RKV 200 Motorcycle

Service Manual

ZHEJIANG QIANJIANG MOTORCYCLE CO.LTD.

Content

Preface

The service manual contains descriptions of maintenance essentials on QJ 200-2A motorcycle.

Service data include attentions that shall be paid on all the maintenance operations in the service manual. Please read the manual carefully before operation.

Check and adjustment contains statements on the main points of inspection and adjustment, safety of the vehicle, maintenance means of each component's performance. This shall be implemented from the time of periodical inspection.

The parts after Part 1 demonstrate breakdown, assembly and main points of inspection of electrics, finished motorcycle, engine and other components.

System diagrams, breakdown drawings, maintenance, fault diagnosis and explanation are presented before each part when compiled.

Notes：

If patterns or structures of the motorcycles change, or differences exist between pictures, drawings, instructions or others and physical products, please take the later as the standard. The product is subject to change without further notice.

ZHEJIANG QIANJIANG MOTORCYCLE CO.LTD

Service Data

General Safety Maintenance Regulation

Specification Sheet Fault Diagnosis

General Safety

Carbon monoxide (CO)

When it is necessary to start the engine, please make sure the workplace is well ventilated. You shall never run the engine in an enclosed place.

Attention

Gas exhausted from the motorcycle contains toxic carbon monoxide, which may lead to loss of consciousness and even death.

It is necessary to run the engine in an open area. If the engine is run in an enclosed site, ventilation system shall be used.

Gasoline

Work in well-ventilated site. Fire and smoking are strictly forbidden in working sites or gasoline storage places.

Battery

Battery shall be away from spark, open fire and smoking places since it may emit explosive gases. Keep it in well-ventilated condition while charging.

Battery contains sulphuric acid (electrolyte), which will cause burns when contacting with skin or eyes. Please put on protection clothing and helmet while handling battery.

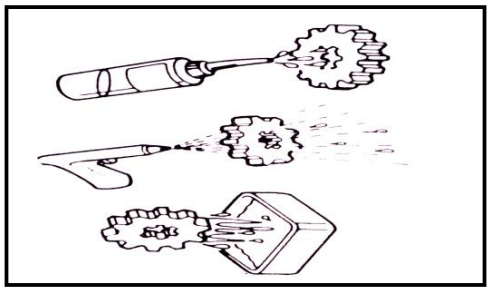
——if electrolyte splashes on the skin, flush immediately with water.

——If electrolyte splashes into eyes, flush immediately with water for at least 15mintues and get a medical examine.

Electrolyte is poisonous. If swallow it by mistake, please immediately drink plenty of water, milk and milk of magnesia (a kind of laxative antacid) or vegetable oil and get a medical examine. Keep it out of reach of Children.

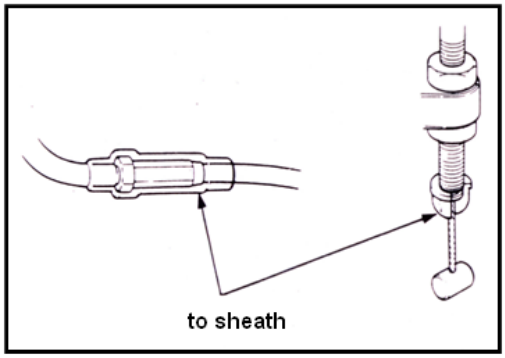
Maintenance Regulations

While repairing and servicing, try to use tools of metric system as possible as you can. Incorrect tools may damage the motorcycle.

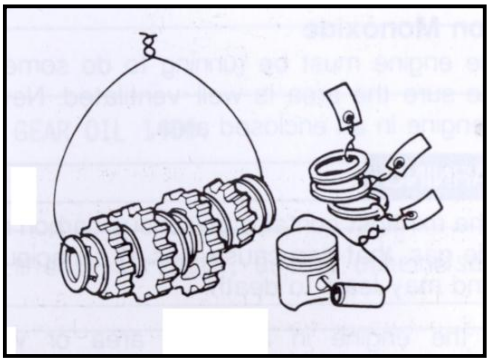


Before take down or open protecting plate for maintenance work, please clean the dirt on external surface of the component or the assembly to prevent the dirt from falling into the engine, chassis or braking system.

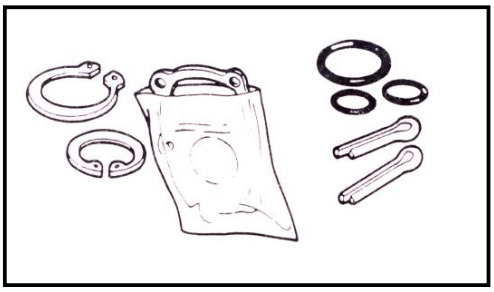
After disassembly and before measuring friction, please clean the components and purge with air compressor.



Plastic parts may deteriorate due to aging, which are apt to be damaged by solvent or oil. Check before re-installation and replace if necessary.

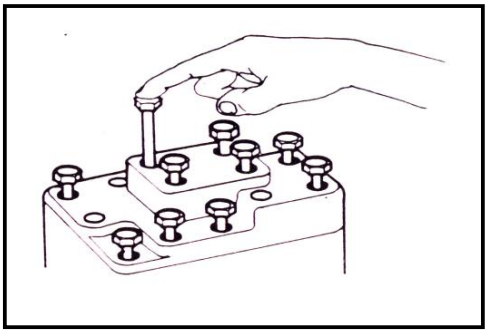


While removing a component with many assemblies, do from outside to inside. Loosen firstly smaller assemblies; for the complicated assemblies, such as gearbox, keep them in a proper assembling order for the sake of easy assembly later.

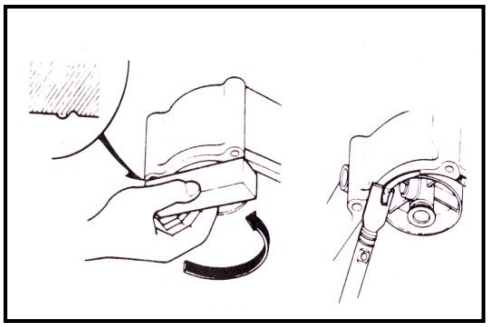


Pay special attention to the key fitting position before disassembly. The components that are not used any more shall be replaced on time before disassembly.

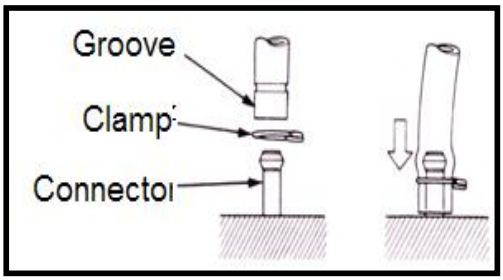
Length of bolts and screws are different for assemblies and protecting plates. They shall be installed at correct positions. If confused, just put the bolt inside the hole and see if it matches.



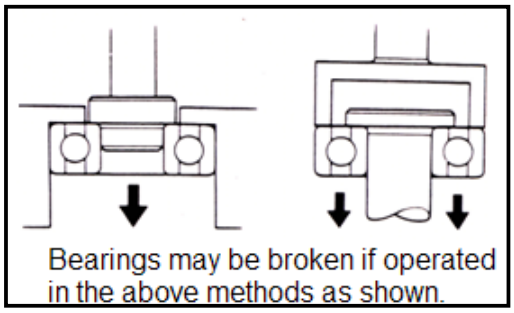
Fill lubricating grease into the groove during oil seal installation. Check if the oil seal is smooth and if it is possible to be damaged when installed.



Installation of rubber hose (fuel, vacuum, or coolant): insert its end into bottom of connector so that there is enough room for the hose clamp to grip the connector. Install the rubber or plastic dustproof boot back to its originally designed position.



Disassembly of ball bearing: use a tool to push against one or two (inner and external) bearing races. If the force works only on one bearing race (whatever inner or external), the bearing may be damaged when disassembled and it must be replaced.



Slack cable implies potential safety hazard on electrics. Check the next cable when the cable is clamped to ensure electric safety;

Cable clamp shall not be bent towards solder joint;

Tie the cable at appointed position;

Don't lay the cable at the end of frame or at the closed angle;

Don't lay the cable at the tip of a bolt or screw;

Wiring of cable shall be away from heat source or places where cable may be clipped while moving;

Prevent the cable from being pulled too tightly or slacking too much when the cable is wired along the handlebar pipe. The cable shall not be affected by any adjacent components at any turning place;

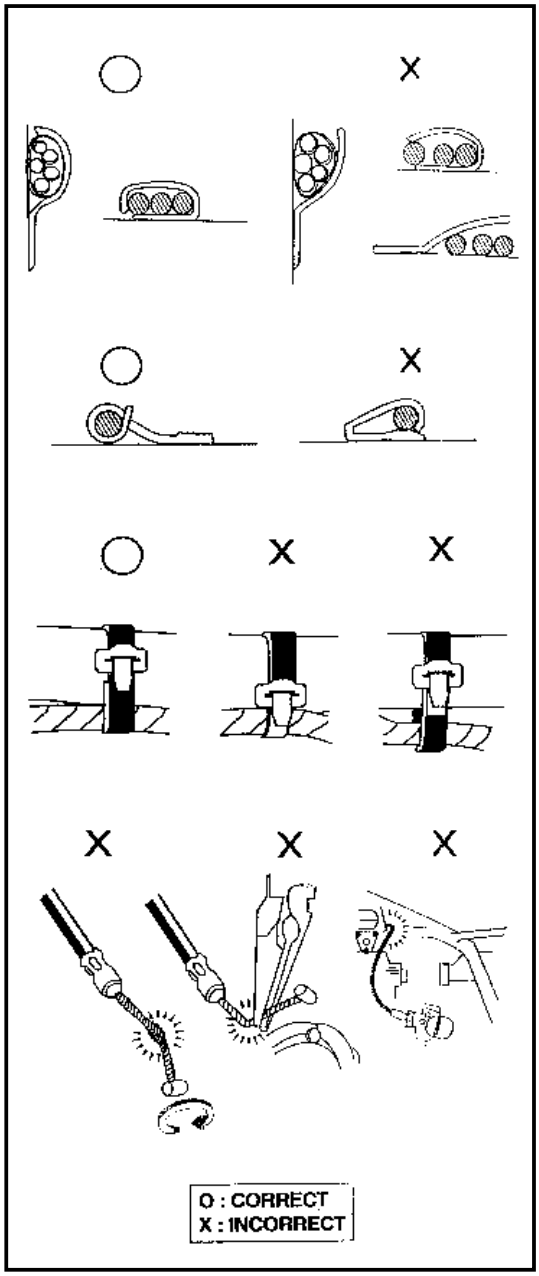
The cable shall be wired smoothly and shall not be knotted or twisted;

Check if sheath of connector is damaged and if connector is over stretched before butt connection;

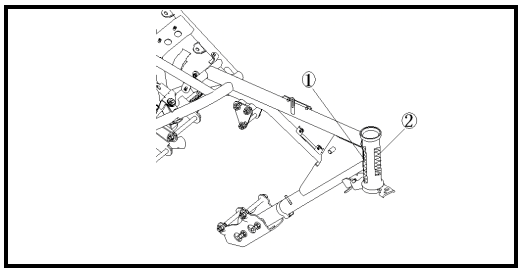
If cable runs around the closed angle or the corner, please protect it with tape or hose;

Tie the cable with adhersive tape reliably after repair;

Controlling cable shall not be bent or twisted. Broken Controlling cable may result in non-flexible control.



Identification of motorcycle



1．Frame number ① labeled as：LBBPEM2A********* (Just for reference. Labeling method may differ due to various conditions),as shown in Figure 1-1.

2．Frame nameplate is riveted at Position ②, as shown in Figure 1-1.

Frame nameplate adopts non-European KEEWAY09 Version. Contents needed to be filled in the blank on the nameplate are described as follows:

Model：RKV 200S

Displacement：200ML

Production date：such as 09/2010

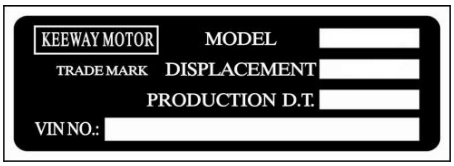
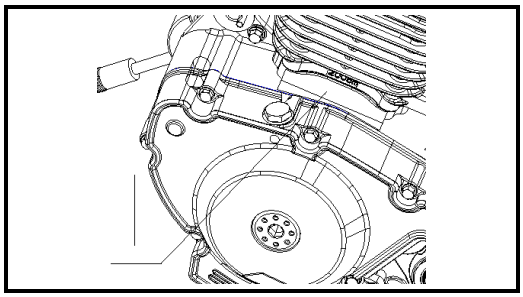


Figure 1-1



3. Serial number of engine ① is marked on the housing of crankcase, as shown in Figure 1-3.

Figure 1-3

Important Notes

1．Please use spare parts manufactured by Zhejiang Qianjiang Motorcycle Co., Ltd. Components that cannot comply with designed specifications of Zhejiang Qianjiang Motorcycle Co., Ltd. may result in damage on the engine.

2．Only metric tools can be used for maintenance work. Metric bolts, nuts and screws cannot be exchanged with inch fasteners.

3．While re-assembling, new washers, O rings, cotter pins and locking plates shall be used.

4．While tightening bolt or nut, please first fasten the ones with great-diameter or internal bolts; and then tighten gradually to specified torque in diagonal order. Those with special requirements are not included.

5．Clean removed components with cleaning liquid. Lubricate all the sliding surfaces before assembly.

6．After assembly, check if all the components are correctly installed and can work properly.
7. Remove dirt and oil before measurement; apply recommended lubricant at lubricating positions at assembly.
8. When the engine and transmission system are disassembled/assembled and needed to be stored for a long time, please apply lubricant on the surface of the components to avoid rust and dust deposition.

Special Tools

Special tools mean specially designed tools used at particular places for assembly or disassembly of certain components on motorcycle. Appropriate special tools are essential for complete and accurate adjusting and assembling work. Use of special tools can realize safe, reliable and quick assembly/disassembly of components, working efficiency improvement and labour saving.

1．Tools for engine overhaul

Specially designed tools are required for smooth assembly and disassembly of some components on the engine.

Special tools and product pictures for engine component assembly and disassembly are listed in Table1-1 and Table 1-2.

Table 1-1

Name	Remarks
Special socket wrench	Used for disassembly/assembly of flywheel bolt, Figure
Clutch holder	1-3
Flywheel extractor	Figure 1-4
Feeler gauge	Figure1-5
Bearing puller	Figure1-6
Bearing installer	Figure1-7
Oil seal remover	Figure1-8
Puller handle	Figure1-9
Piston pin puller	Figure1-10
Piston ring pliers	Figure1-11
Spark plug socket wrench	Figure1-12
Clutch thickness measurement	Figure1-13
Cylinder bore tester	Figure1-14
Dial gauge	Figure1-15
Dial gauge, V-block	Measuring inner diameter of piston pin, Figure 1-16
Micrometer	Measuring valve stem deflection, Figure1-17
Valve guide remover	Measuring OD of valve stem, Figure1-18
Valve guide installer	Figure1-19
Valve clearance adjuster	Figure1-20
Valve spring remover	Figure1-21
Valve guide reamer	Figure1-22
Crankcase remover	Figure1-23
	Figure1-24

Continued Table 1-2

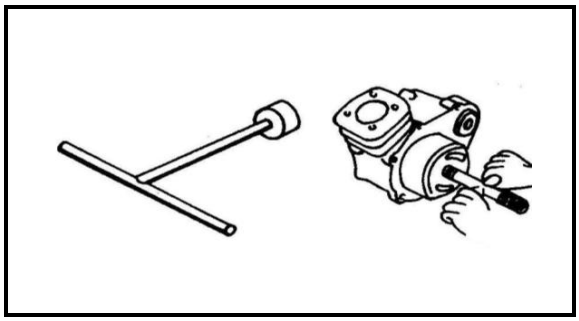


Figure 1-3

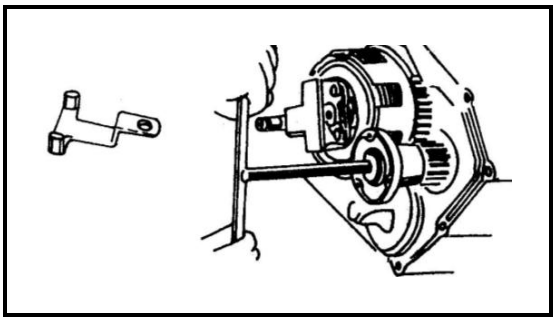


Figure 1-4

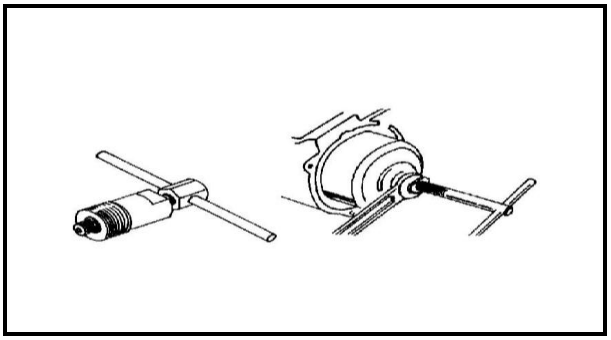


Figure 1-5

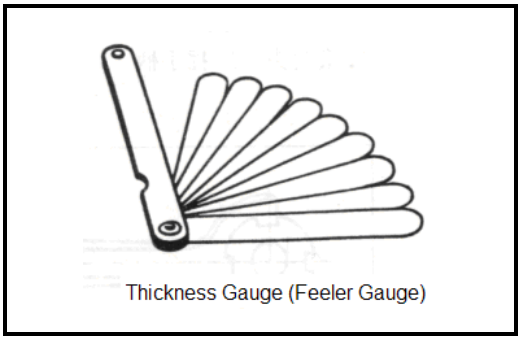


Figure 1-6

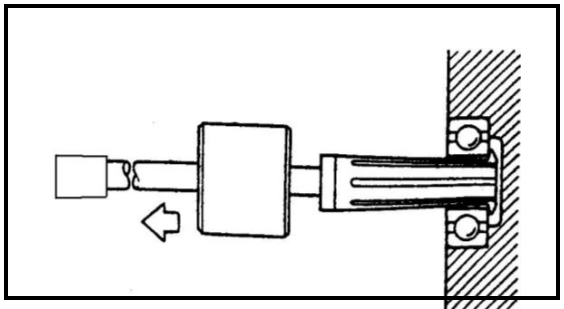


Figure 1-7

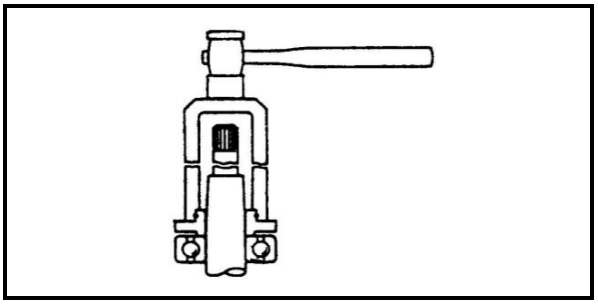


Figure 1-8

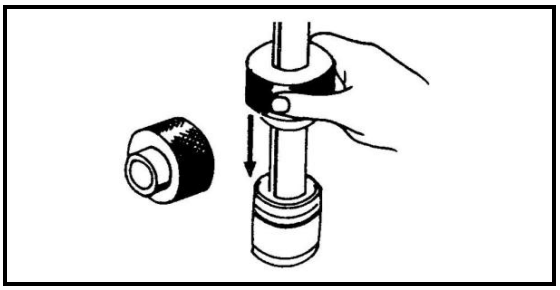


Figure 1-9

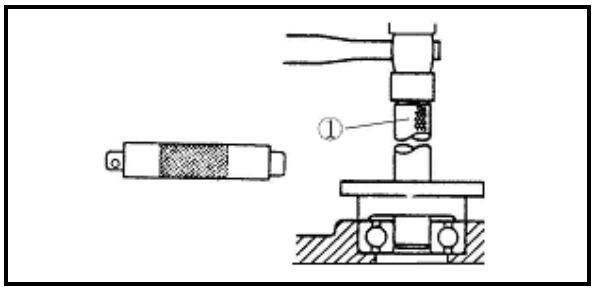


Figure 1-10

① Handle

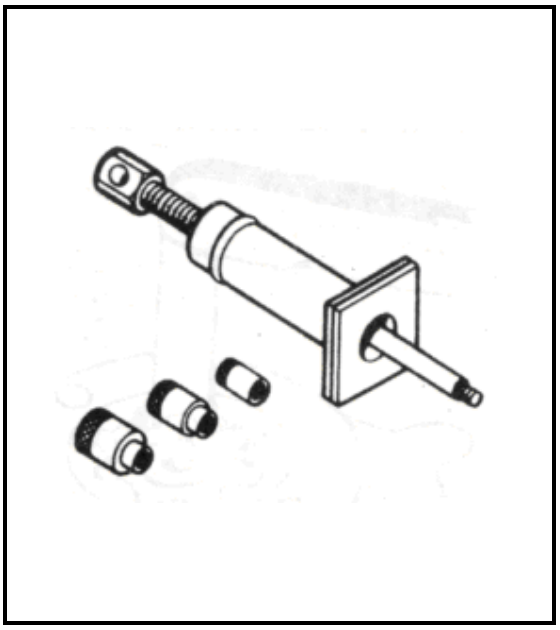


Figure 1-11

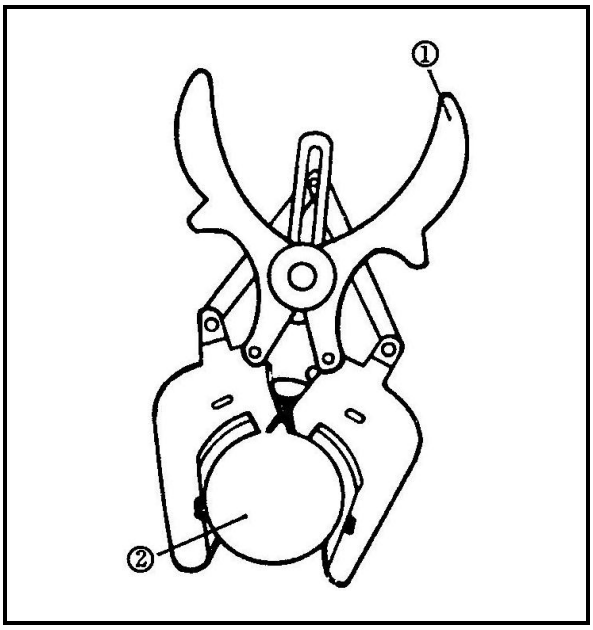


Figure 1-12 ① Pliers ②

Piston

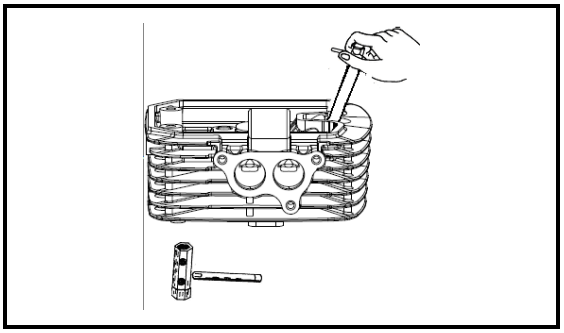


Figure 1-13

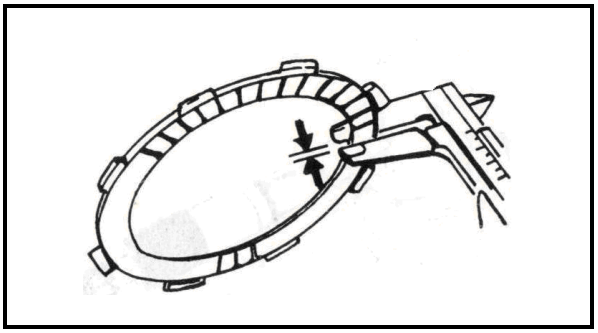


Figure 1-14

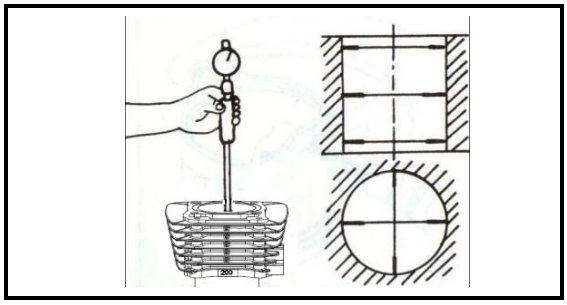


Figure 1-15

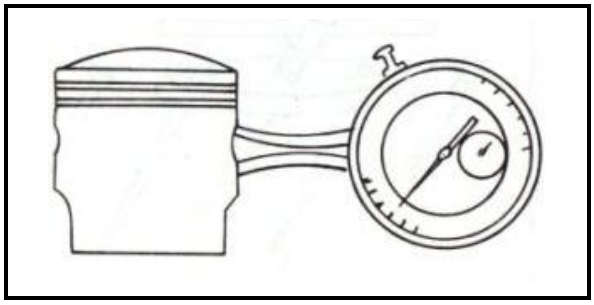


Figure 1-16

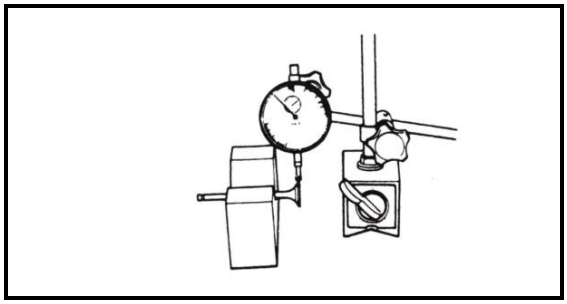


Figure 1-17

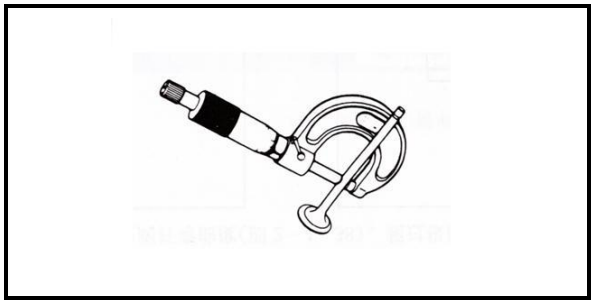


Figure 1-18

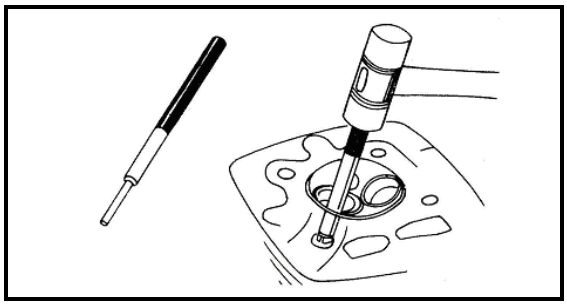


Figure 1-19

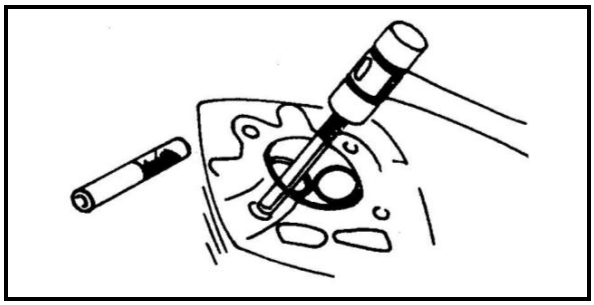


Figure 1-20

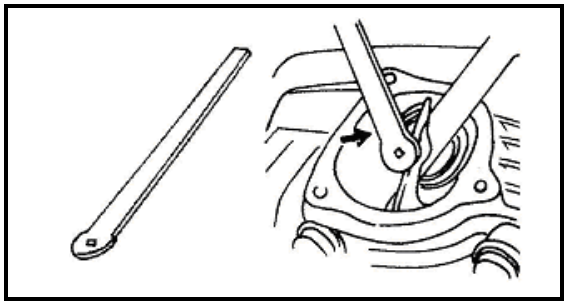


Figure 1-21

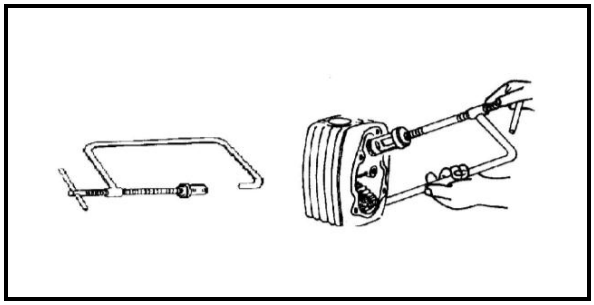


Figure 1-22

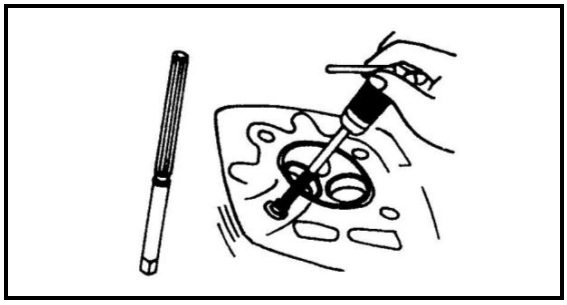


Figure 1-23

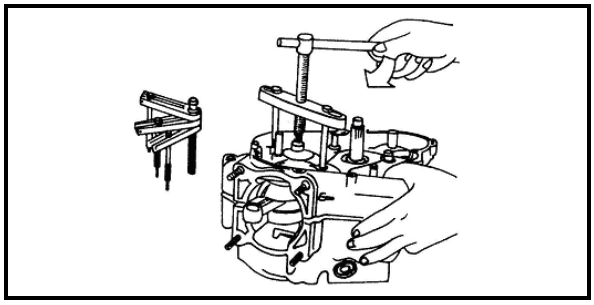


Figure 1-24

2．Toes for chassis overhaul

Common and special tools, as well as their pictures for chassis component assembly and disassembly are listed in Table1-25 and 1-26.

Table1-25

Name	Remarks
Torque wrench	Figure1-27
Allen wrench	Figure1-28
Socket wrench	Figure1-29
Micrometer	Figure1-30
Magnetic stand, V-block	Figure1-31
Dial gauge	Figure1-32
Venier caliper	Figure1-33
Spring criclip pliers	Figure1-34
Hammer screwdriver	Figure1-35
Front fork oil seal installer	Figure1-36
Front fork seal driver	Figure1-37
Steering nut wrench	Figure1-38

(1) General tools used for chassis overhaul

Continued Table 1-26

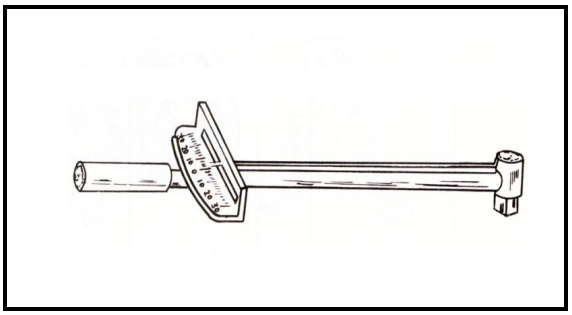


Figure 1-27

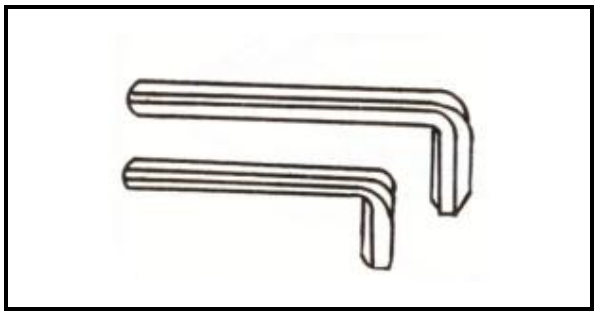


Figure 1-28

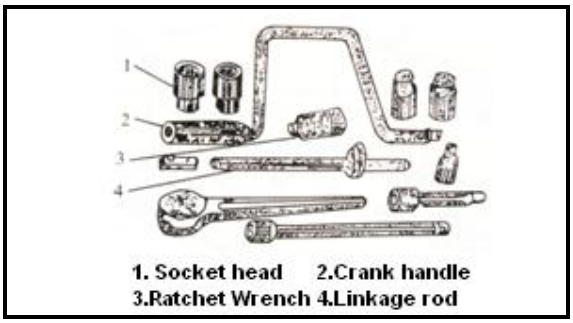


Figure 1-29

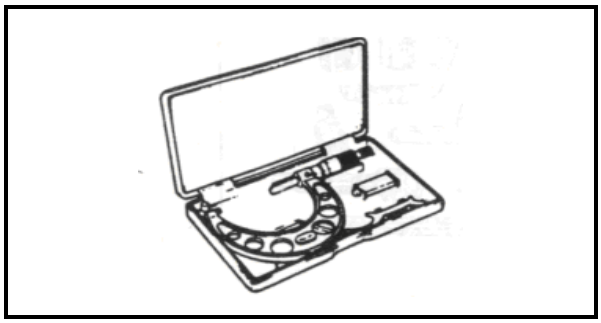


Figure 1-30

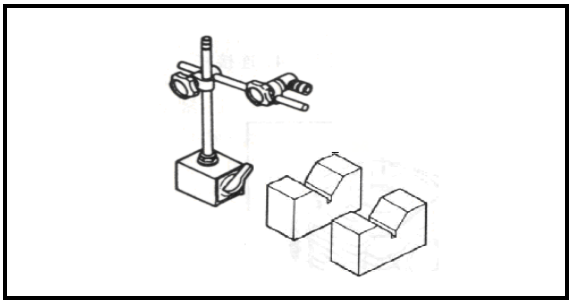


Figure 1-31

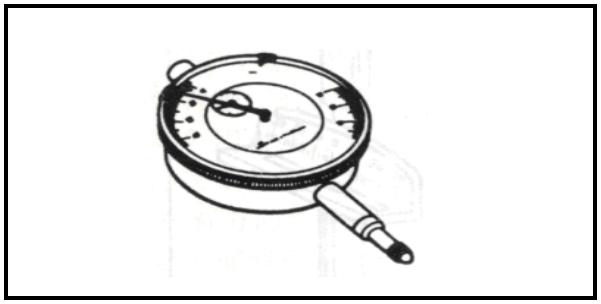


Figure 1-32

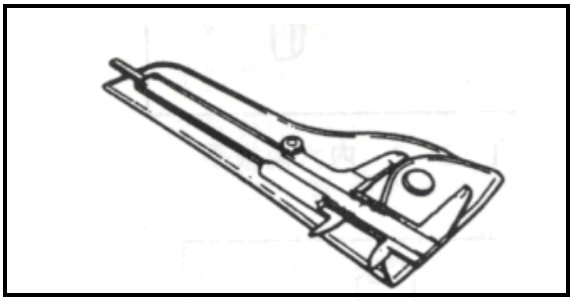


Figure 1-33

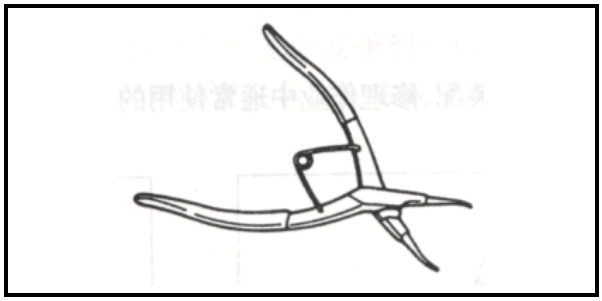


Figure 1-34

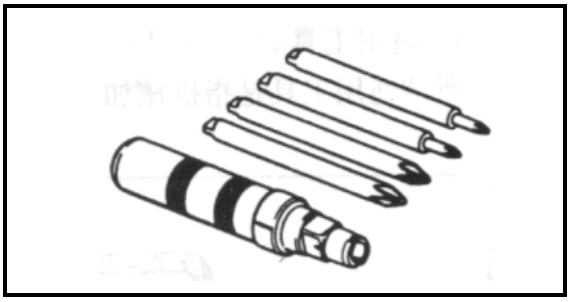


Figure 1-35

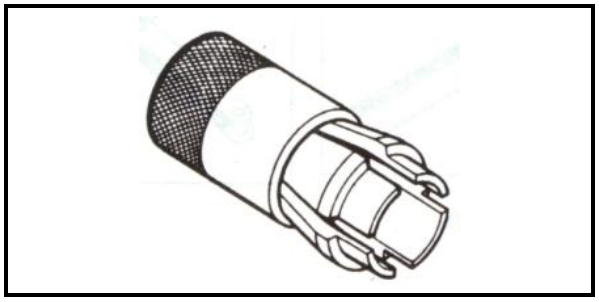


Figure 1-36

（2）Special tools for chassis overhaul：front fork seal driver

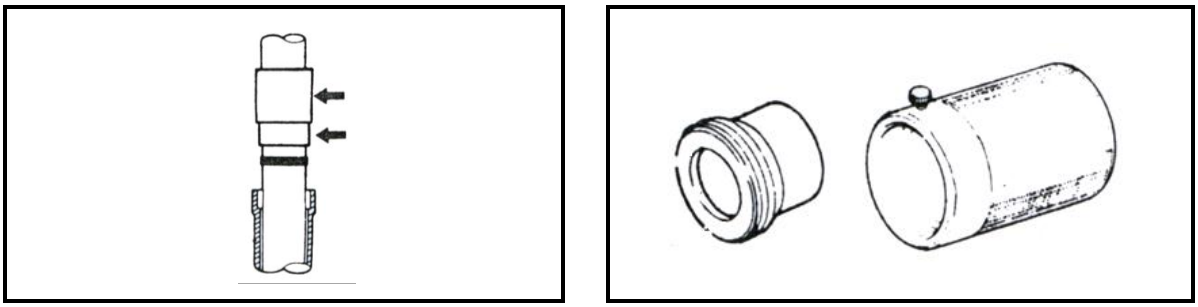


Figure 1-37

（3）Steering nut wrench

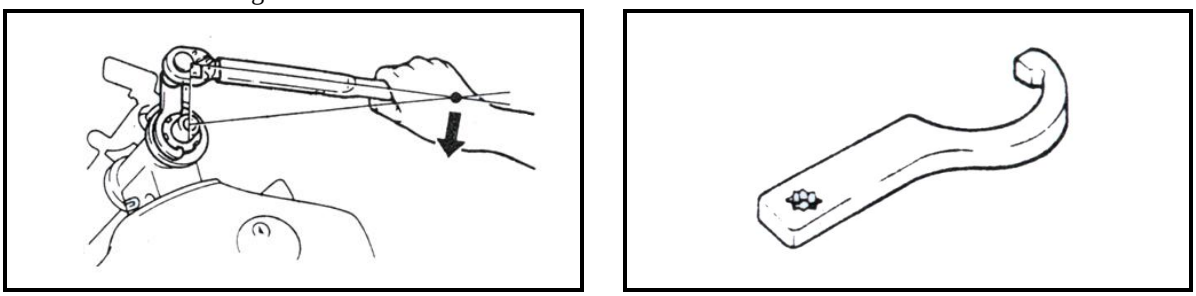


Figure 1-38

3．Tools for electrical components

Special tools and their pictures for electrical component test are listed in Table1-39 and Table 1-40.

Table 1-39

Name	Remarks
Multimeter	Figure1-41
Ignition tester	Figure1-42

Continued Table 1-40

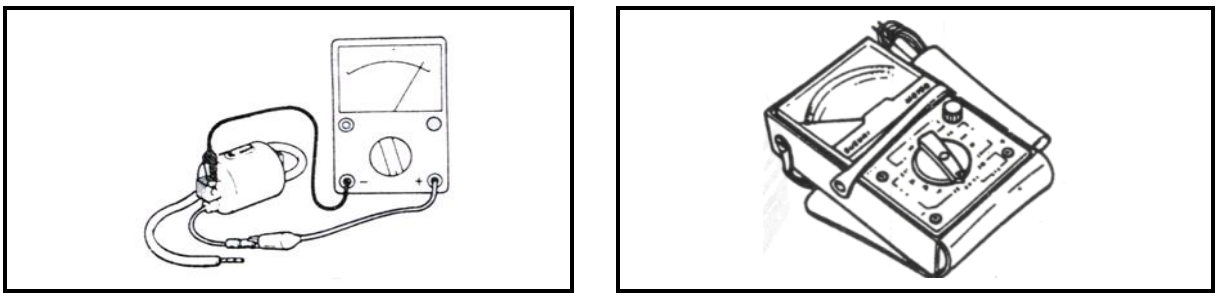


Figure 1-41

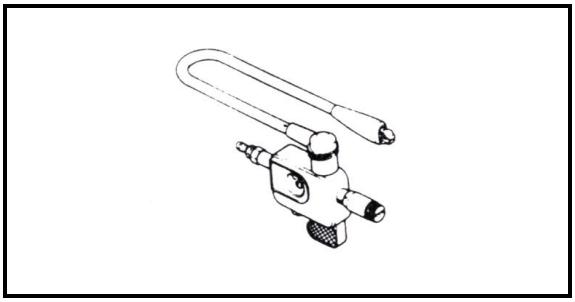
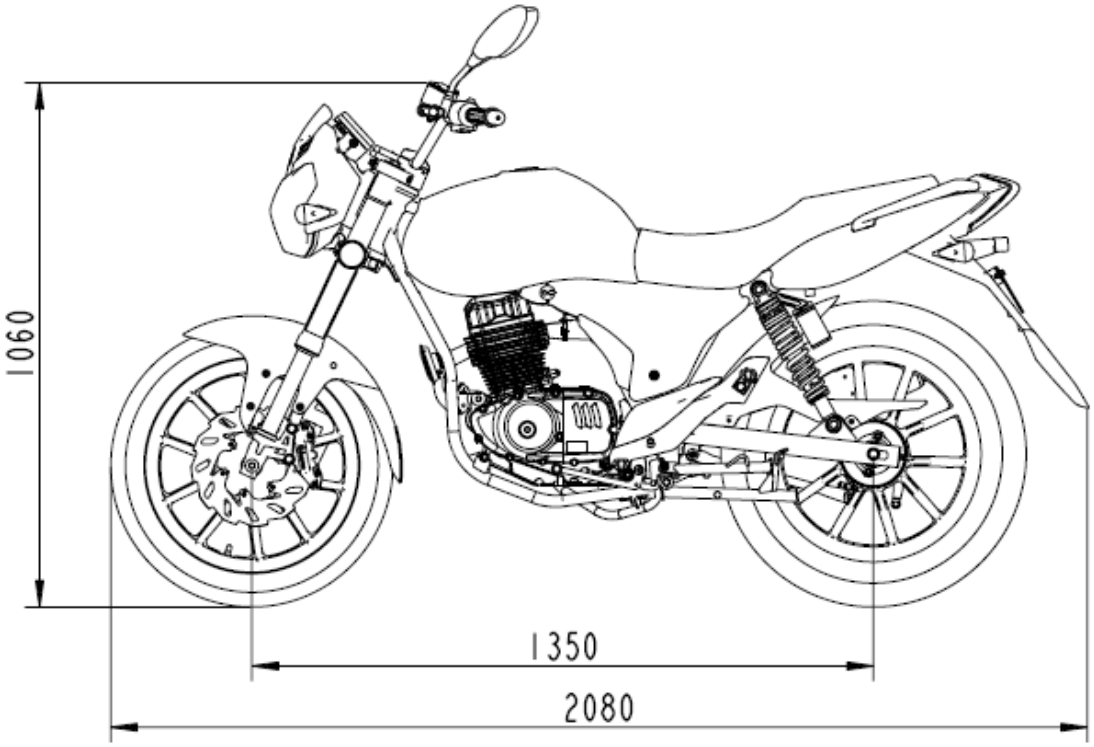
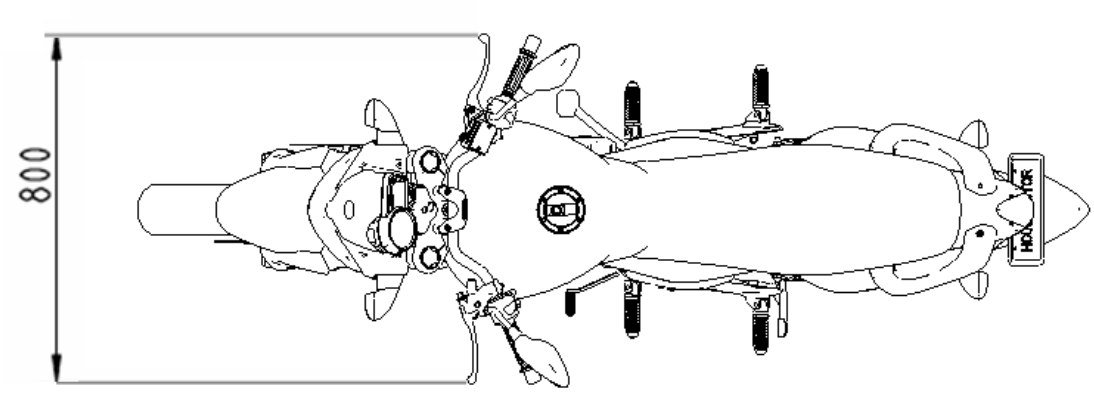


Figure 1-42

Specifications (QJ200-2A)

Model		**QJ200-2A**		**Engine**	**Engine type**	QJ168FML-B
Overall Length(mm)		2080			Fuel	RQ-90
Overall Width(mm)		800			Number of cylinders	1
Overall height(mm)		1060			Bore*stroke	68×55
Wheelbase(mm)		1350			Total Displacement	200cc
Weight (kg)（Curb weight）		**Front axle**	67		Starting mode	Electric
		Rear axle	73		Cooling mode	Air cooling and oil cooling
		Total	140		Lubricating mode	Force-feed and splash lubrication
Tire		Front tire	100/80-17		Air cleaner	Paper element
		Rear tire	130/70-17			
Drive Train	Clutch type	Wet multi-plate friction type			Fuel tank capacity	17±0.5L
	Gearshift pattern	Five-speed gearshift		**Performance**	Carburetor type	PD31
	Transmission	Chain drive			Idle speed-rpm	1400±100r/min
Electricals	Battery capacity/type	12V dry-charged type			Max. torque	15N.m/7500rpm
	Electrical start	100W/8000rpm			Max. power	12.0kW/9000rpm
	Spark plug	NGK CR9E			Compression ratio	9.5:1
	Spark plug clearance	0.6-0.7mm			Top speed	100km/h
	Ignition type	ECU-CDI		**Brake**	Diameter of front brake disc	φ260mm
					Diameter of rear brake disc	φ240mm

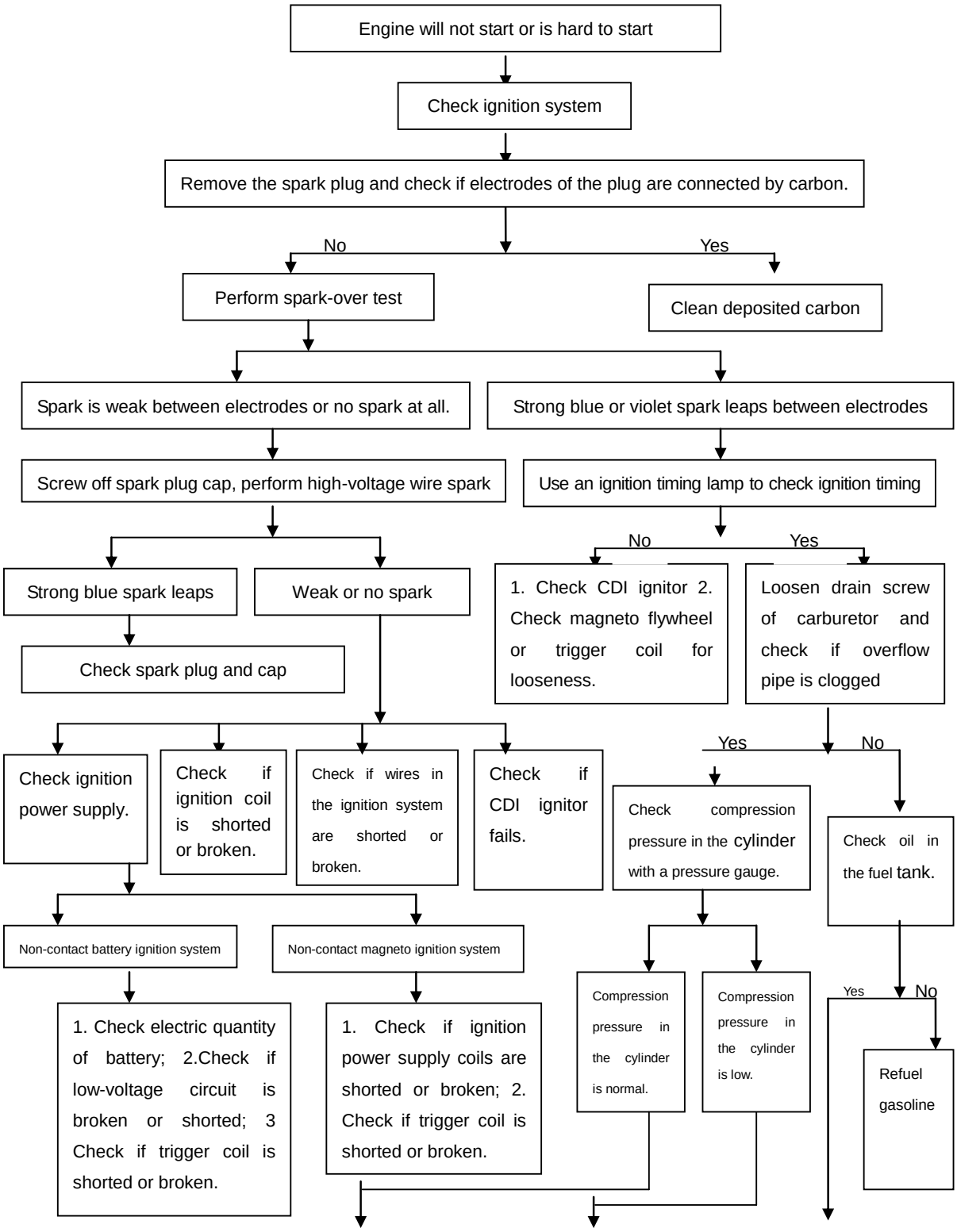


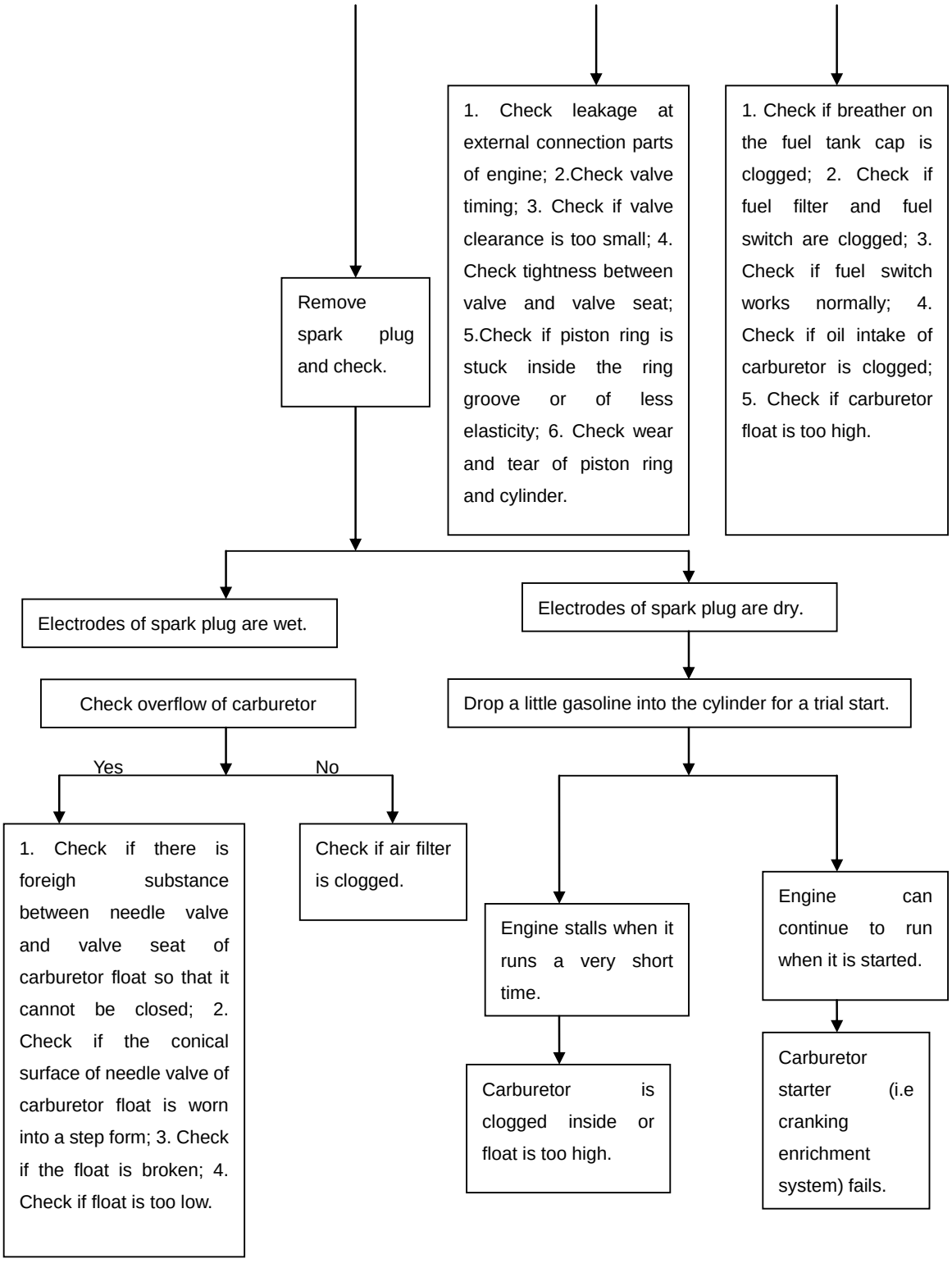


Fault Diagnosis

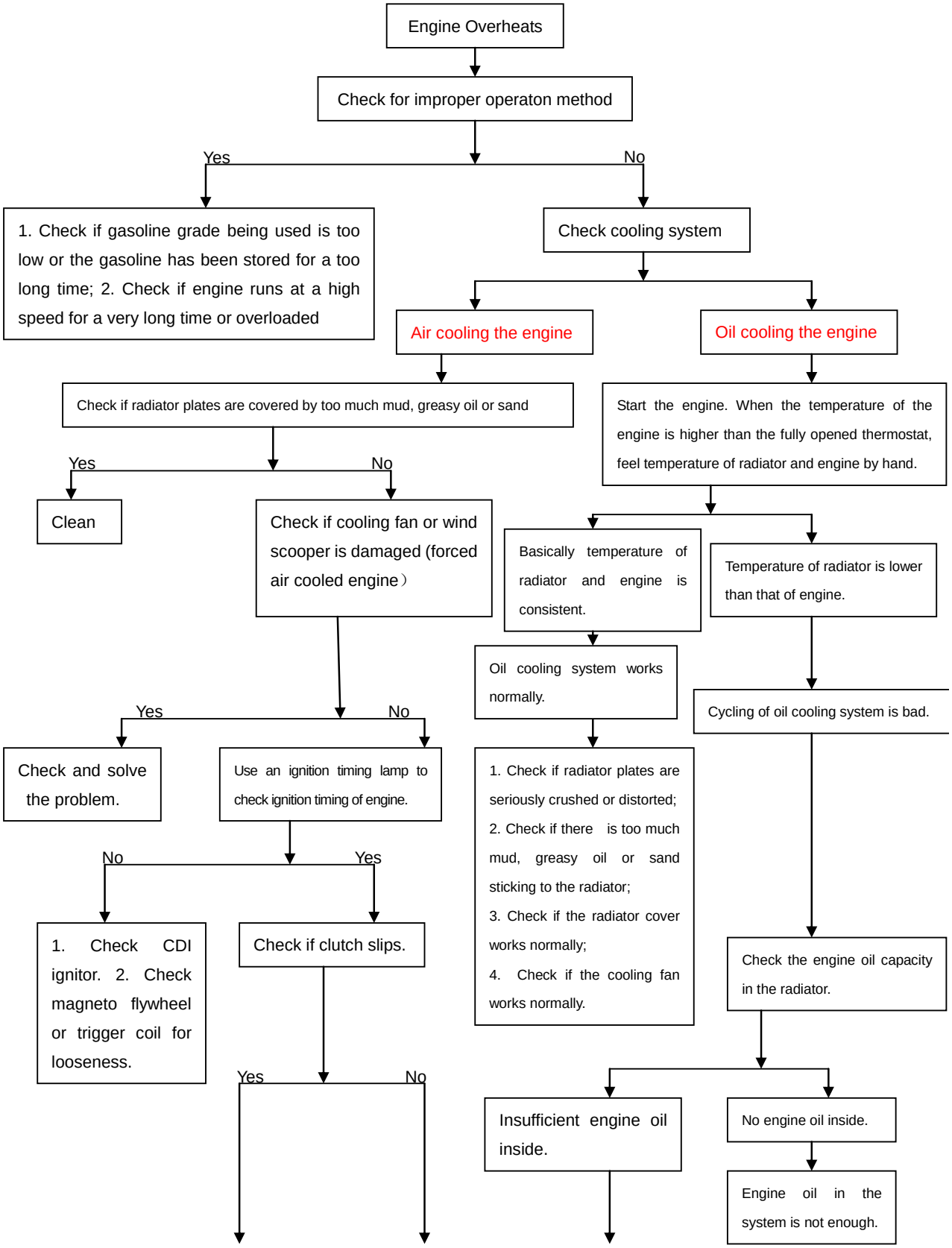
Engine will not start or is hard to start.

