TX200 Service Manual

KEEWAY Motor Corporation Ltd.

Contents

Preface

This manual is an introduction to the maintenance of TX200.

Preparing Documents include all the contents needed, so read it carefully before operation.

Inspections introduce how to check and maintain your motorcycle, which needs to be done regularly.

After the first chapter, the manual will explain parts of the engine, entire motorcycle, electrical parts, and how to disassemble and reassemble these parts.

Each chapter has decomposition map and system diagrams, failure diagnosis and maintenance instructions.

This manual does not separate the two motorcycles when they are described in common parts.

The pictures and content are just for your reference. Please be subject to the actual products if anything is different or updated. Please forgive me for not informing you in advance.

KEEWAY Motor Corporation Ltd.

Preparing Documents

General safety Maintenance rules

Specification table Failure diagnosis

General Safety

Carbon monoxide

Start the engine in a well ventilated place, not a confined one.

Note

Exhausted gas contains poisonous carbon monoxide, which may cause people unconscious and even death. Do use the exhaust removal system when starting the engine in a confined place.

Petrol

Work in a well ventilated place. Open flames are prohibited at places for storing oil and its workplace.

Battery

Battery electrolyte contains sulfuric acid, so do not let the eyes, skin, clothes infected with the electrolyte. Once the skin, clothing infected with electrolyte, they should be thoroughly washed with water immediately; if the eyes are affected, you should go to the hospital as soon as possible.

Special tools

Choose common tools and special tools correctly when dismounting parts. Generic tools are not available to replace the special tools at the same time. What is more, the using force should be appropriate in case that the parts will be damaged.

High-temperature burns

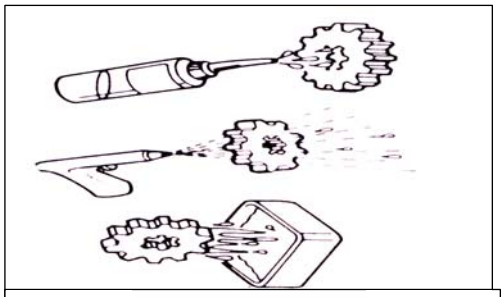
Be careful when checking and operating the motorcycle; especially pay attention not to be burned by the engine, exhaust pipe, muffler and other high temperature components. When you are inspecting the motorcycle with others, do take care of each other and be careful.

Maintenance rules

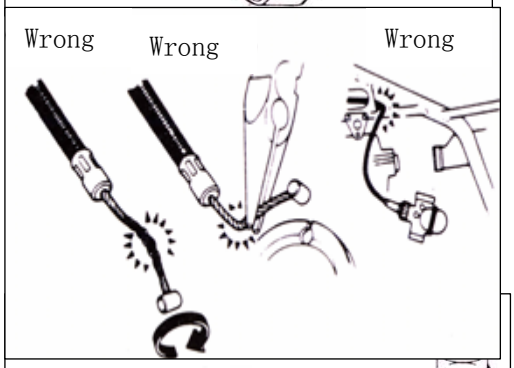
In the maintenance of this bike, metric tools should be used as much as possible; otherwise, the bike will be damaged using the improper tools.

Clean up the dirt of the parts or the assembly parts before removing or opening the motorcycle shield in the maintenance work to prevent dirt falling into the engine, chassis or braking system.

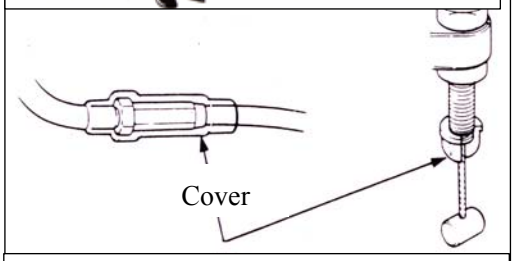
After dismounting the parts, wash and blow the parts with compressed air machines, at last measure wear values.



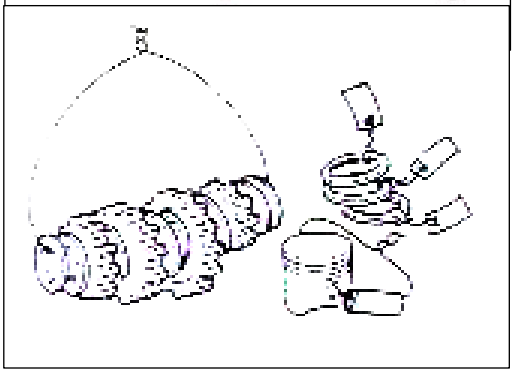
Operation should not be bent or distorted. Otherwise, it will cause operational difficulties or early damage.



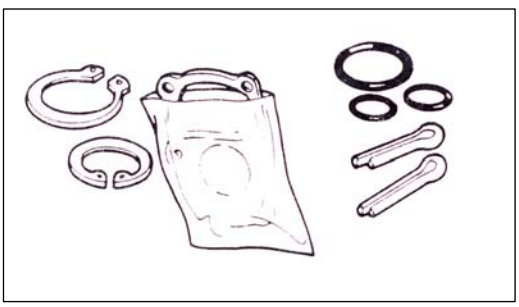
Solvent or oil can easily damage aging rubber articles. So these rubber articles should be checked before reassembling, change them when necessary.。



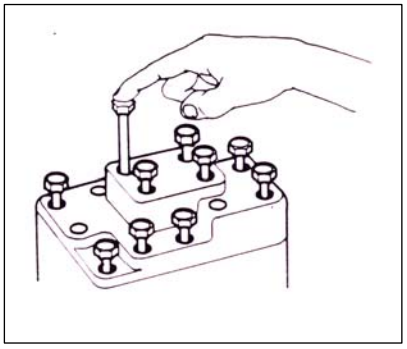
Release parts with kinds of assemblies from outside to the inside. Also, first loosen small assembly. A complex assembly such as the gearbox should be stored in accordance with appropriate assembly sequence in order to be easily assembled in the future.



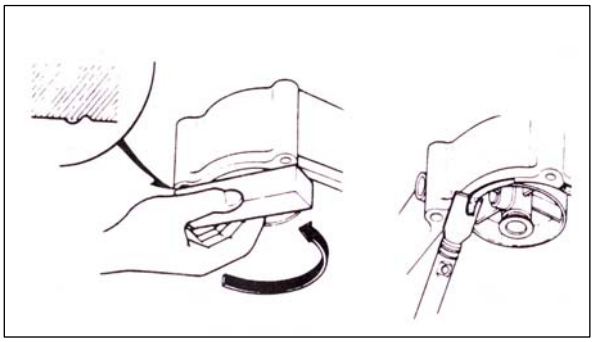
Pay great attention to the dismounting of the important co-location of equipment. Parts which are no longer in use should be replaced in time before dismounting.



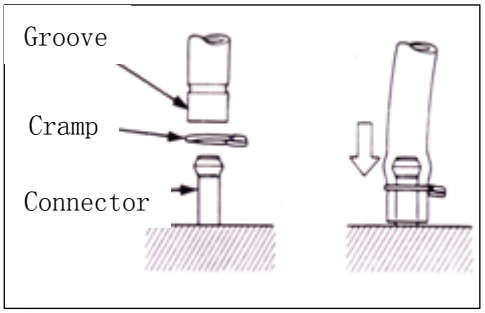
The length of bolts or screws is different for different assemblies and shields, so bolts and screws should be correctly mounted. If there is confusion, you can put the bolt into the hole to see if it is appropriated.



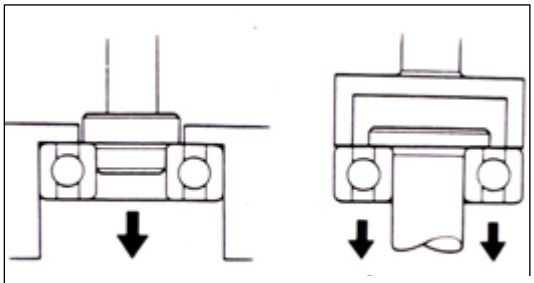
To install the oil seal, first fill the oil seal groove with the grease lubricant, then check whether the seal is smooth, otherwise it will damage the oil seal.



When installing the hosepipe (fuel, vacuum, or cooling agent), you should insert its end to the bottom of the connector in order that there is enough space for the hose clip clipping the connector. Rubber or plastic dirt-proof boot should be installed according to the original design.



When dismantle the ball bearings, you should use a tool to resist one or two (inner or outsider), otherwise the ball bearings may be damaged during the demolition and must be replaced.



The above two examples will make the Bearings crack.

Specifications（TX200-AOff-road type）

<table>
<tr><td colspan="2">Model</td><td colspan="3">QJ200GY-AOff-road type</td><td rowspan="11">Engine</td><td>Engine type</td><td>QJ164FML</td></tr>
<tr><td colspan="2">Length mm</td><td colspan="3">2100</td><td>Fuel type</td><td>Above 90# White gasoline</td></tr>
<tr><td colspan="2">Width mm</td><td colspan="3">770</td><td>Cylinders</td><td>1</td></tr>
<tr><td colspan="2">Height mm</td><td colspan="3">1090</td><td>Bore*Stroke</td><td>63.5mmx62.2mm</td></tr>
<tr><td colspan="2">Wheel base mm</td><td colspan="3">1365</td><td>Swept volume</td><td>197CC</td></tr>
<tr><td colspan="2" rowspan="3">Weight kg</td><td>Forward shaft</td><td colspan="2">45.9kg</td><td>Starting system</td><td>Electric/kick start</td></tr>
<tr><td>Back shaft</td><td colspan="2">89.1kg</td><td>Cooling system</td><td>Air forced</td></tr>
<tr><td>Total</td><td colspan="2">135kg</td><td>Lubrication</td><td>Force-feed and splash</td></tr>
<tr><td colspan="2" rowspan="4">Tire size</td><td>Front(inside）</td><td>Front(outside）</td><td rowspan="4">Oil capacity</td><td rowspan="4">1.2L</td></tr>
<tr><td>90/ 90-19</td><td>90/ 90-19</td></tr>
<tr><td>Rear（inside）</td><td>Rear（outside）</td></tr>
<tr><td>110/90-17</td><td>110/ 90-17</td></tr>
<tr><td rowspan="3">Transmission</td><td>Clutch</td><td colspan="3" rowspan="2">Multiple-disc oil friction disc</td><td>Air cleaner</td><td>Sponge</td></tr>
<tr><td rowspan="2">Fuel capacity</td><td rowspan="2">12L</td></tr>
<tr><td>Gearshift</td><td colspan="3">Manually</td><td rowspan="6">Performances</td><td>Max speed</td><td>106 km/h</td></tr>
<tr><td rowspan="2">Transmission</td><td colspan="3" rowspan="2">Chain transmission</td><td>Gradeability</td><td>Maximum permissible gradient>=15°</td></tr>
<tr><td rowspan="2">Idling speed</td><td rowspan="2">1400±100rpm/min</td></tr>
<tr><td rowspan="5">Electric installation</td><td>Max torque</td><td>14N.m/6000r/min</td></tr>
<tr><td>Battery capacity/type</td><td colspan="3">12V-9AH/dry charged cell</td><td>Max Hp</td><td>9.5KW/7550r/min</td></tr>
<tr><td>Dynamo type</td><td colspan="3">Permanent AC motor</td><td>Compression Ratio</td><td>8.3:1</td></tr>
<tr><td>Spark plug</td><td colspan="3">BR8ES/F10KC</td><td>Cylinder pressure</td><td>1.0-1.1Mpa</td></tr>
<tr><td>Spark plug gap</td><td colspan="3">0.5-0.7mm</td><td rowspan="2">Braking system</td><td>Front fluid brake disc unit</td><td>φ285mm</td></tr>
<tr><td>Ignition</td><td colspan="3">CDI</td><td>Rear fluid brake disc unit</td><td>φ220mm</td></tr>
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Specifications (TX200 Street type)

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<tr><td colspan="2">Model</td><td colspan="2">QJ200GY-AStreet type</td><td rowspan="11">Engine</td><td>Engine type</td><td>QJ164FML</td></tr>
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<tr><td colspan="2" rowspan="4">Tire size</td><td colspan="2">front（outside）</td><td rowspan="2">Oil capacity</td><td rowspan="2">Oil capacity</td></tr>
<tr><td colspan="2">100/80-17</td></tr>
<tr><td colspan="2">rear（outside）</td><td rowspan="2">Air cleaner</td><td rowspan="2">Air cleaner</td></tr>
<tr><td colspan="2">130/80-17</td></tr>
<tr><td rowspan="4">Transmission</td><td rowspan="2">Clutch</td><td colspan="2" rowspan="2">Multiple-disc oil friction disc</td><td>Fuel capacity</td><td>12L</td></tr>
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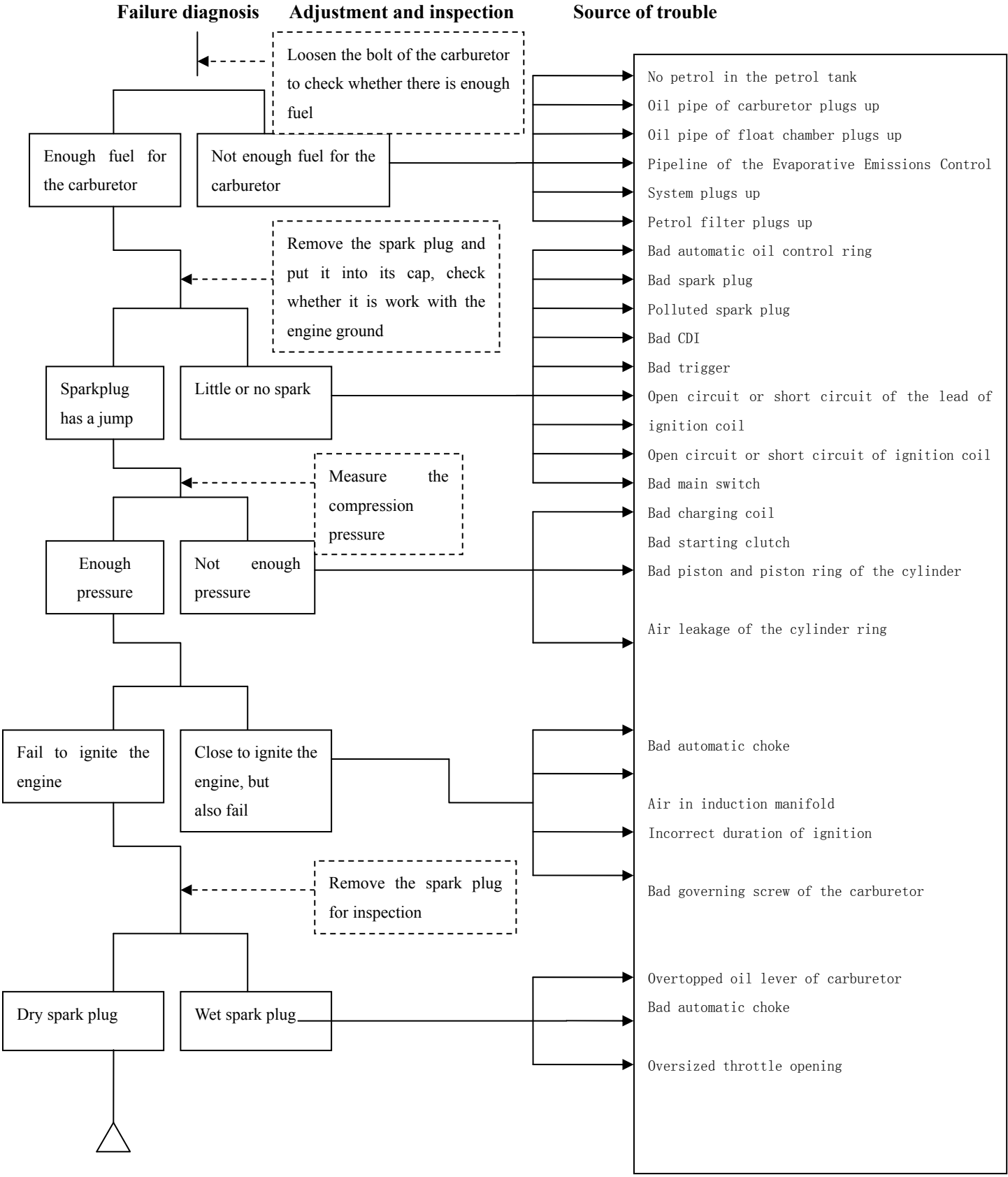
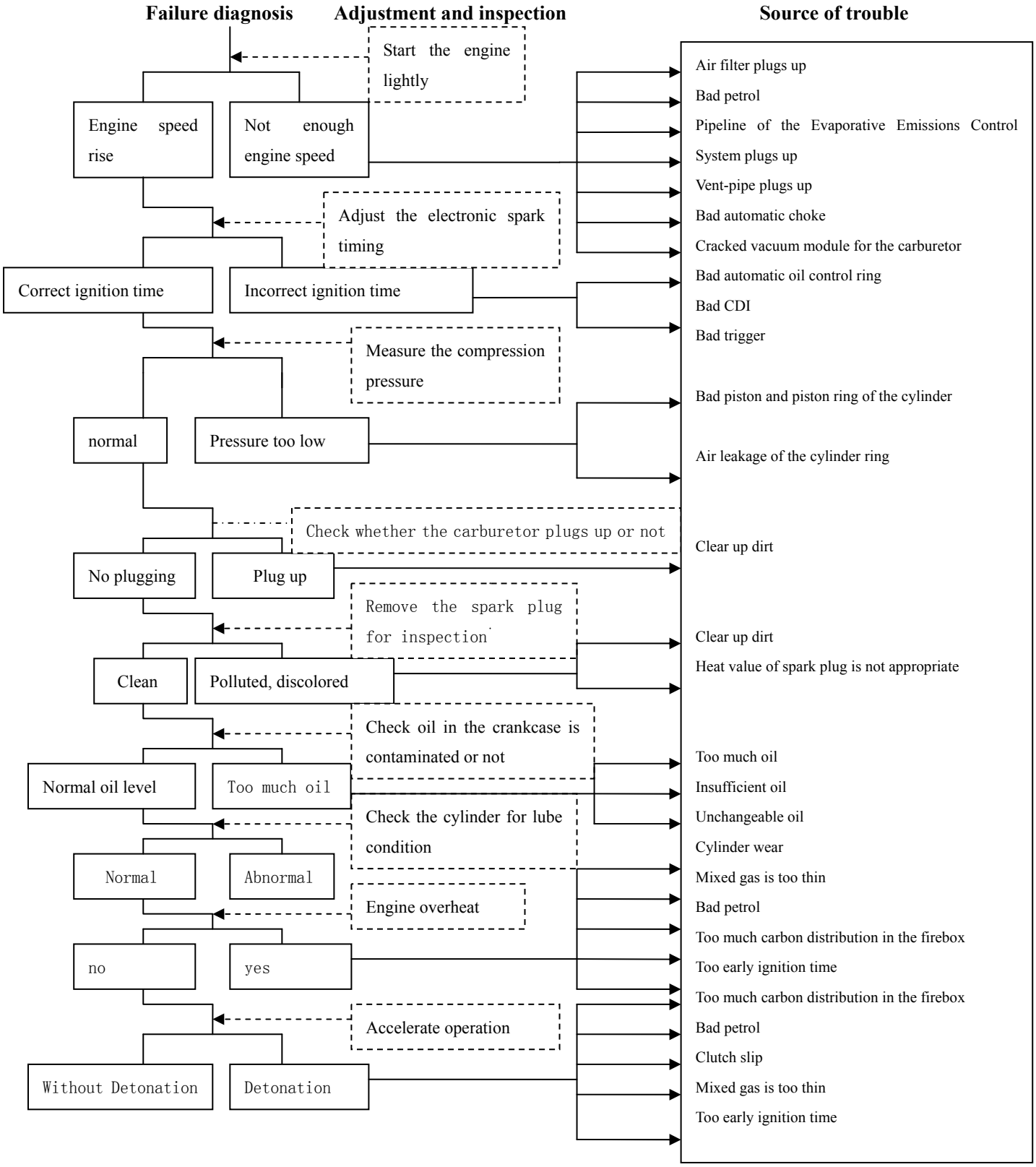
Failure diagnosis

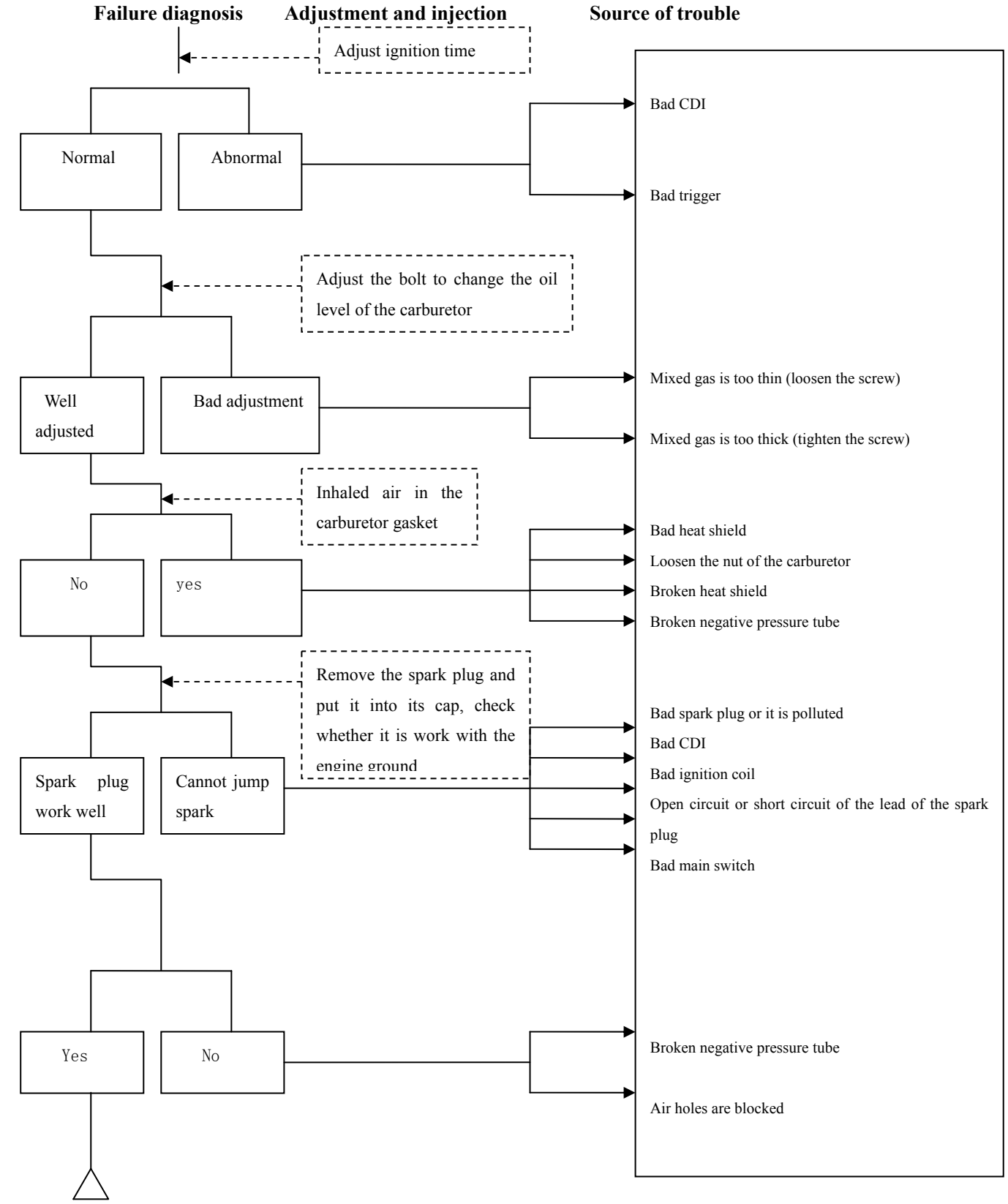
Hard to start hard or can not start



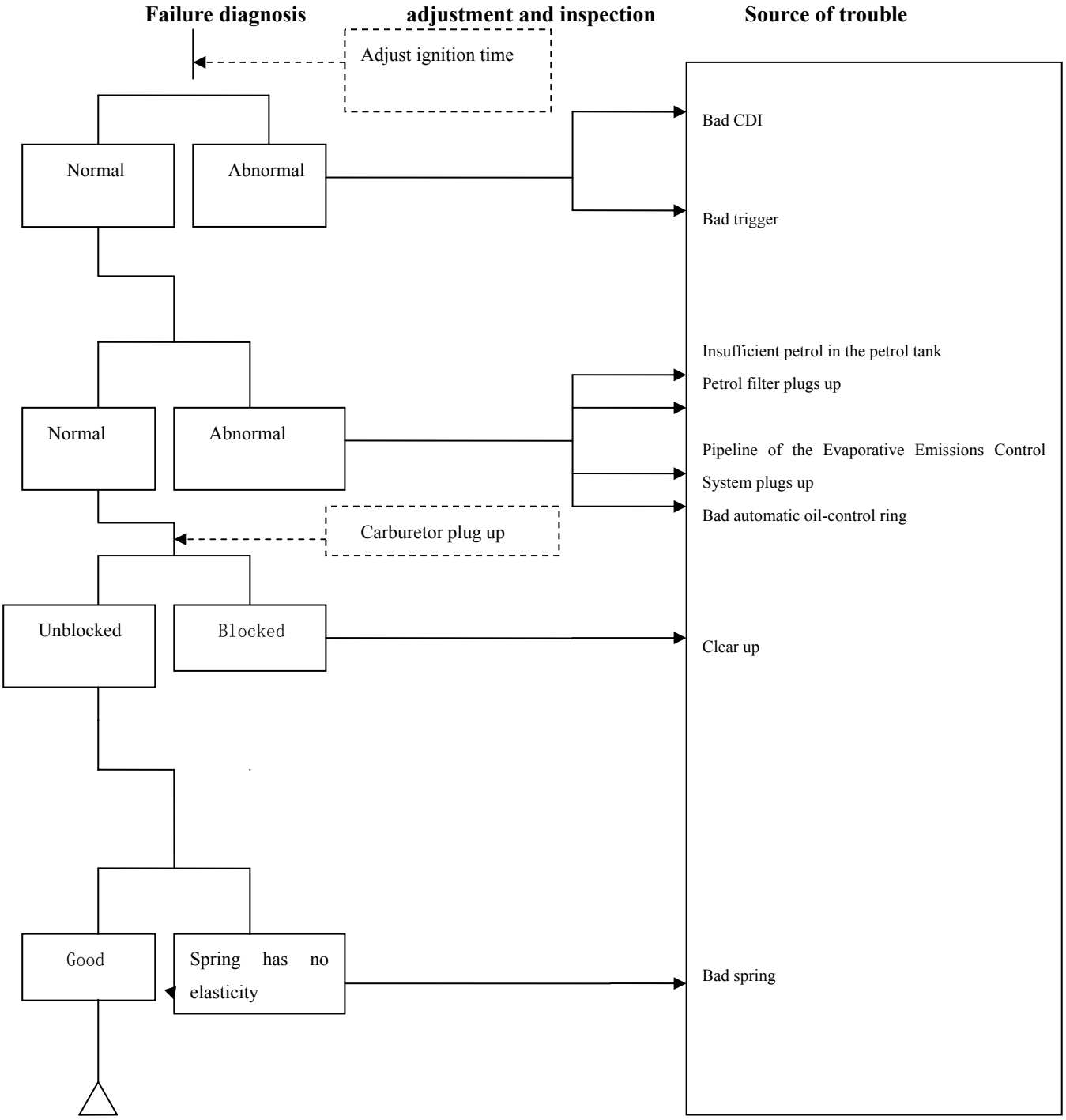
Unsmooth rotation（under speed）



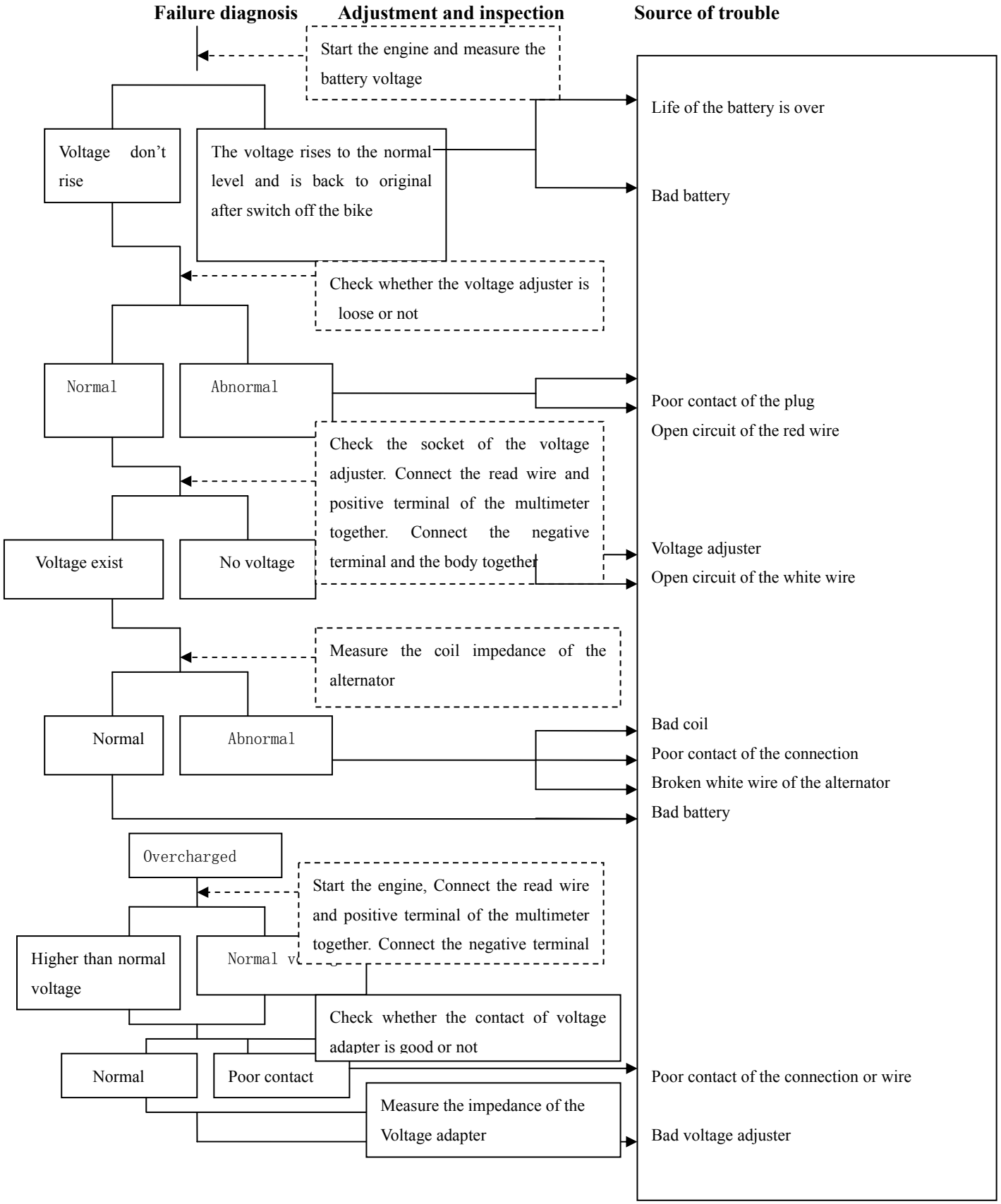
Unsmooth rotation（especially low speed）



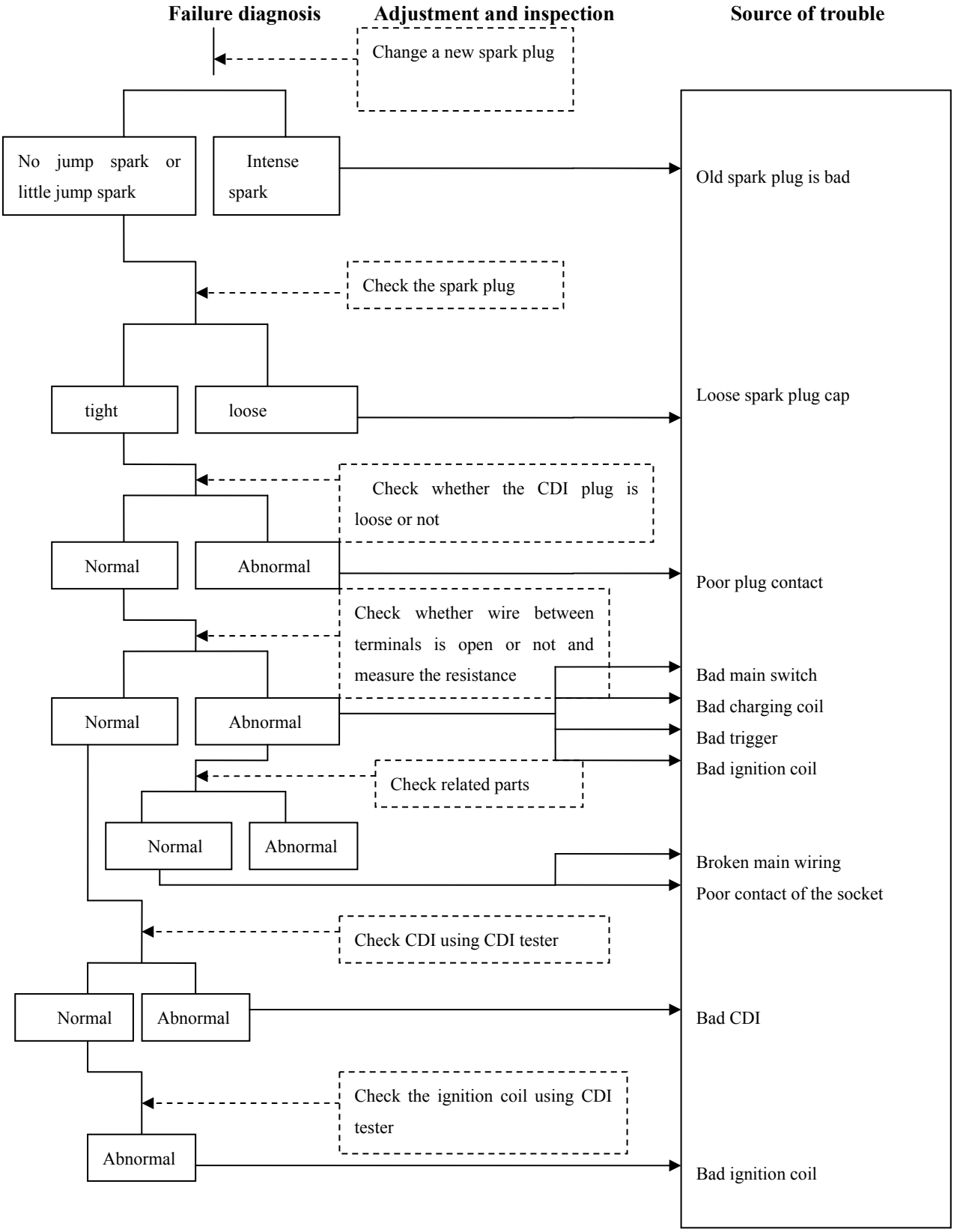
Unsmooth rotation（especially high speed）



Bad battery（over discharged or overcharged）



Spark plug cannot jump



Inspection/Adjustment

Preparing information Cylinder pressure

Check list for periodical maintenance Gear oil

Engine oil/Oil filter screen Gear oil change

Petrol filter Drive chain

Cable accelerator inspection/adjustment Front/Rear travel clearance

Air cleaner Front brake shoe wear

Spark plug Headlight

Battery Clutch

Carburetor Front/Rear suspension system

Electronic spark timing bolt/nut/mounting block

Rim/tire tire type

Direction column bearing and knob mounting block

Preparation Principles

In a general way

Warning!

•Start the engine in a well ventilated place, not a confined one. Exhausted gas contains poisonous carbon monoxide, which may cause people unconscious and even death.

•Under certain condition, petrol is easy to volatile and explode, so its workplace should be ventilated and it should be stopped. Flames are prohibitive in its workplace and fuel storage place.

Specification

Engine

Idling speed	1400±100rpm/min		
Plug gap gauge	0.5-0.7mm	Oil capacity	0.5L
Spark plug type	BR8ES/F10KC		
Cylinder compression pressure	1.1-1.3Mpa/1400rpm		
Duration of ignition	BTDC12°（+/-）1°　1400±100rpm		

Frame

Front brake lever free stroke	10-20mm			
Rear brake pedal free play	10-20mm			
Tire pressure unit ： Kpa	Specification			Tire pressure
	QJ200GY-AOff-road type	Front wheel	90/ 90-19	225kpa
		Rear wheel	110/90-17	225kpa
	QJ200GY-AStreet type	Front wheel	100/80-17	225kpa
		Rear wheel	130/80-17	225kpa
Torque force value	Front axle nut	100-113 N·m		
	Rear axle nut	100-113 N·m		

Check list for periodical maintenance

	maintenance mileage and time Check item	every 300 KM	Every 1000 KM	Every 3000 KM	Every 6000 KM	Every 12000 KM	Every 14500 KM	Using tools
		New	1month	3months	6months	12months	15months	
*	Air filter	I		C	C	R	C	Common tools
*	Petrol filter	I			I	R		Common tools
*	Oil filter	C			C	C		Common tools
	Engine oil replacement	R	Change oil every 1500KM					Common tools
	Tire pressure	I	I	I	I	I	I	Tire gauge, inflator
	Battery inspection	I	I	I	I	I	I	Densimeter multimeter
	Actuate gap inspection	I	I	I	I	I	I	Common tools
	Loose steering control inspection	I			I	I		Common tools
	Absorber inspection	I			I	I		Common tools
	loose screw inspection	I	I	I	I	I	I	Torque spanner
	Leakage of the gearbox inspection	I	I	I	I	I	I	Common tools
*	Spark plug inspection or replacement	I		I	R	R	I	Common tools
*	Gearbox oil replacement	I	Change oil every 5000KM					Common tools
	Each part lubrication				L	L		Oil lubricator
	Exhaust pipe	I	I	I	I	I	I	Common tools
*	Electronic spark timing	I	I	I	I	I	I	Timing light
*	Carburetor	A	I	A	A	A	A	Tachometer CO HC analyzer
*	Emission check at idling speed	A	I	A	A	A	A	
*	Accelerator speed	I		I	I	I	I	Common tools
	Fuel pipe inspection	I		I	I	I	I	Common tools
	Integral instrument lighting electric equipment	I	I	I	I	I	I	Common tools
	Main stand bracket	I			I	I		Common tools
	Absorber			I	I	I	I	Common tools
*	Bolt torque force of the engine	I		I	I	I	I	Torque spanner

Prospective inspection

1	Ignition system—-a clear continuity of ignition disorders, the engine catch fire, overheating phenomenon, do maintenance check.
2	Carbon distribution—-clearly insufficient power，carbon distribution should be done at places such as cylinder head, valve head and exhaust system.
3	Valve, cylinder—-excessive wear of the cylinder，replace the old ones.

Please go to KEEWAY dealer for inspection on a regular basis. The bike should be adjusted regularly to ensure the best driving Status.

In the table, suppose the bike works 1000KM per month.

I—inspection A—adjustment R—replacement C—clean L—lubrication

Notes： 1.“*****”Emissions projects should follow the State Environmental Protection Agency requirements .you must use the instructions provided by the company to implement regular maintenance, it is strictly prohibited for you to maintain it by yourself, otherwise you handle your own risk.

2. In the gravel road or driving under heavily polluted environment, you should increase the frequency of cleaning the air filter in order to extend its life span.

3. Often driving at very high speed or higher traveling mileage, you should increase your maintenance frequency

Engine oil/filter

Oil level

***Note**

•The motorcycle should be parked on a flat ground when checking its oil level
•2-3 minutes after the engine running, and stop about 2-3 minutes and then check the oil level.

Check the oil level.

When the oil level is below the lower limit, add it to the upper limit.

Oil replacement

***Note**

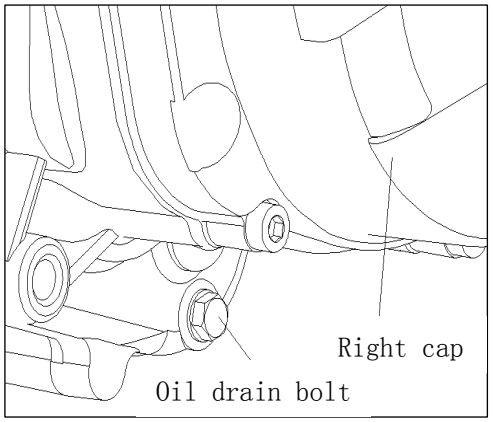
It will be easier to change the oil when the engine is warming up.

Turn off the engine.

Remove the bolt at the bottom of the crankcase and release oil。

When the oil leaks completely, you can install the bolt and packing washer after they are cleaned.

Add oil to the required level。



Oil capacity：0.5L

Check the oil leakage when the engine operates at its idling speed.

Check the oil capacity again.

Petrol filter

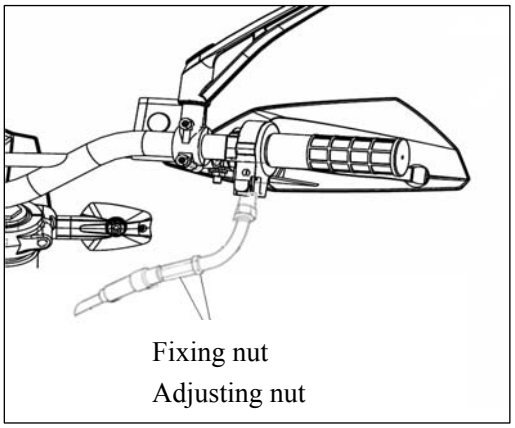
Fuel pipe deterioration and damage inspection

If there is any deterioration, damage, fuel leaks and other phenomena, it should be replaced。

Warning！

No open flames!

Cable accelerator inspection/adjustment



Check whether the cable accelerator is smooth or not.

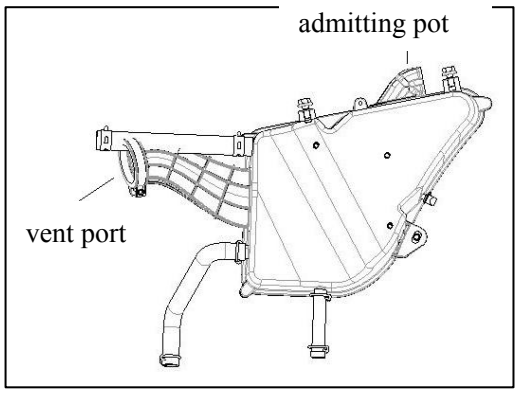
Check the travel clearance.

Travel clearance：2-6mm

The carburetor side needs mainly adjusted

Loosen the fixed nut, and adjust the adjusting nut.

Air filter



Filter replacement

Remove the cushion and body shield

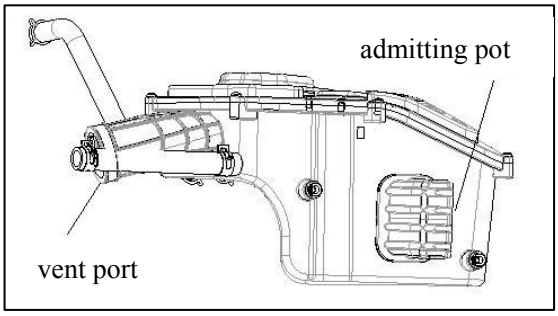
Remove the set screw on the air filter cap in order to remove the filter cap.

Remove the filter

Remove the sponge from the filter from falling

Check whether the filter has been polluted or damaged, if any, replace the old ones.

Replacement time

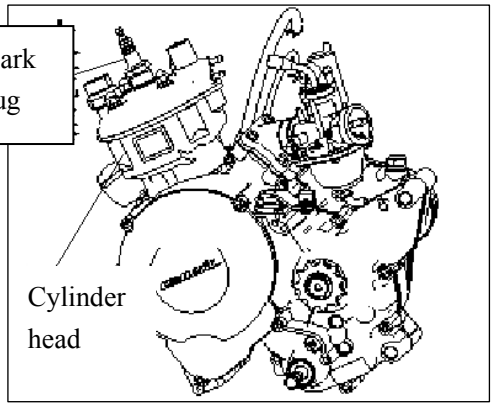


Replace at an early time if the motorcycle is always running on rainy days.

