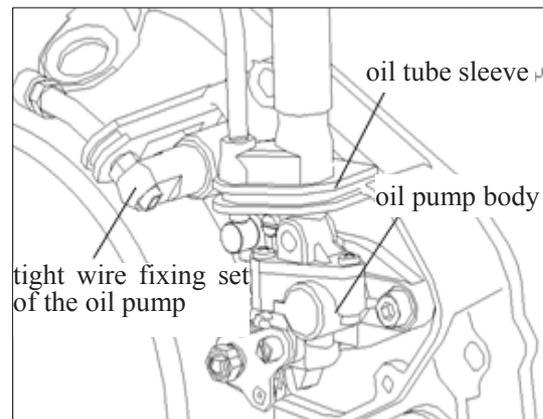
### 9.3.5 Installation

Install the oil pump body, oil tube sleeve and tight wire fixing set of the oil pump.

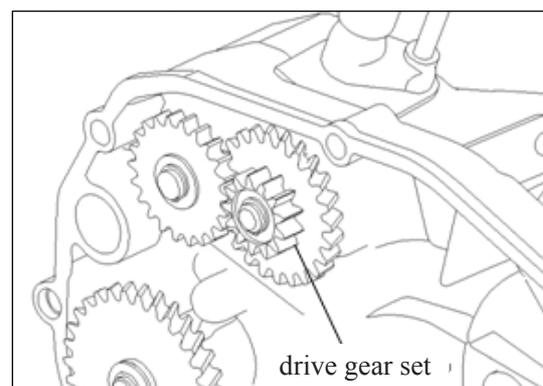
Fix the tight wire of throttle.



Install the oil pump cover.



Install the drive gear set of oil pump.



# 10 Carburetor

Preparation data-----10.1      Float chamber -----10.5  
 Fault diagnosis-----10.2      Installation of carburetor -----10.6  
 Disassembly of carburetor-----10.3  
 Carburetor cover -----10.4

## 10.1 Preparation data

### Matters needing attention in operation

**\*Note**

- Gasoline is extremely dangerous, so smoking or lighting is strictly forbidden in operational field.
- Pay special attention to flakes.
- No wire should be pulled and bent with rudeness. Distortion or damage will have impact on wire actuation.
- After the carburetor is disassembled, choke the intake manifold with clothing to prevent entry of foreign objects.
- If the carburetor is not in use for more than one month, the gasoline inside the float chamber must be discharged. Otherwise, the gasoline inside the float chamber will deteriorate and block the idle speed nozzle, resulting in insecurity of idle speed.

**Function of the carburetor:** the carburetor is a critical component in the fuel delivery system of the engine, the operating mode of which carries direct influence on the steady operation of the engine, its driving force and economical indicator. The carburetor atomizes a given amount of gasoline into mini drops, which then evenly mix with varying volumes of air to shape vaporous combustible mixture according to different operating conditions of engines, and supplied to the engine in time, in order to ensure normal continuous

running of it. Preparation reference

Unit: mm

Item	Standard value
Throat diameter	17.5mm
Main nozzle	B03
Main jet	95#
Idle jet	22.5#
Needle valve	B05-Z

## 10.2 Fault diagnosis

### Bad startup

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>·No flashover in spark plug</li> <li>·Compression pressure too low</li> </ul> | <p>Startup difficulty, flameout after startup, unsteady idle speed</p> <ul style="list-style-type: none"> <li>· Fuel system blockage</li> <li>· Bad ignition</li> </ul> |
|--|---|

- Carburetor short of fuel
  - Gasoline filter blocked
  - Gasoline pipe blocked
  - Needle valve conglutination
  - Bad adjustment of oil level

### Too much fuel in the engine

- Air filter blocked
- Overfuel and oilflow
- Secondary air inlet of fuel system
- Fuel deterioration
- Bad operation of electric enrichment valve
- Idle system or choke system blocked

### Too dense gas mixture

- Bad operation of enrichment valve
- Bad operation of needle valve
- Too high oil level
- Oilflow in carburetor
- Air channel blocked
- Filth in air filter

- Too dense or sparse gas mixture
- Bad fuel
- Secondary air inlet of suction system
- Bad idle adjustment
- Bad adjustment of oil volume

### Too sparse gas mixture

- Oil nozzle blocked
- Needle valve blocked
- Too low oil level
- Fuel system blocked
- Secondary air inlet of suction system
- Bad act of piston

### Intermittent flashover in acceleration

- Too sparse gas mixture

## 10.3 Disassembly of carburetor

### 10.3.1 Disassembly

Switch the fuel control switch to "OFF".

Pull out the oil inlet hose.

Pull out the throttle wire.

Pull out the enrichment valve wire.

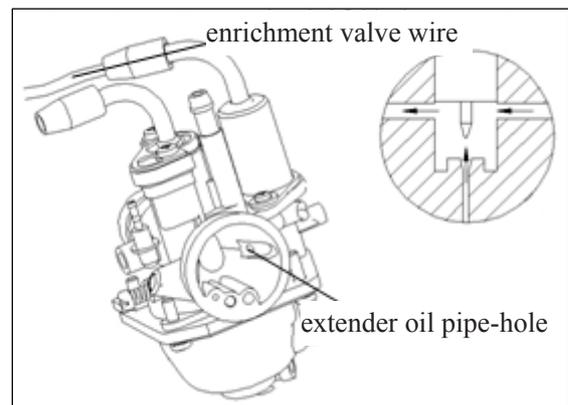
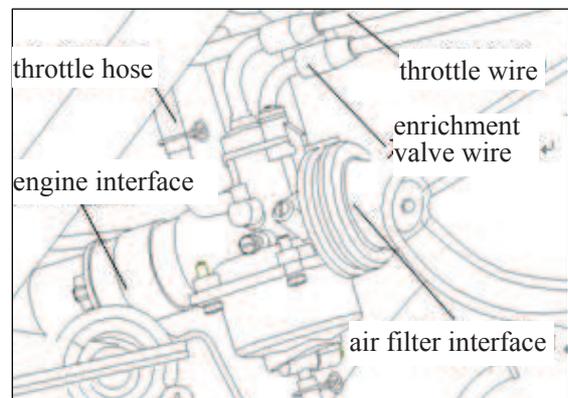
Unscrew the bolts at the interface between the carburetor and engine and at the interface between the carburetor and air filter.

Unload the carburetor from the two interfaces.

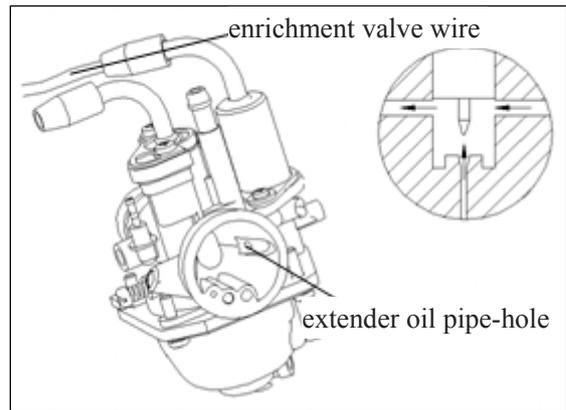
### 10.3.2 Electric enrichment valve

Disassemble the carburetor and cool it down for 30 minutes.

Pull the enrichment valve wire, insert the nylon tube into the extender oil pipe within and blow air into the pipe with mouth. There should be air in the extender oil pipe, otherwise, the pipe should be replaced.



Do not pull the enrichment valve wire, insert the nylon tube into the extender oil pipe and blow air into the pipe with mouth. There should be no air in the extender oil pipe, otherwise, the pipe should be replaced.



### 10.3.2.1 Disassembly

Unscrew the bolts and unload the enrichment valve set.