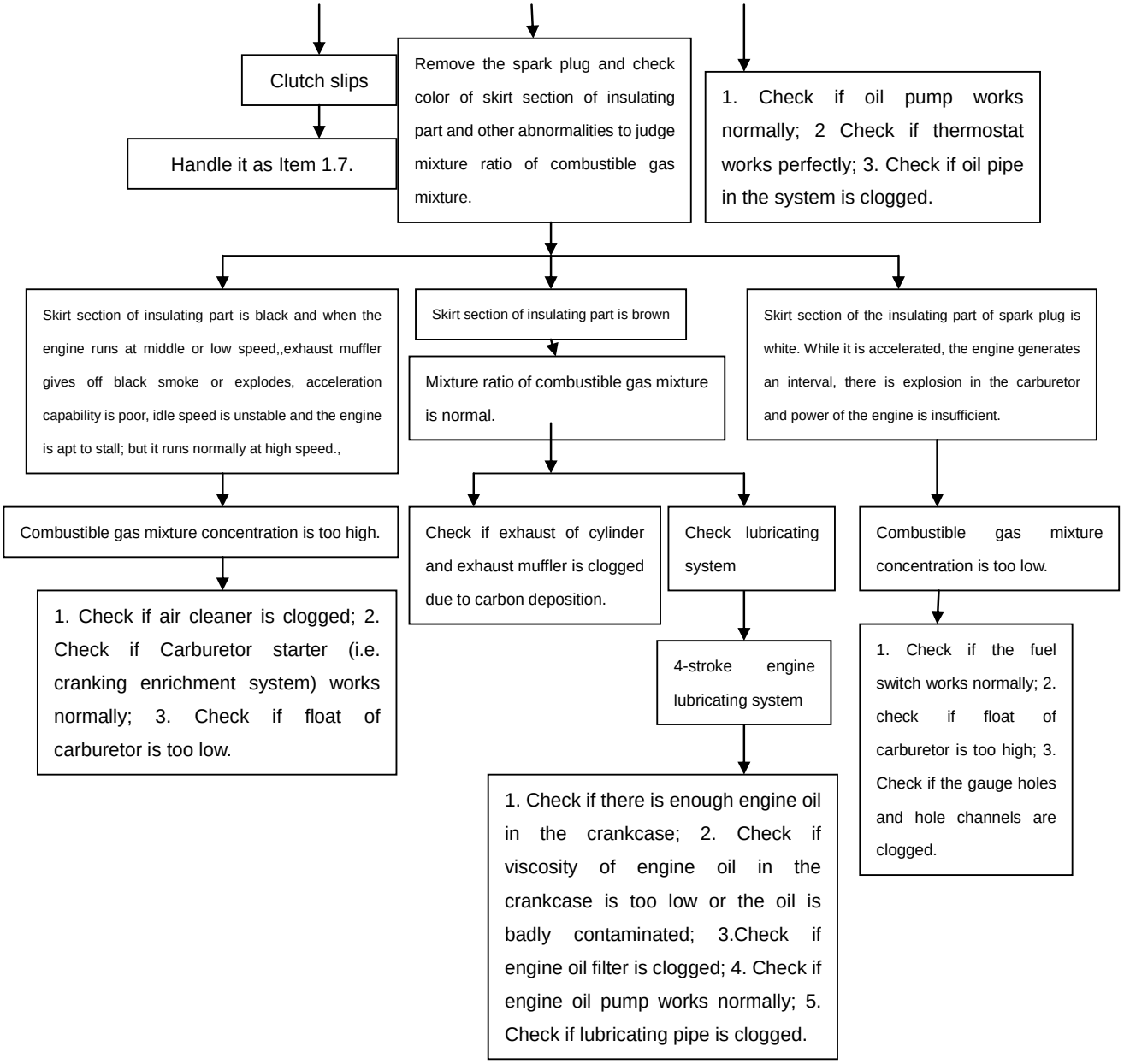
Diagnosis procedures



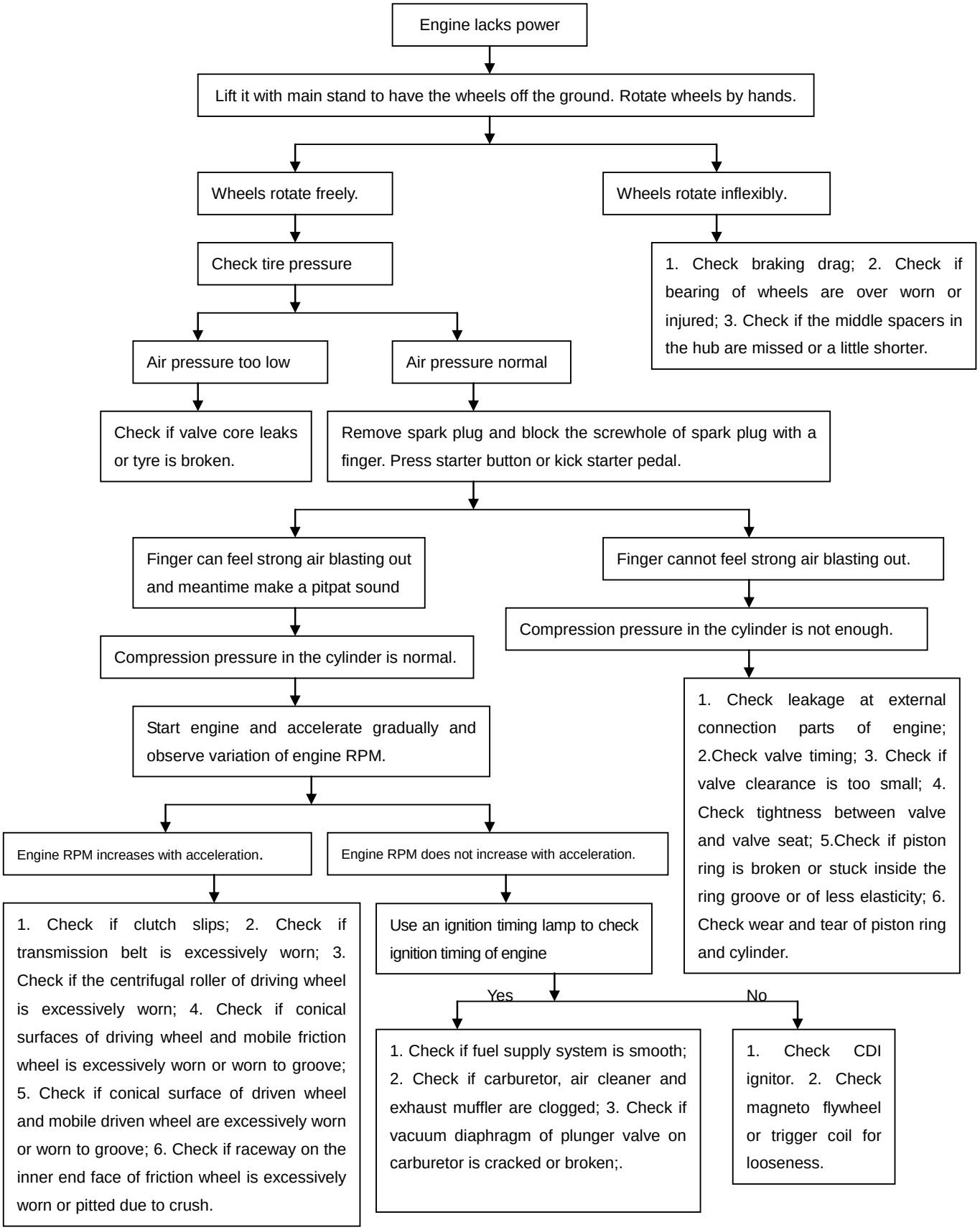


Symptom: Engine Overheats **Diagnosis procedures**



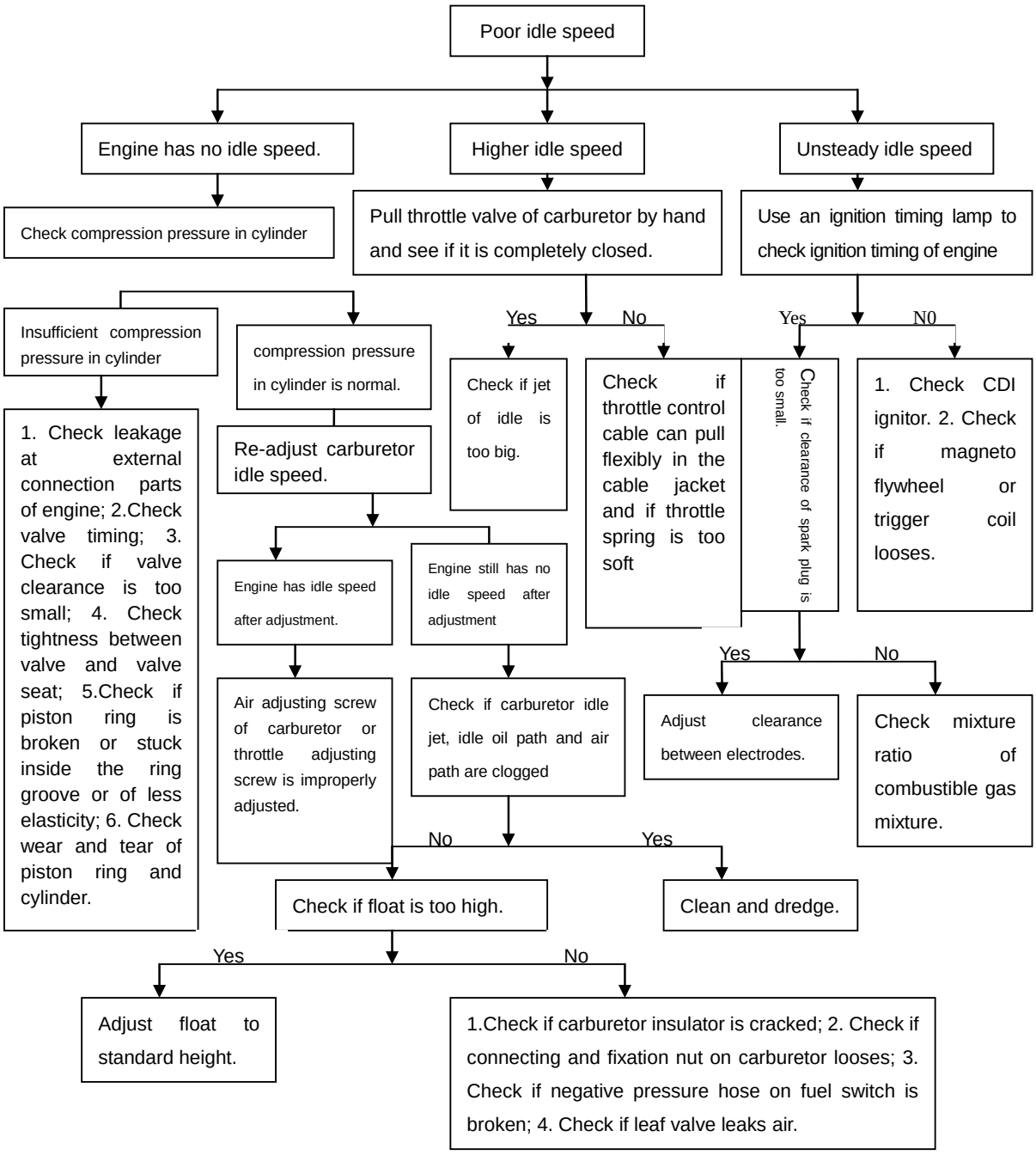


Symptom: Engine lacks power **Diagnosis procedures**

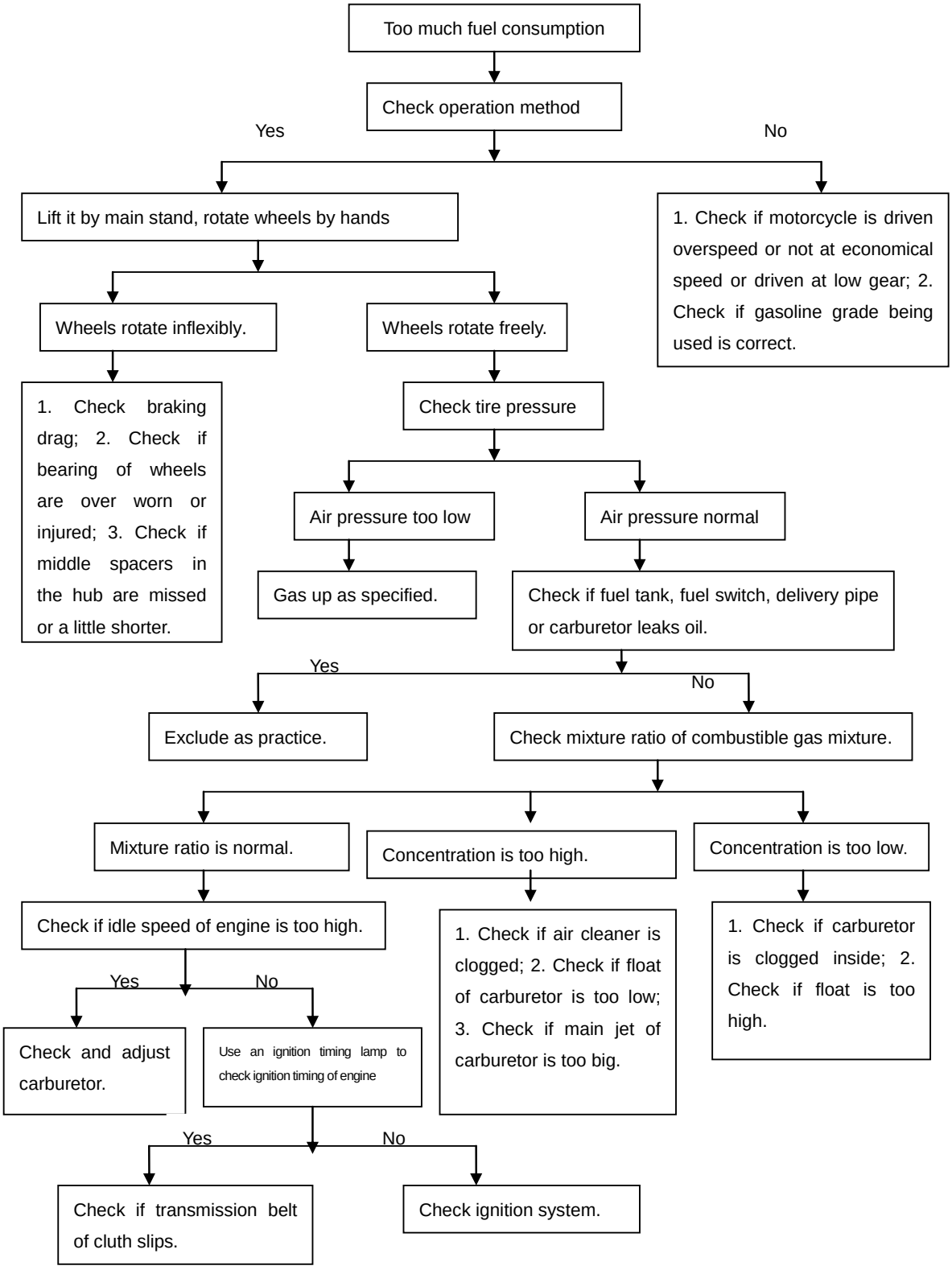


Symptom: Poor idle speed of engine

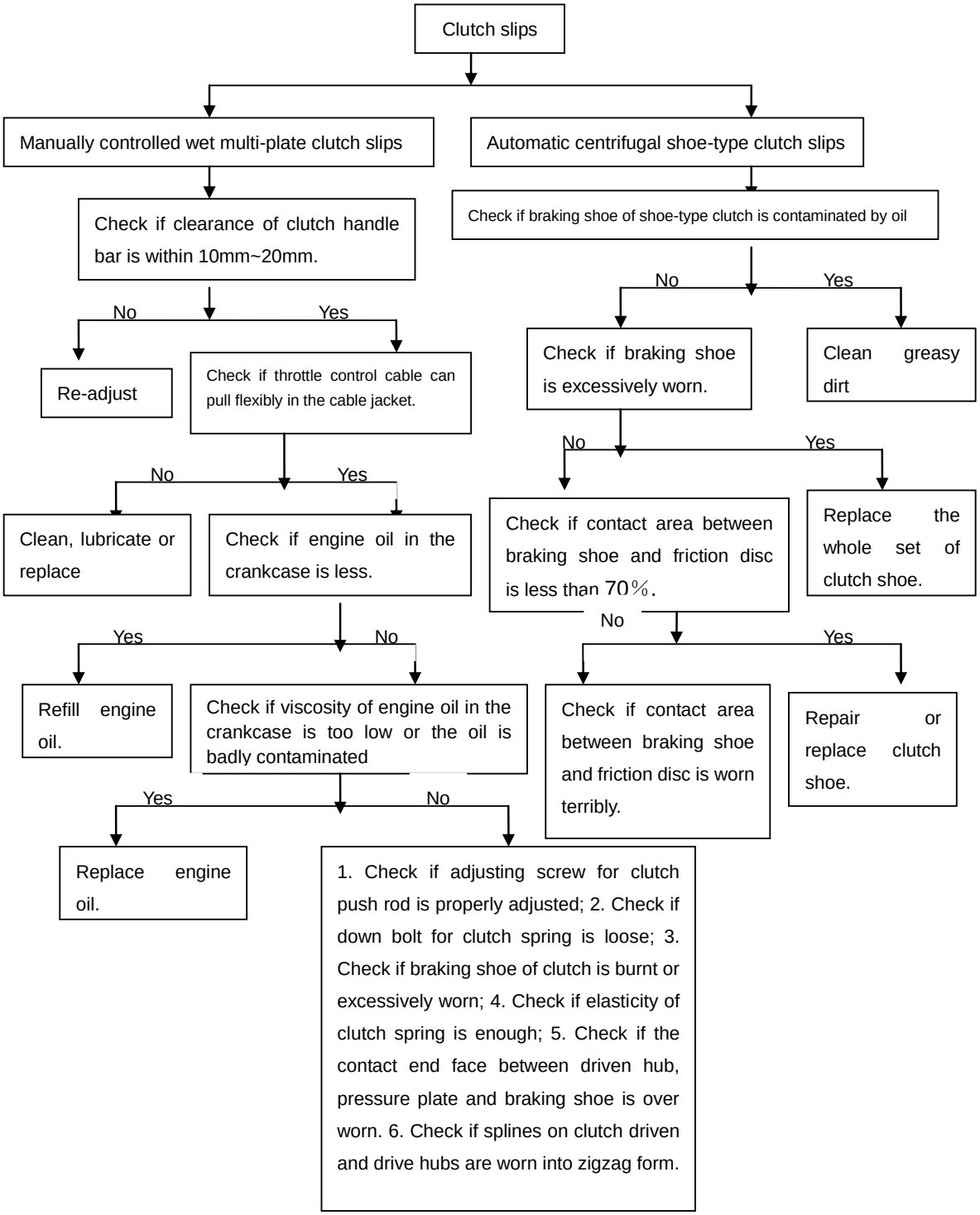
Diagnosis procedures



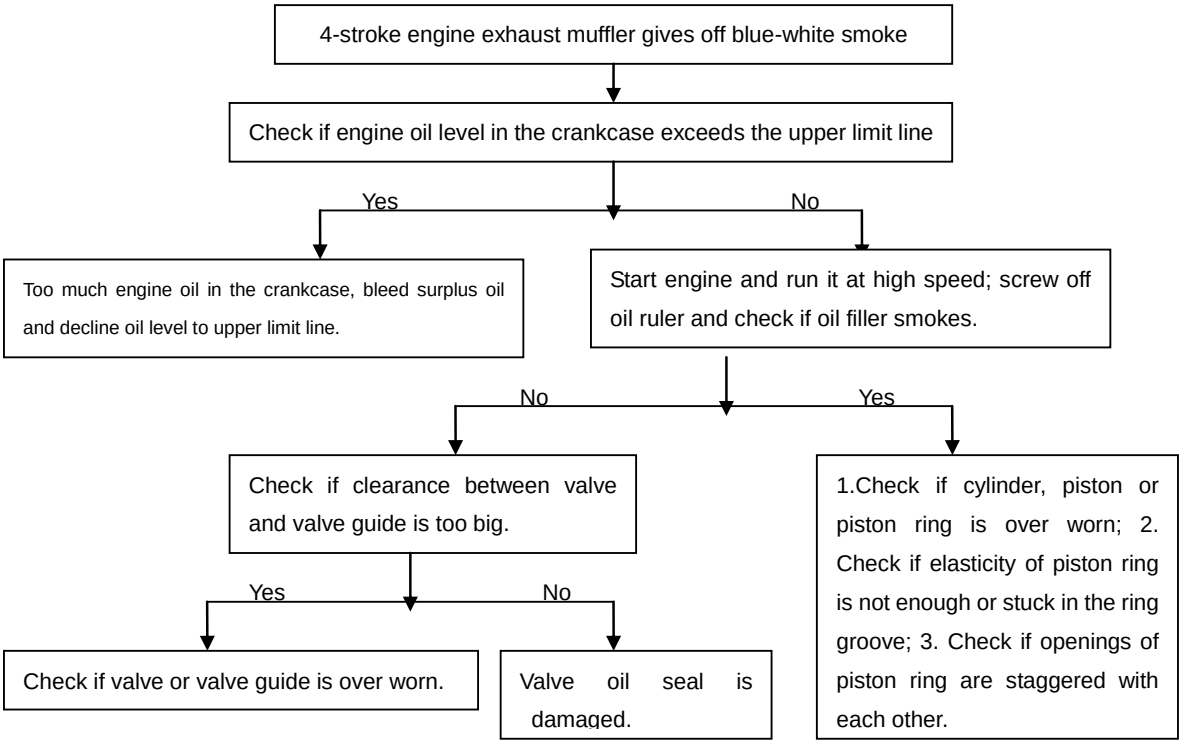
Symptom: Too much fuel consumption by the engine **Diagnosis procedures**



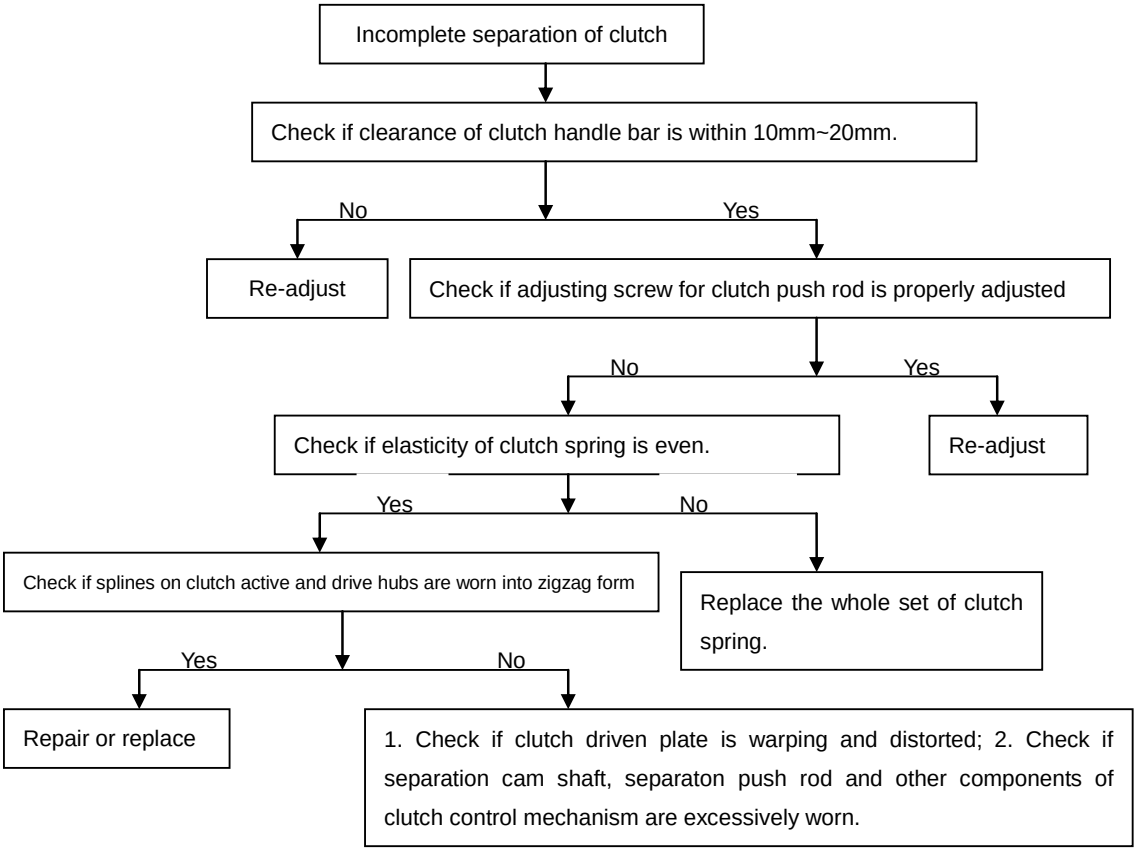
Symptom: Clutch slips **Diagnosis procedures**



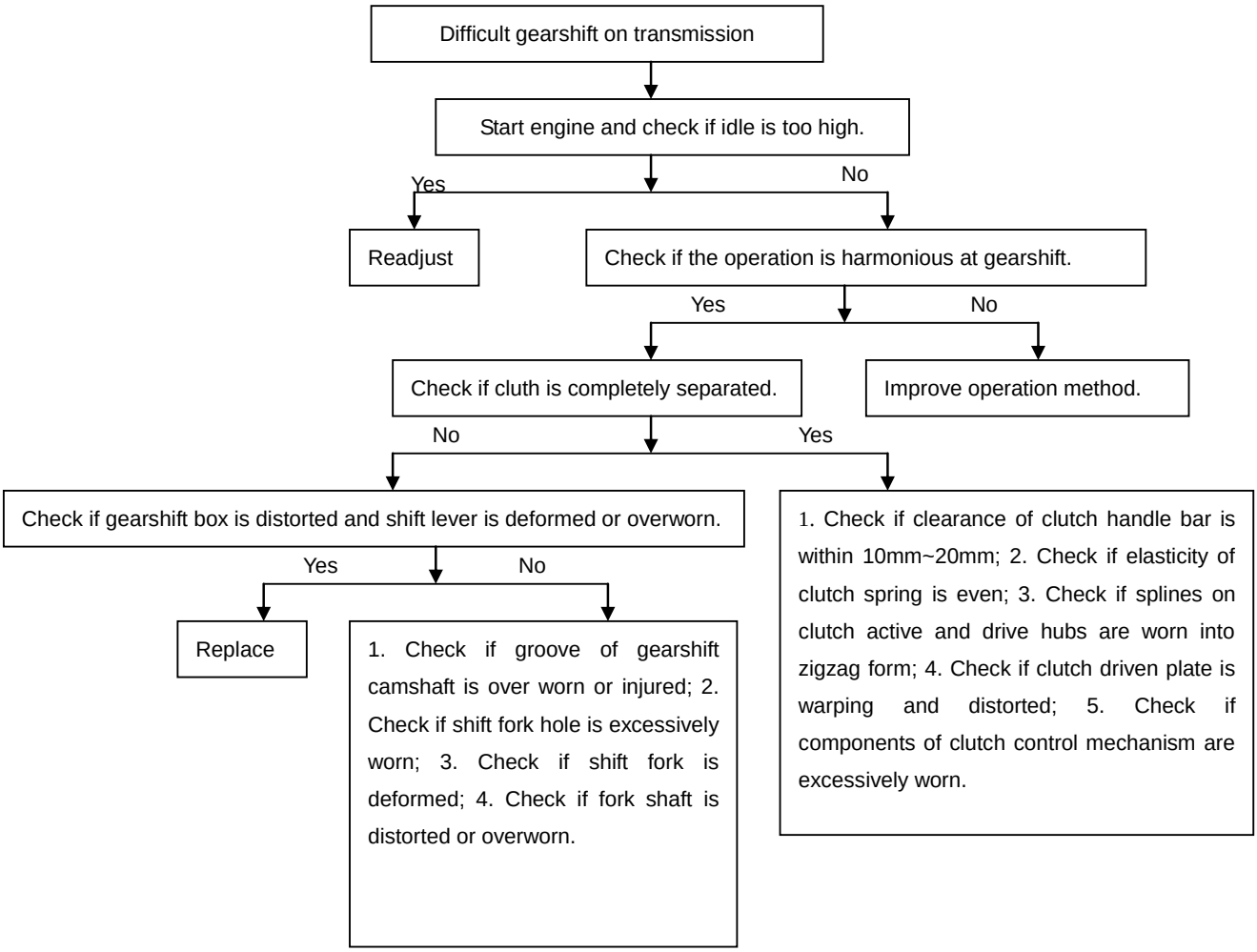
Symptom: 4-stroke engine exhaust muffler gives off blue-white smoke Diagnosis procedures



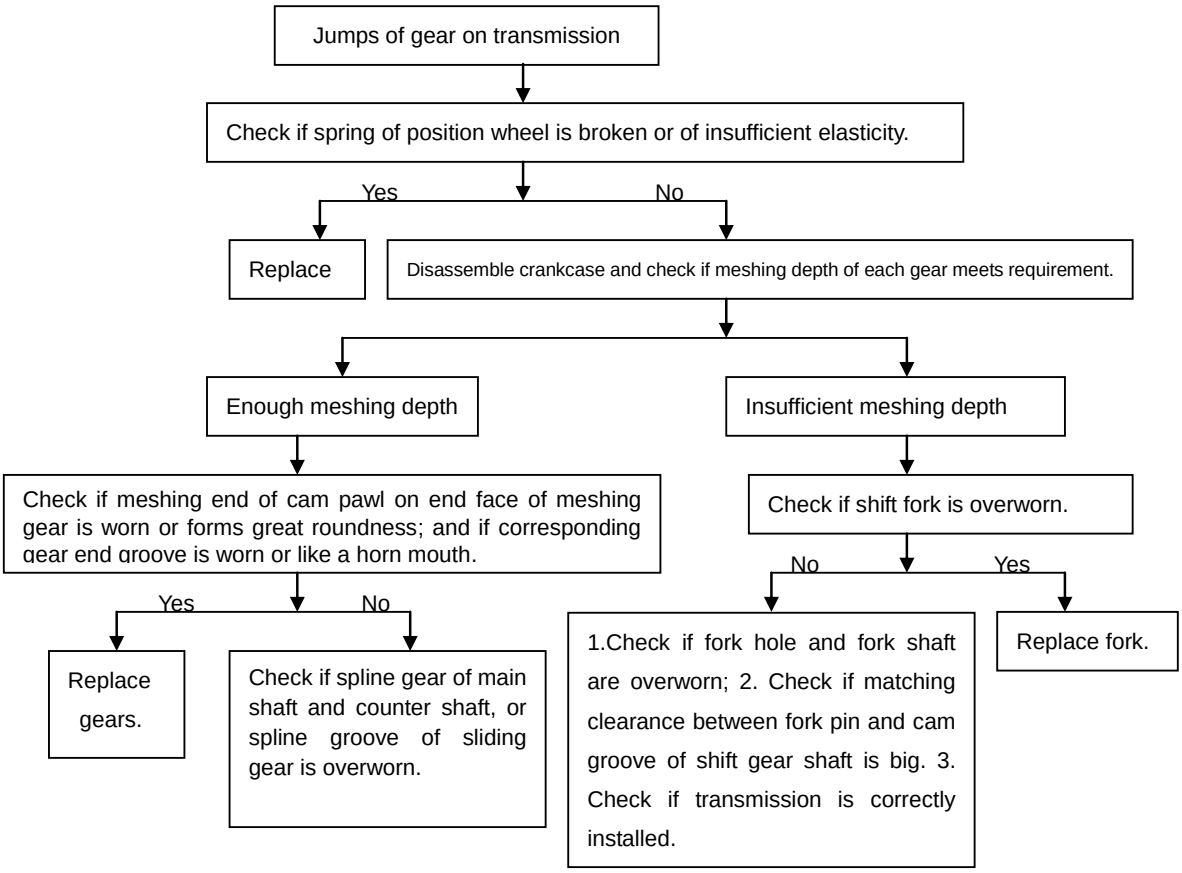
Symptom: Incomplete separation of clutch Diagnosis procedures



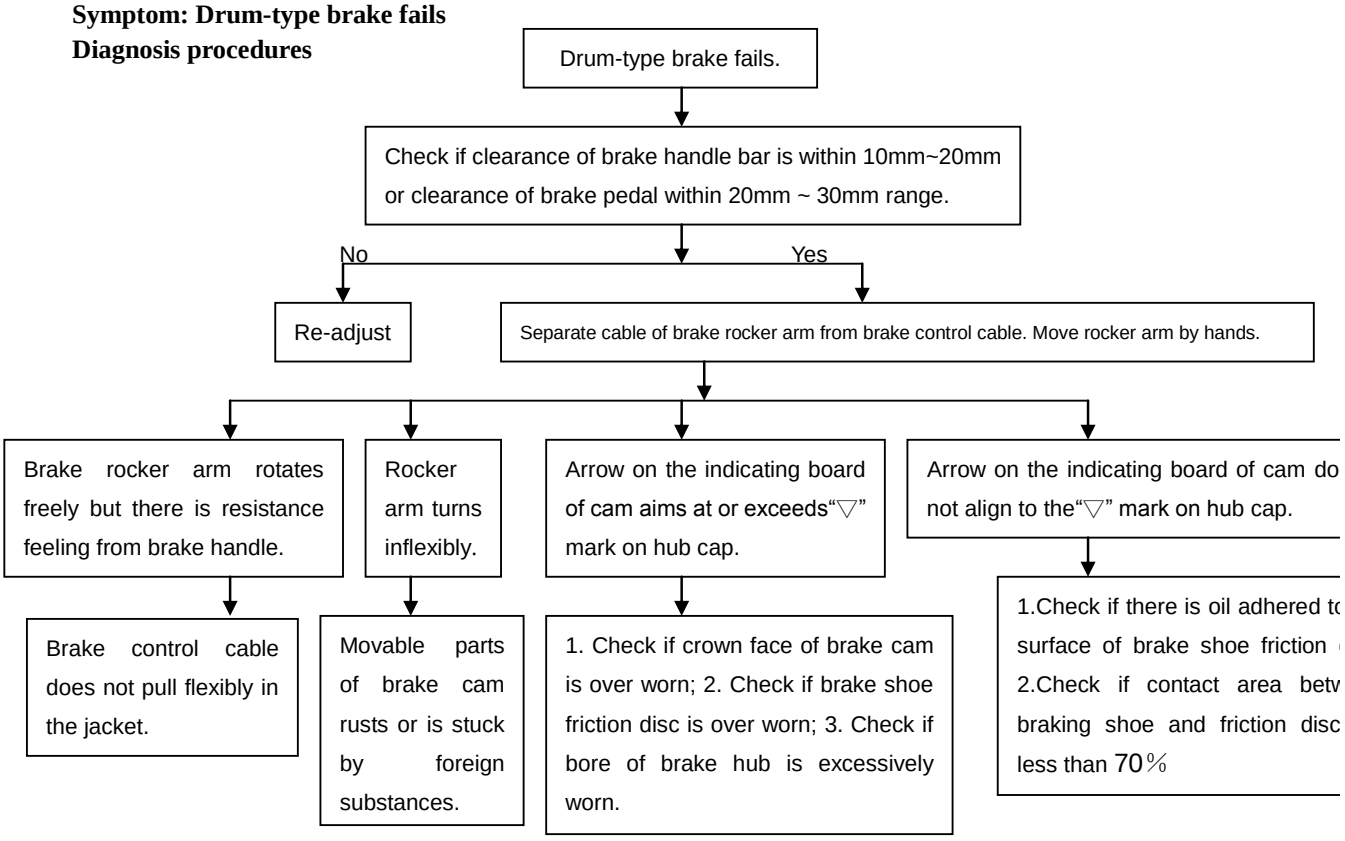
Symptom: Difficult gearshift on transmission Diagnosis procedures



Symptom: Jumps of gear on the transmission Diagnosis procedures

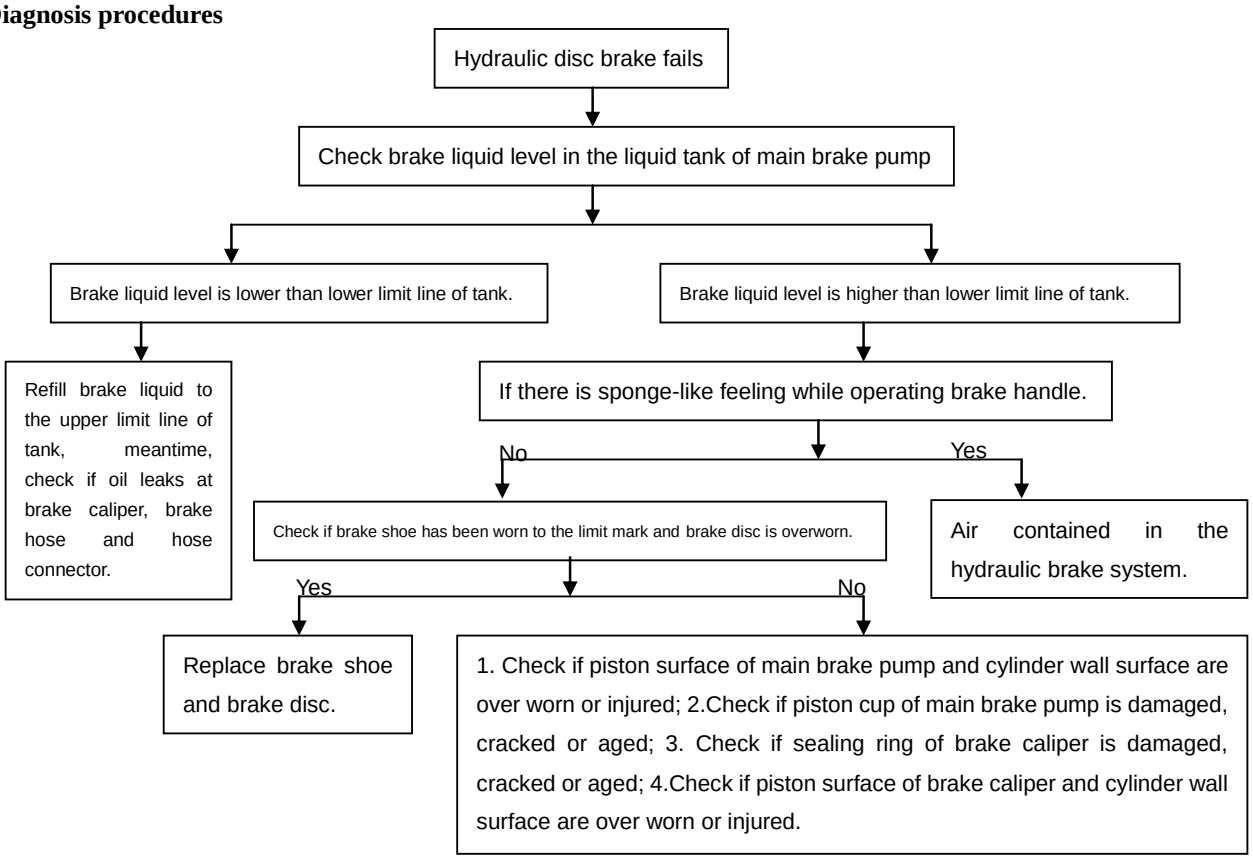


Symptom: Drum-type brake fails
Diagnosis procedures

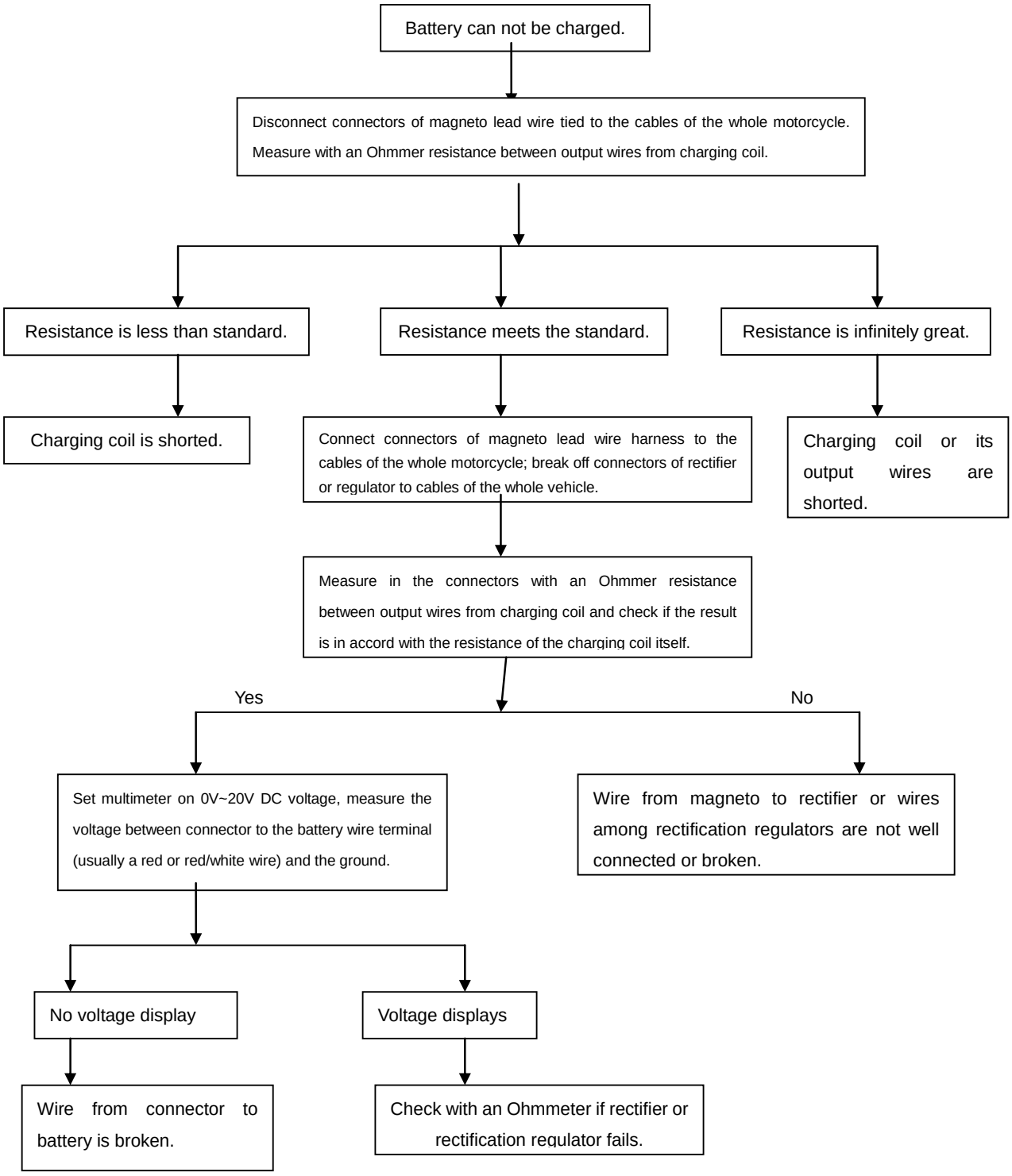


Symptom: Hydraulic disc brake fails

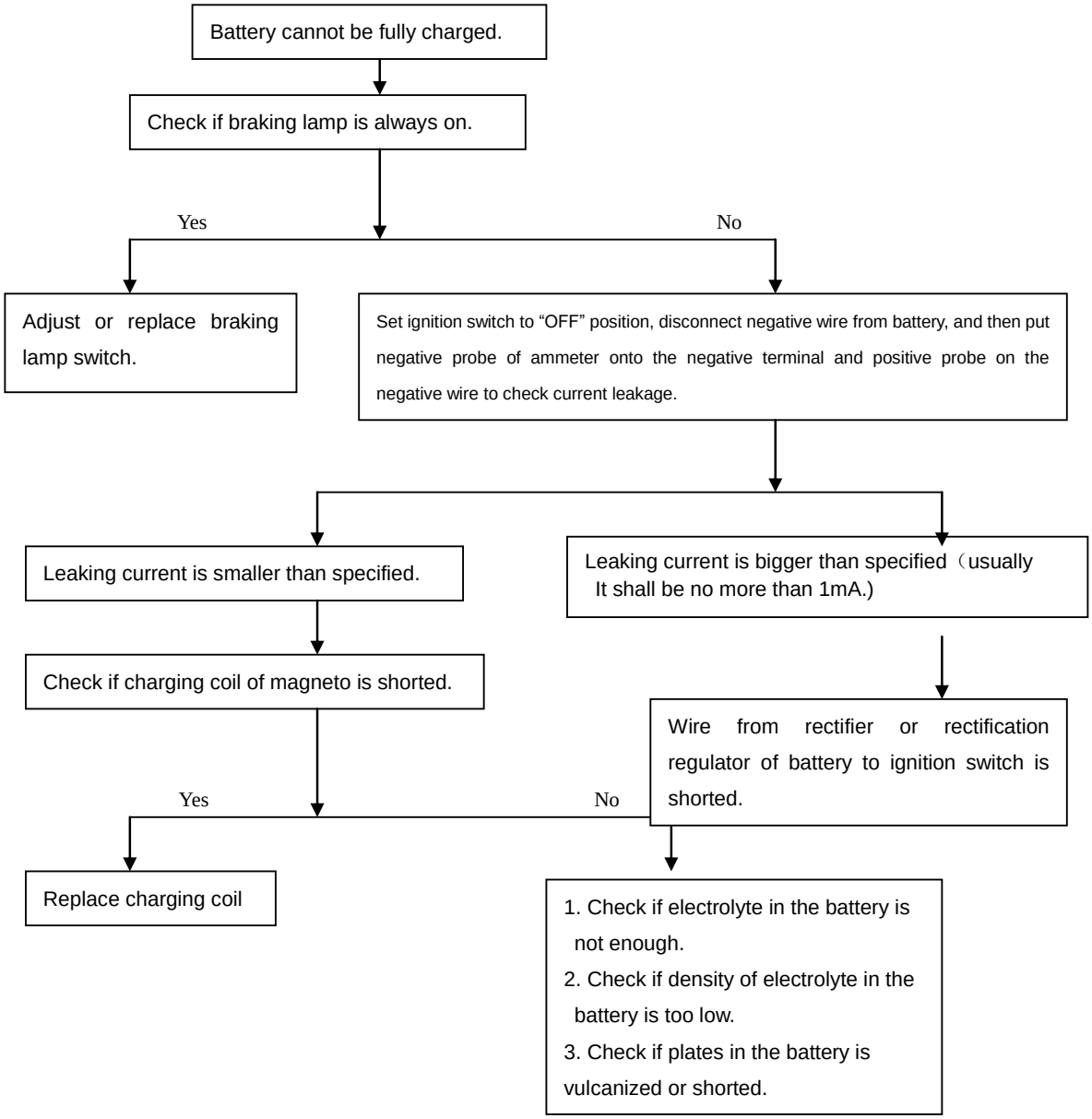
Diagnosis procedures



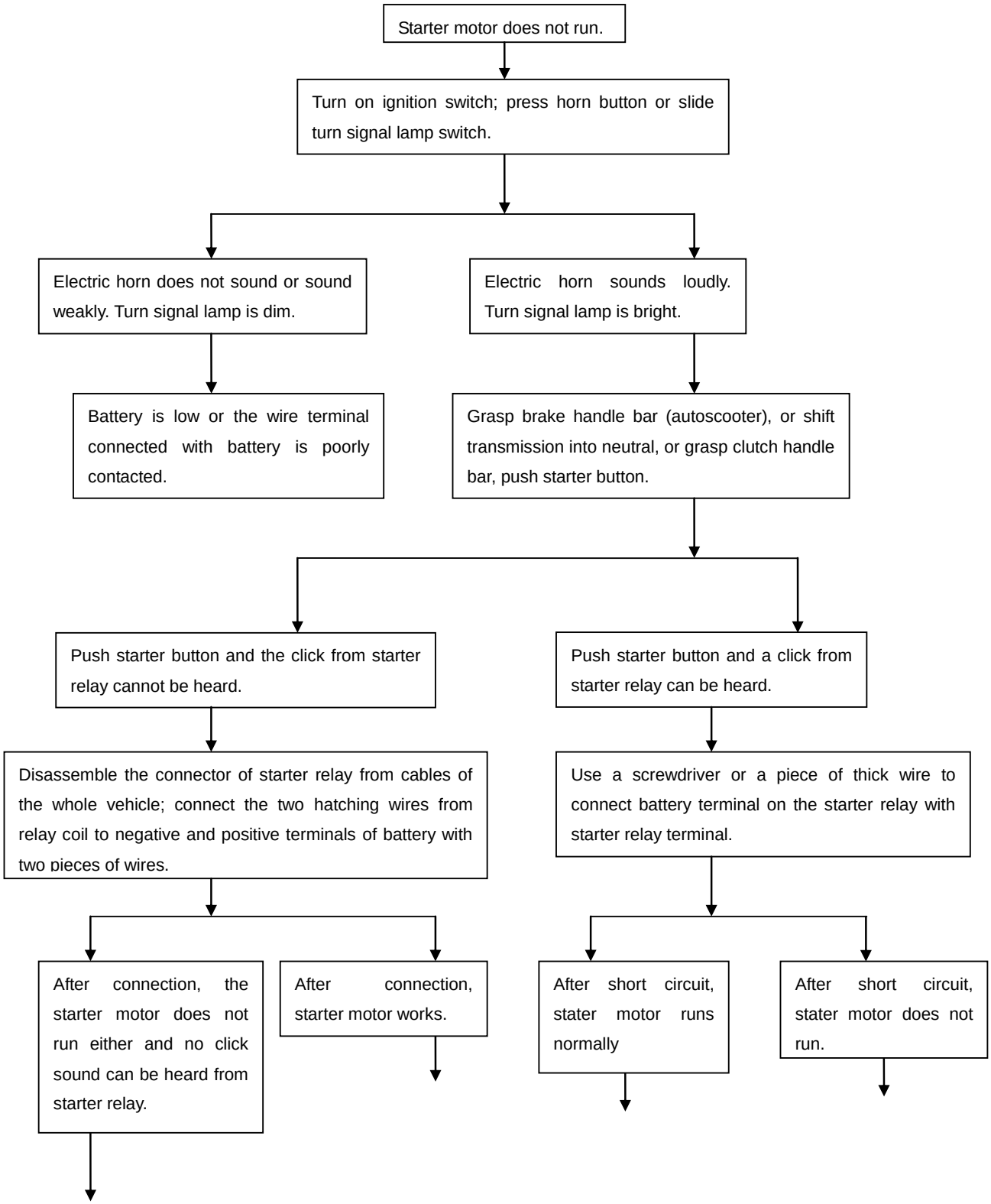
Symptom: Battery can not be charged **Diagnosis procedures**