***Note**

•Make sure the air filter cap is well installed before installing the filter

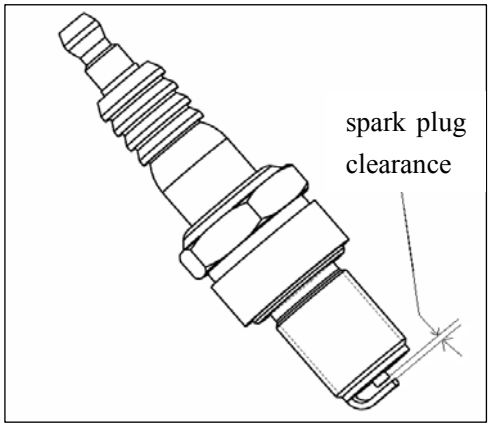
Spark plug



Remove the spark plug
Check the burning, pollution, carbon distribution of the plug
In the above condition, use the spark plug cleaner
or steel brusher.

Check spark plug gap

gap：0.5-0.7mm



***Note**

When installing the plug, first install it by hand and then use the spark plug box (socket) spanner to make it tight

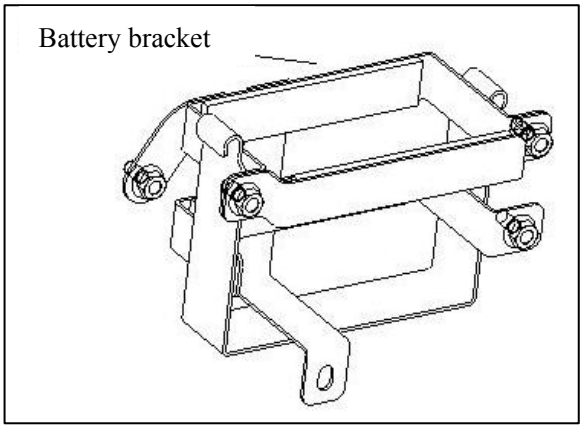
Battery

Battery removal

Open the cushion.
Remove the left sheeting.
First remove the negative wire and then
remove the positive wire.
Remove the battery.

Warning！

The tools for removing the positive electrode should not contact the frame, otherwise it will be very dangerous that
the damaged battery will cause fire.



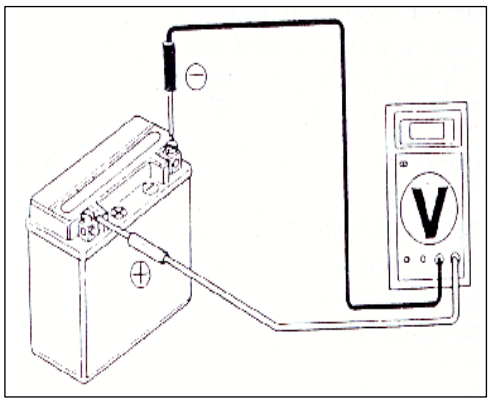
Install the battery following the opposite sequence.

warning！

First positive and then negative to prevent short circuit.

Charging state（closed circuit voltage）inspection

Open the cushion
Open the air filter cap, remove the battery connector wires.



Measure the voltage between battery terminals
Full charge：13.1V
Under charge：12.3V
***Note**

Charge state examination must use a voltmeter operation.

Charge

Connection method： Connect the battery charger positive pole and battery positive pole together. Connect the battery charger negative pole and battery negative pole together.

Warning！

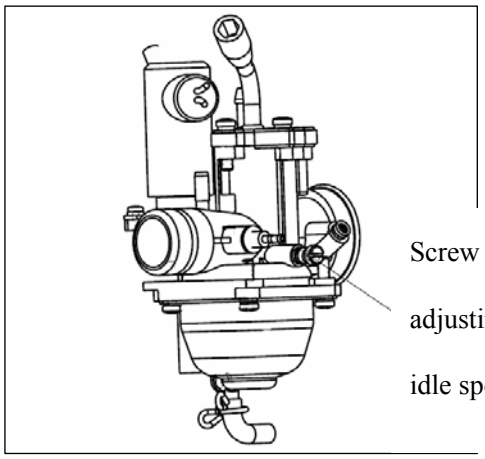
•Battery should be far away from fire source •Turn off the charger switches when starting or completing charging in order to prevent spark of the connections resulting in explosion. •You must follow the required current time when charging.

***Note**

•Except emergencies, you should not use emergency charge •Measure the voltage for every other 30 minutes

Charging current：standard：0.4A
Rapid：4.0A
Charging time：standard：10-15 hours
Rapid：30 minutes
Charging complete：closed circuit voltage：Above 12.8V

Carburetor



Idle speed Adjustment

***Note**

Idle adjustment was made in the implementation of the engine warm-up state.

Implement after warm-up of the engine
Connect the engine rotation meter after running the engine

Adjust the screw of the cable accelerator to rotating velocity

Idle speed：1400±100rpm/min

Adjust the idling adjusting screw when idle speed

is unstable or unsmooth after oiling lightly.

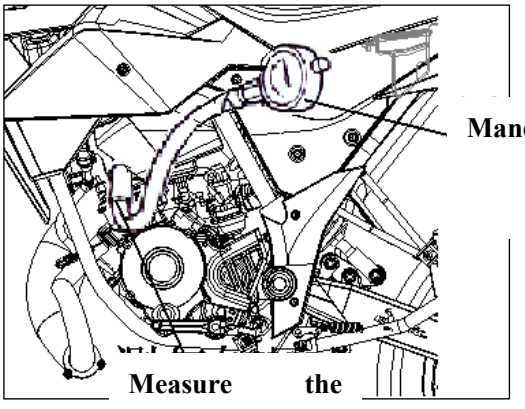
Ignition timing

***Note**

CDI ignition system does not need adjust ignition timing. Check the ignition system when ignition timing is not right.

Remove the left bonnet of the engine.
Check the ignition timing to make sure the ignition right

Cylinder pressure



Measure the cylinder pressure

Operate when the engine warm up.
Remove the spark plug.
Install the cylinder pressure gauge.
At full throttle, measure the cylinder pressure
Manometer
Measure the cylinder pressure
Compression pressure：1.1-1.3Mpa/1400rpm
When compression pressure is too low, check the following items：
—Cylinder head gasket damage

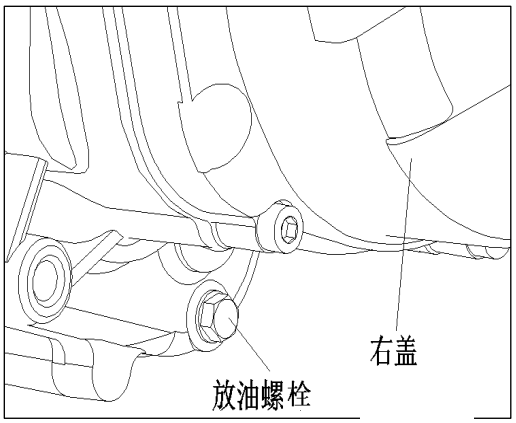
—Piston ring damage
—Piston ring wear
—Piston, cylinder wear and tear
When compression pressure is too high, check the Combustion chamber and too much carbon distribution at piston head.

Gear oil

Inspection

***Note**

Stop on smooth, level ground, turn the ignition OFF remove the key.Use the center stand to park the scooter and allow the engine to cool.



Right cover

Oil drain bolt

Remove and check the bolt after the engine stopped.
Oil
Add gear oil when the oil level is low.
Install the checking bolt.

***Note**

Check whether the leak tightness of the bolt wears or not.

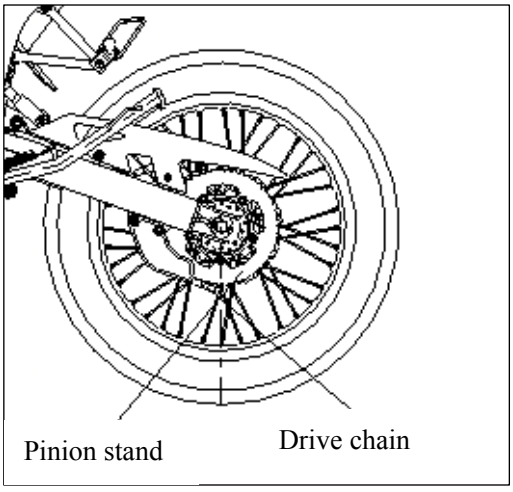
Gear oil replacement

Remove the gear oil checking bolt
Remove the oil drain bolt and let the gear go out.
Install the drain bolt.

***Note**

Confirm whether the bolts wear or not.

Add gear oil
Check whether there is leakage in every part after operation.



Drive chain

Remove the oil seal and check whether it wears or not.
Check whether the rear bearings are damaged and remove the

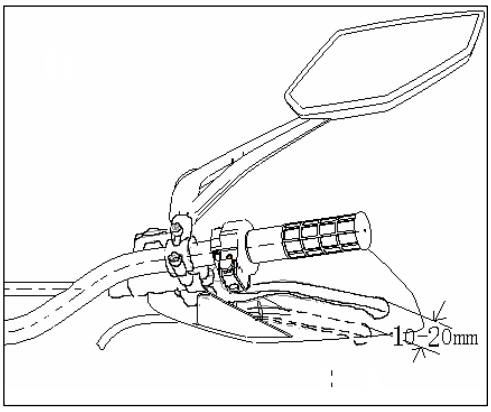
bearings.
Remove the bushing.
Remove the drive chain and bolt of the chain wheel
from the chain wheel seat.
Check whether the drain chain and chain wheel exceed
Limits size.

Front/Rear braking free path

Front braking free path

Measure the front braking free path at the point of the brake lever.

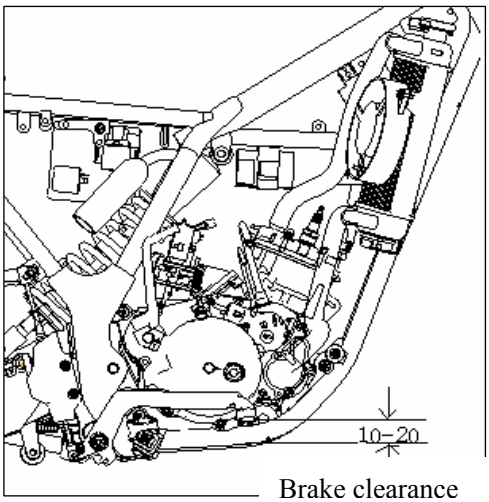
Travelling clearance：10-20mm



Rear braking free path

Measure the rear braking free path at the point of the brake pedal.

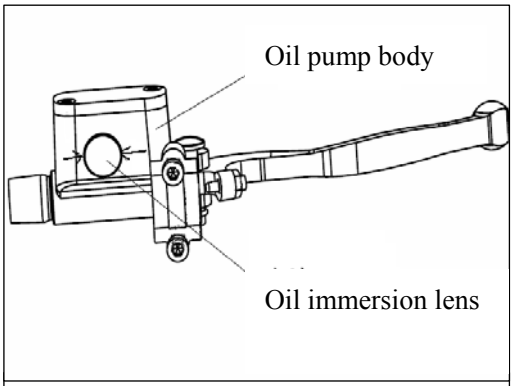
Travelling clearance：10-20mm



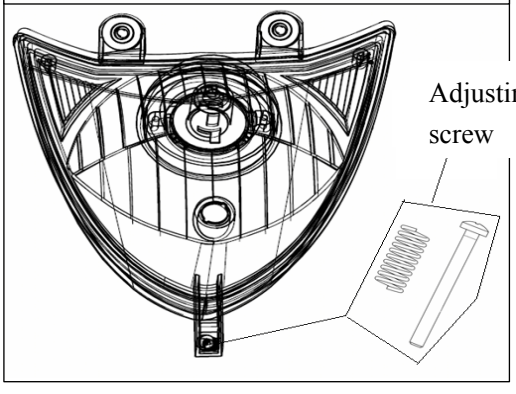
Brake clearance

Front brake shoe wear

When you press the brake in the end, you can check the oil level from the oil mirror. If the level of the brake fluid is right aligned with the
Arrow showed in the picture, you should change the shoe.

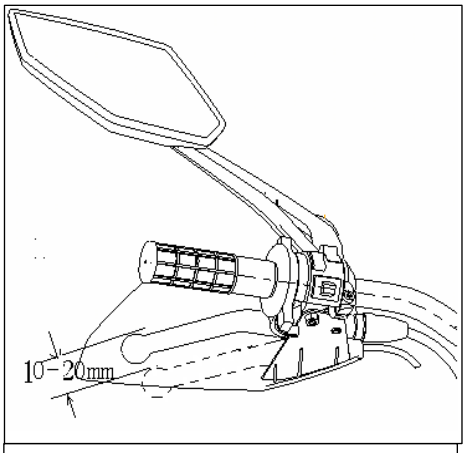


Front light



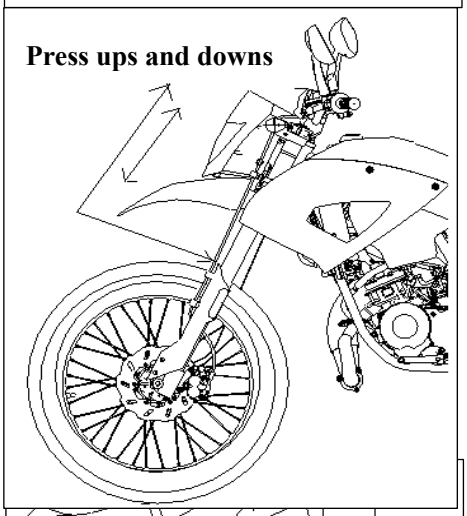
Adjustment

Loosen the adjusting screw of the front light in order to adjust the optical axis.



Clutch

Start the engine and increase its speed gradually to check the clutch.
If the motorcycle fails to go and the engine stops, you should check the clutch block. If necessary, change a new one.
Clutch clearance：10-20mm



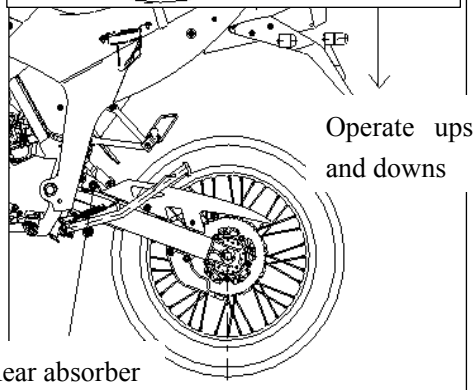
Front/rear suspension system

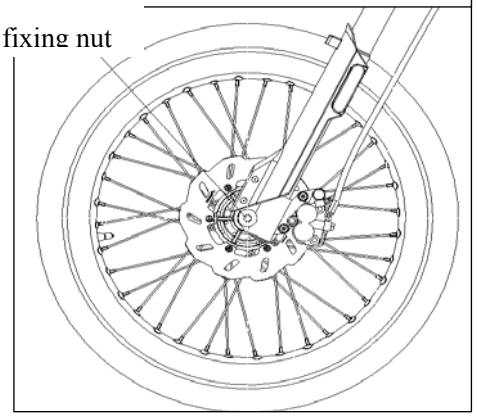
Front

Pull the front brake tight and check the absorber.
Check whether the absorber has leakage or loose.

Rear

Check the rear absorber when operating.
Check whether part of the absorber is loose or wear.
Suspend the rear wheel and check it movingly.
Check whether the suspension bushing of the engine is loose or not.

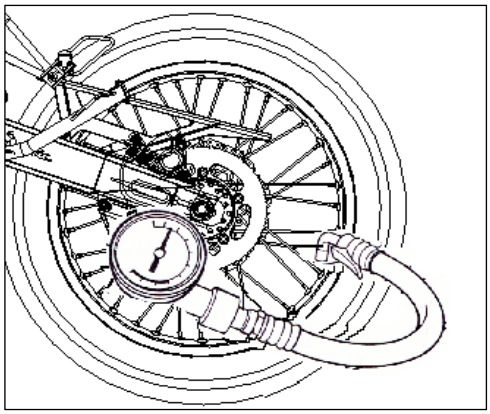




Nuts/bolts/fixed parts

Check whether nuts, bolts, fixed parts are loose or not.
If any, tightening them according to their torque force.

Rim/Tire



Check whether the tire or rim has crack, screw or any other damage.
Check the tire pressure.

***Note**

Check the tire air pressure when it is cold.

Standard air pressure **Unit：Kpa**

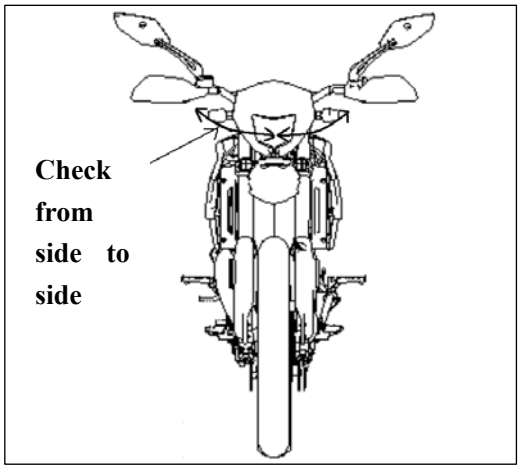
Specification			**Tire pressure**
QJ200GY-AOff-road type	**Front wheel**	90/90-19	225
	Rear wheel	110/90-17	225
QJ200GY-AStreet type	**Front wheel**	100/80-17	225
	Rear wheel	130/80-17	225

Tire specifications

QJ200GY-A Off-road type	**Front wheel inside**	90/90-19
	Front wheel outside	90/90-19
	Rear wheel inside	110/90-17
	Rear wheel outside	110/90-17
QJ200GY-A Street type	**Front wheel**	100/80-17
	Rear wheel	130/80-17

Check whether the front wheel axle is loose or not.
Check whether the rear wheel nut is loose or not.
If there is any loosening, tightening them according to the required torque force value.

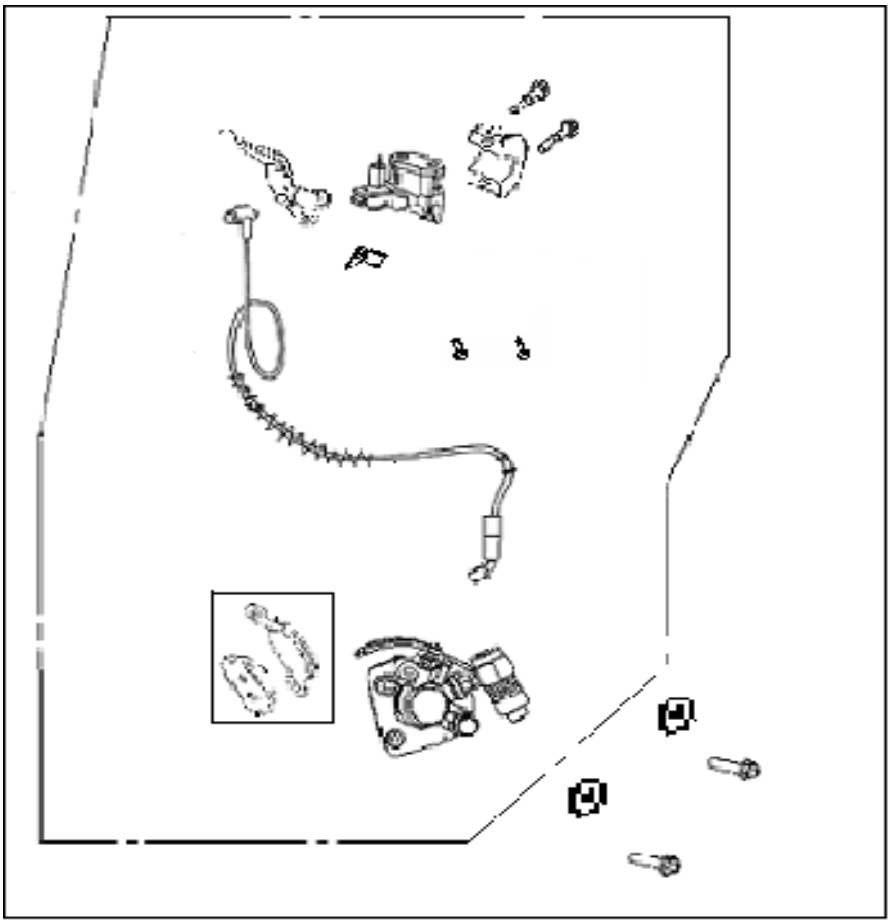
Torque force value: Front wheel axle 100-113 N·m
Rear wheel nut 100-113 N·m



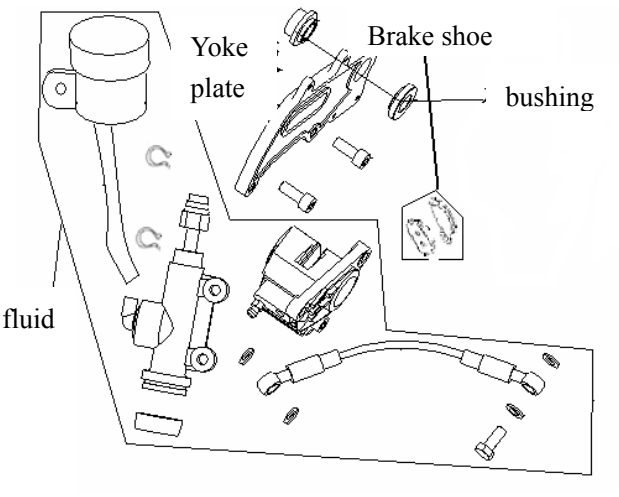
Steering column bearings and handle fixed

Swing the handle in order to confirm there is no interference with wire.
Confirm the handle turn freely when the front wheel turns.
If the handle is loose or unsmooth, you should check the steering column bearings.

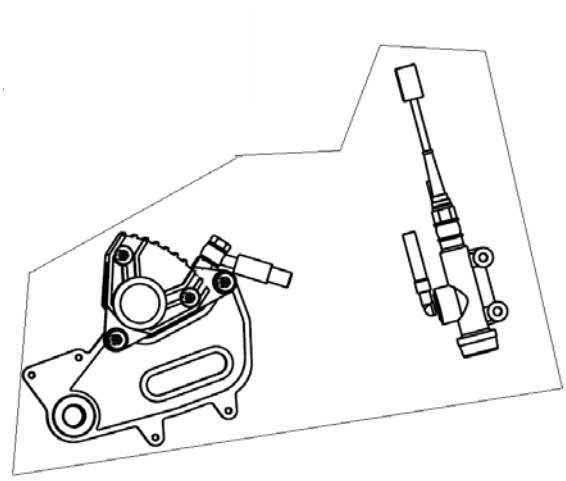
Front fluid brake



Rear fluid brake



Rear fluid brake assembly



1 Brake

1.1 Maintenance instruction

Operation notes

***Note**

•Parts of the braking system should not be polluted when installing or removing.
•Use the required cleaner to prevent affecting the function of the braking system.

Check the brake before riding

1.1.1Specifications

Items	Standard value(mm)	Available limits (mm)
front brake disc thickness	4.0	-
front brake shoe thickness	4.5	3.0
rear brake disc thickness	4.0	-
Rear brake shoe thickness	4.5	3.0

QJ200GY-A（Off-road type） front fluid brake disc diameter φ285mm rear fluid brake disc diameter φ220mm

QJ200GY-A（Street type） front fluid brake disc diameter φ285mm rear fluid brake disc diameter φ220mm

1.1.2 Torque force

Brake disc fixed bolt 22-29 N·m

Fluid brake mounting bolt 22-29 N·m

1.2 Failure Diagnosis

Brake

Poor performance of the braking system Slow reaction and tight lever

1. Improper adjustments for the brake
2. Brake shoe wears
3. Improper installation for the brake shoe
4. Polluted brake shoe

1. Improper adjustments for the brake
2. Brake shoe wear
3. Improper installation for the brake shoe

Abnormal noise

1. Brake shoe wears
2. Polluted brake shoe

1.3 Front fluid brake

1.3.1 Remove

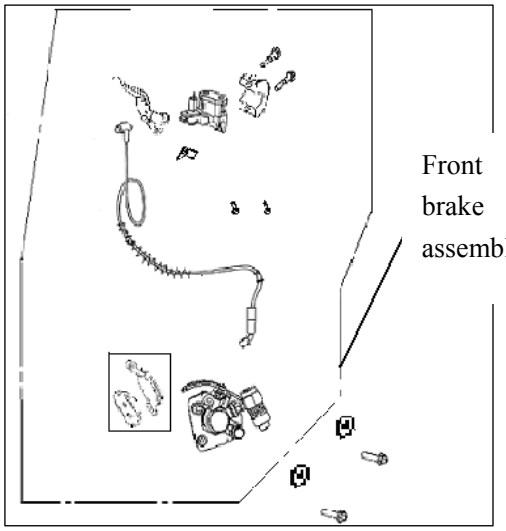
***Note**

•Replacement of the brake shoe assembly. •Mark the replaced shoe for the next use

Remove the following parts from the front absorber

Front brake：

1. Brake shoe
2. Oil pipe of front fluid brake
3. Part of brake cylinder



Front brake assembly

***Note**

• Oil should not be allowed to pollute the brake shoe during installing and removing. •Use the required cleaner to prevent affecting the function of the braking system.

Remove the front wheel axle.

Remove the front wheel.

Loosen the fixed bolt of the brake cylinder.

Remove the brake cylinder from the front absorber.

1.3.2 Inspection

Replace the shoe when necessary.

Measure the brake shoe and disc and write down the maximum.

Specialties

QJ200GY-A（Off-road type） Front fluid brake disc diameter φ285mm

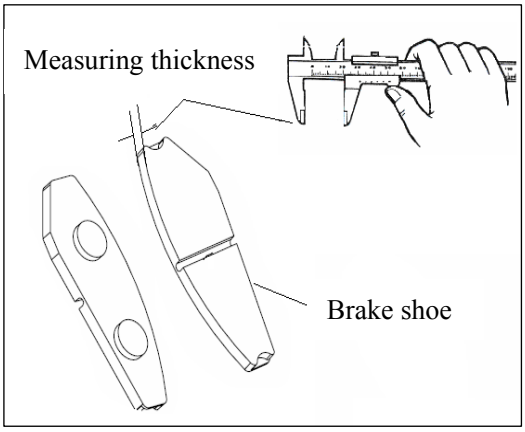
QJ200GY-A（Street type） Front fluid brake disc diameter φ285mm

***Note**

•Use inside micrometer or caliper only to measure.

Measure the thickness of the brake shoe.
If the thickness of the brake disc and shoe is smaller than the maintenance value or polluted by oil, they should be replaced.

Available limits: Brake shoe 3.0 mm



1.3.3 Installation

Install front wheel.
Install the oil pipe for the fluid brake and brake cylinder assembly.
Don't let the oil stains pollute the brake shoe.

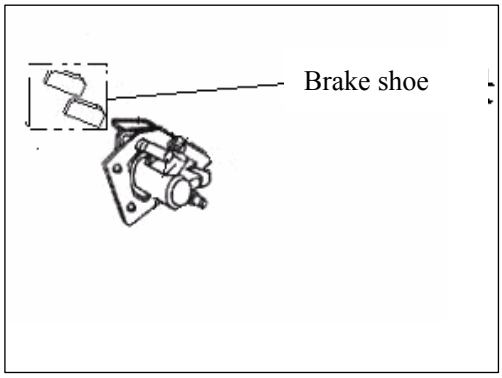
***Note**

If there is oil stains on the brake shoe, the performance of the brake will go bad.

Tighten the nuts and bolts according to their torque force value.

Torque force value:

Brake disc fixing bolt	**22-29 N·m**
Fluid brake mounting bolt	**22-29 N·m**



Don't let oil stains pollute the shoe.
If the shoe is polluted by oil stains, you should us special cleaner to clean it up.

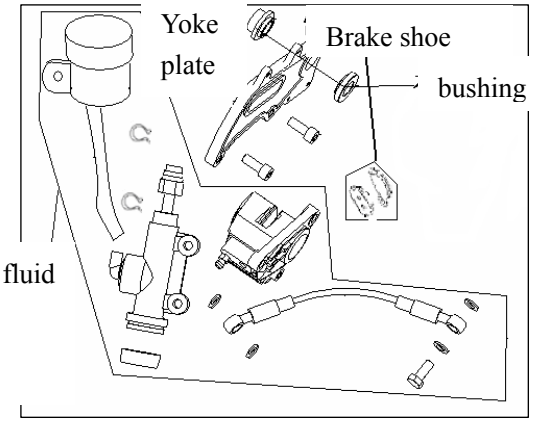
***Note**

If there is oil stains on the brake shoe, the performance of the brake will go bad.

1.4 Rear fluid brake

1.4.1 Remove

Remove the rear brake cylinder assembly.
Remove rear wheel.
Remove the brake disc from the rear wheel hub.



Note：The brake disc cannot be removed unless it is be heated.

***Note**

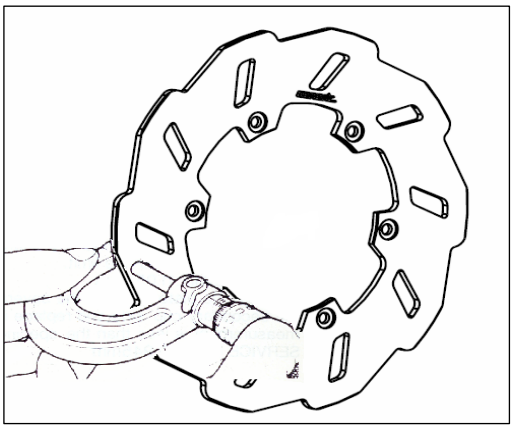
•Brake shoe replacement. •Mark the replaced shoe for the next use

Remove the follow parts from the rear wheel

Rear brake：

1. Rear fluid brake assembly
2. Brake shoe assembly
3. Bushing
4. Link Plate

1.4.2 Inspection



Check whether the brake shoe and disc wear, if necessary, replace new ones.

Measure the brake shoe and disc and write down the maximum.

***Note**

•If the disc get rust, clean it with#120 sand paper. •Use micrometer only to measure.

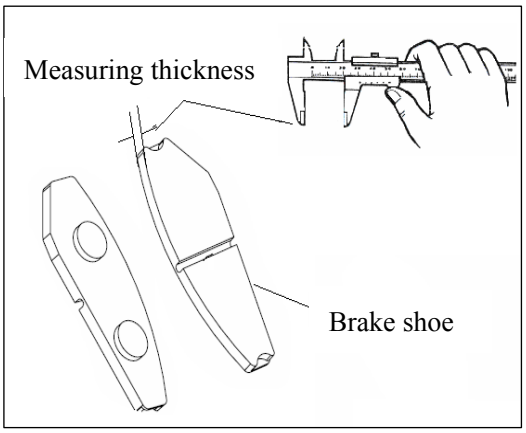
Measure the thickness of the brake shoe.

If the thickness of the brake disc and shoe is smaller than the maintenance value or polluted by oil, they should be replaced.

Note：Replace the shoe in pairs

Rear fluid brake diameter φ220mm

Available limits: brake shoe 3.0 mm



1.4.3Installation

Install rear wheel.

Install the rear brake disc.

Install the rear brake cylinder.

***Note**

If there is oil stains on the brake shoe, the performance of the brake will go bad.

Tighten the nuts and bolts according to their torque force value.

Torque force value：

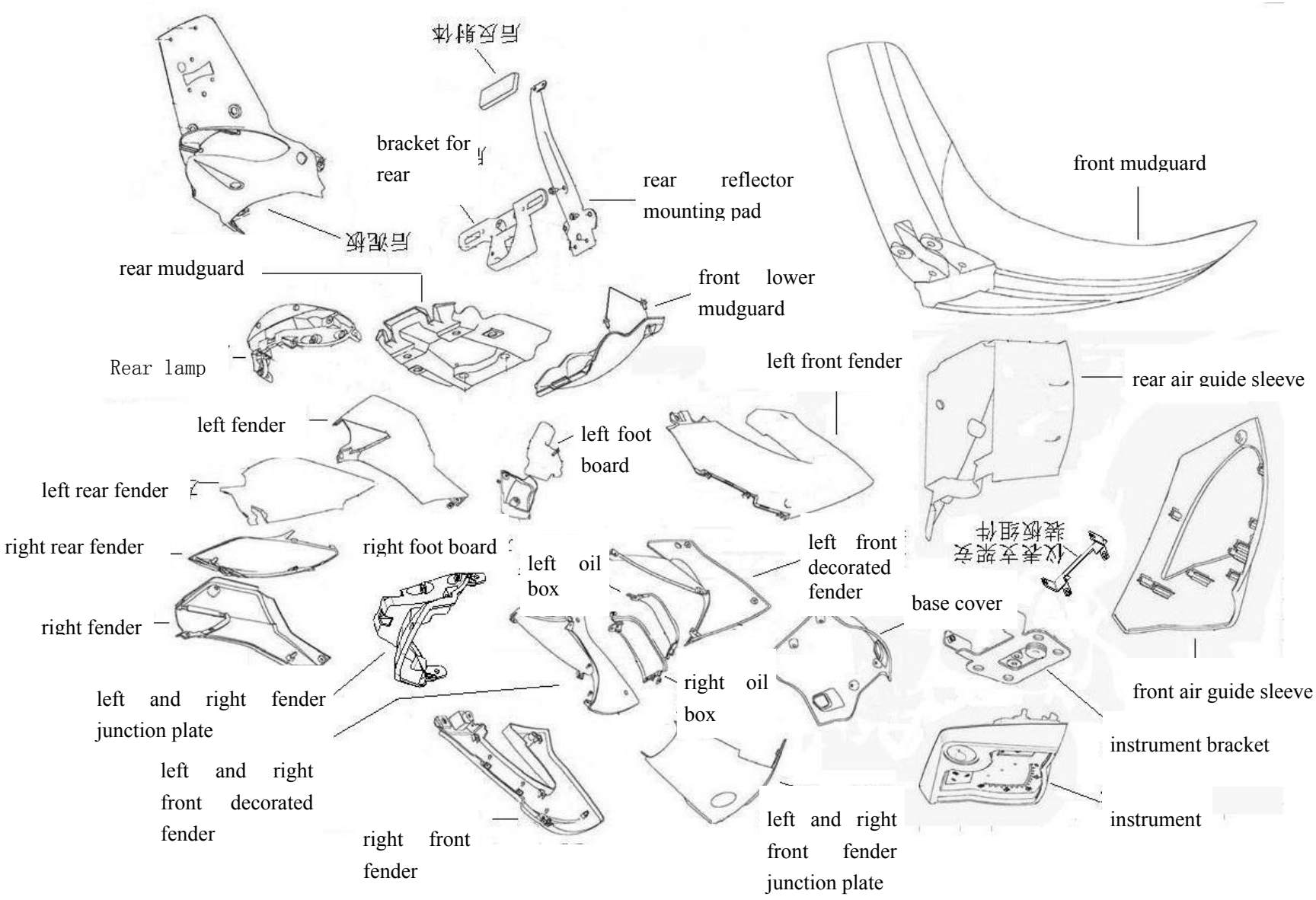
Brake disc fixing bolts： 22-29 N·m

Don’t let oil stains pollute the shoe.

If the shoe is polluted by oil stains, you should us special cleaner to clean it up

***Note**

If there is oil stains on the brake shoe, the performance of the brake will go bad.


后反射体
bracket for rear
rear reflector mounting pad
front mudguard
后泥板
rear mudguard
front lower mudguard
Rear lamp
left front fender
rear air guide sleeve
left fender
left foot board
left rear fender
right rear fender
right foot board
left oil box
left front decorated fender
仪表支架安装板组件
base cover
right fender
front air guide sleeve
left and right fender junction plate
right oil box
instrument bracket
left and right front decorated fender
instrument
right front fender
left and right front fender junction plate

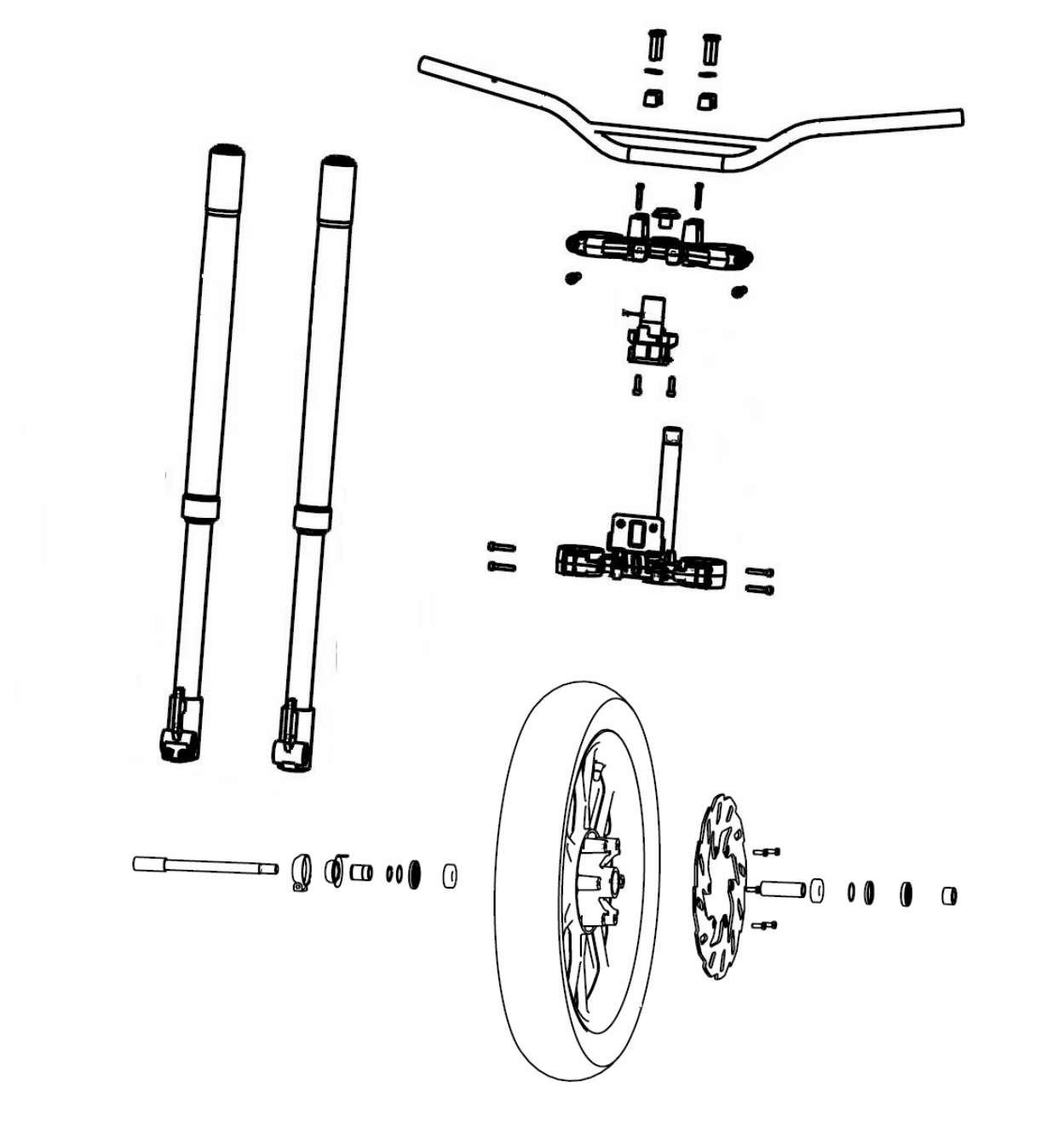
2 Body panel

Following the follow sequence to tear down the body

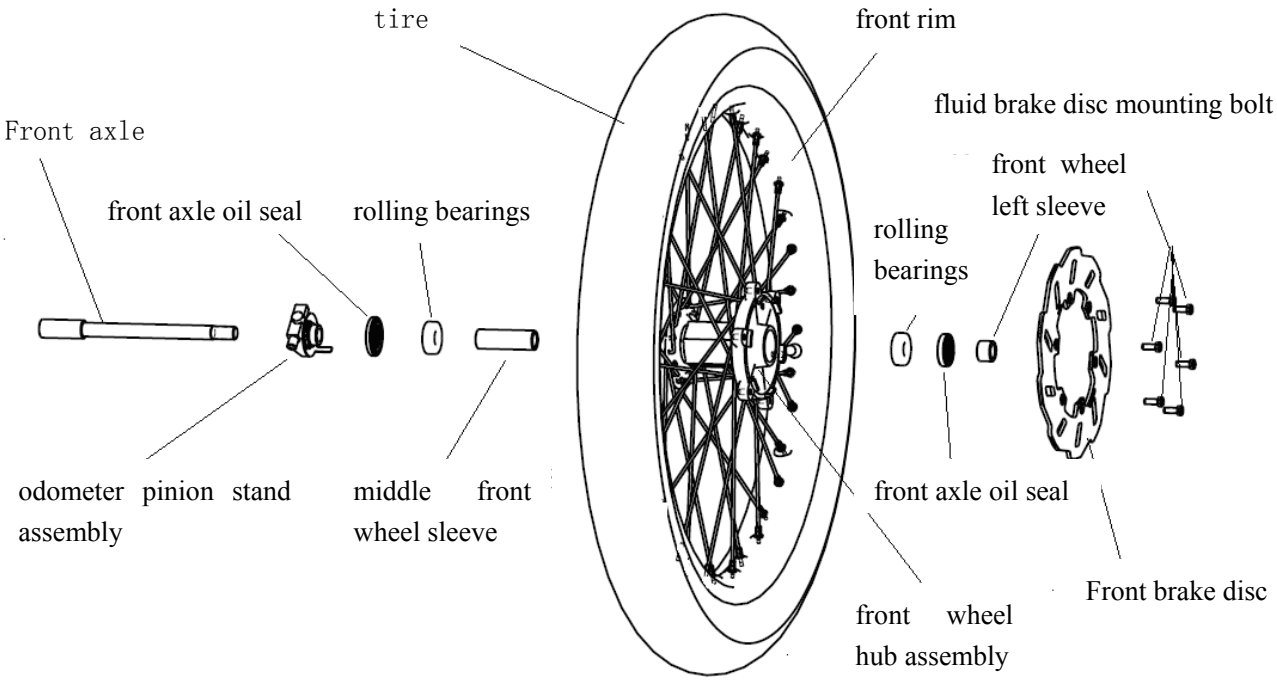
Rearview mirror→ front air guide sleeve → instrument bracket → instrument → rear air guide sleeve → front mudguard → cushion→ left and right front decorated fender → left and right fender → left and right fender junction plate → cover at the end→ left and right fender for oil box → left and right rear fender → left and right foot board → tail light→ rear mudguard → bracket for rear license plate

***Note**
Do not damage the body when removing.
Do not damage the hook of the body.
Do match the grooves for the panels.
Correctly install the hooks of each part.
Do not damage the accessories while installing.