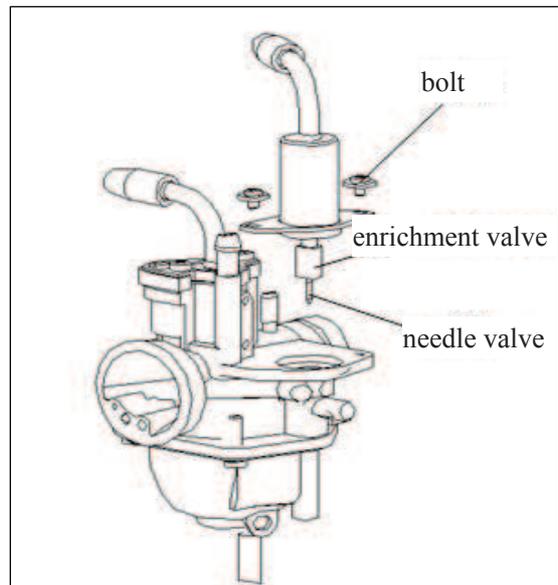
### 10.3.2.2 Inspection

Inspect the wear and tear of the enrichment valve and needle valve.

If the wear is severe, replace the electric enrichment valve set.

### 10.3.2.3 Installation

Install the enrichment valve by aligning its flange with the carburetor and fasten the bolts.



## 10.4 Carburetor cover

### 10.4.1 Dismantling

Unscrew the two bolts on the cover and unload the cover, shim, piston spring, compression cap, needle valve and piston in turn.

### 10.4.2 Inspection

Inspect the wear and tear of the needle valve and piston.

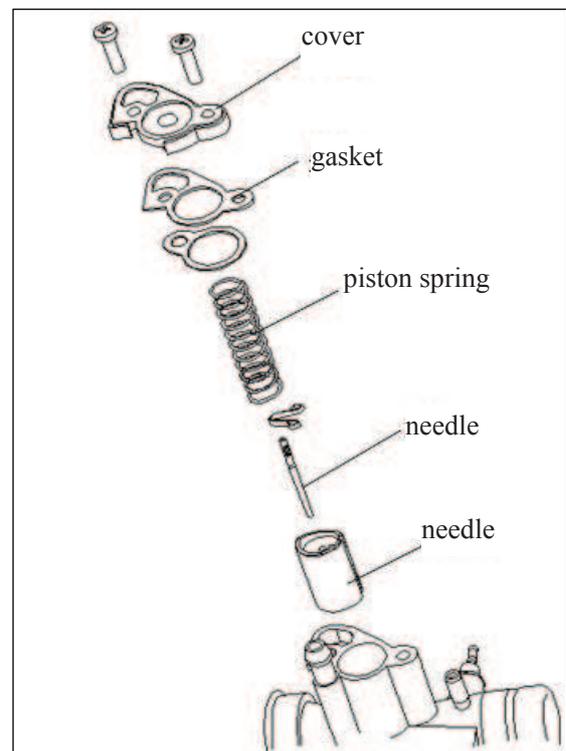
If the wear is severe, replace them.

### 10.4.3 Assembly

Assembly is conducted in the reverse order of disassembly.

**\*Note**

Do not damage the needle valve or piston in assembly.



## 10.5 Float chamber

### 10.5.1 Dismantling

Dismantle the four fixing bolts and unload the float chamber.

Dismantle the float pin and unload the float and needle valve set.

Dismantle the main jet, main bubble tube and idle jet.

Dismantle the idle adjustment bolts.

### 10.5.2 Inspection

Inspect whether the needle valve set is worn out or damaged. If it's true, replace it with a new product and replace the main jet at the same time.

Inspect whether the idle jet, main jet and main bubble tube is worn out, damaged or polluted. If it's true, replace them.

**Note:**

The idle adjustment bolt and nozzle shouldn't be damaged. When screwing off the idle adjustment bolts, memorize the circle number.

Clean every part of the carburetor with gasoline and blow them dry with high pressure air.

### 10.5.3 Assembly

Assembly is conducted in the reverse order of disassembly.

## 10.6 Installation of carburetor

Assembly is conducted in the reverse order of disassembly.

**Note:**

The idle speed must be adjusted after the installation.

Assembly is conducted in the reverse order of disassembly.

Install the carburetor in the reverse order of disassembly.

### 10.6.1 Adjustment of carburetor

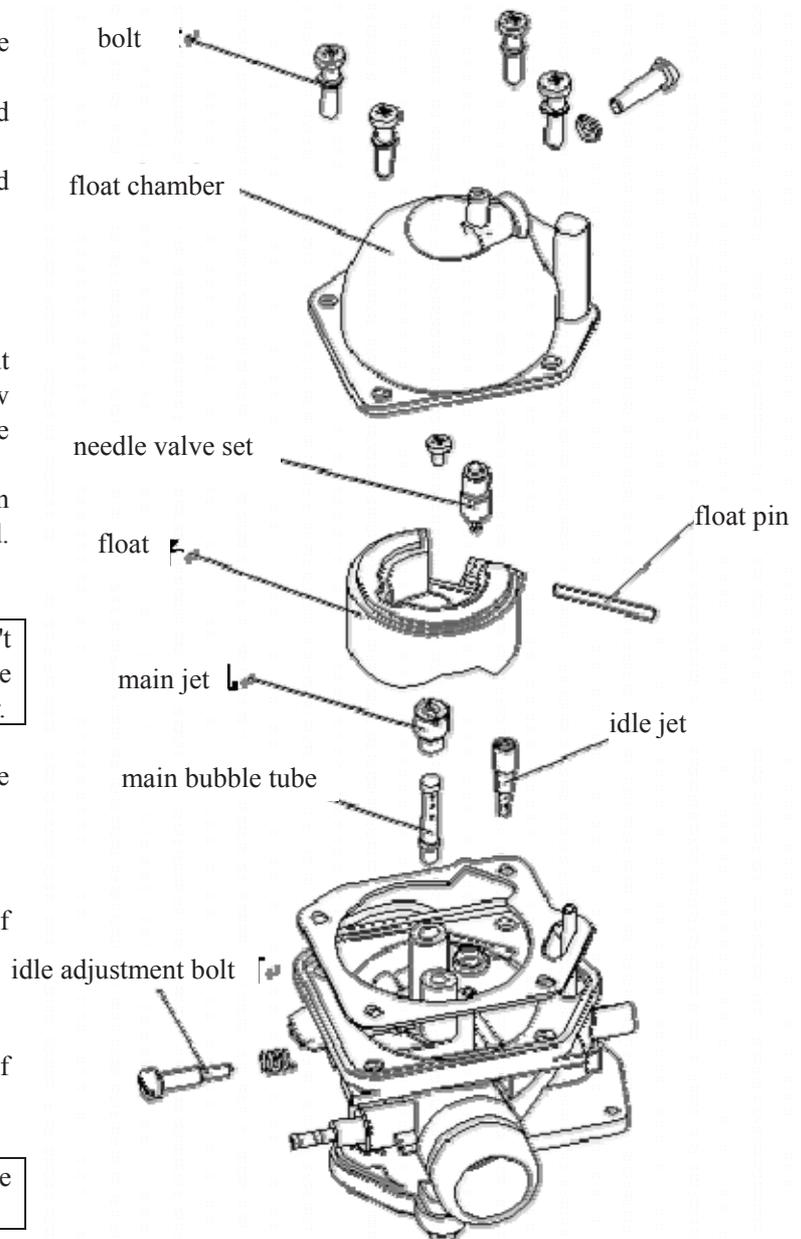
**Note:**

The idle adjustment bolt was adjusted when delivered out of the factory and needs no readjustment. When dismantling, take down the turning circle number for the benefit of installation.

Switch on and warm up the machine for about 3 minutes, so that the engine will operate in normal running temperature.

Adjust the idle adjustment bolts and set engine speed to be 1400rpm.

Screw the mixture adjustment bolt to the end with proper force.



At this point the engine will stall (if not, inspect whether air escapes at the interface of air filter, whether the bolt is tightened and whether the intake of the air filter is blocked).

Withdraw the mixture adjustment bolt for 1 circle.