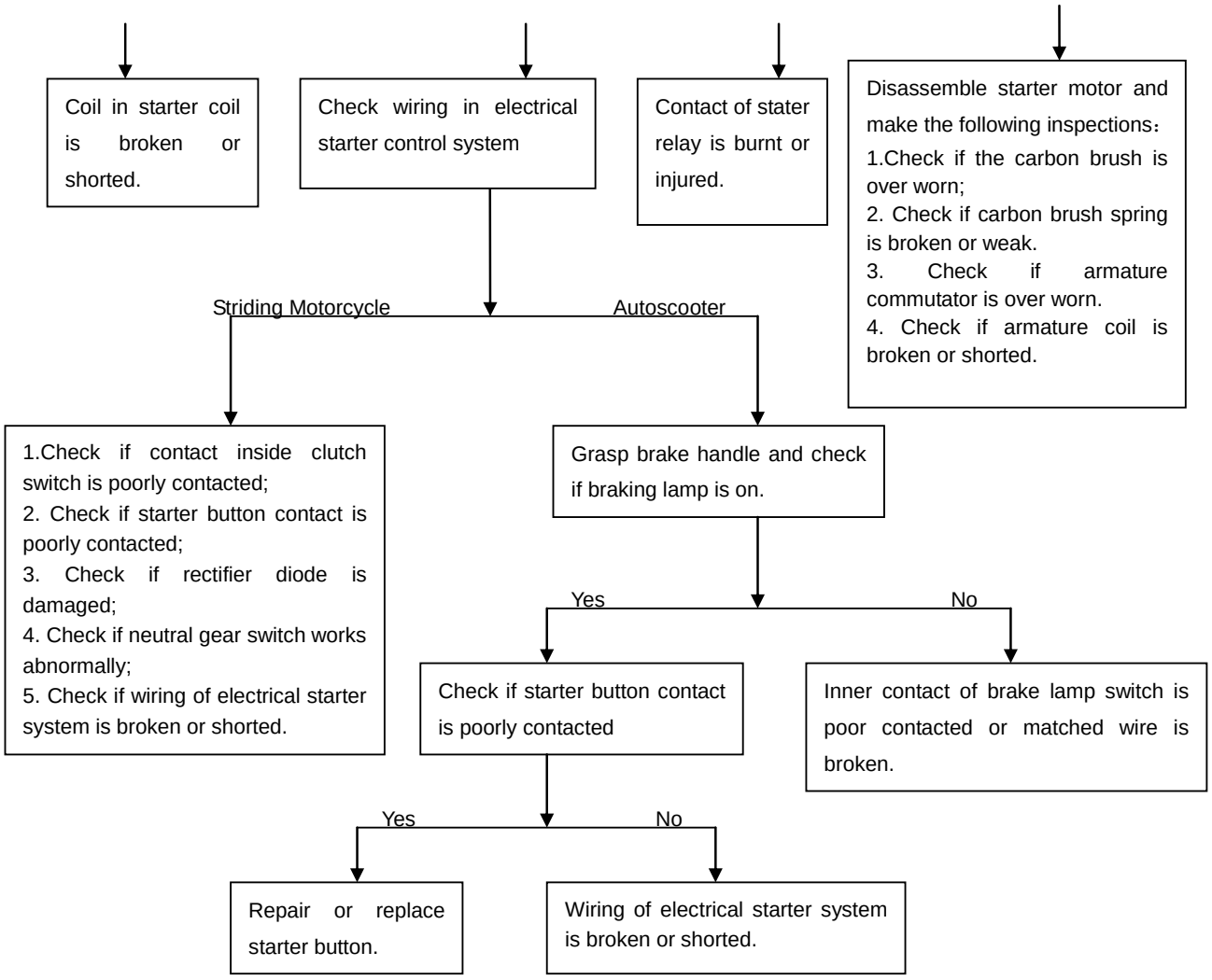


Symptom: Battery cannot be fully charged Diagnosis procedures

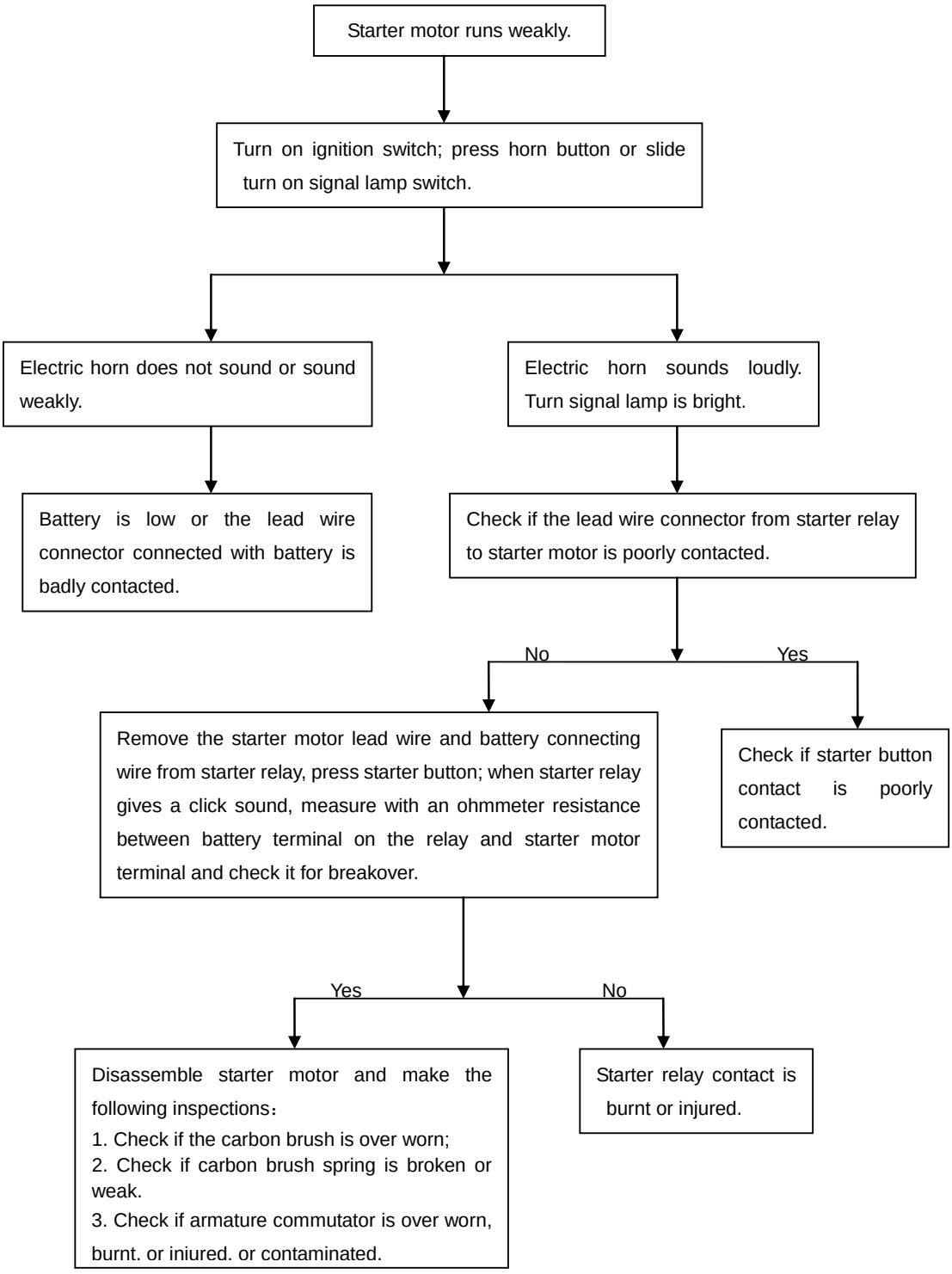


Symptom: Starter motor does not run **Diagnosis procedures**

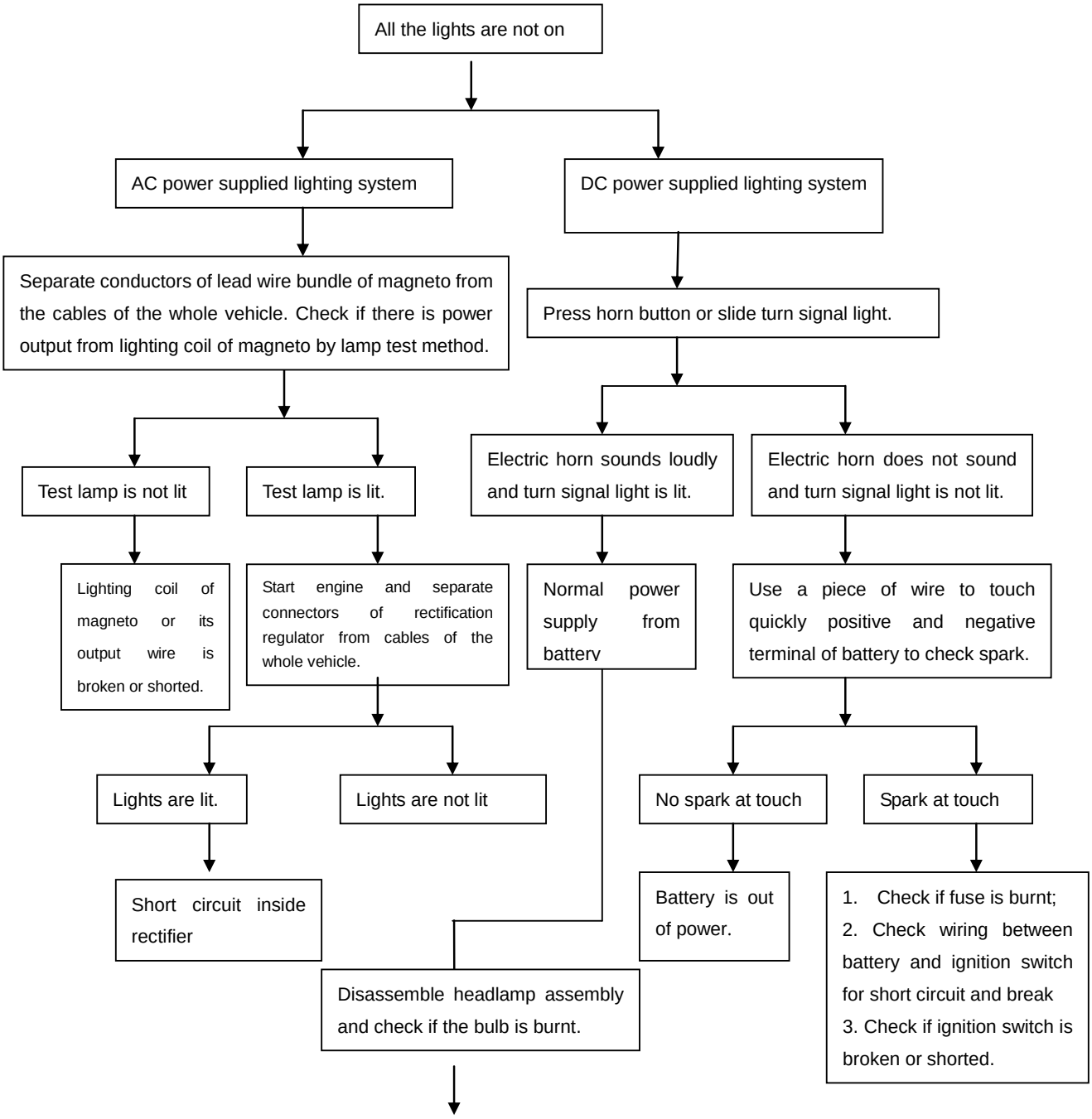


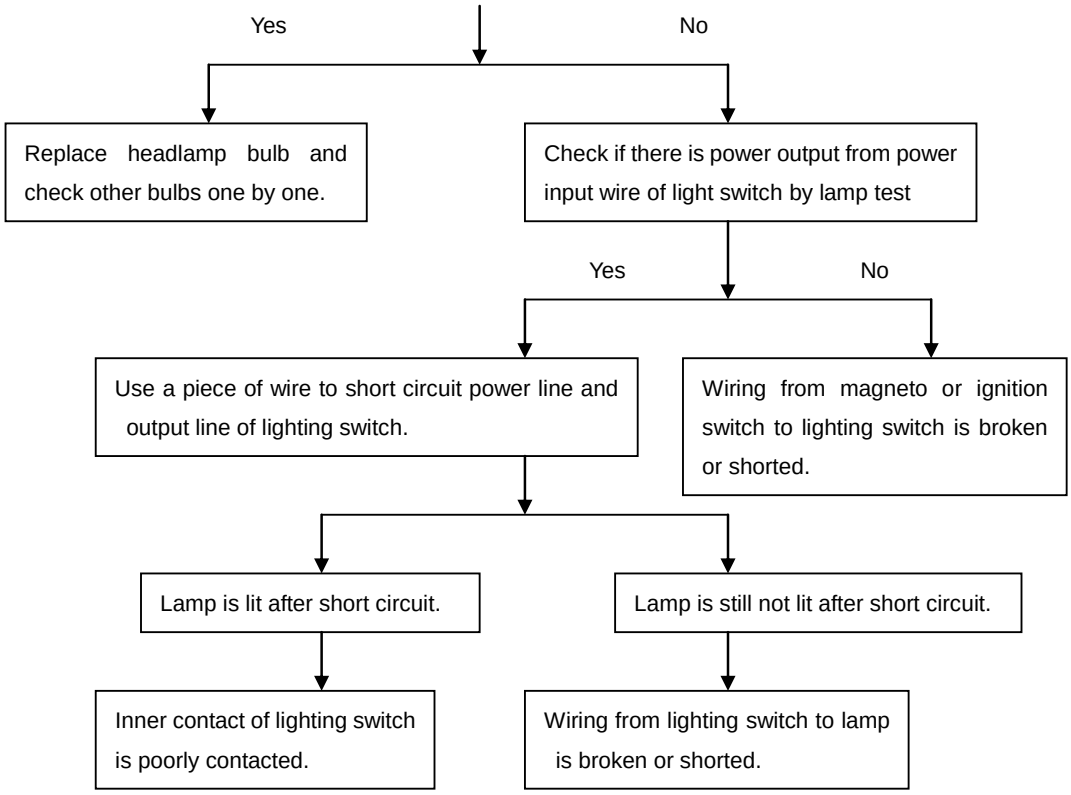


Symptom: Starter motor runs weakly Diagnosis procedures

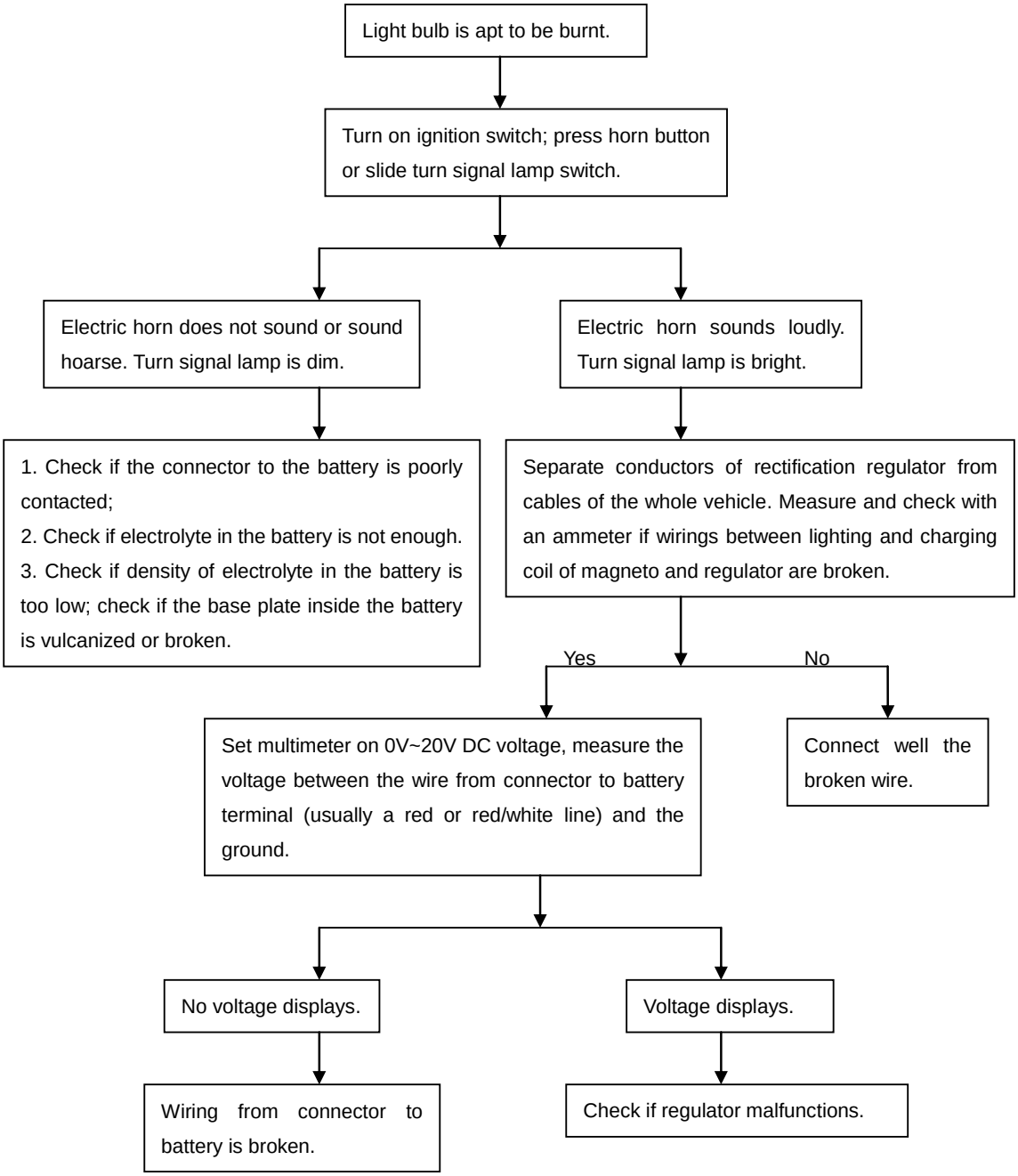


Symptom: All the lights are not on Diagnosis procedures

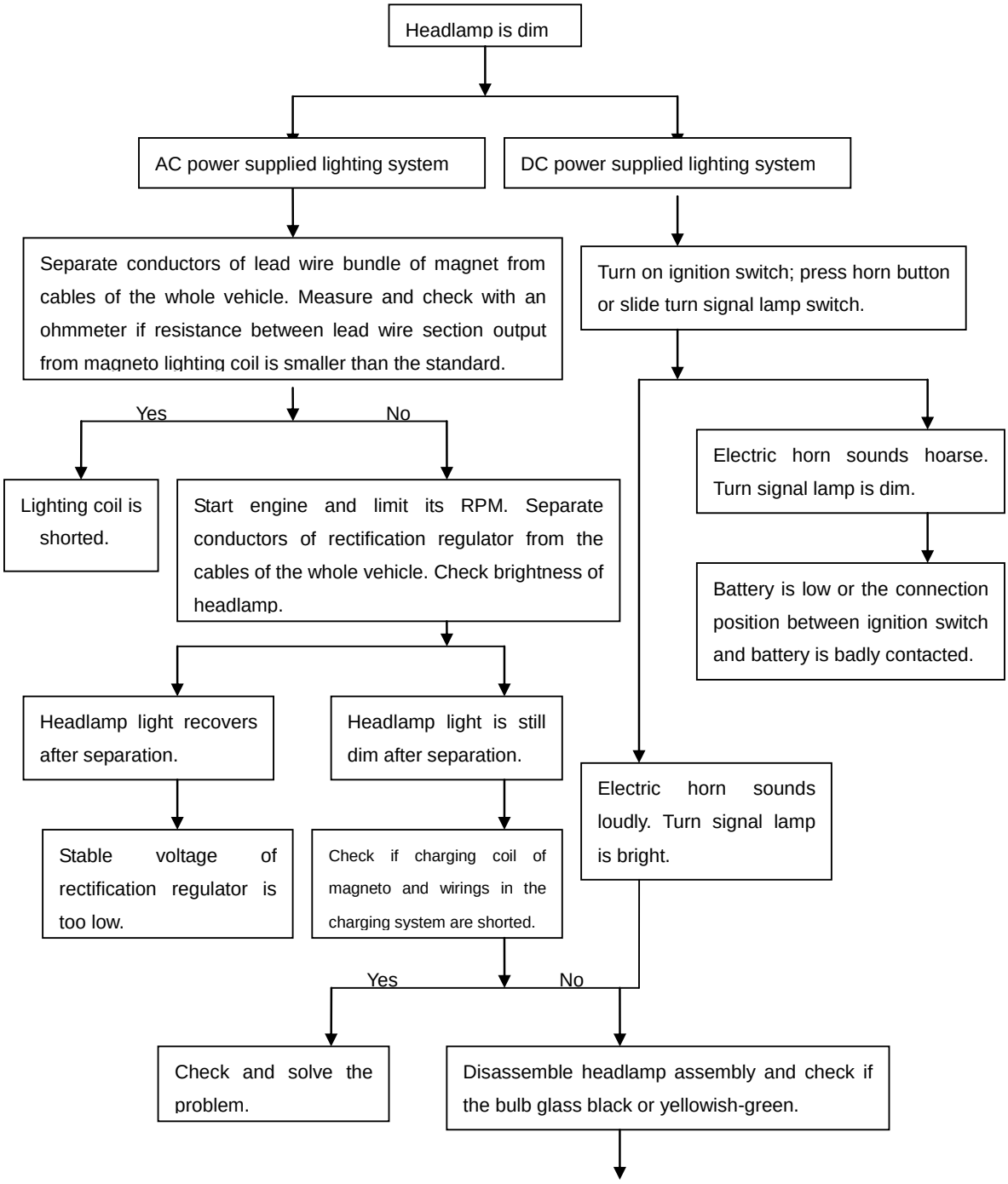


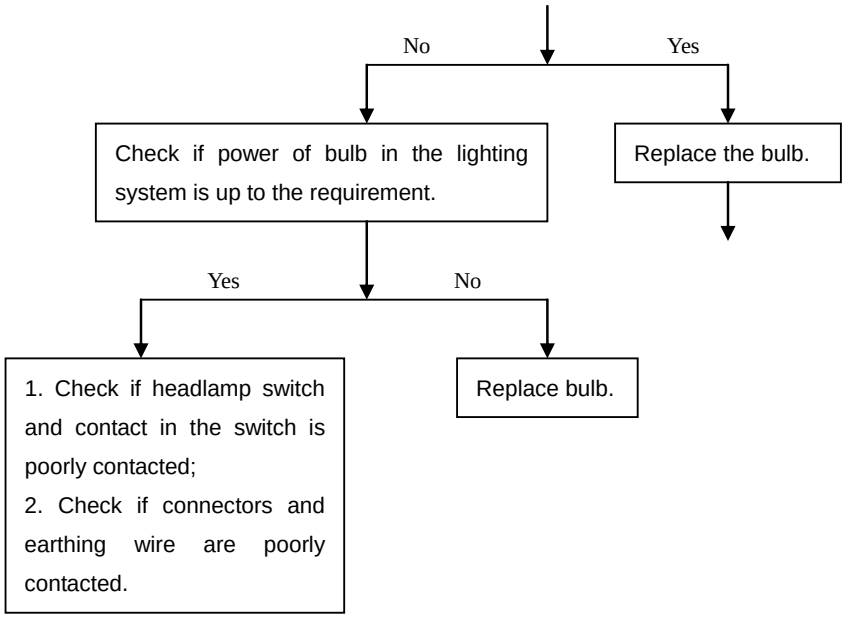


Symptom: Light bulb is apt be burnt Diagnosis procedures

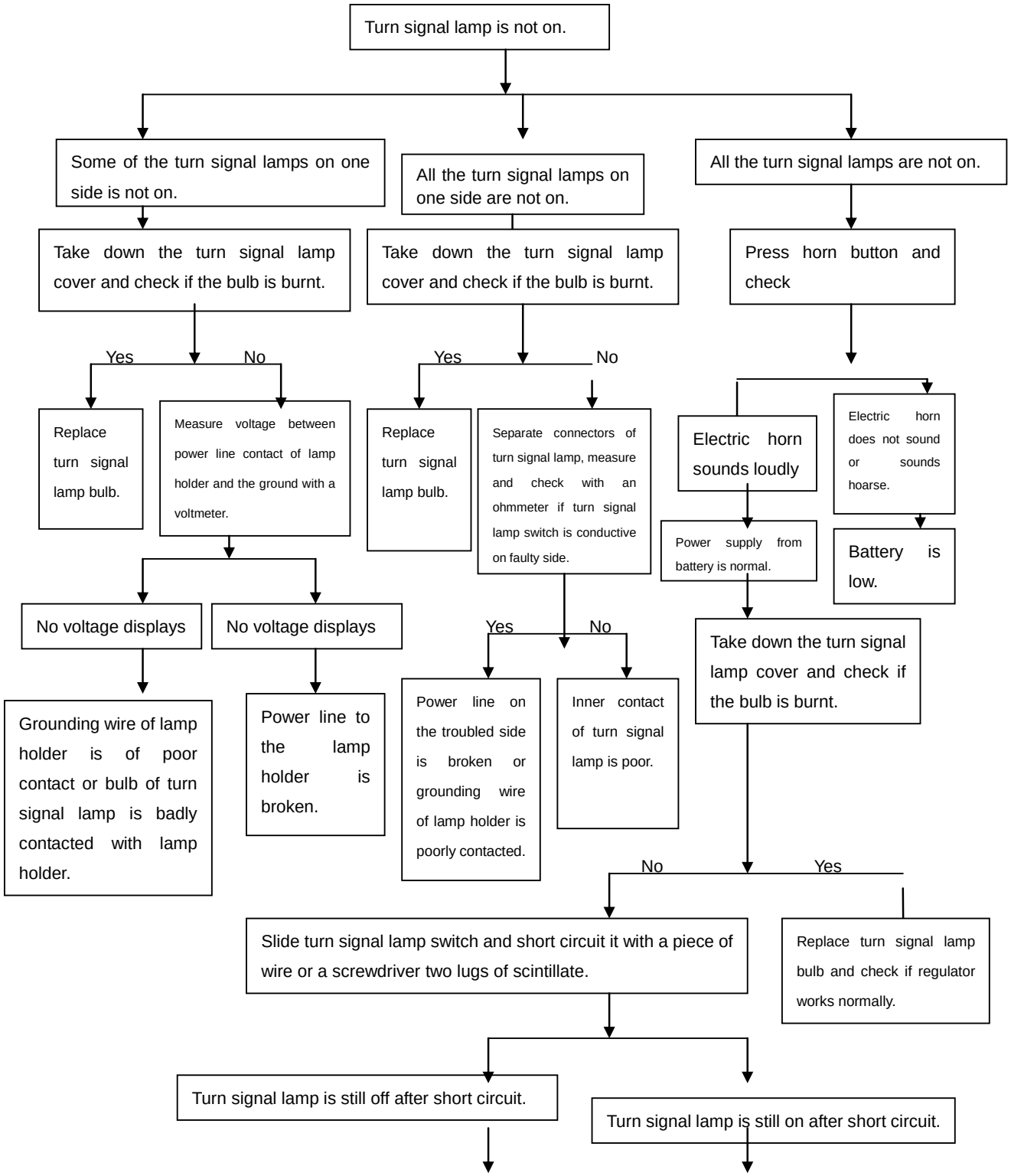


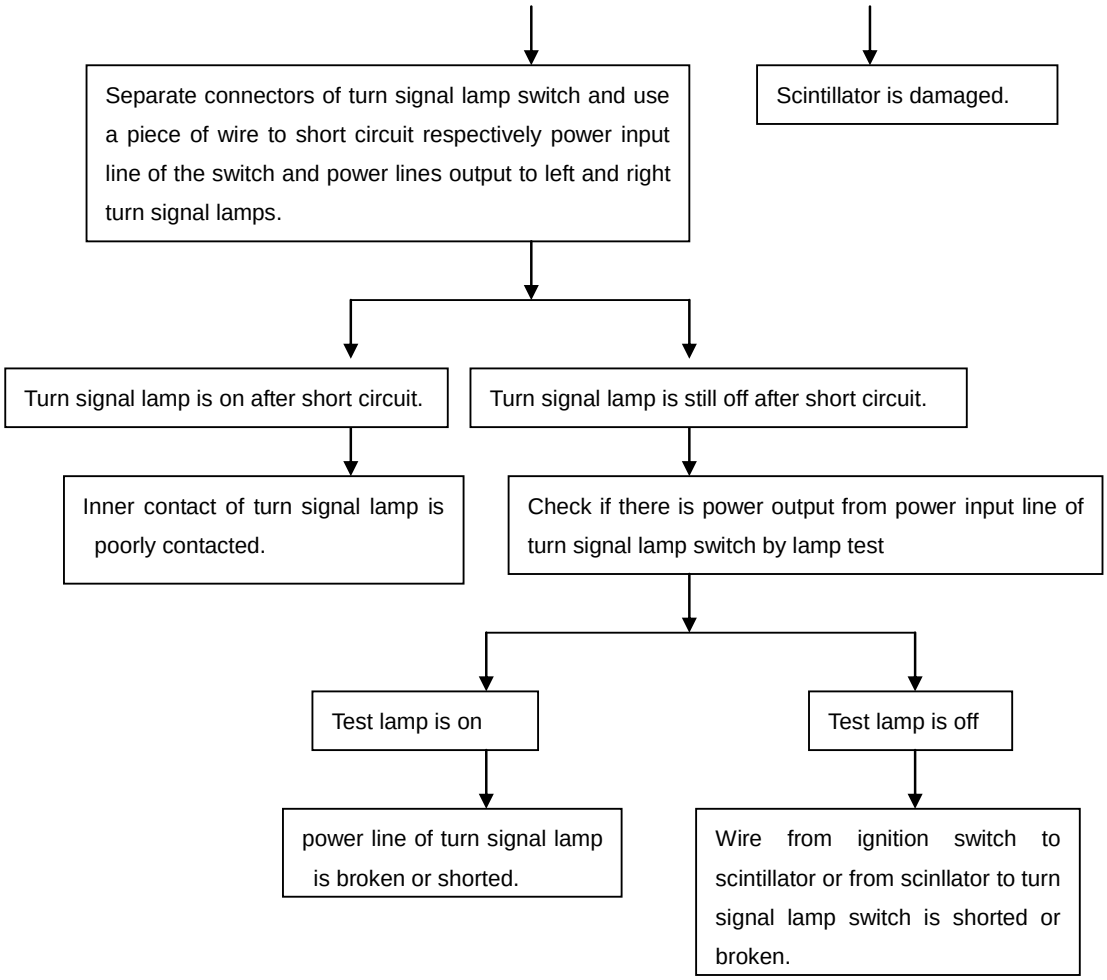
Symptom: Headlamp is dim. Diagnosis procedures



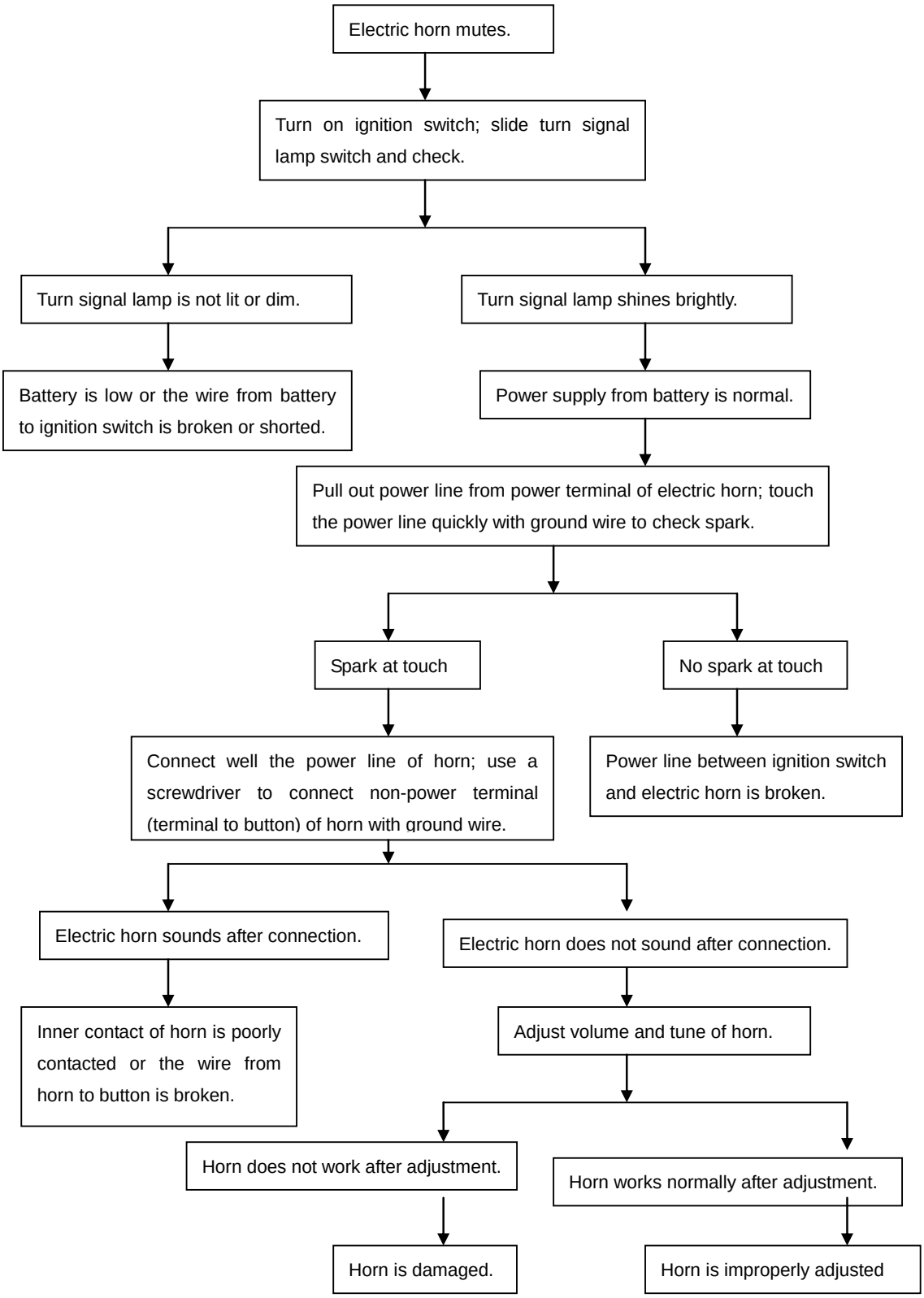


Symptom: Turn signal lamp is off. Diagnosis procedures

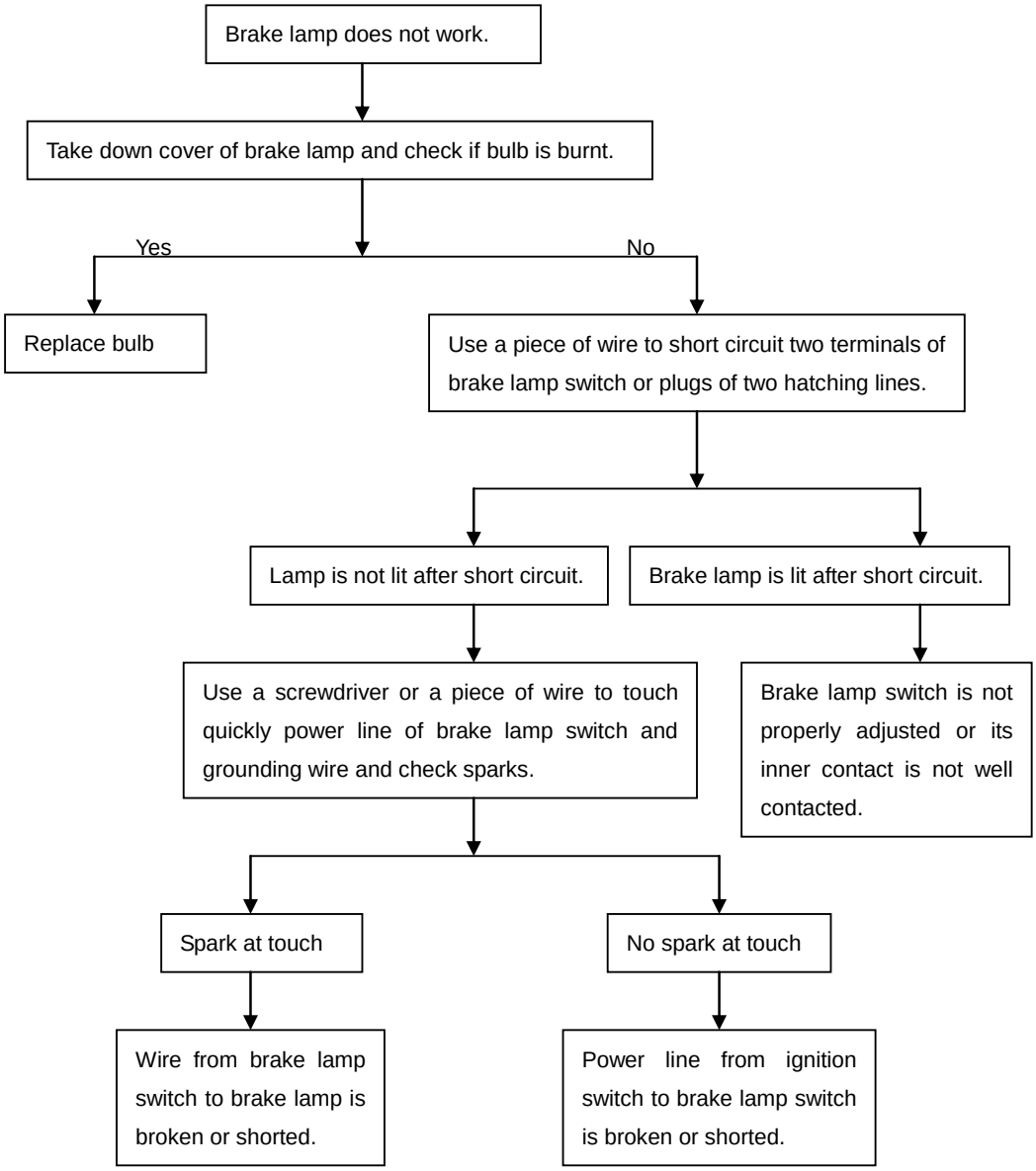




Symptom: Electric horn mutes. **Diagnosis procedures**



Symptom: Brake lamp does not work. Diagnosis procedures



Inspection/Adjustment

Basic data Compression pressure of cylinder

Periodic maintenance schedule chart Engine oil

Engine oil/filter Replacement of engine oil

Steering stem bearing and handlebar fixation Drive chain slackness

Throttle cable adjustment Front/rear brake clearance

Air cleaner Headlamp

Spark plug Clutch

Battery Front/rear suspension system

Carburetor Bolt/nut/fasteners

Ignition timing Tire specification

Wheel rim/tire

Basic Data

General Precautions

Warning!

•Before running the engine, please make sure if the workplace in is well ventilated. You shall never run the engine in an enclosed site. Gas exhausted from the motorcycle contains carbon monoxide, which may lead to loss of consciousness and even death.

• Under certain conditions, gasoline is highly volatile. Work in well-ventilated site. Fire and smoking are strictly forbidden in working sites or gasoline storage places.

Specifications

Engine

Idle speed	1400±100r/min
Spark plug clearance	0.6-0.7mm
Spark plug type	CR9E
Combustion chamber	Spherical
Ignition time（angle of before top dead center）	1500RPM：15℃A/4000RPM：35℃A

Frame

<table>
<tr><td colspan="2">Clearance of front brake handle</td><td colspan="4">10-20mm</td></tr>
<tr><td colspan="2">Clearance of rear brake pedal</td><td colspan="4">20-30mm</td></tr>
<tr><td colspan="2" rowspan="3">Pneumatic pressure unit of tire：Kpa</td><td colspan="3">Specification</td><td>Tire Pressure</td></tr>
<tr><td rowspan="2">QJ200-2A</td><td>Front wheel</td><td>100/80-17</td><td>190±10kPa</td></tr>
<tr><td>Rear wheel</td><td>130/70-17</td><td>210±10kPa</td></tr>
<tr><td>Torque</td><td>Rear wheel locknut</td><td colspan="3">85-98 N·m</td></tr>
</table>

Periodic maintenance schedule chart

	Mileage and interval / Items	Every 300 KM	Every 1000KM	Every 3000 KM	Every 6000KM	Every 12000 KM	Every 14500 KM	Tools
		New Vehicle	One month	three months	Six months	Twelve months	Fifteen months	
*	Air cleaner	I		C	C	R	C	Common tool
*	Gasoline filter	I			I	R		Common tool
*	Engine oil filter	C			C	C		Common tool
	Engine oil Replacement	R	Replace every 5000KM.					Common tool
	Tire pressure	I	I	I	I	I	I	Tire gauge, air inflator
	Battery inspection	I	I	I	I	I	I	Densimeter, multimeter
	Actuating clearance inspection	I	I	I	I	I	I	Common tool
	Inspection of steering handle bar looseness	I			I	I		Common tool
	Shock absorber actuating inspection	I			I	I		Common tool
	Inspection of looseness of bolts at all positions	I	I	I	I	I	I	Torque wrench
	Check if gearbox leaks oil	I	I	I	I	I	I	Common tool
*	Spark plug inspection and replacement	I		I	R	R	I	Common tool
	Lubrication of all the places on the vehicle				L	L		Lubricant injector
	Muffler	I	I	I	I	I	I	Common tool
*	Ignition timing	I	I	I	I	I	I	Timing light
*	Carburetor	A	I	A	A	A	A	Tachometer, CO HC analyzer
*	Idle exhaust gas inspection	A	I	A	A	A	A	
*	Throttle inspection	I		I	I	I	I	Common tool
	Fuel hose inspection	I		I	I	I	I	Common tool
	Lamps, instrument and electric apparatus	I	I	I	I	I	I	Visual multimeter
	Main stand and side stand	I			I	I		Common tool
	Shock absorber			I	I	I	I	Common tool
*	Torque of engine bolt	I		I	I	I	I	Torque wrench
	Front/rear brake			I	I	I	I	Common tool
	Drive chain		I	I	I	I	A	Common tool
	Clutch			I	I	I	I	Common tool

*	Valve		I	I	I	I	I	Feeler gauge

Expected Inspection

1	Ignition system—-perform maintenance inspection on obvious and continuous ignition malfunctions, engine on fire, overheated back burning and others.
2	Carbon deposit removal—-obvious underpower, get rid of carbon deposited at cylinder head, piston head and air exhaust system.
3	Piston and cylinder—-When cylinder is over worn or stuck, please replace it.

Please go to your local Qianjiang Motorcycle dealer periodically for inspection and adjustment to keep your vehicle in best conditions.

In above table, monthly 1000km travel is employed as reference.

I— Inspect A—Adjust R—Replace C—Clean L—Lubricate

Note： 1.“*” for items involved in exhaust gas, which meets regulations of China Environmental Protection Agency. Normal maintenance shall be performed according to specifications on the user’s manual; unauthorized repair and adjustment are forbidden. We will not be responsible for the results.

2. You shall clean more frequently the air cleaner to extend its service life when your motorcycle is used on sand-gravel roads or in severely polluted environment.

3. More frequent servicing may be required when the motorcycle is often driven at a high speed or travels a long distance.

Engine oil/Oil filter

Engine oil level

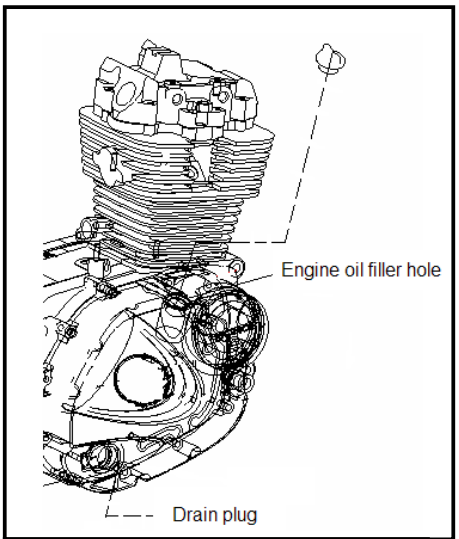
***Attention**

• Motorcycle shall stand on the flat ground while checking engine oil level.

•Inspect engine oil level when the engine has run for 2~3mintues and stopped for 2~3minutes.

Check engine oil level.

When the engine oil level sensor alarms, refill engine oil to its upper limit.



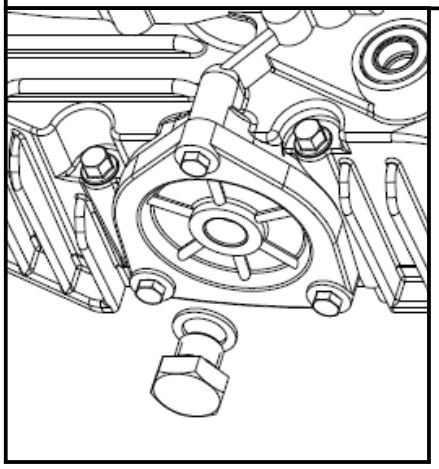
Engine oil replacement

***Attention**

When the engine is warm, replace engine oil. The oil can flow out easily.

Shut down the engine.

Screw off the drain plug at the bottom of crankcase to drain engine oil.

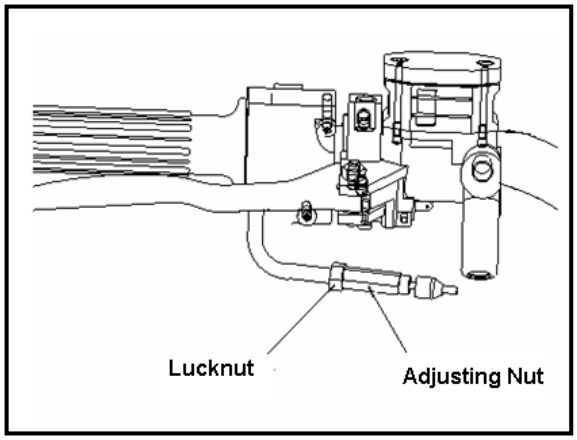


When the engine oil is completely drained, put back cleaned drain plug and sealing ring.
Refill engine oil to specified level.
Check if there is engine oil leakage. Start the engine and run the engine on idle for a few minutes.
Check engine oil level again.

Throttle cable adjustment

***Attention**

Adjust properly engine idle before adjustment of throttle cable clearance.



Check clearance of throttle cable, clearance shall be 3-5mm.
If the clearance is not up to the specified, adjust it.
Adjust clearance of throttle cable.

Procedures:

Loosen locknut.

Rotate adjusting nut inward or outward till it achieves specified clearance.

Rotate inward to increase clearance; rotate outward to reduce clearance.

Tighten locknut.

When the clearance is adjusted, rotate handle leftward and rightward to make sure idle of engine does not change.

Air Cleaner

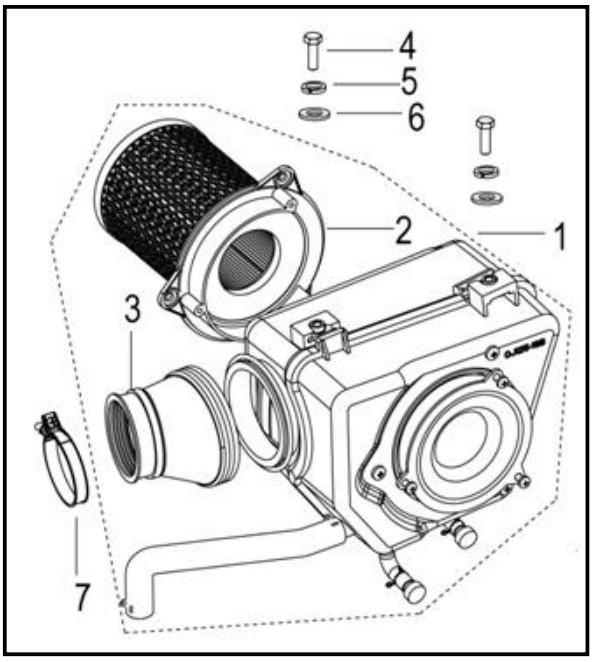
Replace air cleaner.

Take down the left protecting plate.
Remove air cleaner cover.
Take out filter element and guide of air cleaner.

Check if filter element is polluted or injured. If necessary, replace it with a new one.

Replacing Time

If driving under dusty condition or in rainy days frequently, replace the air cleaner earlier.



*** Attention**

While removing filter element of air cleaner, please do not run the engine, in case unfiltered air comes into the engine, which may result in fast wear of some components or damage the engine. On the other hand, rotation of engine without filter element may affect the carburetor and the carburetor will not work normally afterwards, which may result in overheated engine. Install filter element guide, filter element, air cleaner housing cover, stop valve assembly and left protecting plate.

Spark plug

Disconnect lead wire of spark plug cap.

Remove spark plug with a spark plug wrench or equivalent tool.

Inspection

. If the insulator is cracked or damaged;

. If electrodes are worn;

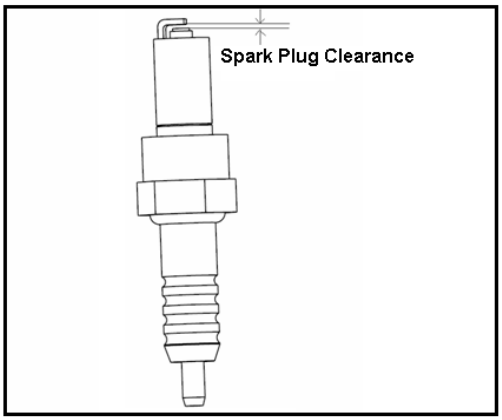
. Combustion condition and color

—Light grey color means excellent combustion condition.

—Pale color indicates that ignition system fails or lean fuel/air mixture.

—Wet appearing or dark carbon deposition means higher fuel/air mixture.

If the above-mentioned appears, please remove them with spark plug cleaner or wire brush. If necessary, replace the spark plug.



Visually inspect the spark plug.

If the insulator is cracked or worn, please replace it with a new one.

Spark plug clearance inspection.

Clearance: 0.6-0.7mm

*** Attention**

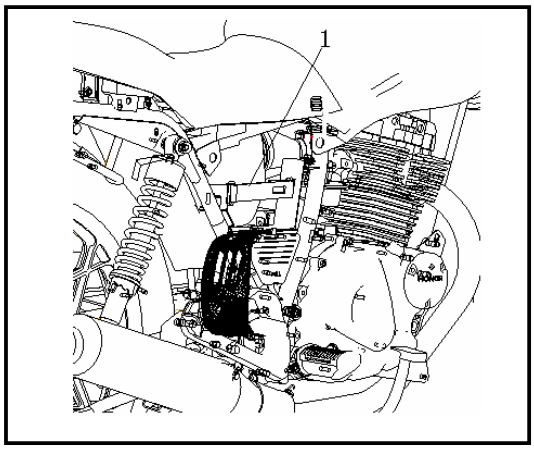
Reinstall the spark plug into the cylinder head and tighten it with the specified torque.

Tightening torque：18N.m

Screw the spark plug into the cylinder head first with a hand, and then tighten it with spark plug wrench.

Battery

Removal

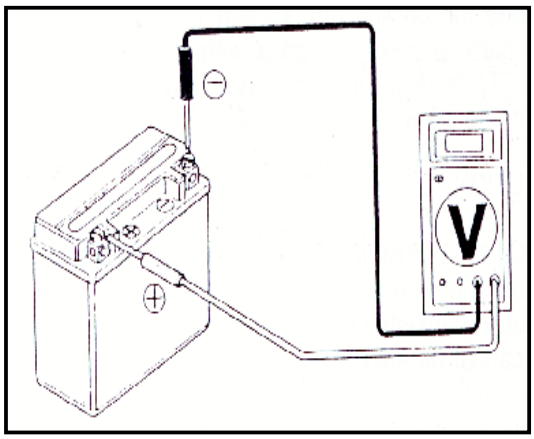


Remove the seat cushion and take down the right protecting plate.
Remove the battery from the battery case（1）.
Disconnect the battery negative (-) lead wire first and then the positive (+) lead wire.
Take out the battery.

Warning!
During positive lead wire disconnection, be sure to prevent the tools being used from touching the frame; or it will result in short circuit sparks, which may ignite gasoline and damage battery. It is dangerous!

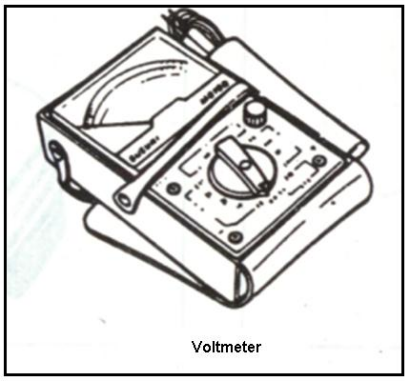
Install the battery in reverse order of removal.

Warning!
To avoid short circuit, please connect positive (+) lead wire first and then the negative (-) lead wire.



Battery charging (circuit voltage) inspection

Open the seat cushion and take down the right protecting plate.
Take out the battery from the battery case.
Disconnect the battery negative (-) lead wire first and then the positive (+) lead wire.
Remove the battery.



Measure the battery voltage between terminals.
Fully charged: 13.1V
Undercharge: 12.3V（battery not work for one hour）

*** Attention**
Voltmeter shall be used for charging-state inspection.

Charging

Connection method: Positive pole of battery charger is connected to battery positive lead wire; Negative pole of battery charger is connected to battery negative lead wire.

Warning!

• Battery shall be away from fire source.

• Shut off charger switch first before or after charging in case sparks may be generated at connection parts, which may result in explosion.

• During charging, please take the current time labeled on the battery as the basic time.

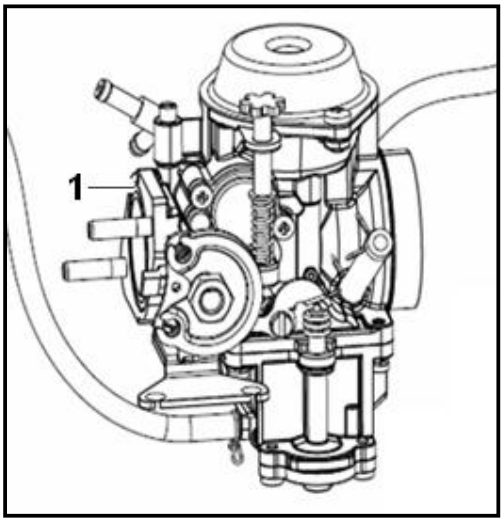
*** Attention**

• Battery quick charging is not recommended except in case of emergency.

• After charging, wait at least 30minutes and then measure the battery voltage.

Charging current: Standard: 0.3A
Quick charging: 3.0A
Charging time: Standard: 10-15hours
Quick charging: 30minutes
After completion of charging: open circuit voltage: higher than 12.8V

Carburetor



Idle speed adjustment

***Attention**

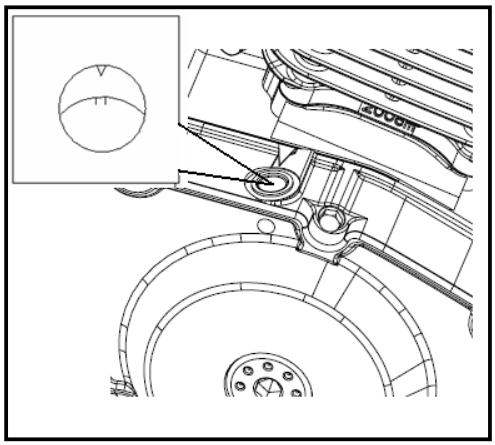
Perform idle speed adjustment when the engine is warm.

Warm up the engine and then adjust idle speed.
Run the engine and connect engine tachometer.
Adjust the throttle cable lock-screw to specified RPM.

Idle speed RPM：1400±100rpm/min

If idle speed RPM is unsteady, or idle speed is not smooth when the vehicle is gently accelerated, adjust idle speed and adjust screws again.

Ignition timing



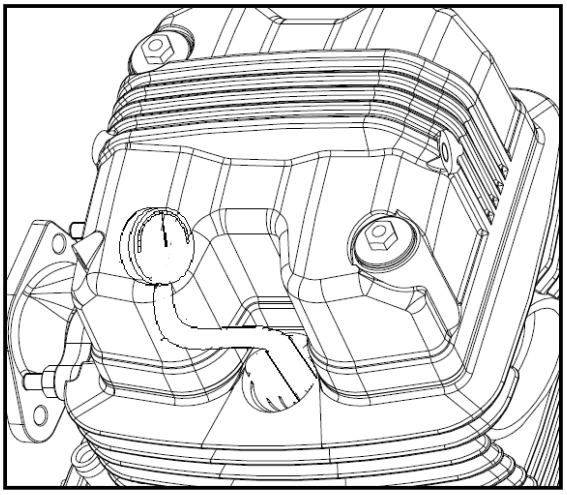
***Attention**

Inspect ignition system when the ignition timing is incorrect.

Warm up the engine for 3~5minutes.