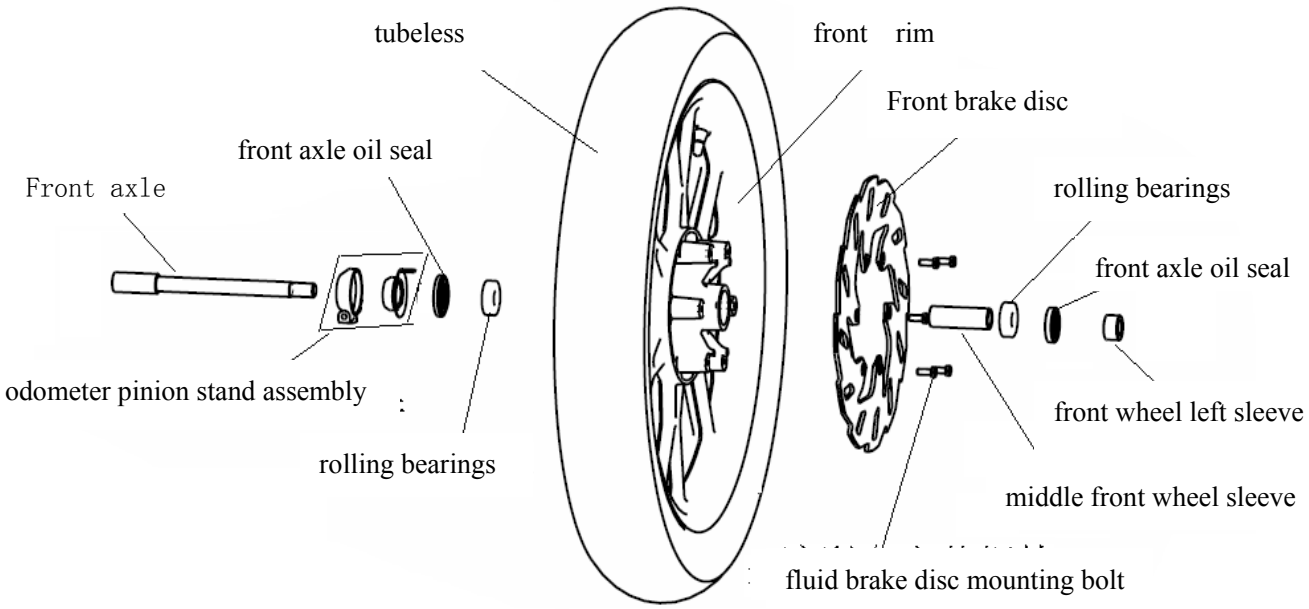
Front wheel/Front suspension（TX200 Off-road type）



TX200（**Off-road type**）Front wheel



TX200（**Street type**）Front wheel



3 Front wheel/Front suspension

3.1 Preparing

Notes

Before removing the front wheel, you should use jack to let it float above the ground and it cannot be rotated.
Pay attention that no oil stains sticking to the brake shoe while operating.

Entire motorcycle standards

Measuring position	Item		Standard value(mm)	Available limits(mm)
Front wheel axle	Bow			0.2
Front wheel	Rim shimmy	vertical		2.0
		horizontal	1.0 以内	2.0

Torque force

Fixing bolt for the steering control 22-29 N·m
Front wheel axle 100-113 N·m

Tools

bearings replacing bar

3.2 Failure diagnosis

3.2.1 Steering hard

The fixing bolt is too tight
Larger deformation of the steering wheel
Low air pressure for the tire

3.2.2 Unsteady steering

Bearings of the steering handle are broken
Not enough tire air pressure
Bent front fork
Bent front tire

3.2.3 Shimmy of front wheels

Deformed tire
Loose front wheel bearings
Bad tire

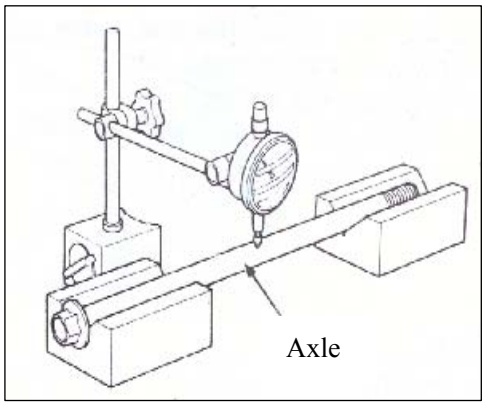
3.2.4 Difficulty of turning the wheel

Trouble of the wheel and bearings

3.2.5 Abnormal noise of front absorber

Loose bolts of the parts of absorber

3.3 Front wheel

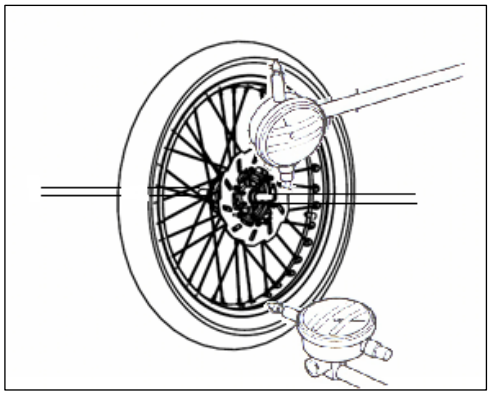


3.3.1 Remove

Before removing the front wheel, you should use jack to let it float above the ground.
Remove the screw, front mudguard and odometer wire.
Remove the front brake tube.

Remove the front axle tightening screw.
Remove the front axle.
Remove the front wheel
Remove the oil seal and bearings separately with their removers.
***Note: QJ200GY-A（Off-road type）, QJ200GY-A（Street type）disassembly/assembly drawing in page 41.**

3.3.2 Check



3.3.2.1 Axle bent inspection

Put the axle on the V-pedestal and measure the eccentricity ratio with dial indicator
Available limits：Replace if it is above 0.2mm

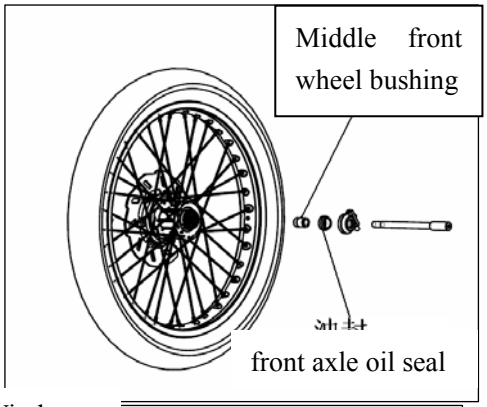
3.3.2.2 Swinging of rim inspection

Available limits：
Vertical：Replace if it is above 2mm.

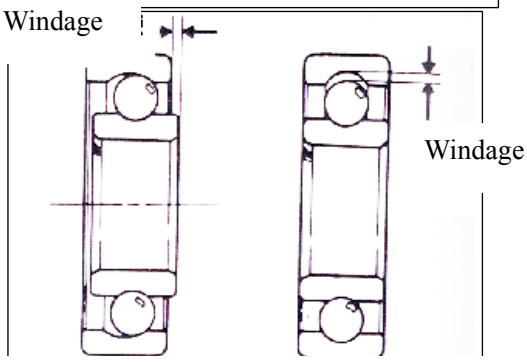
Horizontal：Replace if it is above 2mm.

3.3.2.3 Front wheel bearings inspection

Remove the bushing from the front wheel, and take down the oil seal.



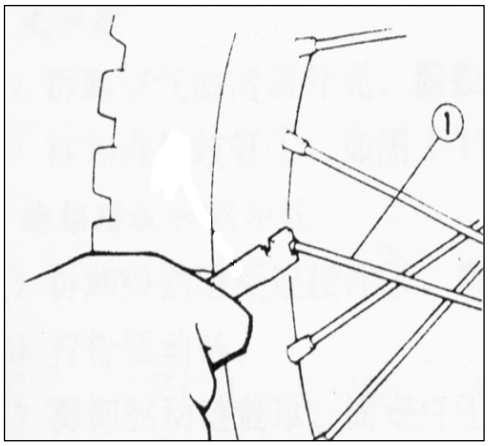
Check the rolling condition of bearings.
If the bearings cannot roll, wear or loose, replace new ones.



Axial direction ——— radical direction

3.3.2.4 Spoke inspection

Check spoke ① if it is bent or wears, replace new one; if it is loose, tighten it.
Tighten the spoke, the torque force of the screw should be 3.0 N·m.



3.3.3 Bearings replacement

Remove the front wheel, front axle and front bushing.

Remove the oil seal and bearings with their removers.

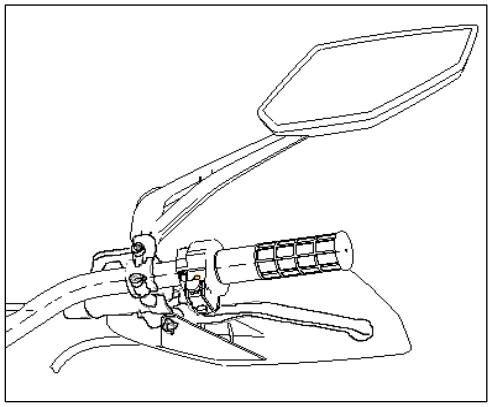
Note：Replace new bearings for the removed ones.

Fill the bearing with lubricating grease and install the bearings with installation tools.

***Note**

•Press the bearings paralleled.
•The oil seal of the bearings should be pressed toward the outside.

3.3.4 Installation



Fill the oil seal with the lubricating grease.

Fill the gearing mesh part and the movable part of the speed indicator and 。

After pairing the pinion stand of the odometer,

Install the brake disc.

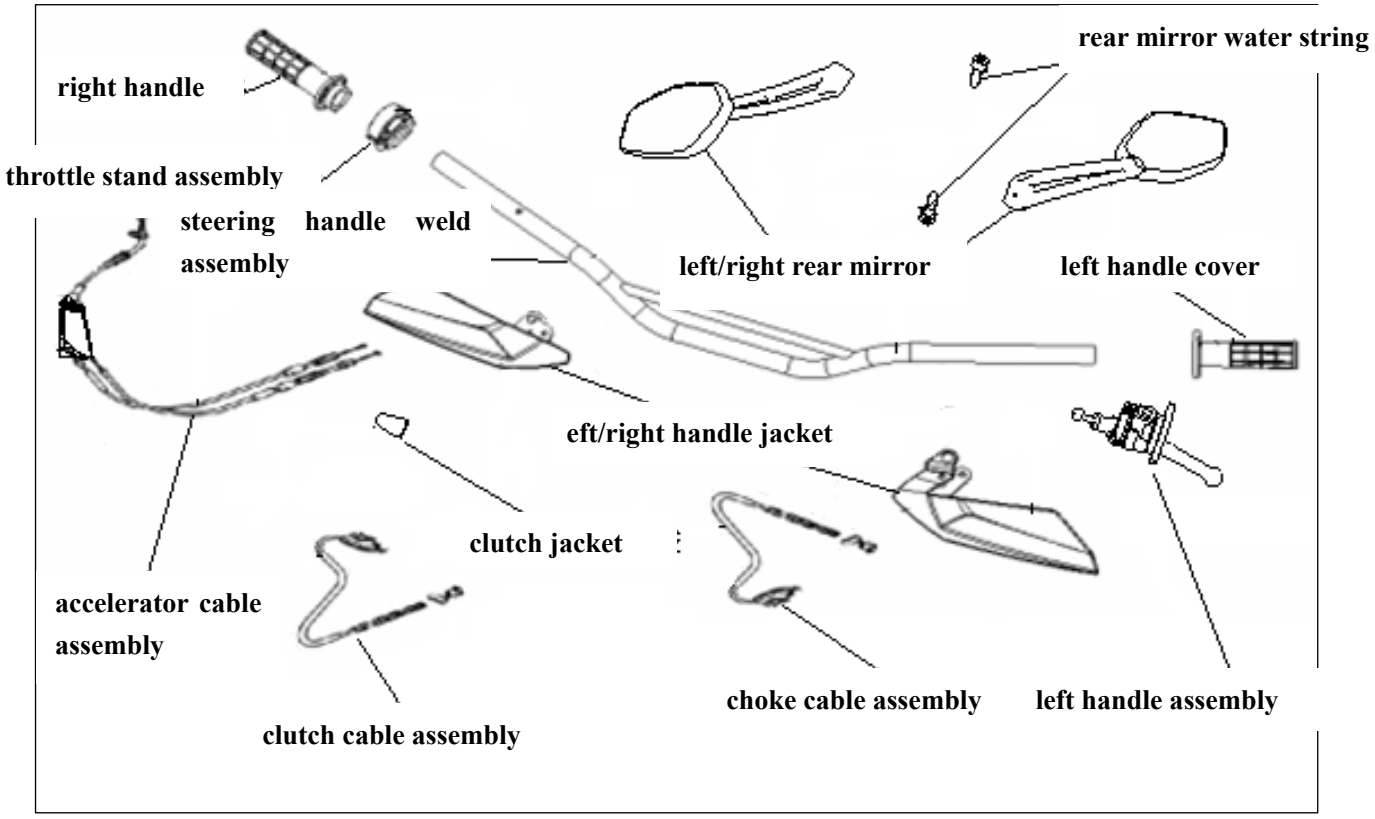
Note

•pinion stand of Odometer will be deformed if it is not tightened with the front axle.
•after installing the axle, rotate the wheel, and confirm Whether the drive axle of the speedometer rotate or not

Install and tighten the front axle.

***Note：TX200（Off-road type）, TX200（Street type）disassembly/assembly drawing in page 41.**

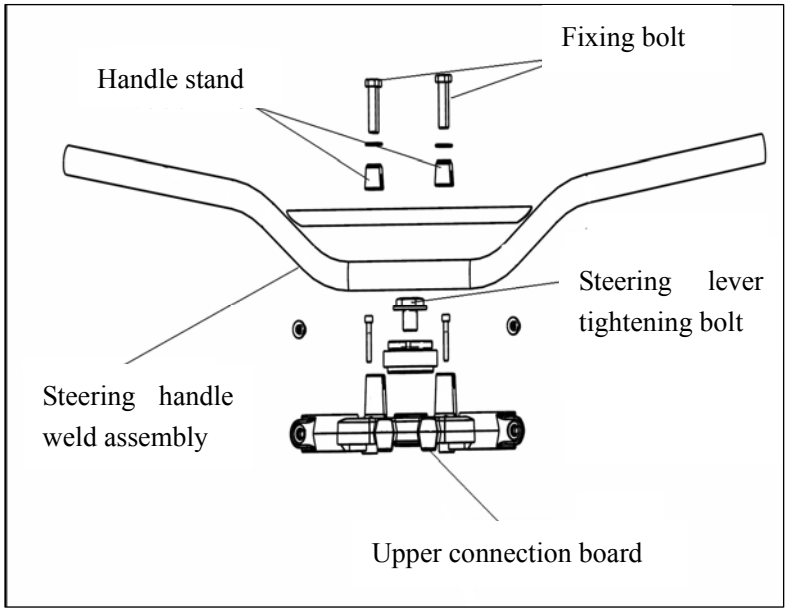
Torque force\ Front axle 100-113 N·m



3.4 Steering handle

3.4.1 Removing

Remove the steering handle jacket and back mirror.
Remove the front brake lever and left lever.
Take down the throttle stand and right lever.
Take down the accelerator cable.
Take down the left side grip.
Take down the clutch cable and choke cable.
Take down the fixing bolt of the handle and remove the
Handle.



3.4.2 Installation

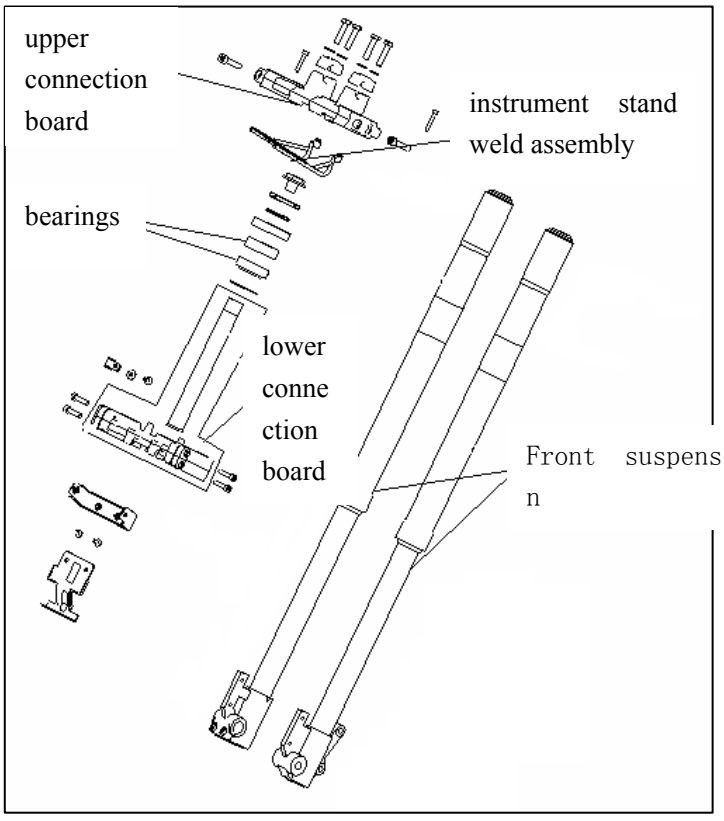
Installation order is opposite to the removing order.
Fixing screw
Torque force value：22-29 N·m

3.5 Front fork

3.5.1 Removing

Remove the front mudguard.
Remove the front wheel
Remove the brake tube and speedometer wire.
Remove the front absorber.
Remove the steering fixing bolt.
remove the steering handle
Tools:
Steering handle fixing screw spanner
Fixing bolt spanner
***Note：**

•Clean up the opening portion of the body fender.



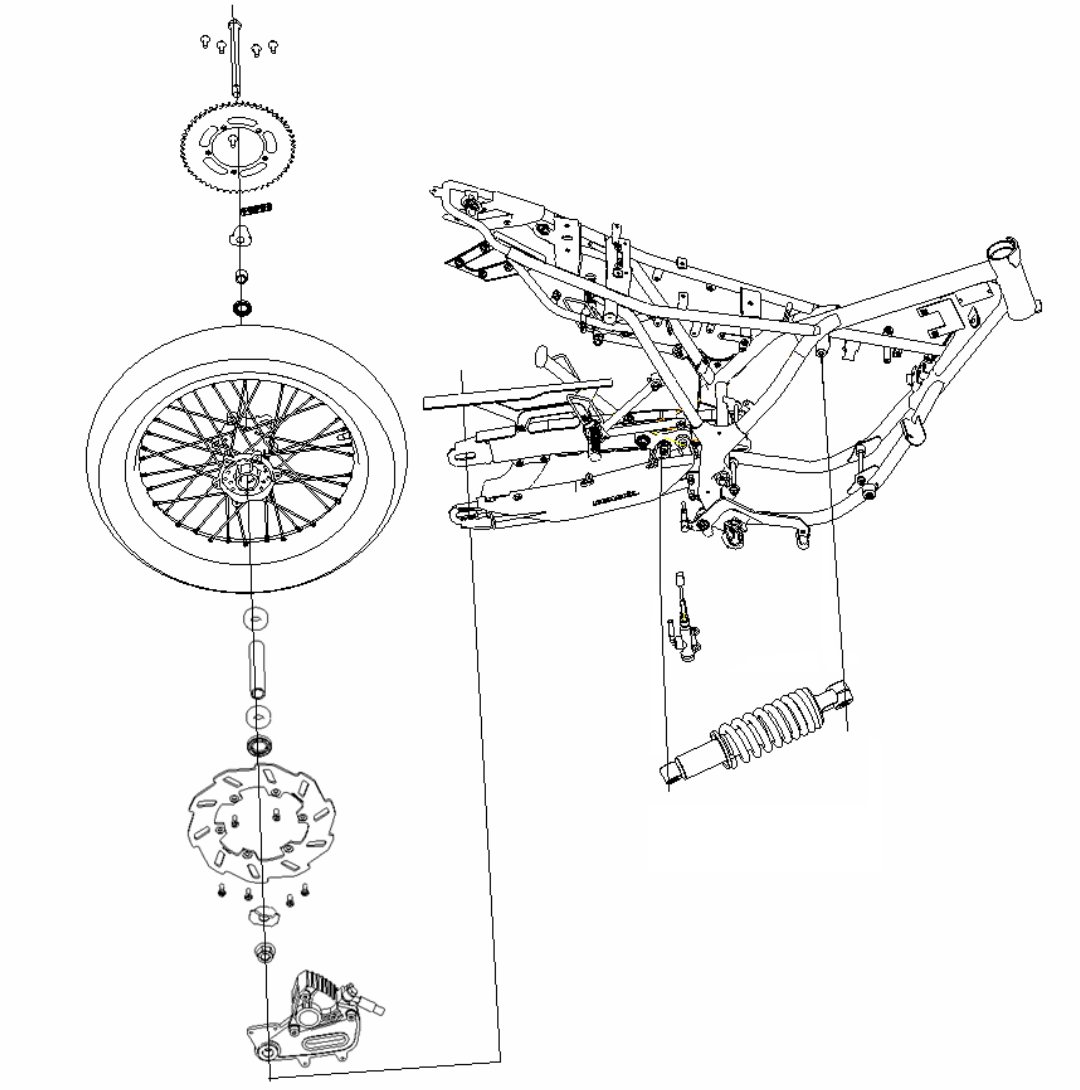
3.5.3 Installation

Tools:
Fixing bolt spanner

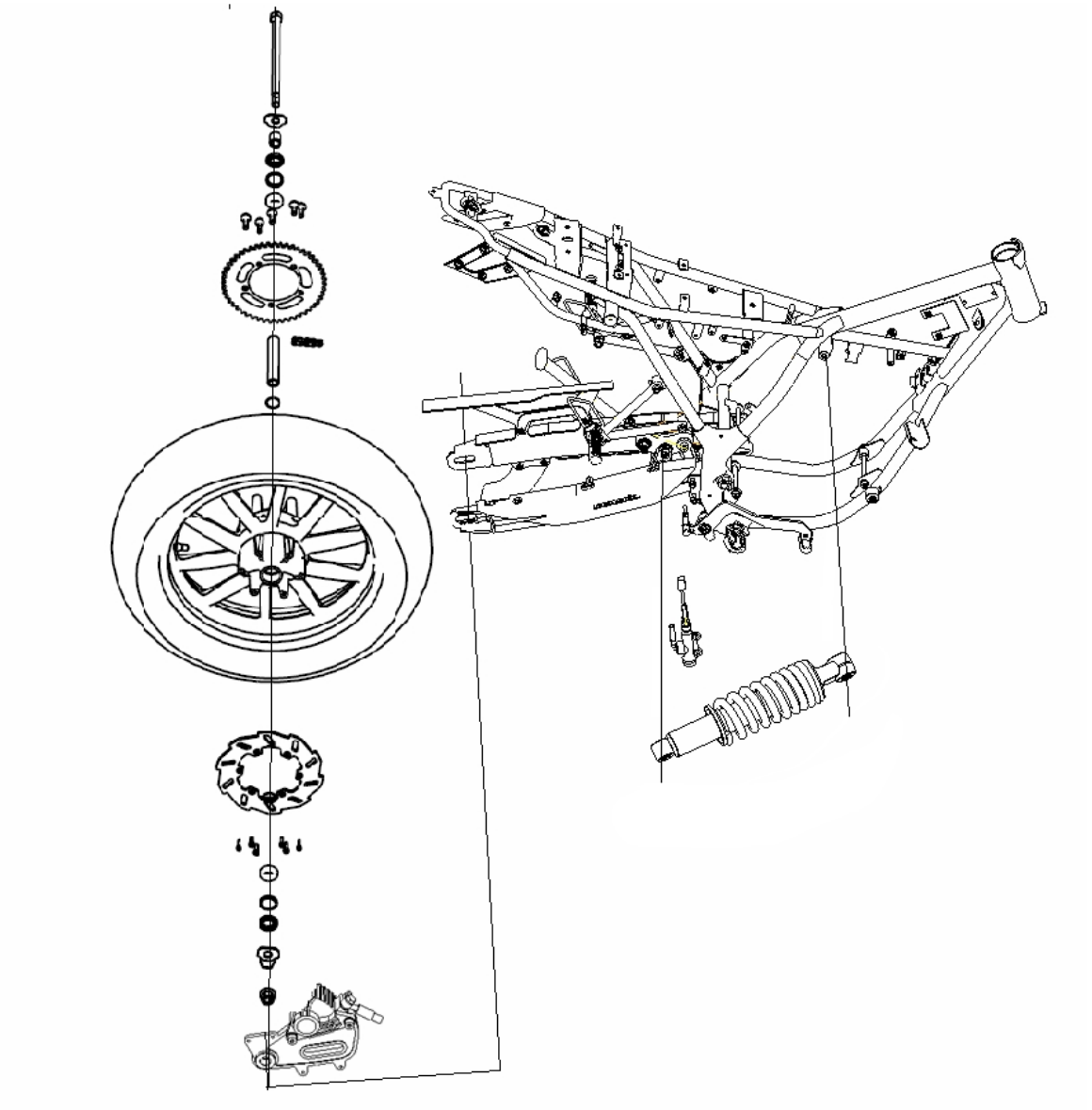
Turn the front fork to confirm its rounding.
Loosening is not allowed.

Steps：
Install the steering handle
Install the front absorber
Install the front wheel

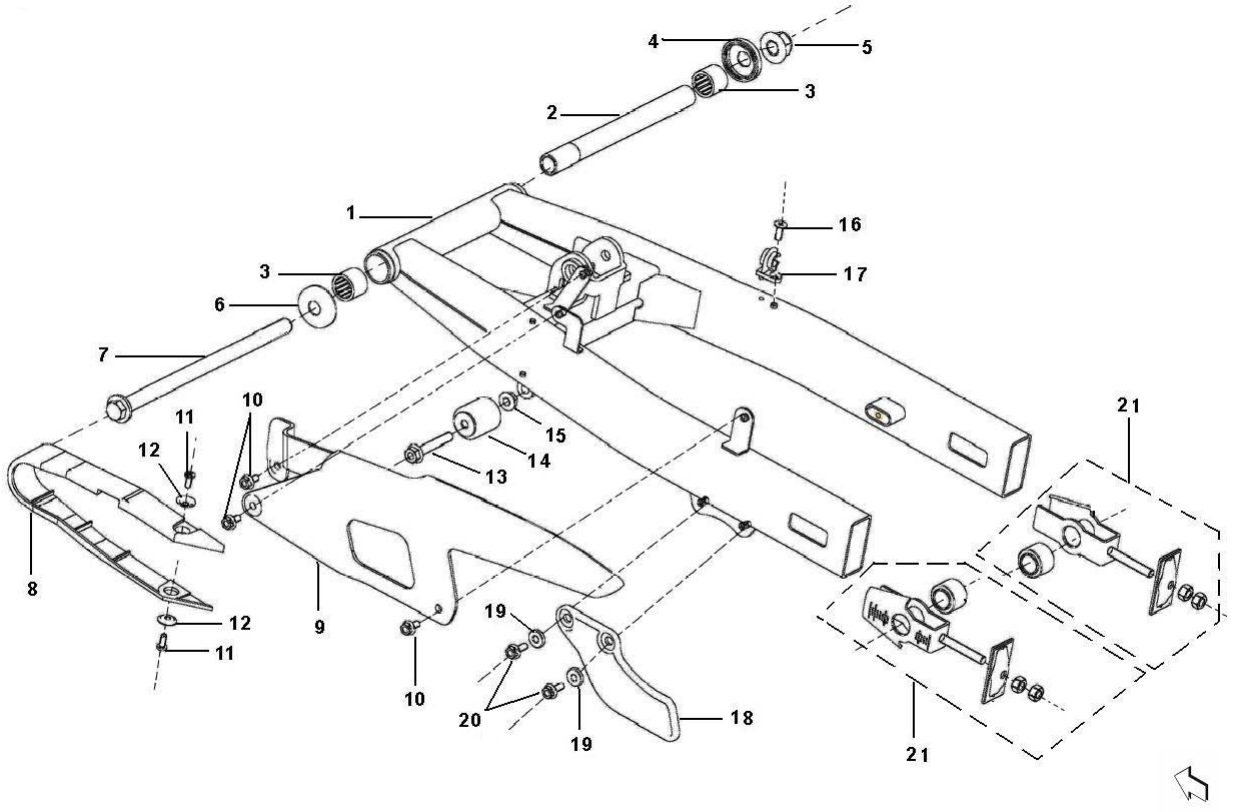
Rear Wheel/Rear Suspension（TX200 Off-road type）



Rear wheel/Rear suspension（TX200 Street type）



Rear absorber/rear rocker



1. weld assembly of the rear rocker2.inner steel sleeve 3.spacer 4.rear rocker cap 5.screw M14 6.rear rocker cap 7.rear rocker axle 8.Chain protective block 9.chain cover 10.bolt M6X12 11.screw M5X12 12.spacer 2 13.bolt M8X50 14.chain tensioner 15.nut M8 16.fixing bolt M6X16 17.bushing 18.chain jacket 19.spacer 1 20.bolt M6X16 21.chain adjustor subassembly

4 Rear wheel/Rear suspension

4.1 Preparing documents

Notes

No oil stains sticking to the brake shoe and disc.

Preparing standards

Item		Standard value（mm）	Available limits（mm）
Amplitude of fluctuation of the rear wheel	Vertical		2.0
	Horizontal		2.0

Tightening torque force

Rear axle screw 100-113 N·m
Rear absorber screw at the top 37-44 N·m
Rear absorber screw at the bottom 37-44 N·m

4.2 Failure diagnosis

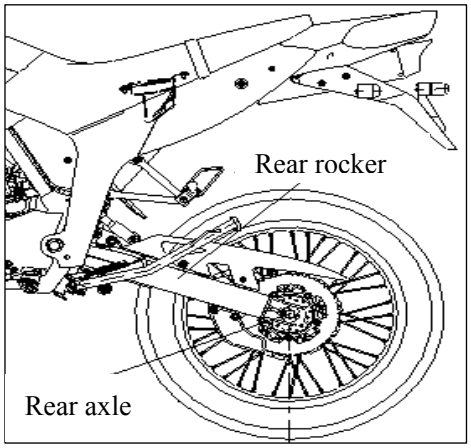
4.2.1 Rear wheel swinging

Deformed rim
Bad tire

4.2.2 Too soft absorber

Elastic fatigue of the spring

4.3 Rear wheel



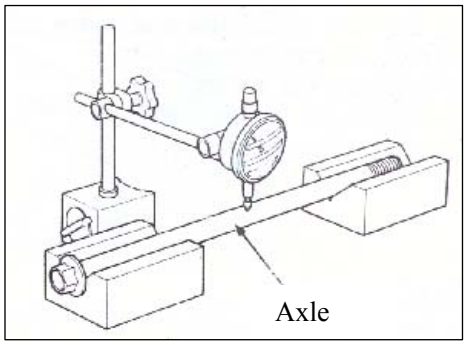
4.3.1 Removing

Loosen the rear axle screw
Remove the rear axle screw and take down the chain.
Take down the rear axle
Take the rear wheel

4.3.2 Inspection

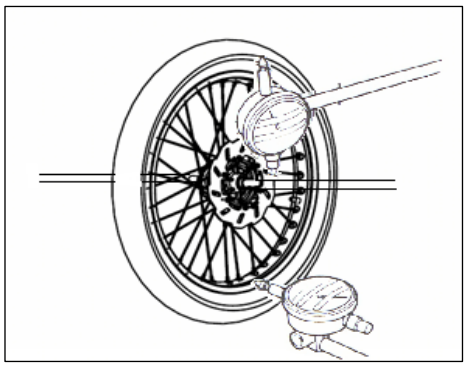
4.3.2.1 Axle bent inspection

Put the axle on the V-pedestal and measure the eccentricity ratio with dial indicator
Available limits：Replace if it is above 0.2mm



4.3.2.2 Rim swinging inspection

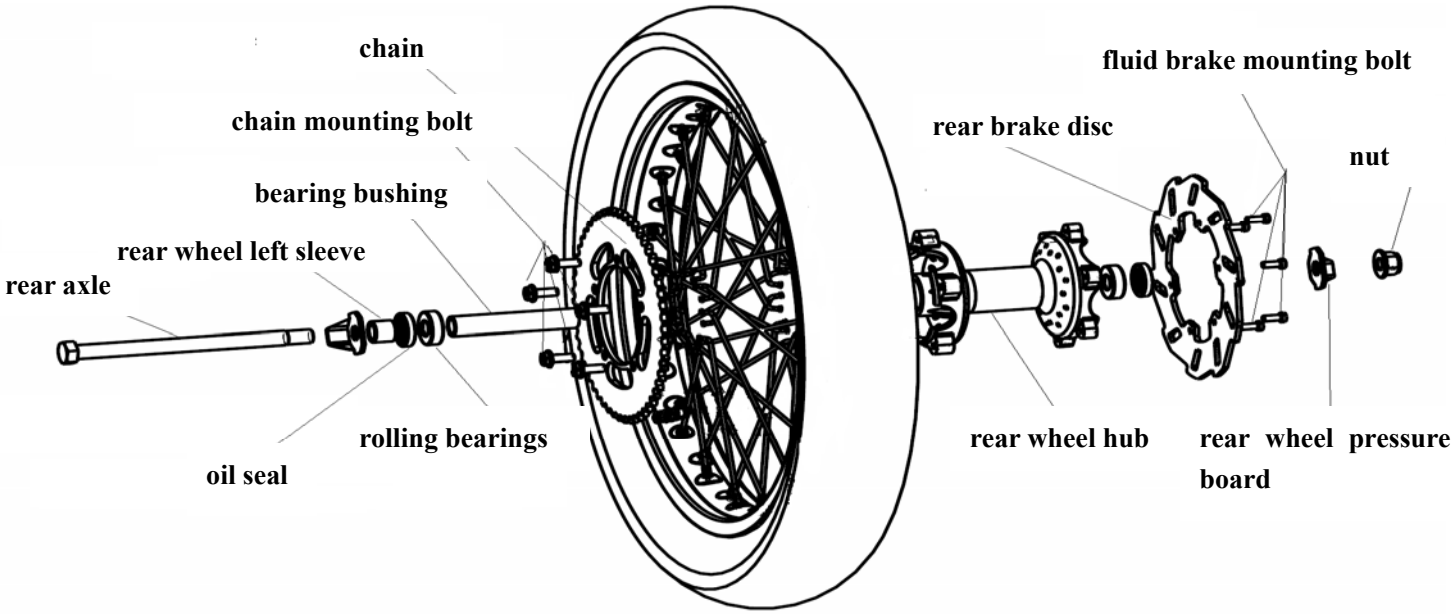
Rotate the wheel and measure eccentricity ratio using
Dial indicator
Available limits：
vertical：Replace if it is above 2.0mm
horizontal：Replace if it is above 2.0mm
When the amplitude of fluctuation of the rear wheel outweighs the available limits and the bearings is loose resulting in the bent rear axle, replace new rear axle



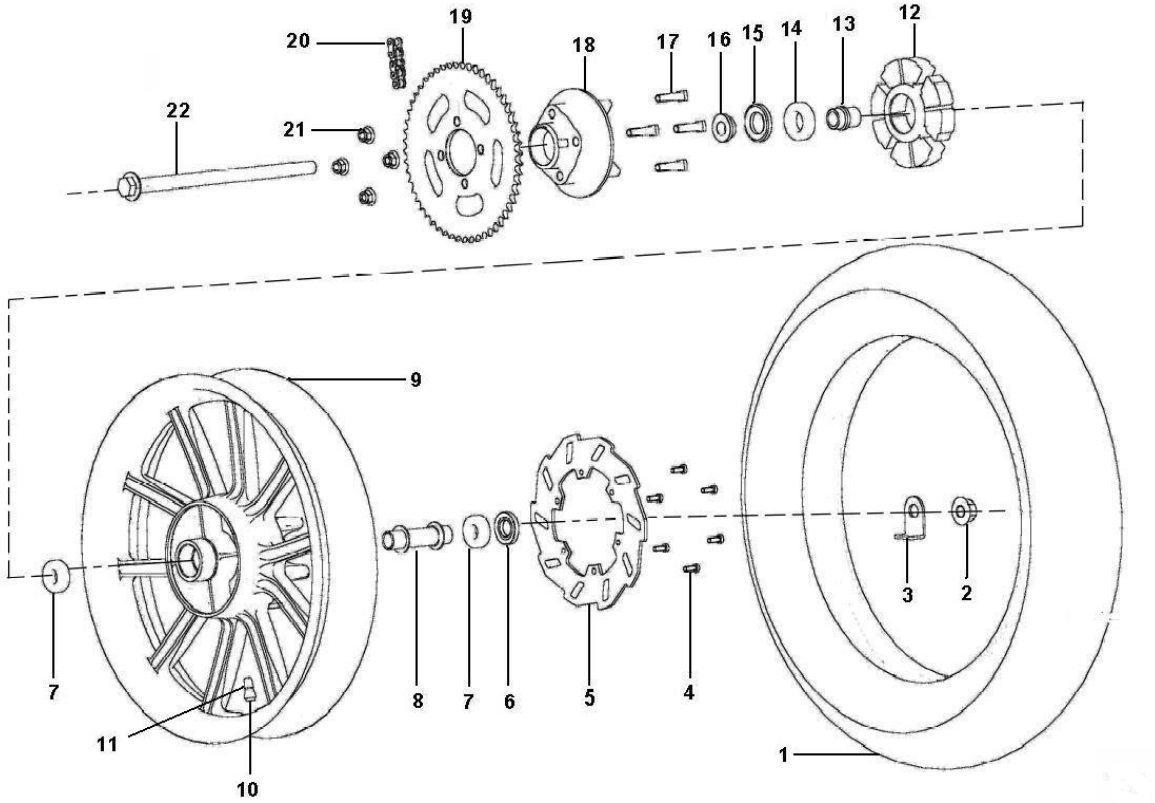
4.3.3 Installation

Install the rear wheel in the opposite sequence of removing and tighten the axle screw.
Rear axle tighten screw
Torque force value：100-113 N·m

TX200（Off-road type）rear wheel



TX200（Street type）rear wheel



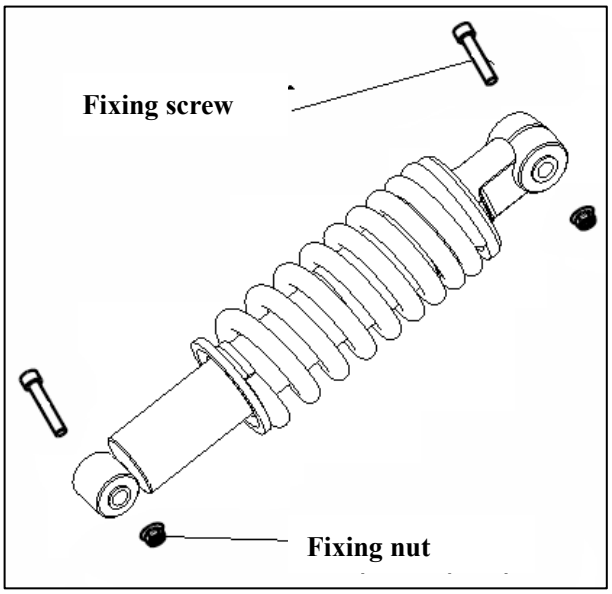
1.tire 2.screw M16 3.rear wheel platen 4.fluid brake disc mounting bolt 5.rear brake disc 6.dust ring 7.rolling bearing 6203-2RS 8.middle sleeve assemblies 9.rear rim 10.inflating valve 11.valve cap 12 .rear wheel bumper block 13.chain transmission sleeve 14.rolling bearings 6005-2RS

15.dust ring assemblies 16.rear wheel sleeve 17.chain wheel mounting bolt 18.chain pulley seat 19.chain wheel 20.chain 21.screw M12 22. rear axle

4.4 Rear absorber/rear rocker

4.4.1 Rear absorber removing

Remove the body fender
Remove the rear mud guard
Remove the tool box
Remove the air fifer
Remove the rear absorber fixing screw
Take down the rear absorber



4.4.2 Installation

Install the rear absorber.

Torque force value：
Upper fixing nut：37-44 N·m
Lower fixing nut：37-44 N·m
Installations of air filter and tool box.
Install the mud guard.
Install the body defender.

4.4.3 Remove the rear rocker

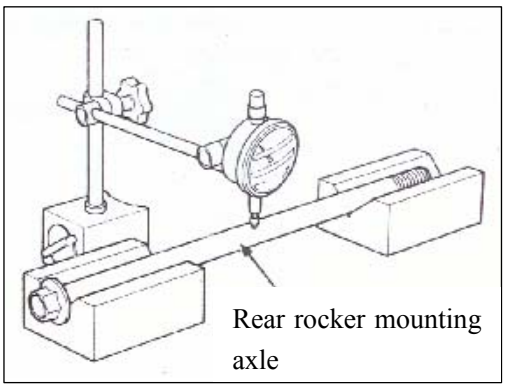
Remove the chain fender.
Remove the chain tensioner and rear axle.
Remove the rear wheel and rear absorber
Remove the rear rocker mounting axle.
Remove the weld assembly of the rear rocker.

4.4.4 Check rear rocker

Check its mounting axle. Rotate the axle on a flat ground or measure it with clock gauge. If it bends, replace new ones.

***Note**

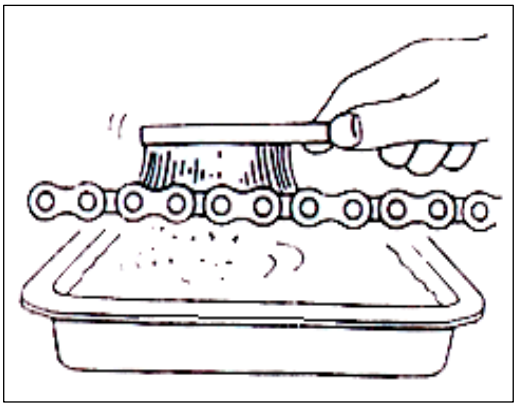
Don’t try to straighten the bent axle.



Clean the parts of the rear rocker mounting axle in the solvent.
Check the rear rocker sleeve assemblies and the middle sleeve. Replace them when damaged.

4.5 Drive chain

4.5.1. Removing



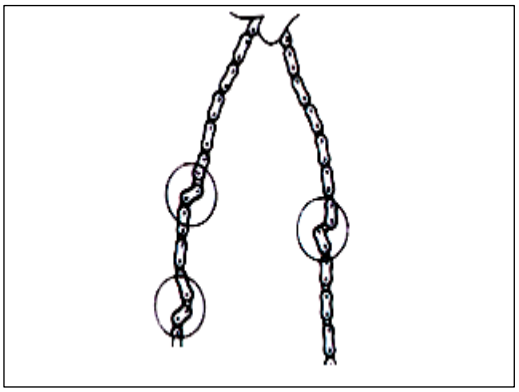
Put the motorcycle on the ground.
Remove the shift lever rocker, side cover, drive chain.
Remove the rear wheel, chain fender and drive chain

4.5.2. Inspection

Clean the drive chain and put it into the kerosene to clean up the dust.
Take out the chain of the kerosene and make it dry.

Check the roller ① and the side panel ②, if they are damaged or wear, replace with new drive chain.

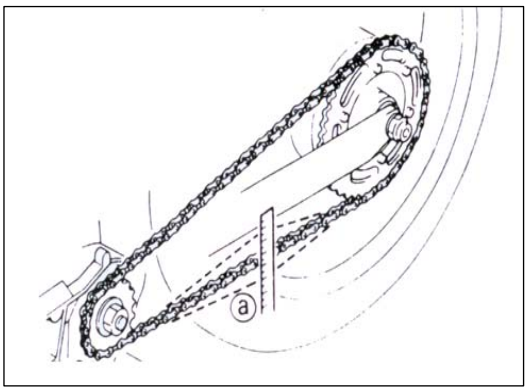
Lubricate the drive chain with lubricant.
Check the drive chain, if it is hard, clean lubricate or replace it.



Check the drive chain and driven sprocket, if 1/4 of the wheel tooth wear or the tooth bends, replace the chain.

Check the wheel bearings，if there is bearing clearance in the hub for vehicle wheel or the wheel rotate is in imbalance , replace the bearings. If the oil seal wear or is damaged, replace them with new ones.

4.5.3 Adjustment of the relaxation degree of the drive chain



Place the motorcycle on a flat ground and keep it upright

Check the degree of relaxation of the drive chain ⓐ, the degree is between 10-20mm.

Adjust the relaxation degree if it is not accord with the standard.

Loosen the rear axle screw ①.

Adjust the relaxation degree of the drive chain.

The steps as follows:

Loosen the tightening screw ②, adjust the device ③ until the degree is accord with the standard value.

Screw in, the degree increase;

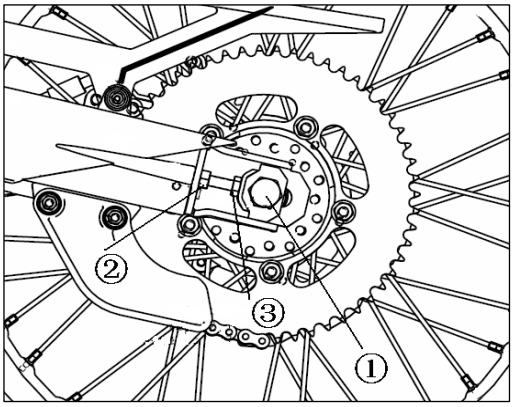
Screw out, the degree decrease.