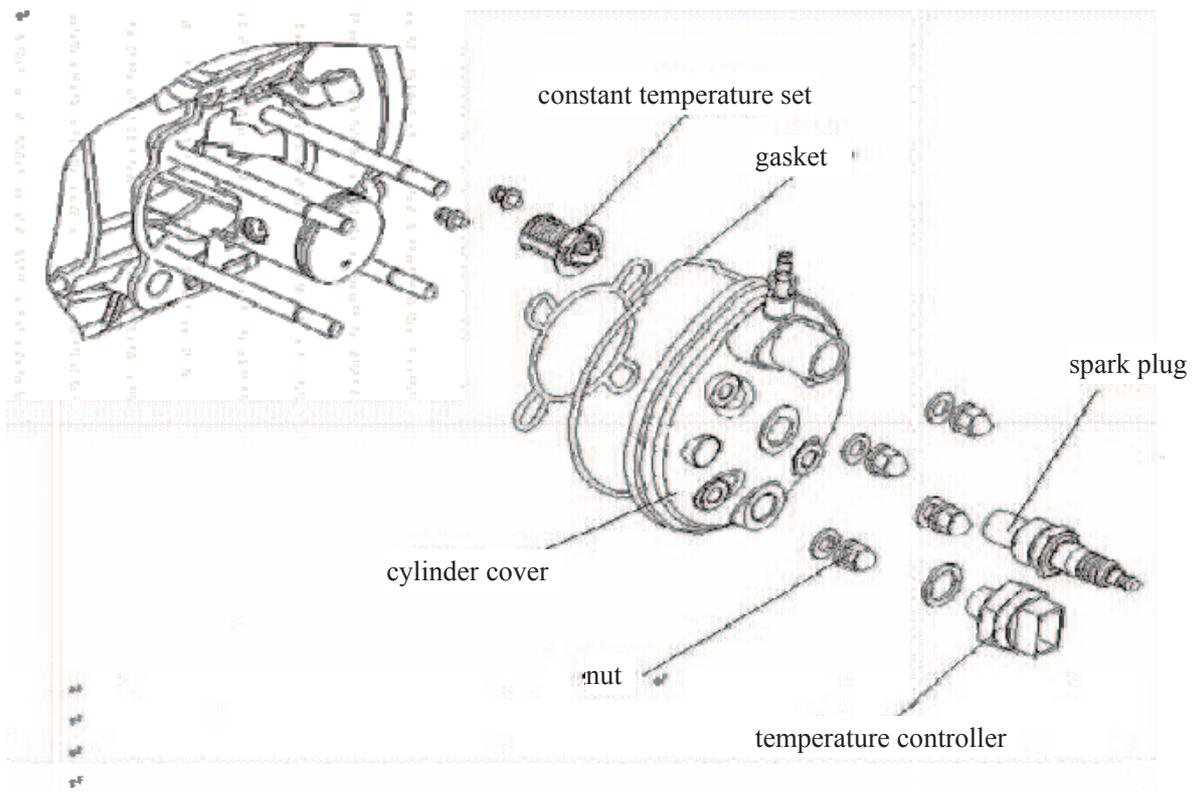
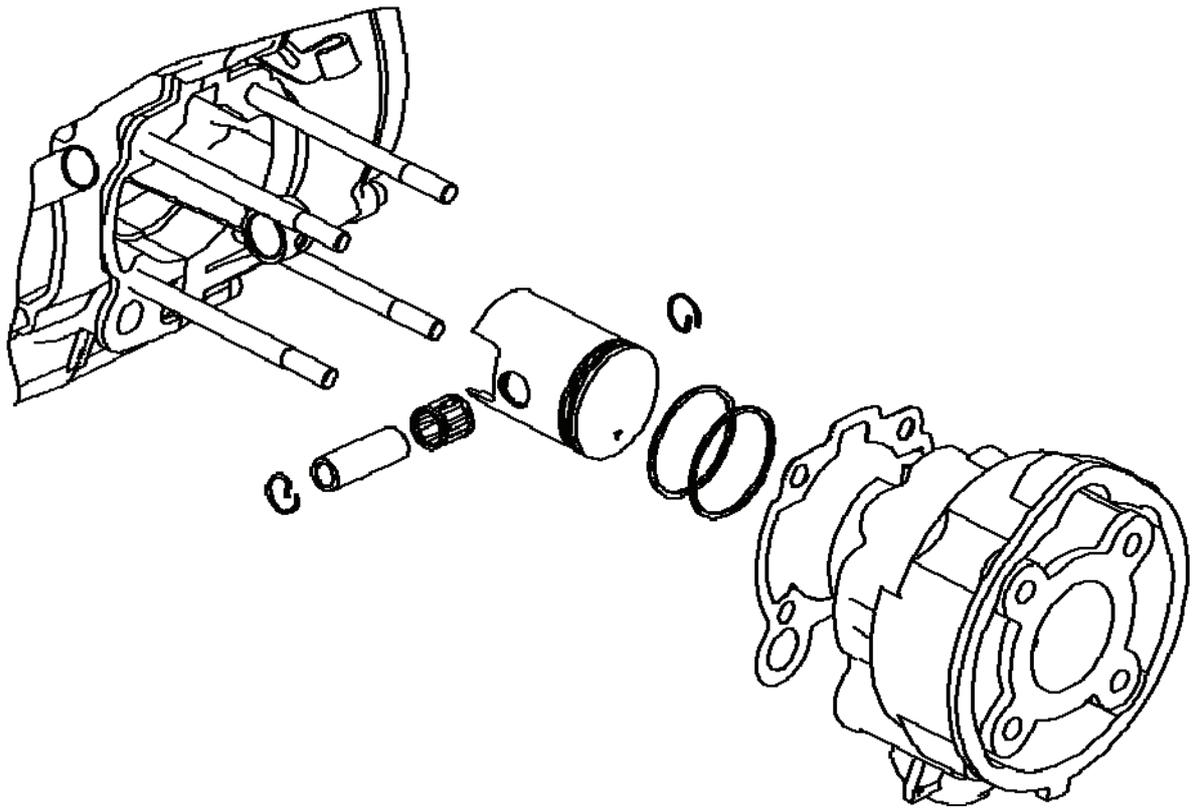
Restart and adjust the idle adjustment screw so that the rotation speed reaches 2000-2500rpm.

Slowly adjust the mixture adjustment bolts (anticlockwise), till the engine speed reaches its utmost (mixture bolt is withdrawn for two circles at most).

Reset the idle adjustment screw and set the engine speed down to  $1400 \pm 100$  rpm/min.

Pull the throttle for several times for acceleration and inspect whether the idle speed is steady.

Test the outlet and compare it with the specified standards.



# 11 Cylinder cover/air cylinder/piston

Preparation data -----11.1

Fault diagnosis -----11.2

Disassembly of air cylinder -----11.3

Disassembly and installation of the piston -----11.4

Installation of air cylinder -----11.5

Disassembly of cylinder cover -----11.6

Installation of cylinder cover - -----11.7

## 11.1 Preparation data

### Matters needing attention in operation

- The operation of air cylinder/piston can be conducted on the frame.
  - Blow it dry with compressed air after dismantling, before inspection and test or after cleaning.
  - In order to ensure the encapsulation of cylinder cover and cylinder body, the cylinder cover bears considerable bolt retightening force. Retightening force value: 50Nm.
- All parts should be cleaned before inspection and test and should be blow dry with high pressure air.

**Function of the cylinder:** the cylinder body provides space for the compression, burning and expansion of air and plays a steering function to piston motion.

It also transmits part of the heat in the air cylinder to the surrounding cooling media.

### Function of piston:

1. Bearing the pressure caused by burning of combustible mixture gas and pass the pressure to the connecting rod, driving the rotation of the crankshaft.
2. Shaping a combustion chamber with the cylinder cover and others.
3. Acting as the sliding valve to lock and unlock the air channel, pressing the fresh air mixture in the crankcase into the air cylinder and ejecting the exhaust gas out of the air cylinder after combustion.