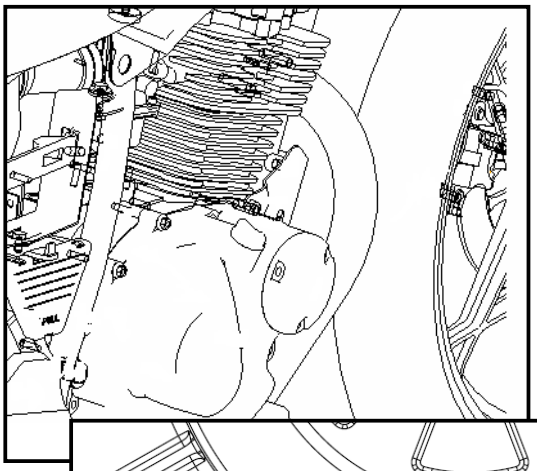
Stop the engine and connect the timing lamp to lead wire of spark plug.
Remove timing hole cap.
Start engine and idle it.
Inspect ignition timing.
If symbol “F” aligns with the mark on the right crankcase, it indicates that the ignition timing is correct.
Increase engine speed and check if Symbol “F” begins to move.

Compression pressure of cylinder



Warm up engine.
Insert the pressure gauge.
Turn choke valve to its full open position.
Set throttle handle to its full open position and kick start the engine.
Compression pressure of cylinder：1～1.2mpa

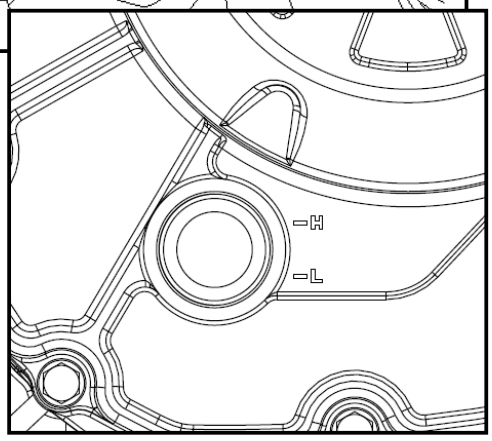
*** Attention**
Start the engine till reading of pressure gauge does not rise.
Causes for low pressure:
. Valve improperly adjusted
. Valve leaks air
. Worn piston ring or cylinder
Causes for high pressure:
. Carbon deposition in combustion chamber or on piston.
Stop engine and remove spark plug/ spark plug cap.



Engine oil

Engine oil level inspection

*** Attention**
During engine oil inspection, please do not tighten engine dipstick.
When inspect oil level, stop the motorcycle on the flat ground with its middle stand and stand the vehicle vertically.
When engine oil is consumed continually, oil level shall be inspected regularly and refill to proper position if necessary.

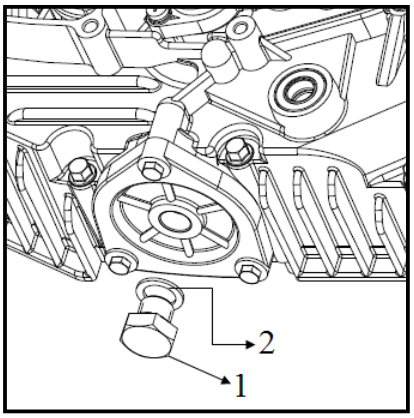


Engine oil volume: 0.8L for oil replacement
1.1L for engine overhaul
If engine oil level is too high, operation of engine and clutch will be affected;
Too low engine oil level will result in overheated engine and

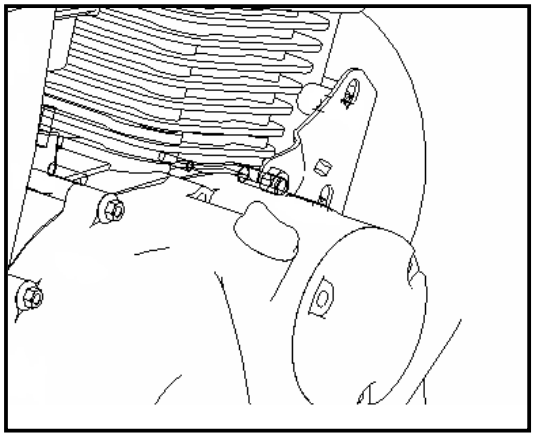
premature component wear.
Refilling engine oil of poor quality or different types or brands will reduce lubrication effects.

When the engine stops, clean dust on the oil level indicator on the right side cover with a piece of clean cloth.
Stand the engine on a horizontal plane and check oil level in the oil level indicator.
If oil level is lower or approaches the lower limit (-L), add recommended oil to the upper limit mark (-H).

Engine oil replacement



Warm up the engine.
Place an oil pan below the engine and remove the drain plug and oil filler plug.
Kick start engine several times to drain thoroughly the engine oil.
After drainage, inspect and clean engine oil filter.
Be sure that filter screen, spring, O ring, drain plug (1) and sealing ring (2) are perfect and then put them back onto the engine.



*** Attention**
Oil should be changed when the engine is warm. Place the engine on the side stand. Make sure all the engine oil is completely and quickly drained.
When the drain plug is removed, engine oil filter and spring will be ejected.

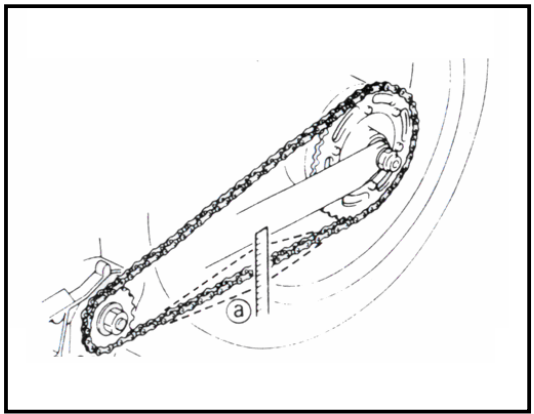
Tighten the drain plug.
Add recommended engine oil into the crankcase.
Install engine oil filler plug. Start the engine and let it run for 2~3minutes at idle.
Stop the engine and check if engine oil level is at upper limit mark in a few minutes.
Stand the engine vertically on the ground to check oil level.
Make sure no oil leaks.

Drive chain slackness

Stand vertically the motorcycle on the flat ground and check drive chain slackness ⓐ.

Drive chain slackness: 10-20mm

If the drive chain does not meet the specification, adjust it.



Adjust drive chain slackness:

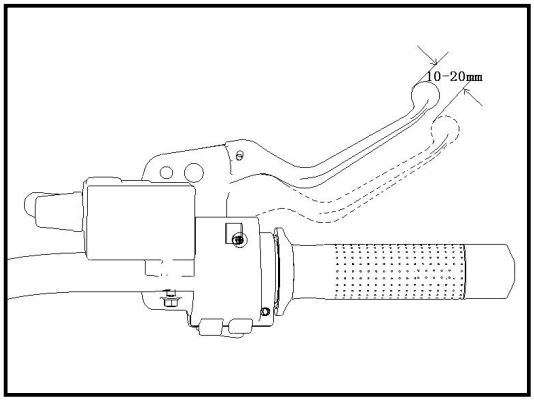
Screw off rear shaft nut and locknuts of adjusters on both drive chains.

Rotate uniformly both adjusters till the drive chains gain normal slackness.

*** Attention**

Do not install new drive chains onto worn sprockets or install worn drive chains onto the new sprockets.

Keep both sprocket and drive chain in good conditions, or newly replaced chain or sprocket will be worn soon.



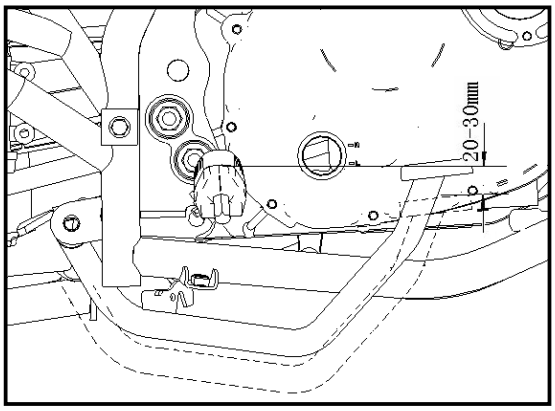
Clearance of front/rear brake

Front brake clearance

Measure clearance of front brake at the tip of front brake handle.

Clearance: 10-20mm

Brake pedal clearance



Measure brake pedal clearance.

Clearance: 20-30mm.

If the clearance measured does not meet the specified value, adjust it.

Adjust clearance of brake pedal.

Screw in or screw out the adjuster.

If the adjuster is screwed in, clearance is increased; if screwed out, clearance is decreased.

Adjust till the clearance is up to the specification.

After adjustment, the brake shall not drag.

Headlamp

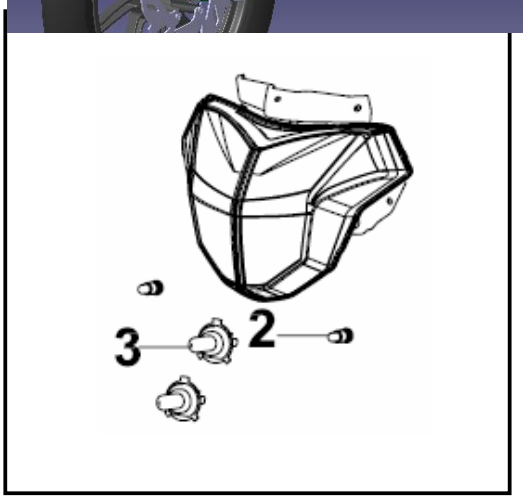
Remove the locknuts of headlamp .
Take down the headlamp.
Pull out connector of headlamp holder and remove the reflector. Release the circlip and take out lamp holder.

*** Attention**
When the bulb is lit, keep you hands and inflammable materials some distance away from it. Lighting bulb is hot, touch it when it cools down.

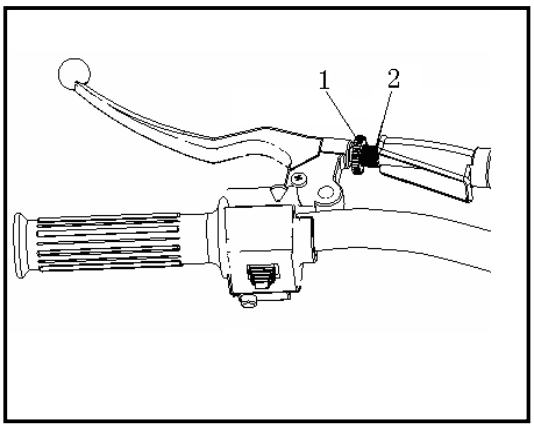
Install a new small bulb (2), a new big bulb (3), lamp holder, and reflector for the headlamp.
Screw tightly the new bulbs into the lamp holder.

Avoid touching bulb glass with your bare hands during installation and avoid staining them with oil, which may affect transparency, service life and luminous flux of bulbs. If oil is adhered to the bulb, clean it with a cloth moistened with alcohol or highly volatile rubber solution.

Install headlamp assembly.



Clutch

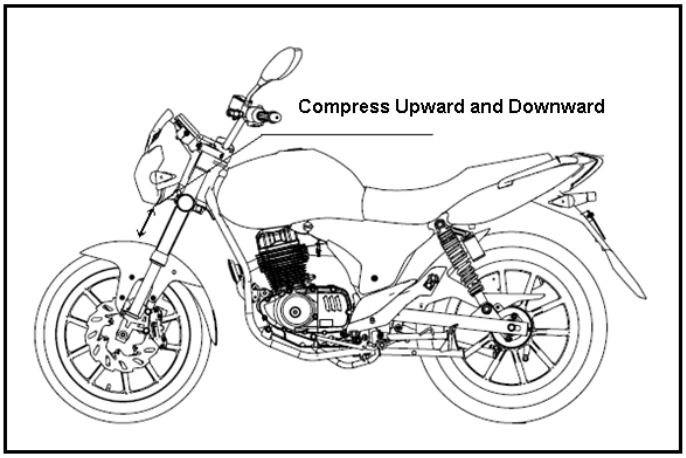


Check clearance of clutch cable.
Clearance: 10-20mm.
Adjust clearance of clutch cable.
First loosen lock nut（1）.
Screw in or screw off adjuster（2）till clearance meets the specified value.
Finally tighten the locknut.

Front/rear suspension system

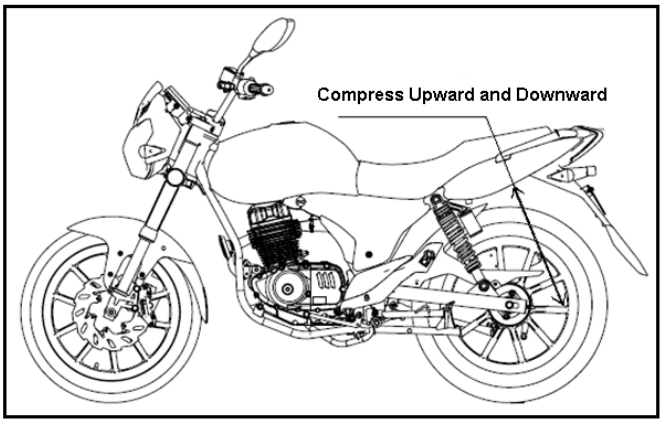
Front suspension

Grasp the front brake handle and compress upward and downward the front shock absorber to check its actuation.
Check if the front shock absorber leaks oil and if the components are loosened.



Rear Suspension

Compress upward and downward the rear shock absorber to check its actuation.
Check if components on the rear shock absorber are loosened or injured.
Lift and support the rear wheel and swing the wheel to check if engine suspension bushing is loosened.

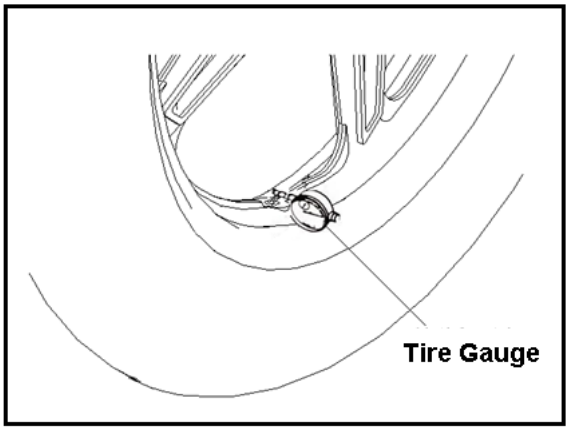


Bolt/nut/fasteners

Inspect if bolts, nuts and fasteners at every part of the motorcycle are loosened.
If it is loosened, tighten it to specified torque.

Wheel rim/tire

Check if there is crack, nails and similar sharp objects, and other injuries on the tyres.



*** Attention**

Measure cold inflation tire pressure.

Specified air pressure Unit：Kpa

Tire specifications			Tyre pressure
QJ200-2A	Front tire	100/80-17	190±10kPa
	Rear tire	130/70-17	210±10kPa

Tire Specifications

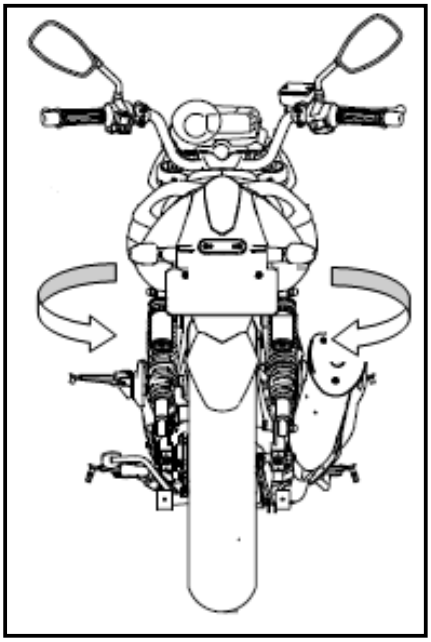
QJ200-2A	Outer tube of front wheel	100/80-17
	Outer tube of rear wheel	130/70-17

Check if locknut of front shaft is loosened.

Check if locknut of rear shaft is loosened.

If loosened, tighten it to specified torque.

Tightening torque：Rear wheel lock nut 85-98 N·m



Steering stem bearing and handlebar fixation

Move left and right the handlebar and check if lead wires disturb it.

Rotate front wheel and confirm the handlebar can move smoothly.

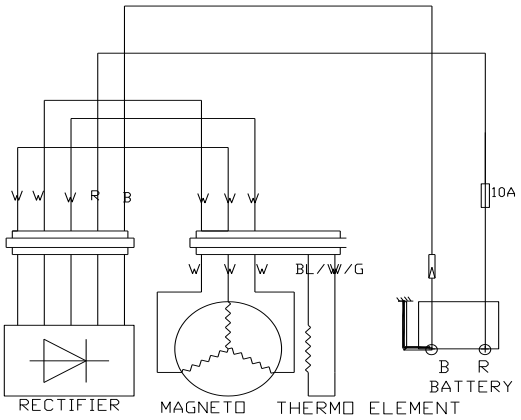
If the handlebar does not move smoothly and is loosened, check steering stem bearing.

Inspection and maintenance of electrical system

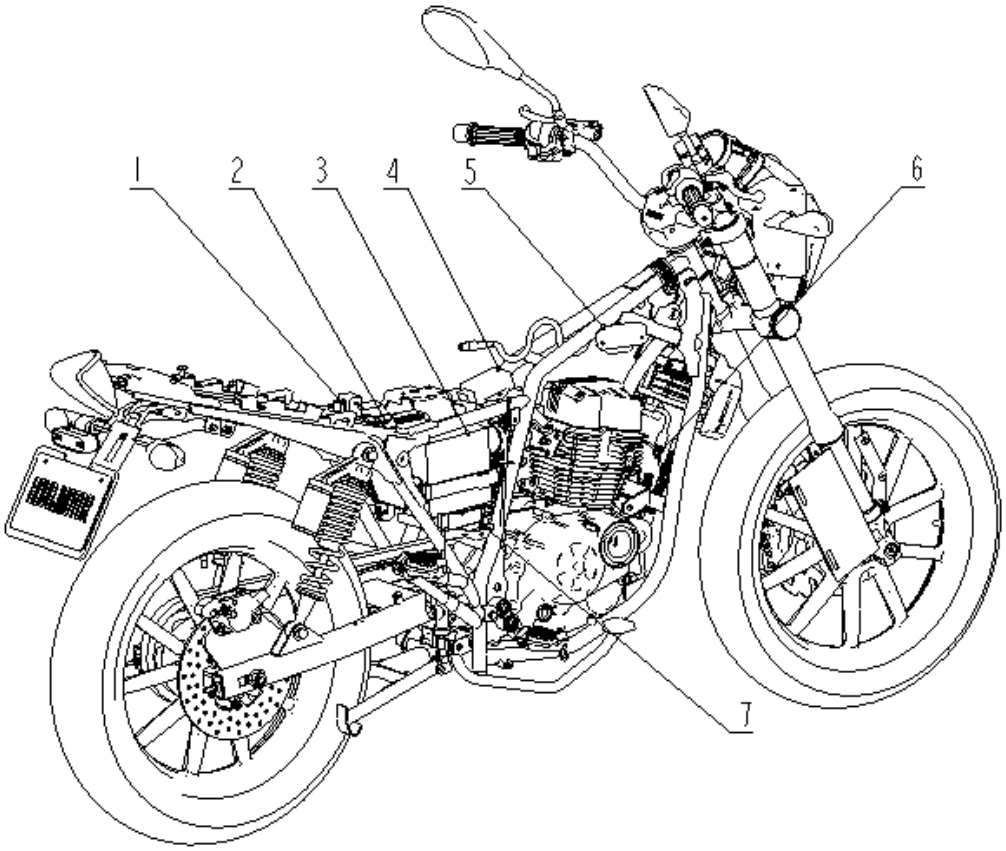
Tightening torque table for fasteners used in electric system

Fastening positions and names of fasteners	Tightening torque（N·m）
Starter motor clutch cover bolt	12
Starter motor clutch locknut	95
Rectifier bolt	5.0
High-voltage coil pinch bolt	9.0
Flywheel locknut	5.0
Vehicle block protecting plate bolt	9.0

Charging system



Charging System



1.Variable frequency scintillator 2. Ignitor 3. Battery 4. Voltage regulator 5. High-voltage ignition coil 6. Electric horn 7. Rectifier

Ⅰ Battery/Charging System

1.1 Service Data

Precautions on operation

*** Attentions**

1. The battery can be charged and discharged, and used repeatedly. If a battery is laid aside after discharging, its service life will be shortened and its performance is degraded. Performance of a battery is usually reduced after about 2-3 years' use. Voltage of the performance-reduced (capacity drops) battery can be resumed, but the voltage will run down quickly while loading.
2. Overcharging of battery: Usually overcharging is demonstrated by the battery itself. If short circuit occurs inside the battery, voltage or very low voltage on the terminals of the battery cannot be inspected. If the regulator fails, it will have too high voltage on the battery and the life-span of the battery will be shortened.
3. When the battery is laid aside for a long period, it will self-discharge and its capacitance will drop. The battery should be recharged every three months.
4. Charging system inspection: please perform inspection in accordance with the sequence listed in the fault diagnosis table.
5. If there is current going through the electric parts, the connector shall not be removed, or the voltage will be very high and electronic components inside the voltage regulator will be damaged. Set ignition switch at "Off" position and then begin your work.
6. It is not necessary to inspect maintenance-free (dry-charged type) battery. Electrolyte and distilled water are not required to be added.
7. Inspect the entire electric load.

8. Quick charging is forbidden except in emergency.
9. During quick charging, the battery must be removed from the motorcycle first and then be charged.
10. While battery is exchanged, please do not use liquid-feeding battery.
11. A voltmeter shall be employed to check the state of charged battery.

Service Data

Item			Specification
Battery	Capacity/type		12V-9AH/ dry-charged type
	Voltage (20℃)	Fully charged	13.1V
		Must be charged	12.3V(stop working for one hour)
	Charging current		Standard：0.9A，Quick：9A
	Charging time		Standard：10-15hours; Quick：30minutes
Magneto	Capacity		100W/8000rpm
	Coiling impedance value（20℃）		White-white 0.5-10Ω
Voltage regulator	Type		Full-wave rectification
	Battery charging voltage		14.5V±0.4V/5.000rpm

Tightening torque

Rectifier bolt	**5.0 N·m**
High-voltage coil pinch bolt	**9.0 N·m**
Flywheel locknut	**5.0 N·m**
Vehicle block protecting plate bolt	**9.0 N·m**

Tools

Universal non-adjustable spanner
Flywheel remover
Testing device
Multimeter

1.2 Fault Diagnosis

No power

Battery over discharged
Wiring of battery is not connected.
Fuse fails.
Power switch is poorly contacted.

Unstable power

Wiring of battery is poorly contacted.
Discharging system is of poor contact.
Lighting system is of poor contact or short circuit.

Low voltage

Battery is poorly charged.
short line.
Poor contact.
Poor charging system.
Poor voltage and current regulator

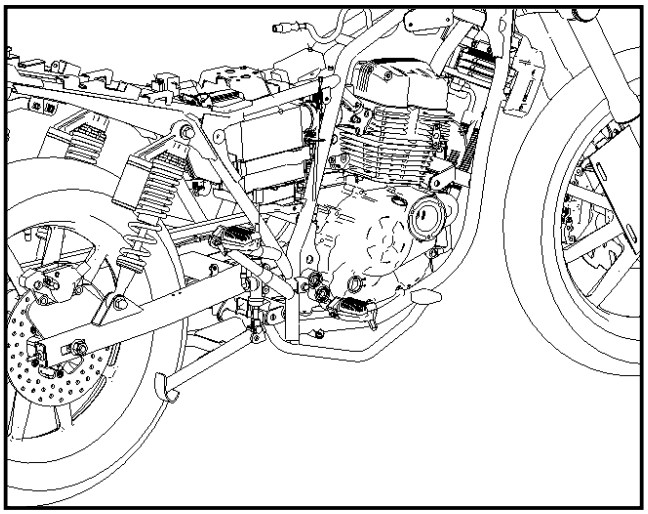
Poor charging system

Wire connector is of poor contact, short circuit or

Defective voltage and current regulator
Magneto does not work well.

1.3 Battery

1.3.1 Battery Removal

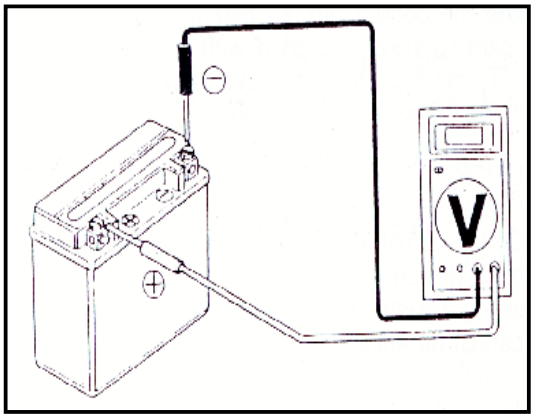


Take down the right protecting plate .
Disconnect the battery negative lead wire first and then the positive lead wire.
Remove the battery breather.
Remove battery mounting bracket.
Take out the battery**.**

Warning!
During positive lead wire disconnection, be sure to prevent the tools being used from touching the frame; or it will result in short circuit sparks, which may ignite gasoline and damage battery. It is dangerous!
Install the battery in the reverse order of removal.

*** Attention**
To avoid short circuit, please connect positive lead wire first and then the negative lead wire.

Battery charging (circuit voltage) inspection

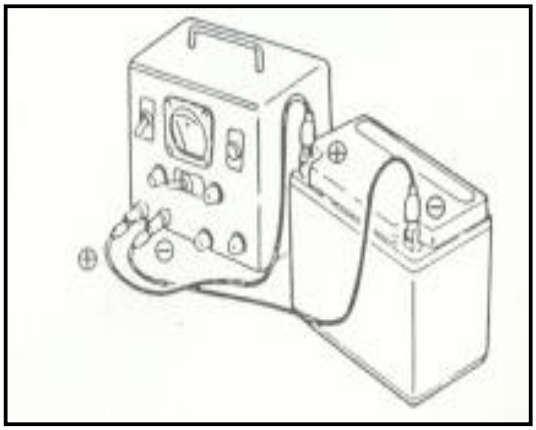


Open the battery cover and remove battery pressure plate assembly.
Disconnect lead wire of the battery connector.
Measure voltage between terminals of the battery.

Fully charged: 13.1V
Undercharged: 12.3V （battery stop working for 1hour）

*** Attention**
A voltmeter shall be employed to check the state of charged battery.

1.3.2 Charging



Connection method: Positive pole of battery charger is connected to battery positive pole; Negative pole of battery charger is connected to battery negative pole.

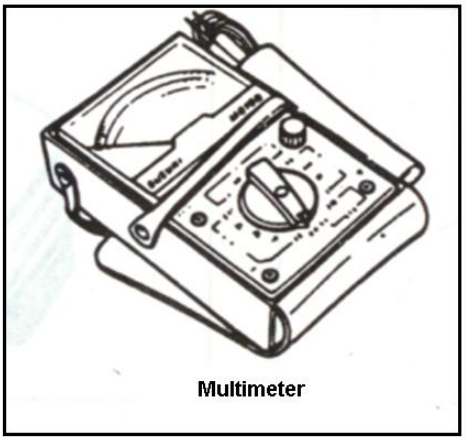
Warning!
• Battery shall be away from fire sources.
• Shut off charger first before or after charging in case that sparks may be generated at connection parts, which may result in explosion.
• During charging, please take the current time labeled on the battery as the basic time.

*** Attention**

• Battery quick charging is not recommended except in case of emergency.

• After charging, measure the battery voltage in 30minutes' time.

Charging current: Standard: 0.3A
Quick charging: 3.0A
Charging time: Standard: 10-15hours
Quick charging: 30minutes
Charging completed: open circuit voltage: higher than 12.8V



Multimeter

1.4 Charging system

1.4.1 Short circuit test

Disconnect the grounding wire from the battery and use a voltmeter to connect battery negative lead wire with grounding wire. Set the switch at OFF position and check if it is shorted.

*** Attention**

Positive lead wire of multimeter is connected to negative lead wire of battery.

If abnormality is found, check if there is short circuit on ignition switch and main wiring.

1.4.2 Charging State Inspection

While in inspection, if the battery is fully charged, a multimeter shall be used for the test.

Warm up the engine and then install the fully charged battery onto the motorcycle.

Connect voltmeter between terminals of the battery.

Remove the main fuse and connect an ammeter between the two terminals.

Start engine and slowly raise RPM. Measure limited voltage and current.

Limited voltage/rpm：14-15V （5.000rpm）

If limited voltage is beyond the specified range, check the voltage regulator.

Inspect limited voltage in lighting system.

*** Attention**

Set multimeter to AC voltage.

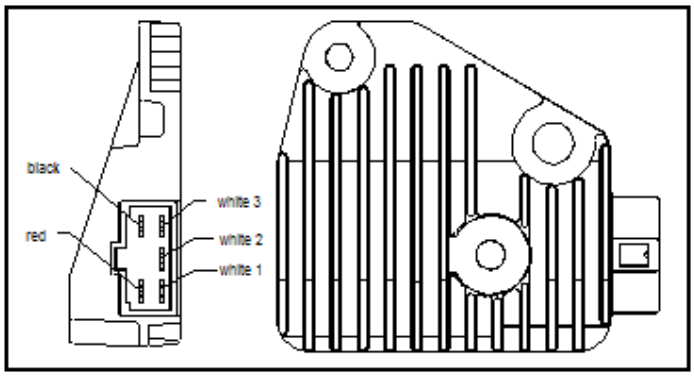
1.5 Voltage-current regulator

1.5.1 Loop inspection on main wiring terminals

Disconnect the 6P plug on the voltage-current regulator.

Check continuity between main wiring terminals in the following way:

Item （wire color）	Judgment
Between battery (red) and ground of vehicle block	There is battery voltage.
Between ground wire (black) and ground of vehicle block	There is a lead wire.
Between charging coil (white) and ground of vehicle block	No power flowing between magneto coil and ground
Between charging coils (while 1 and white 2)	There is resistance between coils



1.5.2 Voltage-current regulator inspection

When main wiring terminal is normal, check if plug of voltage-current regulator is of poor contact and measure impedance value between terminals of voltage-current regulator itself.

Multimeter + / -	White1	Red/white	Red	Black	White2
	Unit：MΩ				
White1		No	No	0.1~3	10~90
red/white	No		No	0.1~3	No
Red	0.1~3	No		1.2~5	0.1~3
Black	No	No	No		No
White2	60~80	No	No	0.1~3	

*** Attention**

• Do not touch the metal part of multimeter probe with your finger.

• Check with a multimeter. If impedance values measured by different multimeters are not the same, it indicates incorrect inspection..

When impedance value between terminals is abnormal, voltage regulator shall be replaced.

1.6 Magneto charging coil

*** Attention**

Inspection of magneto charging coil can be performed on the engine.

Inspection

Disconnect the 6P connector on the magneto.

Use a multimeter to measure impedance value between white coil of magneto and vehicle block.

Standard value：0.5-10Ω（20℃）

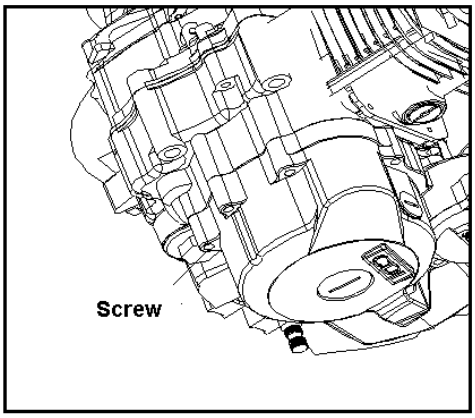
If measured value exceeds the standarde, the magneto coiling shall be replaced.

1.7 Magneto Removal

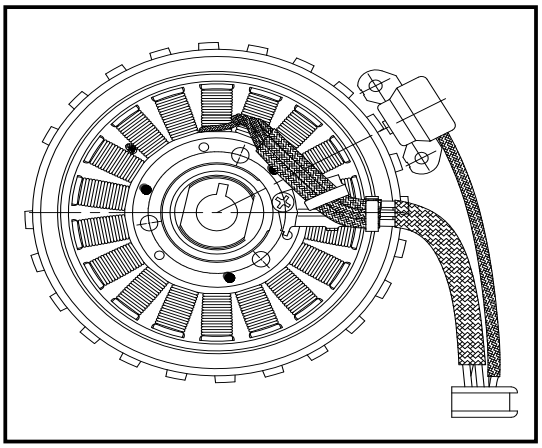
1.7.1 Removal

Remove vehicle block protecting plate.

Remove protecting plate of engine on the left side.

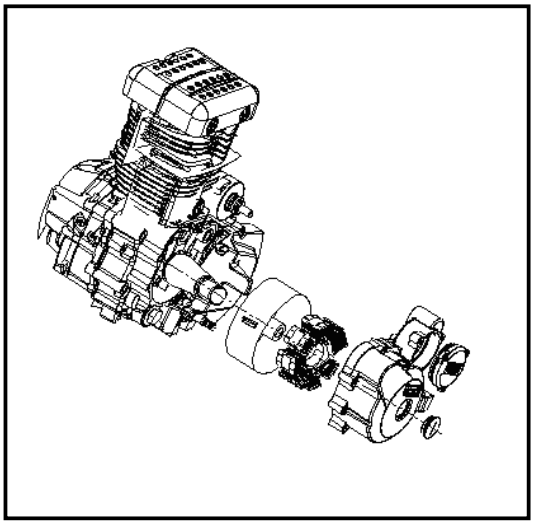


Remove flywheel locknut.
Use a flywheel remover to take down the flywheel.
Remove the fixation key.
Disconnect lead-wire connector of magneto.
Disconnect magneto stator.



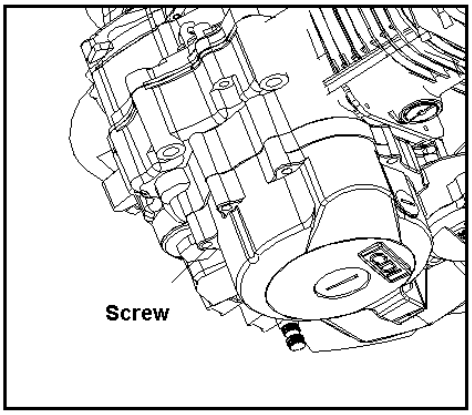
1.7.2 Installation

Install the magneto stator onto the engine case.
Connect connector of magneto lead wire.



Clean crankshaft and conical part of flywheel.
Make sure the fixation key is installed into the key slot on the crankshaft.
Align the groove on the flywheel to the fixation key on the crankshaft**.**

**** Attention**



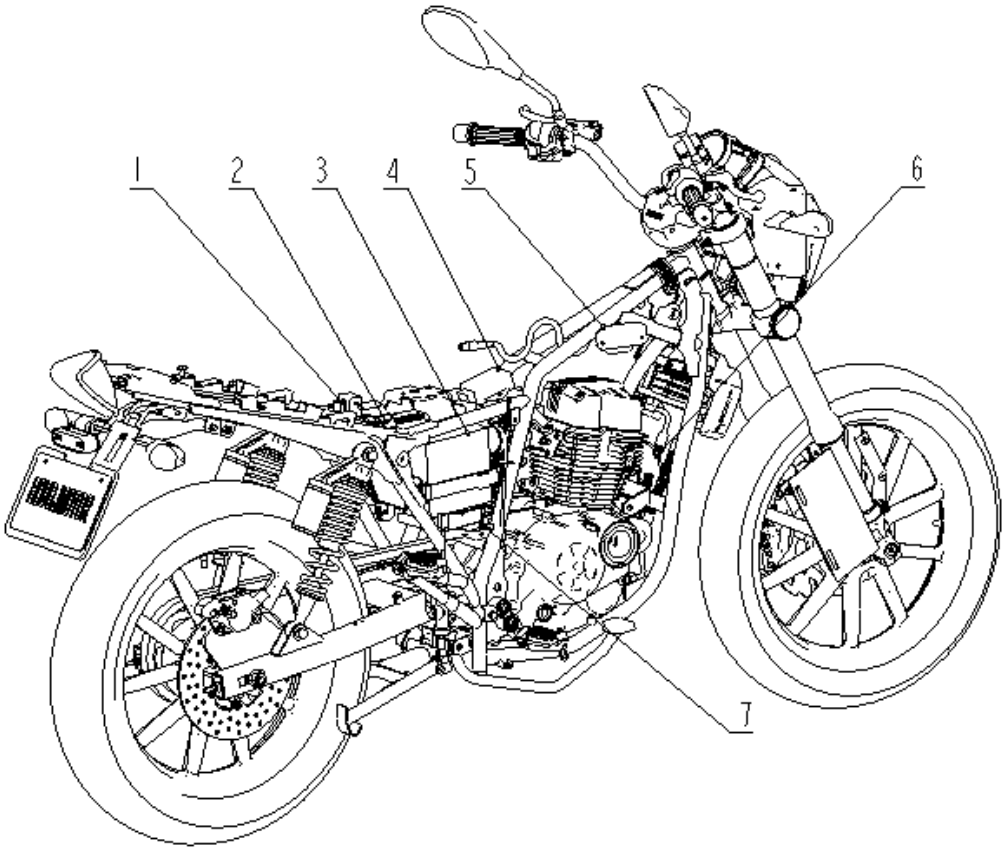
There is magnetism on the inner surface of flywheel, and make sure there is no bolt.

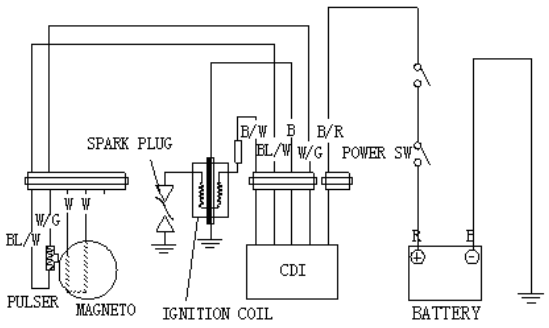
Fix the flywheel using a universal non-adjustable spanner and then tighten the locknut.

Torque value: 9.0 N·m

Install protecting plate on the left side.

Ignition System





Ignition System

1.Variable frequency scintillator 2. Ignitor 3. Battery 4. Voltage regulator 5. High-voltage ignition coil 6. Electric horn 7. Rectifier

Ⅱ Ignition System

2.1 Service Data

Precautions on operation

1. Ignition system inspection: please perform inspection in accordance with the sequence listed in the fault diagnosis table.
2. Ignition system uses electronic-type automatic timing device, which is solidified in the CDI assembly, so ignition time adjustment is unnecessary.
3. Ignition system inspection: please perform inspection in accordance with the sequence listed in the fault diagnosis table.
4. Ignition system CDI shall not be dropped and hung, or heavily knocked (this is also the main reason for its failure). Pay special attention to this while removing it.
5. Most of the ignition system problems are due to poor contact of sockets. Please check first if parts of the connector are well contacted.
6. Check if heat value of spark plug is proper. Improper spark plug may result in unsmooth engine running or burnt of spark plug.
7. The maximum voltage is taken to introduce inspection items in this Part. Inspection methods for impedance value of ignition coil are also recorded and judged.
8. Check ignition switch according to the continuity test table.
9. Remove magneto and stator on operation instructions.

Service data

Item		Standard Value
Spark plug	Standard	CR9E
Spark plug clearance		0.6-0.7mm

Ignition coil impedance value（20℃）	Primary coil		0.35±15%Ω
	Secondary coil	With spark plug cap	8-11KΩ
		Without spark plug cap	4.2±15%KΩ
Impedance value of trigger（20℃）			100-200Ω
Impedance value of charging coil（20℃）			600-800Ω
Ignition coil primary peak voltage			95-400V
Trigger voltage			Higher than 1.7V

Tools

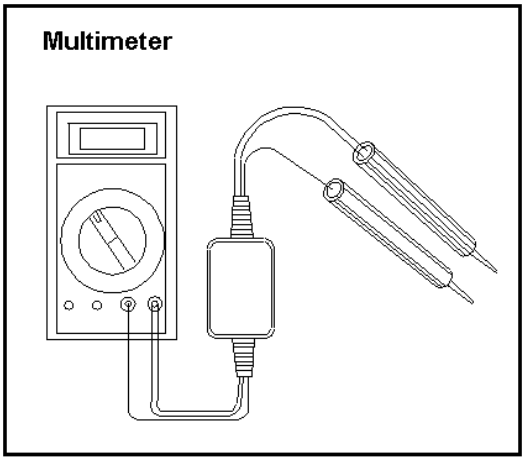
Accessories for the voltage with maximum range
Multimeter

2.2 Fault diagnosis

Spark plug not sparking

	Symptom	Possible causes（Determine the cause from 1 in sequence）
Ignition coil	When the high voltage power is too low.	①When inner impedance is too small, use the appointed tester to test. ②Crankshaft rpm is too low. ③Tester is disturbed (it is normal when several times' measured voltages are above the basic）. ④Wiring of ignition system is poorly contacted. ⑤Ignition coil is no good. ⑥Charging coil is bad. (Peak voltage measurement)
Secondary side voltage	While no high-voltage power supply, high voltage power is sporadic.	①Tester is wrongly connected. ②Poor ignition switch. ③Connector of CDI assembly is poorly contacted. ④Ground wire for CDI assembly is shorted or poorly contacted. ⑤ Poor charging coil (Peak voltage measurement）. ⑥ Defective trigger （Peak voltage measurement）. ⑦ Poor connector of high voltage wire. ⑧ Inferior CDI assembly.（after items ①-⑦ are tested and proved abnormal or spark plug no sparking.）
	High-voltage power is normal, spark plug no sparking.	①Inferior spark plug or secondary leakage of the ignition coil. ② Poor ignition coil.
Charging coil	No high-voltage power supply	①When inner impedance is too small, use appointed tester to test. ②Crankshaft rpm is too low. ③Tester is disturbed (it is normal when more than one time's measured voltage is above the basic）. ④Charging coil is bad. (when items ①-③ are proved normal）

	No high-voltage power supply or high voltage power is sporadic.	①Defective ignition coil. ②Defective charging coil.
Trigger	High-voltage power supply is too low.	①Inner impedance is too low. Use appointed tester to test. ②Crankshaft rpm is too low. ③Tester is disturbed (it is normal when more than one time's measured voltage is above the basic）. ④Poor trigger (when items （①-③ are proved normal）
	No high-voltage power supply or high voltage power is sporadic.	①Poor ignition coil. ②Poor trigger.



2.3 Ignition system inspection

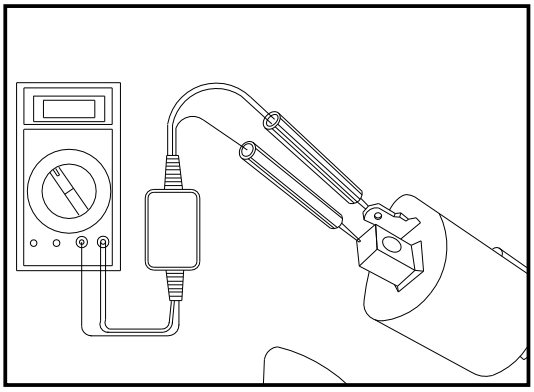
*** Attention**

• When the spark plug is not sparking, check if components of wiring are loosened or badly contacted and make sure all the voltage values are normal.

• There are many brands of multimeters with different interior impedance. The values they measured are not the same.

Connect a high-voltage shunt or an ammeter with input impedance higher than 10MΩ 10CV to the multimeter.

2.3.1 Primary voltage of ignition coil



If an old spark plug is removed and replaced with a good one, ground it with engine.

*** Attention**

Test when wirings of all the circuits are correct. Normal cylinder compression pressure means to test with spark plug installed on the cylinder head.

Connect lead wire of ignition coil and a shunt is connected between terminal (black/white) of primary coil and grounding wire of vehicle block.

Press starter motor button or kick starter pedal to measure primary peak voltage of ignition coil.

Min. voltage: higher than 95V.

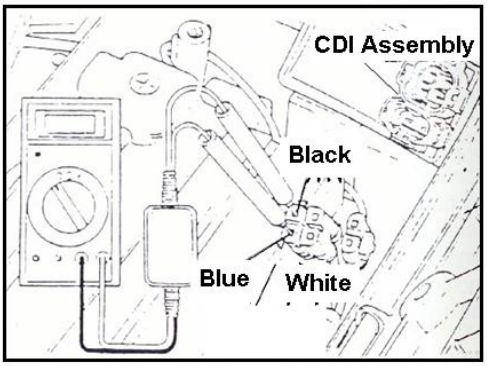
***Attention**

Please do not touch the metal parts of testing probe with your fingers while measuring voltage, or you will be shocked. Please take care.

2.3.3 Trigger

*** Attention**

Inspect when spark plug is installed on the cylinder head and compression pressure is normal.



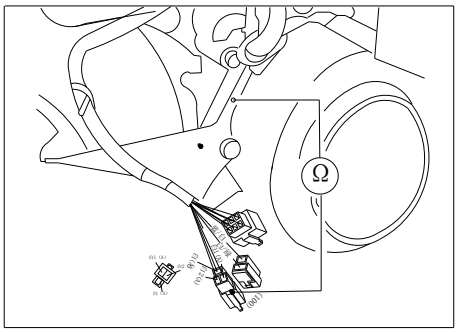
Disconnect connector 4P and 2P from CDI assembly. A peak-voltage shunt is connected between the 4P connector (black terminal) on trigger (blue/white terminal) for 2P connector of wiring-terminal. Press starter motor button or kick pedal level to measure primary peak voltage of trigger.

Connecting method: positive to blue/white, negative to green/white.

Min. voltage: higher than 1.7V.

***Attention**

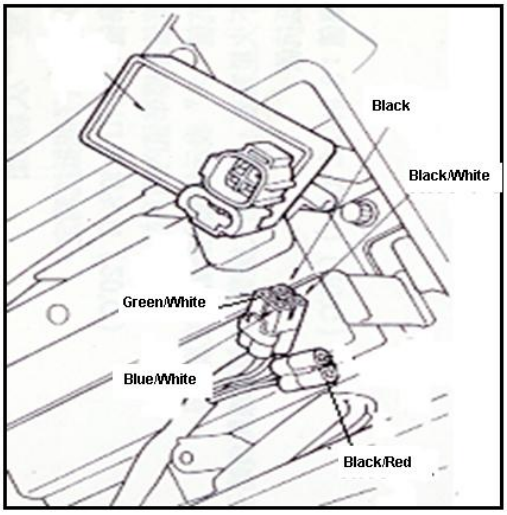
Please do not touch the metal parts of testing probe with your fingers while measuring voltage, or you will be shocked. Please take care.



When the peak voltage measured at connector of CDI assembly is abnormal, take down the protecting plate on the right side of vehicle and remove connector of magneto. The trigger (blue/white) is connected with a shunt.

- When the measured voltage at CDI assembly terminal is abnormal, but measured voltage at magneto terminal is normal, it indicates that the connector is of poor contact or wiring is broken.
- When measured results at both sides are abnormal, the trigger is damaged. Please check with a reference to items listed in Diagnosis Table

2.4 CDI Assembly



2.4.1 System Inspection

System inspection.
Remove CDI assembly and check components related to ignition system at wiring terminal.

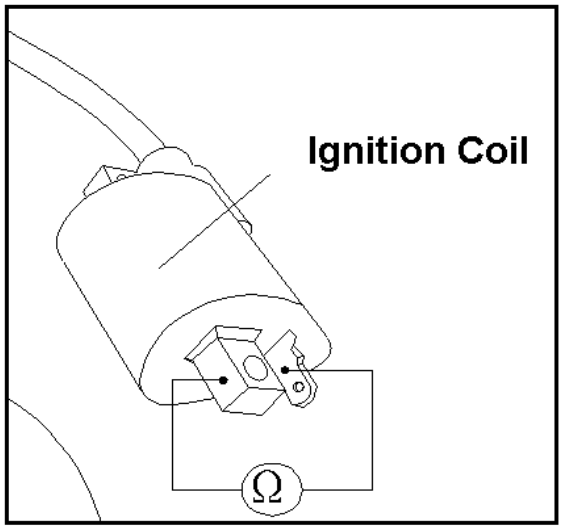
2.4.2 Inspection

Remove CDI assembly and check if connectors are loosened
or corrosive.

Item	Measured terminal	Standard Value（20℃）
Main switch	Red—Red/White	On continuity when main switch is “OFF”.
Trigger	Blue/White-White/Green	100-200Ω
Primary coil of ignition coil	Black/White—Black	0.4Ω±10％
Secondary coil of ignition coil	Black—spark plug cap（excluding spark plug）	3-5.5KΩ±10％

2.5 Ignition coil

2.5.1 Removal



Remove protecting plate of vehicle block.
Remove spark plug cap.
Remove primary lead wire of ignition coil.
Unscrew locknut of ignition coil and take out the ignition coil.
Install it in the reverse order of removal.

***Attention**
The primary coil is installed with black/white wire connector.

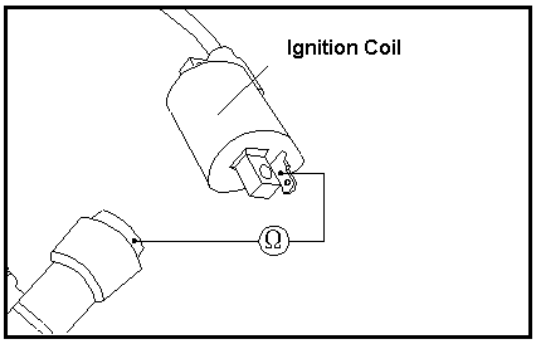
2.5.2 Primary coil inspection

Measure impedance between terminals of primary coil.

Standard value:0.4Ω±10％（20℃）

Impedance value within the range is good.

Impedance value "∞" indicates broken wire inside the coil. The coil shall be replaced.



2.5.3 Secondary coil

Provided with a spark plug. Measure impedance between lead-wire side of spark plug cap and terminal.

Standard value:8-11KΩ（20℃）

Impedance value within the range is good.

Impedance value "∞" indicates broken wire inside the coil.

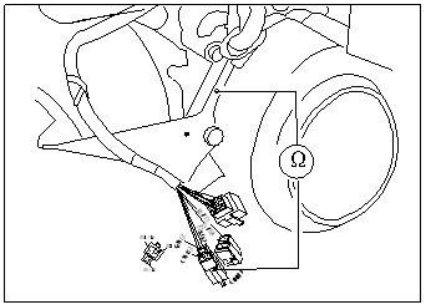
Remove the spark plug cap and measure impedance value between primary side lead-wire of ignition coil cap and negative terminal.

Standard value:3-5.5KΩ±10％（20℃）

2.6 Trigger

**** Attention**

Trigger inspection can be performed on the engine.



Inspection

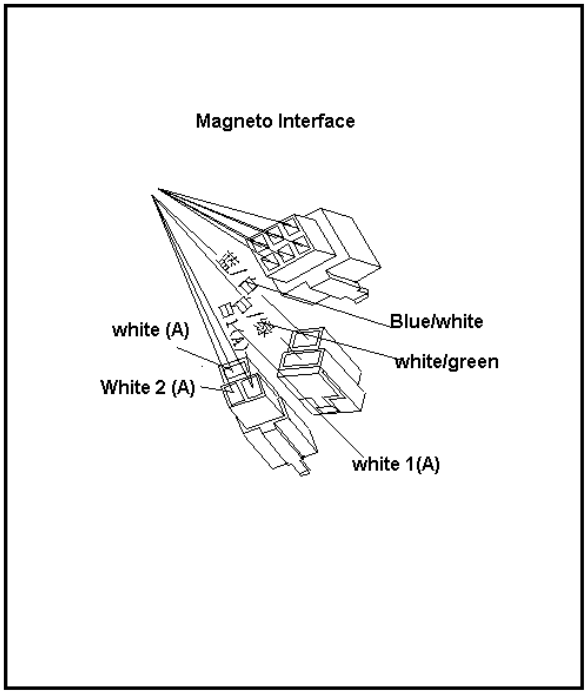
Remove protecting plate of vehicle block.

Remove lead-wire connector of trigger.

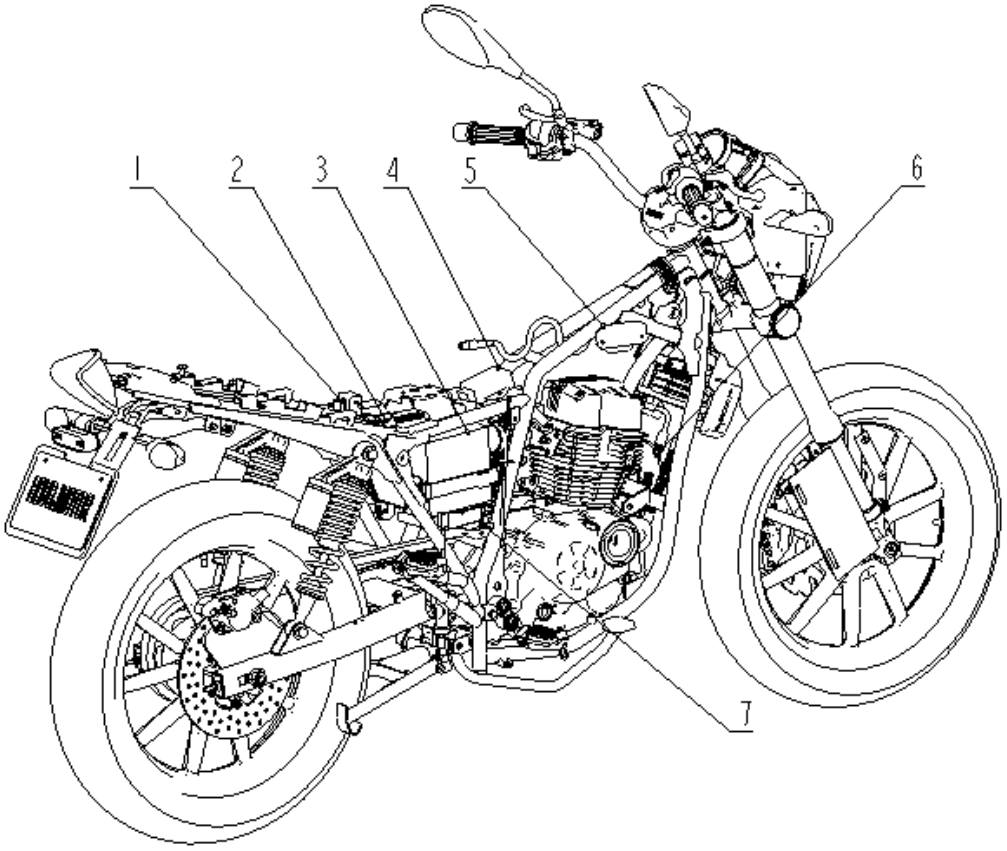
Measure impedance between blue/white terminal of lead wire on the engine side and ground wire of vehicle block.

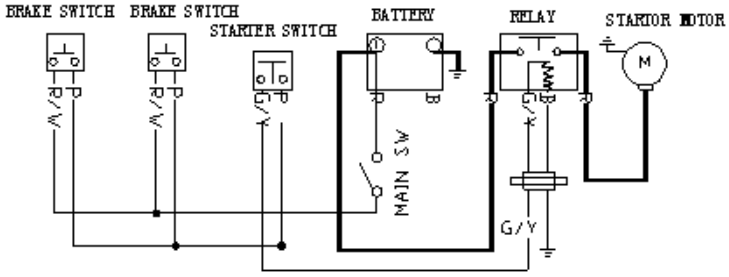
Standard value:100-200Ω（20℃）

If measured impedance value is beyond the range, please replace the magneto.



Starting System





Starting Schematic Diagram

1.Variable frequency scintillator 2. Ignitor 3. Battery 4. Voltage regulator 5. High-voltage ignition coil 6. Electric horn 7. Rectifier

Ⅲ Starting System

3.1 Service Data

Precautions on operation

Starter motor removal can be performed on the engine.
Starter clutch removal refers to removal instruction.