Note:

The number of turns of each adjusting device should be the same in order to install the axle correctly.

At last, screw the tightening nut.

4.5.4. Installation



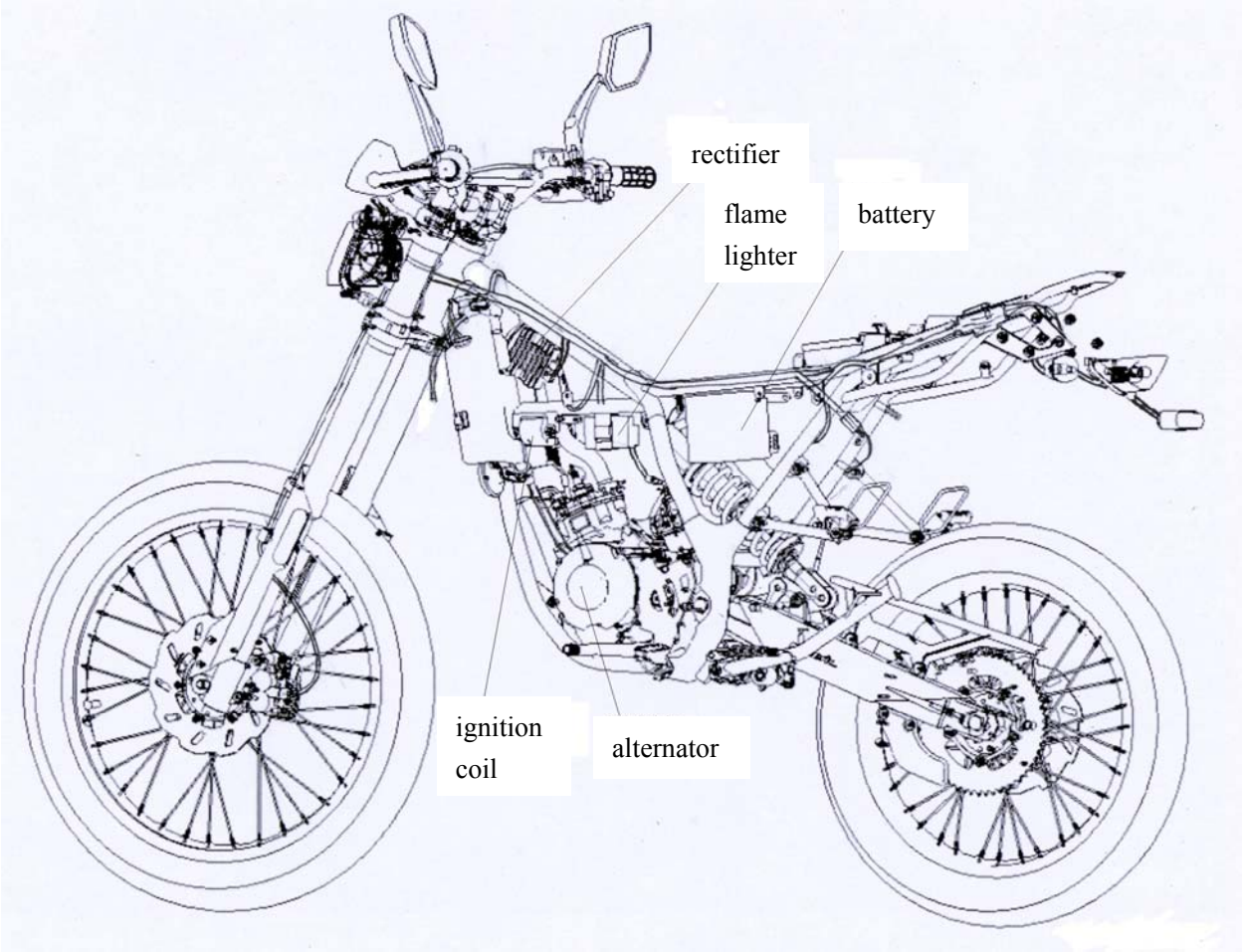
Installation sequence is opposite to the removing sequence.

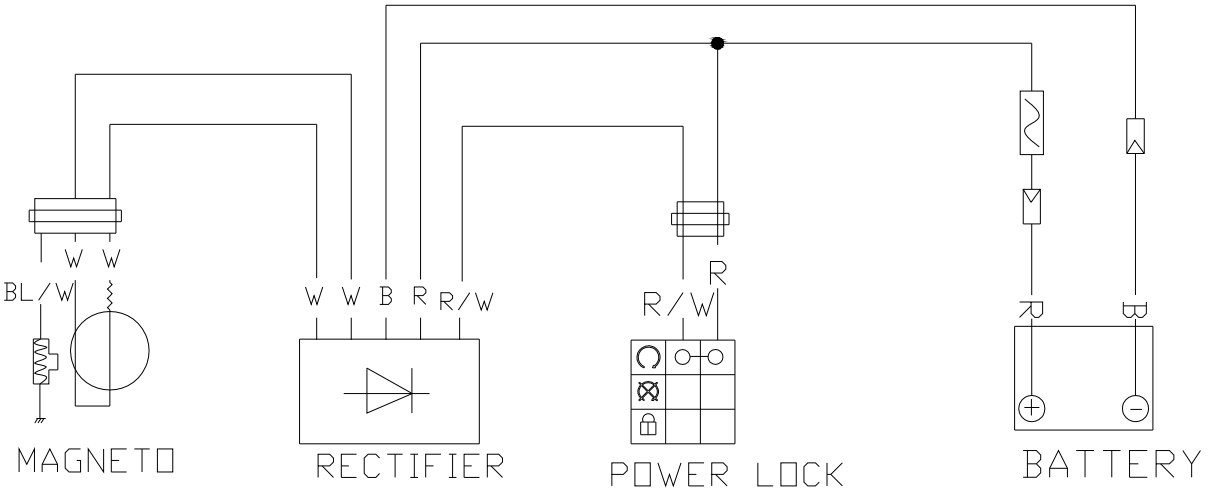
Install the drive chain, casting, rear absorber (left), rear wheel, drive chain cover.

Adjust the relaxation degree and free play of the brake.

The degree should be accord with the standard value.

If the degree is too small, the engine and other important parts will be overloaded.





Charging system

5 Battery/Charging system

5.1 Preparing

Notes

***Note**

1. Battery charge and discharge can be repeated use, its life span can be shortened and performance decreases after discharging. Usually its performance decreases 2-3 years later. Battery with performance degradation, the voltage will resume but sharply drops with load.
2. Battery overcharge：Generally we can judge its overcharge from its body. If the inside of the battery is short-circuit, it is hard to detect the voltage between its terminals. Adjustment failure: the battery voltage is too high; battery life span will be shortened.
3. If the battery has been place without using for a long time, it will be self-discharged and its capacity will drop. Under this condition, it should be charged every 3 months.
5. Check the charging system following the sequence listed on the table.
6. Don't remove the connector with current flowing through the electrical parts, otherwise the voltage will be too high and these parts will be broken down. Switch off the main switch and operate.
7. Maintenance free battery (dry cell type) doesn't have to be checked and added electrolyte and distilled water.
8. Check total electricity load.
9. Emergency charging can only be used in emergent situation.
10. Remove the battery from the motorcycle for emergency charging.
11. Add liquid battery cannot be used when changing the battery.
12. Use the voltage meter for measuring the voltage when charging.

Preparing standards

Item			Specifications
Battery	Capacity/Type		12V-9AH/dry cell
	voltage（20℃）	Full charge	13.1V
		Obligatory charge	12.3V(not working 1h)
	Charging current		standard：0.9A，rapid：9A
	Charging time		standard：10-15h，rapid：30min
Magnetor	capacity		100W/8000rpm
	Coil impedance（20℃）		White-White 0.5-10Ω
Voltage adjuster	type		Full wave rectifier
	Battery charging voltage		14.5V±0.4V/5.000rpm

Tightening torque force value

Rectifier bolt 5.0 N·m

High tension coil fixing bolt 9.0 N·m

Tools

multiple fixing spanner

flywheel remover

Testing instrument

Multimeter

5.2 Failure diagnosis

Power supply dead

Battery overcharge

Battery wire isn't connected

Fuse blow

Bad power switch

interrupted electric current

poor contact of the charging wire

poor contact of the charging system

poor contact or short circuit of lighting system

Low voltage

Bad battery charging

Poor contact

Bad charging system

Bad voltage current adjustor

Bad charging system

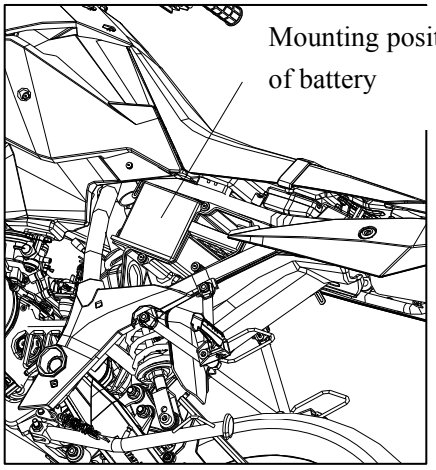
poor contact of the wire, short or open circuit

bad voltage current adjustor

bad alternator

5.3 Battery

5.3.1 Battery removing



Open the cushion
Remove the left fender
First remove the negative wire and then the positive
Take out the battery

Warning!

When removing the positive terminal, the tools should not be contacted with the bracket. It is dangerous that spark caused by short circuit will spark the petrol and break the battery.

Install the battery in an opposite order.

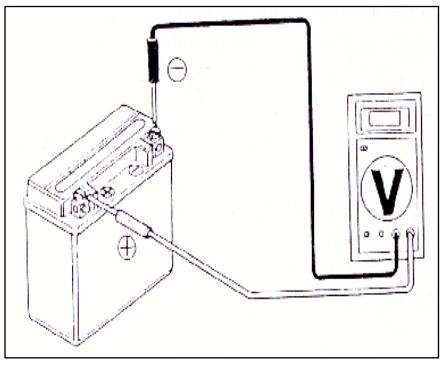
***Note**

First positive terminal then negative terminal to prevent short circuit.

Check the charging situation.
Open the cushion
Open the air filter cap and remove the connector wire.
Measure the voltage of the terminals
Full charge：13.1V
Insufficient charge：12.3V （not working for 1h）

***Note**

Use voltmeter when charging.



5.3.2 Charging

Connection method：Connect the positive terminal of the battery charge and the battery

Connect the negative terminal of the battery charge and the battery

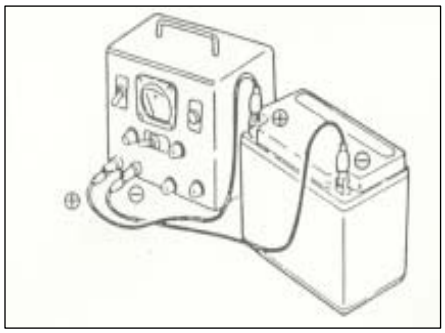
Warning!

- The battery should be far away from fire source.
- Turn off the charger when starting charging or completing charging
- Take the marked current time as a standard when charging

***Note**

••Except emergencies, you should not use emergency charge •Measure the voltage for every other 30 minutes

Charging current：standard0.4A
emergency：4.0A
Charging time：standard：10-15h
emergency：30min
Charging completes：open-circuit voltage：above12.8V



5.4 Charging system

5.4.1 Short circuit test

Remove the batter ground wire, and connect the voltmeter between the negative terminal and ground wire. Turn off the switch and check whether it is short circuit.

***Note**

Connect the positive terminal of the multimeter and the negative terminal of the battery together

Check whether the main switch and main wire are short-circuit under abnormal conditions.

5.4.2 Charging inspection

Use the multimeter to checking the fully charged battery.
Mount the battery after the engine warming up.
Connect the voltmeter between terminals
Remove the fuse and connect the ammeter between its terminals.
Start the engine slowly and measure the limiting voltage and current.
Limiting voltage/rotating speed：14-15V （5.000rpm）
If the limiting voltage is not within the required range, check the voltage adjustor.
Check the limiting voltage of the lighting system

***Note**

choose AC voltage of the multimeter

Limiting voltage：13.1（+/-）0.5V/5.000rpm
If the limiting voltage is not within the required range, check the current adjustor.

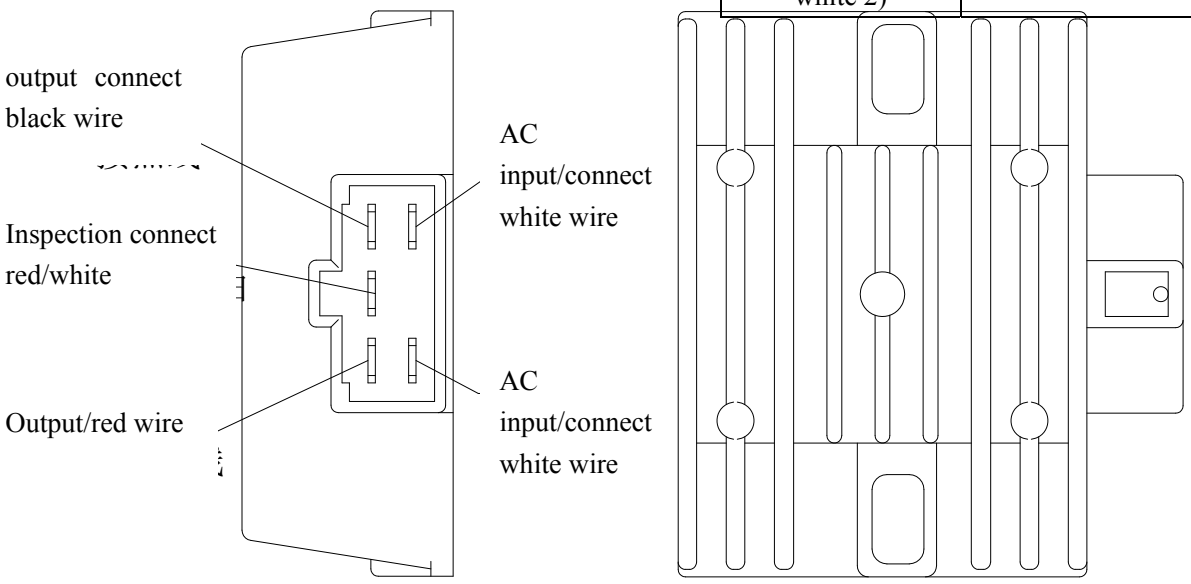
5.5 Voltage and current adjustor

1.5.1 Main wiring inspection

Remove the adjustor's 6p plug.

Check the conducting state of the terminals of the main wiring.

Item（wiring color）	Judgments
Between Battery（red）and GND of the body	With battery voltage
Between GND wire（black）and GND of the body	With wiring
Between charging coil(white) and the GND of the body	No connection between the magneto coil and the ground
Between the charging coil(white 1 and white 2)	There is resistance in the magnetor coil



5.5.2 Voltage and current adjustor inspection

The main wiring is completely normal, check the contact of the adjustor's plug, and measure the resistance value between the terminals of the adjustor.

***Note**

•When checking the metal parts, your finger should not contact test bar of the multimeter.

Multimeter + / -	white1	red/ white	red	black	white2
	unit ： MΩ				
white1		without	without	0.1~3	10~90
red/ white	without		without	0.1~3	without
red	0.1~3	without		1.2~5	0.1~3
black	without	without	without		without
white2	60~80	without	without	0.1~3	

•Different multimeter will show differently, so use the same multimeter while checking.

Replace the voltage adjustor when the resistance value between the terminals is abnormal.

5.6 Alternator charging coil

***Note**

Check the alternator charging coil on the engine.

Check

Remove the 4p connector of the alternator.

Measure resistance value between the white coil and the body

Standard value：0.6-1Ω（20℃）

Replace the alternator coil when the measured value exceeds the standard value

5.7 Alternator lighting coil

***Note**

Check the alternator lighting coil on the engine.

Check

Remove the 4p connector of the alternator.

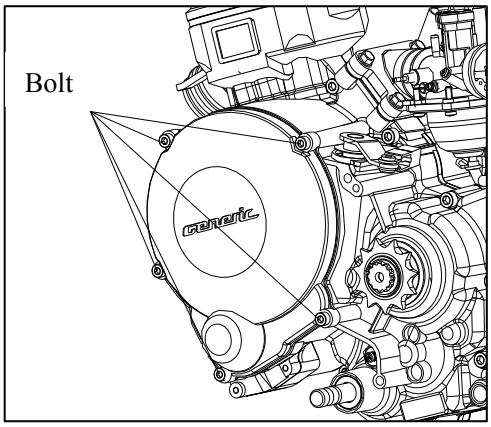
Measure resistance value between the white coil and the ground of the body.

Standard value：0.6-1Ω（20℃）

Replace the alternator coil when the measured value exceeds the standard value

5.8 Removing the alternator

5.8.1 Removing



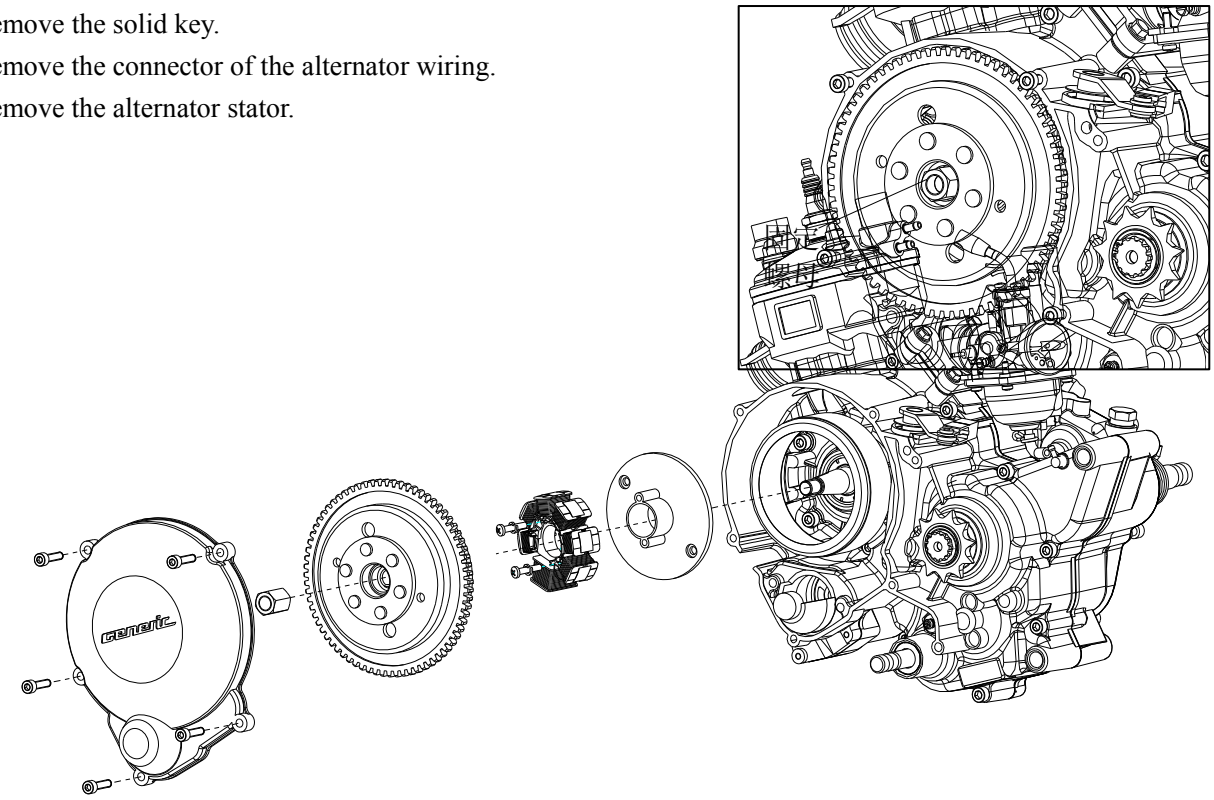
Remove the fixing bolt and screw。

Take down the left cap

Fix the flywheel using the universal spanner.

Remove the fixing bolt of the flywheel.

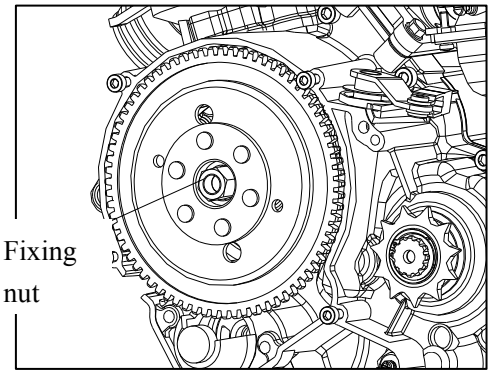
Remove the flywheel using the flywheel remover.
Remove the solid key.
Remove the connector of the alternator wiring.
Remove the alternator stator.



5.8.2 Installation

Install the stator on the body of the engine.
Connect the alternator terminator.

Clean up the taper part of the bent axle and flywheel
Install the solid key of the flywheel into the bent axle.
Aim the flywheel groove at the solid key on the axle.

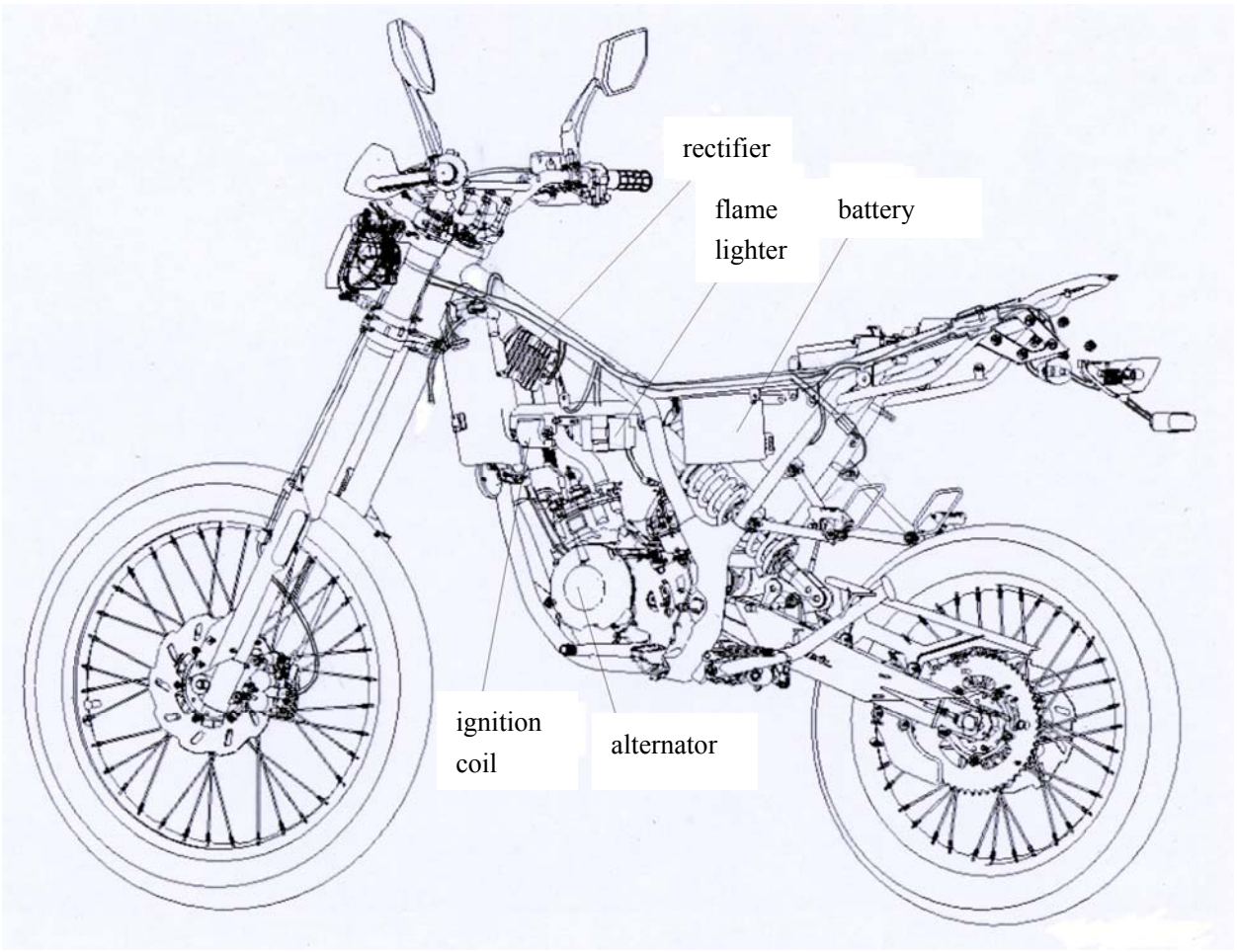


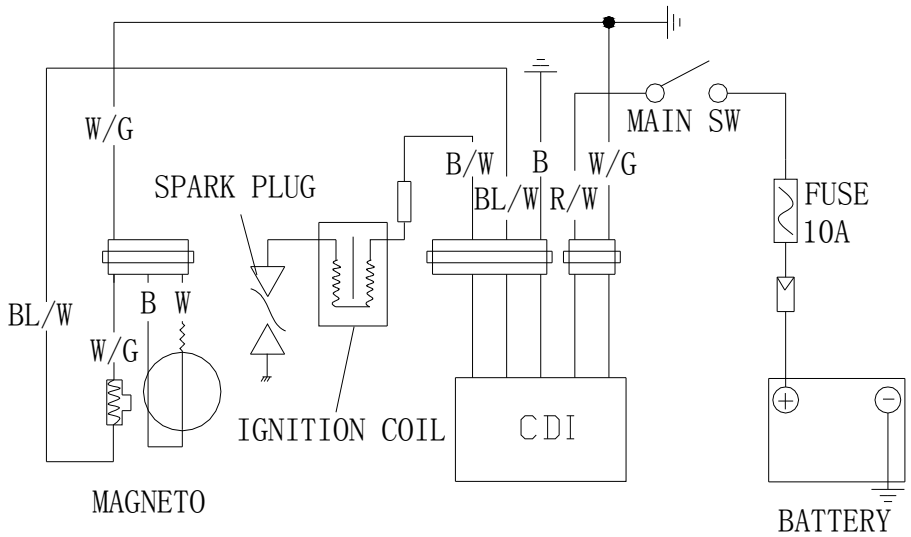
***Note**

Confirm the inside of the flywheel do not have bolts.

Fix the flywheel with the universal spanner and tighten the fixing screw.
Torque force value：9.0 N·m

Install the left body fender





Ignition system

6 Ignition system

6.1 Preparing

Notes

1. Checking the ignition system following the sequence listed in the table of failure diagnosis.
2. The ignition system is solidified in the CDI group and you don't have to adjust the ignition time.
3. Checking the ignition system following the sequence listed in the table of failure diagnosis.
4. CDI ignition system cannot subject to strong percussion (which is the main reason for failure), so you need to pay great attention to that.
5. Check whether the connection is bad or not, because usually the reason for failure is poor contact socket.
6. The heat value of the spark plug should be appropriate. Improper spark plug will cause the engine running unsmooth and even the spark plug will be burn-out.
7. Inspection in this chapter is based mainly on the maximum voltage，also inspection of the ignition coil impedance is introduced.
8. Check the main switch according to the table.
9. Remove the alternator and stator according to the instructions

Preparing standards

Items			Standard value
Spark plug recommended	Standard		C5HSA(NGK)
	Hot type		C6HSA(NGK)
	Cold type		C7HSA(NGK)
Spark gap			0.5-0.7mm
Ignition coil impedance（20℃）	Primary coil		0.4Ω（+/-）10％
	Secondary coil	With plug cap	8-11KΩ
		Without plug cap	4.5-5.5KΩ
Resistance of trigger（20℃）			100-200Ω
Measure the maximum voltage after ignition coil rotates once			95-400V
Trigger voltage			Above 1.7V

Tools

Voltmeter
Multimeter

6.2 Failure diagnosis

Spark plug unable to jump

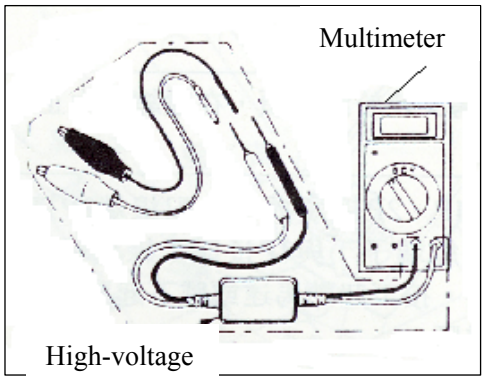
	Abnormal situations	Source of trouble (confirming in order)
Ignition coil	too low high tension electricity	① The inner resistance is too small and it should be tested by required tester ② Low rotation speed of the bent axle ③ Tester is interfered. (It is normal that several measured voltage is above the basic standard.) ④ Poor contact wire for the ignition system。 ⑤ Bad ignition coil。 ⑥ Bad charging coil（measure at maximum voltage）
Secondary Measured voltage	No or interrupted high tension electricity	① Wrong connection with the tester. ② Bad main switch ③ Bad connector of the CDI group ④ Poor contact of the CDI group or GND of the CDI group is short-circuit. ⑤ Bad charging coil（measure at maximum voltage） ⑥ Bad trigger（measure at maximum voltage） ⑦ Bad high tension electricity connector ⑧ Bad CDI group（when there is no spark for the plug or ①-⑦ is abnormal）。
	Normal high tension electricity/no spark for the plug	① Bad plug or secondary ignition coil leakage ② Bad ignition coil
Charging coil	No high tension electricity	① The inner resistance is too small and should be tested by required tester. ② Low rotation speed of the bent axle ③ Tester is interfered. (It is normal that several measured voltage is above the basic standard.) ④ Bad charging coil（①-③ are normal）
	No or interrupted high tension electricity	① Bad ignition coil ② Bad charging coil
Trigger	Low high tension electricity	① The inner resistance is too small and should be tested by required tester. ② Low rotation speed of the bent axle (It is normal that several measured voltage is above the basic standard.) ③ Tester is interfered. ④ Bad trigger（①-③ are normal）
	No or interrupted high tension electricity	① Bad ignition coil ② Bad trigger

6.3 Checking the ignition system

*** Attention**

•When there is no spark on the spark plug, check whether there is loose wiring or poor contact of all components, and make sure all voltage values are normal.
•There are various kinds of multimeters with different internal impedances and different test values.

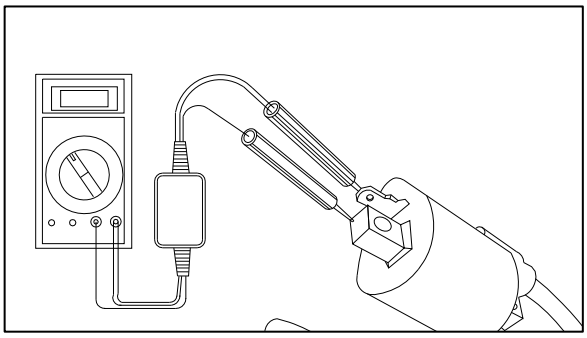
Connect a high-pressure shunt or an ammeter with an input impedance above 10MΩ10CV to the multimeter.



High-voltage shunt

6.3.1 Voltage of the ignition Coil at a time

If you replace the original spark plug with a better one, make ground connection with the engine.



*** Attention**

Make sure the wire connection is correct before testing.
Cylinder compression pressure normally refers to the test value when the spark plug is installed in the cylinder head.

Remove the intermediate cap.
Connect the wires of ignition coils.
Ground connect the two ends (black/white) of the primary coil to the car body to create current divider.
Press the staring motor or step on the actuating lever to measure the voltage of the ignition coil at a time.
Minimum voltage：Above 95V.

*** Attention**

Never touch the metal of test prod when measuring the voltage in case of electric shock.

6.3.2 Charge coil

***Attention**

Install the spark plug in the cylinder head and carry out the measuring when the compression pressure is normal.

Remove the 4p and 2p joints of CDI group, connect the high-voltage shunt between the charge coil with short wiring 2p end(red/white end) and 4p end (Black end).

Press the starting motor or step on the actuating lever to measure the peak voltage of the charge coil.

Method of attachment: Red/white end to the positive pole and black end to the negative pole.

Minimum voltage: Above 95V.

***Attention**

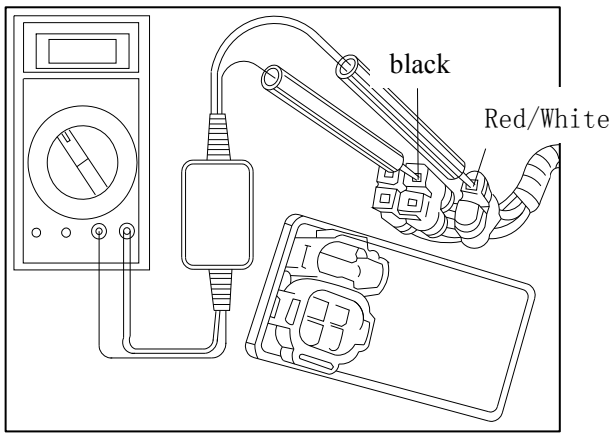
Never touch the metal of test prod when measuring the voltage in case of electric shock.

Remove the adaptor of the alternator when the maximum voltage of the end of CDI group is abnormal.

Connect the current divider with the charge coil.

·If the obtained voltage of the CDI section group is abnormal while the one of the alternator end is normal, the problem should be poor contact or wire break.

·If both ends are abnormal, the charge coil may be broken, please refer to the check of the charging coil table.

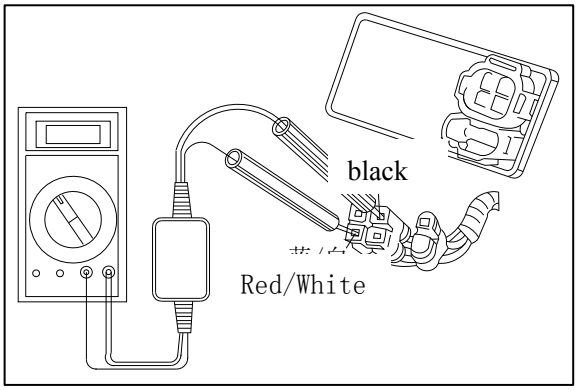


6.3.3 Trigger

***Attention**

Install the spark plug in the cylinder head and carry out the measuring when the compression pressure is normal.

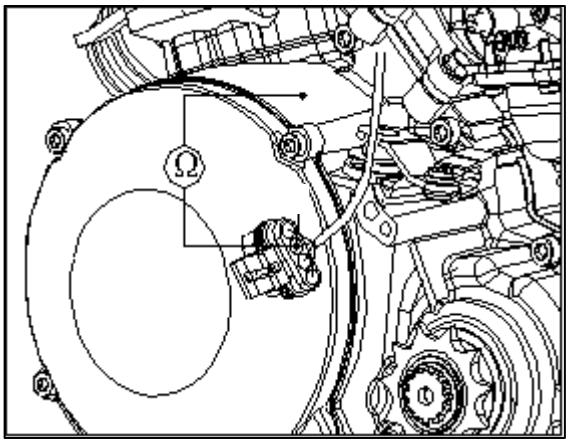
Remove the 4p joints of CDI group, connect the peak-voltage current divider between the trigger with wiring 4p end (blue / white end) and 4p end (black end). Press the starting motor or step on the actuating lever to measuring the peak voltage of the trigger.
Method of attachment: Blue/white end to the positive pole and black end to the negative pole.
Minimum voltage：Above 1.7V.

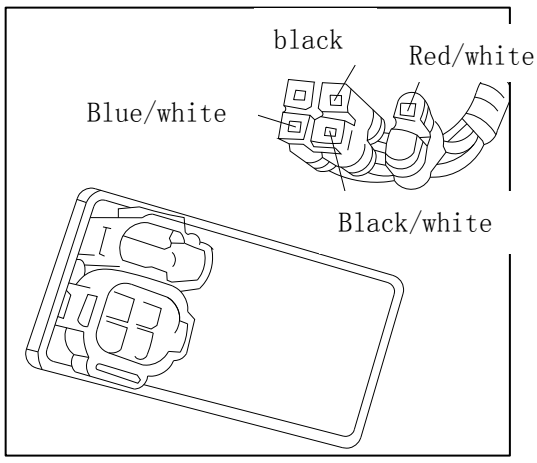


***Attention**

Never touch the metal of test prod when measuring the voltage in case of electric shock.

Remove the adaptor of the alternator when the peak voltage of the adaptor of CDI Group is abnormal.
Connect the current divider of and the trigger (blue/white).
·If the obtained voltage of the end of CDI Group is abnormal while the one of the end of the alternator is normal, the problem should be poor contact or wire break.
·If both ends are abnormal, the trigger may be broken, please refer to the checking method in the failure diagnosis table.





6.4 CDI

6.4.1 System check

Check the system.
Remove the CDI Group, check the components concerning the ignition system at the wiring end.

6.4.2 Check

Remove CDI Group, check whether there is loose or corrosion in the adaptor.

Checking item	Testing end	Standard value（20℃）
Main switch	Red--red/white	Breakover when the main switch is “OFF”
Trigger	Red—car body ground	100-200Ω
Primary coil of the ignition coil	Black/white--black	0.4Ω（+/-）10％
Secondary coil of the ignition coil	Black--spark plug cap（without the spark plug）	4.5-5.5KΩ（+/-）10％

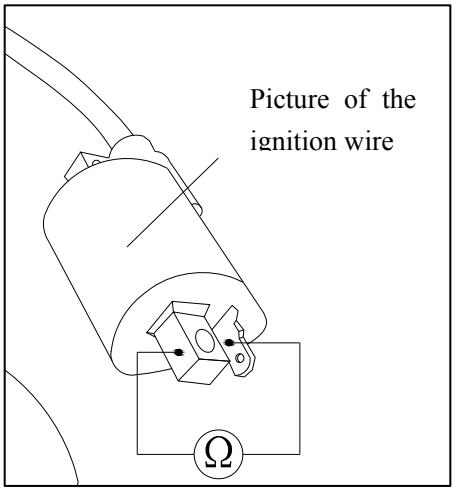
6.5 Ignition coil

6.5.1 Unload

Unload the body cover.
Unload the spark plug cap.
Unload the primary wire of the ignition coil.
Unload the fixed bolt of the ignition coil, remove the ignition coil.
Carry out the operations in the opposite order of unloading during installation.

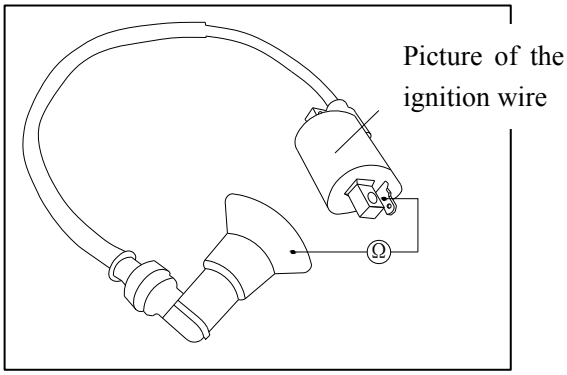
***Attention**

Use the black/white end of primary coil during installation.



6.5.2 Check the primary coil

Impedance measuring between the ends of the primary coil.
Standard value：0.4Ω（+/-）10％（20℃）
If the impedance value is within the range of the standard value, it is fine.
If the impedance is “∞”, there is wire break in the coil, replace it with a new one.



6.5.3 Secondary coil

With a spark plug attached. Measure the impedance value between the wire side and the end of

the spark plug cap.

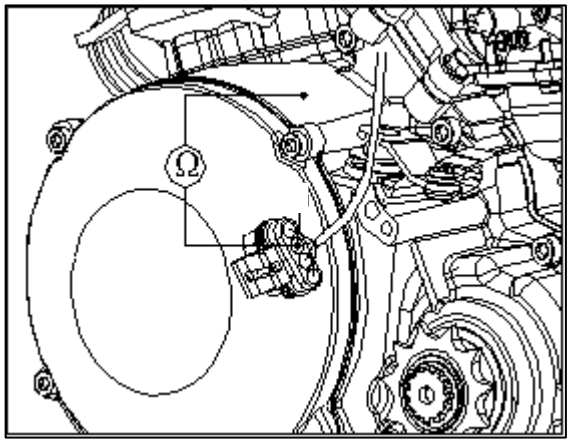
Standard value：8-11KΩ（20℃）

If the impedance value is within the range of the standard value, it is fine.

If the impedance is "∞", there is wire break in the coil.

Remove the spark plug cap, measure the impedance value between a side wire and the negative end.

Standard value：4.5-5.5KΩ（+/-）10％（20℃）



6.6 Trigger

***Attention**

Check of the trigger could be carried out on the engine.

Check

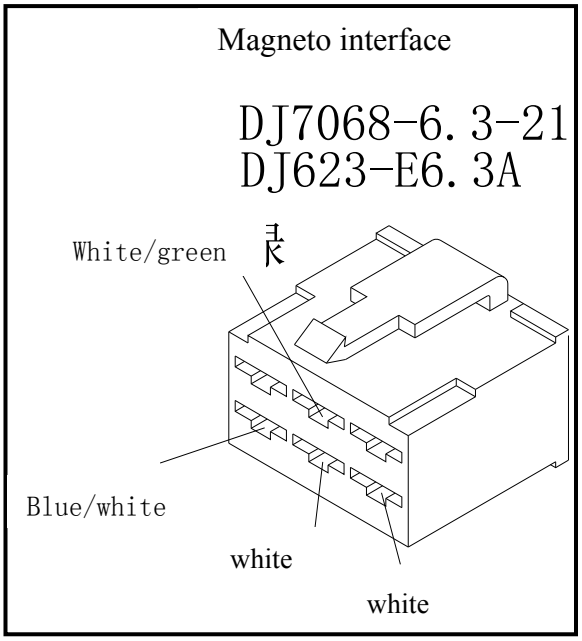
Remove the fender of the car body.

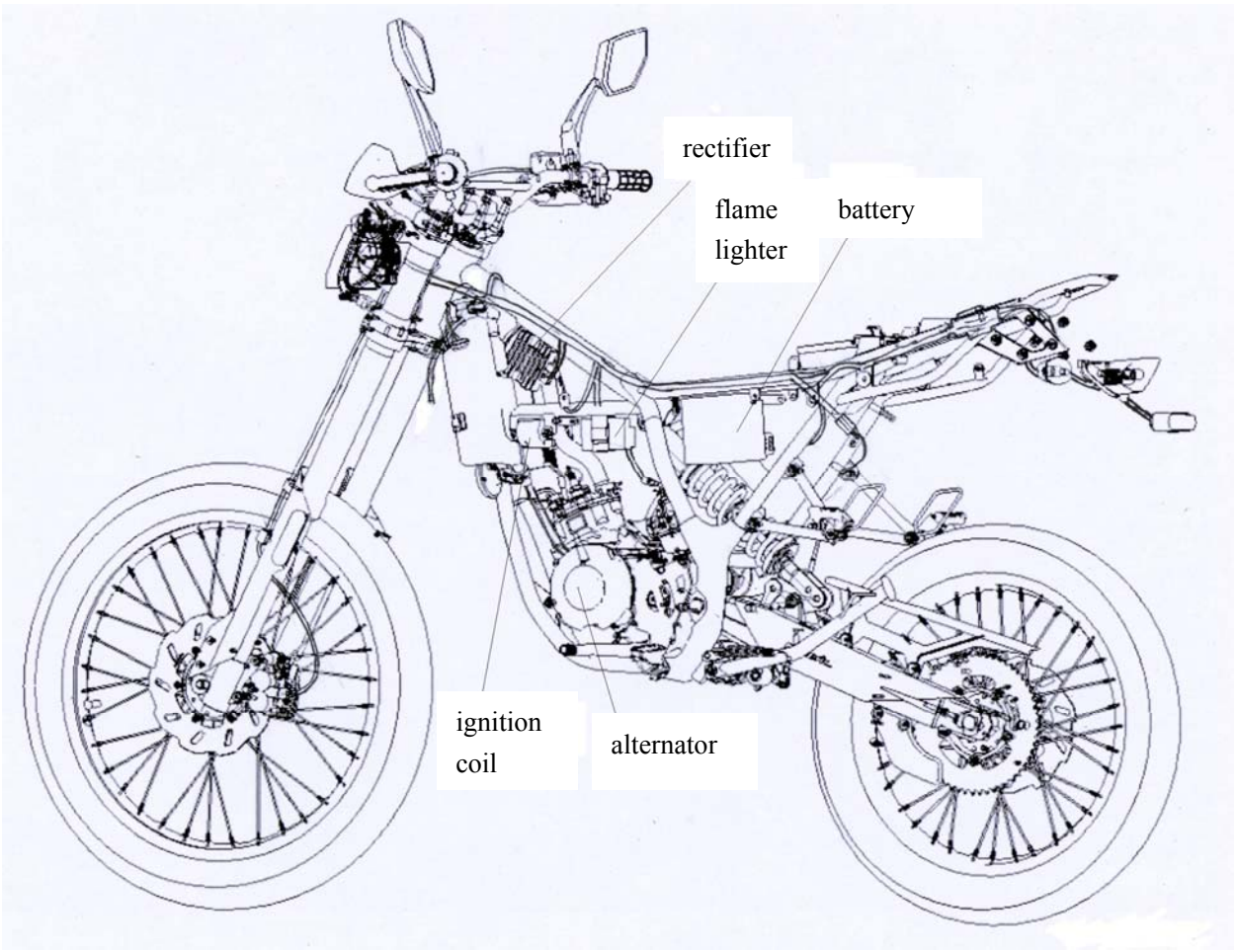
Remove the wire adaptor of the trigger.