**Function of the cylinder cover :** the cylinder cover is designed to encapsulate the air cylinder, constitute a combustion chamber with the piston and bear combustible gas with high pressure and high temperature.

Preparation reference

Unit: mm

Item		Standard value	Allowable limit	
Air cylinder	Bore diameter	40.27-40.28	40.3	
	Bent		0.05	
	Cylindricity		0.05	
	Roundness		0.05	
Piston and piston ring	clearance between the piston ring and piston ring groove	Top ring	0.015-0.05	0.09
		Second ring	0.015-0.05	0.09
	Interface clearance	Top ring	0.1-0.25	0.5
		Second ring	0.1-0.25	0.5
	Outer diameter of piston		40.22-40.23	40.2
	Clearance of piston and air cylinder		0.04-0.06	0.1
	Bore diameter of piston pin hole		12.002-12.008	12.04
Outer diameter of piston pin		11.994-12	11.96	
Clearance of piston pin hole and piston pin		0.002-0.014	0.08	
Bore diameter of connecting rod small end		14.995-15.006	15.06	

## 11.2 Fault diagnosis

·If bad startup or unsmooth low speed occurs, inspect whether white fume is ejected out of the crankcase breather. If the crankcase vent hole does have white fume ejected, the piston ring must be worn out, burnt out or the piston must be broken.

### Low compression pressure

- The piston ring is worn out, burnt out or broken.
- The air cylinder piston is worn out or damaged.

### White fume in vent pipe

- The piston ring is worn out or damaged.
- The air cylinder piston is worn out or damaged.

### Compression pressure too high

- The piston combustion chamber has carbon deposit.

### Piston noises

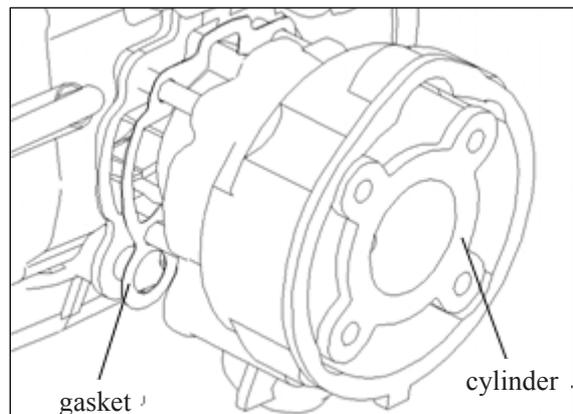
- The air cylinder piston and piston ring is worn out.
- The piston pin hole and piston pin are worn out.

## 11.3 Disassembly of air cylinder

Disassemble the cylinder body.

Disassemble the gasket and scrape clean the adhesive gasket at the cylinder junction.

Inspect the wear and tear of the cylinder inner wall. Severe wear and replace it.

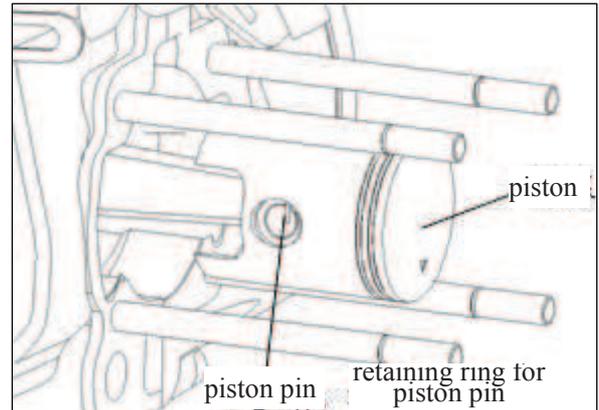


## 11.4 Disassembly and installation of the piston

Disassemble the retaining ring for piston pin.

Note: When disassembling, do not drop the retaining ring into the crankcase.

Withdraw the piston pin and unload the piston.

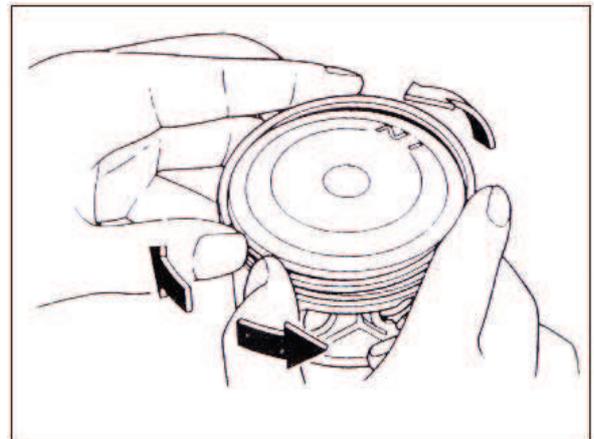


Unload the piston ring.

Inspect the piston, piston pin and piston ring.

**Note:**

Do not break or damage the piston ring.  
Clean away the carbon deposit in the piston ring groove.



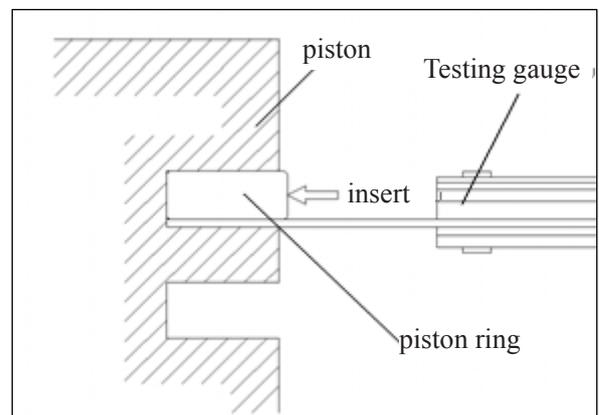
Install the piston ring.

Measure the clearance of the piston ring and piston ring groove.

**Allowable limit :**

**Top ring: 0.09mm.**

**Second ring : 0.09mm.**

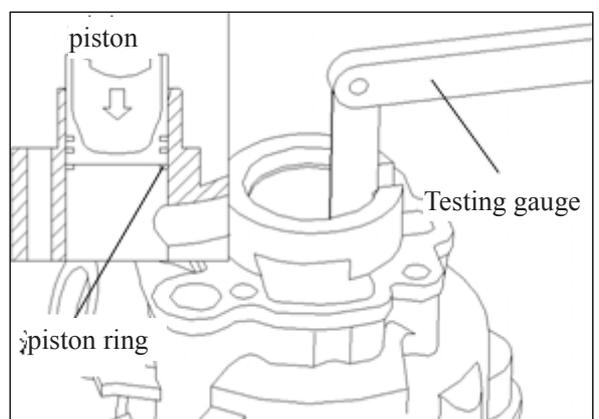


Unload the piston ring and install each piston ring at the bottom of the cylinder.

**Note:**

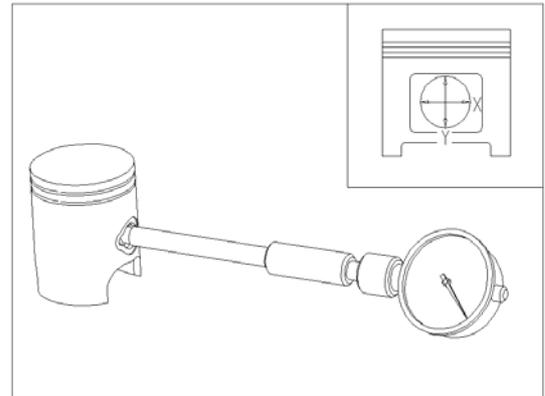
Press the piston ring into the air cylinder with the piston crown.  
Measure the interface clearance of the piston ring.