Basic data

Item	Standard	Service Limit
Length of starter motor electric carbon brush	12.5mm	8.5mm
Starter idler shaft bushing		8.3mm
Starter idler shaft OD		7.94mm

Tightening torque

Starter motor clutch cap bolt **12 N·m**
Starter motor clutch locknut **95 N·m**

Tools

Locknut wrench

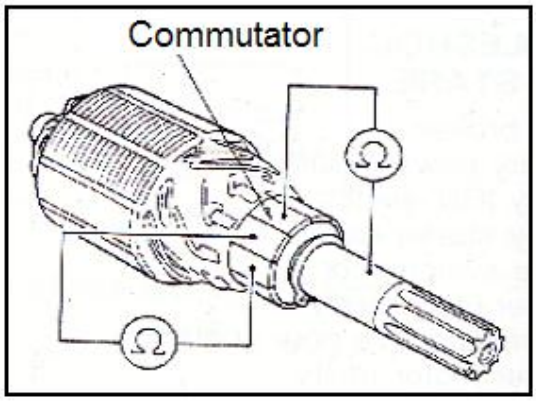
Universal un-adjustable wrench

3.2 Fault Diagnosis

Stator motor cannot run does not	Stator motor runs weakly	Starter motor rotates but the engine
•Broken Fuse	•Low battery	•Defective starter clutch
•Low battery	•Poor connecting wire contact	•Starter motor counter-rotate
•Defective ignition switch	•Stator motor gear stuck by foreign substances	•Low battery
•Defective starter clutch		
•Defective braking switch		
•Defective starter relay		
•Defective connecting wire contact		
•Defective starter motor		

3.3 Starter Motor

3.3.1 Removal



*** Attention**

Before removing starter motor, the ignition switch must be set at "OFF" position. Disconnect battery grounding wire and then turn on the power supply to check if the starter motor runs to confirm safety.

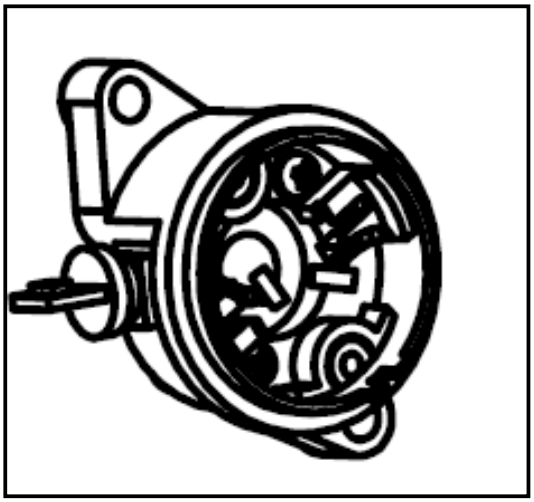
First remove the lead-wire clip of starter engine.

Remove starter motor pinch bolt and take down the starter motor.

Roll up the rubber waterproof jacket and remove starter motor connector.

3.3.2 Disassembly

Disassemble housing screw, front cover, motor housing and other parts.



3.3.3 Inspection

Inspect other component assemblies.

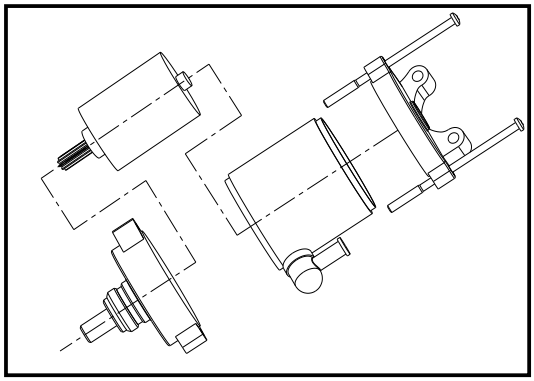
Replace with a new one when there is surface partial friction, injuries or burning loss.

Commutator shall be cleaned when there is metal particles adhered to its surface.

Inspect for continuity between contact surfaces of other

assemblies.
Confirm uncontinuity of armature shaft among surfaces of commutator.
Inspect for continuity of starter motor housing.
Confirm incontinuity between conducting terminal and starter motor housing.
Inspect continuity between conducting terminal and brush.
Replace it with a new one if abnormality exits.
Inspect carbon brush holder for continuity. If there is continuity, replace it.
Measure carbon brush length.
Service limit: replace it when it is shorter than 8.5mm
Check rotation smoothness of the needle bearing in the front cover and whether it is loosened when it is pressed in.
If there is abnormality, replace it with a new one.
Check if the oil seal is worn or damaged.

3.3.4 Assembly



Apply lubricating grease on the oil seal in the front cover.
Install brush onto the carbon brush holder.
Apply lubricating grease on movable parts at both ends of brush shaft.
Press carbon brush into its holder and install front cover of electrodes.

*** Attention**
• There should be no hurt on the contact surface of carbon brush and armature. Take care.
• Installation shaft of armature cannot hurt lip of oil seal. Take care.

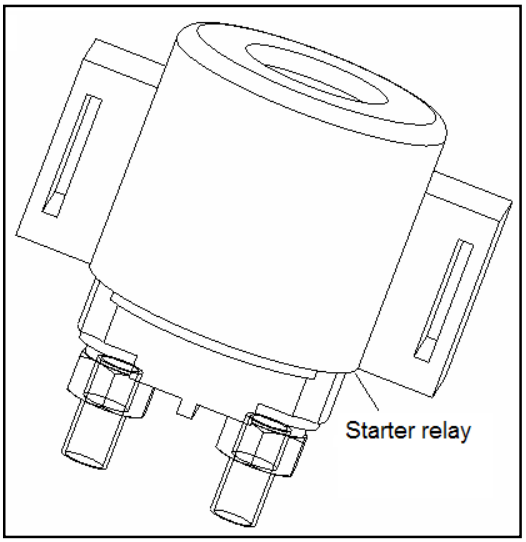
Install a new O ring onto the front cover.
Align and install the boss of motor housing to the recess of front cover.
Tighten housing screws.

*** Attention**
When assembling housing and front cover, armature can work as a magnet to easily pull the front cover up; and then gently press it down with hands to complete the assembly.

3.3.5 Installation

Install lead wire of starter motor and be sure to install the dust seal.
Check if the O ring is damaged and replace it with a new one if it is inspected as abnormal.
Apply some engine oil onto the O ring and then install the starter motor.
Install rear brake wire clip.

3.4 Starter Relay



3.4.1 Actuation Inspection

Take down the protecting plate of vehicle block.

When the ignition switch is set at "ON" position, press starter motor and a "Click" sound can be heard.

"Click" sound indicates normal.

No sound: • Check starter relay voltage.

• Check starter relay ground wire loop.

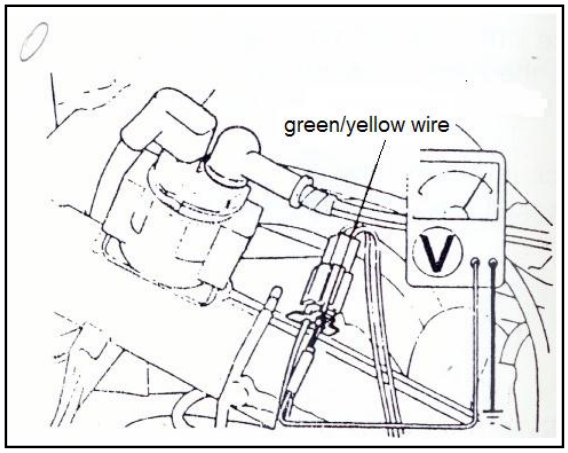
• Inspect starter relay actuation.

3.4.2 Starter relay voltage inspection

Lift and support the main stand. Measure the voltage between negative pole (green/yellow) of starter relay connector and vehicle ground wire.

Set ignition switch at "ON" position and catch the brake lever. Battery voltage shall meet the specified.

When there is no voltage at wire terminal of starter relay, inspect braking switch continuity and lead wire.



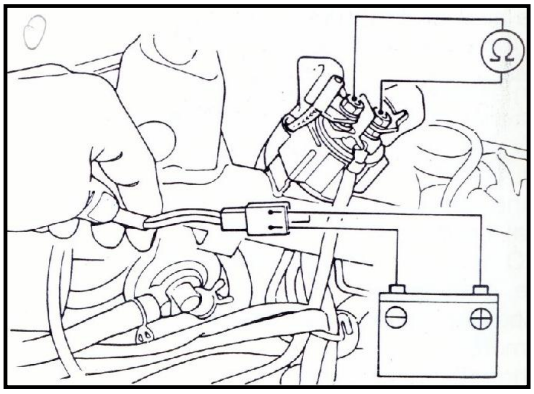
3.4.3 Starter relay ground loop inspection

Remove starter relay connector.

Inspect continuity between black wire of connector terminal and vehicle ground wire.

When the starter button is pressed, continuity between black wire of connector and vehicle ground wire shall be fine.

If there is no continuity, inspect starter button continuity and lead wire.

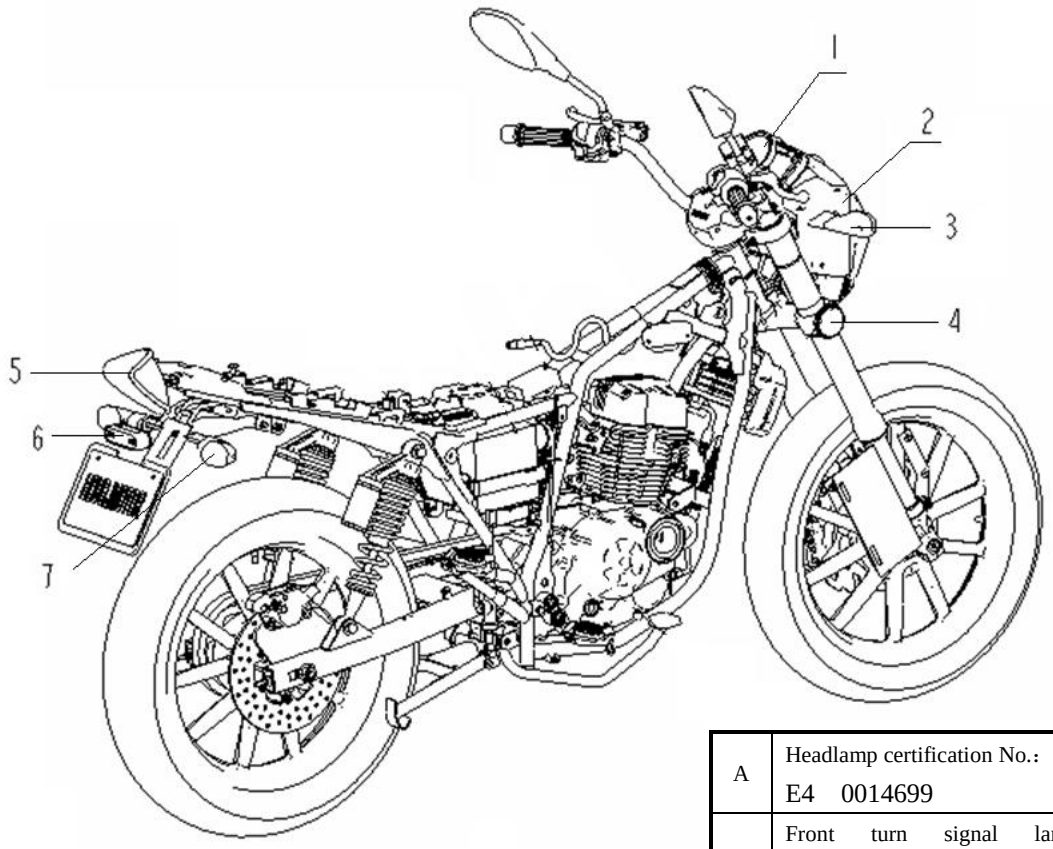


3.4.4 Actuation inspection

Connect starter relay with battery and connect terminal of starter motor with multimeter.

Connect fully charged battery between black wire and green/yellow wire of relay. A "tap" sound of operation can be heard on the relay and resistance displayed by multimeter is "zero".

Bulbs/Switches/Instruments



A	Headlamp certification No.: E4 0014699
B	Front turn signal lamp certification No.: E4 50R 001732
C	Tail lamp certification No.: E4 50R 0014700
D	Rear turn signal lamp certification No.: E4 50R 001732
E	Side reflector certification No.: E11 020612
F	Rear license plate lamp certification No.: E11 50R 000066

1 Instrument 2 Headlamp 3 Front right turn signal lamp 4 Side reflector 5 Tail lamp
6 Rear license plate lamp 7 Rear right turn signal lamp

Bulbs/Switches/Instruments

4.1 Service Data

Precautions on operation

Remove switches from the motorcycle and perform continuity test.

All the plastic connectors have pawls on them. Release clamping of the pawl before removal. Align pawl to its hole when it is reinstalled.

While trouble shooting electric faults, please check continuity of electric component as current flowing over it.

Confirm state of battery before any inspection, including battery voltage.

4.2 Fault Diagnosis

“ON” lamp of ignition switch is not lit.

• Defective bulb.

• Defective switch.

• Poor contact of connector or broken wire.

• Low battery power or no voltage.

4.3 Headlamp bulb replacement

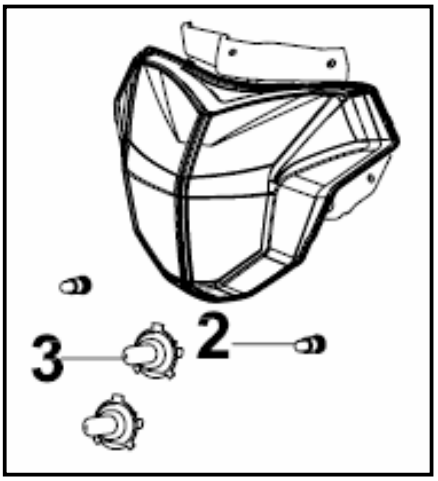
4.3.1 Removal

Screw off with a wrench locknut of headlamp and take down the headlamp.

Pull out connector of headlamp socket and remove the rear cover. Release circlip in the arrow direction and take out of the lamp socket

*** Attention**

When the bulb is lit, keep you hands and inflammable materials some distance away from it. Lighting bulb is hot; touch it when it cools down.



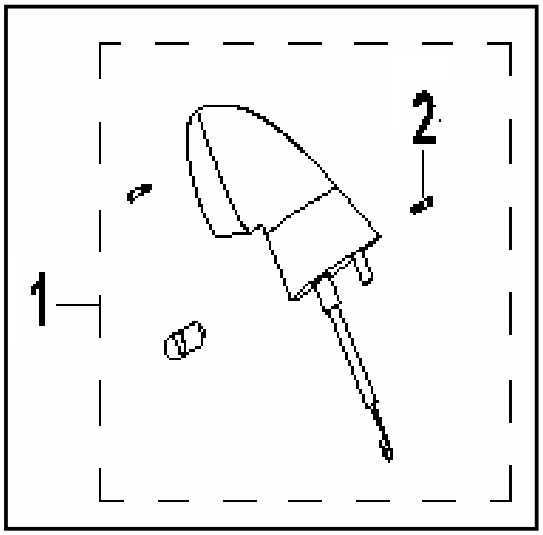
4.3.2 Installation

Install a new bulb, lamp adapter and headlamp rear cover. Tighten the new bulb into the socket.

Avoid touching bulb glass with your bare hands during installation and avoid staining it with oil, which may affect transparency, service life and luminous flux of bulb.

If oil is adhered to the bulb, clean it with a cloth moistened with alcohol or highly volatile rubber solution.

Install headlamp assembly.



4.4 Front turn signal lamp bulb replacement

4.4.1 Removal

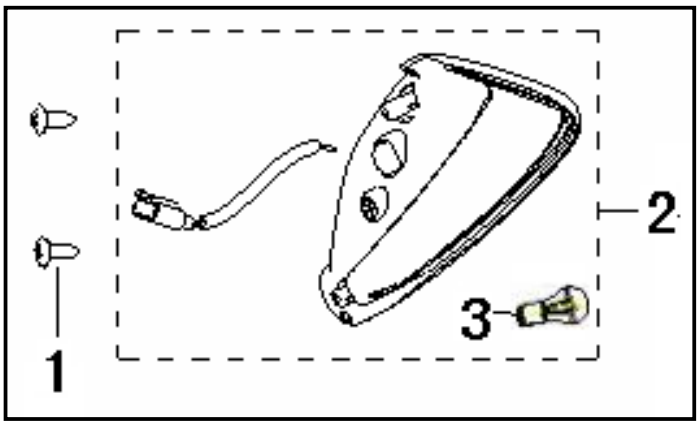
Disconnect wire to turn signal lamp.
Screw off self-tapping screw on the turn signal lamp.
Remove the bulb socket from the lamp.
Remove the bulb from lamp adapter.

4.4.2 Installation

Install the bulb in the reverse order of removal.

4.5 Tail lamp bulb replacement

4.5.1 Removal



Screw off the two bolts.
Remove the tail lamp hood.
Disconnect wire connector to the tail lamp.
While pressing down the tail lamp, rotate it counterclockwise.
Remove the tail lamp.

4.5.2 Installation

Install the tail lamp in the reverse order of removal.

*** Attention**
While installing tail lamp, be sure that sealing washer on the tail lamp hood is in good condition and correct position.

4.5.3 Tail lamp bulb replacement

4.5.3.1 Removal

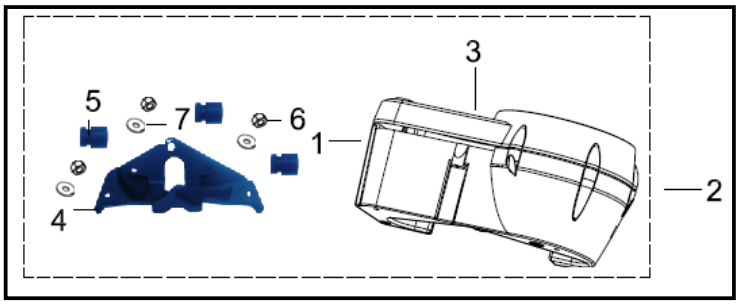
Screw off mounting bolts on the tail lamp hood.
Remove tail lamp hood（1）so that tail lamp bulb can be removed.
Remove the tail lamp bulb from lamp adapter.

4.5.3.2 Installation

Install the tail lamp bulb in the reverse order of removal.

4.6 Instrument

Remove rear mirror.
Take down the handle hood and pull out waterproof connector.
Remove the bolts.
Remove odometer assembly to take down the instrument.
Install the instrument orderly in the reverse order of removal.



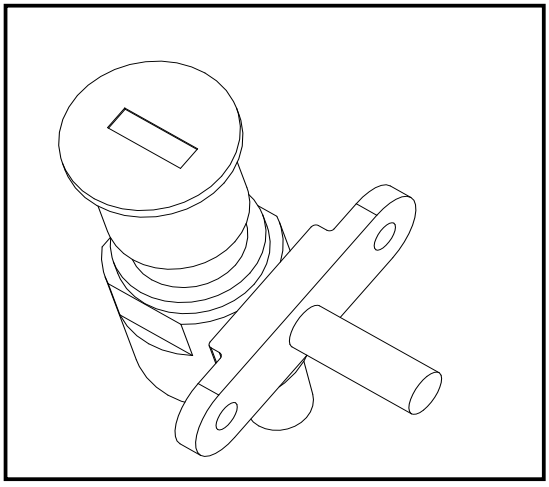
4.7 Main switch

4.7.1 Inspection

Remove the front protecting plate.
Disconnect connector of main switch lead wire.
Check the connector terminal for continuity.

Wiring Diagram

Color / Gear	R	R/W



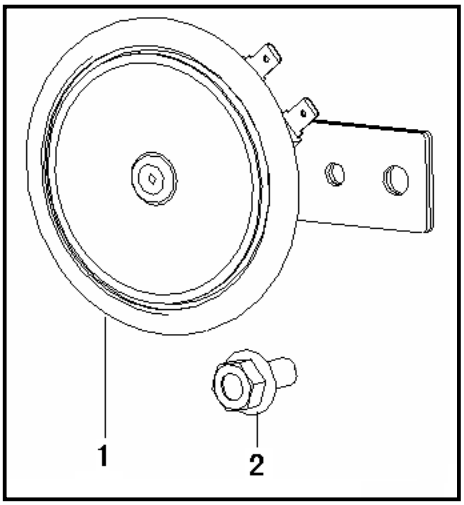
4.7.2 Replacement of main switch

Remove the front protecting plate.

Unscrew the mounting bolt and take down the main switch holder.

Remove the mounting bolt and replace the main switch.

4.8 Electric horn



Inspection

Disconnect wire to the electric horn.

Connect lead wire of horn with the battery. When the electric horn sounds, it indicates the horn is in good condition

4.9 Handle switch

Remove protecting plate of steering handle.

Screw off mounting bolt on the brake lever and take down the bracket.

Remove bracket for the rear brake lever.

Remove throttle handle and bolts.

Take down the throttle handle from the handle and remove the throttle cable.

Remove mounting bolt on the handle and take down the handle.

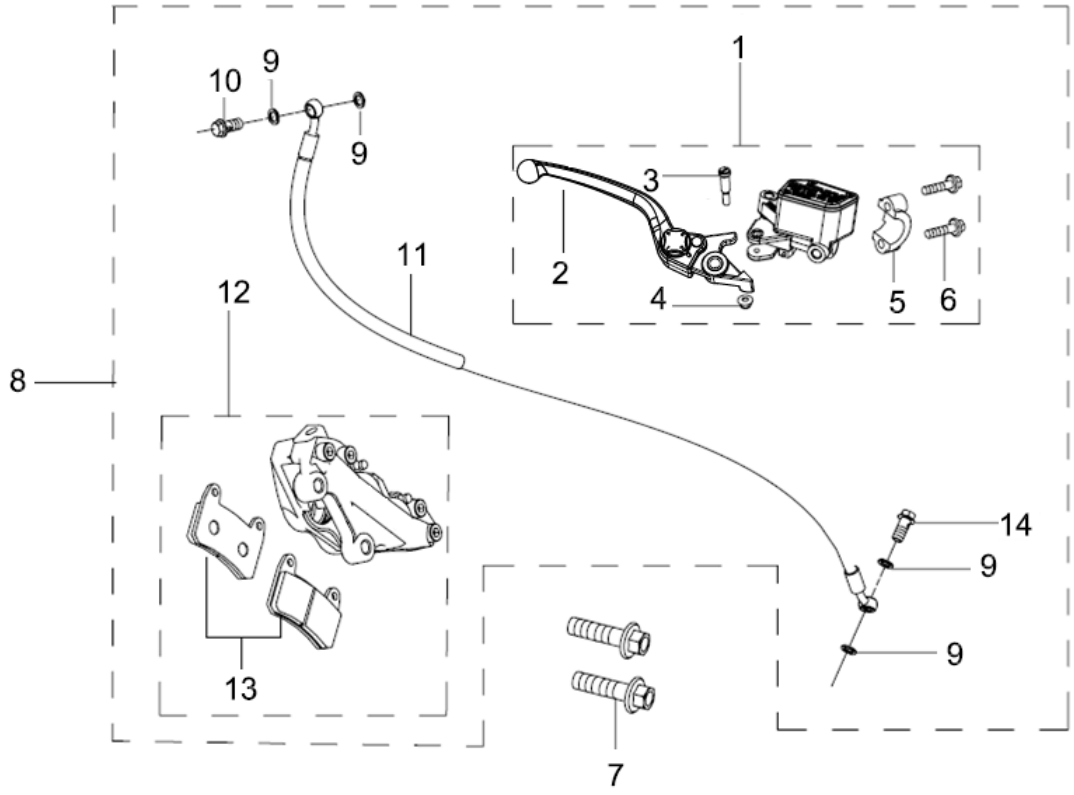
1 Stop switch
2 Grip adjuster of the front brake
3 Light switch
4 Motor Starter button
5 Passing lamp switch
6 Dimmer switch
7 Grip adjuster of the front brake
8 Horn switch
9 Turn signal switch

Chassis Inspection and Maintenance

Tightening Torque of Fasteners on Chassis

Fastening positions and names of fasteners	Tightening Torque（N·m）
Oil pump assembly mounting bolt	5-9
Front brake cylinder assembly mounting bolt	22-29
Rear brake rocker arm mounting bolt	5-9
Rear shaft locknut	85-98
Steering handle welding assembly mounting bolt	22-29
Front wheel shaft locknut	None
Front shock absorber mounting bolt	37-44
Rear wheel locknut	85-98
Rear shock absorber top nut	37-44
Rear shock absorber bottom nut	37-44
Rear handrail mounting bolt	22-29
Fuel tank mounting bolt	5-9
Helmet case mounting bolt	5-9
Muffler mounting bolt	22-29
Muffler connector mounting bolt	5-9
Rear swing arm shaft nut	70-83

Front Hydraulic Brake



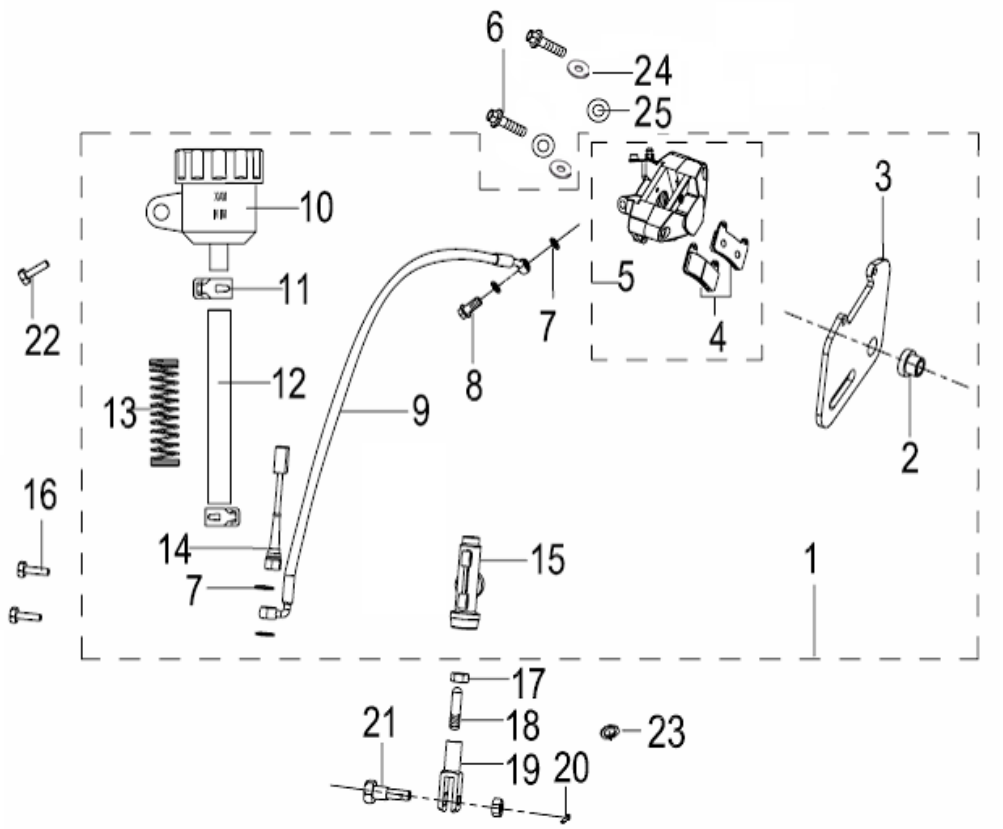
A	Front brake disc diameter：260mm
B	Front brake disc thickness：4.0mm Service limit：3.0
C	Thickness of friction lining：4mm Service limit：3.0mm
D	Mounting torque for Bolt 3 in the diagram：5-9 N·m
E	Mounting torque for Bolt 6 in the diagram：5-9 N·m
F	Clearance of brake handle： 10-20mm

1 Oil pump block assembly 2 Front brake handle 3 Bolt 4 Nut 5 Fixing cover 6 Bolt M6×23 7 Front hydraulic brake mounting bolt 8 Front hydraulic brake assembly 9 Washer

10 Oil hose mounting bolt 11 Brake hose assembly 12 Brake cylinder assembly

13 Friction lining assembly 14 Oil hose mounting bolt

Rear Hydraulic Brake



A	Mounting torque for Nut 17 in the diagram: 5-9 N·m
B	Rear brake drum ID:130 Service limit:131
C	Thickness of friction lining:4.0mm Service limit:3.0mm
D	Mounting torque for Bolt 6 in the diagram:22-29 N·m
E	Mounting torque for Bolt 22 in the diagram:5-9 N·m

1 Rear hydraulic brake assembly 2 Bushing Ⅱ 3 Yoke plate 4 Friction lining assembly 5 Brake cylinder assembly 6 Bolt M8×22 7 Sealing washer 8 Hex. Flange head bolt 9 Brake hose assembly (rear hydraulic brake) 10 Oil cup assembly 11 Hoop 12 Oil hose 13 Protecting spring 14 Brake switch assembly (rear hydraulic brake) 15 Oil pump block assembly 16 Bolt M6×20 17 Nut M6 18 Lever 19 Draw-bar 20 Cotter pin 2×18 21 Mounting bolt 22 Bolt M6×12 23 Washer 24 Spring washer 25 Washer

Ⅴ Braking System

5.1 Maintenance Instructions

Precautions on operation

*** Attention**

• Please do not contaminate braking assembly with oil while assembly or disassembly.
• Please use specified detergent to clean the braking assembly, or it may reduce braking performance.

* Please check braking system before driving your motorcycle.*

5.1.1 Specifications

Item	Standard Value (mm)	Service Limit (mm)
Front hydraulic brake disc diameter	φ260	-
Front hydraulic brake disc thickness	4.0	3.0
Front friction lining thickness	6.0	5.0
Rear hydraulic brake disc diameter	φ240	-
Rear hydraulic brake disc thickness	4.0	3.0
Rear friction lining thickness	6.0	5.0

5.1.2 Tightening Torque Value

Rear hydraulic brake disc mounting bolt 5-9 N·m
Front brake cylinder assembly mounting bolt 22-29 N·m
Rear brake cylinder assembly mounting bolt 22-29 N·m

5.2 Fault Diagnosis

Braking System

Poor braking performance

1. Improper brake adjustment
2. Worn friction lining assembly
3. Friction lining assembly improperly installed installed
4. Friction lining assembly and hydraulic brake disc are contaminated.

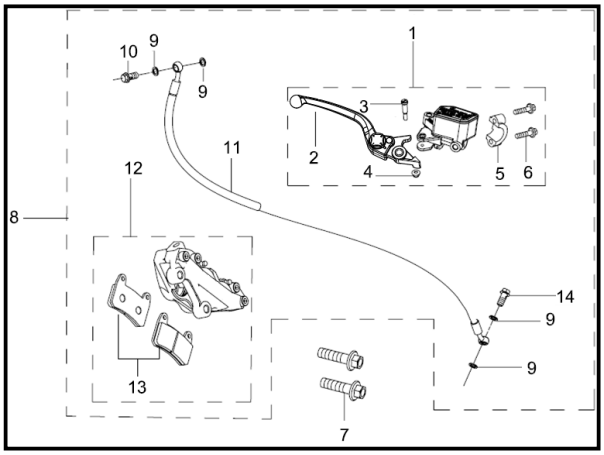
Brake drags or tight handle

1. Improper brake adjustment
2. Worn friction lining assembly
3. Friction lining assembly improperly

Noisy Braking

1. Friction lining assembly is worn out.
2. Friction lining assembly and hydraulic brake disc are contaminated.

5.3 Front Hydraulic Brake



5.3.1 Removal

*** Attention**

• Replace friction lining assembly.

• If a friction lining assembly will be used again, please mark it on the side before removal so as to re-install it to its original place.

Steadily stand the motorcycle.

Disconnect brake hose and speedometer cable.

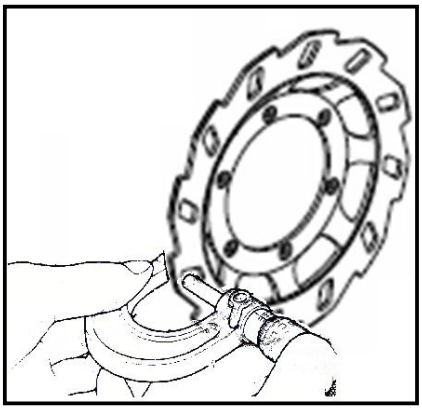
Loosen the front wheel axle.

Place a proper support under the engine to lift the front wheel.

Remove the front wheel axle and the front wheel. When the front wheel is taken down from the motorcycle, please do not squeeze the brake.

Remove the braking disc.

Remove washer, gear seat and front brake cam shaft.



*** Attention**

•Please do not contaminate braking shoe assembly with oil while assembly or disassembly

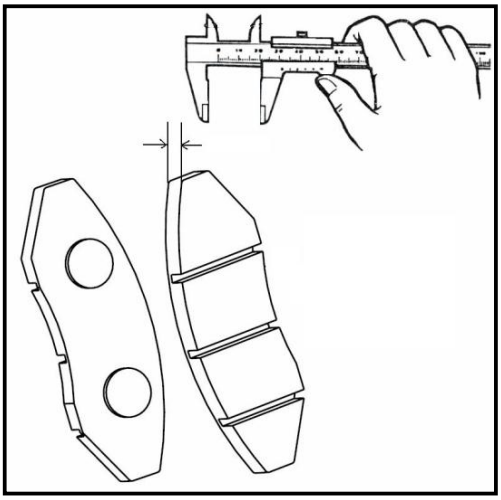
•Please use specified detergent to clean the braking assembly, or it may reduce braking performance.

5.3.2 Inspection

Check if the friction linings are worn out. Replace them if necessary.
Measure friction lining and hydraulic brake disc and record the maximum values.

Specifications

QJ200-2A	**Front hydraulic brake disc diameter**	**φ260mm**
	Front hydraulic brake disc thickness	**4.0mm**



*** Attention**

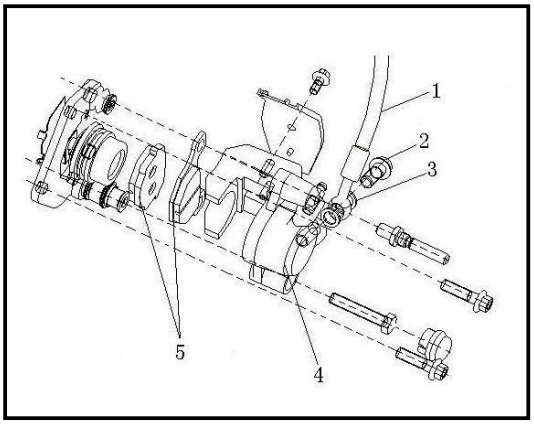
• A micrometer shall be used for the measurement.

Measure thickness of friction lining.
If hydraulic brake disc and friction lining are contaminated by grease or their thickness is smaller than service limit, replace them.

Service limit: **Friction lining: 5.0mm**
Hydraulic brake disc: 3.0mm

Note:
Friction linings shall be replaced in pairs.

5.3.3 Installation



Install hydraulic brake discs and front wheel.
Install front brake hose assembly and hydraulic brake assembly.
Please do not contaminate friction linings and brake discs with oil.

*** Attention**

A contaminated braking shoe will reduce braking performance and result in brake failure.

Tighten bolt and nut to their specified torque value.

Torque value:

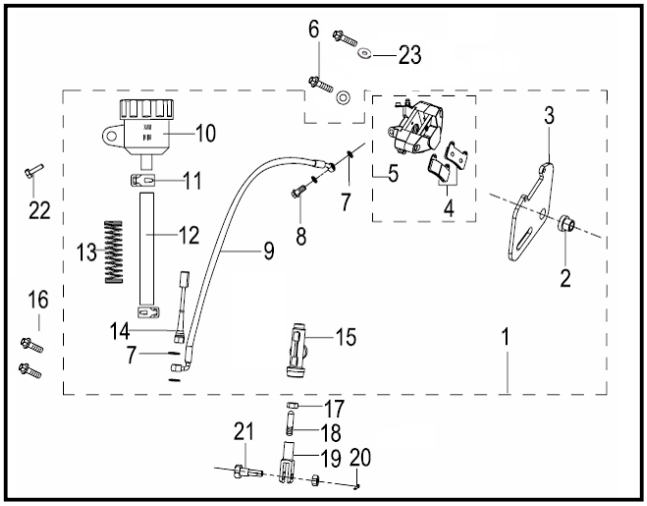
Front wheel axle locknut	**40-60**	**N·m**
Front brake cylinder assembly mounting bolt	**22-29**	**N·m**

Do not contaminate friction linings with oil.
If a friction lining is polluted by oil, clean it with brake cleaner.

***Attention**
A contaminated friction lining will weaken braking performance.

5.4 Rear Hydraulic Brake

5.4.1 Removal



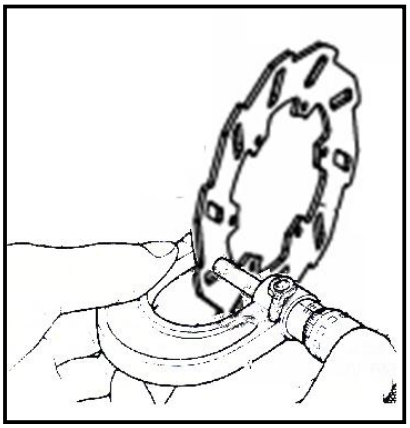
Remove seat cushion assembly and protecting plate assembly.
Remove the engine assembly, air filter assembly and muffler assembly.
Take down the rear brake cylinder assembly.
Remove the rear wheel.
Remove the rear hydraulic brake discs from the rear wheel hub.

*** Attention**

• Replace braking shoes.
• If a braking shoe will be used again, please mark it on the side before removal so as to re-install it onto its original place.

Remove the following assemblies from the rear wheel
Rear brake:

1.Friction lining assembly（4）
2.Rear brake hose assembly（9）
3.Braking cylinder（5）
4.Rear hydraulic brake yoke plate（3）



Note: Detailed exploded view refers to P86.

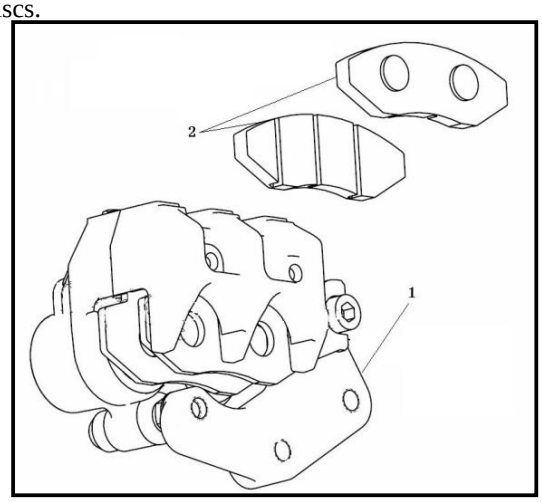
5.4.2 Inspection

Check if braking shoe and hydraulic brake disc are worn out.
Replace them if necessary.
Measure braking shoe and hydraulic brake disc and record the maximum values.

*** Attention**

•If the hydraulic brake disc is rusty, please polish it with #120 abrasive paper.
•A micrometer shall be used for the measurement.

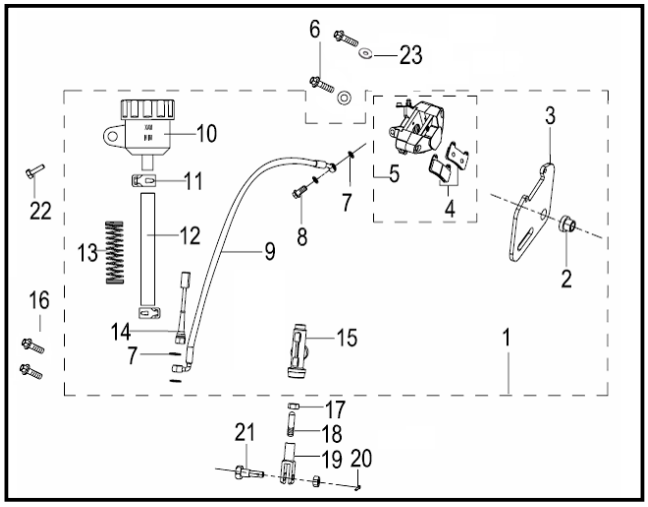
Measure thickness of braking shoes and hydraulic brake discs.
If the braking shoes are contaminated by oil or their thickness is smaller than the service limit, replace them.
Measurement of hydraulic brake discs can be performed on the motorcycle and removal is not required.



Note: Braking shoes shall be replaced in pairs.
Diameter of rear hydraulic brake disc φ240mm
Thickness of rear hydraulic brake disc 4.0mm
Service limit: Friction lining 5.0mm
Brake disc 3.0mm

5.4.3 Installation

Install rear hydraulic brake discs and rear wheel.
Install rear brake cylinder assembly.
Install engine assembly and air cleaner assembly.
Install muffler assembly, protecting plate assembly and seat cushion assembly.



*** Attention**

A contaminated braking shoe will decrease braking performance and result in braking failure.

Tighten bolts and nuts to their specified torque value.

Torque value:
Rear hydraulic brake disc mounting bolts 5-9N·m
Rear braking shoe installation bolts: 22-29 N·m

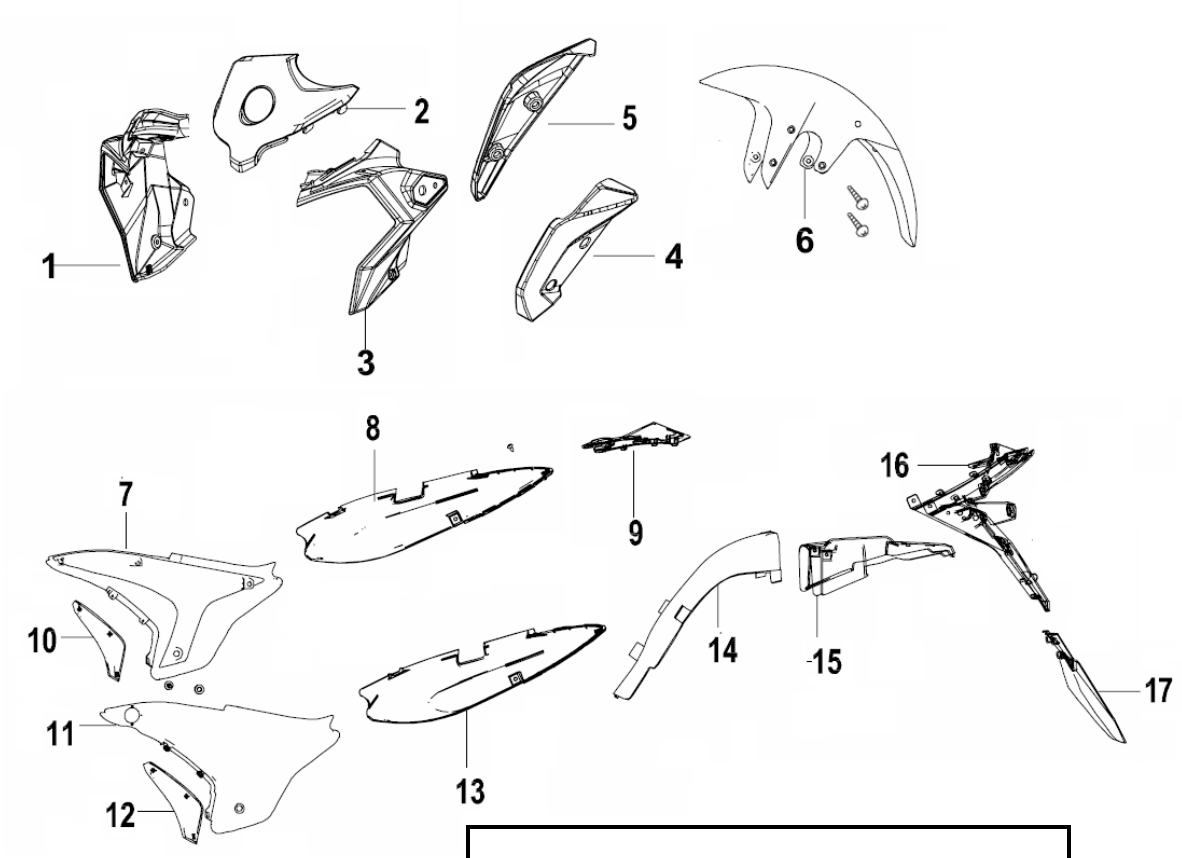
Do not contaminate brake shoes and hydraulic brake discs with oil.
If a braking shoe or a hydraulic brake disc is polluted by oil, clean it with a brake cleaner.

*** Attention**

A contaminated brake shoe will decrease braking performance and result in braking failure.

Note: Detailed breakdown drawing refers to P87.

Exterior



***Attention**

Do not damage the exterior during disassembly.

Do not damage falcula on the exterior during disassembly.

Align insert plates and covers on the exterior with their slots.

Correctly install falculas on each position during assembly.

Do not damage auxiliaries during installation of the exterior.

1. Mounting plate, right guiding cover 2. Mounting plate, guiding cover 3. Mounting plate, left guiding cover, 4. Left trim board, front mud fender 5 Right trim board, front mud fender 6. Front mud fender 7. Right guard 8. Right tail cap 9. Interconnecting plate, tail cap 10. Trim board, right guard 11. Left guard 12. Trim board, left guard 13. Left tail cap 14. Front part, rear mud fender 15. Front part 1, rear mud fender 16. Rear mud fender 1 17. Rear mud fender 2

VI. Motorcycle exterior

Disassemble the motorcycle body in the following sequence.

Seat cushion assembly→ Left guard component→ Right guard component→ LR tail cap→ RR tail cap→ Left pedal→

↓

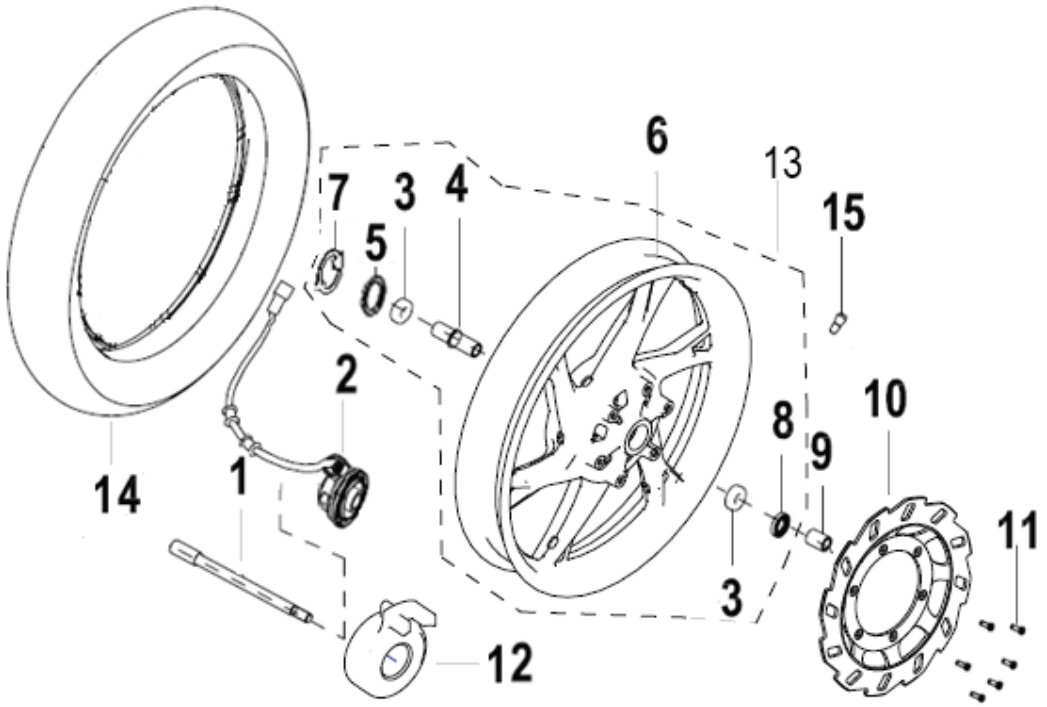
Right pedal→ Reinforcing plate, front mud fender→ Front mud fender→ Rear mud fender component→ Connecting plate, rear tail cap→Tail lamp

↓

→ Tail lamp bracket→ Rear carrier assembly

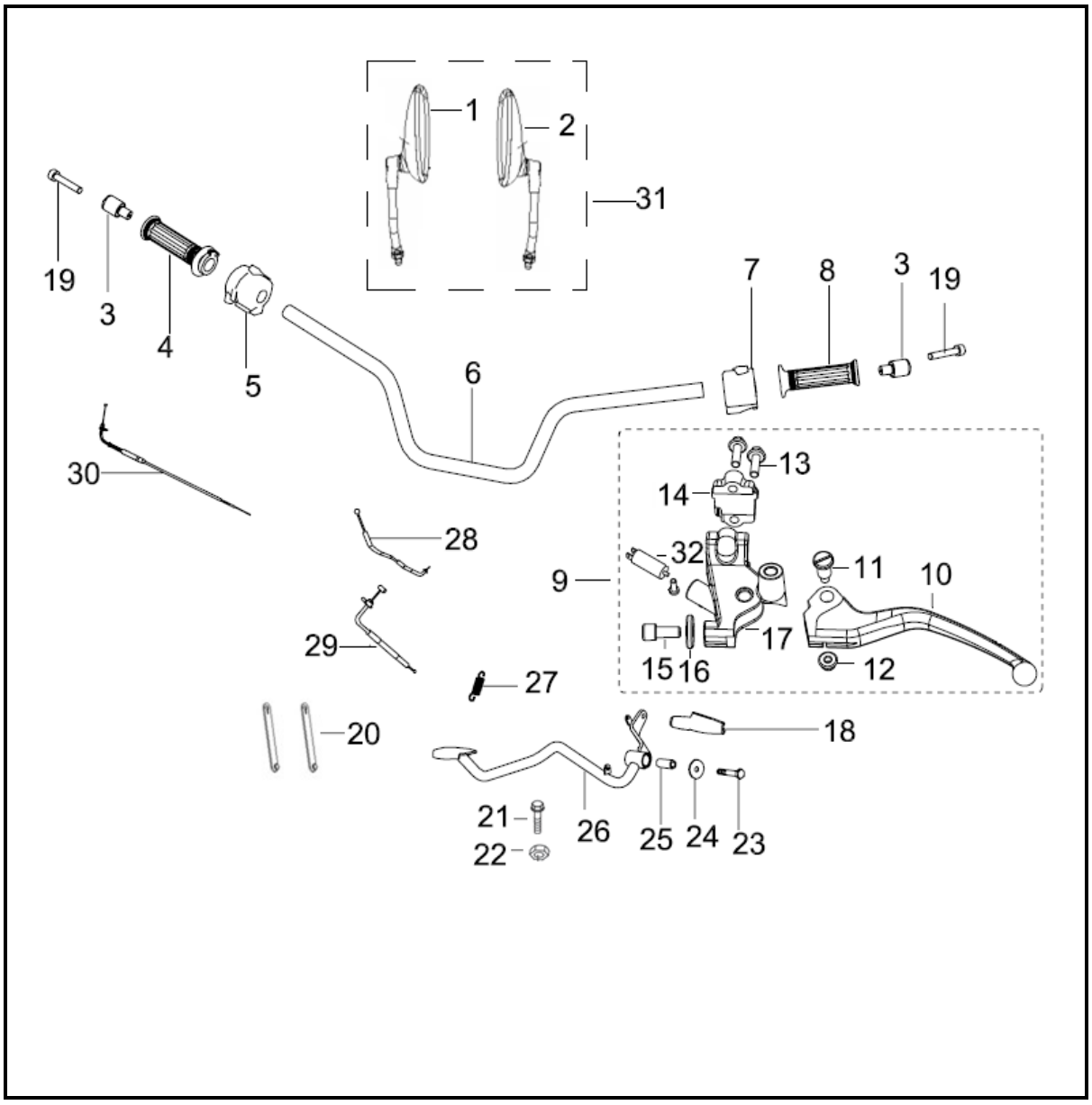
Front wheel

A	Rim runout limit: Vertical: 2.0mm Horizontal: 2.0mm
B	Wearing limit: 1.0mm



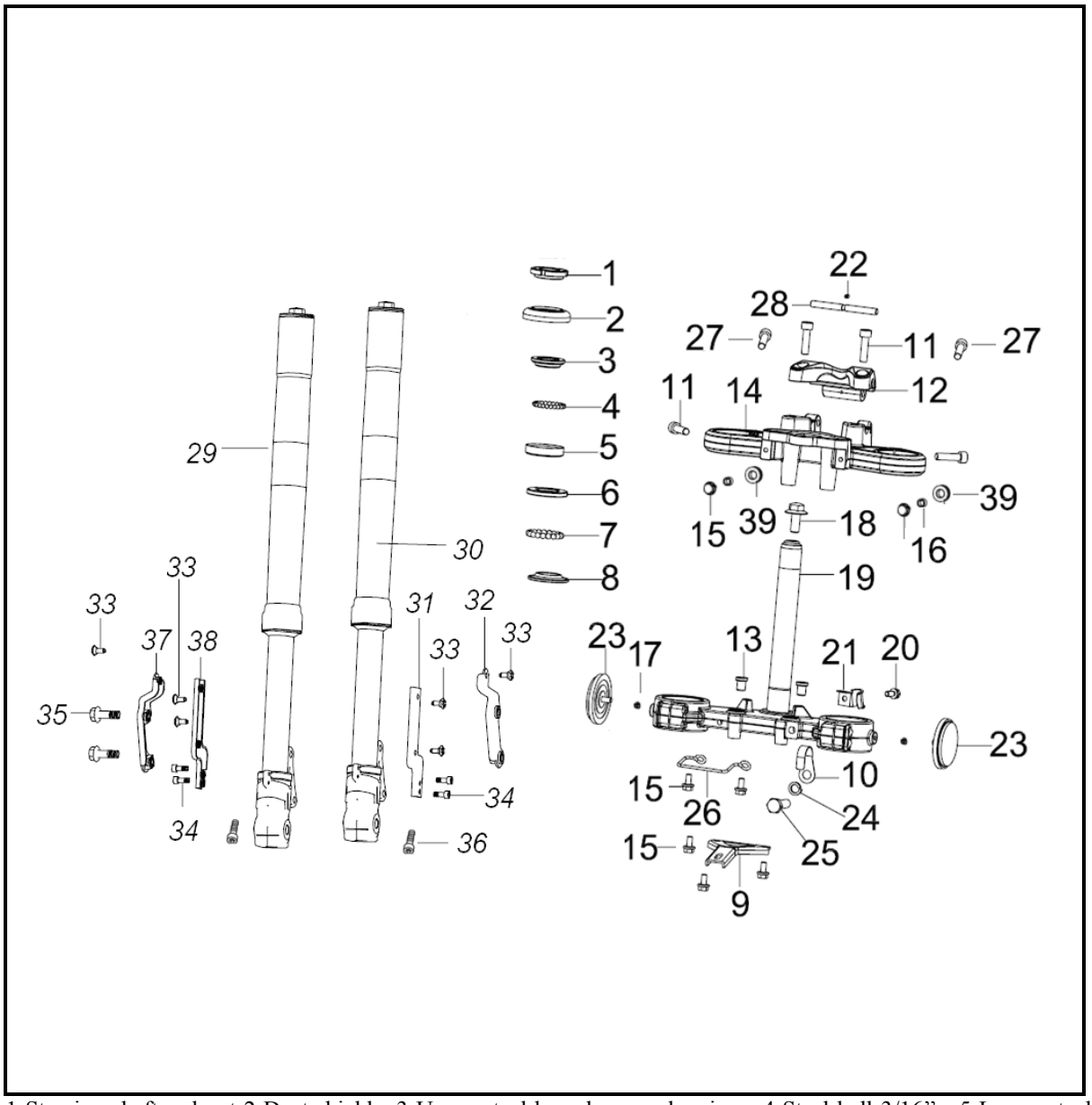
1 Front wheel shaft 2 Gear housing assembly 3 Rolling bearing 4 Intermediate sleeve, front wheel 5 Gear housing oil seal component 6 Front wheel disk 7 Big gear drive vane 8 Oil seal component, front wheel 9 Left bearing sleeve, front wheel 10 Front braking disk 11 Mounting bolt, hydraulic braking disk 12 Right lining, front wheel 13 Sub-assembly, front wheel 14 Vacuum tyre 100/80-17 15 Inflating valve Z2-01-1/direct

Steering handlebar



1 RR mirror assembly 2 LR mirror assembly 3 Handlebar stop 4 Right handlebar component 5 Right combined switch 6 Welded component, steering handlebar 7 Left combined switch 8 Left steering handlebar sleeve 9 Left handle component 10 Left handle 11 Handle fixing bolt 12 Bolt M6×25 13 Bolt M6×20 14 Fixed cover 15 Adjusting screw 16 Adjusting nut 17 Left handle base 18 Clutch wire sleeve 19 Socket head cap screw M6×35 20 Check valve flexible wire clamp 21 Bolt M6×25 22 Nut M6 23 Mounting screw, brake pedal 24 Spring washer 10 25 Lining 26 Welded component, brake pedal 27 Brake pedal tensioning spring 28 Valve steel cable component 29 Clutch cable component 30 Accelerator cable component 31 Rear mirror assembly 32 Clutch switch

Front fork



1 Steering shaft rod nut 2 Dust shield 3 Upper steel bowel, upper bearing 4 Steel ball 3/16” 5 Lower steel bowel, upper bearing 6 Upper steel bowel, lower bearing 7 Steel ball 1/4” 8 Lower steel bowel, lower bearing 9 Lower bracket, lamp 10 Cable clamp 11 Socket head cap screw M8×30 12 Upper base, steering handlebar 13 Bottom cushion, bracket 14 Upper interconnecting plate assembly 15 Bolt M6×12 16 Bolt M6×12 17 Socket head cap screw M6×30 18 Strut bolt 19 Lower interconnecting plate assembly 20 Combined screw M6×12 21 Hydraulic tube clamp 22 Hexagon socket set screws with flat point M4×6 23 Side reflective assembly 24 Washer 10 25 Bolt M10×16 26 Cable clamp 27 Combined screw M6×16 28 Locating pin 29 FR shock absorber assembly 30 FL shock absorber assembly 31 Left bracket II assembly, front fender 32 Left bracket I assembly, front fender 33 Screw M6×15.2 34 Socket head cap screw M6×16 35 Front license mounting bolt M10×1. 25×30 36 Socket head cap screw M6×30 37 Right bracket I assembly, front fender 38 Right bracket II assembly, front fender 39

VII. Front wheel/Front suspension

7. 1 Service Data

Precautions

Prior to disassembly of the front wheel, use a jack to support against bottom of the motorcycle, and it is important that the front wheels must not rotate reversely when they keep away from the ground.
During operation, it is important that any grease must not be attached on friction disc and its assembly, as well as hydraulic braking disk.