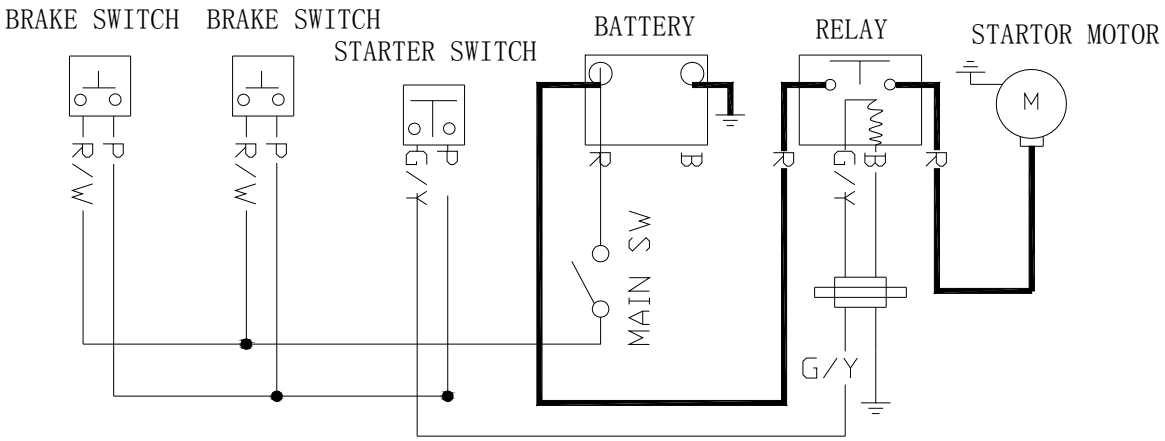
Measure the impedance value between the blue/white end of the wire at the engine side and the ground strap connection of the car body.

Standard value：100-200Ω（20℃）

Change the alternator when the value is beyond the range of the standard value.







Schematic diagram of starting

7 starting system

7.1 Preparing

Notes for operation

The unloading of the starting engine could be carried out on the engine.
Refer to the method of unloading when unloading the engine.

Preparation standard

item	Standard value	Service limits
Length of the motor brush of the starting motor	12.5mm	8.5mm
Liner of the starting idler shaft		8.3mm
External diameter of the starting idler shaft		7.94mm

Torque tightening value

Clutch cover bolt of starting motors **12 N·m**
Set screw nut of the clutch cover of starting motors **95 N·m**

Instrument

Set screw nut wrench
Universal fixed wrench

7.2 Failure diagnosis

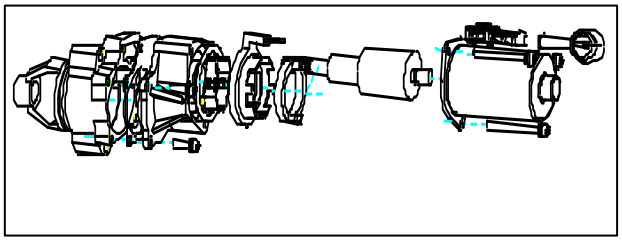
Activation failure	Weak rotating force of the starting motor	starting motor is rotating well while the engine is not
•Burnt out fuse	·Low storage battery	•Broken starting clutch
•Low storage battery	•Poor contact of connecting line	•anticlockwise revolution of the starting motor
•Broken main switch	•The gear of the starting motor is stuck by foreign matters.	•Low storage battery
•Broken starting clutch		
•Broken brake switch		
•Broken stating relay		
•poor contact of connecting line		
•Broken starting motor		

7.3 Starting motor

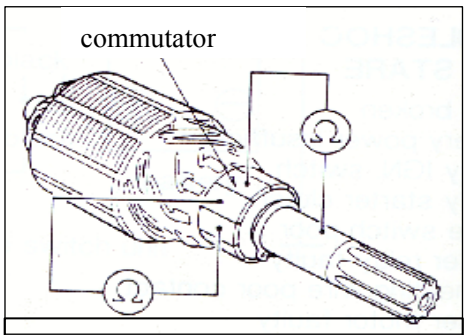
7.3.1 Unloading

***Attention**

Before unloading the starting motor, turn the main switch to "OFF" first; remove the bond strap of the storage battery, then turn the power source on the see if the starting motor is working to ensure the security.

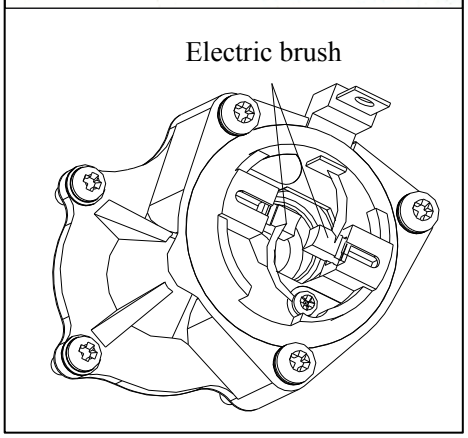


Remove the wire clip of the starting motor first.
Remove the fixed bolt of the starting motor and unload the motor.
Roll up the rubber overshoe and pull down the adaptor of the starting motor.



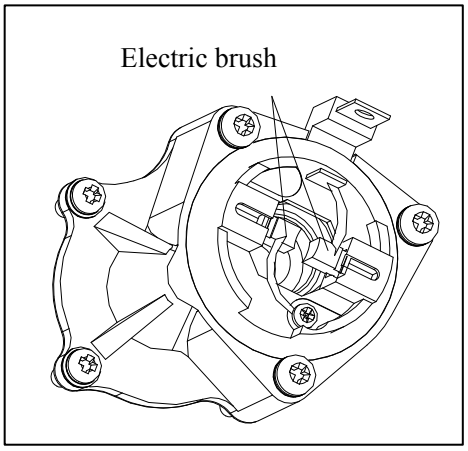
7.3.2 Breaking down

Unload the screws in the outer cover, the front cover, the motor cover and other parts.



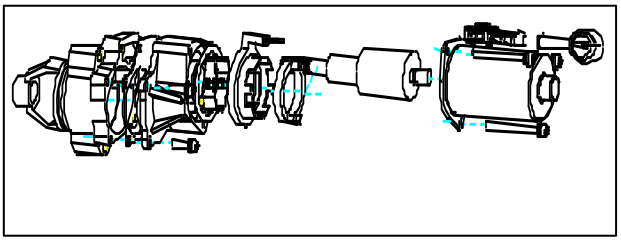
7.3.3 Check

Check other component assembling.
Replace for a new one when there is wear, fragment or burning loss in the surface.
Clean the metal powder on the surface of the commutators.



Conduction check between all interfaces of other components
Make sure armature shafts of all interfaces could not turn on.
Conduction check of the outer cover of the starting motor
Make sure the conduction terminator and the outer cover of the starting motor could not turn on.
Conduction check between conduction terminators and electric brushes
Change for a new one if there is anything abnormal.
Conduction measuring of the electric brush bracket
Change for a new one if it turns on.
Measuring of the length of electric brushes
Available credit: Change for a new one if the length value is less than 8.5mm
Check whether the needle bearing in the front Cover is rotating smoothly and whether there is any loose when pressed in.
Change for a new one if there is anything abnormal.
Check whether there is any wear or damage of the oil seal.

7.3.4 Assembling



Oil seal and greasing coating in the front cover.
Install the electric brush on the Electric brush bracket.
Grease coating on movable parts of the two ends of electric brush.
Press all the electric brushes into the bracket, then fit on the front cover of the electric motor.
***Attention**

Damage is not allowed in the interface

between the electric brush and the armature, pay attention please.
The labial part of the oil seal should not be damaged by the installation shaft, pay attention please.

Install new packing rings on the front cover.
Pair the screw of the motor shell with the one of the front cover during installation.
Screw up the screw in the outer shell.

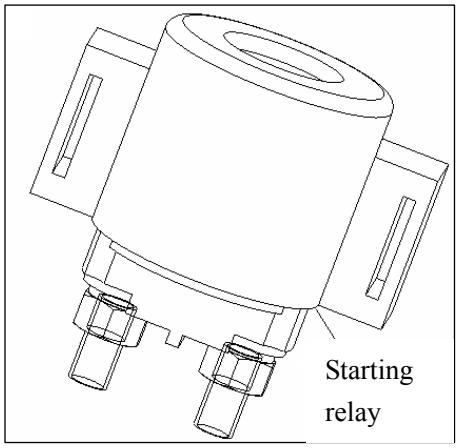
***Attention**

In the assembling of the outer shell and the front cover, use the magnet to draw the front cover to make it easy to pull out the armature, and then press it down softly.

7.3.5 Installation

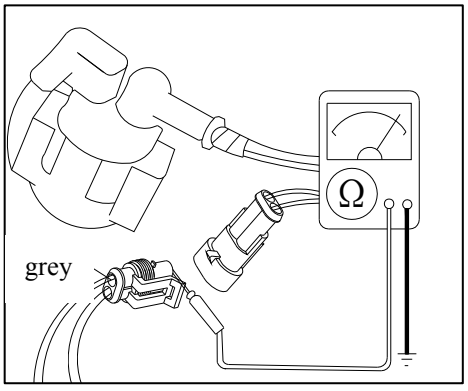
Install wires of the starting motor, make sure the solderingcup is properly installed.
Then install the starting motor.
Install the wire clip of the rear brake.

7.4 Starting relay



7.4.1 Actuation examination

Remove the fender of the body.
Ensure there is a “click” when turning on the starting motor with the main switch remaining “on”.
If there is sound, it is ok.
If no sound appears: ·check the voltage of the starting relay.
·Check the ground loop of the starting relay.
·Actuation examination of the starting relay.



7.4.2 Voltage examination of the starting relay

Set up the main stand, measure the voltage between the negative pole of the green/yellow wire in the adaptor of the starting motor and the ground strap connection of the body.
Hold on the brake tension rod with the main switch remaining “on”, the voltage of the storage battery

must be in accordance with specification.

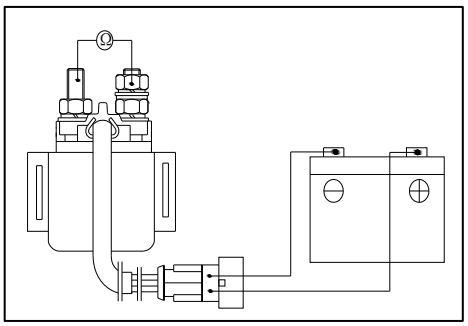
Continuity check and examination of the wires when the voltage between the ends of the starting motor iszero.

7.4.3 Examination of the ground loop of the starting relay

Remove the adaptor of the starting relay.
Conduction examination between the grey wire at the end of conductor joint and the ground strap connection of the body.
When pressing on the starting button, the conduction between the grey wire and the ground strap connection of the body must be fine.
Examination of the conduction of the starting button and wires when there is no conduction.

7.4.4 Actuation examination

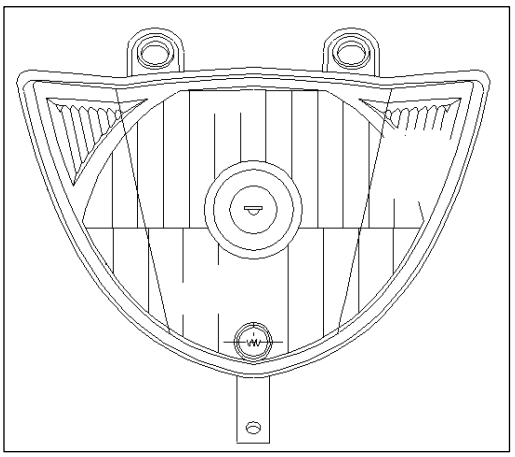
Remove the storage battery out of the starting relay, and connect the end of the starting relay with a multimeter.
Connect the fully charged storage battery between the black wire and the green/yellow wire of the relay. The relay will utter a “click” and the electric impedance the multimeter shows is “zero”.



8 lights/Switches/Meters

8.1 Preparing

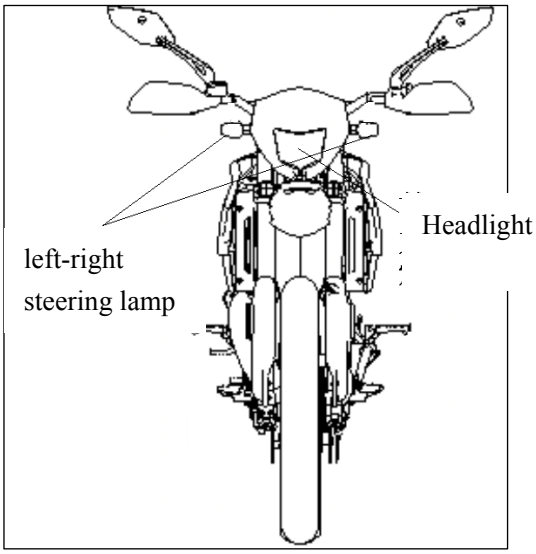
Matters need attention on operation
Conduction examination of the switch (The switch could be removed from the motorcar before being examined)



8.2 Failure diagnosis

The bulb can not light up when the main switch is turned to “on”.
·The bulb is broken.
·The switch is broken.
·poor contact at the adaptor or wire break.

8.3 Headlight bulb replacement



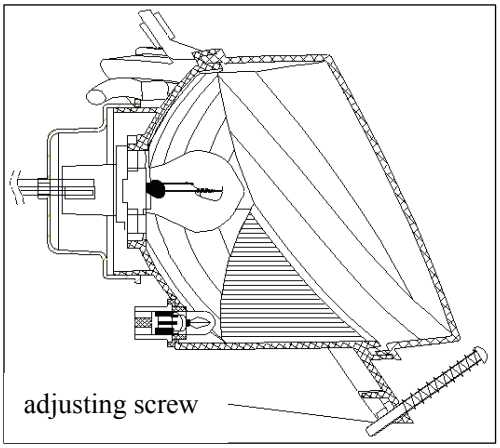
8.3. Unloading

Remove the air guide sleeve.
Remove the screw in order to unload the headlight.
Remove the glass lens of the headlight.
Keep the headlight in place; rotate the outlet clockwise to remove the bulb.

8.3.2 Installation

Install the bulb in the opposite order of removal.
.

8.4 Front turn light bulb replacement



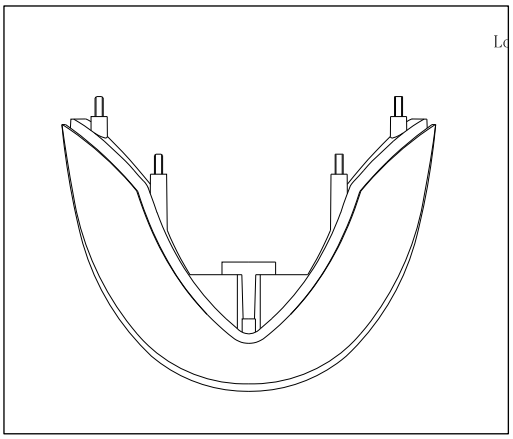
8.4.1 Unloading

Unscrew the setscrew of the turn light.
Remove the bulb outlet from the lamp.

8.4.2 Installation

Install the bulb in the opposite order of removal.

8.5 Taillight/Number plate lamp/Rear turn signal light bulb replacement



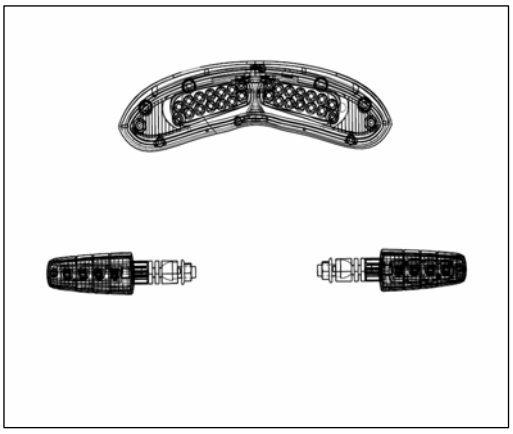
8.5.1 Unloading

Remove the screw to unload the lampshade of the taillight.
Remove the bulb from the outlet.

8.5.2 Installation

Install the bulb in the opposite order of removal.

8.5.3 Rear turn signal lamp bulb replacement



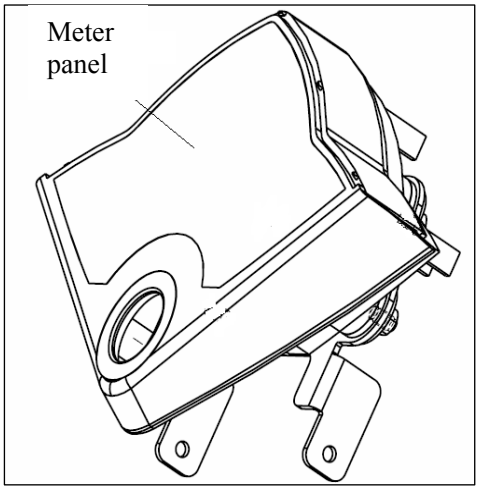
8.5.3.1 Unloading

Remove the screw to unload the lampshade of the taillight.
Remove the bulb from the outlet.

8.5.3.2 Installation

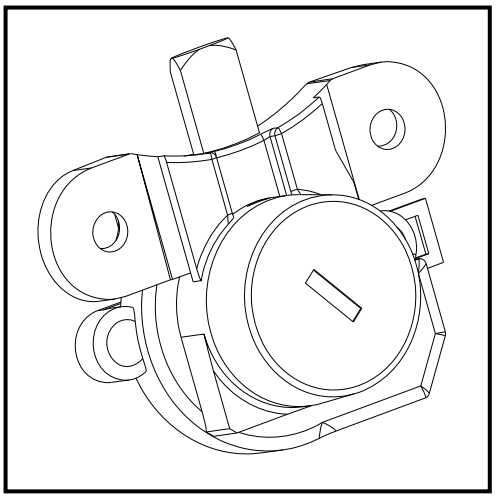
Install the bulb in the opposite order of removal.

8.6 Meters



Remove the rearview mirror.
Remove the protective guard of the handlebar, pull up the waterproof connector.
Remove the screw.
Remove the meter housing to unload the meter.
Install the speedometer in the opposite order of removal.

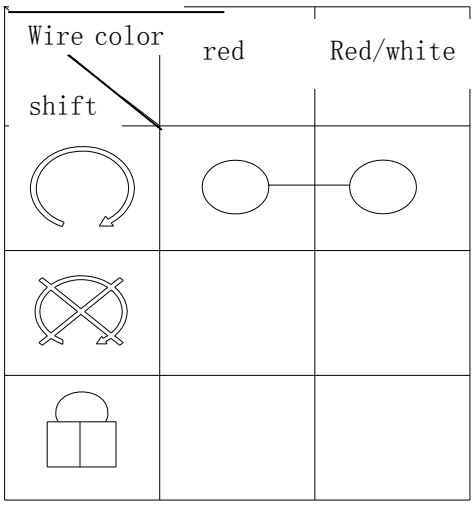
8.7 Main switches

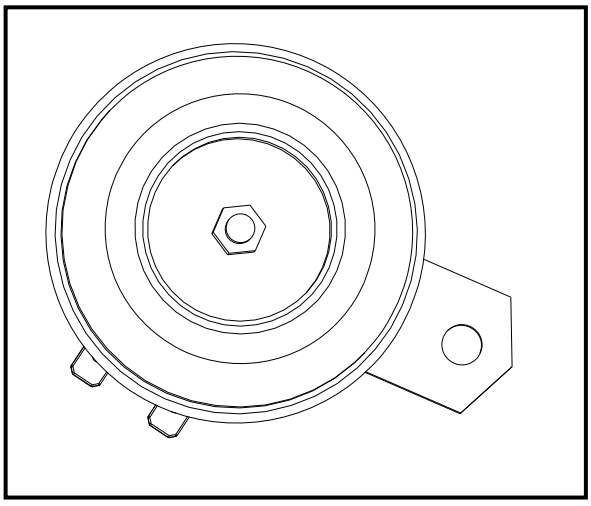


4.7.1 Examination

Remove the apron plate.
Remove the conductor joint of the main switch.
Conduction examination of the ends of the adaptor

Schematic wiring diagram

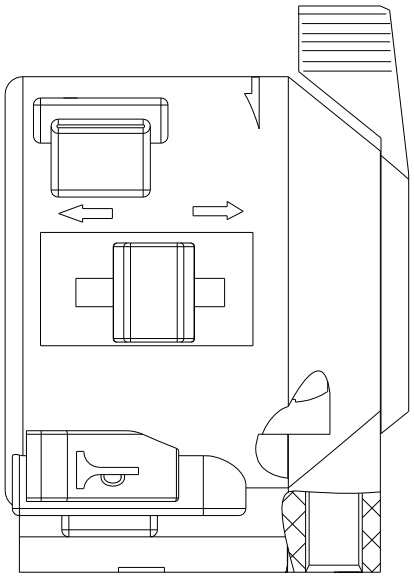




8.7.2 Main switch replacement

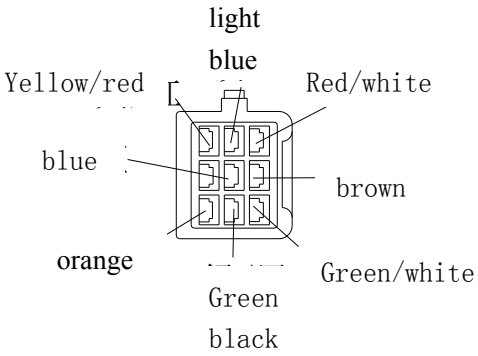
Remove the apron plate.
Remove the standing bolt; unload the permanent seat of the main switch.
Remove the standing bolt to replace the main switch.

8.8 Horn



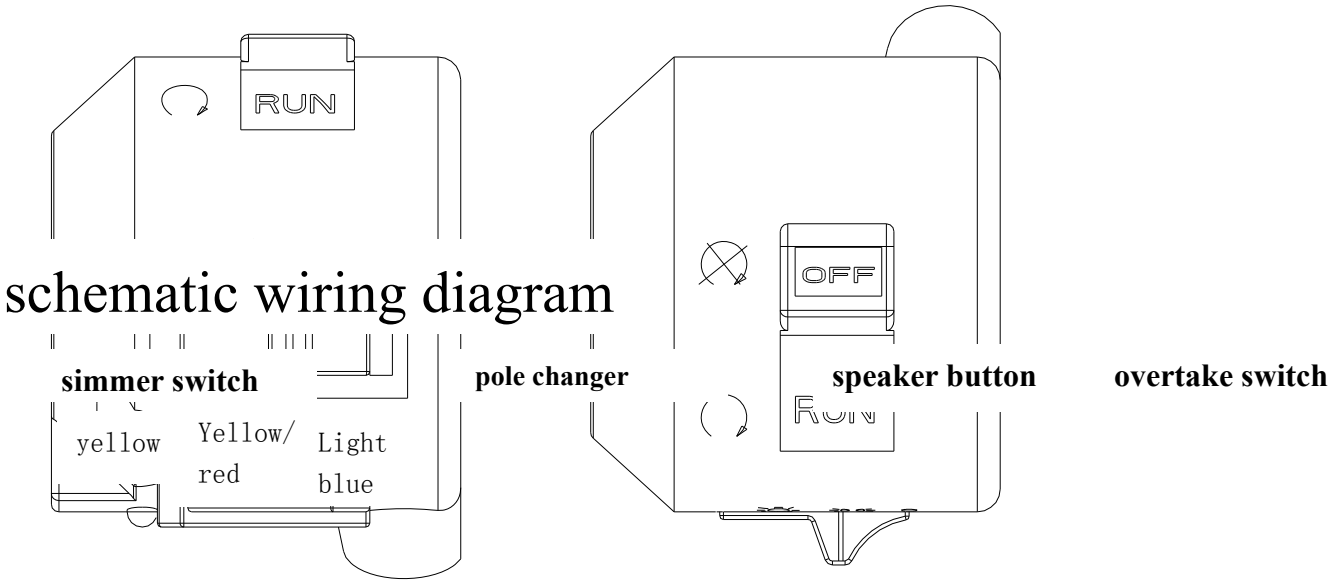
Examination

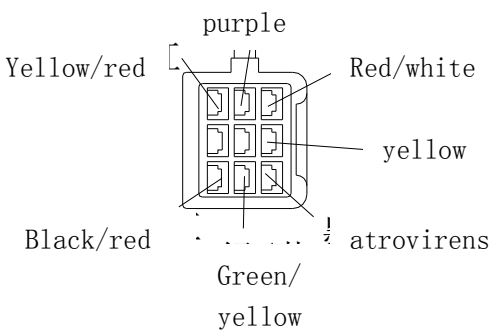
Remove the wires of the speaker.
Connect the speaker to the storage battery.
If there is sound, it is working.



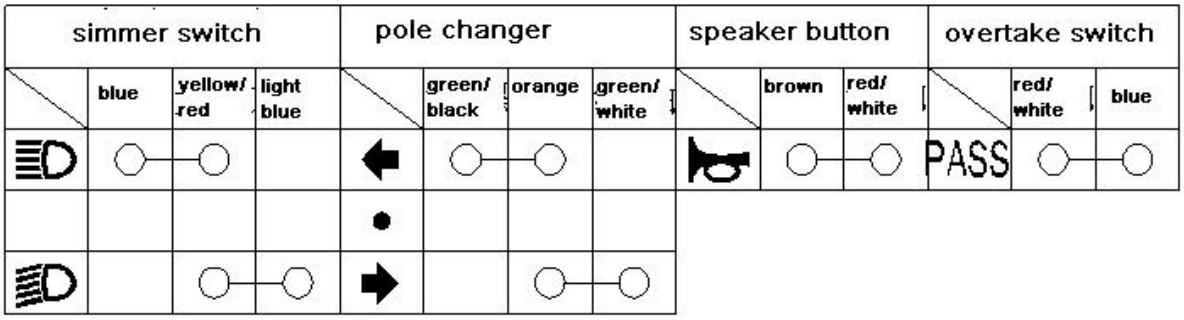
8.9 Handle switches

Remove the apron of the steering gear arm.
Remove the standing bolt of the brake tension rod, unload the bracket.
Remove the bracket of the rear brake tension rod.
Remove the accelerator handle and the screw.
Remove the accelerator han dle.
Yellow/red
Remove the accelerator cab..
Remove the standing bolt of the handle to unload the handle.

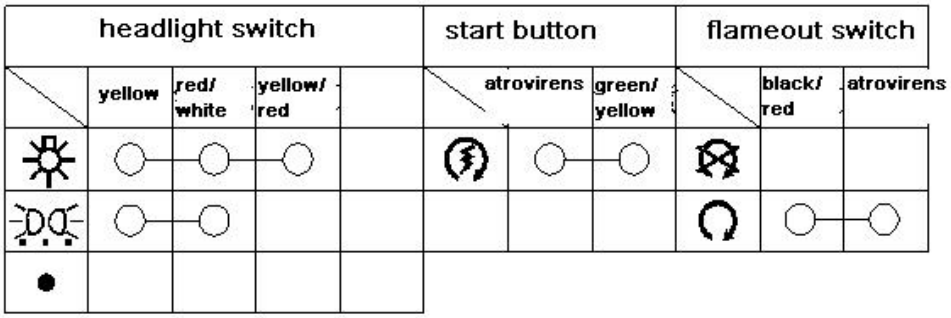




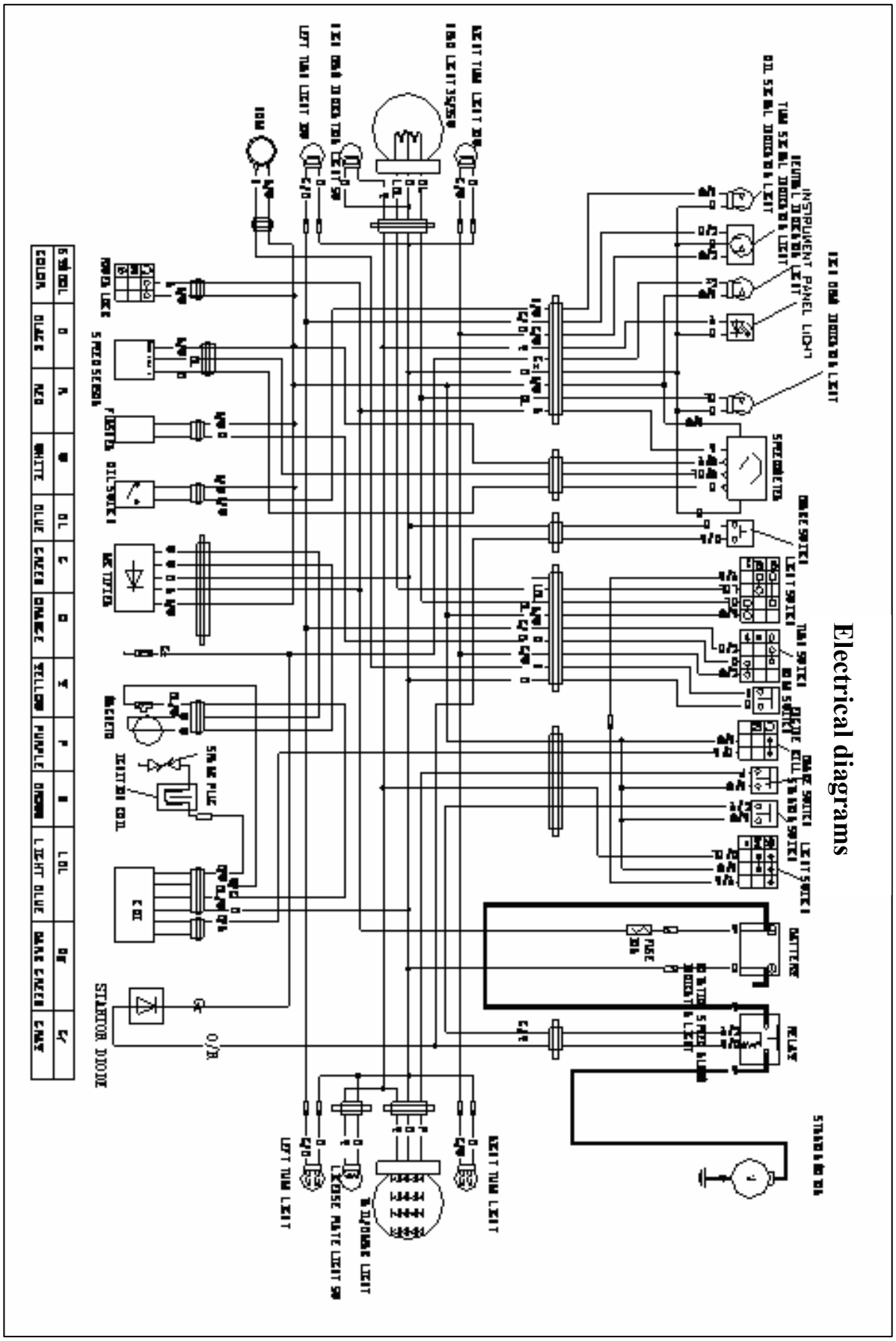
schematic wiring diagram



schematic wiring diagram



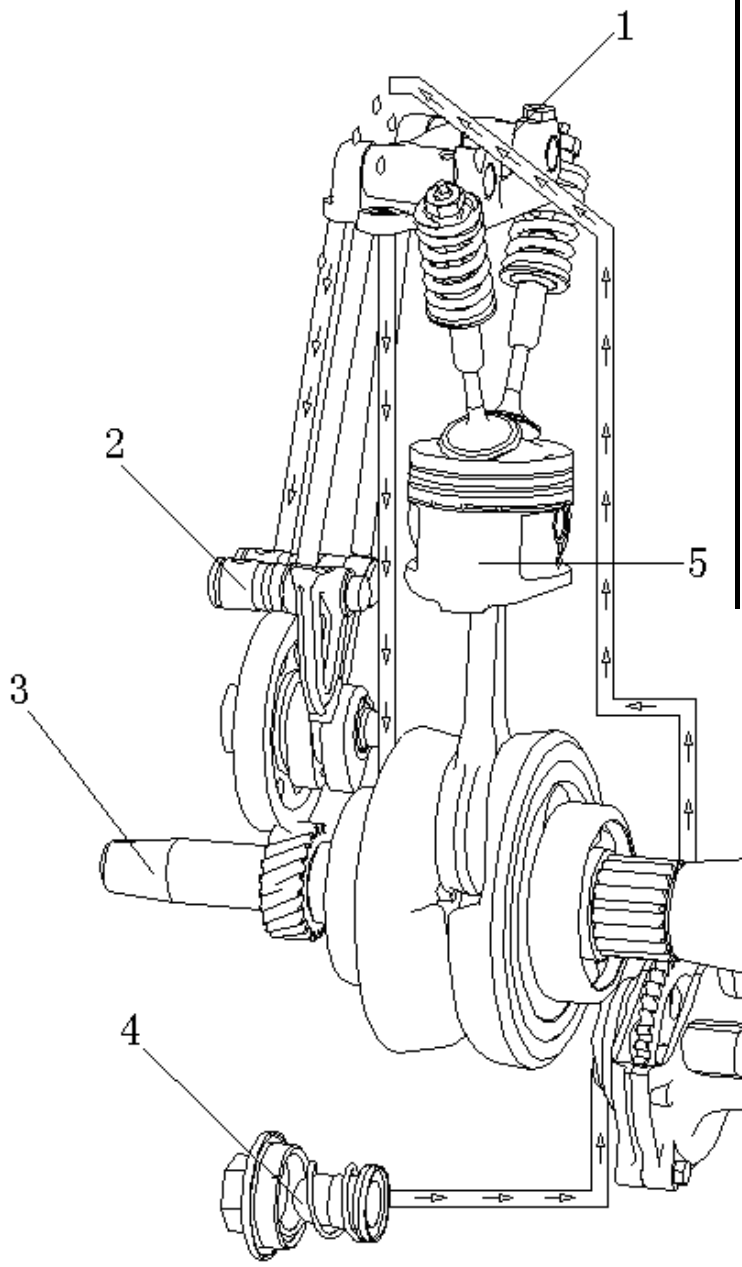
Electrical diagrams



Engine fastener torque value table

Fastening parts and fasteners Name	Tightening torque（N·m）
cylinder head nut	25～28
Rocker arm shaft support bolt	15～20
Cylinder double end bolt	10～17
CMFLR Cam Follower shaft standing bolt	18～23
Flywheel locking screw nut	30～40
Filter spring blind nut	15～30
Valve-lash adjuster screw nut	10～15
Shift locator bolt	10～16
Assemble mould bolt	9.8～11
Left and right crankcase bolts	9.8～11
Loop screw	9.8～11
Oil filter cover screw	4～7
Clutch separating plate bolt	10～16
Cylinder head cover bolt	9.8～11
Cylinder block fastening bolt	9.8～11
Engine oil filter rotor screw nut	40～50
drive sprocket bolt	10～16
Oil pump body bolt	9.8～11
Shift locating plate bolt	10～16
Spark plug	15～26

Lubrication system



Attention： After unloading the oil pump, all the components must be carefully washed, and the surface of the components should be blown clean with high pressure gas.

Don’t let foreign matter fall into the crankcase during the unloading and installation of the oil pump.

1 rocker 2 cam mechanism 3 bent axle 4 engine oil filter 5 piston 6 oil filter 7 oil pump

10.1 Preparing

Matters need attention on operation：

After unloading the oil pump, all the components must be carefully washed, and the surface of the components should be blew clean with high pressure gas.

Don’t let foreign matter fall into the crankcase during the unloading and installation of the oil pump.

Use of the lubrication system：

Function of the engine lubrication system is to supply lubricant to component surface, transforming the dry friction on the surface to liquid friction among the lubricant particles, in order to reduce wear of the components; cooling components with higher heat load; absorbing the shock of bearings and other machine components to reducing noises; increasing leak tightness between the piston ring and the cylinder wall; clean and wash away the impurity on the surfaces of components.

Preparation standard

item		standard	Operating limit
Oil level	During oil change	0.8L	__
	During unloading	1.1L	__
Oil pump rotor	Radial clearance between inner and outer rotors	0.10-0.15	0.25
	Clearance between the outer rotor and the pump	0.10-0.15	0.25
	Rotor end clearance	0.07-0.12	0.15

10.2 Failure diagnosis

Decrease of oil level　　Engine burning loss

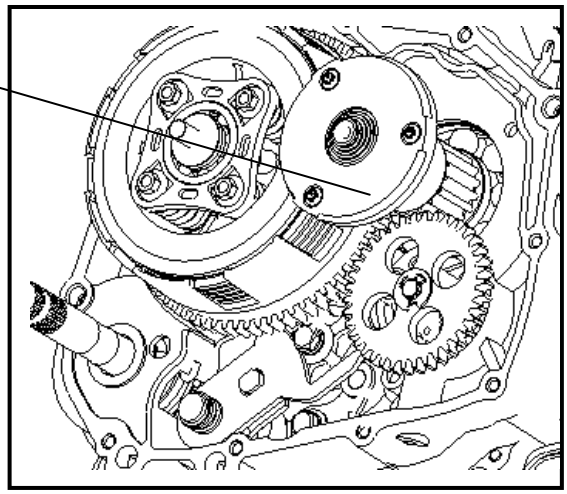
Normal consumption of oil
Oil leak

No oil pressure or low oil pressure
Oil line block

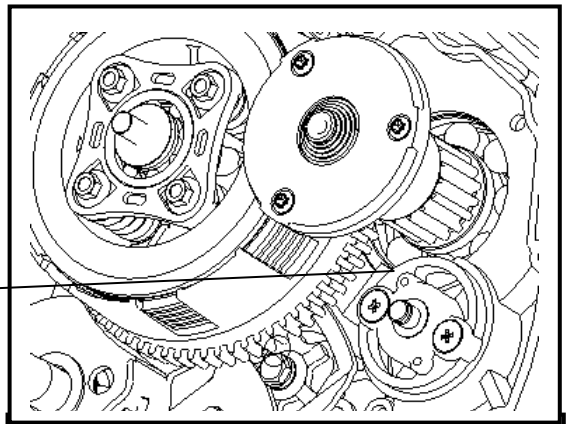
10.3 Oil pump

10.3.1 Unloading

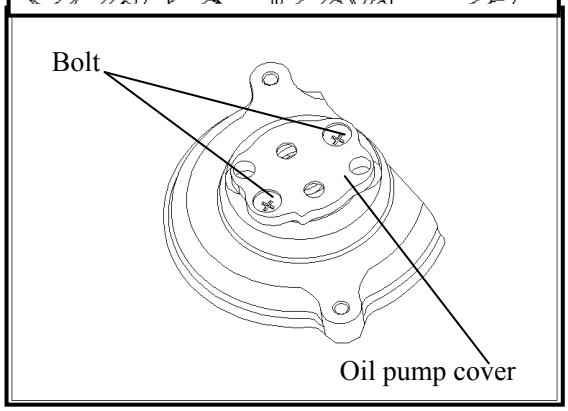
Remove the right cover, unload the oil filter, unscrew the set screw of the oil pump, and remove the driver gear and the oil pump shaft.



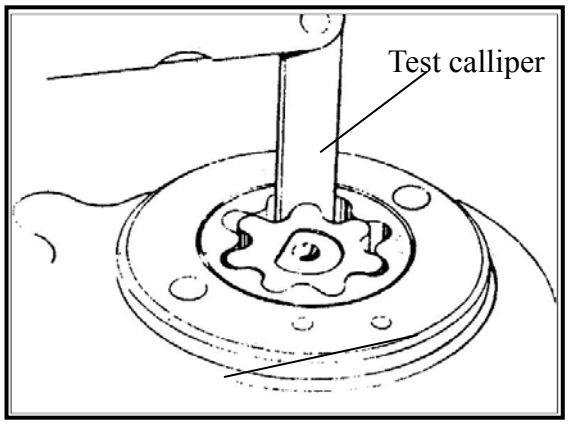
Remove the bolt.
Unload the oil pump body.



Remove the bolt, unload the oil pump cover.
Disassemble the oil pump.

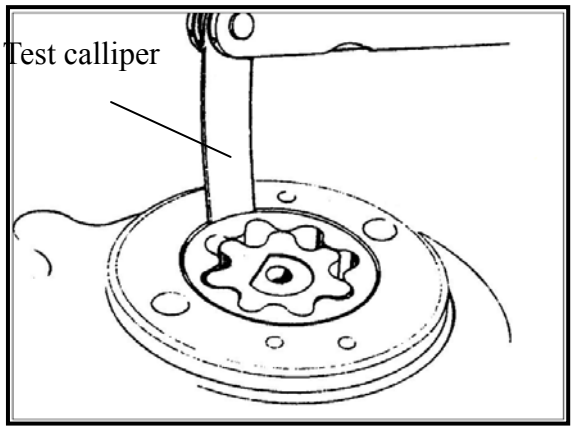


Examine the radial clearance between inner and outer rotors.
Operating limit: 0.25mm
Examine the clearance between outer rotors and



oil pump seat.