**Allowable limit: 0.5mm.**



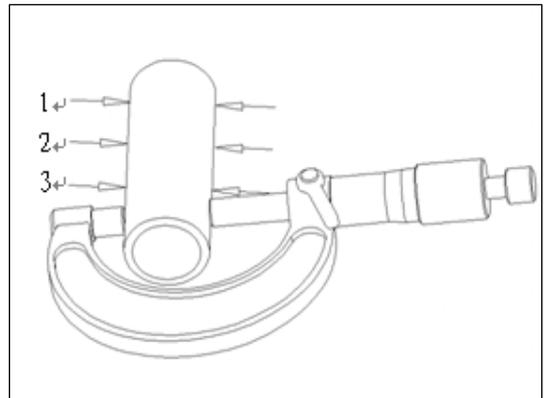
Measure the bore diameter of the piston pin hole.

**Allowable limit: 12.04mm.**



Measure the outer diameter of the piston pin.

**Allowable limit: 11.96mm.**



Measure the outer diameter of the piston.

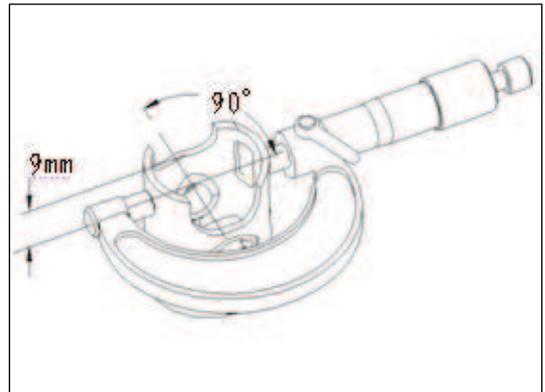
**Note:**

The measuring position and the piston pin form an angle of 90 degree, some 15.5mm below the skirt of piston.

**Allowable limit: 40.20mm.**

Clearance of the piston pin hole and piston pin.

**Allowable limit: 0.08mm.**



Inspect the abrasion and wear of the cylinder inner wall.

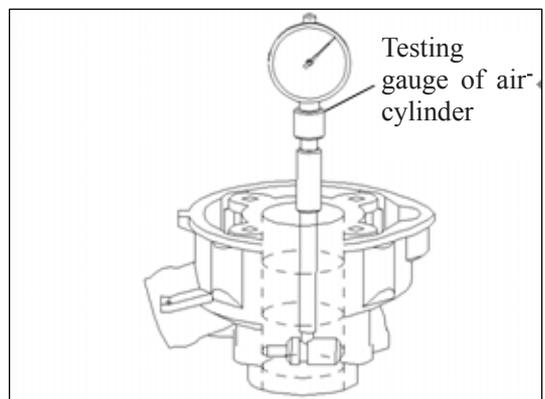
**Note:**

Measure the bore diameter of the cylinder at the upper, middle and lower part when keeping an angle of 90 degree from the piston pin.

**Allowable limit: 40.3mm.**

Measure the clearance of the cylinder and piston and take the maximal value as final one.

**Allowable limit: 0.1mm.**



Measure the roundness of inner wall ( bore diameter difference between X and Y direction ) .

**Allowable limit: 0.04mm.**

Measure the cylindricity of inner wall ( bore diameter difference at the upper middle and lower part in X or Y direction ) .

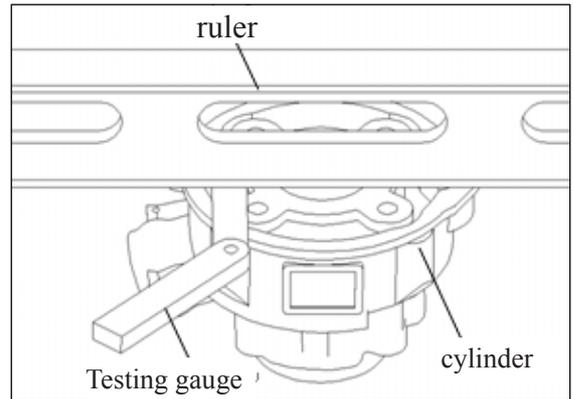
**Allowable limit: 0.05mm.**

middle

lower

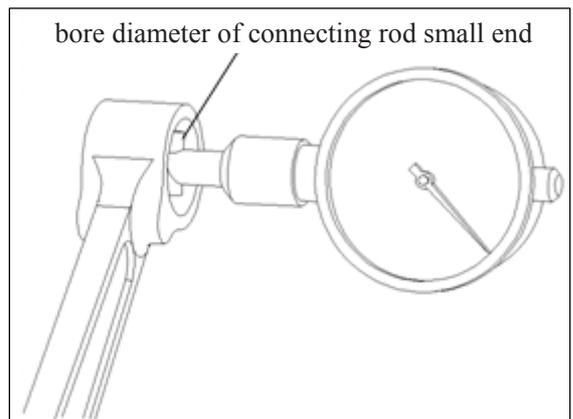
Inspect the flatness of the cylinder surface.

**Allowable limit: 0.05mm.**



Measure the bore diameter of connecting rod small end.

**Allowable limit: 15.06mm.**



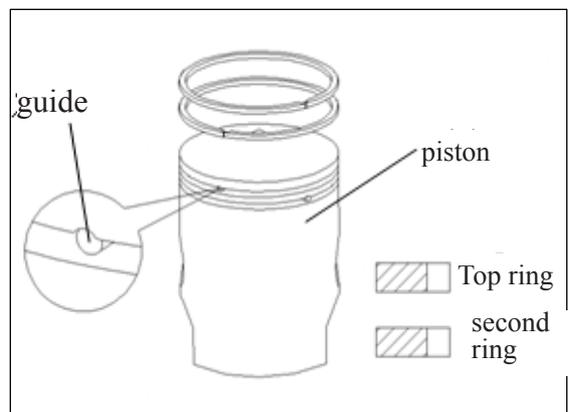
### 11.4.1 Installation of piston

Install the guide pin.

Evenly spread machine oil on each piston ring and piston and correctly install the piston ring by aligning it with the guide pin on the piston.

**Note:**

The piston should not be scratched and the piston ring should not be broken.  
The piston ring should be assembled with its marked side upward.



Scrape the adhesive gasket off the crankcase.

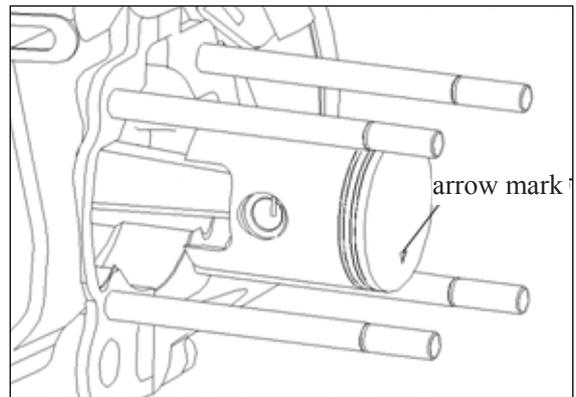
**Note:**

No foreign objects should fall into the crankcase.

Install the piston, piston ring and retaining ring.

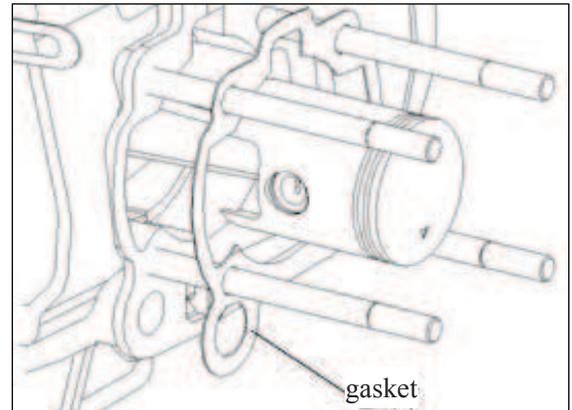
**Note:**

Install according to the arrow mark on the piston top.  
The retaining ring should not fall into the crankcase.



## 11.5 Installation of the air cylinder

Install the gasket on the crankcase.