Reference for motorcycle

Measuring position	Item		Standard value (mm)	Allowable limit (mm)
Front wheel shaft	Bending			0. 2
Front wheel	Wheel disk shimmy	Longitudinal direction		2. 0
		Horizontal direction	Not less than 1. 0	2. 0

Torque force value

Tool

Fixing bolt, welded component, steering handlebar 22-29 N·m Dismantling rod, bearing

Fixing bolt, front shock absorber 37-44 N·m Locking nut wrench

7. 2 Fault Diagnosis

7. 2. 1 Steering handlebar rotating without flexibility

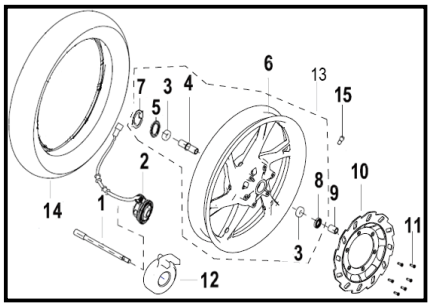
The handlebar bearing is faculty.
The handlebar bearing is damaged.
Pressure within the tyre is too low.
Air leaks from the tyre.

7. 2. 2 Direction not steady

The handlebar bearing is damaged.
Pressure within the tyre is insufficient.
Front fork is bent and its bearing is bent.
Front wheel tyre is subjected deformation and the tyre is not aligned.

7. 2. 3 Front wheel wobbling

Wheel disk is deformed.
Front wheel bearing is worn.
Tyre is in poor condition.



7. 2. 4 Wheel failing to rotate

Wheel shaft bearing is faulty or gear housing is faulty.

7. 2. 5 Abnormal noises from front shock absorber

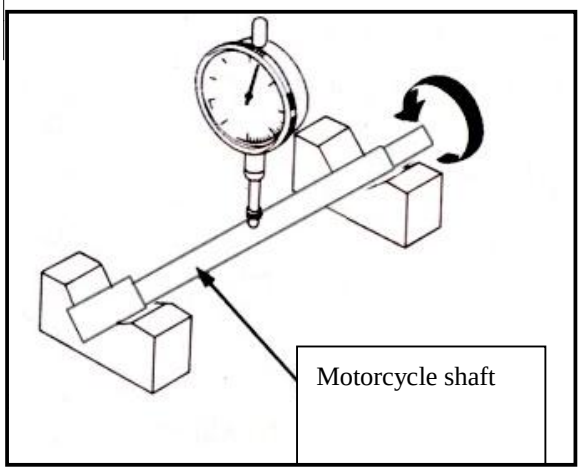
Noises due to friction against absorber guard.
Bolts of the absorber are loosened.

7. 3 Front wheel

7. 3. 1 Disassembly

Attention:
The motorcycle must be securely supported against the ground.
Remove the fixing screw of speed meter and its cables.
Remove the locking nut of front wheel shaft.
Remove the front wheel shaft (1).
Remove the gear housing component (2) and front wheel.
Unscrew to remove the front mud fender and odometer cable.
Remove the braking hose of front brake.
Oil seal removing appliance and bearing removing appliance must be used.
Remove oil seal (8) and bearing (3).

***Note: See P75 of this manual for disassembly of**



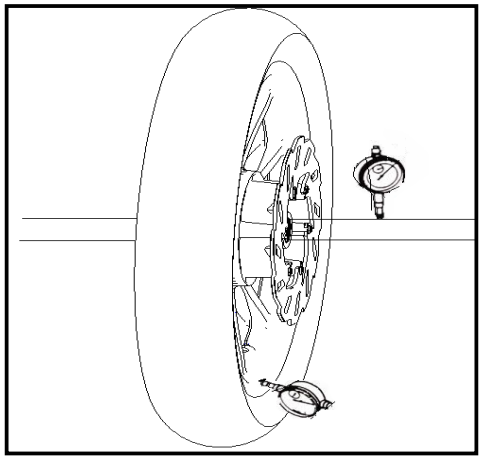
QJ200-2A front wheel.

7. 3. 2 Check

7. 3. 2. 1Check of wheel shaft bending

Place the wheel shaft onto a V-shaped base, and the measure eccentricity with a micrometer gauge.

Allowable limit: replacing is required in case of exceeding 0. 2mm.



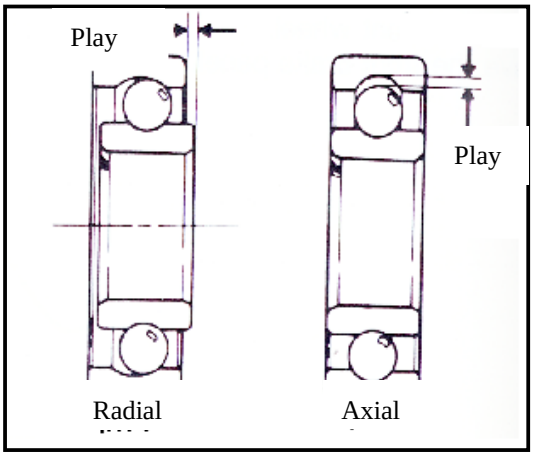
7. 3. 2. 2 Check of wheel disk wobbling

Place the wheel disk onto an accurate rack.
Check swinging degree of wheel disk.
Manually turn the wheel and read the swinging degree.
Allowable limit
Longitudinal direction: replacing in case of exceeding 2. 0mm
Horizontal direction: replacing in case of exceeding 2. 0mm

7. 3. 2. 3 Check of front wheel bearing

Remove the front wheel shaft (1) and hydraulic braking disc (10).
Remove the left bearing sleeve (9) of the front wheel to remove the oil seal (8).
Remove the bearing (3).

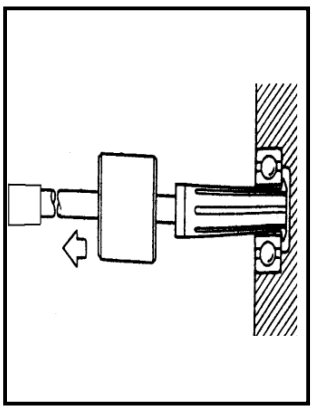
Check rotation of bearing.
If the bearing is found not to rotate or its rotation is found not to be smooth or steady, it indicates that the bearing is worn or loosened, and it shall be replaced with new bearing.



7. 3. 3 Replacing bearing

Remove the front wheel shaft, front wheel and its left bearing sleeve.
Intermediate sleeve (4) of front wheel
Oil seal removing appliance and bearing removing appliance must be used to remove the lower oil seal and bearing respectively.
Note: the removed bearing must be replaced with new bearing.
During installation, apply the lubricating grease onto the bearing.
And then, use the bearing mounting tool to press the bearing.

***Attention**
The bearing must be pressed in a parallel manner.

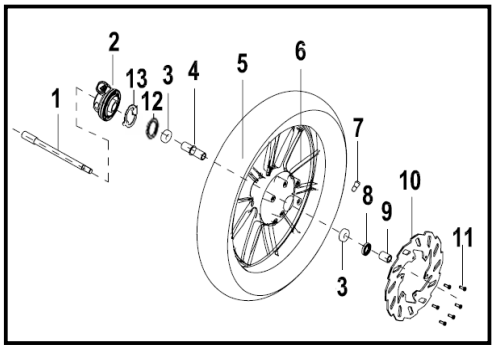


7. 3. 4 Installation

Installation must be initiated in the reverse sequence of disassembly.

Attention:
Lubricate the front wheel shaft, gear housing component, oil seal, bearing sleeve, rolling bearing (6301) and intermediate sleeve.
The recommended lubricant is calcium-base grease.

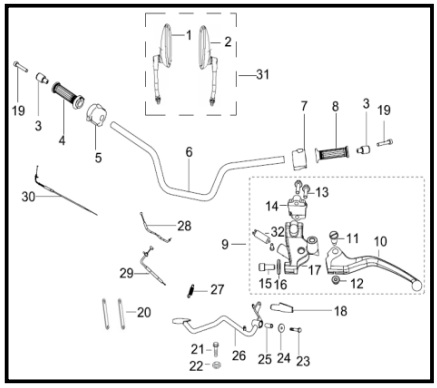
Install the front wheel shaft (1), front wheel, gear housing component (2) and nut M12X1.25.
It is important that the gear housing component should be aligned when it is being installed.
Odometer gear housing
The odometer gear housing component will deform if the component is not aligned to the locked front wheel shaft.
The front hydraulic bake component is mounted onto the hydraulic braking disc.
Tighten the front wheel shaft.



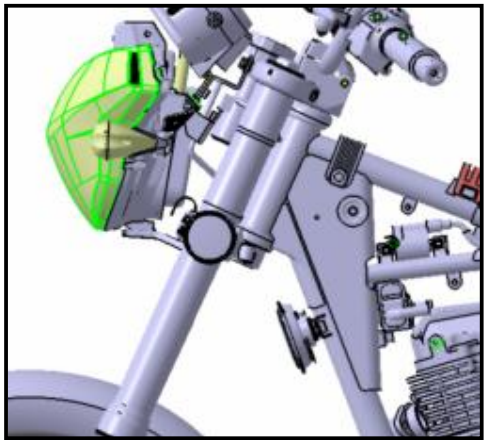
***Note: See P75 of this manual for disassembly of QJ200-2A front wheel.**

7. 4 Steering handlebar

7. 4. 1 Disassembly



Dismantle the right and left rear mirrors (1) and (2).
Open the fixed cover.
Remove the left handle component (9) of the front brake.
Remove the balancing block component (3)
Remove the right and left combined switches (5) and (7).
Remove the left handle grip (8) and throttle control handle (4) and fixed screws onto the upper base of steering handlebar.
Remove the upper base.
Remove the steering handlebar component.



7. 4. 2 Installation

***Note: See P96 of this manual for disassembly of QJ200-2A steering handlebar.**

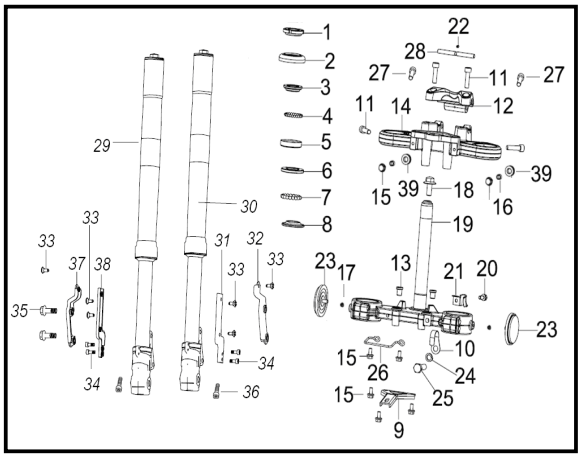
It should be installed by reversing the sequence of disassembly.

Fixing bolt, welded component, steering handlebar

Torque force value22-29 N·m

7. 5 Front fork

7. 5. 1 Disassembly



Support the main stand of the motorcycle.

Remove the front wheel.

Remove the brake clamp and tube clamp.

Dismantle the front fender and the reflector.

Remove the handle pipe.

Loosen the clamping bolt (upper interconnecting plate) and the clamping bolt (lower interconnecting plate).

Remove head light bracket.

Remove the front fork.

Tool

Fixing bolt, welded component, steering handlebar

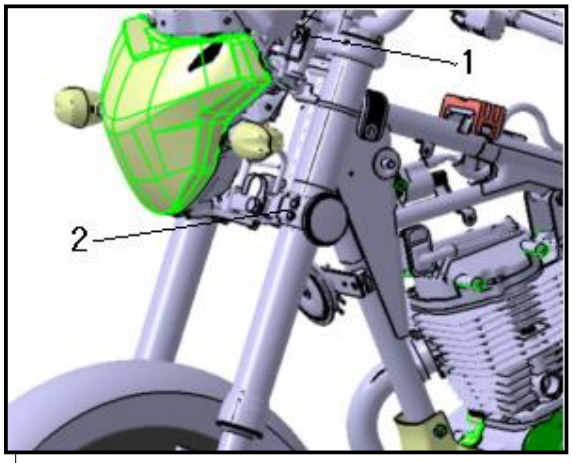
Locking nut wrench

Tool special for removing steel bowel of bearing.

***Attention:**

Clean the opening on the body opening with dust rag.
The steel bowels of the upper and lower bearings are removed by means of special tool.

7. 5. 3 Installation

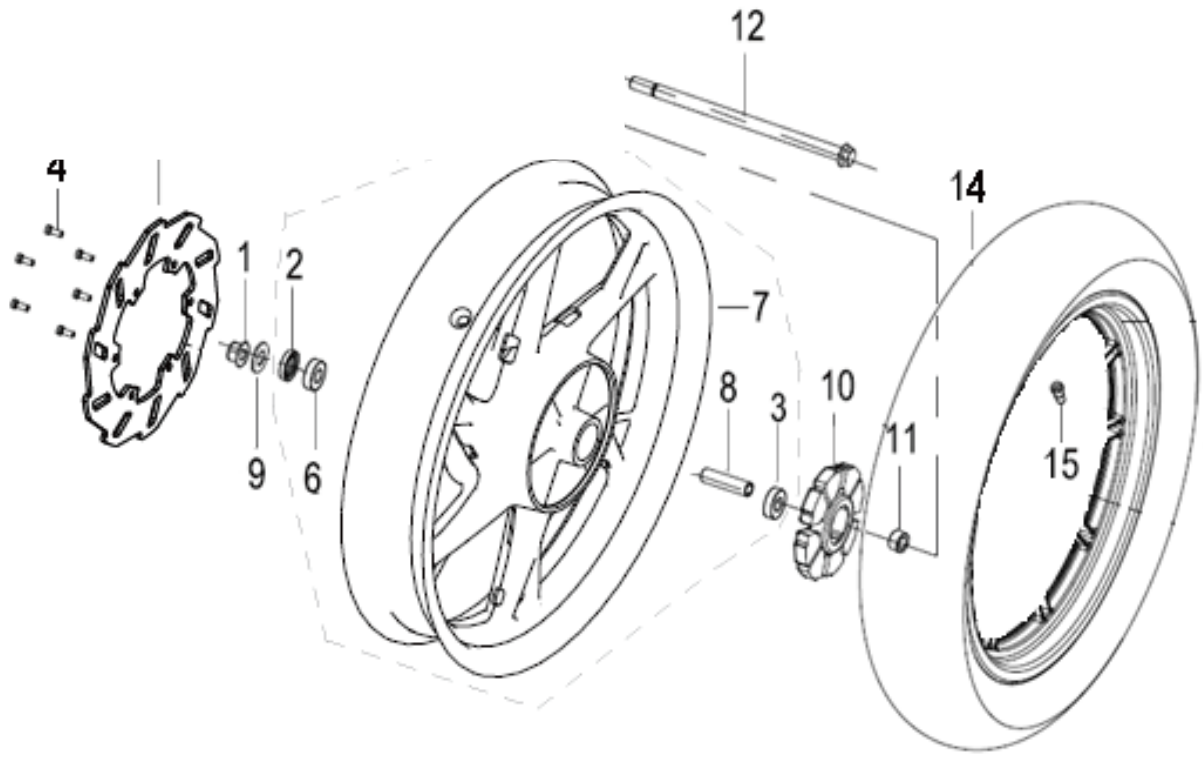


Apply grease onto the steel bowel of bottom bearing and confirm the number of steel balls (23 balls).
The steering handlebar is non-turnable (to prevent the steel balls from falling) and then install the steering handle.
Support the steering handle, apply grease onto steel bowel of the top bearing and confirm the number of steel balls (19 balls).
Apply grease onto the top housing washer.
Rotate the steering handle left and right so that steel balls are contacted and mated with each other closely.

Tool:
Fixing nut wrench
Turn the front fork left and right to confirm its smoothness and it is not loosened.
Procedures:
Installation must be initiated in the reverse sequence of disassembly.
To install the front fork, tighten the clamping bolt firstly.
Make sure that the fork end is flushed with handle head.
Tighten the clamping bolt (lower interconnecting plate) (11)
and tightening bolt of steering stem (18).
***Note: See P92 of this manual for assembly and disassembly of QJ200-2A front fork.**

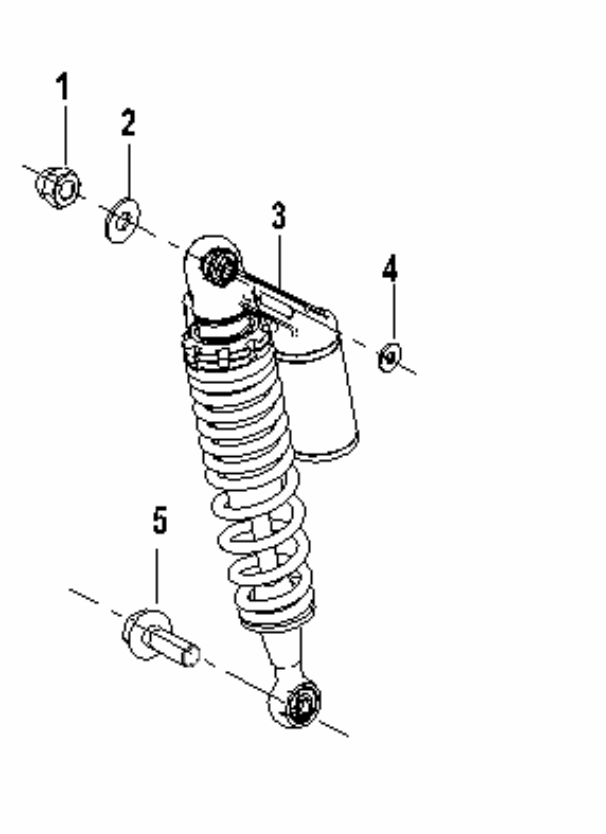
Rear wheel

A	Tyre dimensions: vacuum tyre 130/70-17
B	
C	Rim runout limit:
	Vertical: 2.0mm
	Horizontal: 2.0mm
D	Wearing limit: 1.0mm
E	Rear hydraulic braking disk diameter: 240mm
F	Torque force value of bolt 12 in the figure: 85-98 N • m



1 Self-locking nut M14×1.5 2 Right oil seal assembly of front wheel 3 Rolling bearing 6202-2RS 4 Mounting bolt M6×16 of hydraulic braking disk 5 Rear braking disk 6 Rolling bearing 6302-2RS 7 Rear wheel disk 8 Bearing sleeve 9 Washer φ16×φ32×2 10 Damper, rear wheel 11 Left bearing sleeve component of rear wheel 12 Rear wheel shaft M14×1.5×292 13 Sub-assembly of rear wheel 14 Vacuum tyre 15 Inflating valve

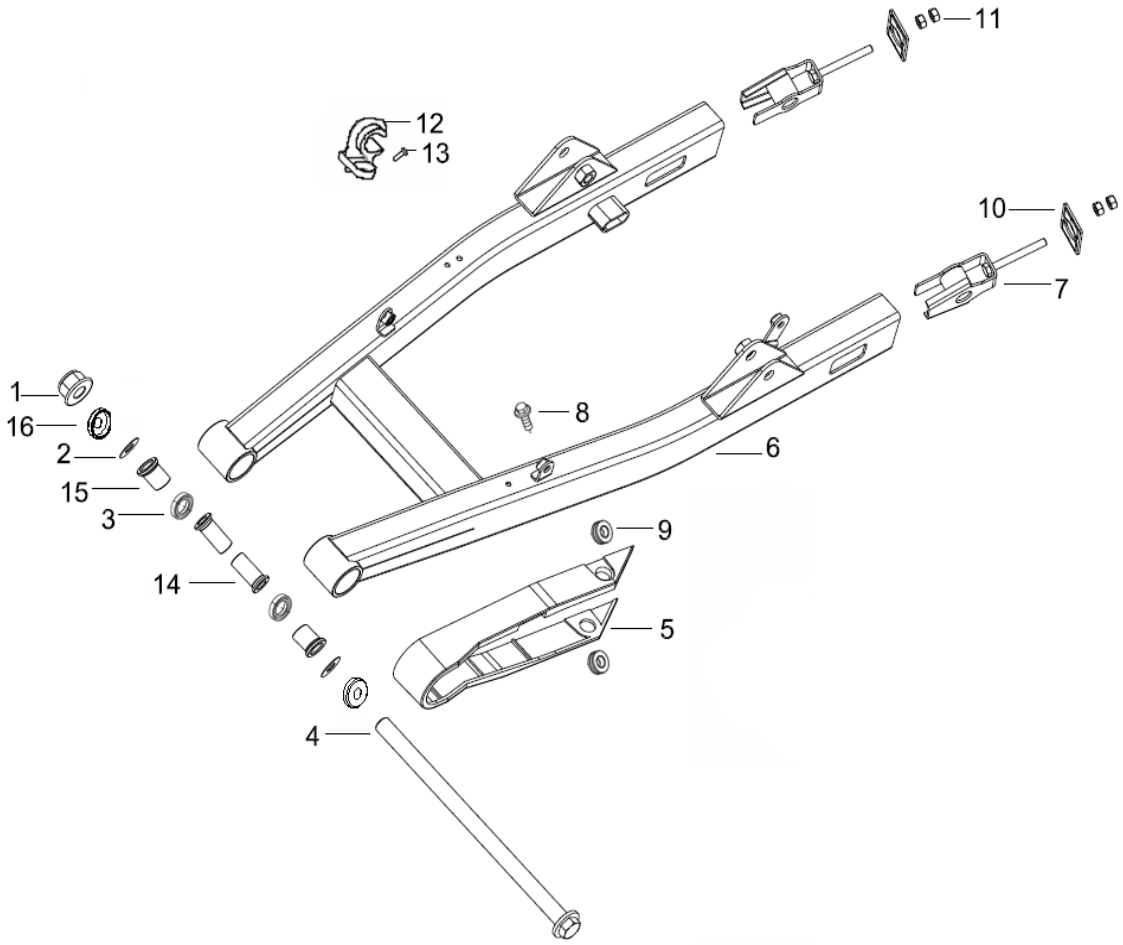
Rear shock absorber



1 Domed nut M10×1. 25 2 Mounting gasket, rear shock absorber 3 Rear shock absorber component 4 Washer 12 Bolt M10×1.25×40

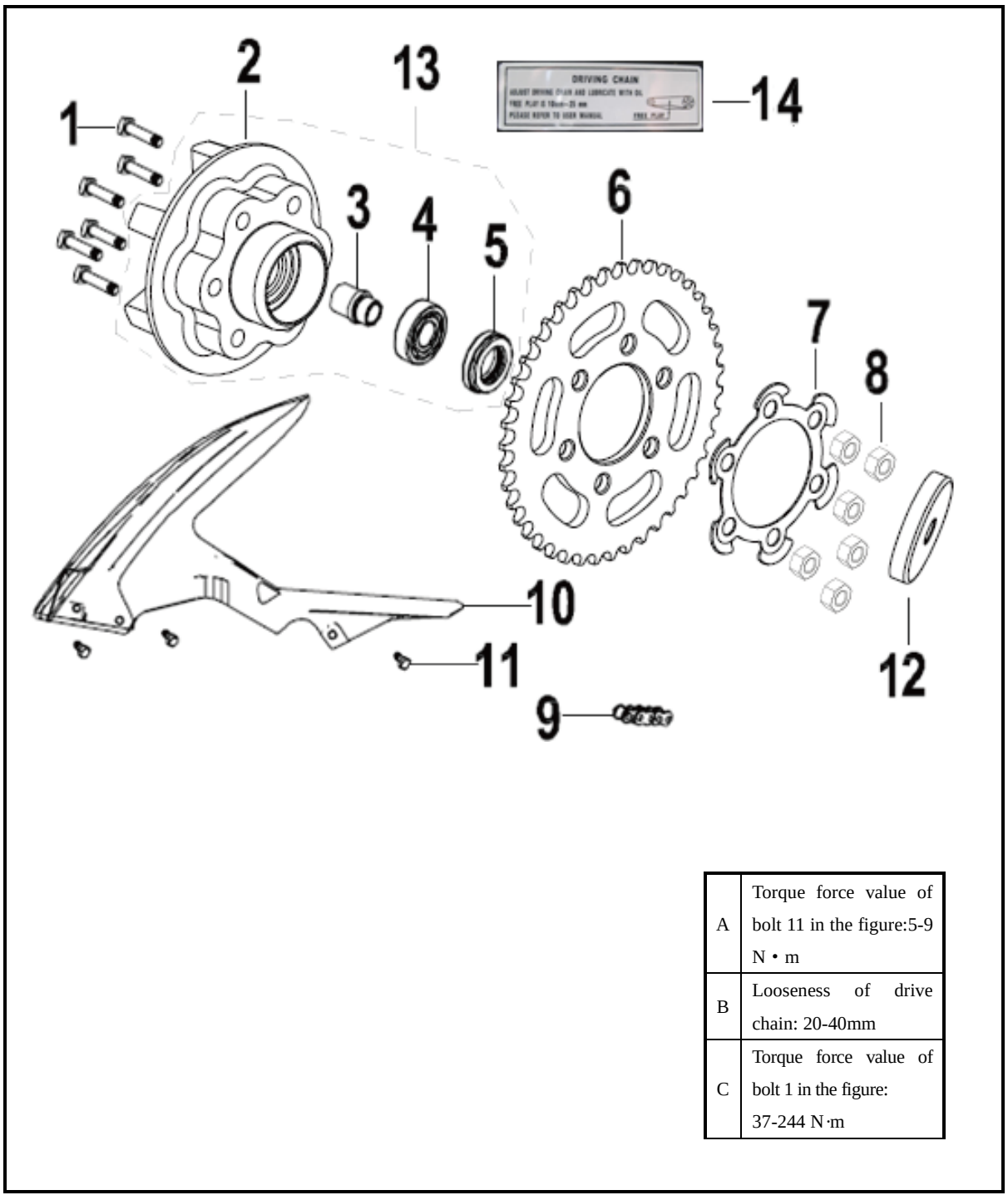
Rear swing arm

A	Side play limit (for swingarm opening end): 1.0mm
B	Torque force value of nut 1 in the figure: 70-83 N • m



1 Self-locking nut M14×1.5 2 Mounting washer, rear swingarm 3 Intermediate bearing sleeve 4 Mounting shaft, rear swingarm 5 Chain protective pad 6 Rear swingarm welding set, 7 Chain regulator 8 Screw M5×12 9 Sleeve 2 10 Holddown plate, chain regulator 11 Nut M8 12 Rear hydraulic brake cable clamp 13 Screw M6×12
14 Intermediate sleeve 15 Lining of rear swingarm 16 Dust shield component

Chain drive assembly



A	Torque force value of bolt 11 in the figure:5-9 N • m
B	Looseness of drive chain: 20-40mm
C	Torque force value of bolt 1 in the figure: 37-244 N·m

1 Mounting bolt M10×1. 25×38, sprocket 2 Sprocket hub 3 Chain driving sleeve 4 Rolling bearing 6204-2RS 5 Dust shield component 6 Toothed sprocket, sprocket 40 7 Anti-loosening locking pad, sprocket 8 Nut M10×1. 25 9 Chain 428HG-1×124 10 Chain cover 11 Boss bolt 12 Dust shield, sprocket hub 13 Sub-assembly, sprocket 11 Chain regulation mark

VIII. Rear wheel/Rear suspension

8. 1 Service Data

Precautions

Any grease spot is not allowed on the hydraulic braking disk and friction disc.

Reference

Item		Standard value (mm)	Allowable limit (mm)
Rear wheel wobbling	Longitudinal direction		2. 0
	Horizontal direction		2. 0

Locking torque force

Fixing nut, rear wheel	**85 - 98 N·m**
Top nut, rear shock absorber	**37 - 44 N·m**
Bottom nut, rear shock absorber	**37 - 44 N·m**

8. 2Fault Diagnosis

8. 2. 1 Rear wheel wobbling

Wheel disk is deformed.
Rear wheel bearing is worn.
Tyre is faulty.
Swingarm pivot bushing is worn or damaged.
Driving chain regulator adjusts incorrectly.

Motorcycle frame or swingarm is bent.

8. 2. 2 Wheel rotating without flexibility

Brake regulates incorrectly.
Rear wheel bearing is worn.
Driving chain is too tightened.

8. 2. 3 Bad braking performances

Brake regulates incorrectly.
Brake friction disc is worn.
Hydraulic braking disk is worn.
Brake friction disc is installed incorrectly.

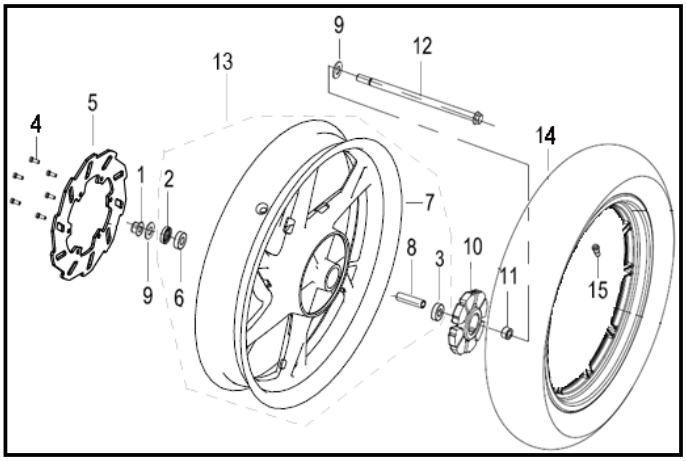
8. 2. 4 Brake pedal not flexible or returning slowly

Return spring is worn or broken.
Brake regulates incorrectly.
Hydraulic braking disk is worn or dirty.
Brake friction disc is installed incorrectly.

8. 2. 5 Brake jarring

Brake friction disc is worn.
Hydraulic braking disk is worn.
Brake friction disc is dirty.
Hydraulic barking disk is dirty.

8. 3 Rear wheel

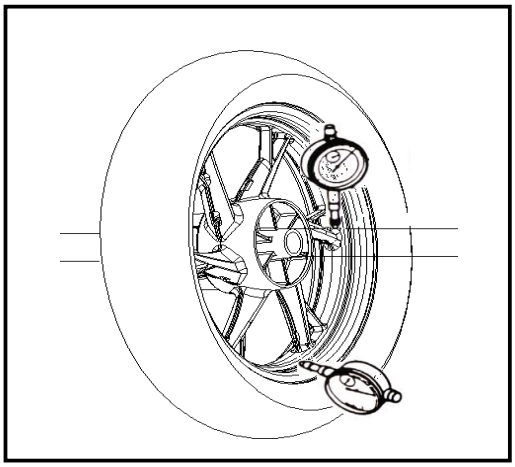


8. 3. 1 Disassembly

The motorcycle should be supported against the ground securely so that the wheels can keep away from the ground.
Remove the muffler .
Remove the rear brake cylinder component,
Remove the rear wheel shaft nut,
Remove the rear wheel.

Remove the torque transmission arm from the rear hydraulic braking disk.
Remove the drive chain regulating nut (4).
Dismantle the rear wheel shaft locking nut (1) and rear wheel shaft (12).
Move the rear wheel forward and then remove driving chain from the driving sprocket.
Dismantle the rear wheel.

8. 3. 2 Check



8. 3. 2. 1 Check of wheel disk wobbling

Turn the rear wheel manually and measure eccentricity with a micrometer gauge.

Allowable limit
Longitudinal direction: replacing in case of exceeding 2. 0mm
Horizontal direction: replacing in case of exceeding 2. 0mm

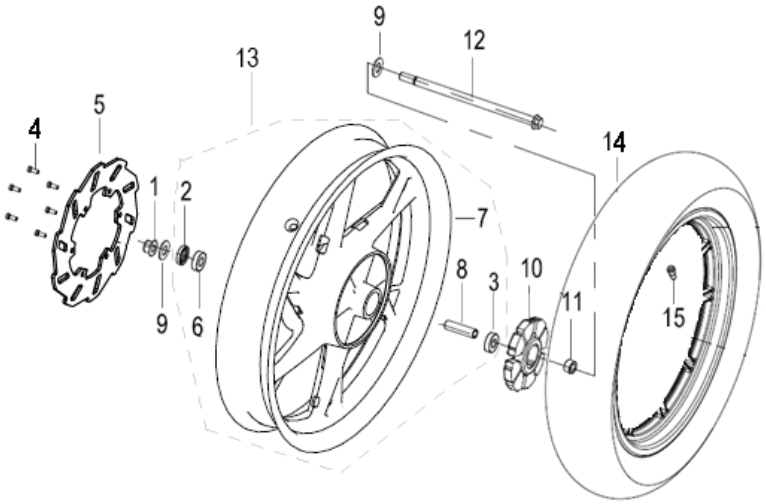
If the rear wheel wobbling exceeds the allowable limit, the rear wheel bearing is loosened, consequently the rear wheel wobbling. Replace the rear wheel bearing after check.

8. 3. 3 Installation

Install the rear wheel in reverse sequence of disassembly and lock the nut.

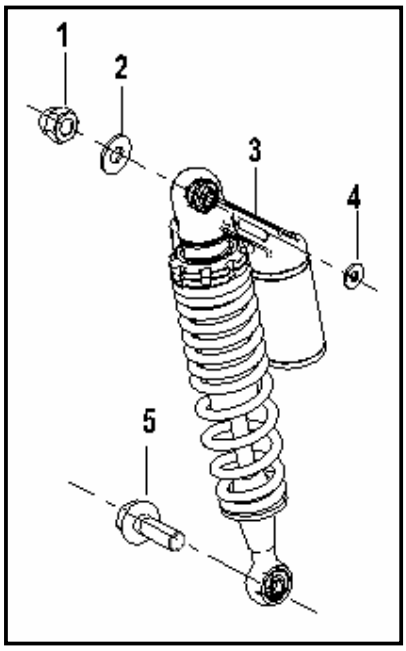
Fixing nut, rear wheel
Torque force value : 85-98N·m

QJ200-2A Rear wheel



8. 4 Rear shock absorber/rear swingarm

8. 4. 1 Dismantling rear shock absorber



Remove the sealing cover.
Remove the upper and lower fixing bolts (5) and nut (1) from the rear shock absorber.
Remove the rear shock absorber.

8. 4. 2 Check of rear shock absorber

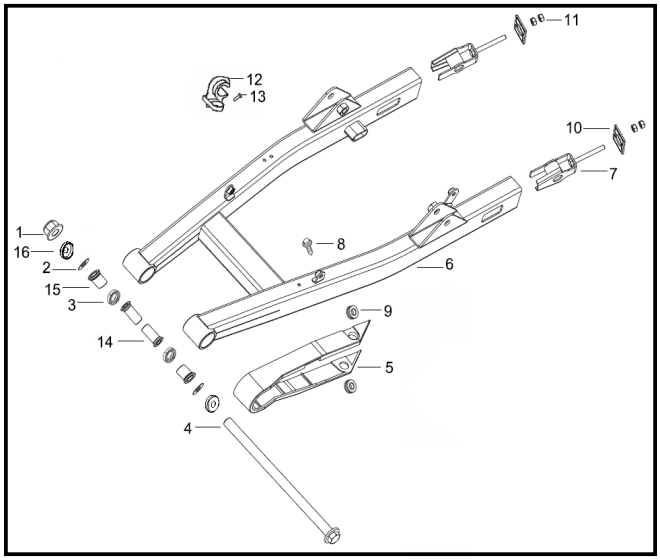
Check rear shock absorber rod, and if it is bent or damaged, replace the rear shock absorber component.
Check the spring, and if it is fatigued, replace the rear shock absorber component.

8. 4 Installation of rear shock absorber

Installation must be initiated in the reverse sequence of dismantling.
Mount the upper fixing nut and lower fixing bolt on the rear shock absorber.
Lock to the specified torque force.

Fixing nut
Torque force value : 37-44 N·m

8. 4. 4 Removal of rear swingarm



Dismantle the rear wheel.
Remove the two bolts and driving chain cover.
Remove the lower fixing bolt from the shock absorber on both sides.
Remove the swingarm pivot nut, rear swingarm shaft and swingarm from the frame.

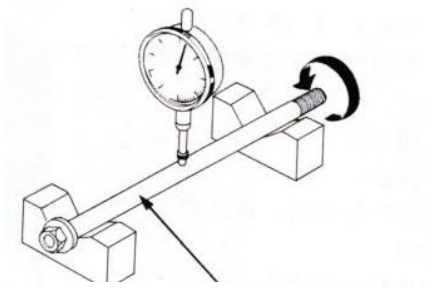
Note: See P101 for details of removal and installation.

8. 4. 5 Check of rear swingarm

Check the mounting shaft of rear swingarm and turn the shaft or measure it with a micrometer gauge after it is placed onto a flat surface. If the shaft is bent, replace it.

***Attention**

Do not attempt to straighten bent shaft.



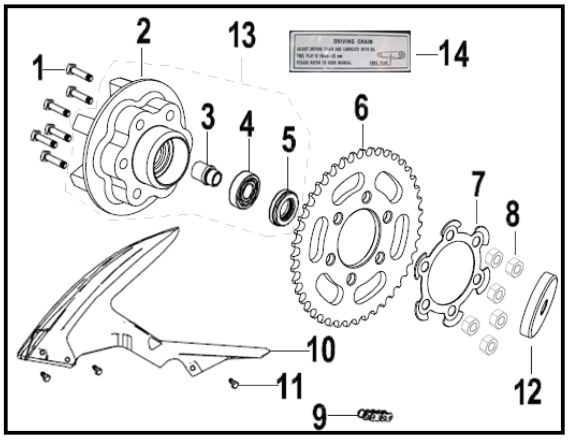
Rear swingarm shaft

Clean parts of rear swingarm mounting shaft with a solvent.
Check rear swingarm shaft sleeve component (2) and intermediate sleeve (3), and if any damage is found, replace it.

8. 4. 6 Installation of rear swingarm

Installation must be initiated in the reverse sequence of disassembly.
Apply grease onto the pivot bushing.
Check rear swingarm shaft sleeve component (2) and intermediate sleeve (3).
Install chain guard.
Load the swingarm onto the frame and insert the rear swingarm,
Install the swingarm shaft nut to the specified torque force.
Install the lower fixing screw of the rear shock absorber.
Install the driving chain cover.
Install the two connecting bolts.
Install the rear wheel.

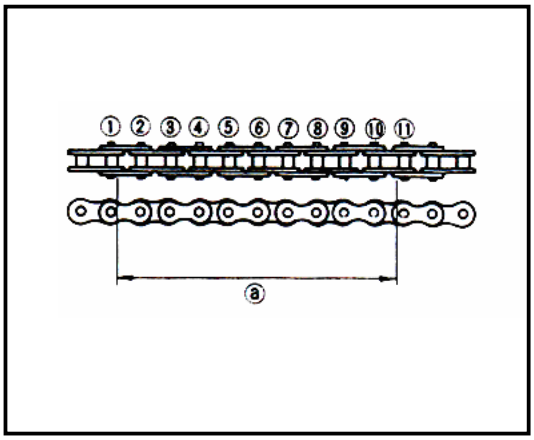
Nut, rear swingarm shaft
Torque force value : 70-83N·m



8. 5 Chain drive assembly

8. 5. 1． Disassembly

Stop the motorcycle on the flat ground, and support it securely.
Remove the connector of gear shift pedal, driving sprocket cover and driving sprocket.
Remove the rear wheel, rear shock absorber, sprocket housing and driving chain.



8. 5. 2. Check

Measure length of 10 links ⓐ, and if it does not meet specified value, replace the driving chain.

Limit length of the 10 links is 127mm.

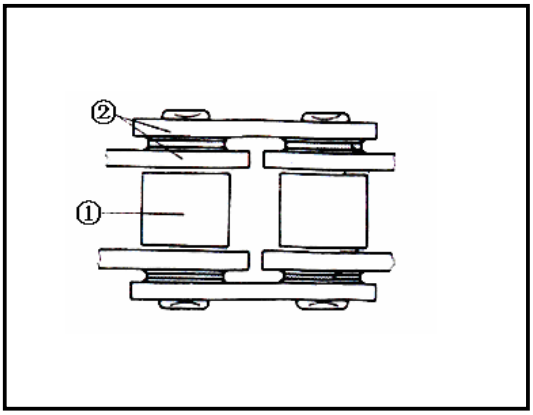
***Attention:**

Measurement shall be made only after the chain is straightened manually.

Measurement shall cover from link roller ① to ⑪

Measure length of 10 links.

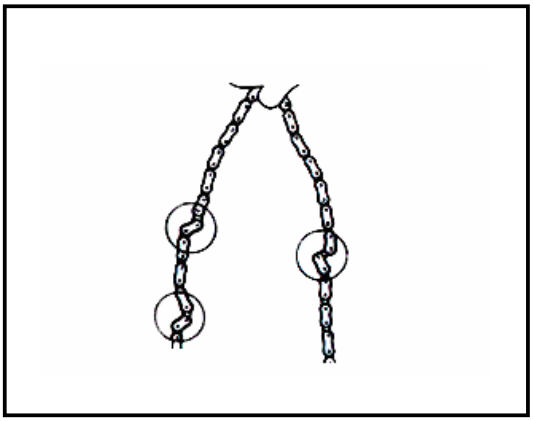
2-3 measurements shall be made for length of 10 links on different positions.



Clean the driving chain and place it into kerosene.

Clear dust as much as possible.

And then, take the chain out of kerosene, and dry it.



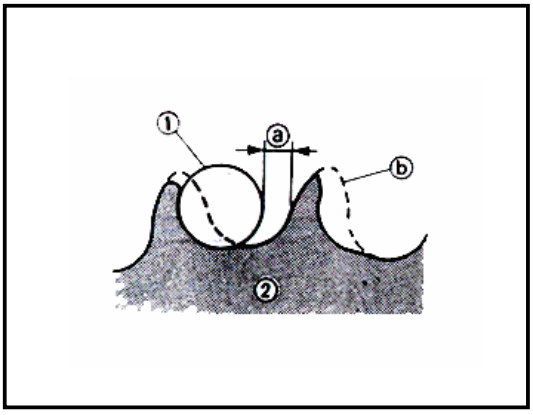
Check rotor ① and side panel ②.

If either of them is worn or damaged, replace the driving chain.

Lubricate the driving chain, and the lubricant can be outsourced from a shop.

Check hardness of driving chain.

If the chain is hard, clean, lubricate or replace it.



Check driving sprocket and driven sprocket.

If 1/4 teeth ⓐ is worn, replace the sprocket.

If the sprocket is bent, replace it.

Check rear hydraulic brake, and if any crack or wearing is found, replace it.

Check rear wheel damping sleeve, and if it is worn or damaged, replace it.

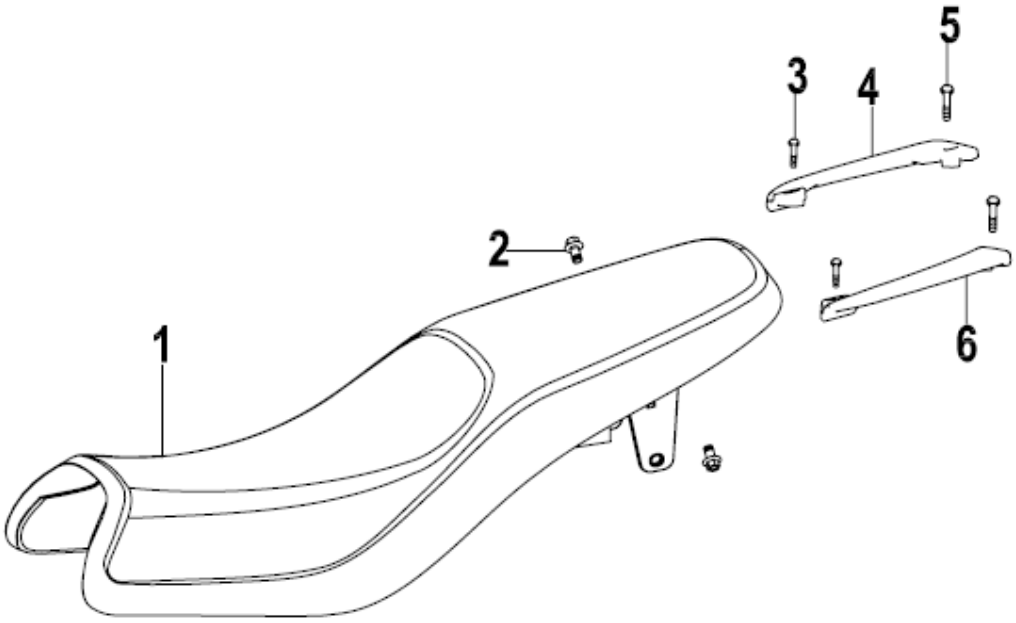
Check wheel bearing, and if bearing clearance is found within the hub or the wheel cannot rotate in a balanced manner, replace it.

Check oil seal, and replace it if it is damaged or worn.

8. 5. 4. Installation

Installation must be initiated in the reverse sequence of disassembly.
Install the driving chain, chain cover, LR shock absorber, rear wheel and driving sprocket cover.
Adjust the looseness of driving chain and free stroke of brake pedal.
If the looseness is too small, the engine and other key parts will be consequently overloaded.
Maintain the chain looseness within the specified limits.

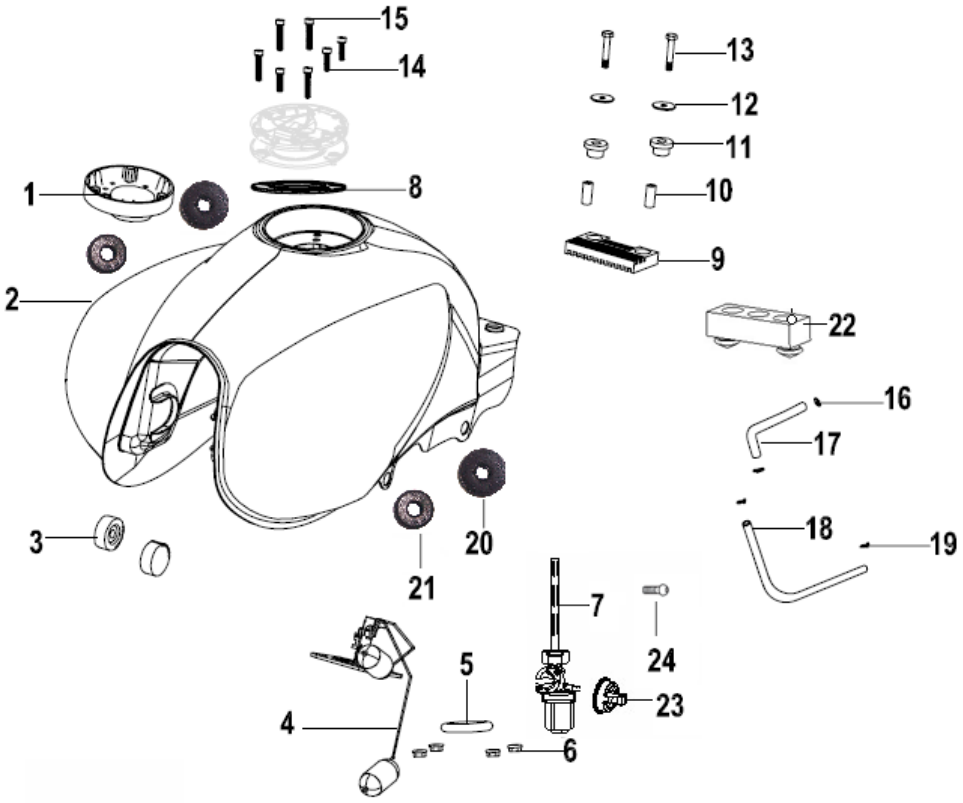
Seat cushion



A	Notes: To dismantle gasoline tank, turn the fuel switch to OFF.
B	Torque force value of bolt 2 in the figure: 22-29 N·m
C	Torque force value of bolt 5 in the figure: 22-29 N·m

1 Cushion assembly 2 Bolt M8×20 3 RR rack, rear carrier screw I4 5 RR rack (flat black B4) 6 LR rack

Fuel tank



A	Gasoline capacity: 17±0. 5L
B	Torque force value of screw 13 in the figure: 5-9 N·m
D	Torque force value of nut 6 in the figure: 5-9 N·m
E	Notes: To dismantle gasoline tank, turn the fuel switch to OFF.

1 Tank cover support component 2 Tank body component 3 Tank mounting pad 4 Fuel sensor component 5 Sensor rubber gasket 6 Nut M6 7 Tank switch component 8 Sealing gasket, tank cover 9 Tank mounting pad 10 Tank mounting shaft sleeve 11 Rubber sleeve 12 Tank mounting gasket 13 Bolt M6×35 14 Socket head cap screw M5×14 15 Socket head cap screw M5×30 16 Steel wire clampΦ10. 5 17 Oil tubeφ7×11×500 18 Fuel tube φ4. 5×8. 5×140 19 Steel wire clamp 8 20 Guard rubber gasket 21 Guard rubber gasket 22 Tank mounting pad 23 Switch lever 24 Screw M4×25

IX. Fuel tank/Seat cushion

9. 1 Service Data

Precautions

The dismantling site shall keep away from source of spark.
To dismantle gasoline tank, turn the fuel switch to OFF.
During assembly, tighten the bolt and nut to specified torque force value.
After assembly, check if all parts are installed correctly and operated correctly.

Reference

Item	Standard	Allowable limit
Gasoline capacity	17±0.5L	/

Locking torque force

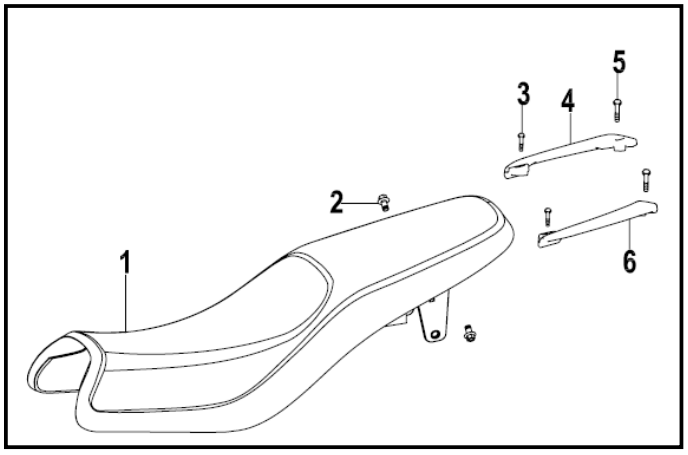
Rear rack fixing bolt	**22-29 N·m**
Gasoline tank fixed bolt	**5 - 9 N·m**

9. 2 Fault Diagnosis

Gasoline volume decreases.

Gasoline is consumed naturally.
Gasoline leaks.

9. 3 Fuel tank/Seat cushion



9. 3. 1 Disassembly

Dismantle the right and left guards.

Insert the ignition key into the seat lock, turn the key clockwise and open the lock.

Insert the ignition key into the seat lock, turn the key clockwise and open the lock.

Pull out the helmet hook downward, disengage the hook with frame

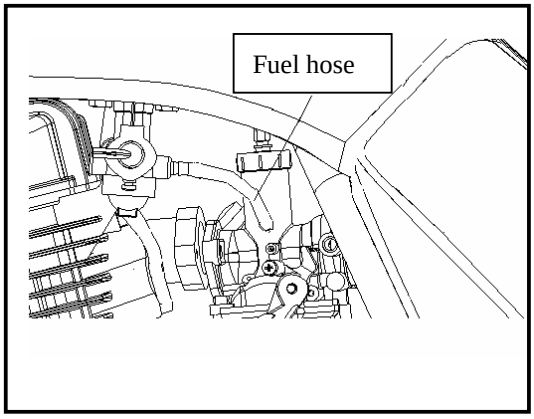
and then remove the cushion (1).

Remove the fuel level sensor cable connector.

Turn fuel switch to OFF.

OFF: fuel hose

Remove bolt, gasket, cushion and fuel tank.