Operating limit: 0.25mm

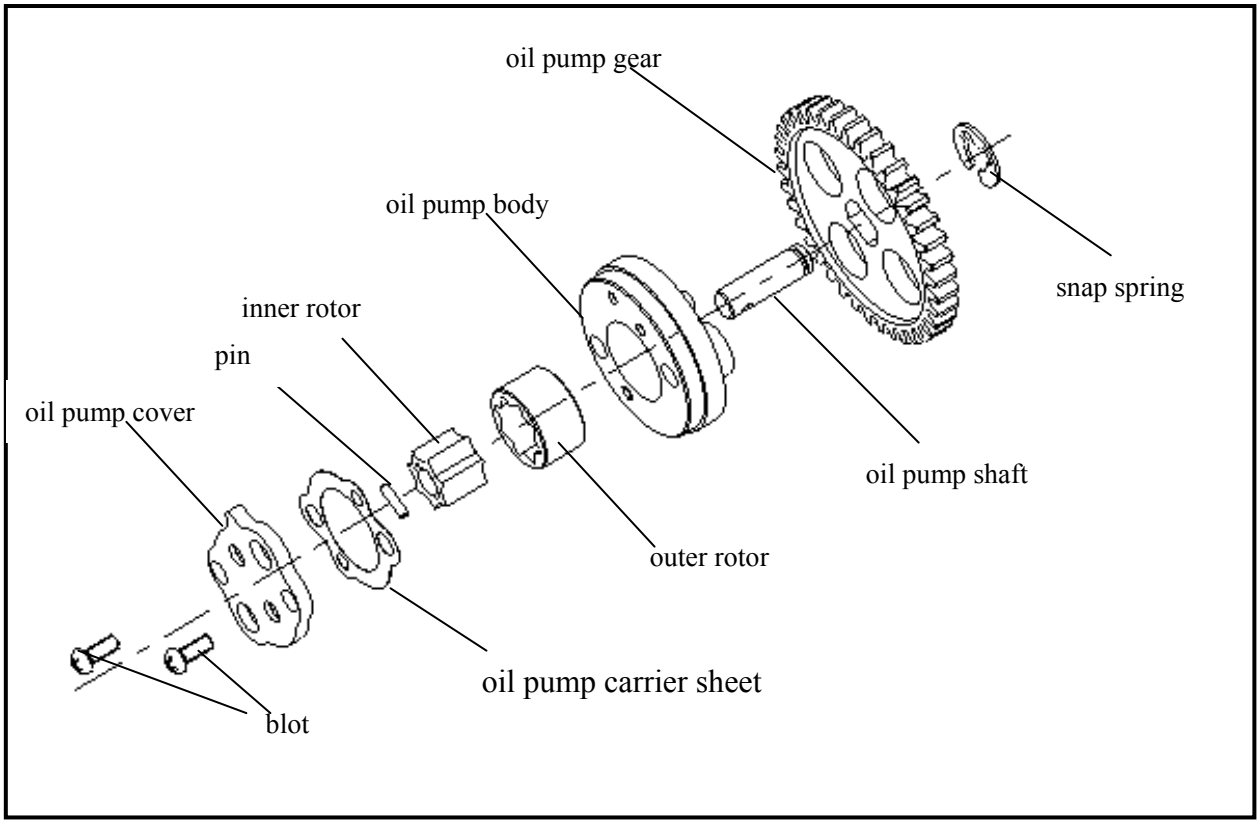


Examine end clearance of rotors.

Operating limit: 0.15mm

10.3.2 Assembling the oil pump

As the following picture shows:



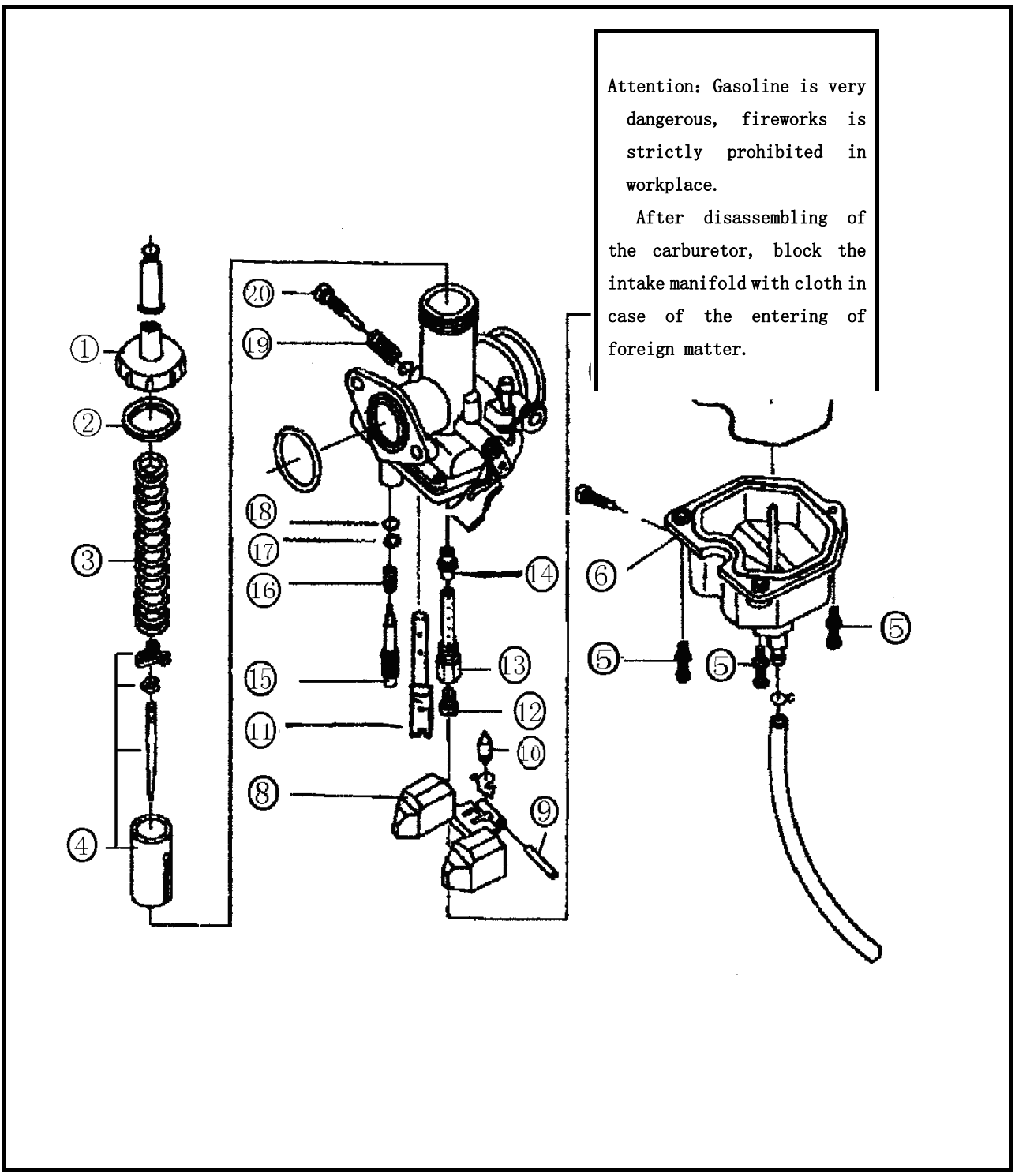
***Attention：**

After assembling, inner and outer rotors should rotate smoothly without stagnation.

10.3.2 Assembling

In the opposite order of unloading

Carburetor



1-roof cover 2-roof cover airproof 3- plunger spring 4-plunger piston component 5-lower casing coupling screw 6-lower casing component 7- sealing ring 8-float component 9-float pin 10-needle valve 11-idle metering jet 12-main entering jet 13-mian jet 14-mian foam pipe 15-mixing ratio screw 16-mixing ratio screw spring 17-mixing ratio screw spacer 18- mixing ratio screw sealing ring 19- plunger adjusting screw spring 20-plunger adjusting screw

11 **Carburetor**

11.1 Preparing

Matters need attention on operation

·Gasoline is very dangerous, fireworks is strictly prohibited in workplace.
·Pay special attention to sparks.
·Forcibly pulling and bending of wires is not allowed. Distortion and damage will affect the wires.
·After disassembling of the carburetor, block the intake manifold with cloth in case of the entering of foreign matter.
·Unused for more than a month, the gas in carburetors of displacer type should be let out, as the gas in the displacer type may go bad, blocking the idling jet to make idle speed not safe.

Use of carburetor： Carburetor is a critical component in the fuel feed system of the engine; its working directly affects the stability of the engine and dynamic, economic indicators. Certain amount of gasoline is atomized into little oil drops in it, and mixed with different quantities of air homogeneously, forming vaporific fuel mixture of different thickness according to needs of different working condition of the engine and supplied to the engine to ensure continuous and normal operation of the engine.

Preparation standard

Unit: mm

Item	Standard value
Main jet	A07
Main jet	0.9
Idle metering jet..	0.34
Oil injection needle	A08-3

11.2 Failure diagnosis

Starting disorder	hard starting	Flameout after starting	unstable idling speed
No fuel in the carburetor		Carburetor blockage	
Gas filter blockage		too thick or too thin gas mixture	
Gas pipe blockage		secondary air suction in the inspiration system	
Needle valve ankylosis		idle speed maladjustment	

Oil level maladjustment oil volume maladjustment

Blockage in the idling system or the electric enrichment valve

Excessive fuel in the engine too thin gas mixture

Outflow due to excessive oil oil jet blockage

Secondary air suction in the inspiration system needle valve blockage

Fuel deteriorate low oil level

Enrichment valve disorder fuel system blockage

Blockage in the idling system or the choke system secondary air suction in the inspiration system

Over thick gas mixture flashover interruption on acceleration

Enrichment valve disorder too thin gas mixture

Needle valve disorder

Over high oil level

Carburetor outflow

Air channel blockage

Dirty air cleaner

11.3 Remove carburetor

11.3.1 Remove

Remove the set screw nut between the carburetor and the Bakelite layer on the cylinder head.

Remove the carburetor.

11.3.2 Disassembling of carburetor

Remove the roof cover, unload the sealing ring of the roof cover, plunger spring and plunger components.

Remove the coupling screw of the lower casing; knock down components of the lower casing and the sealing ring.

Remove float components, float pins and needle valve case.

Remove the idle metering jet, the main metering jet, the main jet and the main foam pipe.

Remove mixing ratio screws and mixing ratio screw springs.

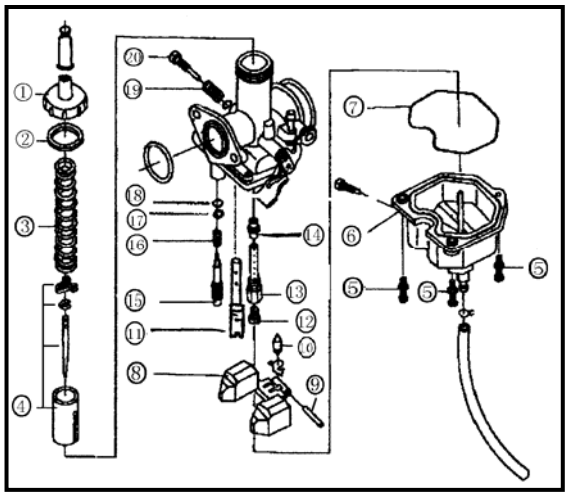
Remove mixing ratio screw spacer and sealing rings of the mixing ratio screws.

Remove plunger adjustment screws and plunger adjustment screw springs.

11.3.3 Check

Check if there is any wear or damage in needle valve components, needle valve seating and float components.

Change the needle valve for a new one if there is any wear or damage.
Change the carburetor body for a new one if there is any wear or damage in the needle valve seat.
Change the float tongue piece for a new one if there is any wear and tear.
Examine the spindle of the carburetor. If there is any wear or damage, change it for a new one and change the main jet at the same time.
Check if there is any wear, damage or contamination in the idle metering jet, the main metering jet and the main jet. If there is, change them.
Check if there is any wear and tear in the plunger. If there is, change it.
Examine the carburetor and fuel lines. If they're contaminated, clean them according to the specification.



11.4 Carburetor Installation

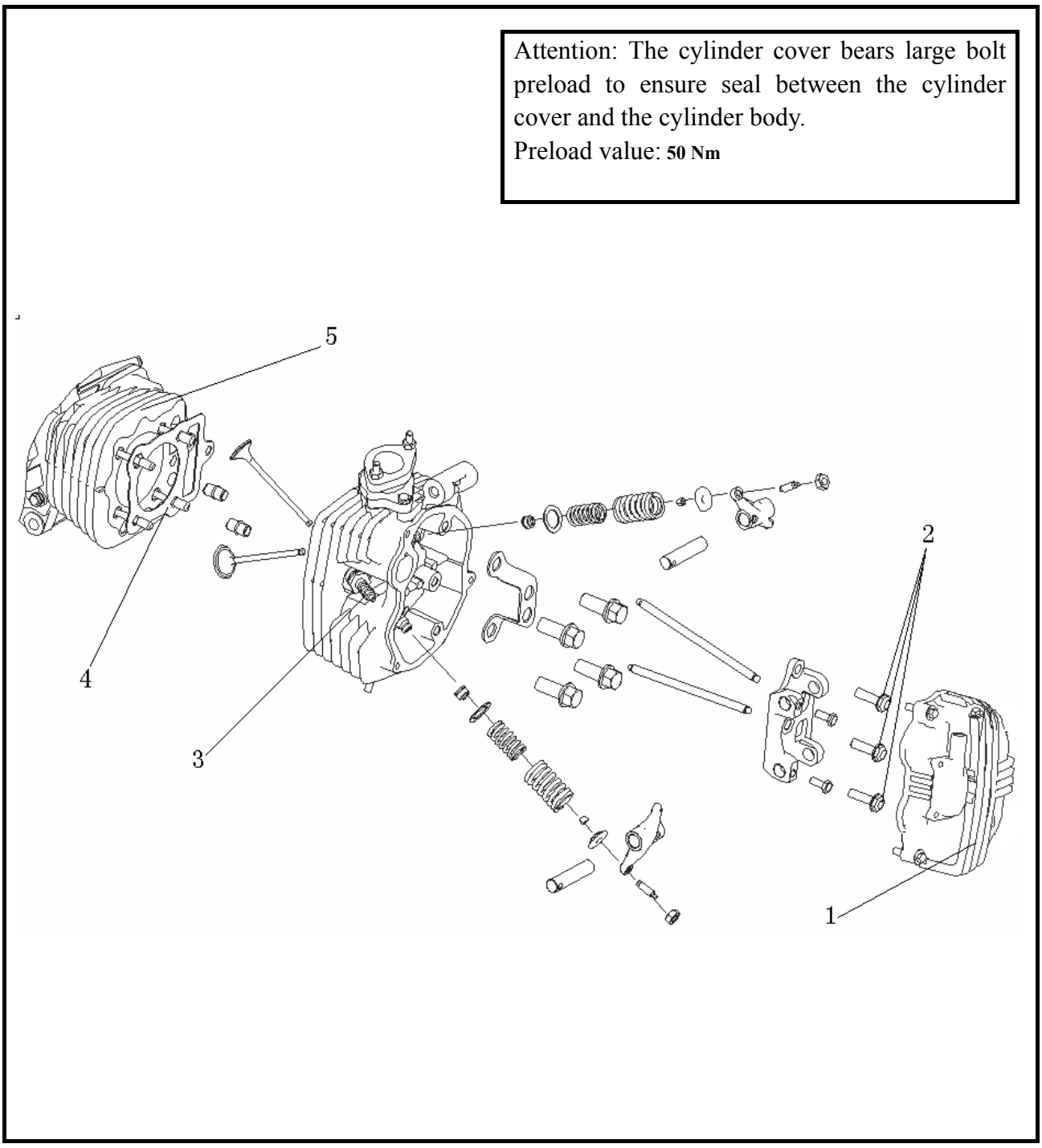
Assembling

Install the idling meter jet, the main metering jet, the main jet and the main foam pipe.
Install the float, the float pin and the needle valve.
Install sealing rings of the top housing and the lower casing, lower casing components and lower casing coupling screws.
Install mixing ratio screw spacers, sealing rings of mixing ratio screws, mixing ratio screw springs and mixing ratio screws.
Install the mixing ratio screws into the body.
Install plunger adjustment screw springs and plunger adjustment screws.
Install plunger springs and plunger components.
Install roof cover sealing rings and the roof cover.

Installation

Installation is carried out in the opposite order of unloading.

Cylinder head/Valve



1 cylinder cover hood 2 bolt 3 spark plug 4 cylinder head gasket 5 cylinder

Attention: The cylinder cover bears large bolt preload to ensure seal between the cylinder cover and the cylinder body.

Preload value: **50 Nm**

12.Cylinder head/ Valve

12.1 Preparing

Matters need attention on operation

For air tightness between the cylinder head and the cylinder body, the head bears tremendous bolt pretightening force. Pretightening force value: 50 Nm.

All components must be cleaned and dried with high-pressure air before examination.

Function of the cylinder head: The cylinder head is used to seal the cylinder and form the combustion chamber with the piston. It bears HPHT fuel gas, and carries out air entering and exhaust distribution devices.

Preparation standard

unit: mm

Item			Standard	Service limit
Flatness of the cylinder head			0.03	0.05
valve Valve guide	valve clearance	inlet	0.03-0.05	__
		outlet	0.03-0.05	__
	External diameter of the valve rod	inlet	5.44-5.45	5.40
		outlet	5.435-5.445	5.40
	inner diameter of valve guides	inlet	5.475-5.485	5.50
		outlet	5.475-5.485	5.50
	clearance between the valve rod and the valve guide	inlet	0.025-0.045	0.08
		outlet	0.03-0.05	0.10
	Width of valve seat	Inlet/outlet	0.8-1.0	1.6
Valve spring	Free length	internal	33.5	30
		external	40.9	39.5
rocker	external diameter of rocker shafts	Inlet/outlet	11.98-11.988	11.95

	internal diameter of the rocker	Inlet/outlet	12-12.018	12.05
	clearance between the rocker shaft and the rocker hole	Inlet/outlet	0.012-0.038	0.08

12.2 Failure diagnosis

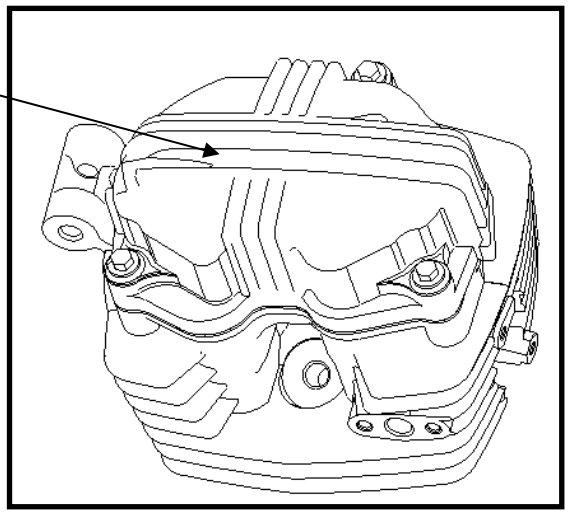
Low compression pressure
Maladjustment of the valve
Valve burning or bending
Bad air tightness in the valve seat
Air leak in the cylinder head spacer
Poor installation of the spark plug

abnormal sound in the cylinder head
Maladjustment of the valve clearance
valve spring damage
excessive compression pressure
redundant carbon deposit in the combustion chamber

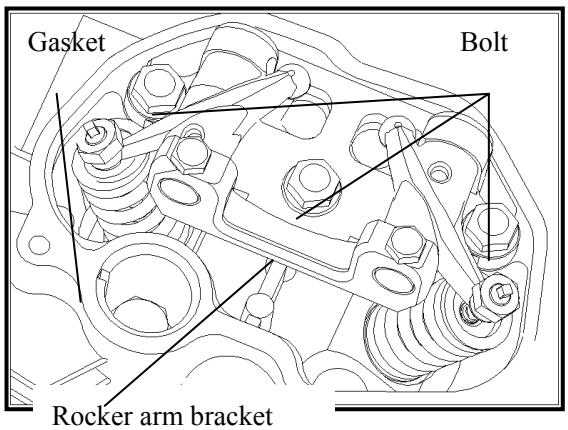
12.3 Cylinder head

12.3.1 Unloading

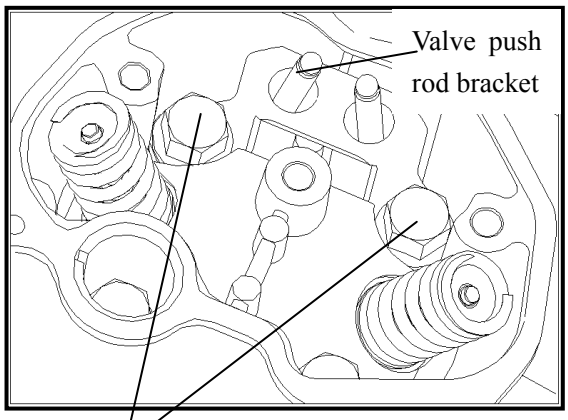
Unscrew three standing bolt and unload the valve mechanism cover.



Remove the gasket.
Unscrew three fastening bolt and unload the rocker arm bracket (rocker).

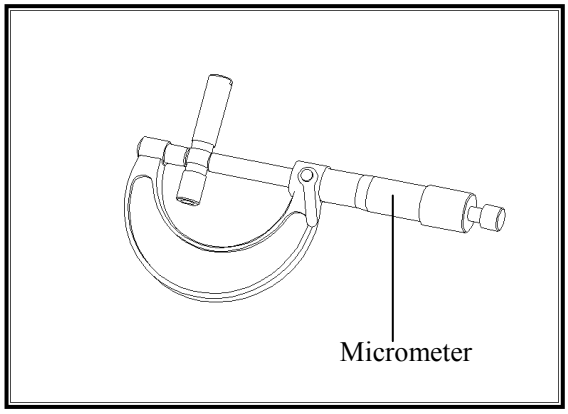


Remove the valve push rod.
Unscrew the screws in the cylinder head and unload the push rod bracket.

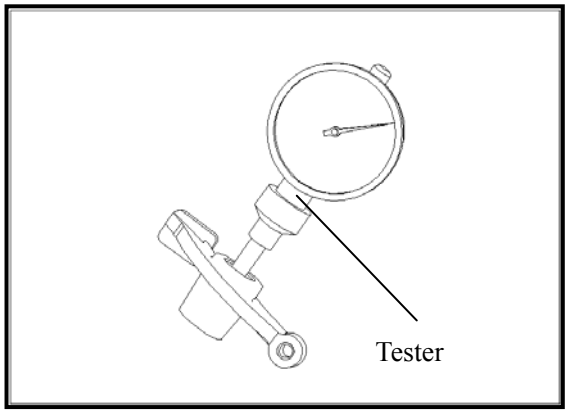


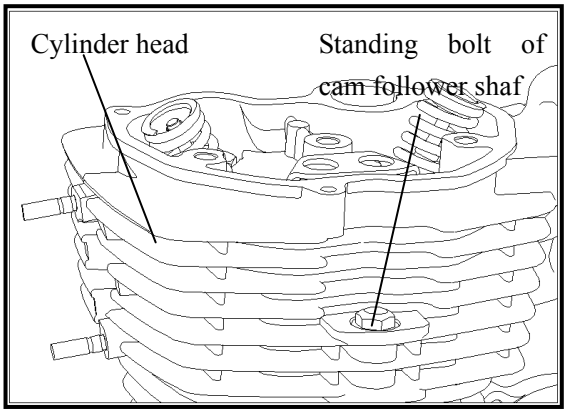
Measure the external diameter of the rocker shaft.
Allowable limit: 11.95mm

Measure the internal diameter of the rocker shaft.
Allowable limit:： 12.05mm。
measure the clearance between the rocker arm hole and the wayshaft.
Allowable limit:： 0.08mm。



Remove the standing bolt of the cam follower shaft and unload the cylinder head.

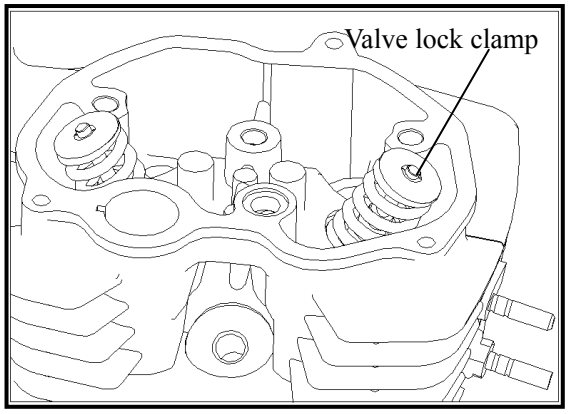




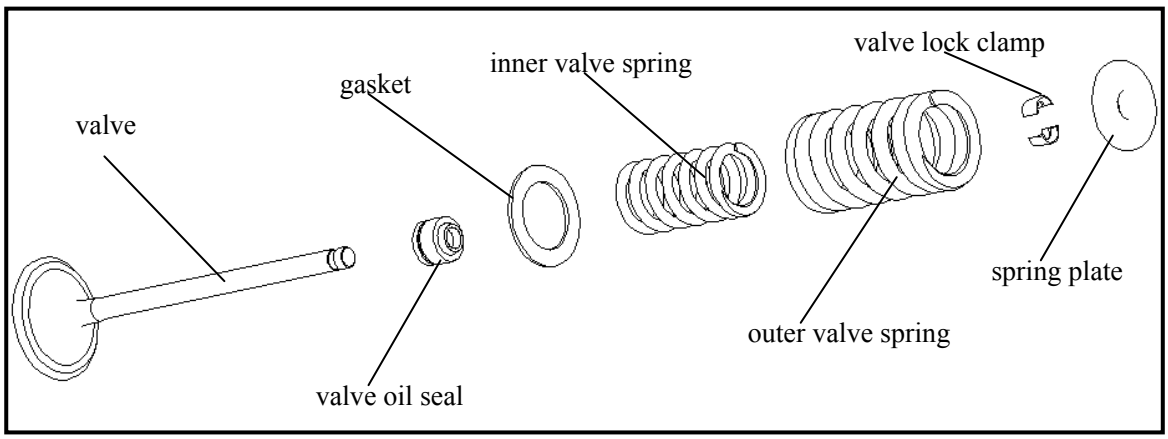
Compress the valve spring with valve spring compression instrument.

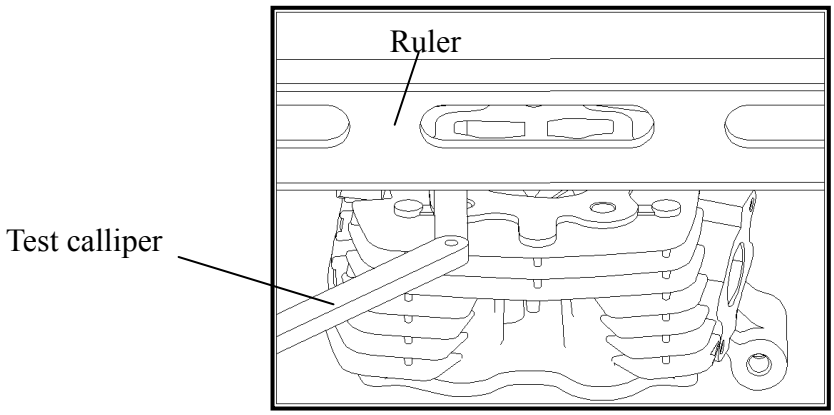
Remove the valve lock clamp.

Remove the spring plate, inner and outer valve spring, the spring shim of the outer valve and the valve one by one.

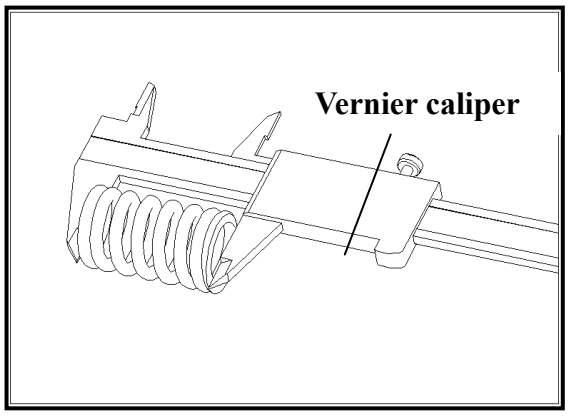


12.3.2 Valve disassembling





12.4 Valve examination



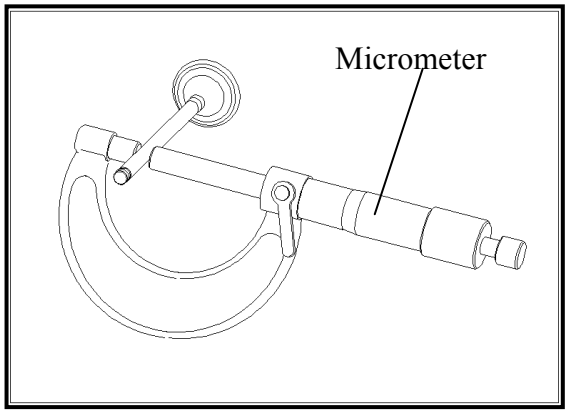
Clean the carbon deposit on the cylinder head.

Measure the flatness of the junction surface of the cylinder head.

Allowable limit：0.05mm.

Place the crocus paper on the panel when the flatness of the junction surface of the cylinder head exceeds the allowable limit.

Joint the junction surface of the cylinder head with the crocus paper and mill it in the direction like writing an 8.



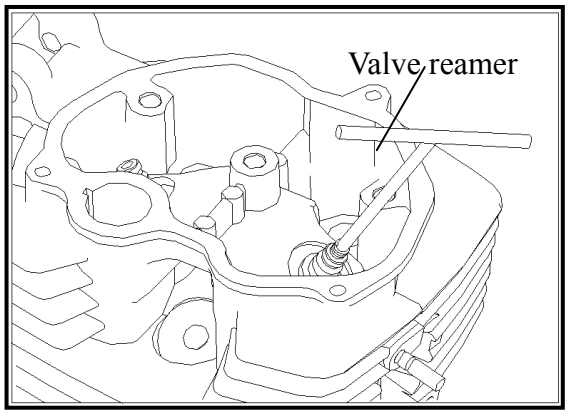
Measure the free length of the inner and outer valve spring.

Allowable limit：inner spring：30mm。

outer spring：39.5mm。

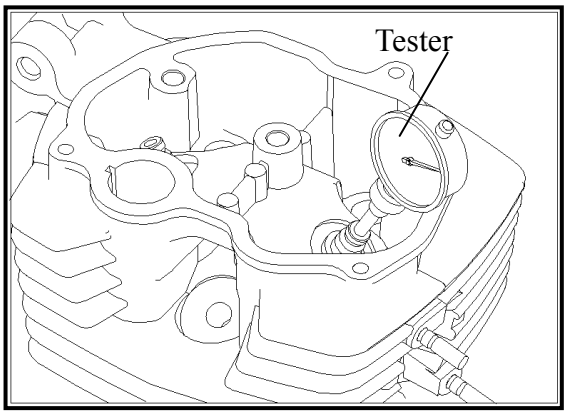
Measure the external diameter of the valve rod.

Allowable limit：5.40mm.



Examine the valve guide. Before examination,

Use a reamer to clear the carbon deposit in the guide. Attention: use the reamer clockwise, never use it anticlockwise.



Measure internal diameters of all valve guides

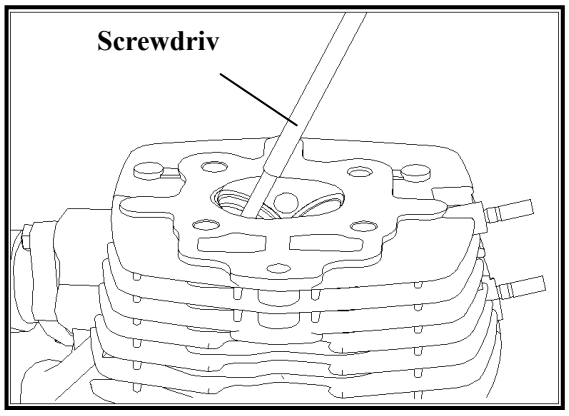
Allowable limit：inlet/outlet：5.5mm。

Measure the clearance between the valve and the valve guide.

Allowable limit：intake valve：0.08mm。

exhaust valve：1.0mm。

12.5 Remove valve guide



***Attention**

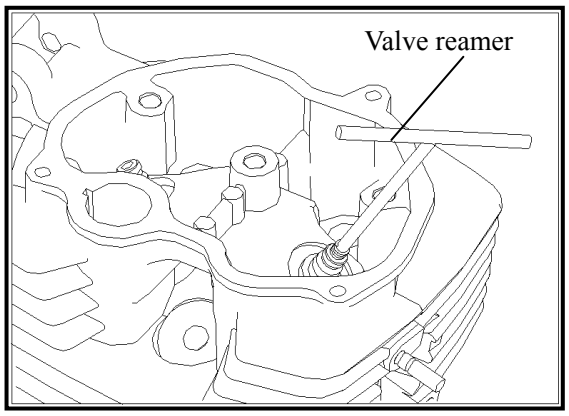
Displace the valve guide if the clearance between the valve and the valve guide exceeds the allowable limit. After displacement, correct the surface of the valve gate seat ring.

Place the valve guide in the freezing Chamber of the fridge for an hour.

Heat the cylinder head on an electric furnace or in an oven to 100-150℃.

Place the cylinder head; remove the valve guide out of the cylinder head with valve guide unloading instrument.

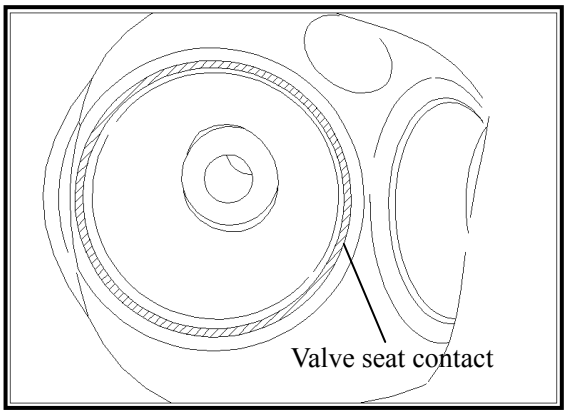
起子：Screwdriver



Place a new O ring on the new valve guide.

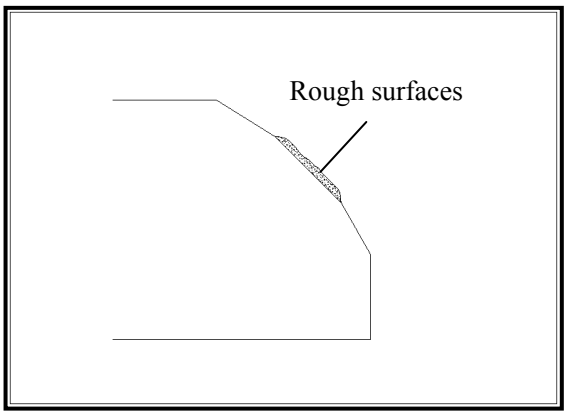
Install the valve guide from the top of the cylinder head.

***Attention：** Don't damage the cylinder head during the installation of the valve guide.



After the valve guide is embedded, correct it with a valve guide reamer.

***Attention:** Add some cutting oil when using the reamer. Use the reamer clockwise.



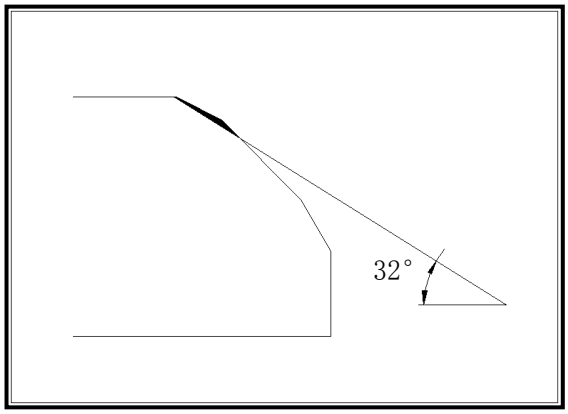
Clear the carbon deposit in the combustion chamber and the valve, and clean the inlet and outlet gate completely.

Allowable limit：inlet/outlet：1.6mm。

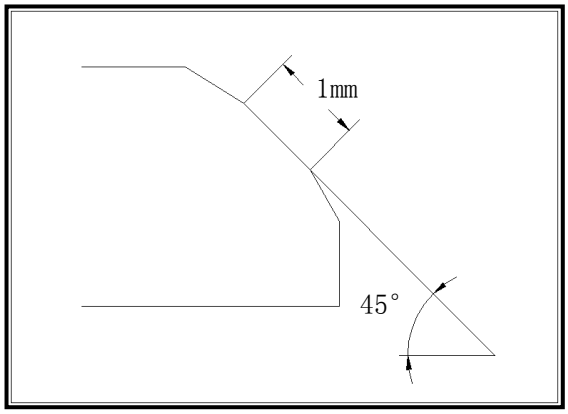
12.6 Repair and maintenance of the valve seat ring

Use the milling cutter of 45°cutting angle to eliminate coarse or bumpy places.
Note：
Smear the valve seat ring with a transparent
or Prussian blue layer to make it easily seen.

Use a milling cutter of 32°cutting angle to remove 1/4 of the outer part of the valve seat ring.

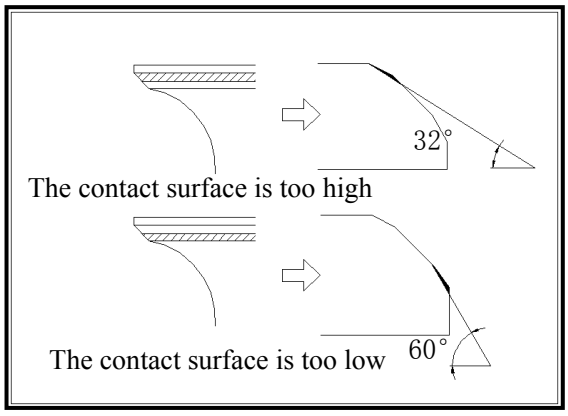


Use a milling cutter of 60° cutting angle to remove
1/4 of the base of the valve seat ring
Put down the milling cutter and examine worked places.



Use a fine repair milling cutter to wear the
valve sear ring to attain a proper width.
Make sure to eliminate all the dents and bumpy parts.
Width of standard valve seat rings: inlet: 1.0mm
Outlet: 1.0mm

Use a plain milling cutter of 32°cutting angle to lower the valve seat ring if the touched place is because part of the valve is too high. Use an
internal milling cutter of 60°to raise lower parts of the valve seat ring if the touched place is because part of the valve is too low. Use the fine repair



milling cutter to repair the valve seat ring again to make it meet the requirement.
Coat the valve surface with brightener after
mill of the valve seat ring to polish the valve softly.

12.7 Cylinder heads installation

Installation is carried out in the opposite order of unloading.

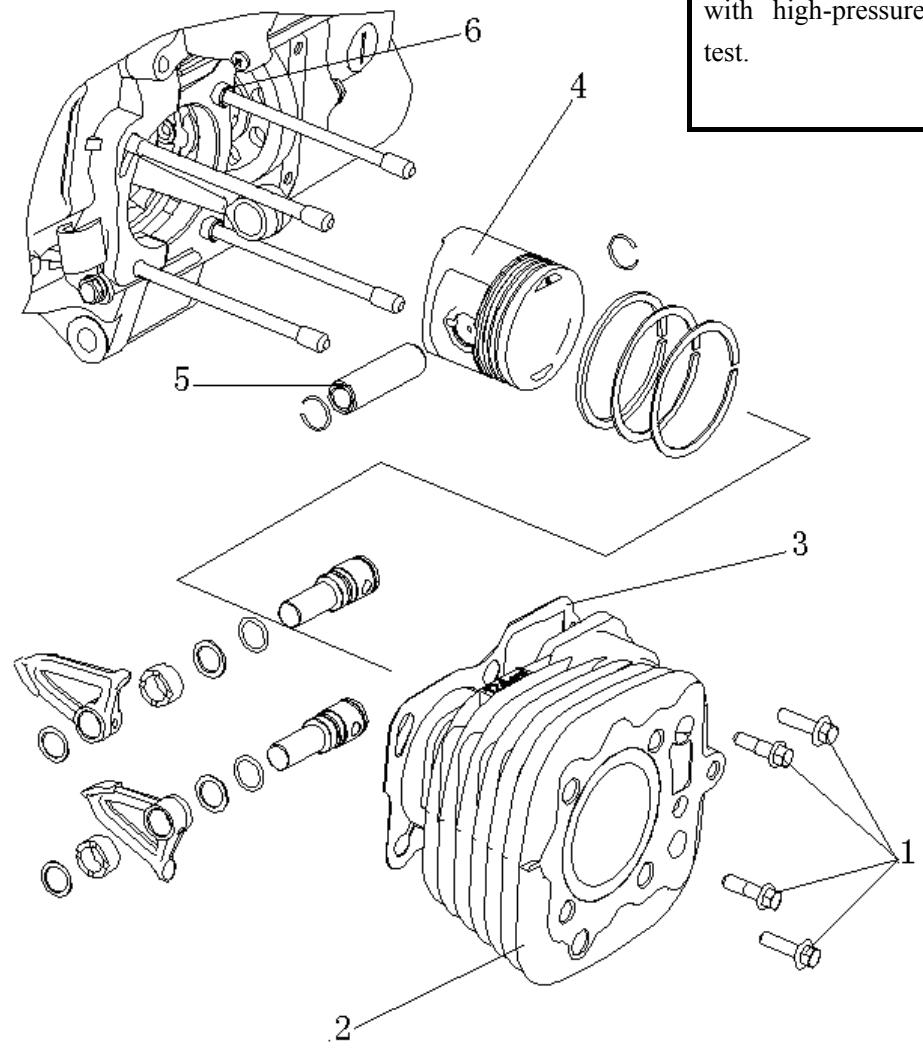
***Attention：**

Install the valve spring with the end with smaller spring pitch pointing to the combustion chamber.

In the installation the valve lock clamp, use valve spring compression instrument to compress the spring.

In the installation of the valve, coat the valve stem with some oil, and then install it into the valve guide.

13.Cylinder block and piston



1 bolt 2 cylinder body 3 spacing piece 4 piston 5 piston pin 6 locating pin

13.1 Preparing

Matters need attention on operation

All components must be cleaned before examination and dried with high-pressure air.

Function of the cylinder body: The cylinder provides a space for the air to compress combust and expand, and direct the movement of the piston. It also propagate pass some of the heat in the cylinder to the surrounding cooling medium.

Function of the piston:

It bears the pressure of the fuel gas mixture in the cylinder and propagate the pressure to the connecting bar to drive the rotation of the crankshaft, thus forming the combustion chamber with the cylinder.

It also act as the slide valve of the gas port, pressing the fresh gas mixture in the crankcase into the cylinder and discharge the waste gas after combustion in the cylinder regularly.