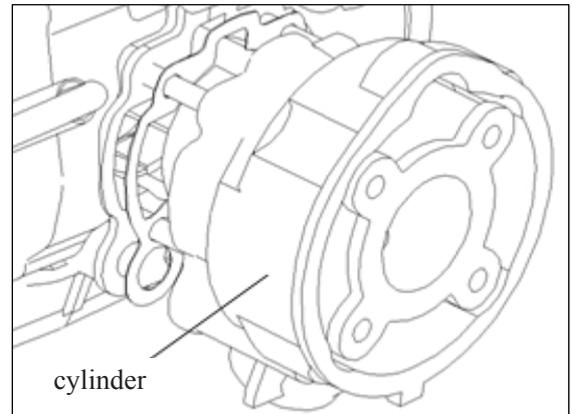


Evenly spread machine oil on cylinder inner wall, piston and piston ring.

Take care to install the piston ring in the cylinder.

**Note:**

The piston ring should not be damaged.

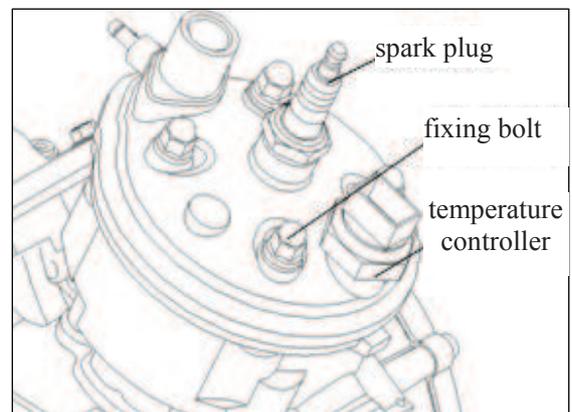


## 11.6 Disassembly of cylinder cover

### 11.6.1 Disassembly

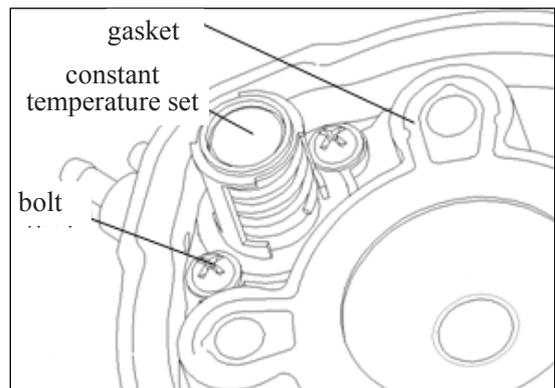
Disassemble the spark plug and unscrew the temperature controller.

Unscrew the four nuts and unload the cylinder cover.



Unload the gasket.

Unscrew the bolts and unload the constant temperature set from the cylinder cover.



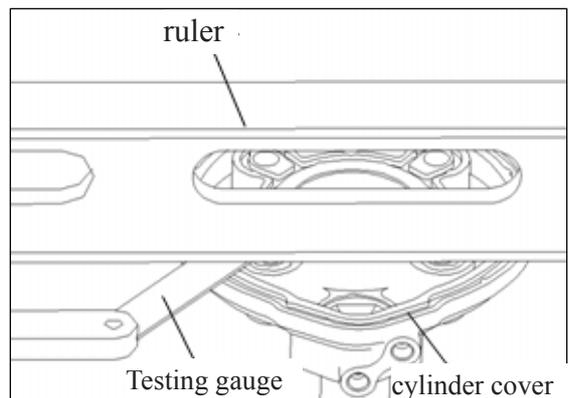
### 11.6.2 Inspection

Inspect whether the cylinder cover is broken.

Inspect the flatness of the bottom surface of the cylinder.