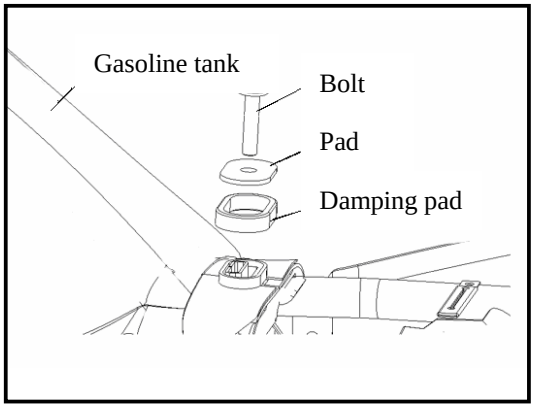


Take tank from the frame.

Notes:

See P91 and P92 for details of installation and removal.

9. 3. 1 Installation



Installation must be initiated in the reverse sequence of disassembly.

Mounting torque force:

Rear rack fixing bolt	**22-29 N·m**
Gasoline tank fixing bolt	**5 - 9 N·m**

Maintenance and check of engine

Fastener Torque Force Value Table

Fastening position and fastener description	Fastening torque (Nm)
Cylinder head nut	24～30
Cylinder head cover bolt	9～12
Cylinder double end studs	24～30
Flywheel locking bolt	40～55
Valve clearance adjustment nut	9～12
Gear shift locator bolt	9～12
Closer bolt	9～12
Right and left crankcase cover bolts	9～12
Coil screw	9～12
Oil filter cover bolt	9～12
Clutch Fixing nut	190～210
Cylinder body fixing bolt	9～12
Output sprocket nut	190～210
Fuel pump screw	9～12
Gear shift locating plate bolt	9～12
Spark plug	10～15

X. Lubricating system

10. 1 Service Data

Function of lubricating system: engine lubricating system is to supply lubrication oil to friction surface of engine elements, turning the dry friction on the surface into liquid friction between lubrication oil particles, thus mitigating part wearing, cooling down parts with high thermal load, absorbing impact from bearing and the elements and consequently reducing noises, increasing tightness between cylinder ring and wall, and cleaning and taking away foreign matters from surface of parts.

Precautions

After engine oil pump is disassembled, carefully clean its parts and purge the surface with high-pressure gas.

To disassemble engine oil pump, it is important to prevent any foreign matter from falling into crankcase.

Table for Standard Value and Allowable Limit of Reference Items

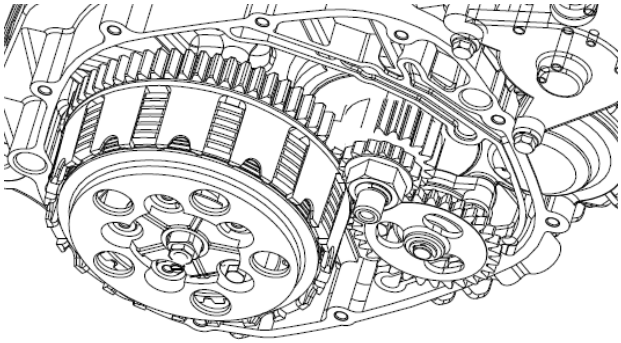
Item		Standard	Allowable limit
Engine oil capacity	For changing oil	1. 2L	__
	For disassembly	1. 4L	__
Pump rotor	Radial clearance between inner and outer rotors	0. 04~0. 1	0. 15
	Clearance between outer rotor and pump	0. 11~0. 176	0. 22
	Rotor face-to-face clearance	0. 016-0. 063	0. 11

10. 2Fault Diagnosis

Gasoline volume decreases
Gasoline is consumed naturally.
Oil leakage

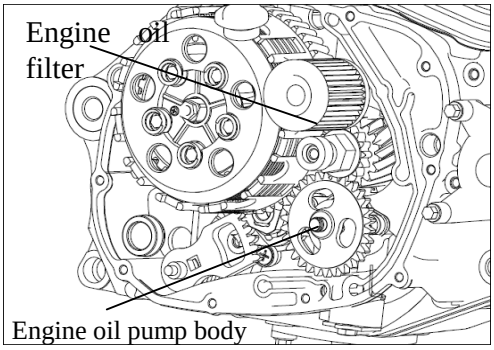
Engine damaged
No or too low oil pressure
Oil circuit clogged.

10. 3 Engine oil pump

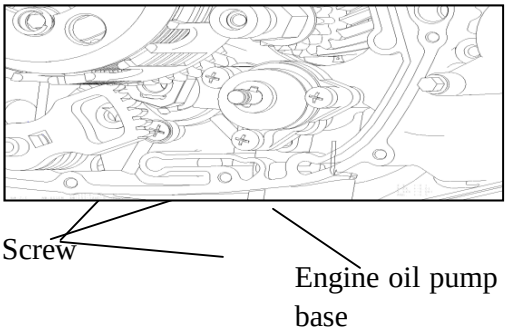


10. 3. 1 Disassembly

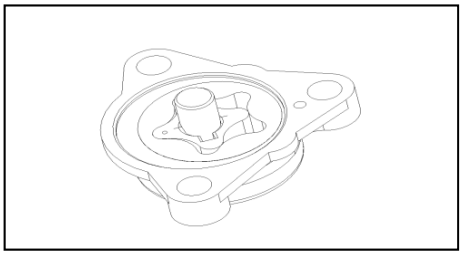
Remove the right cover, unscrew the pump fixing screw after engine oil filter is removed, and then remove the pump body, driving gear and pump shaft.



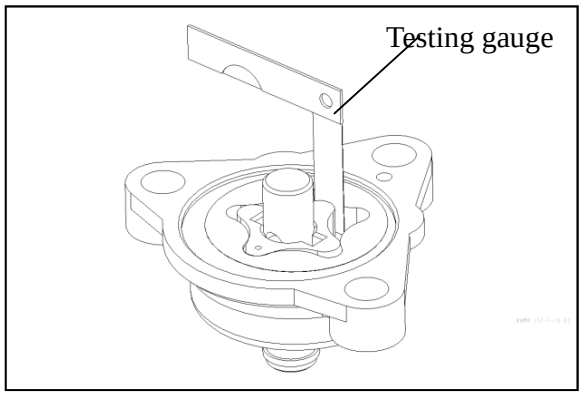
Remove screws.
Remove the pump base.



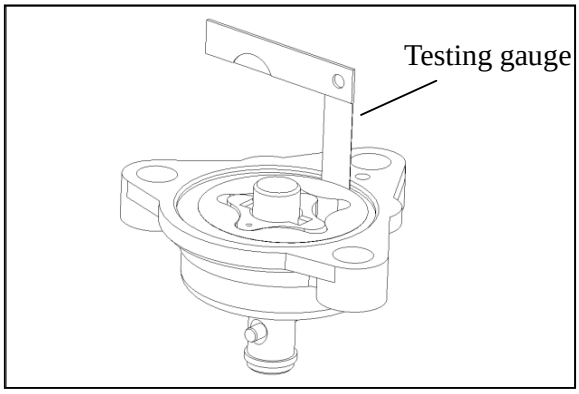
Remove the pump cover and dismantle the pump.



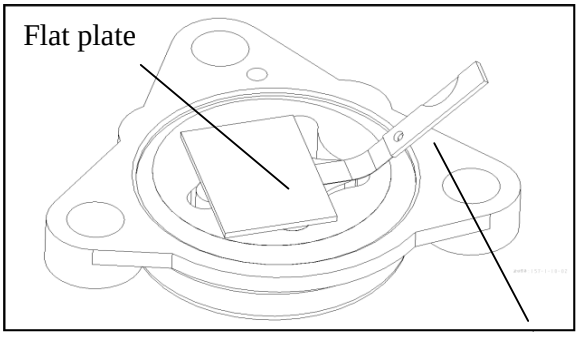
Check radial clearance between inner and outer rotors
Allowable limit: 0. 25mm.



Check clearance between outer rotor and pump base.
Allowable limit: 0. 25mm.

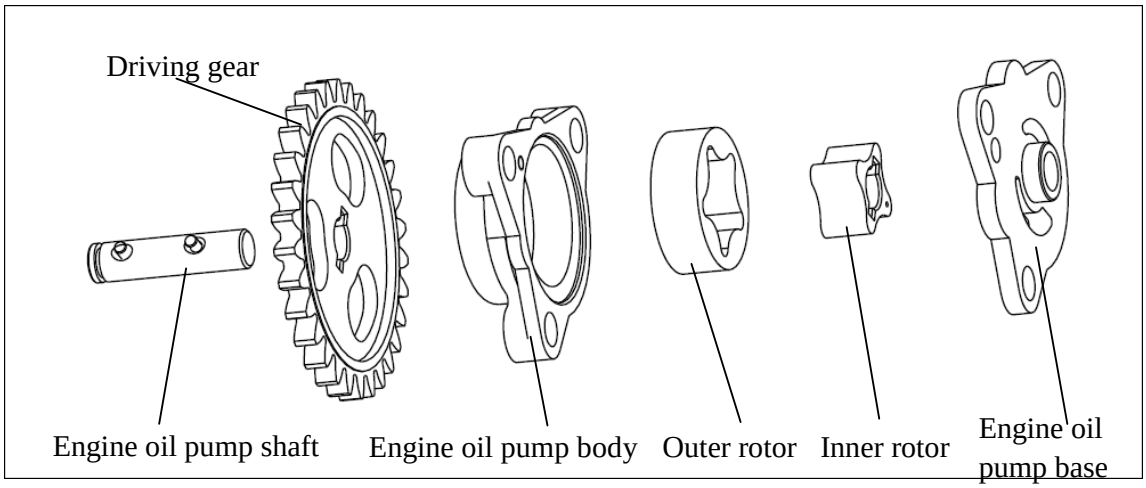


Check rotor face-to-face clearance
Allowable limit: 0. 15mm.



10. 3. 2 Assembly of engine oil pump

As shown in the following figure.

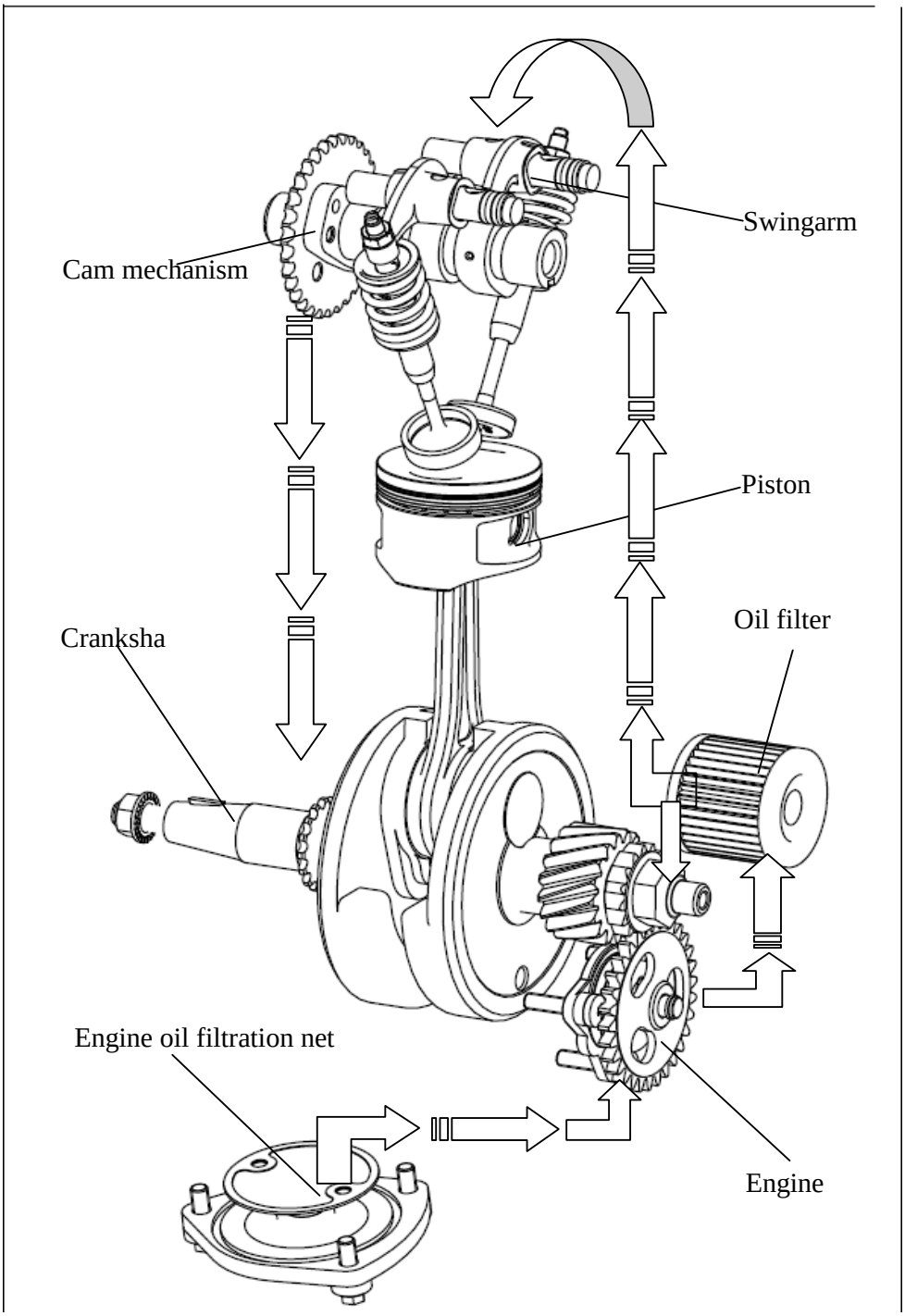


Attention: After these parts are combined into the pump, the inner and outer rotors must be free to rotate without jamming.

10. 3. 2 Installation

These parts are assembled in the reverse sequence of disassembly.

Diagram for lubricating system



XI. Carburetor

11. 1 Service Data

Function of carburetor: It is a key part of engine fuel supply system, and its operation status has a direct bearing on operation stability, power and economic indexes of the engine. It atomizes a certain amount of gasoline into fine oil droplets and mixes these droplets with different amounts of air evenly, thus forming combustible mixed gas mist with different density depending on the needs of engine under different operating conditions and promptly supplying the gas to engine, ensuring continuous and normal operation of engine.

Precautions

The gasoline is combustible and explosive, therefore operation must be conducted in a well-ventilated place.

After the carburetor is disassembled, take necessary measures to prevent ingress of any foreign matter.

If a carburetor has not been used for one month, oil in the float chamber shall be released to prevent idling jet from being clogged as a consequence of gasoline degradation.

Table of Standard Items of Reference Items

Item	Standard value
Main metering jet	262
Idling metering jet	70
Oil needle	C03-0

11. 2 Fault Diagnosis

Poor startup

No fuel in carburetor
Gasoline filter clogged
Gasoline tube clogged

Difficult to startup, flaming out after startup or unstable during idling

Clogged carburetor
Too thick or thin mixed gas
Secondary air entering into intake system

Needle valve locked
Bad oil surface adjustment

Bad idle adjustment
Bad oil volume adjustment
Idle system or power enrichment valve clogged.

Too many fuels in engine
Too much oil and overflow
Secondary air entering into fuel system
Fuel degradation
Enrichment valve working badly
Idle system or air suppression system clogged

Too thin mixed gas
Jet clogged
Needle valve clogged
Too low oil level
Fuel system clogged
Plunger working badly
Secondary air entering into intake system

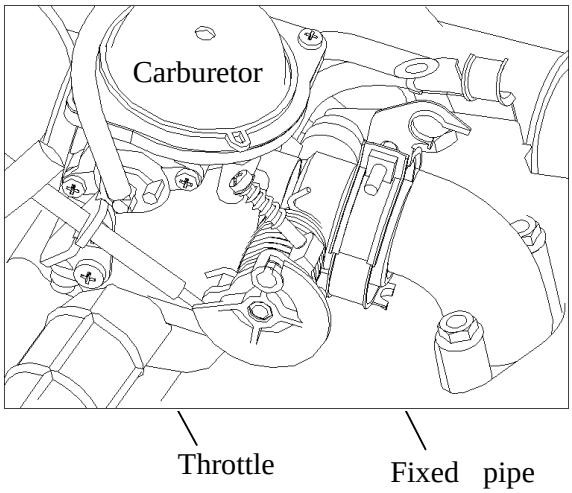
Too thick mixed gas
Enrichment valve working badly
Needle valve acting badly
Too high oil level
Carburetor oil overflow
Air circuit clogged and dirty air filter

Intermittent sparking during acceleration
Too thin mixed gas

11. 3 Disassembly of carburetor

11. 3. 1 Disassembly

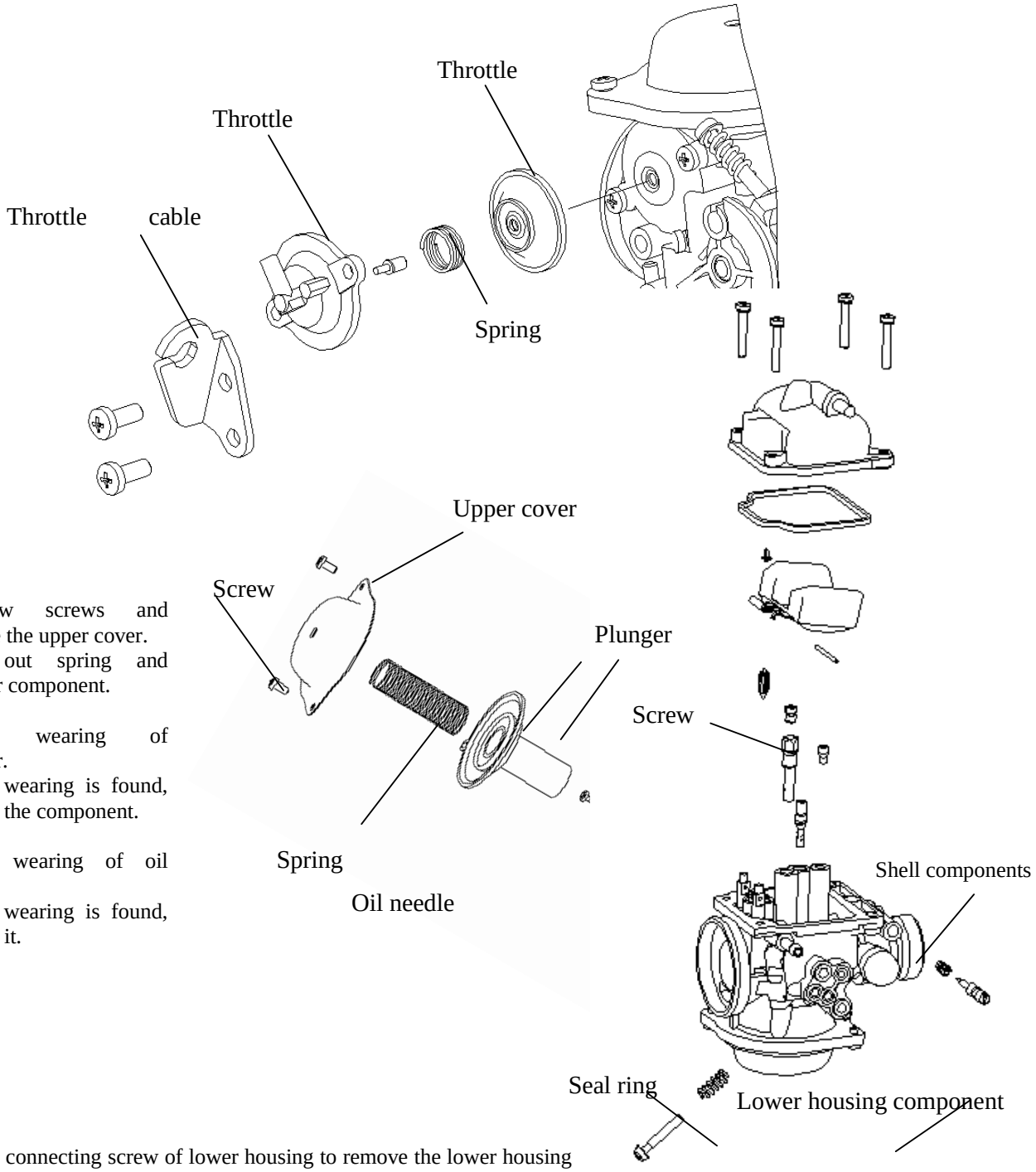
Turn off tank switch, loosen oil drain plug screw to release gasoline from the float chamber, and then remove the rubber fuel oil tube.
Remove the throttle steel cable.
Loosen fixing pipe clamp and fixing screw on the air intake pipe.
Dismantle carburetor assembly.



11. 3. 2 Decomposition of carburetor

Remove the fixing plate of throttle cable.

Take down the throttle valve bonnet, spring and throttle valve.



Unscrew screws and remove the upper cover.
Take out spring and plunger component.

Check wearing of plunger.
If any wearing is found, replace the component.

Check wearing of oil needle.
If any wearing is found, replace it.

Loosen connecting screw of lower housing to remove the lower housing component and seal ring.
Remove the float component, float pin and needle valve core.

Remove idling metering jet, main jet, main nozzle and main foam tube.

Remove the idling adjusting screws and their springs.
Dismantle mixture screw and its spring.

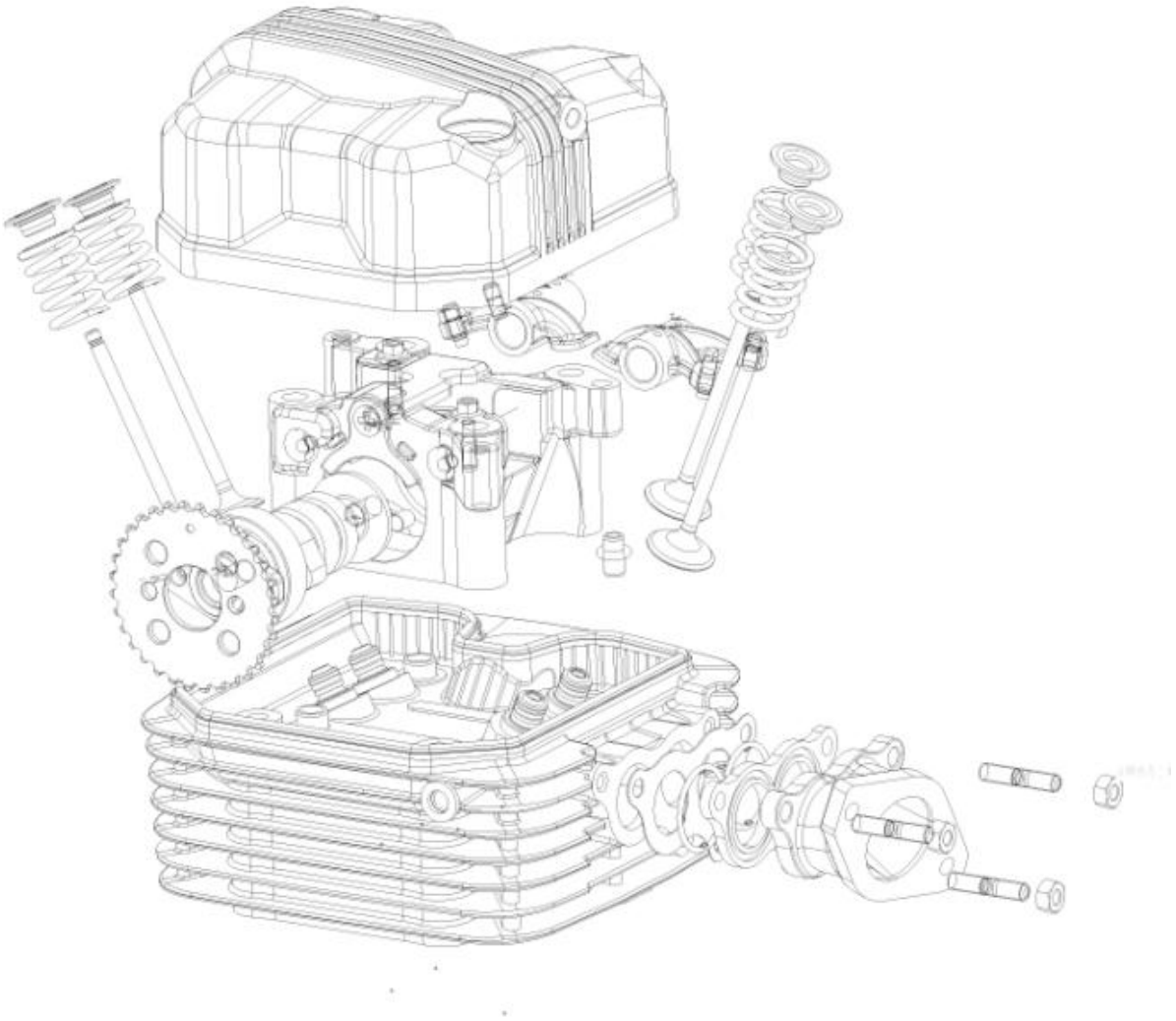
11. 3. 4 Assembly and installation

Assembly and installation are in the reverse sequence of disassembly.

11. 3. 4 Adjustment of carburetor

Attention: The idling adjusting screws have been adjusted when the carburetor is delivered, so no adjustment is needed in general. To decompose the carburetor, record the number of rotations for future combination.

Start and warm for around 3 minutes so that the engine runs at normal operating temperature;
Adjust the idling adjusting screw so that the engine speed is 1,500rpm;
Tighten the mixture adjusting screw completely and do not apply too big force;
Now, the engine flames out (if it does not flame out, check if the air filter connection leaks air, screws are tightened and air filter air inlet is clogged);
Reversely turn the mixture adjusting screw for one turn;
Restart and adjust the idling adjusting screw so that the speed is 2,000—2,500rpm;
Keep adjusting the mixture screw (counterclockwise) slowly until the engine rotates at its maximum speed (the screw is withdrawn for 2 turns at its maximum);
Re-adjust the idling adjusting screw so that the engine speed is 1,400±100rpm;
Increase frequency of throttle acceleration to check if the idle speed is stable;
Test emission and make comparison against specified standard.



XII Cylinder head/Valve

12. 1 Service Data

Function of cylinder head: It is used to seal cylinder and form the combustion chamber along with the piston in order to withstand high-temperature and high-pressure combustible gas. Through the valve system, the cylinder head intakes and discharges gas.

Precautions

To ensure seal between the cylinder head and cylinder body, the head withstand large pre-tension force from bolt. Pre-tension value: 50Nm

All parts must be cleaned before being checked, and purged with high-pressure air.

Table for Standard Value and Allowable Limit of Reference Items (in mm)

Item			Standard	Allowable limit
Flatness of cylinder head			0. 03	0. 05
Valve Valve guide	Valve clearance	Intake	0. 09-0. 1	—
		Discharge	0. 09-0. 1	—
	OD, valve rod	Intake	4. 965-4. 975	4. 9
		Discharge	4. 95-4. 96	4. 9
	ID, valve guide	Intake	5. 0-5. 012	5. 1
		Discharge	5. 0-5. 012	5. 1
	Clearance between valve guide and valve guide	Intake	0. 03-0. 041	0. 072
		Discharge	0. 045-0. 056	0. 077
	Valve base width	Intake/ discharge	1	1. 3
Valve spring	Free length		35. 4	32
Swingarm	OD, swingarm shaft	Intake/ discharge	11. 985-11. 989	11. 93
	ID, swingarm hole	Intake/ discharge	12-12. 018	12. 05
	Clearance between swingarm shaft and swingarm hole	Intake/ discharge	0. 01-0. 033	0. 075
Cam	Cam height	Intake	32. 343	32. 14
		Discharge	32. 107	31. 91

12. 2 Fault Diagnosis

Low compression pressure

Bad valve clearance adjustment

Valve burned or bent

Bad valve base air tightness

Abnormal noise in cylinder head

Bad valve clearance adjustment

Valve spring damaged

Too high compression pressure

Air leakage from cylinder head gasket

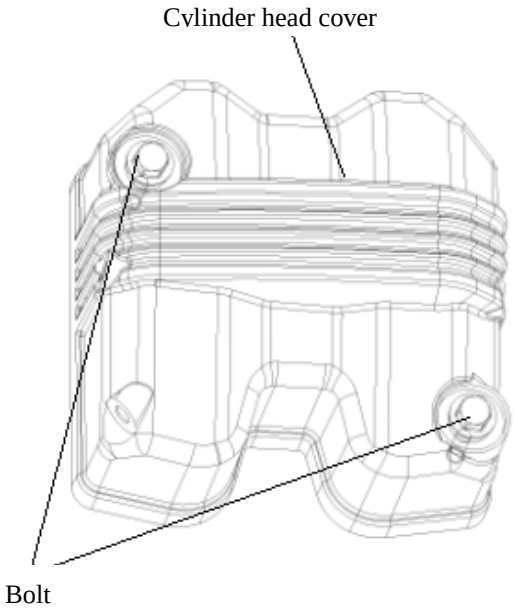
Too much accumulated carbon in combustion chamber

Poor installation of spark plug

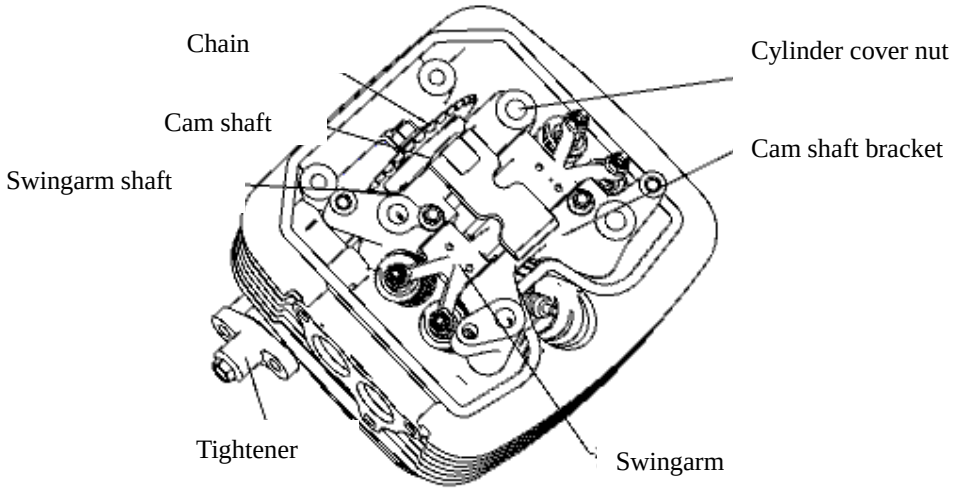
12. 3 Cylinder head

12. 3. 1 Disassembly

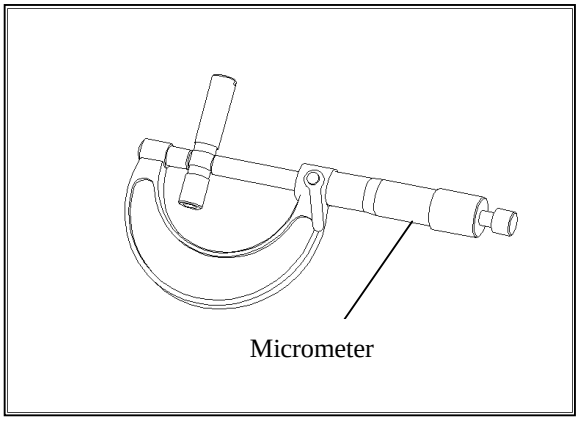
Loosen the two fixing bolts and remove the cylinder head cover (swingarm and its shaft).



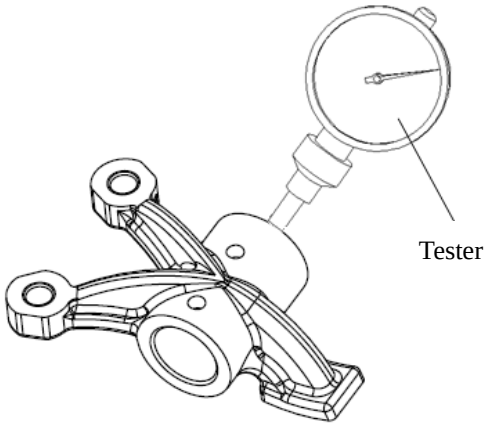
Release the tightener, loosen the chain and unscrew cover nut to take down cam shaft bracket, swingarm shaft, swingarm and cam shaft.



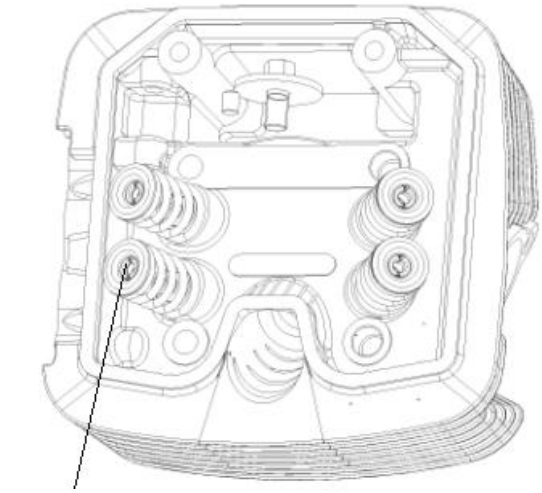
Measure outer diameter of swingarm shaft.
Allowable limit: 11. 93mm



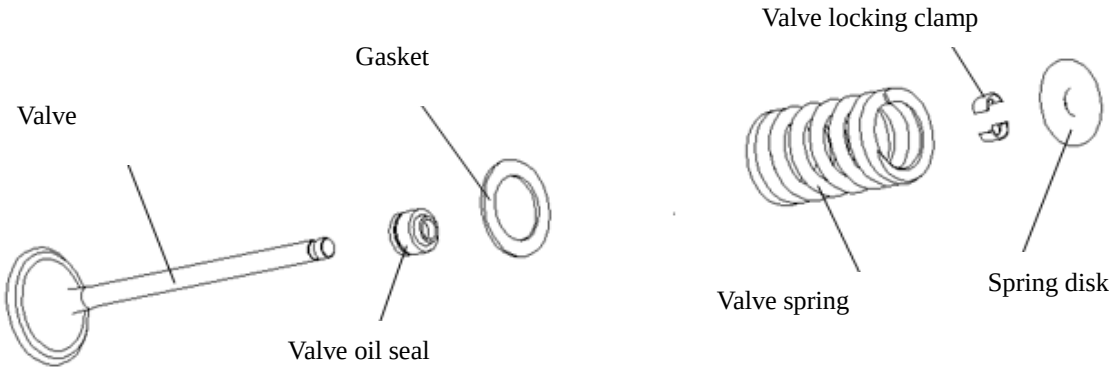
Measure inner diameter of swingarm hole.
Allowable limit: 12. 05mm
Clearance between swingarm hole and swingarm shaft
Allowable limit：0. 075mm



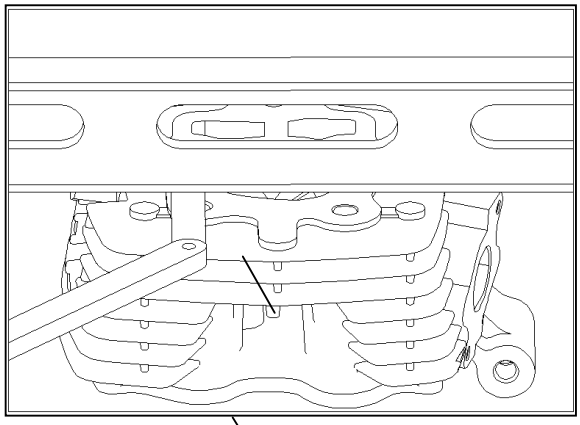
Directly remove the cylinder head cover and compress the valve spring with the valve spring compression tool and remove the valve locking clamp.
Take down the spring disk, valve spring and its gasket, and valve in turns.



12. 3. 2 Decomposition of valve

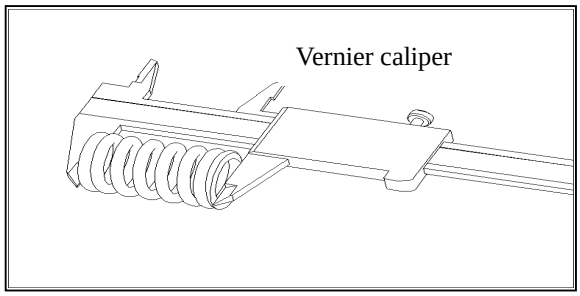


12. 4 Inspection

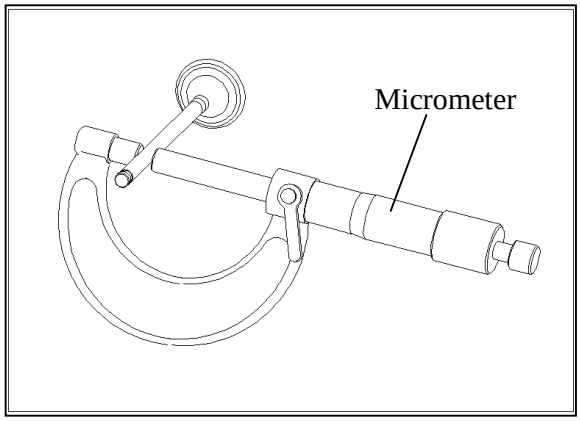


Clear carbon accumulated on the cylinder cover.
Measure flatness of the interfacing surface on the cover.
Allowable limit: 0. 05mm
If the flatness exceeds the allowable limit, place fine sands on a flat board, engage the interfacing surface with the board, and then grind in a “8” shape.

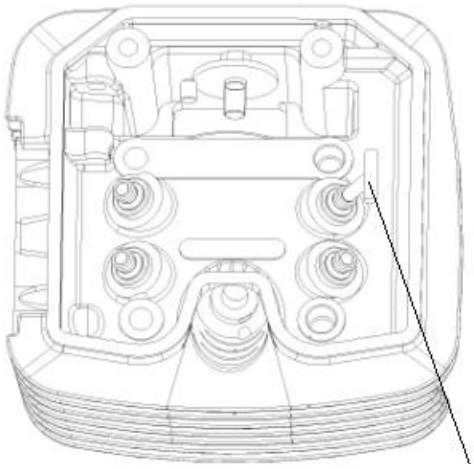
Measure free length of valve spring.
Allowable limit: 32mm



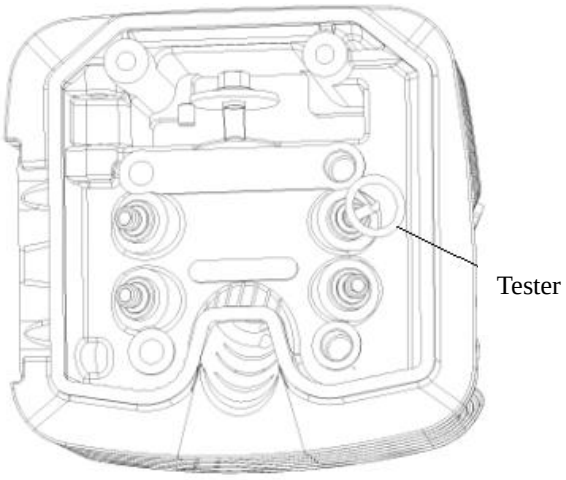
Measure outer diameter of valve rod.
Allowable limit: 4. 92mm for discharge and 4. 935 for intake



Check the valve guide. Prior to check, use a reamer to eliminate carbon accumulated within the guide.
Attention: the reamer shall be turned clockwise and do not turn it counterclockwise.

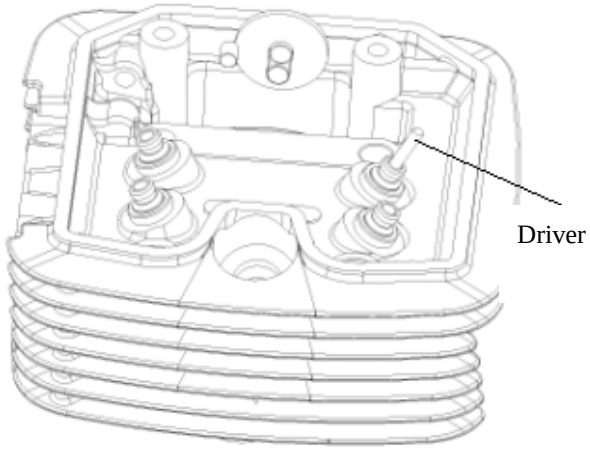


Measure inner diameters of valve guides.
Allowable limit: Intake/discharge: 5. 06mm
Allowable limit for clearance between valve and its guide: intake: 0. 072mm
Discharge: 0. 077mm.

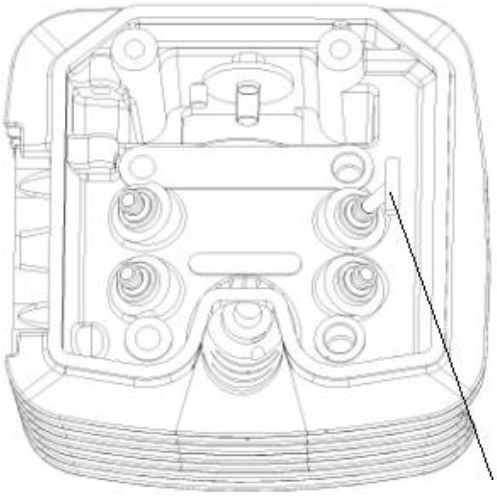


12. 5 Valve guide replacement

Attention: If clearance between the valve and its guide, replace the guide. After the guide is replaced, trim surface of the valve washer.
Place the guide into the freezing chamber of electrical refrigerator for one-hour cooling.
Heat the cylinder head to 100-150℃ with an electric oven or thermal oven.
Fix cylinder head, and use the guide disassembly tool to remove the guide out of the head.
Place a new O ring onto the new guide.
Fit the guide from the head top.
Attention: Do not damage the head when fit the valve.

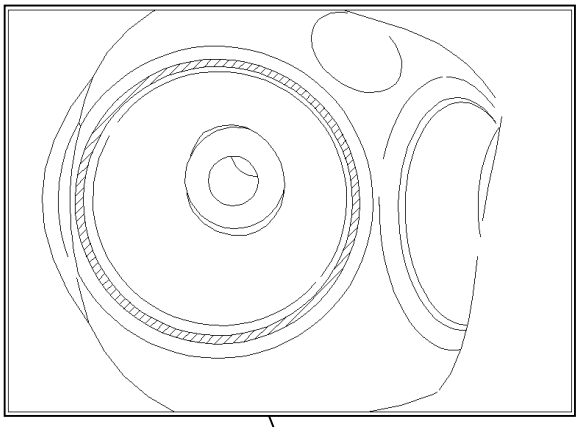


After the guide is inserted, trim it with a reamer.
Attention: Inject right amount of cutting oil when cut with the reamer. The reamer rotates counterclockwise.



Reamer

Clear carbon accumulated within the combustion chamber and valve, and thoroughly clean the intake and discharge valves.
Check width of valve contact surface (valve race width).
Allowable limit: Intake/discharge: 1. 3mm.

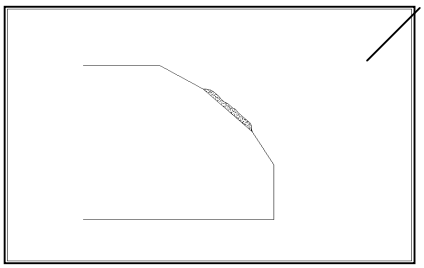


Racer contact surface

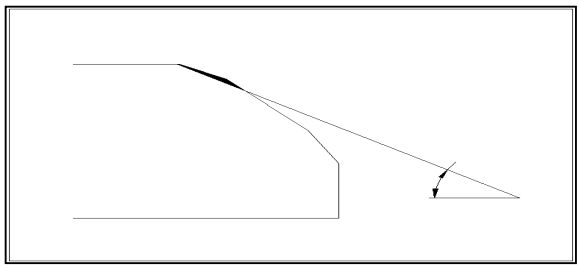
12. 6 Valve race fixing and adjustment

Use a 45° cutter to clear coarse or uneven parts on the surface of valve race.
Notes: apply a layer of transparent or Prussian blue coating across the race for more visibility.

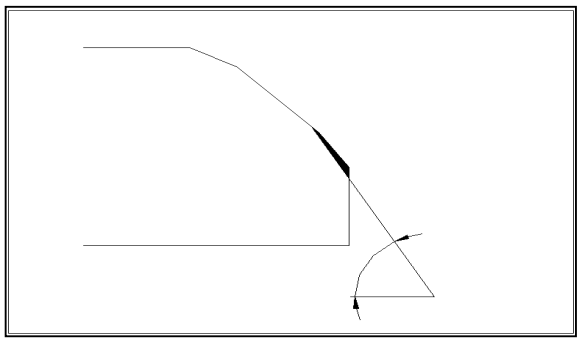
Uneven



Use a 32° cutter to clear 1/4 of external end of race.

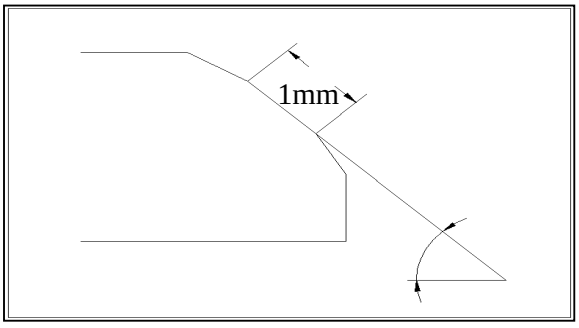


Use a 60° cutter to clear 1/4 of bottom of race. Remove the cutter and check the processed locations.

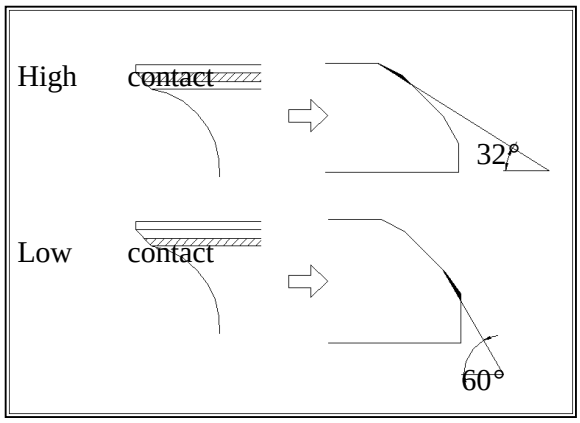


Use a 45° trimming cutter to grind the race so that it meets the suitable width.
Make sure all caves and unevenness are eliminated.

Standard race width: Intake: 1mm
Discharge: 1mm

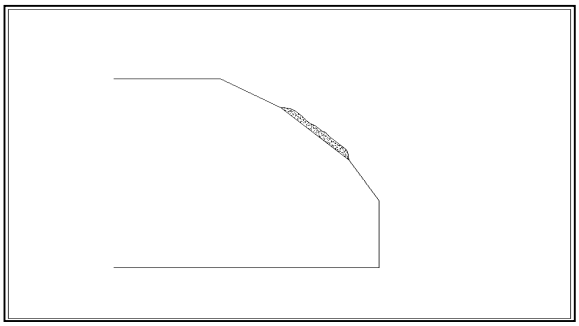


If the contact is higher part in the valve, use a 32° cutter to lower the race to its minimum height.
If the contact is lower part in the valve, use a 60° cutter to raise the race to its minimum height.
Use a 45°trimming cutter to trim the race so that it meets the required specifications.
After the race is ground, apply polishing agent across the valve surface to polish the valve gently.



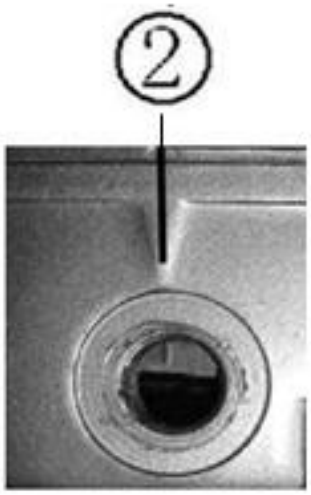
12. 7 Installation

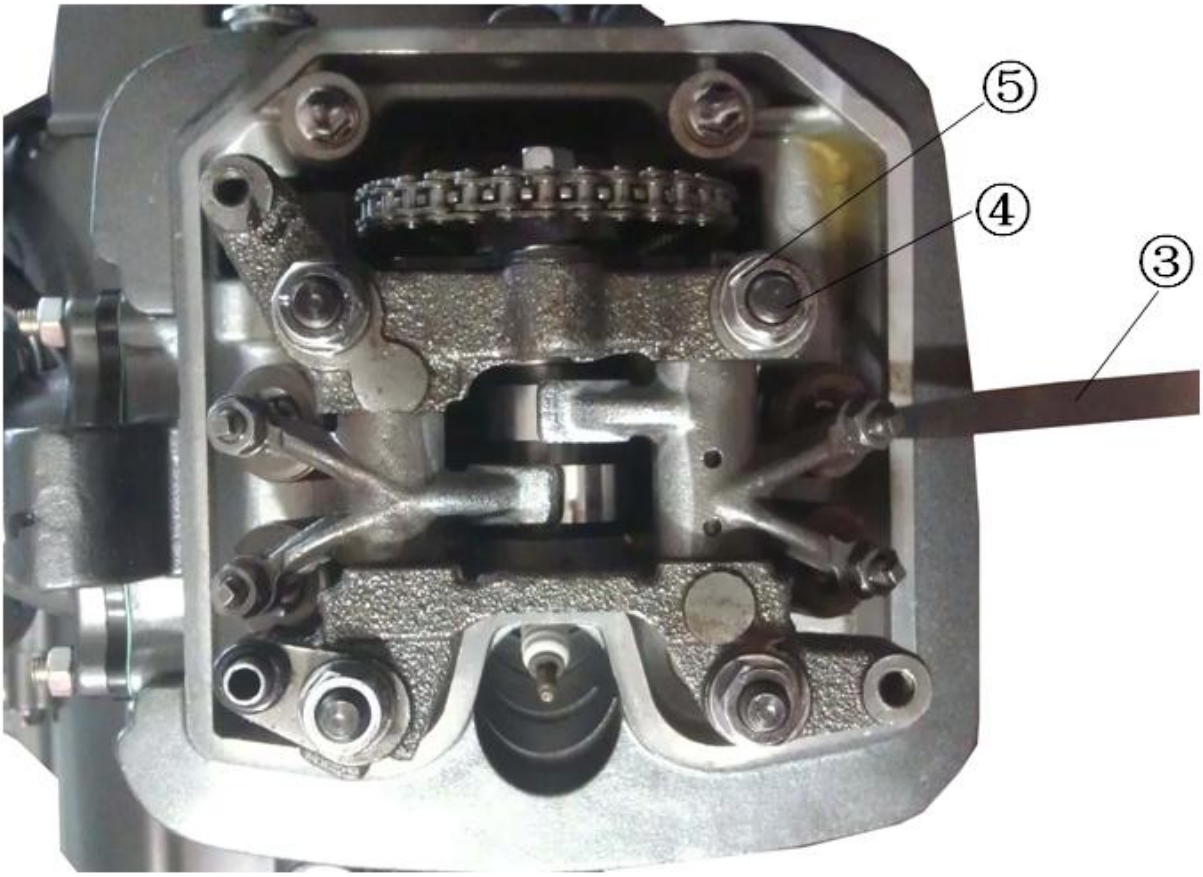
Installation is executed in the reverse sequence of disassembly.
Attention: To install the valve spring, it shall be such installed that the end with smaller spring pitch faces the combustion chamber.
To install valve locking clamp, compress the spring with its compression tool. To install the valve, apply a right amount of engine oil across the valve rod, and then place the rod into the guide.

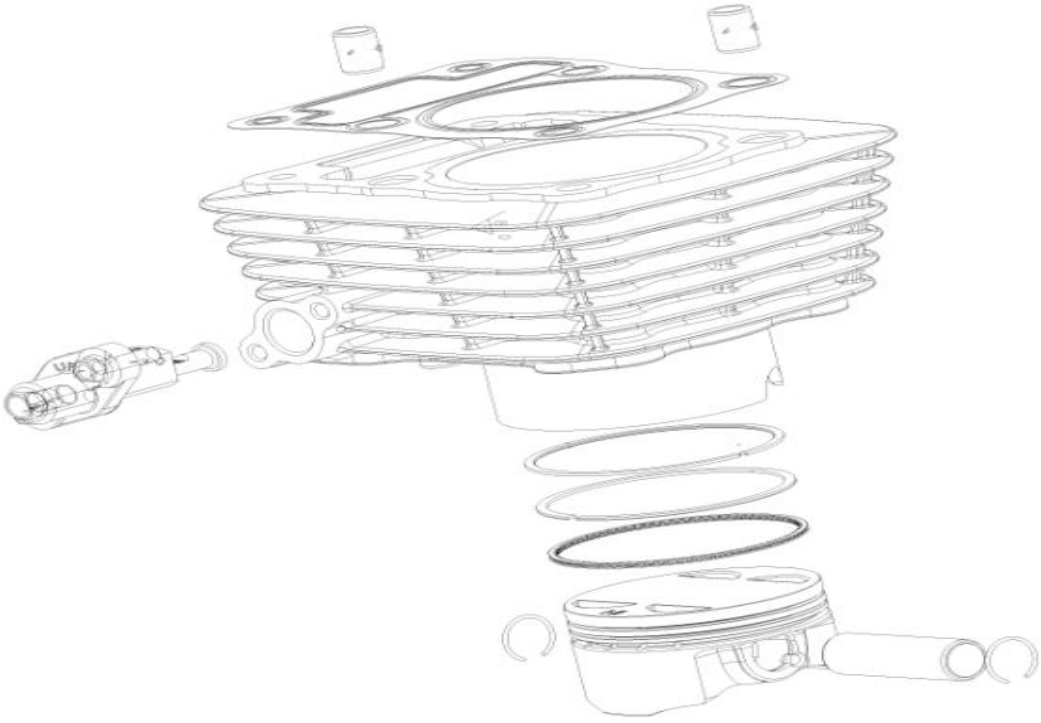


12. 8 Adjustment of valve clearance

Check and adjust valve clearance when the engine has been in cooling status.
1. Remove the eyelet cover①, engine cover, and engine cover and intake/discharge adjusting screw cover on the cylinder head cover.
2 Turn the engine rotor counterclockwise, after the discharge valve and the intake valve are compressed, align the mark "—" (on the engine rotor) with the scale mark ② above the engine case, and make sure the piston is located at the top of compression stroke.
3. Insert the feeler gauge③ between the adjusting screw and valve rod, and check clearance of the intake and discharge valves.
4. Standard valve clearance: intake stroke 0. 06-0. 08mm and discharge stroke 0. 06-0. 08mm.
5. Adjustment is made by loosening the locking nut ⑤ and then tightening screw ④. After the adjustment is made, tighten the locking nut, and then measure the clearance until it meets the standard value.







XIII Cylinder block and piston

13. 1 Service Data

Precautions

All parts must be cleaned before being checked, and purged with high-pressure air.

Function of cylinder block: It offers a space for gas compression, combustion and expansion, and guides in piston motion.

It also transfers some of heat to surrounding cooling media.

Function of piston:

1. Withstand pressure as a result of combustion of combustible mixed gas, and transfer such pressure to the connecting rod to drive the crankshaft.
2. Form the combustion chamber along with the cylinder cover.

Precautions

All parts must be cleaned before being checked, and purged with high-pressure air.