Preparation standard

unit：mm

item			Standard value	Service limit
Cylinder	Internal diameter		62-62.01	62.01
	Cylindricity		-	0.005
	Circular degree		-	0.005
	Flatness		0.03	0.05
	External diameter of the piston (measuring point)		61.965-61.975 (11mm below the piston skirt)	61.975
	Internal diameter of the piston pin		15.002-15.008	15.04
	External diameter of the piston pin		14.994-15.000	14.96
	Clearance between the piston and the piston pin		0.002-0.014	0.07
	Clearance between the piston ring and the ring groove	first ring	0.035-0.065	0.09
		second ring	0.020-0.050	0.09
	Clearance of the mouth of the piston ring	first ring	0.15-0.30	0.5
		second ring	0.10-0.30	0.5
		Oil ring	0.20-0.30	-

	Internal diameter of the small end of the connecting rod	15.010-15.018	15.06
	Clearance between the connecting rod and the piston pin	0.010-0.024	0.10
Cam Follower Cam Follower shaft	Internal diameter of the cam follower hole	12.01-12.018	12.05
	External diameter of the camshaft	11.986-11.994	11.93
	Clearance between the cam follower hole and the camshaft	0.016-0.032	0.08
Camshaft sprocket camshaft drive	Height of the cam	32.6-32.8478	32.5
	Internal diameter of the camshaft bushing	14.06-14.078	14.10
	Clearance between the camshaft drive and the bushing	0.025-0.053	0.08

13.2 Failure diagnosis

Low compression pressure

wear, burning or snap in the piston
wear or damage in the cylinder or the piston
damaged spacer，gas leak between the crankcase and the gas
Higher compression pressure
Excessive carbon deposit in the combustion chamber

white smoke from the vent pipe

wear and damage in the piston ring
wear and damage in the piston or the cylinder

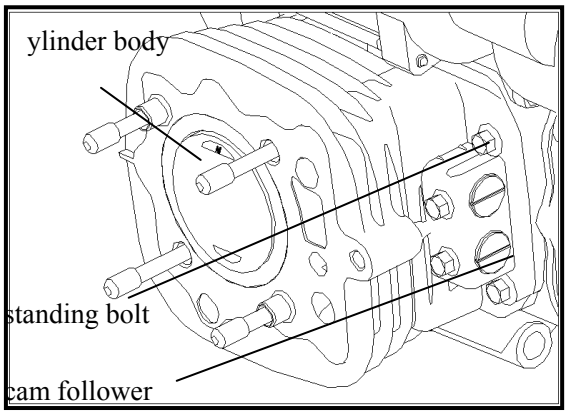
abnormal sound from the piston

damage in the cylinder, the piston or the piston ring
Wear in the piston pin hole and the piston pin

13.3 Cylinder block

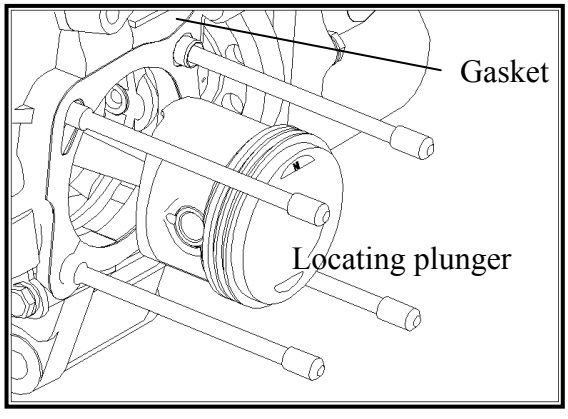
13.3.1 Unloading of the cylinder body

Remove the standing bolt of the cylinder body.
Unload the cylinder body (with the cam follower)

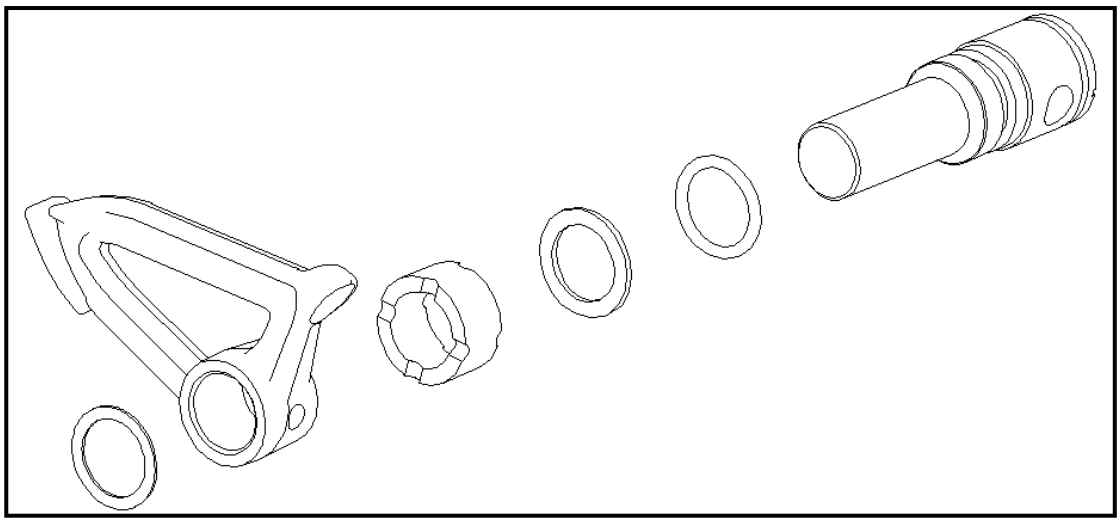


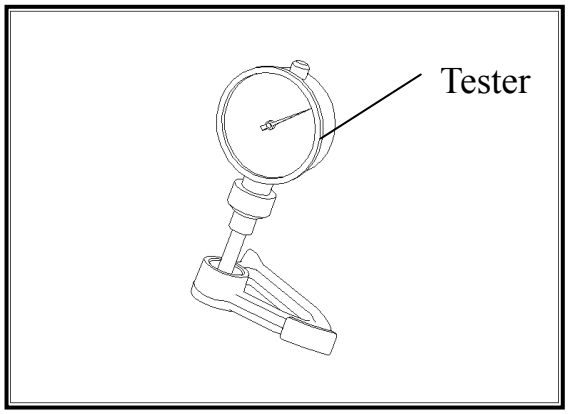
13.3.2 Examination of the cylinder body

Examine the wear pattern inside the cylinder body.
If seriously worn, replace it for a new one.
Unload the spacer and the locating plunger.

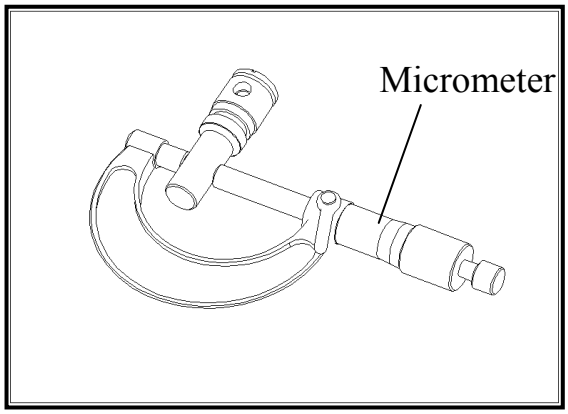


13.3.3 Disassembling the cam follower





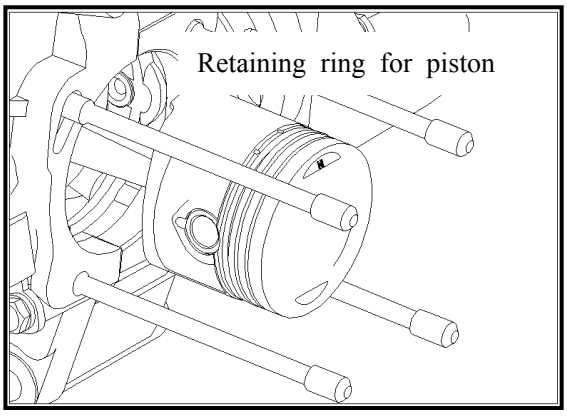
Measure the internal diameter of the cam follower.
Allowable limit：12.05mm。



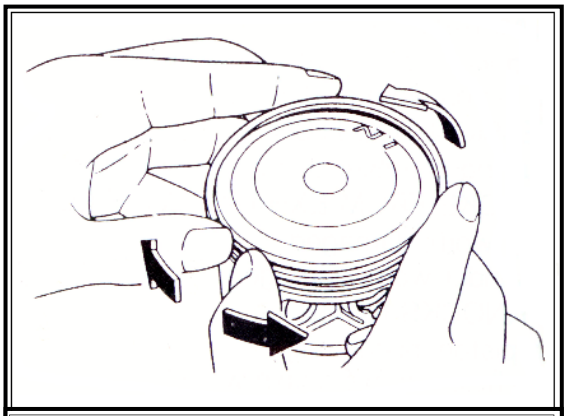
Measure the external diameter of the cam follower.
Allowable limit：11.93mm.
Measure the clearance between the cam follower hole and the camshaft.
Allowable limit：0.08mm。

13.4 Pistons

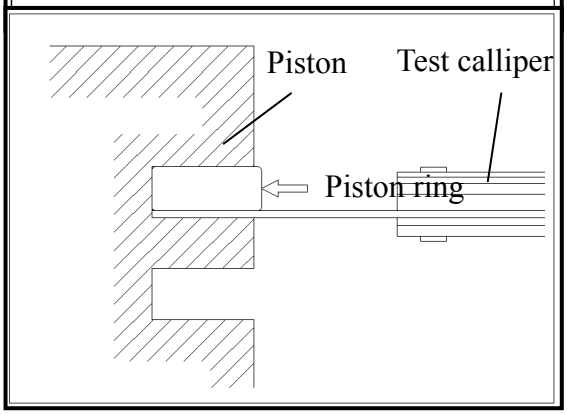
13.4.1 Unloading



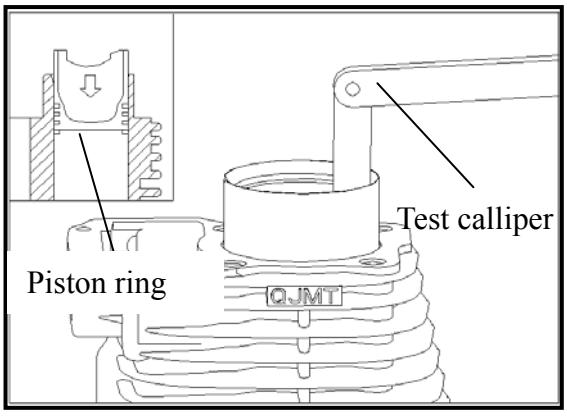
***Attention：**
Remove the retaining ring for piston pin.
Don't allow the retaining ring fall into the crankcase during unloading.
Remove the piston pin and unload the piston.



Remove the piston ring.
Examine the piston, the piston pin and the piston ring.
***Attention: don't break off or damage the piston ring. Clear the carbon deposit in the piston ring groove.**

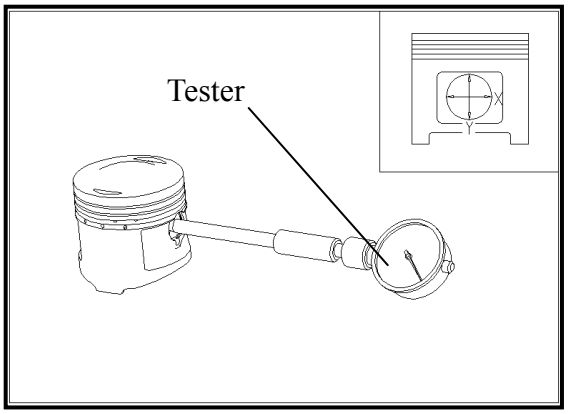


Fit on the piston ring.
Measure the clearance between the piston ring and the piston ring groove.
Allowable limit：apical ring：0.09mm。
Second ring：0.09mm。

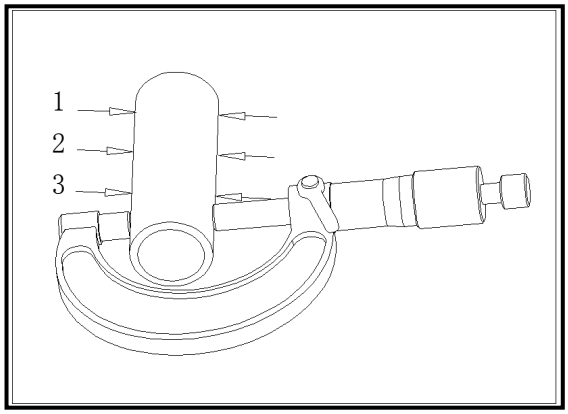


Remove the piston ring, and install all of them into the bottom of the cylinder.
***Attention:** press the piston ring into the cylinder with piston head.
Measure the clearance at the mouth of the piston ring.
Allowable limit：0.5mm。

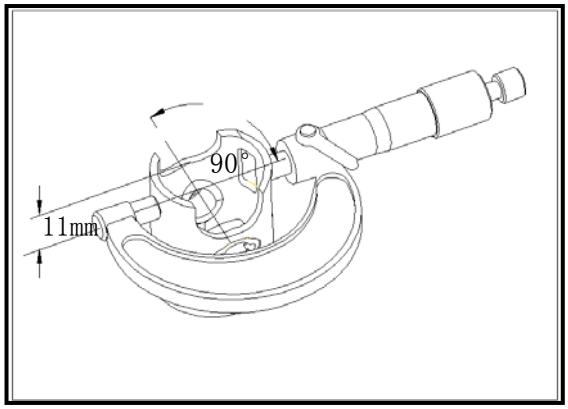
Measure the internal diameter of the piston pin hole.
Allowable limit：15.04mm。



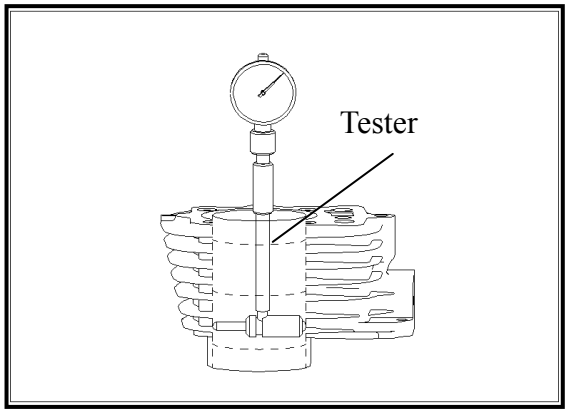
Measure the external diameter of the piston pin.
Allowable limit：14.96mm。
Measure the clearance of the piston pin hole and the piston pin.
Allowable limit：0.02mm。



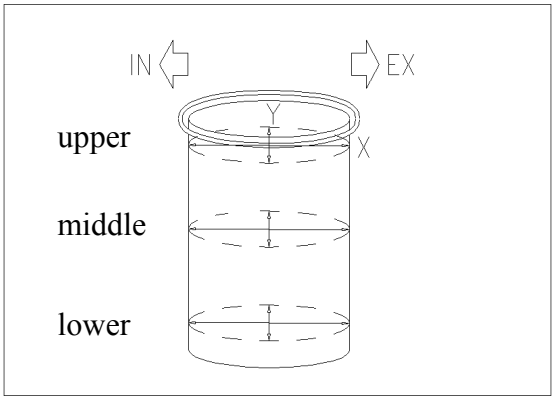
Measure the external diameter of the piston.
***Attention:** The angle between the measuring point and the piston pin is 90 degree. The measuring point is about 11mm below the piston skirt.
Allowable limit：61.975mm。



Scratch and wear examination inside the cylinder.
***Attention：** 90-degree angle direction with the piston pin
测试计：Tester
Measure the internal diameter of the cylinder at Upper, middle and lower parts of the cylinder respectively.
Allowable limit：62.01mm。
Measure the clearance between the cylinder and the piston, choose the maximum result.
Allowable limit：0.17mm。

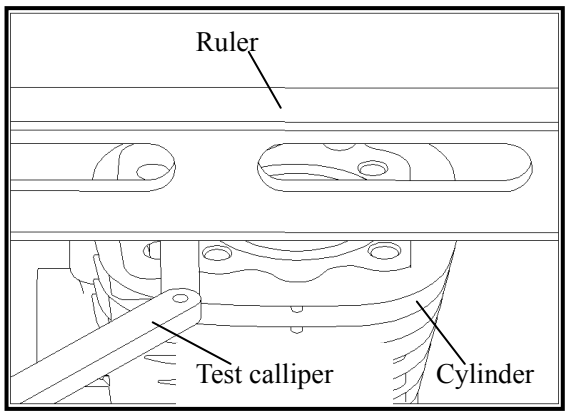


Measure the circular degree of the cylinder inwall.
（internal diameter difference between X direction and Y direction）.
Allowable limit：0.05mm。
Measure the cylindricity of the cylinder inwall.
（internal diameter difference between X direction and Y direction at upper, middle and lower parts of the cylinder ）。
Allowable limit：0.05mm。

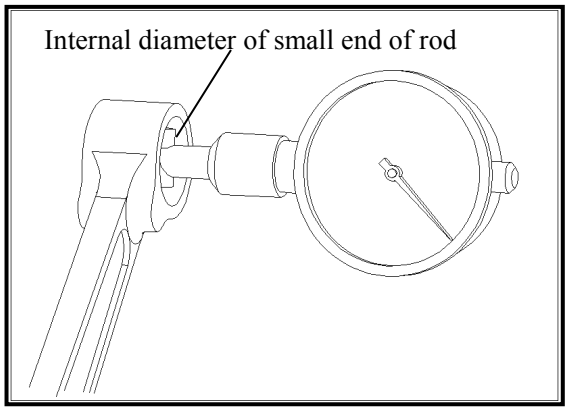


上

Examine the planeness of the cylinder surface.
Allowable limit：0.05mm。

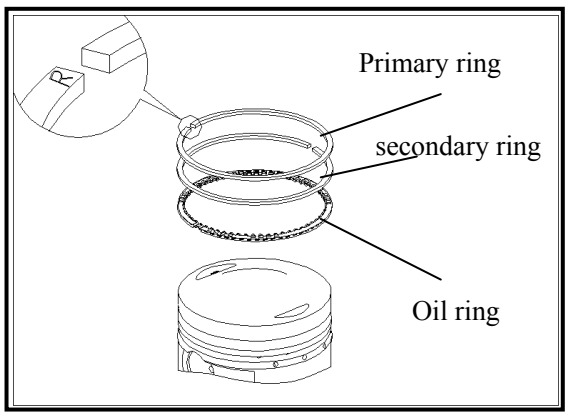


Measure the internal diameter of the small end of the connecting rod.
Allowable limit：15.06mm。



13.4.2 Installation of the piston

Install the locating plunger.
coat piston rings and pistons with engine oil.
Put the piston ring into place with inclined plane of the piston ring upside.
***Attention：**
Don’t scratch the piston or break off the piston ring.
The piston ring must rotate freely in the piston



ring glove after installation.

Chip the adherent spacers to the crankcase away.

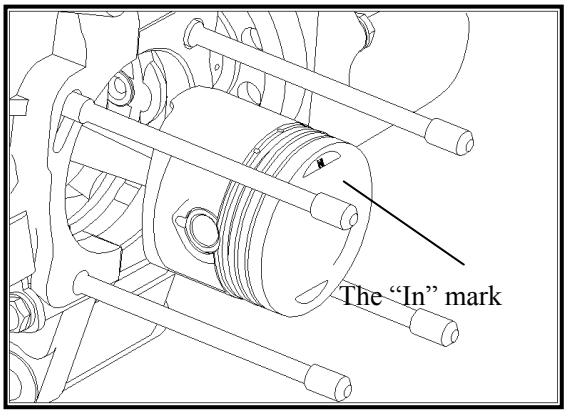
***Attention：**

Don’t allow foreign matter fall into the crankcase.

Install the piston, piston pin and retaining ring of piston pin.

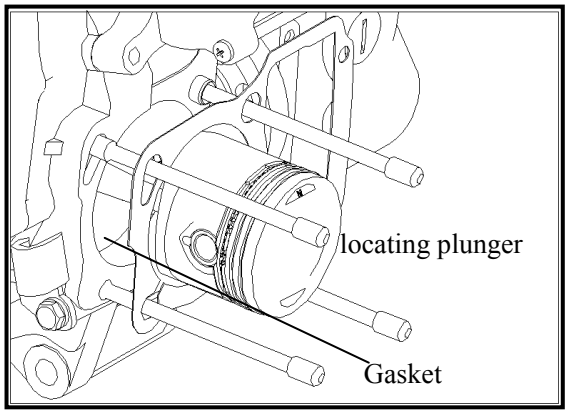
***Attention：**

Install the piston with the “IN” at the piston head pointing to the valve.



13.5 cylinder block installation

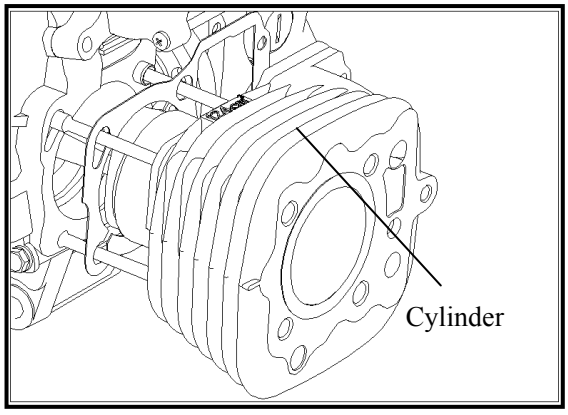
Install the spacer and the locating plunger onto the crankcase.



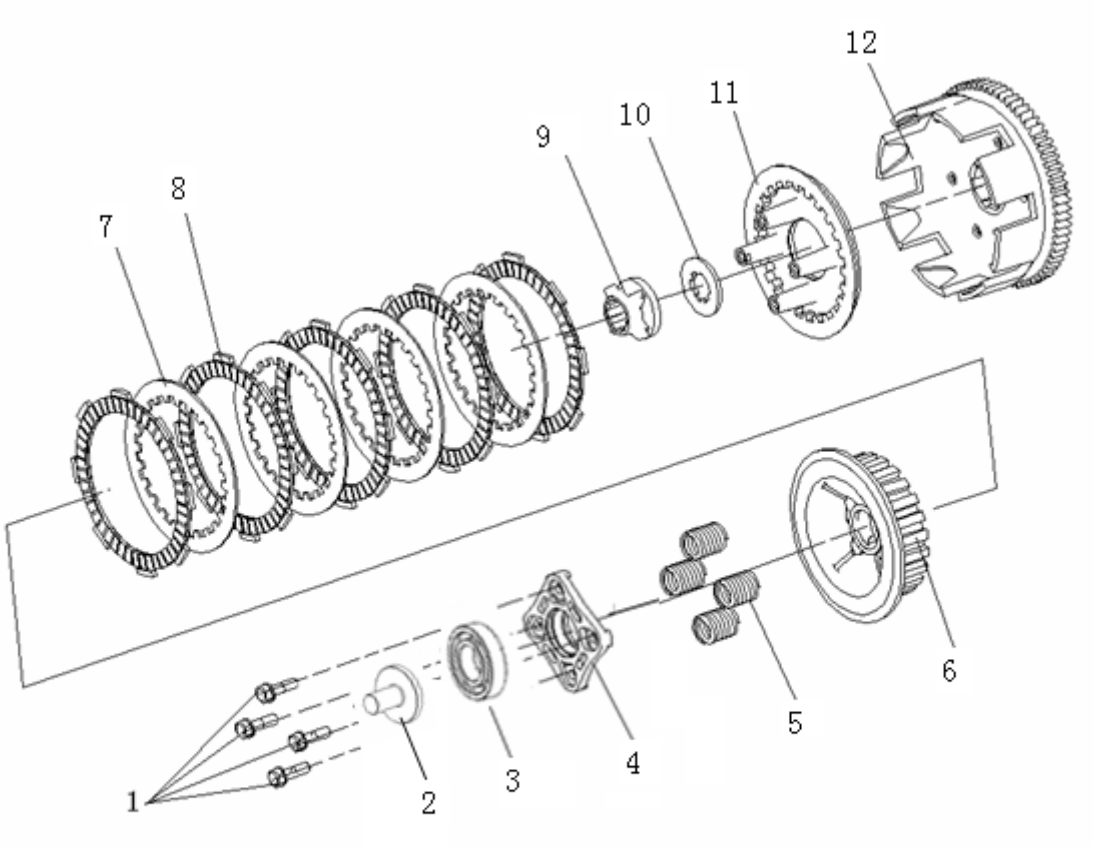
Coat the cylinder inwall, the piston and the piston ring with engine oil.

Install the piston ring into the cylinder carefully.

***Attention:** Don’t damage the piston ring.



Clutch



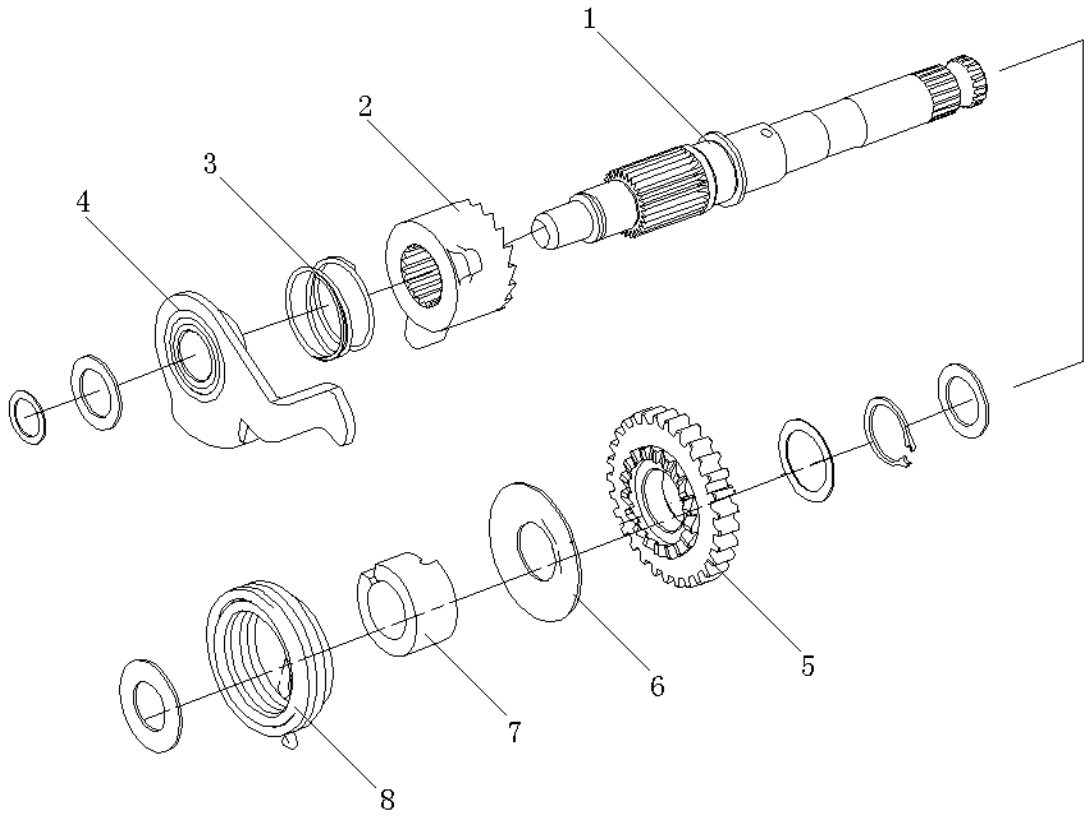
Attention: It is not necessary to unload the engine during examination of clutch. The viscosity of the engine oil and the oil level will affect the operation of the clutch. Make sure to examine the oil and oil lever before examination. If any of the clutch spring, disk or plate doesn't work, displace it.

1 adjusting bolt 2 push rod 3 bearing 4 split disc 5 pressure spring 6 center bearing bracket 7 primary plate 8 driven plate 9 lock nut 10 sliding key gasket 11 platen 12 Shell Widgets

Attention: It is not necessary to unload the engine during examination of clutch.

The viscosity of the engine oil and the oil level will affect the operation of the clutch. Make sure to examine the oil and oil lever before examination. If any of the clutch spring, disk or plate doesn't work, displace it.

Foot actuating mechanism



Attention: Check if there is any spring force reduction or damage in the foot start return spring or retchet wheel on operation. Check if there is any wear of damage in the start retchet wheel.

1 recoil start shaft 2 recoil start ratchet wheel 3 ratchet spring 4 ratchet counter vane module 5 recoil start gear 6 spring retainer 7 shaft liner 8 offsetting spring

14 Clutch/ Foot starting system

14.1 Preparing

Matters need attention on operation

It is not necessary to unload the engine during the overhaul of the clutch.
The viscosity of the oil and the oil level of the engine will influence the operation of clutch. Thus they have to be examined before the overhaul of the clutch.
Function： The clutch and driven gear together form the variable speed case.

Preparation standard

unit: mm

clutch	Thickness of the friction plate	2.9-3	2.6
	Length of the pressure spring	35.45-36.5	34.2

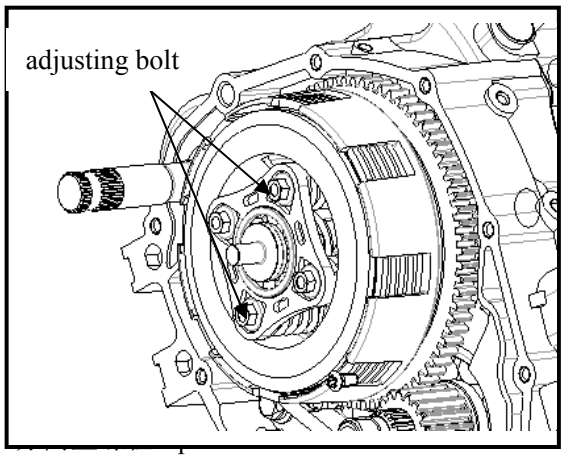
14.2 Failure diagnosis

Too tight clutch release lever clutch slipping during acceleration loose gear at speed changer
Clutch cable is damaged, twisted or contaminated no windage in the clutch release lever weakened scotch arm return spring force or fracture
Injured clutch lifting poker wear in the clutch plate injured scotch arm
Bearing malfunction in clutch lifting poker weakened clutch spring force wear or damage in shift cam
Glued clutch lifting poker
Difficulty in speed change clutch release difficulty or motorcar sluggish after clutch release
Clutch regulation error oversize windage in the clutch release lever
Bent speed change mandrel twisting clutch plate
Injured shift cam malfunction in clutch push rod
Bent or damaged gear shifting quadrant abnormal in engine oil and oil level

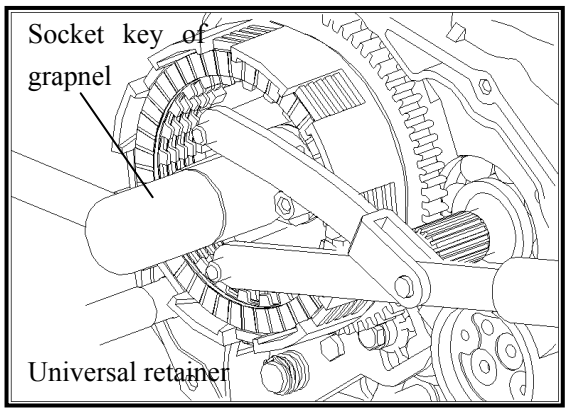
14.3 Clutch

14.3.1 Unloading

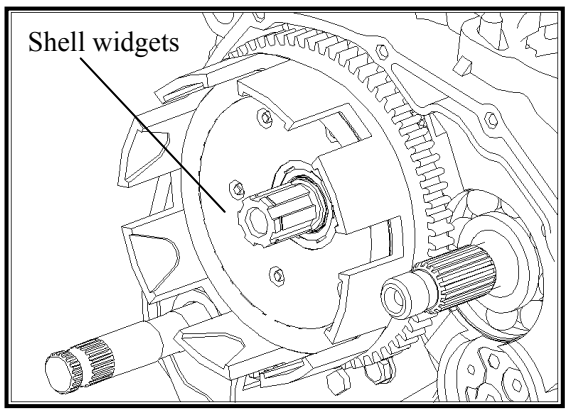
Unscrew four bolts on the split disc in the direction of diagonal cross.
Remove the disengaging rod, the shaft housing, the bearing, the split disc and the clutch spring.
Please refer to the exploded view for removing components.



Screw the nuts with special tools.
Remove the locknut and the gasket.
Remove the center bearing bracket of the clutch.
Remove primary plate and driven plate of the clutch.
Remove the clutch compressing disc.
Please refer to the exploded view for removing components.

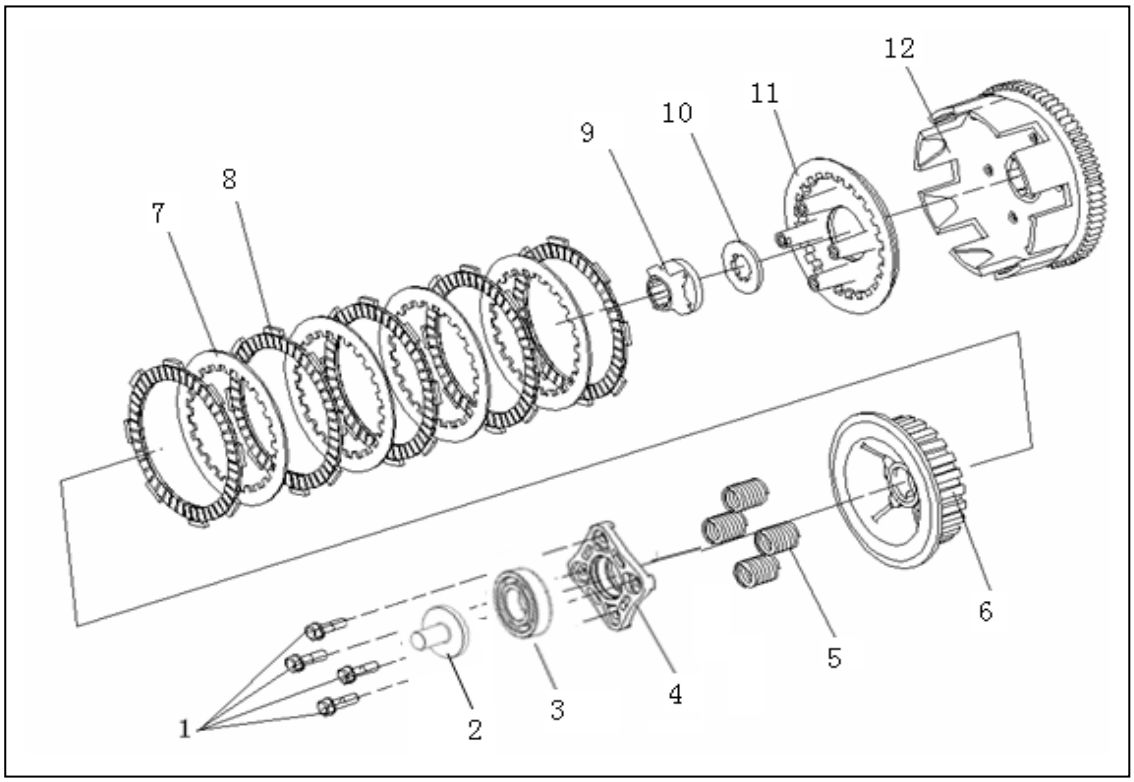


Remove the spline gasket.
Remove shell widgets



Installation of the clutch is carried out in the opposite direction of unloading.

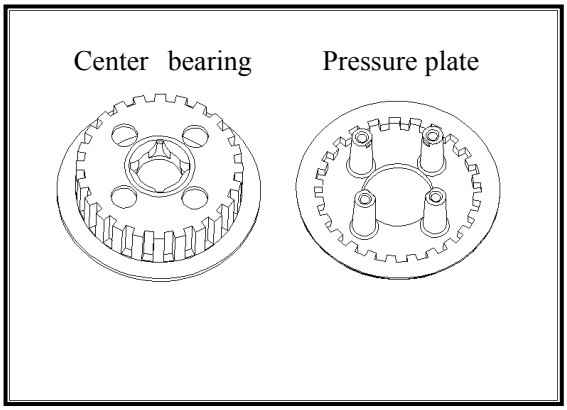
14.3.2 Assembling the clutch



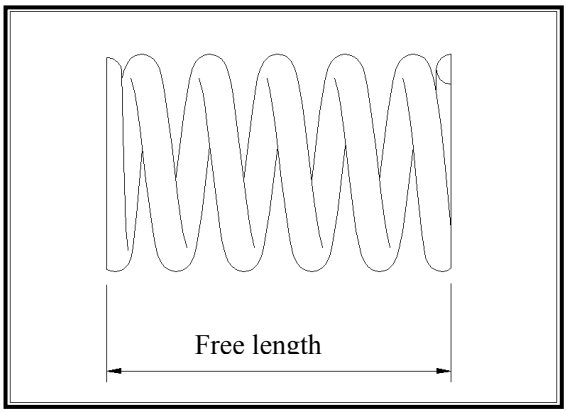
1 adjusting bolt 2 push rod 3 bearing 4 split disc 5 pressure spring 6 center bearing bracket 7 primary plate 8 driven plate 9 locknut 10 sliding key gasket 11 pressure plate 12 shell widgets

14.3.3 Examination

Check if there is any burr or trace of damage on the crust of clutch. if there is, repair it with a file.
If the repair expectancy is overlarge, displace it.
Check if there is any damage in the tooth shape of the pressure plate and the center bearing bracket.
If there is, displace it.

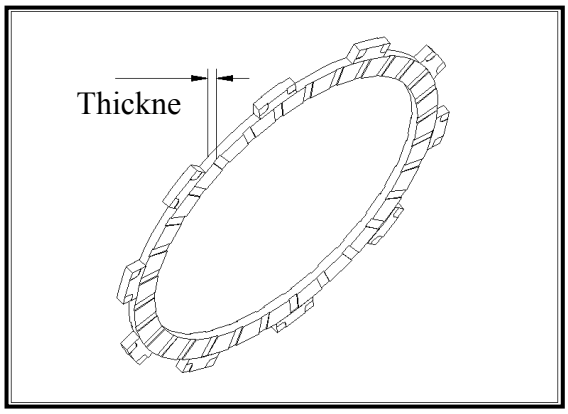


Measure the free length of the pressure spring.
Allowable limit: displace it below 34.2mm.

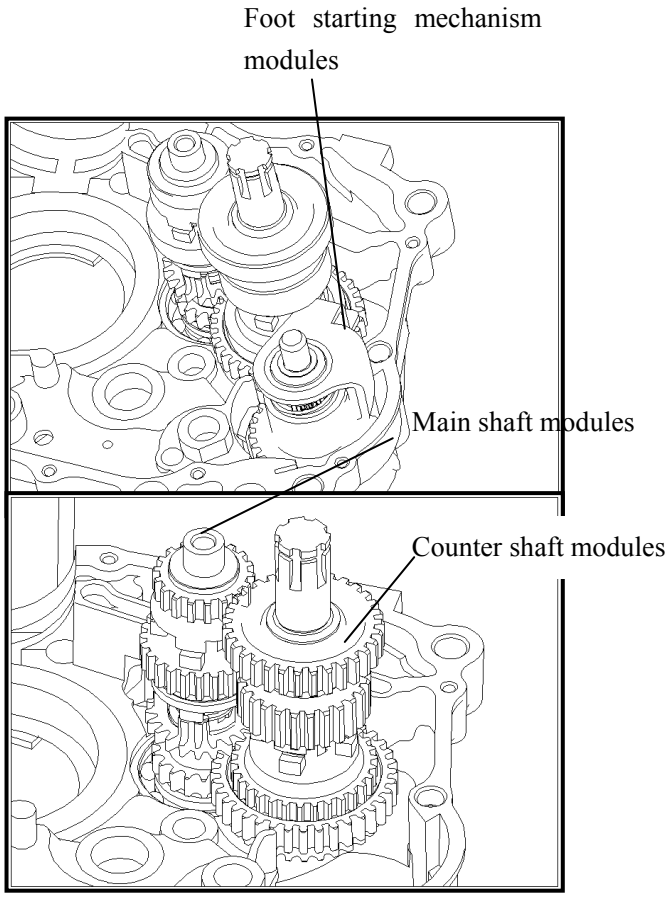


Measure the thickness of the wearing piece with a slide caliper.

Allowable limit: Displace it below 2.6mm.



14.4 Foot starting system



Unloading

Remove the foot starting mechanism components from the right crankcase.

examination

Examine the elasticity of return spring and ratchet spring. If damaged, displace them.

Examine the gearing of starting shaft spline and internal spline of the ratchet. If loose, displace them.

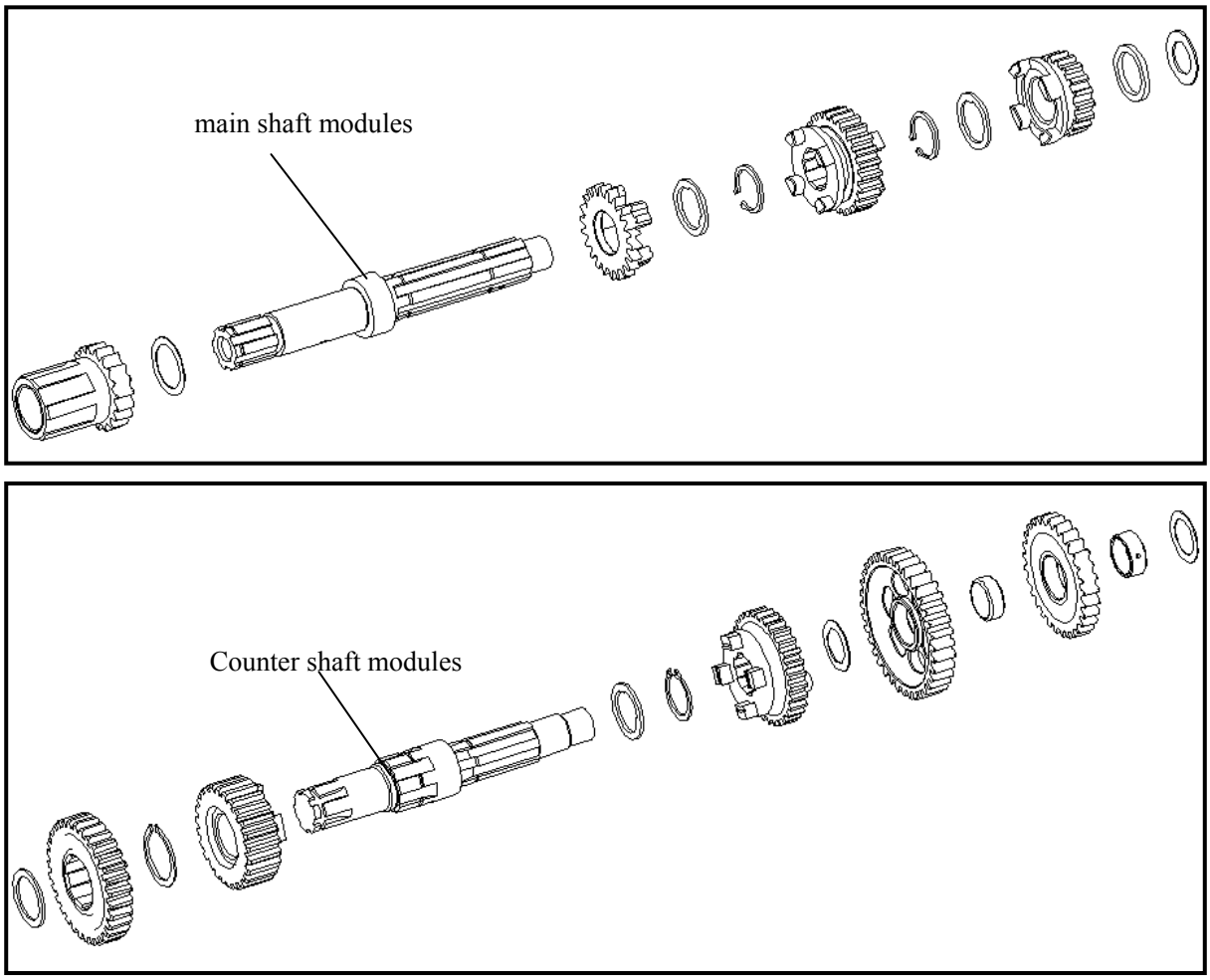
Assembling

Installation is in the opposite order of unloading.

Remove main shaft components.

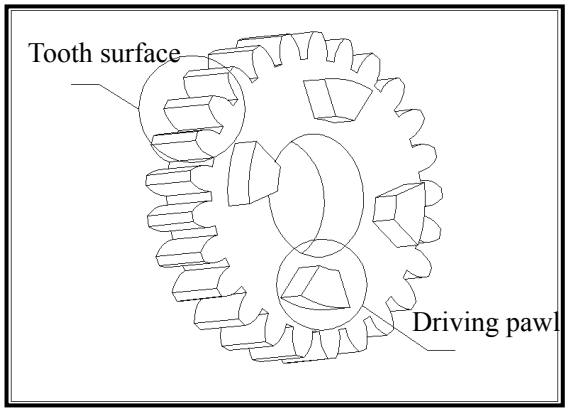
Remove counter shaft components.

14.5 Disassembling of main shaft & counter shaft



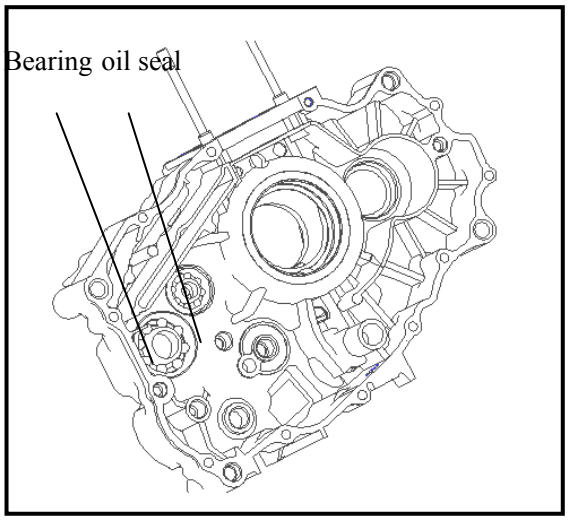
Examination

Examine the wear of tooth surface and driving pawl of the gear. If damaged seriously or injured, displace it.