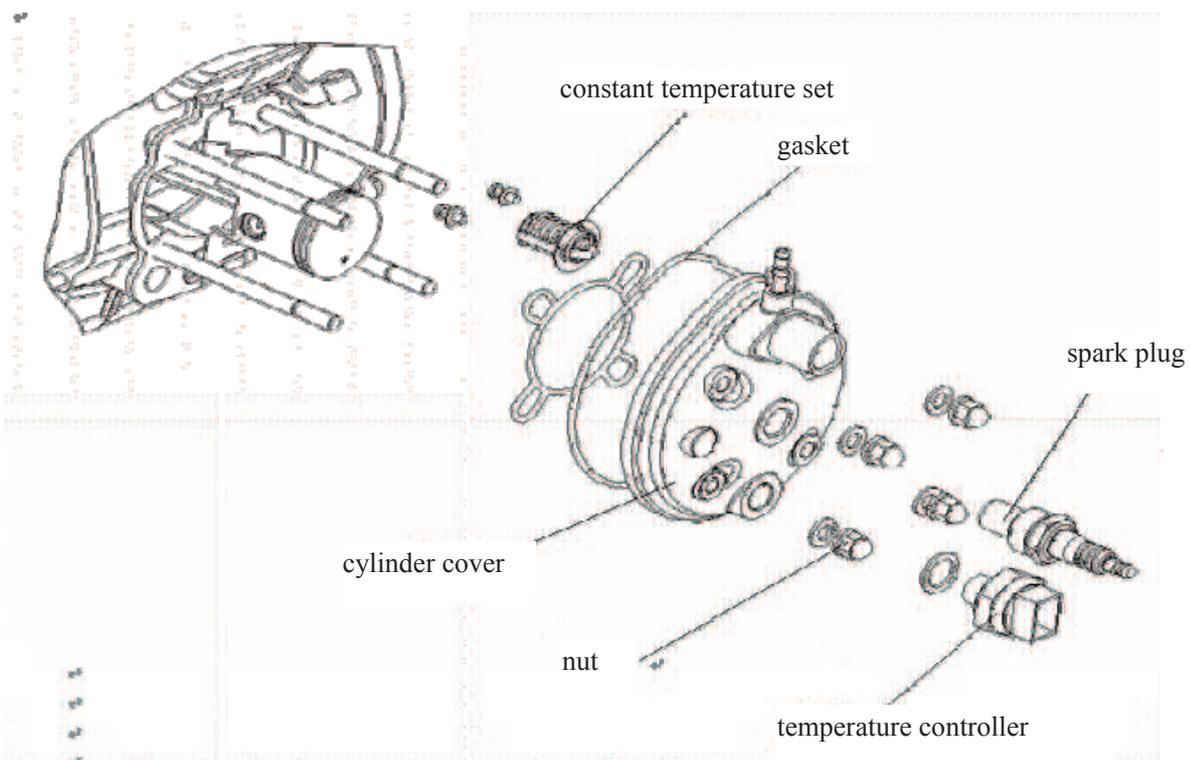
**Allowable limit: 0.05mm.**

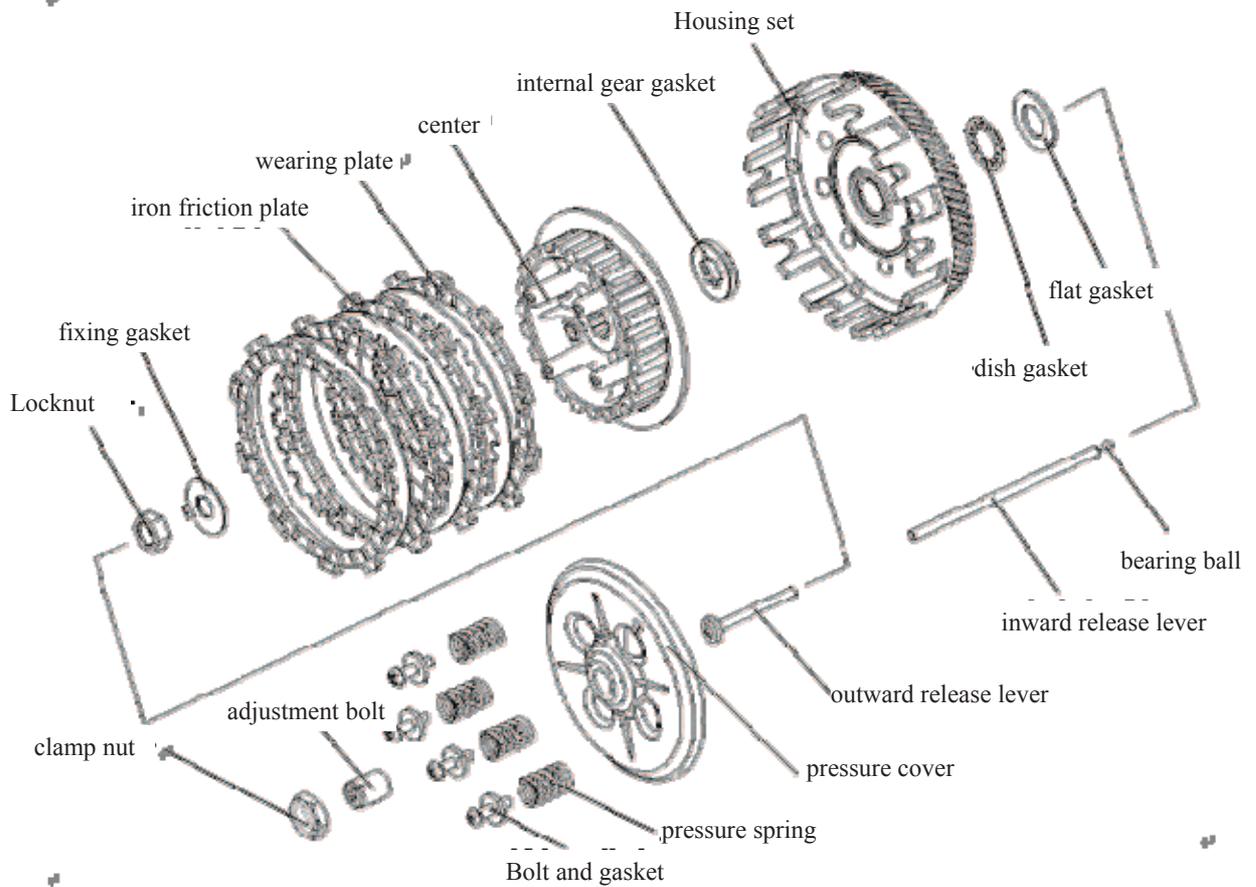
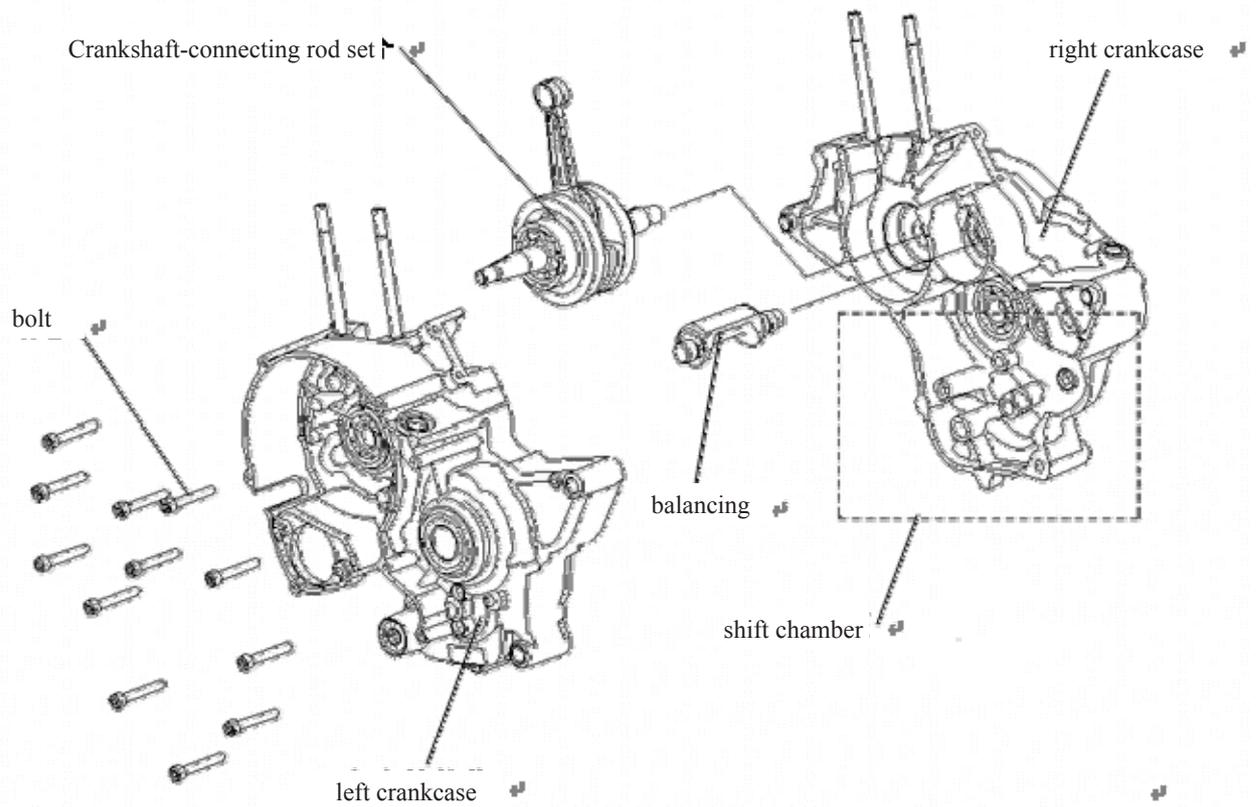
Remove the carbon deposit on the cylinder cover with a bamboo scraper.



### 11.7 Installation of the cylinder cover

Installation is conducted in the reverse order of disassembly.





## 12 Crankcase/clutch/actuating lever

Preparation data -----12.1

Fault diagnosis -----12.2

Crankcase -----12.3

Clutch -----12.4

Actuating lever -----12.5

### 12.1 Preparation data

#### Matters needing attention in operation

Since the crankcase is a thin-section casting, please avoid impact on it during operation in case there is any distortion or rupture.

All parts should be cleaned before inspection and test and should be blow dry with high pressure air.

Before operation, discharge the lubricating oil in the crankcase.

**Function of the crankcase:** the bearing part of the engine. Its primary function is supporting the crankshaft, clutch, gearbox, cylinder body as well as the cylinder cover and bearing bursting impact of combustion and movement inertia force of crankshaft connecting rod system and constituting some closed (oil, air seal) space. The crankcase has a hanging hole which links the engine and the frame with other parts by connecting with the hanging hole.

#### Preparation reference

Unit: mm

Item		Standard value	Allowable limit
Crankshaft	clearance of connecting rod big end in right and left direction	0.1-0.35	0.55
	axial clearance of connecting rod big end in vertical angle	0-0.008	0.05
	vibration		0.1
Clutch	Thickness of wearing plate	2.9-3	2.6
	Length of pressure spring	29.4-30.6	29.0
Shift mechanism	Bore diameter of shift fork	7.825-7.845	7.91
	Thickness of shift fork	3.95-4.05	3.9
	Outer diameter of shift drum	41.8-42	41.75
	Locked groove width of shift drum	6.05-6.15	6.3

#### Tools

Multiple use fixer

Driver's perch

Guide rod

Clutch spring compressors

Box spanner

Bearing driver

## 12.2 Fault diagnosis

### Low compression pressure

Air escape in crankcase

### Overheat of engine

Slipping of clutch

Lubricant starvation

### Unable to put the shift

Gearshift fork broken or distorted

Fork pin broken

Gear cam wear

### Automatic off-gear

Joint cam is worn out and the edge turns round.

Weakening elasticity of return spring

The spline gear of the spline shaft and spline groove of the

axial force in gear movement.  
The shift drum and shift fork are worn out.