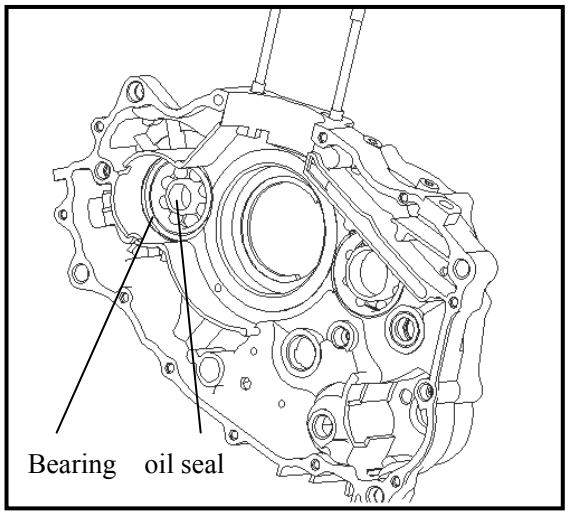
Remove the bearing and oil seal of the left crankcase.
Check if there is any damage in the bearing or the oil seal. If there is, displace it.

***Attention：**
The removed bearing can not be reused. Change it for a new one.
Use special tools in the removal of bearing and oil seal.



Remove the bearing of right crankcase.
Check if there is any damage in the bearing. If there is, displace it.

***Attention：**
The removed bearing can not be reused. Change it for a new one.
Use special tools in the removal of bearing and oil seal.



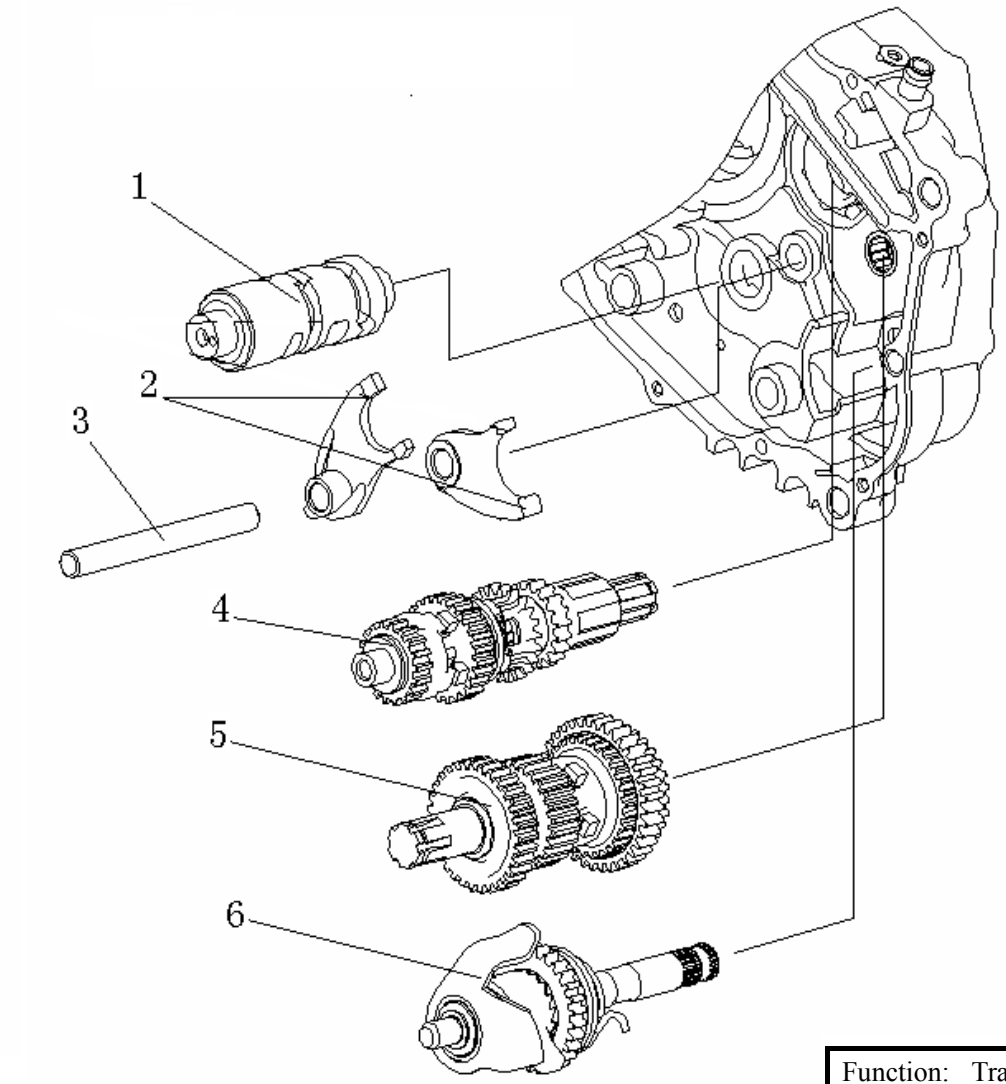
Assembling the main shaft and the counter shaft

***Attention：** Coat the gears and shafts with lubricant in installation.
Make sure no gear gets stuck after installation.

Note：

Installation of the crankcase is in the opposite order of unloading.

Speed control system



Function: Transmitting torque moment, and determine the final output torque and

1 shift drum 2 shift fork 3 fork shaft 4 main shaft module 5 counter shaft module 6 recoil foot starting module

15 Speed transmission system

15.1 Preparing

Function： Transmitting torquemoment, and determine the final output torque and rotating speed.

Preparation standard unit: mm

Shift mechanism	external diameter of shifting fork shaft	11.97-12	11.95
	Internal diameter of shifting fork shaft	12-12.018	12.05
	thickness of shifting fork	4.93-5.0	4.7
	External diameter of shift drum	35.8-36	35.75
	Hinge slot of shift drum	7.05-7.15	7.3

15.2 Failure diagnosis

Transmission problem shift difficulty

Snapped or deformed gear shift fork incomplete separation of clutch

Snapped fork fitting pin improper movement of return spring of the speed changer

Wearing gear convex wearing shift drum hinge slot

Automatically out of gear

Wearing knuckle claw to form circular bead at the edge

Weakened return spring force in shift mechanism

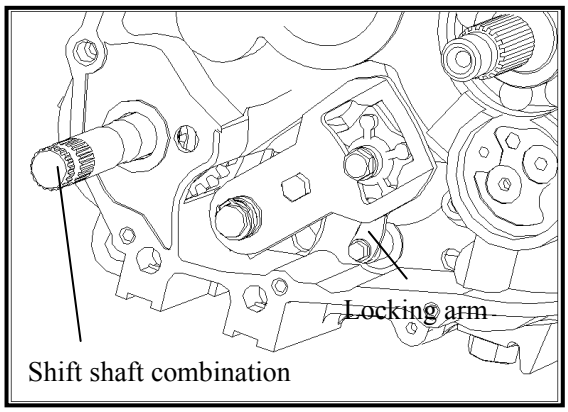
Too big axial force in during working hours of gears as a result of wear between spline teeth of the spline shaft and the spline slot of the sliding gear

Wearing shift drum and fork

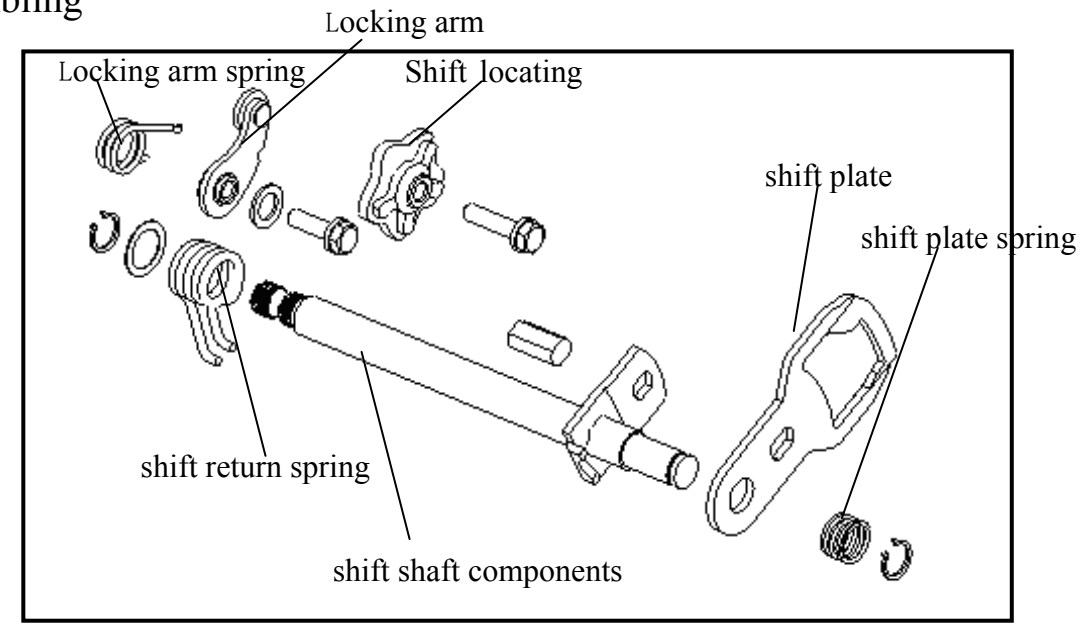
15.3 Gear Shifting mechanism

15.3.1 Unloading

Remove the shift shaft combination.
Remove the bolt and shift locating plate.
Remove the bolt, locking arm and springs.
Remove the locating plunger.
Refer to the exploded view for removing components.

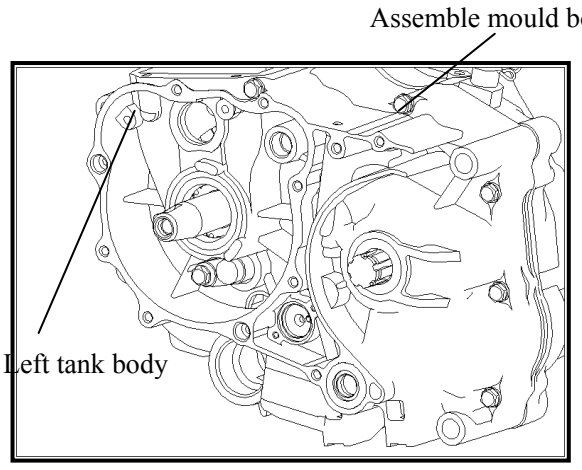


15.3.2 Disassembling



15.3.3 Examination

The shift plate should return smoothly without stuck before disassembling.
Examine the wear in the combination of shift plate and shift shaft. If seriously worn, displace the components.
Examine the wear in the shift locating plate. If seriously worn, displace the components.



Check if there is bending in the shift shaft. If over bent, displace it.
Check if the spring force of the return spring is weakened, displace it when necessary.

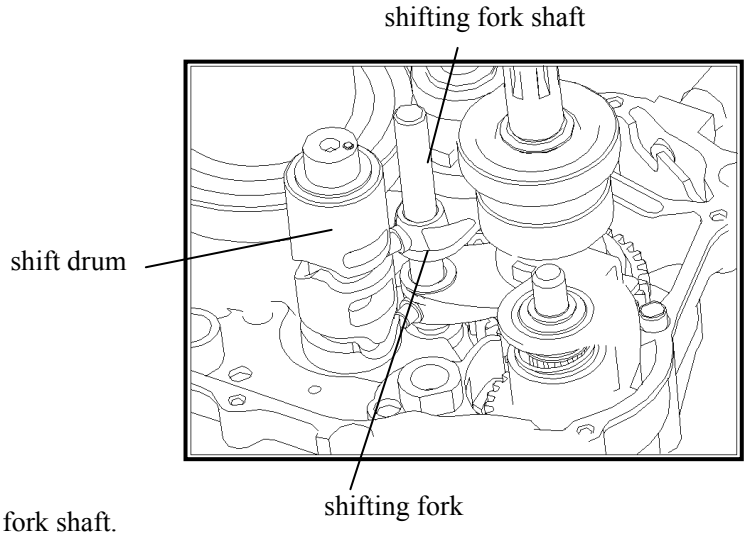
Unscrew mould assembling bolt to separate the crankcase.

***Attention：** Don't damage the gasket and the mould assembling surface.

Remove the left tank body.

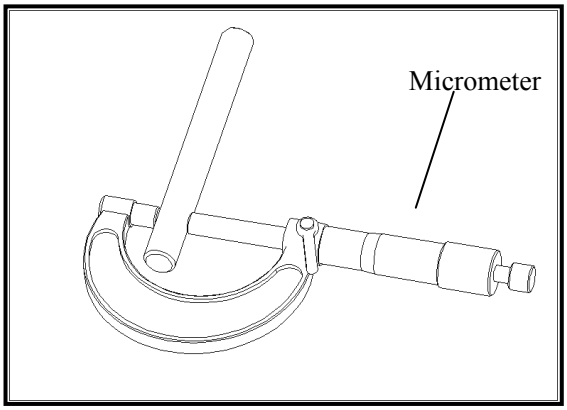
Pull out the shifting fork shaft.

Remove the shifting fork.



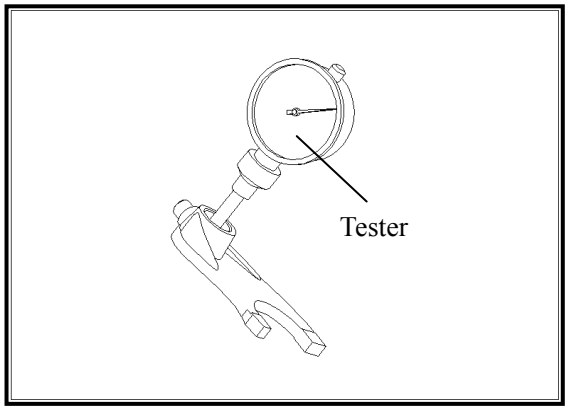
Measure the external diameter of the shifting fork shaft.

Allowable limit：11.95mm。



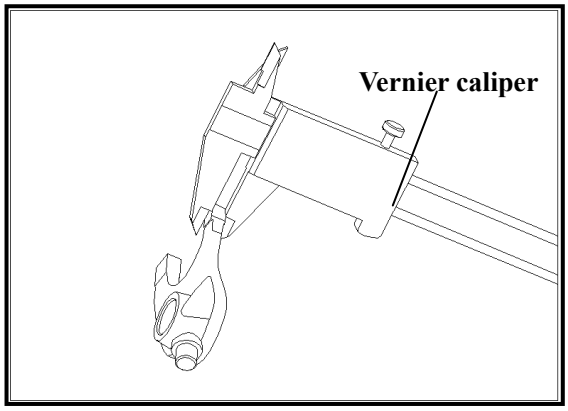
Measure the internal diameter of the shifting fork hole.

Allowable limit：12.05mm。



Measure the thickness of the shifting fork.

Allowable limit：4.7mm。

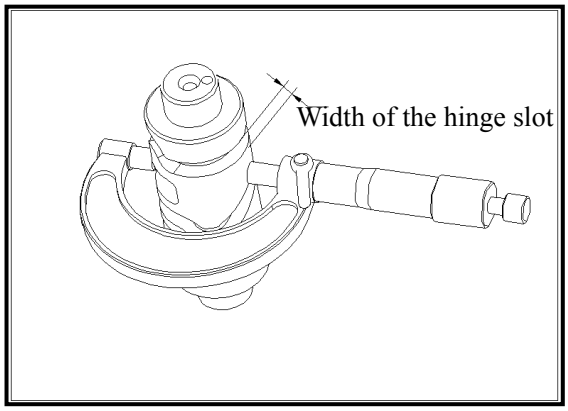


Measure the external diameter of the shift drum.

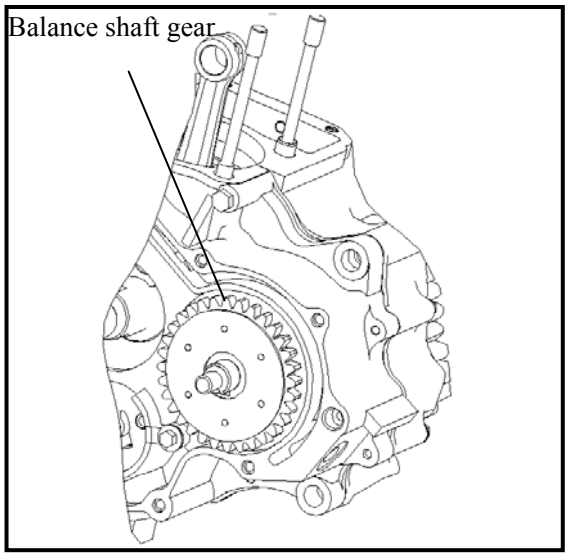
Allowable limit：35.75mm。

Measure the width of the hinge slot of the shift drum.

Allowable limit：7.3mm。



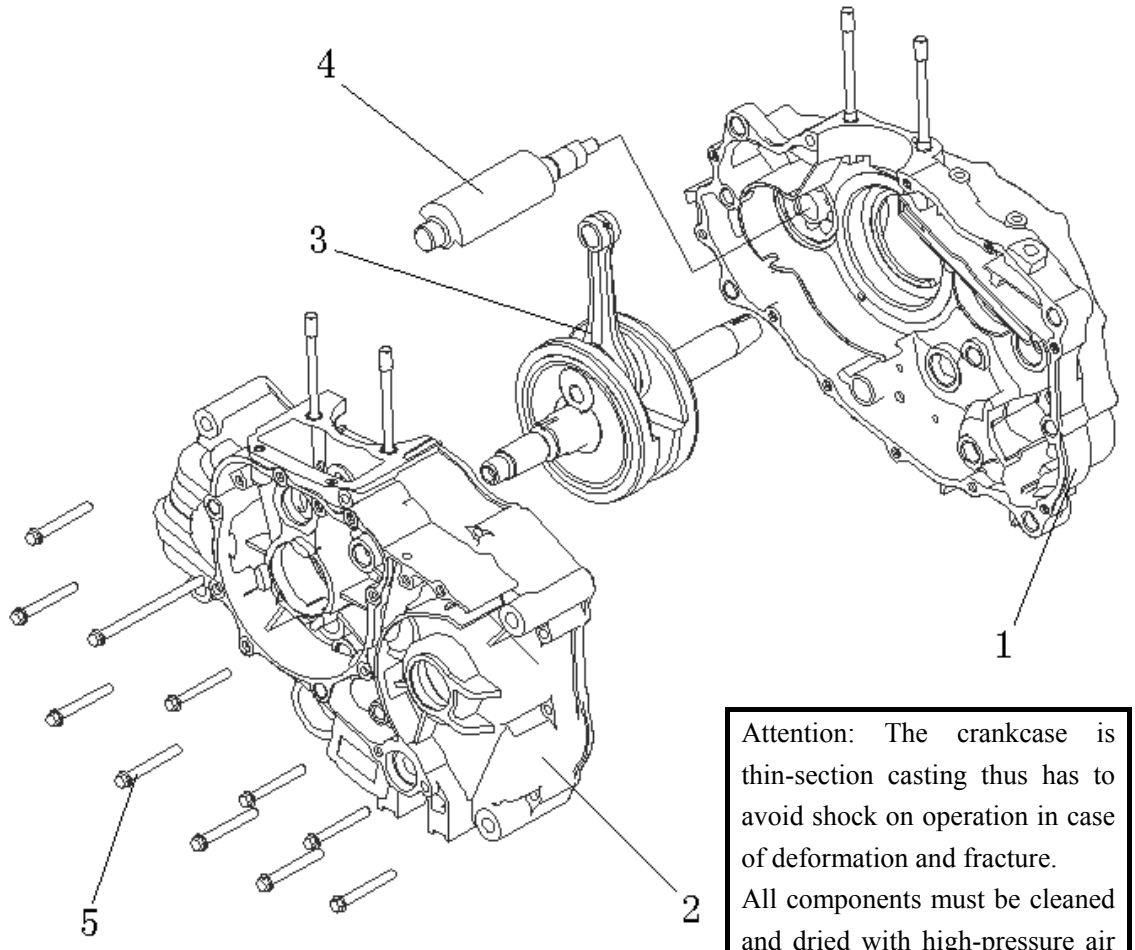
Remove the gear of the balance shaft.



15.4 Installation

Installation is in the opposite order of unloading.

Crankcase



Attention: The crankcase is thin-section casting thus has to avoid shock on operation in case of deformation and fracture.
All components must be cleaned and dried with high-pressure air before test.
The lubricant in the crankcase should be released before operation.

1 right crankcase 2 left crankcase 3 the combination of crankshaft and the connecting bar 4 balance shaft 5 bolt

.

16 Crankcase

16.1 Preparing

Matters need attention on operation

The crankcase is thin-section casting thus has to avoid shock on operation in case of deformation and fracture.
All components must be cleaned and dried with high-pressure air before test.
The lubricant in the crankcase should be released before operation.

Function of the crankcase： The crankcase is the force-bearing part of the engine. Its main function is bearing crankshaft, clutch, transmission case, cylinder body and cylinder head, bearing the inertia force from combustion shock and the movement of crankshaft connecting rod system, and forming a closed space(oil sealing, air sealing)
There are suspension holes in the crankcase, connecting the engine to other parts of the body through the connection with suspension holes in the car circuit.

Preparation standard

unit：mm

item		Standard value	Service limit
crankshaft	Left-right clearance at the end of rod	0.1-0.3	0.55
	Radial clearance at the end of the rod	0.005-0.01	0.05
	shimmy	-	0.1

Tools

Universal holder **spring compressor of the clutch**
Screwdriver lever **socket wrench**
Guide rod **bearing driver**

16.2 Failure diagnosis

Abnormal sound in the crankcase

Scattering or snapped component in the crankcase

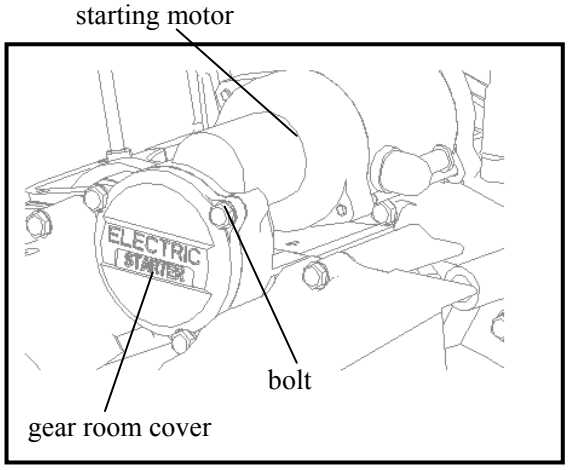
automatic stop of the engine

stuck clutch

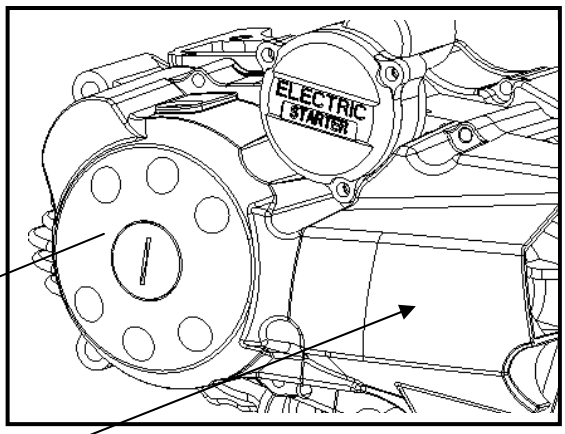
16.3 Crankcase

16.3.1 Unloading crankcase

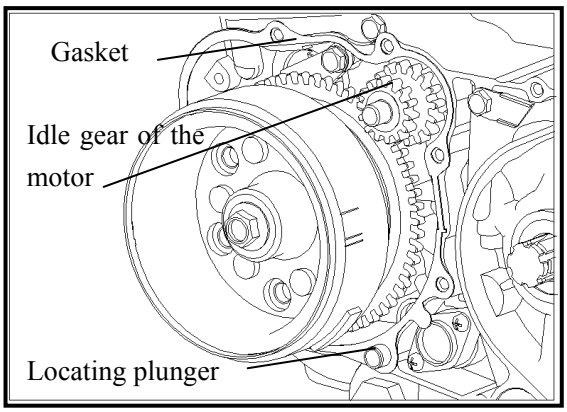
Unscrew the standing bolt of the starting motor.
Unload the starting motor.
Unscrew the standing bolt in the gear room cover of the starting motor.
Remove the cover of the gear room.
Remove the electric starting gear, the needle bearing and the gasket.



Unscrew the bolt in the left front cover and rear cover of the crankcase.
Remove the left front cover and rear Cover.

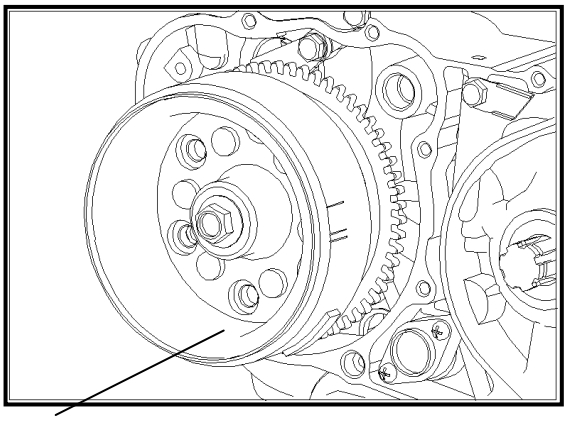


Remove the idle gear of the starting motor.
Remove the gasket and the locating plunger.



Use electric or air-powered instrument to unscrew the flywheel locknut.

Pull out flywheel modules (including star wheel).

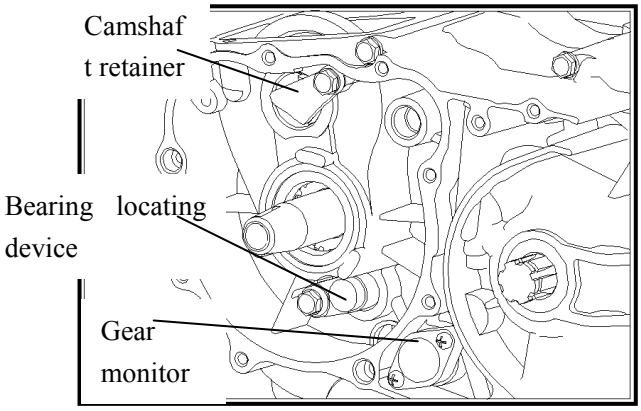


Remove the gear monitor.

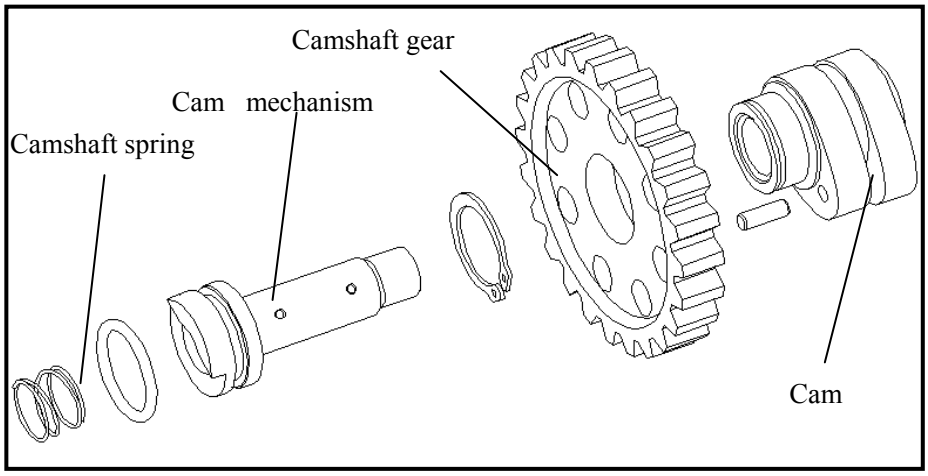
Remove the camshaft limiting plate.

Remove the cam modules.

Remove the gear locating equipment.



16.3.2 Disassembling cam modules

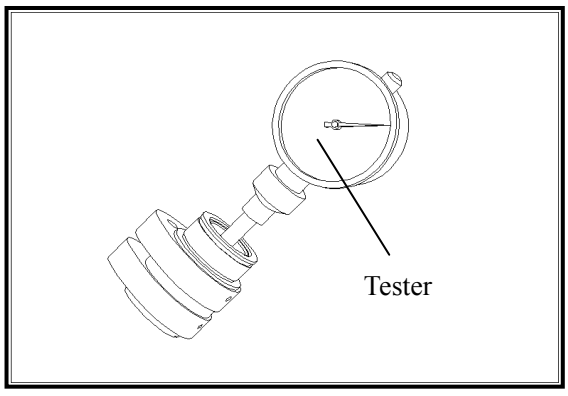


Measure the internal diameter of the cam bush.

Allowable limit：14.10mm。

Measure the height of the cam.

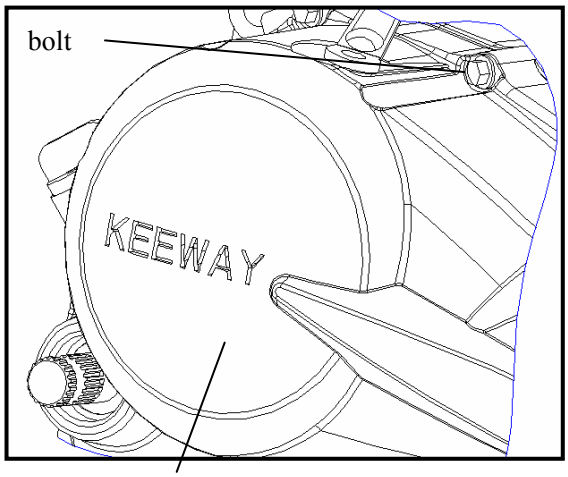
Allowable limit：32.5mm。



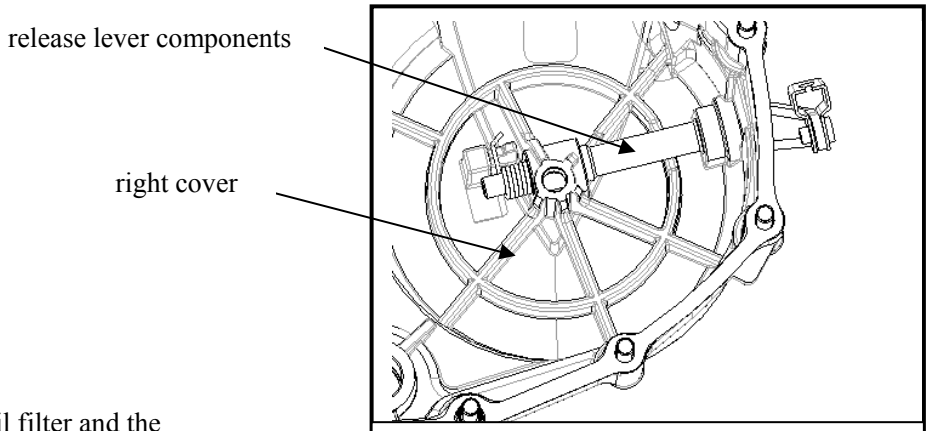
16.3.3 Unloading the right rear cover of the crankcase

Unscrew the binding bolt.

Unload the right cover of the crankcase (the right cover for short in the picture)



Remove clutch release lever components from the right cover.



Remove bolts, rotor cover of oil filter and the gasket of the rotor cover.

Remove the gasket and the locating plunger.

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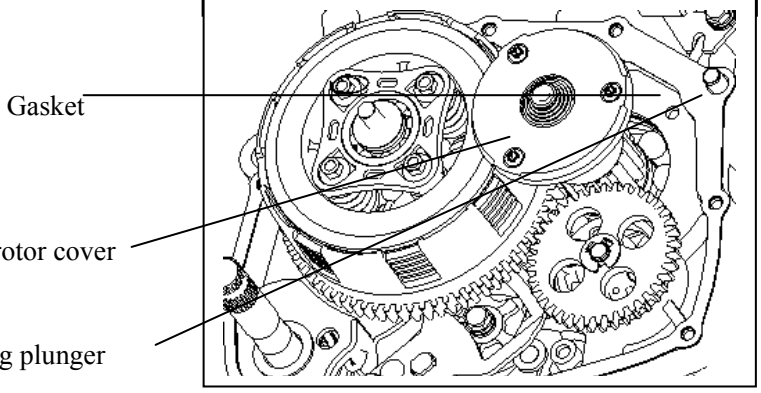
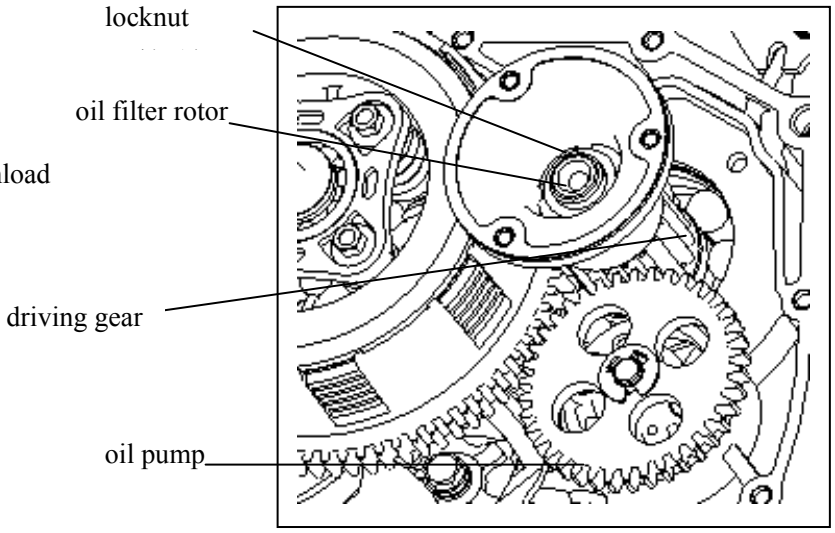
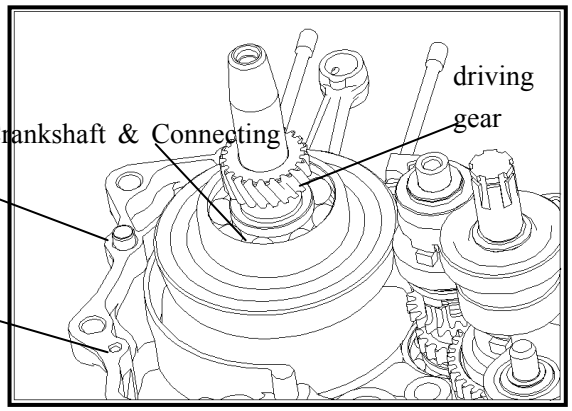


Use electric or air-powered instrument to unscrew locknuts.
Remove the oil filter rotor, unload the driving gear.
Unscrew the screws of the oil pump, unload oil pump component.



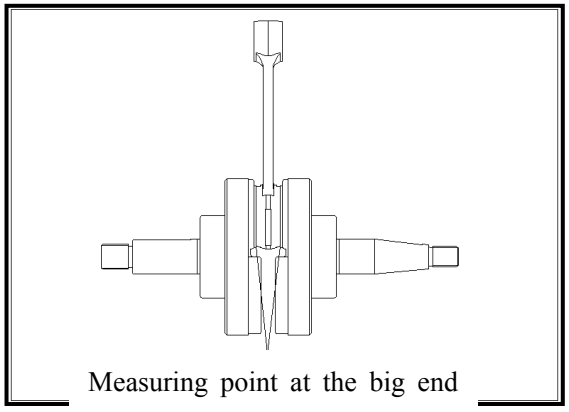
16.4 Crankshaft & Connecting rod



Unloading
Unload the left crankcase.
Unload the gasket and the locating plunger.
Unload the driving gear.
Remove the Crankshaft & Connecting from the right crankcase.
***Attention：** Don't injure the gasket and the surface of the assemblemould.

Examination

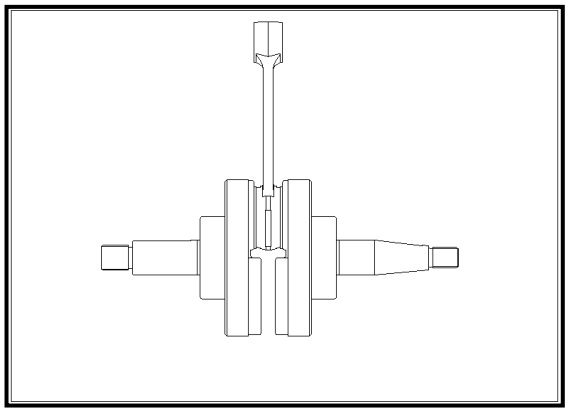
Measure the left-right clearance of the big end of the connecting rod.
Allowable limit ： 0.55mm。


Measuring point at the big end of the connecting rod

Measure the clearance in X-Y direction at the big end of the connecting rod.
Allowable limit：0.05mm。

Measure the shimmy of the crankshaft.

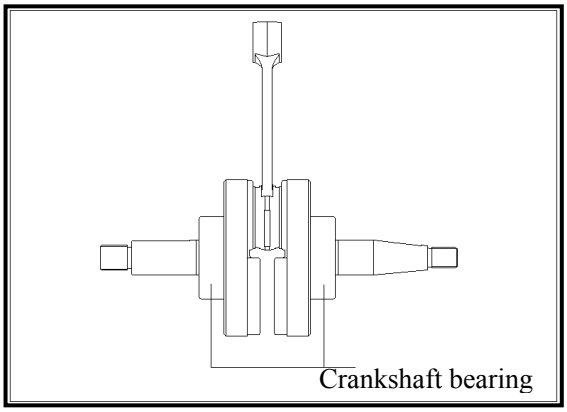
Allowable limit ： 0.01mm。



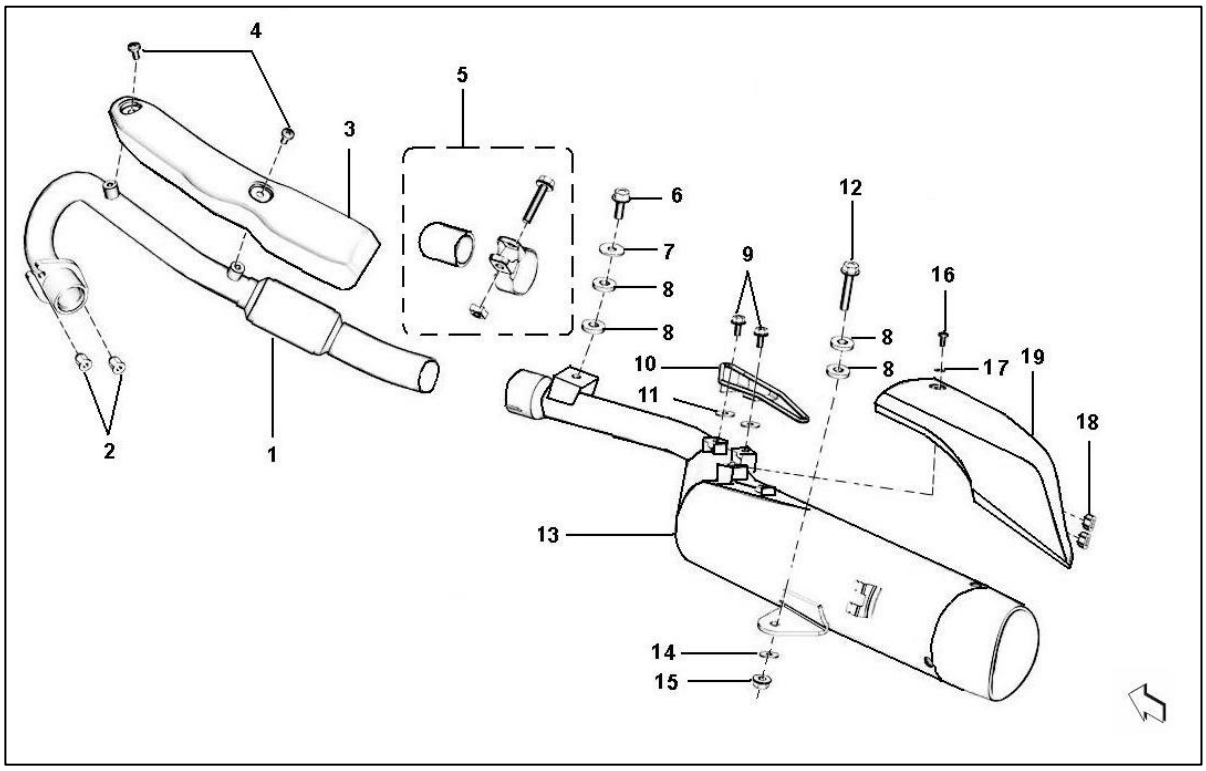
Check if there is any abnormal sound or looseness of the crankshaft bearing on revolution. If there is, displace the crankshaft components.

***Attention：**

Install the Crankshaft & Connecting bar to the crankcase with gear shift mechanism together.



Muffler



1. exhaust mainfold subassembly 2.acorn nut M6 3.vent-pipe protective shield 4.bolt M6X20 5.Clamp component 6.bolt M6X20 7.gasket 6 8.rubber gasket 9.bolt M6X12 10.bull bar components of muffler 11.gasket 6 12.bolt M8X40 13.muffler component 14.gasket 8 15.screw nut M8 16.bolt M5X10
17. Gasket 5 19.rear ornamental shade component

17 The exhaust emission system

17.1 Exhaust gas discharge control system warranty

1. The exhaust gas discharge system of this motorcycle is in conformity with the revision of EC/97/24/5/I and 2003/77/EC B stage by EU. We can assure you the quality under absolute normal use and proper maintenance according to the provision within effective service life.
2. Warranty scope
   1) Function guarantee of exhaust gas discharge system
   We can guarantee the motorcycle in conformity with all regular or irregular exhaust gas examination from the government offices within the service limit (15000 kilometers).
3. For the need of maintenance, distributors or service departments of our company of all provinces/cities are willing to provide service at reasonable prices if any of the following cases occurs, though this warranty does not apply to them.
   1) Regular maintenance is not carried out within necessary time or road haul according to the provision by our company.
   2) Those don't carry out regular examination, adjustment or maintenance at distributors or service centers of our company, or those who can't provide full service history.
   3) Overload or improper use.
   4) Reconstructing the motorcycle, removing the original components or reload other equipment at will.
   5) Using it as a motor chaser or riding it on non-motor vehicle roads frequently.
   6) Damage caused by Extreme Weather such as typhoon, flood, etc. or damage and fault as a result of misuse, traffic accidents or foreign object struck.
   7) Long-term out of service without regular maintenance.
   8) Those that do not carry out immediate maintenance of the odometer, or modify, suspend or replace it on one's own authority.
   9) Please carry out exhaust gas examination regularly in the inspection station every three months.

17.2 Regular maintenance notice

·The state gives provisions for motor vehicles to conform air pollutant emission standards to all manufacturers to ensure that the environmental pollution doesn't get worse. Apart from keeping with the air pollutant emission standard in our production, our company makes great effort in air purification and air pollutant

reduction.

·This motorcycle undergoes strict examination before leaving the factory with all qualities in conformity with air pollutant emission standards. We formulate the regular check list concerning gas emission as follows in consideration of different use condition by customers. The use is requested to carry out regular check, adjustment or maintenance according to the scheduled time to ensure normal emission.

·If other problems occur, please contact KEEWAY distributors or KEEWAY service center for help.

·Relevant discharge provisions are shown as follows：

Discharge provision	CO	$HC+NO_X$
Discharge standard	≤1.0g/km	≤1.2g/km

※The standard is subject to the latest provision of our country if there is any modification in the discharge standard.

·For those who haven't carried out regular examination according to the requirements form the distributor and service center of our company, we assume no responsibility if the motorcycle is clamped down. Please carry out necessary examination to guarantee the best vehicle condition.

Note: ①Please increase the frequency of washing the air cleaner if riding on gravel roads or seriously polluted environment to extend the life of the engine.

②For high speed or frequent riders, the maintenance level should be increases.

Guarantee of discharge standard, please pay attention to the following:

1) Oil use: please use the designated engine oil.

2) Maintain the vehicle according to the regular maintenance table.

3 As to the exhaust gas emission control system, arbitrary adjustment or replacement is forbidden (including the adjustment on the use of spark plug, idle speed, ignition timing, carburetor, etc).

4) Matters need attention：

·Since the disorder of ignition system, the charging system, and the fuel system has great influence on the catalytic system, please come to designated distributors or service center of our company for examination, adjustment or maintenance if any disorder of the above ones occurs.

5) The exhaust gas emission control system of the vehicle is in line with relevant provision of our country, make sure to use the quality components of our factory if needed, and receive service from designated distributors and service centers.