### Strange noises in crankcase

Parts shattered or broken in crankcase

### Engine stalling

Clutch depressed

### Difficulty in gearshift

Half disengagement

Bad operation of shift return spring

Locked groove wear of shift drum

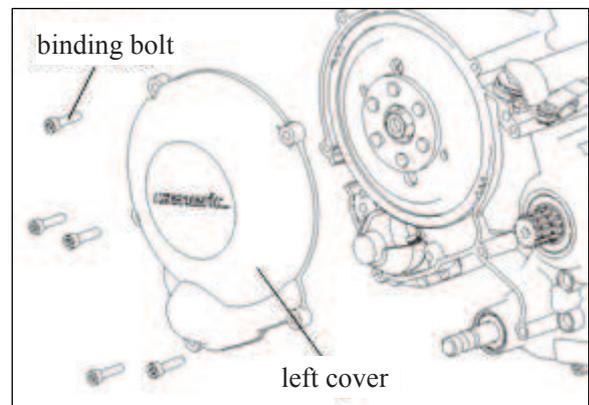
slide gear are worn out, resulting in considerable

## 12.3 Crankcase

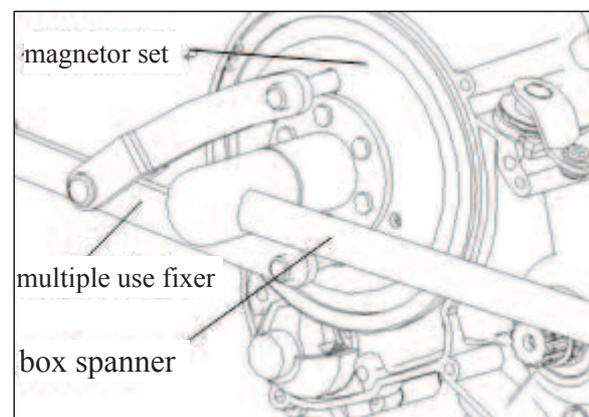
### 12.3.1 Disassembly of left crankcase

#### cover

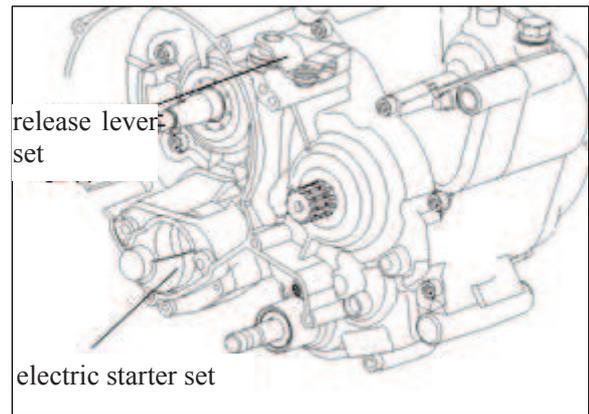
Unscrew the binding bolt and unload the left crankcase cover ( called as left cover for short in the diagram ) .



Unscrew the locknut and unload the magnetor set.

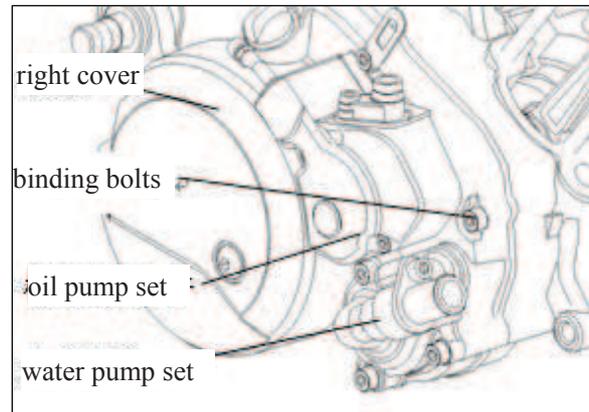


Unload the release lever set.  
Unload the electric starter set.



### 12.3.2 Disassembly of right crankcase cover

Unscrew the binding bolts and unload the right crankcase cover ( called as right cover for short in the diagram) .  
Note: when unloading the right cover, disassemble the oil pump set and water pump set together.



### 12.3.3 Installation of crankcase cover

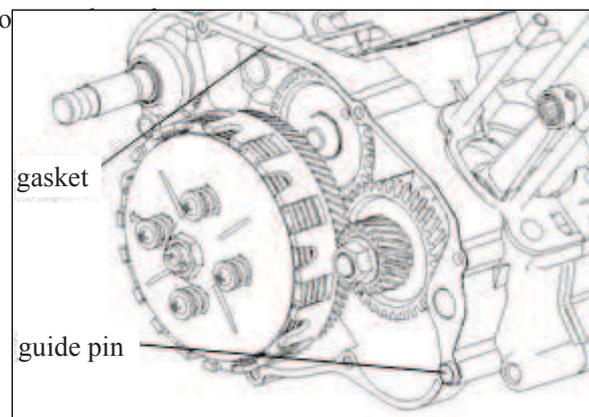
Install in the reverse order of operation.

## 12.4 Clutch

### 12.4.1 Disassembly

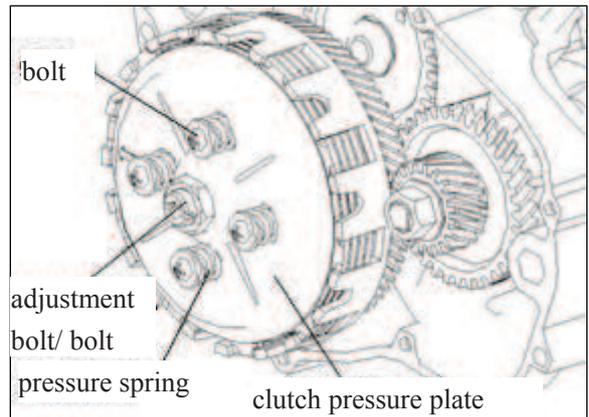
Unload the right cover and then unload the gasket and guide pin.

Remove the adhesive gasket on the joint face of the right co



Unscrew the four bolts, and unload the pressure spring, clutch pressure plate.

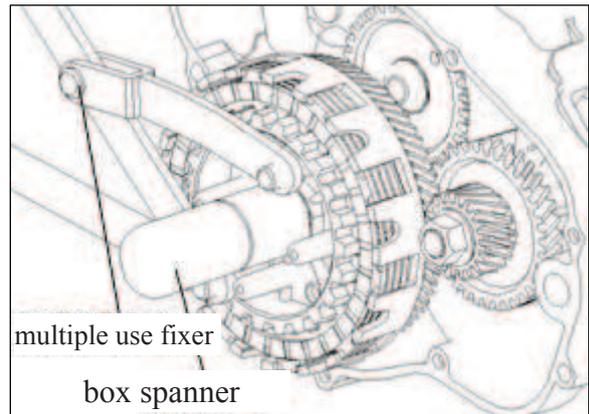
Unload the adjustment bolt and clamp nut on the press plate.



Remove the gasket lock by unscrewing the locknut with a special tool.

Remove the outward release lever of the clutch.

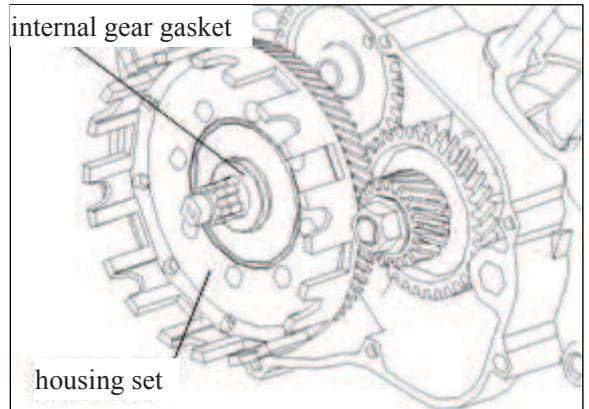
Unload the wearing plate set ( centre, wearing plate set and iron friction plate ). See the dismantling diagram for parts.



Unload the internal gear gasket.

Unload the housing set.

Unload the dish gasket and flat gasket.



Assembly of clutch is conducted in the reverse order of disassembly.