Table for Standard Value and Allowable Limit of Reference Items

Item			Standard value	Allowable limit
Cylinder	ID		68. 010-68. 020	68. 120
	Cylindricality		-	0. 005
	Roundness		-	0. 004
	Flatness		0. 02	0. 05
	Piston OD (measuring point)		67. 96-67. 97 (11mm from piston skirt bottom)	67. 91
	Piston pin hole ID		16. 002-16. 008	16. 04
	Piston pin OD:		15. 992-16	15. 960
	Clearance between piston and piston pin		0. 002-0. 016	0. 024
	Clearance between piston ring and ring slot	Ring 1	0. 03-0. 07	0. 09
		Ring 2	0. 02-0. 06	0. 09
	Piston ring closure clearance	Ring 1	0. 15-0. 3	0. 5
		Ring 2	0. 15-0. 3	0. 5
		Oil ring	0. 02-0. 06	0. 12
	Piston pin end ID		16. 010-16. 018	16. 05
	Clearance between connecting rod and piston pin		0. 01-0. 026	0. 10

13. 2Fault Diagnosis

Low compression pressure
Piston worn, burnt or broken
Cylinder and piston worn or damaged
Gasket damaged and air leakage between crankcase and gas

Too high compression pressure
Too much accumulated carbon in combustion chamber

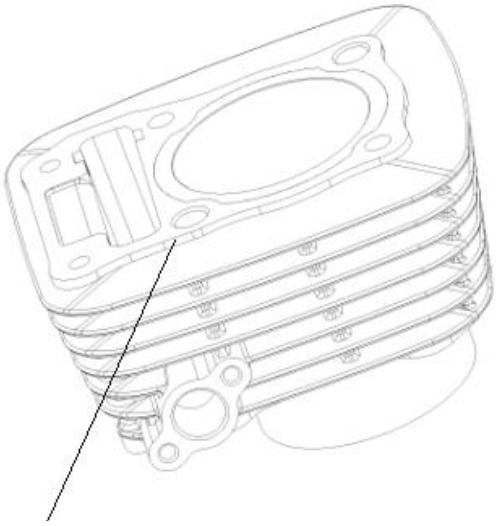
White smoke from discharge duct
Piston ring worn or damaged
Cylinder and piston worn or damaged

Abnormal noise from piston
Cylinder, piston and piston ring worn or damaged
Piston pin hole and piston pin worn

13. 3 Cylinder block

13. 3. 1 Disassembly

Remove the cylinder block.



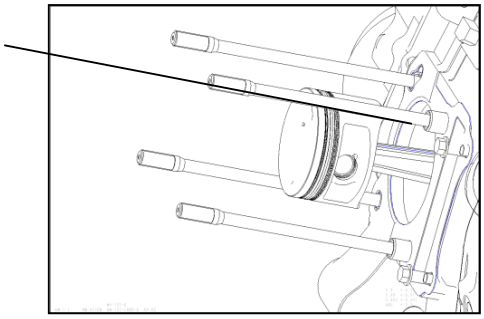
Cylinder block

13. 3. 2 Inspection

Check wearing of inner wall of cylinder.
If serious wearing is found, replace it.

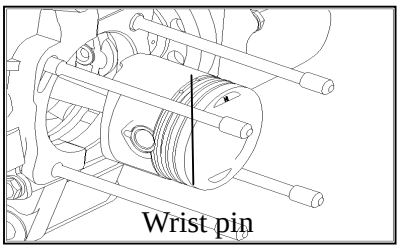
Remove the gasket and locating pin.

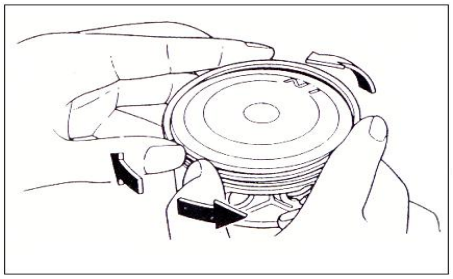
Gasket



13. 4 Piston

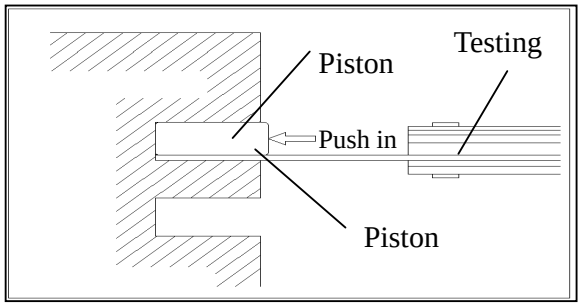
13. 4. 1 Disassembly
Remove the piston retaining ring.
Attention: During removal, do not fall the retaining ring into crankcase.
Take out the piston pin and remove the piston.



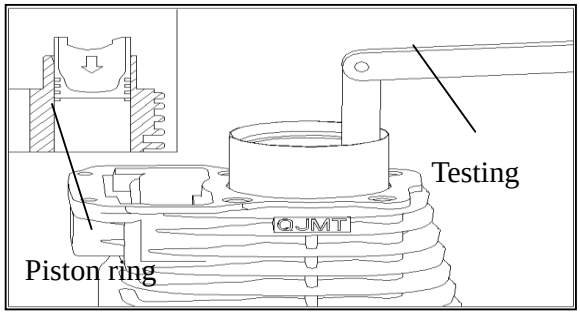


Remove the piston ring.
Check piston, piston pin and piston ring.
Attention: do not break or damage the piston ring.
Clear the accumulated carbon within the piston ring.

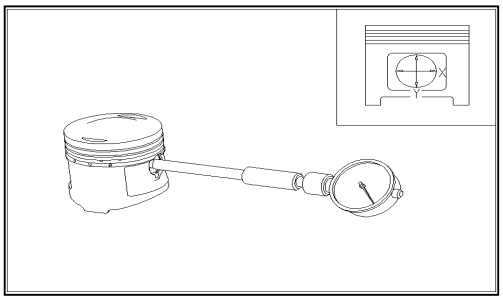
Install the piston ring.
Measure clearance between the piston ring and its slot.
Allowable limit: Top ring: 0. 09mm
Ring 2：0. 09mm



Remove the piston ring and install the piston rings at the bottom of cylinder.
Attention: use the piston head to press the piston ring into the cylinder.
Measure piston ring closure clearance
Allowable limit: 0. 5mm.

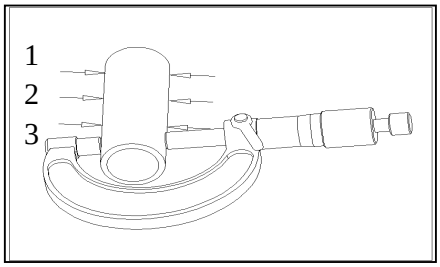


Measure piston pin hole ID.
Allowable limit: 16. 04mm.

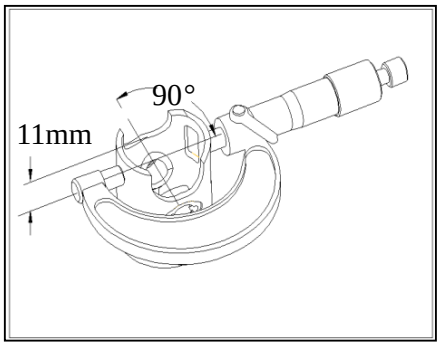


Tester

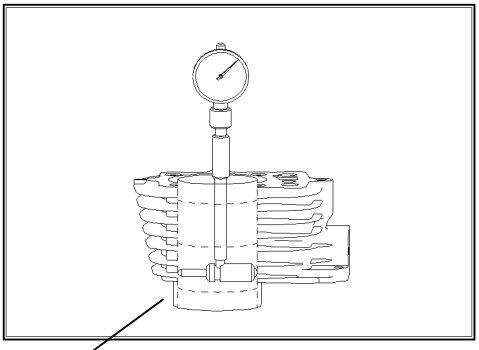
Measure piston pin hole OD.
Allowable limit: 15. 96mm
Clearance between piston pin hole and piston pin
Allowable limit: 0. 024mm



Measure piston OD.
Attention: measurement is made at such position as to form 90° with piston pin and around 11mm from the piston skirt bottom.
Allowable limit: 67. 91mm

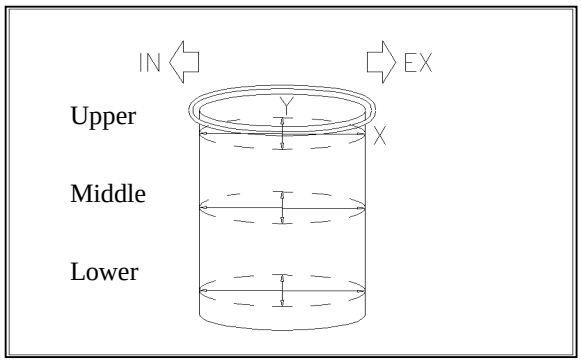


Check of cylinder inner wall scratch and wearing.
Attention: measure cylinder inner diameter at upper, middle and lower positions at 90° with the piston pin.
Allowable limit: 68. 12mm
Measure the clearance between the cylinder and piston, and the maximum value prevails.
Allowable limit: 0. 17mm

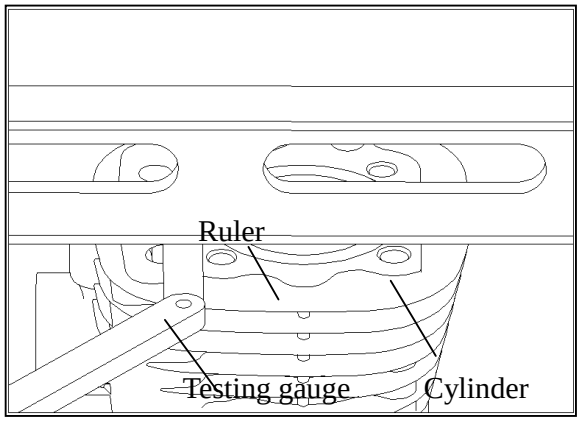


Tester

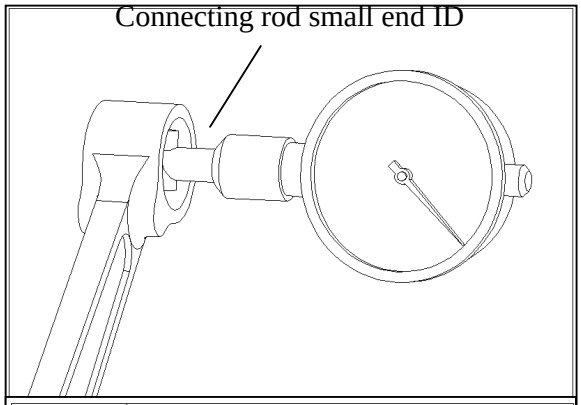
Measure the roundness of cylinder inner wall (difference between X ID and Y ID).
Allowable limit: 0. 05mm
Measure the cylindricality of cylinder inner wall (ID difference at the upper, middle and lower positions between X and Y).
Allowable limit: 0. 05mm



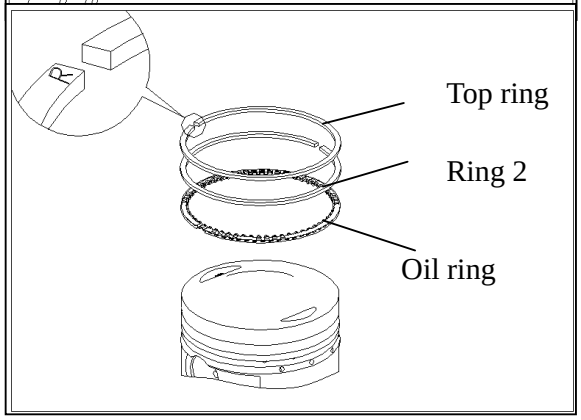
Check the flatness of cylinder surface.
Allowable limit: 0. 05mm



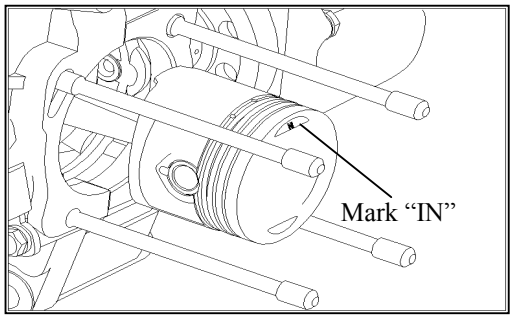
Measure connecting rod small end ID.
Allowable limit: 16. 05mm.



13. 4. 2 Installation of piston
Install locating pin.
Apply engine oil on the piston rings and pistons, and install the piston rings at their positions with the marking face upward.
Attention: do not scratch the piston and do not break the piston ring.
After the piston ring is installed, the piston ring is capable to rotate within the piston slot freely.

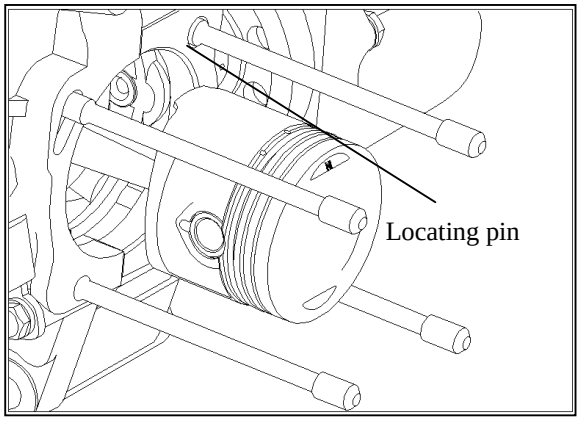


Clear all of gaskets attached on the crankcase.
Attention: any foreign matter shall not fall into the crankcase.
Install piston, piston pin and its retaining ring.
Attention: the mark “IN” at the piston top is installed facing the intake valve.



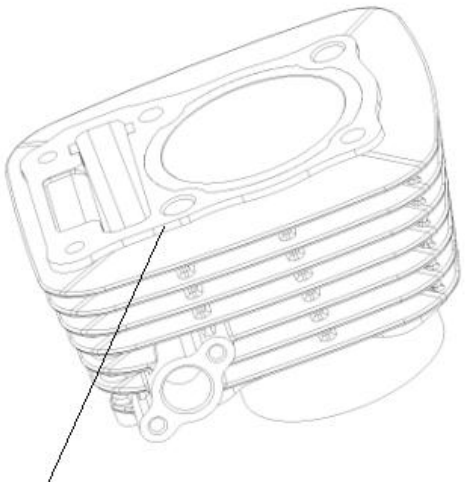
13. 5 Installation of cylinder

Install the gasket and locating pin on the crankcase.



Apply engine oil across the cylinder inner wall, piston and piston ring.
Care shall be excised to locate the piston ring into the cylinder.
Attention: do not damage piston ring.

XIV Crankcase



14. 1 Service Data

Function of crankcase: It is a bearing component in the engine. It is provided to support the crankshaft, clutch, gearbox, cylinder block and head, withstand impact from combustion and inertia force due to crankshaft connecting rod mechanism, and it also forms some enclosed spaces (oil-seal and gas-seal).

Suspension hole is provided on the crankshaft, and it is connected with the suspension hole on the motorcycle so that the engine is connected with frame and other parts.

Precautions

Crankcase is thin-wall casting, so it is required to avoid impact during operation for fear of deformation or breaking.

All parts must be cleaned before being checked, and purged with high-pressure air.

Prior to any operation, release lubricating oil from the crankcase.

Table for Standard Value and Allowable Limit of Reference Items (in mm)

Item		Standard value	Allowable limit
Crank connecting rod component	Right-left clearance of connecting rod large end	0. 1-0. 3	0. 8
	Radial clearance of connecting rod large end	0. 008-0. 018	0. 06
	Run-out	0. 03	0. 1
Clutch	Friction disc component thickness	2. 9-3. 1	2. 6
	Flatness of driven friction disc	0. 04	0. 2
	Length of compression spring	30. 4-31. 6	29. 7
	Thickness of roller needle bearing	1. 88-2	1. 8
Gear shift mechanism	Shaft lock OD	9. 98-9. 995	9. 96
	Shaft lock inner hole diameter	10-10. 015	10. 05
	Shaft lock thickness	5. 3-5. 4/5. 5-5. 65	5. 1/5. 35
	Gear shift hub OD	39. 8-40	39. 75
	Gear shift hub lock slot width	6. 1-6. 2	6. 35

14. 2Fault Diagnosis

Low compression pressure
Crankcase air leakage
Overheating engine
Clutch sliding
Poor lubrication
Failure to put into gear
Gear shifter broken or deformed
Shifter guiding pin broken
Gear dog worn
Automatic out-of-gear
Joint dog worn and edge rounded
Gear shift return spring force reduced
Spline teeth on spline shaft and spline slot of sliding gear worn, consequently generating large axial force when the gear is operating.
Gear shift drum and shifter worn.

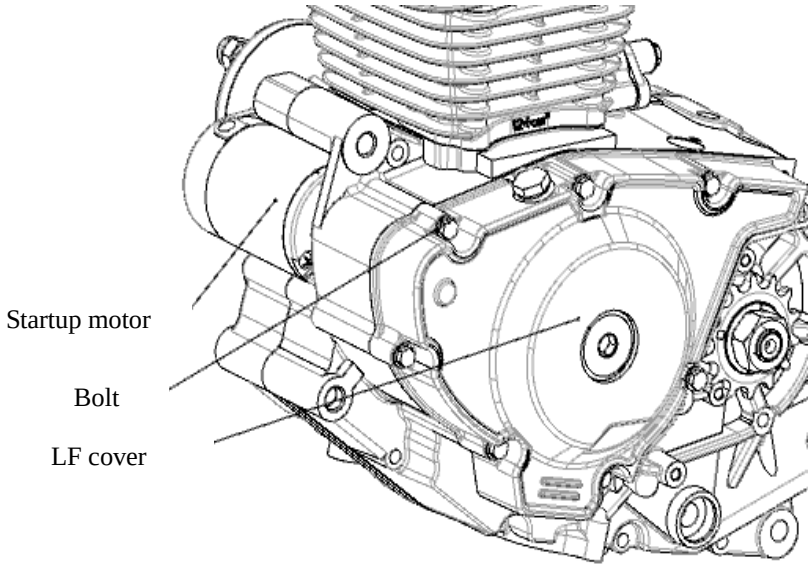
Abnormal noise in the crankcase
Parts loosened or broken in crankcase
Automatic engine shutdown
Clutch jammed

Difficulty in gear shifting
Clutch disengaged incompletely
Bad action of gearbox return spring
Gear shifting drum slot worn

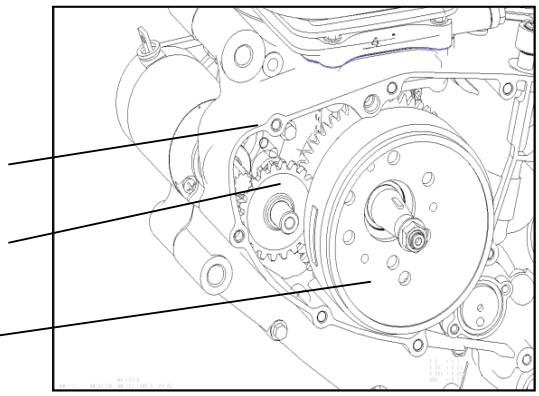
14. 3 Crankcase

14. 3. 1 Removal of left crankcase cover

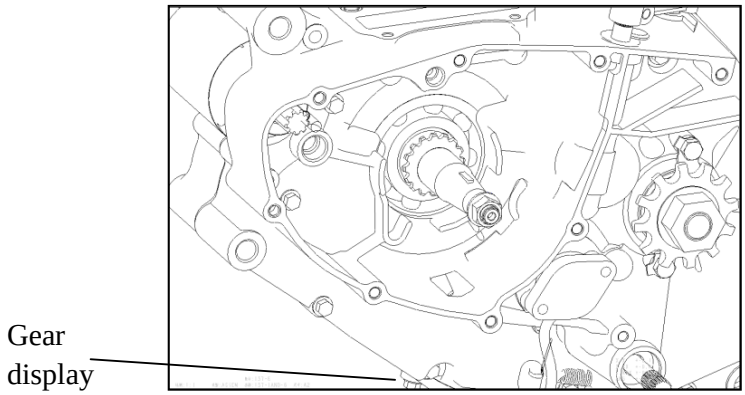
Loosen the fixing bolt on the startup motor and remove the motor.
Loosen LF cover fixing bolt and remove the LF cover.



Use the electrical or pneumatic tool to
loosen flywheel locking nut.
Take out the flywheel component (including sprocket),
and remove the idle gear of motor.
Remove the gasket.

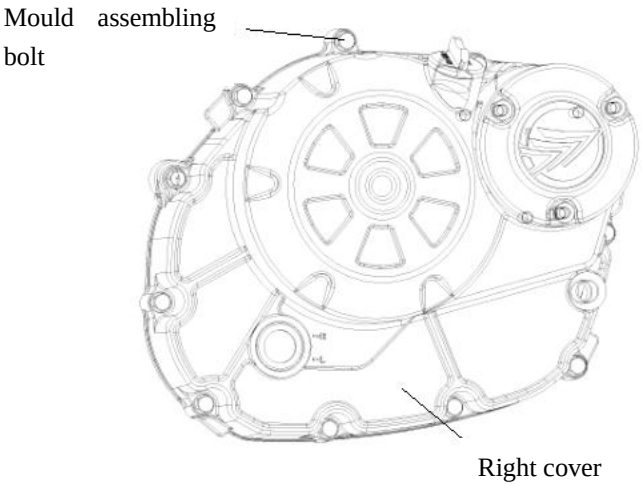


Remove the gear display.



14. 3. 2 Removal of right crankcase cover

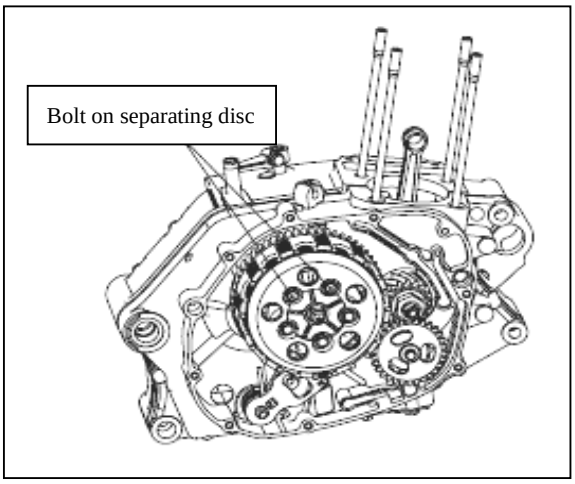
Loosen the fixing bolt and remove the right crankcase cover, gasket and locating pin.



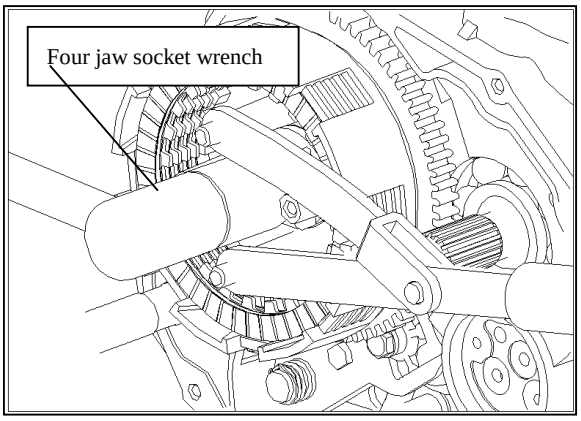
14.4 Clutch

14.4.1 Dismounting

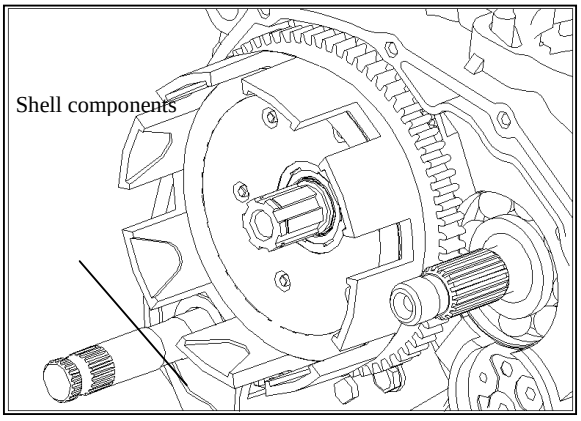
Unscrew the five bolts in the pressure plate with the diagonal cross method.
Dismount the clutch spring, pressure plate, thrust washer, plane needle roller bearing and bearing support.
Refer to the breakdown drawing for dismounted components.



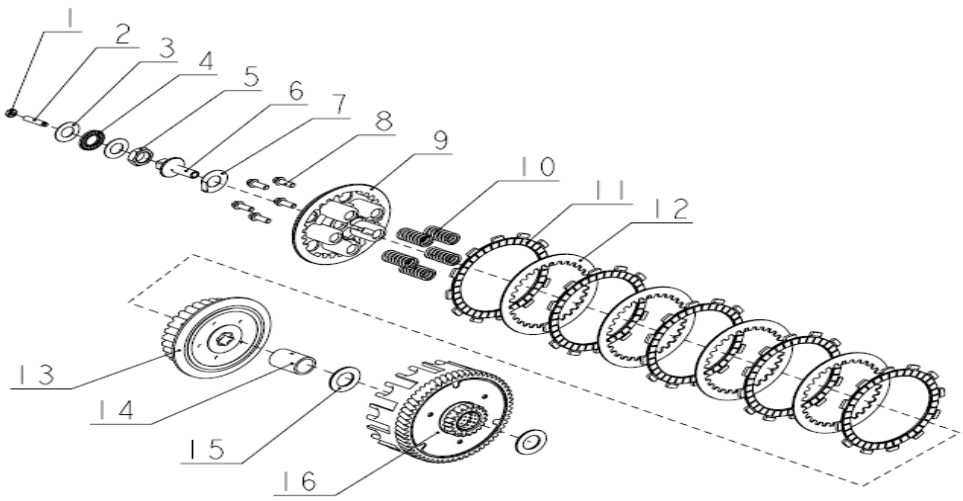
Unscrew the lock nut with special tool to dismount the lock nut and thrust washer.
Dismount the center bearing bracket on the clutch.
Dismount the drive and driven friction blocks on the clutch.
Refer to the breakdown drawing for dismounted components.



Dismount the thrust washer.
Dismount the shell components.
Clutch assembly is done in the reverse order.



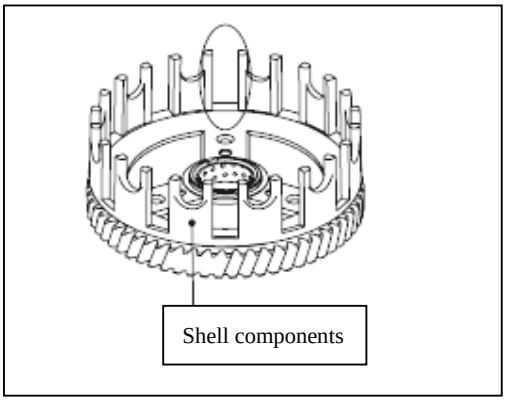
14.4.2 Clutch disassembly



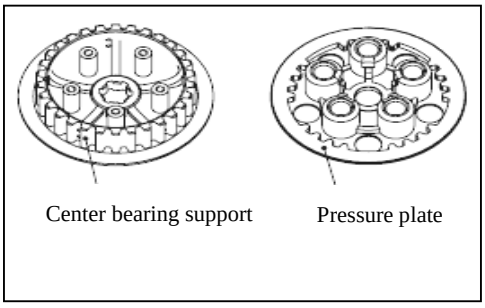
1 nut; 2 Phillips adjusting screw; 3 thrust washer; 4 plane needle roller bearing; 5 lock nut; 6 bearing support; 7 lock washer; 8 bolt assembly; 9 pressure plate; 10 clutch spring; 11 friction disc assembly; 12 driven friction disc assembly; 13 center bearing bracket; 14 shaft sleeve; 15 thrust washer; 16 shell components

Check

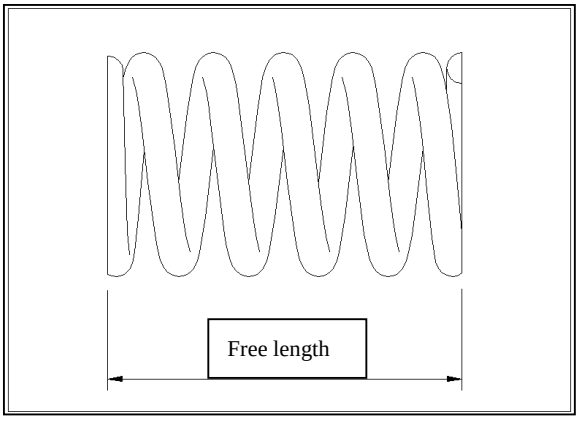
Check if there are burrs or damage in the shell components of the clutch, and get rid of them with a file. Replace the clutch if too much such work needs doing.



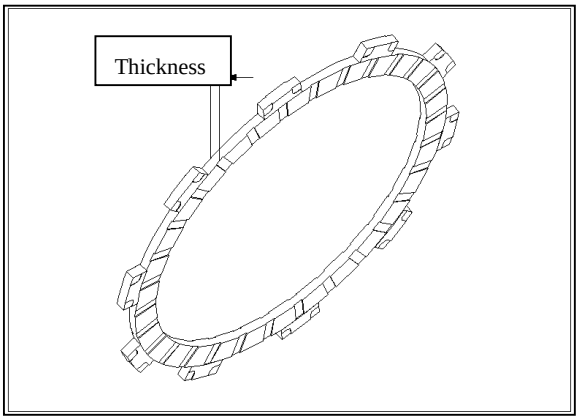
Check if there is damage in the dents of the pressure plate and the center bearing support. Replace it if there is damage.



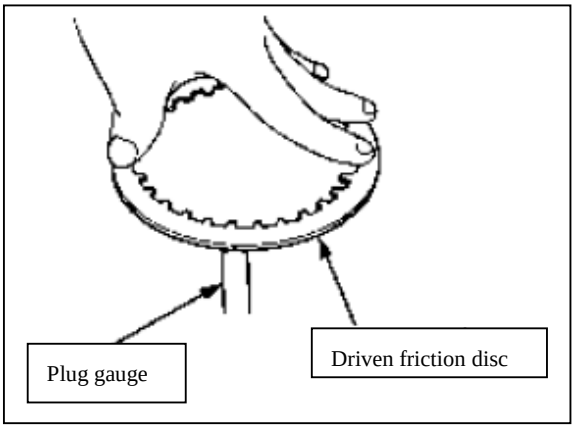
Measure the free length of the pressure spring.
Replace it if the limit is below 29.7 mm.



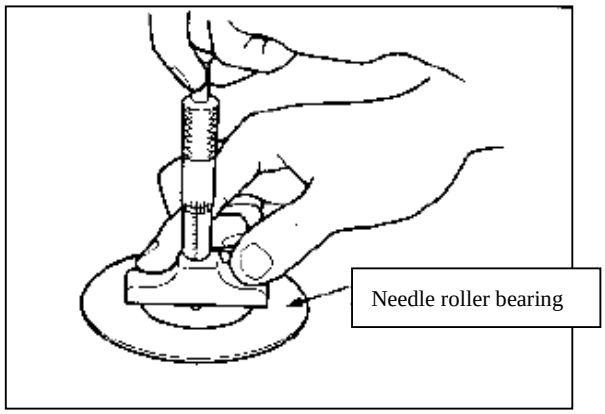
Measure the thickness of the friction disc with a vernier caliper.
Replace it if the limit is below 2.6mm.



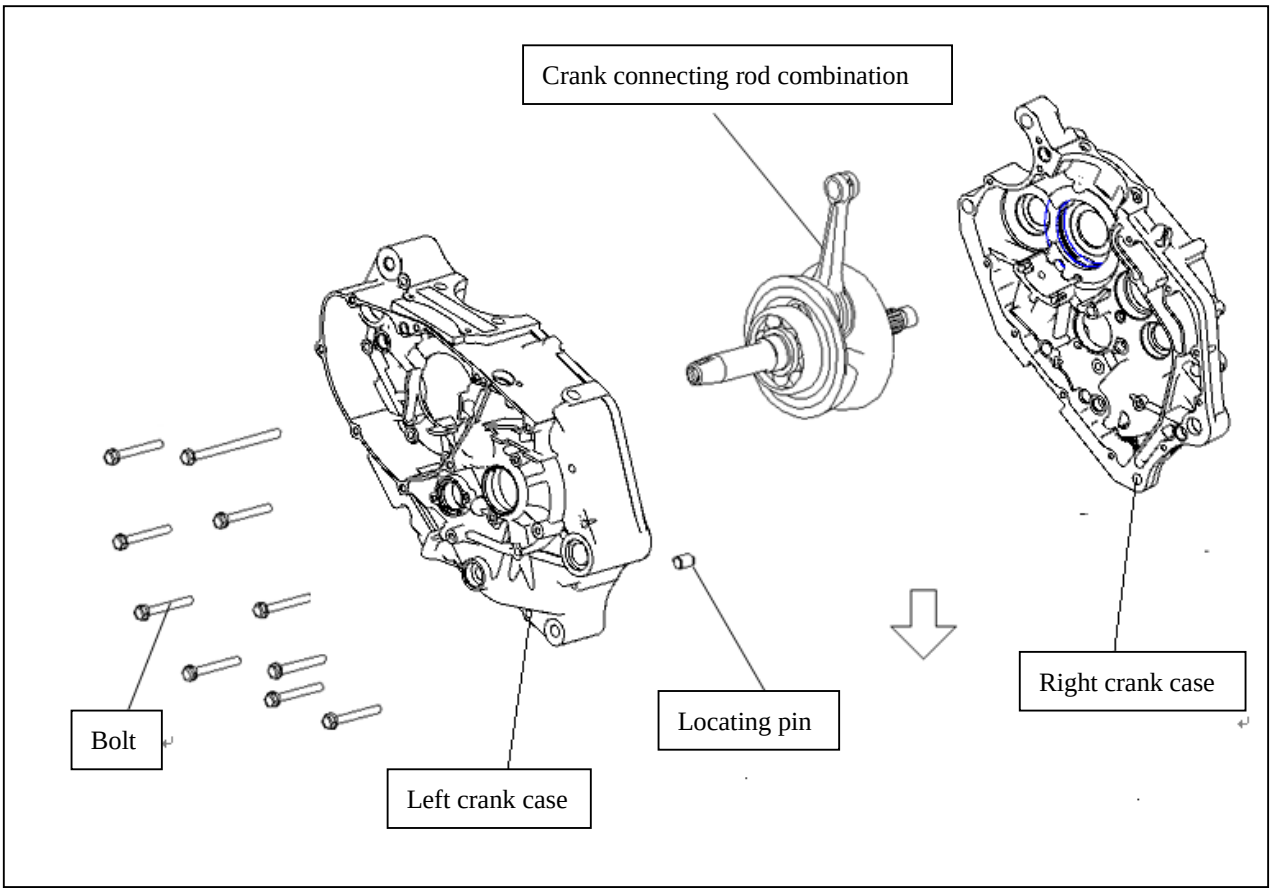
Measure the flatness of the driven friction disc with a plug gauge.
Replace it if the limit is above 0.2mm.

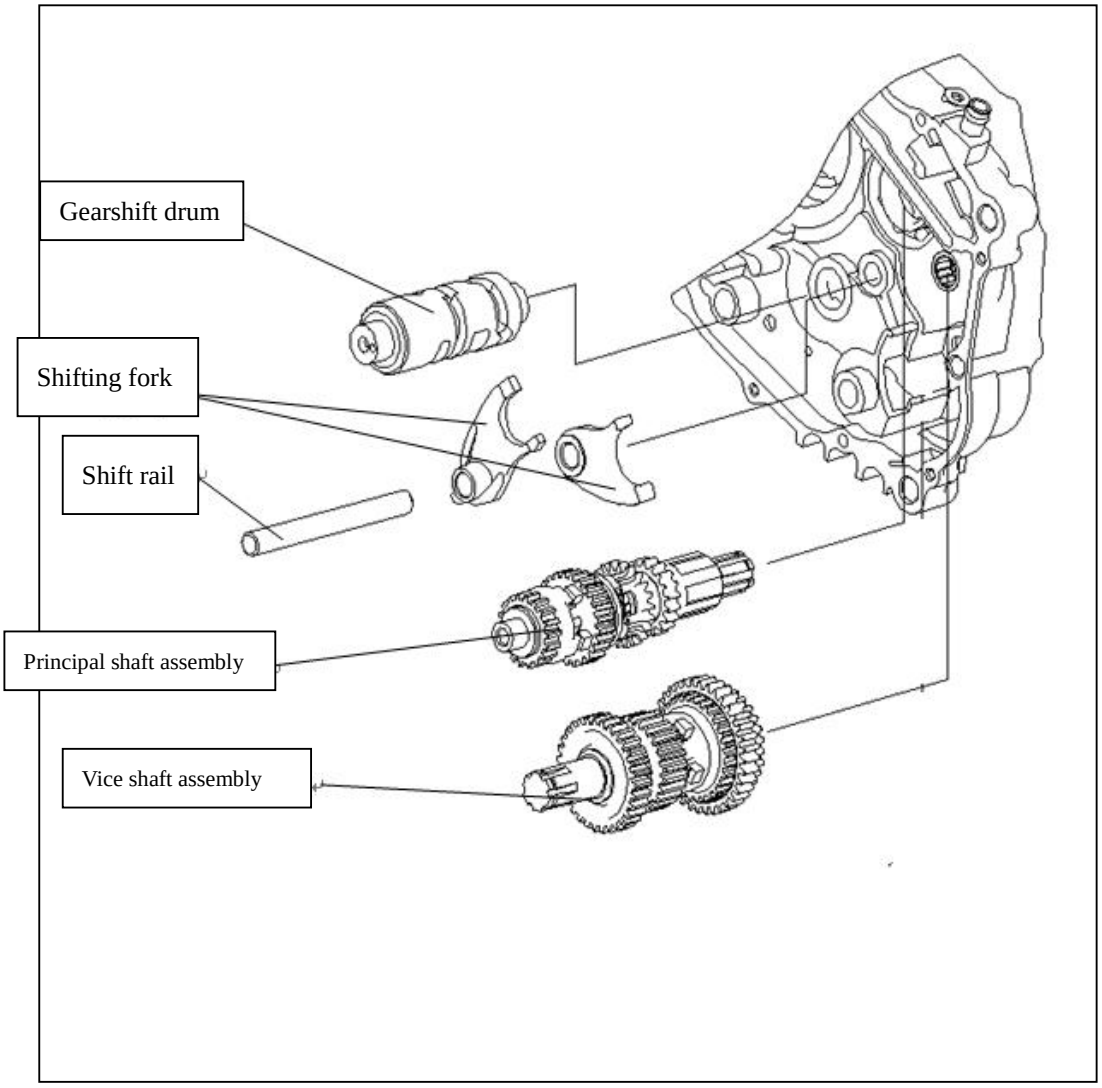


Measure the thickness of the plane needle roller bearing.
Replace it if the limit is below 1.8mm.



Crank connecting rod combination and gearbox assembly





14.4 Gearshift Mechanism

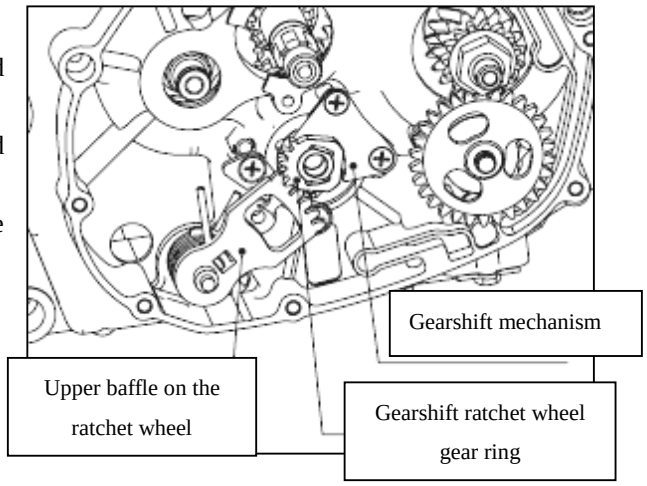
14.4.1 Dismounting

Dismount the gearshift combination.

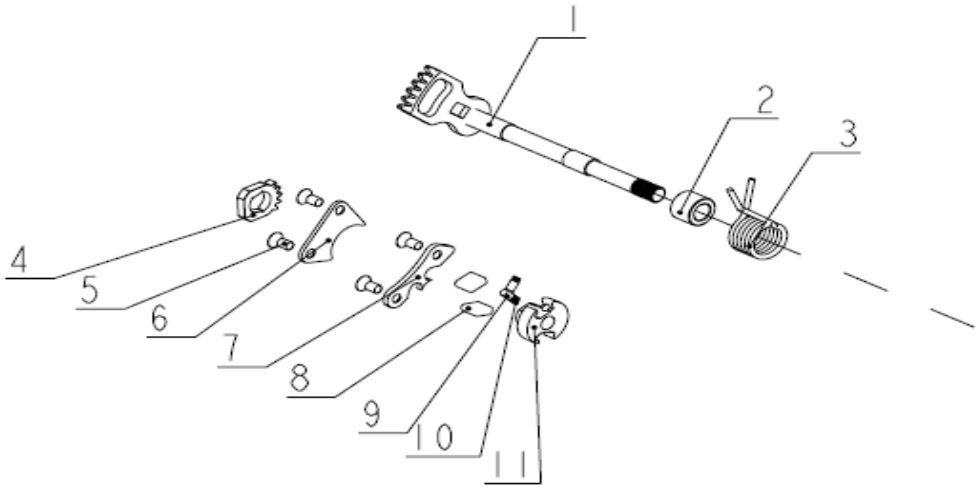
Dismount the upper baffle bolt, the upper baffle and gearshift ratchet wheel gear ring.

Dismount the lower baffle bolt, the lower baffle and the ratchet wheel.

Dismounted components are revealed in the dismantling drawing.



14.4.2 Dismantling drawing of the gearshift mechanism



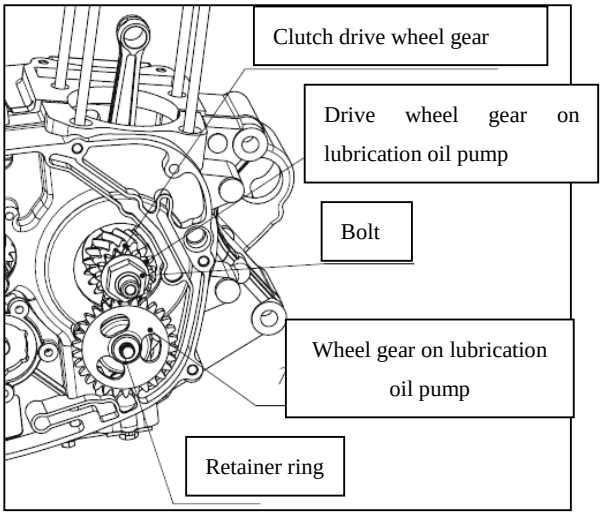
1 gearshift mechanism; 2 shaft sleeve; 3 restoring spring; 4 gearshift ratchet wheel; 5 nut; 6 upper baffle on the ratchet wheel; 7 lower baffle on the ratchet wheel; 8 pawl; 9 jack-prop on the pawl; 10 contact spring; 11 gearshift ratchet wheel

14.4.3 Check

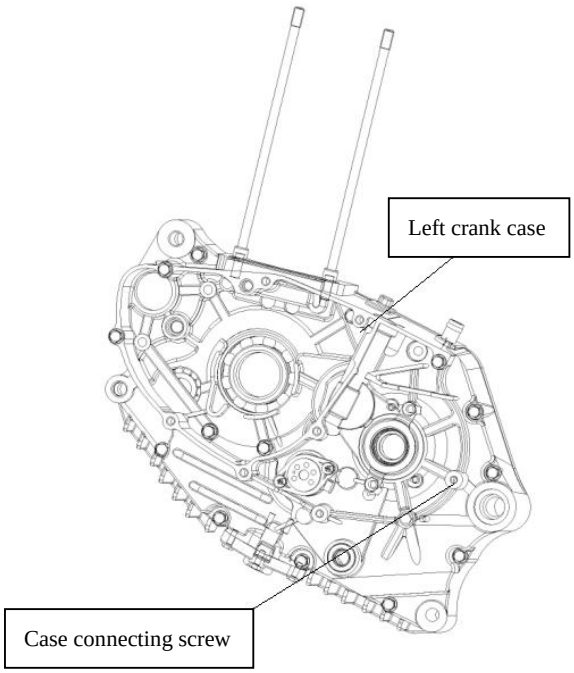
Before dismounting, the gearshift baffle should work sound and without difficulty in restoring.

Check the abrasion of the baffle and the gearshift mechanism. Replace it if there is too much abrasion.

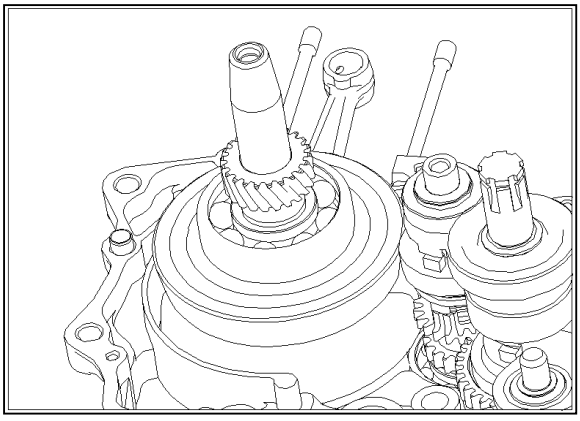
Check the abrasion of the locating plate of the gearshift. Replace it if there is too much abrasion.
Check if the gearshift shaft is bent. Replace it if it is excessively bent.
Check the elasticity of the restoring spring. Replace it if necessary.
Unscrew the bolt and washer on the right crank shaft with electric or compression tools. Dismount the two wheels and the flat key.
Dismount the retainer ring; remove the wheel gear on the fuel pump; unscrew the nut in the fuel pump; dismount the fuel pump assembly.



Unscrew the bolt in the veneer case.
Open the crank case.
Note: do not damage the surface of the case.
Remove the left part of the case.



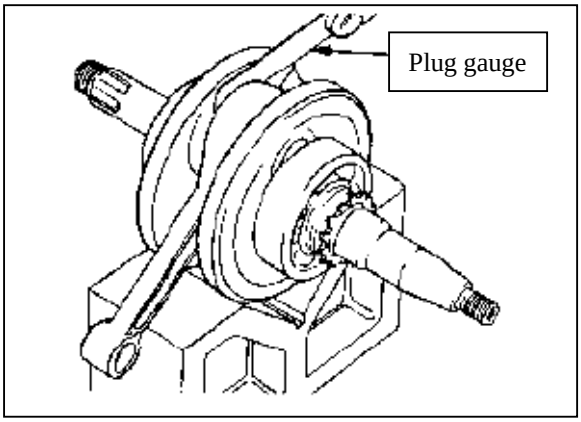
14.5 Crankshaft connecting rod assembly



14.5.1 Dismounting

Remove the crankshaft connecting rod assembly from the right crank case.

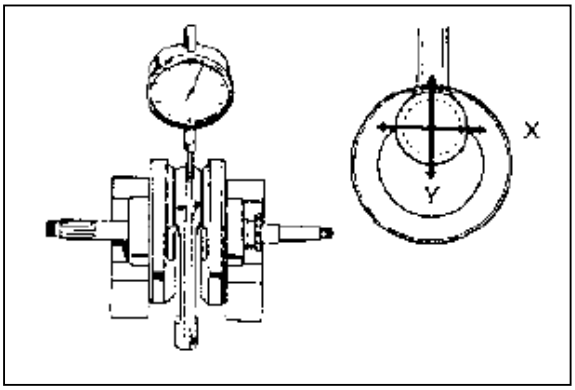
Note: do not damage the surface of the case.



14.5.2 Check

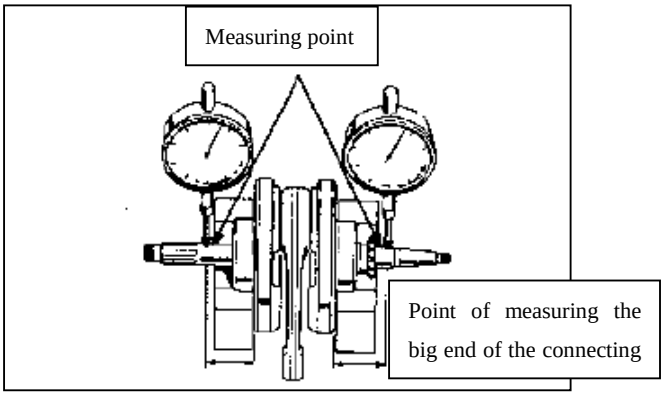
Measure the clearance on the left and right side of the big end of the collecting rod.

Allowable limit: 0.05mm.



Measure the clearance along X-Y direction of the big end of the connecting rod.

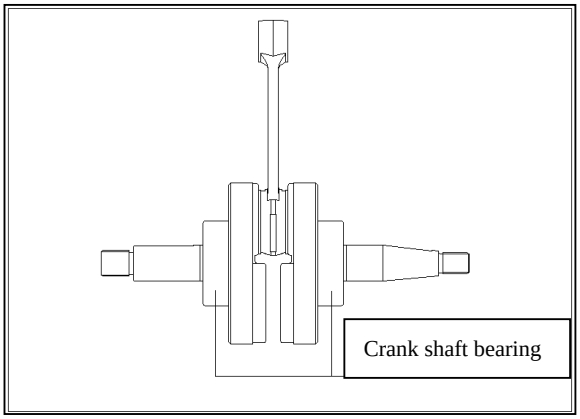
Allowable limit: 0.8mm.



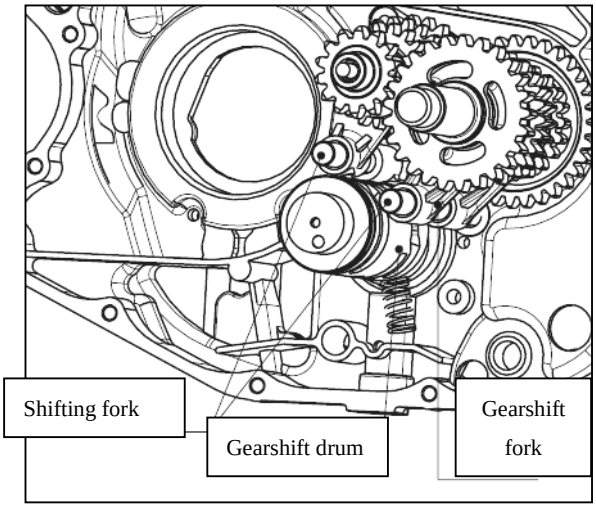
Measure the dislocation of the crank shaft.

Allowable limit: 0.1mm.

Check if the crank shaft is noisy or loose while restoring.
Replace it if so.

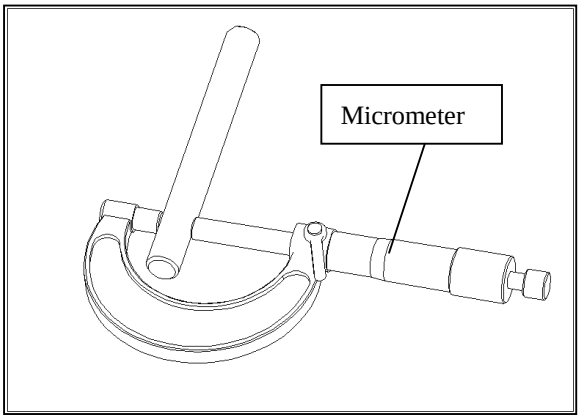


Note: both the crank connecting rod and the gearshift mechanism are installed on the crank case.
Draw out the shifting fork.
Remove the gearshift drum.
Remove the gearshift fork.

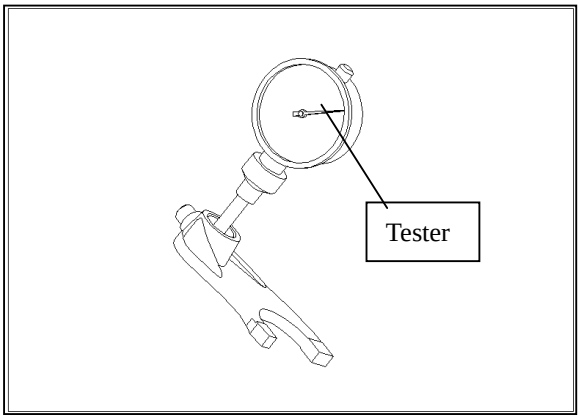


14.5.3 Check

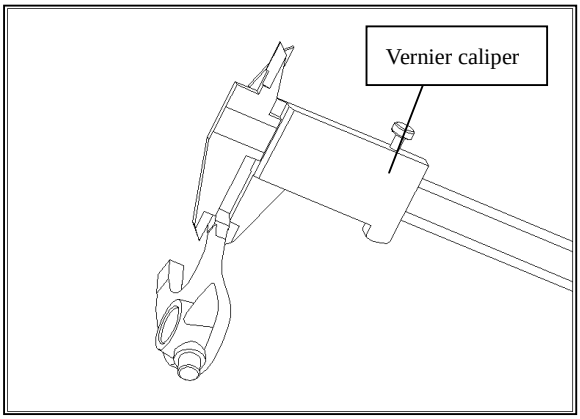
Measure the external diameter of the shifting fork.
Allowable limit: 9.96mm.



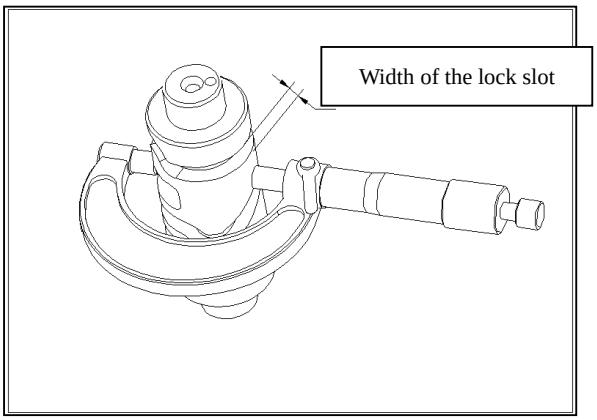
Measure the inner diameter of the fork hole.
Allowable limit: 10.05mm.



Measure the thickness of the shifting fork.
Allowable limit: respectively 5.1mm and 5.35mm.

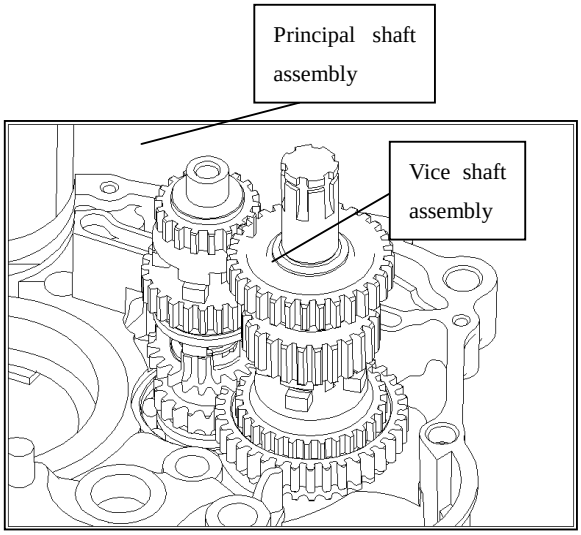


Measure the external diameter of the gearshift drum.
Allowable limit: 39.75mm.
Measure the width of the hinge slot in the gearshift drum.
Allowable limit: 6.35mm.

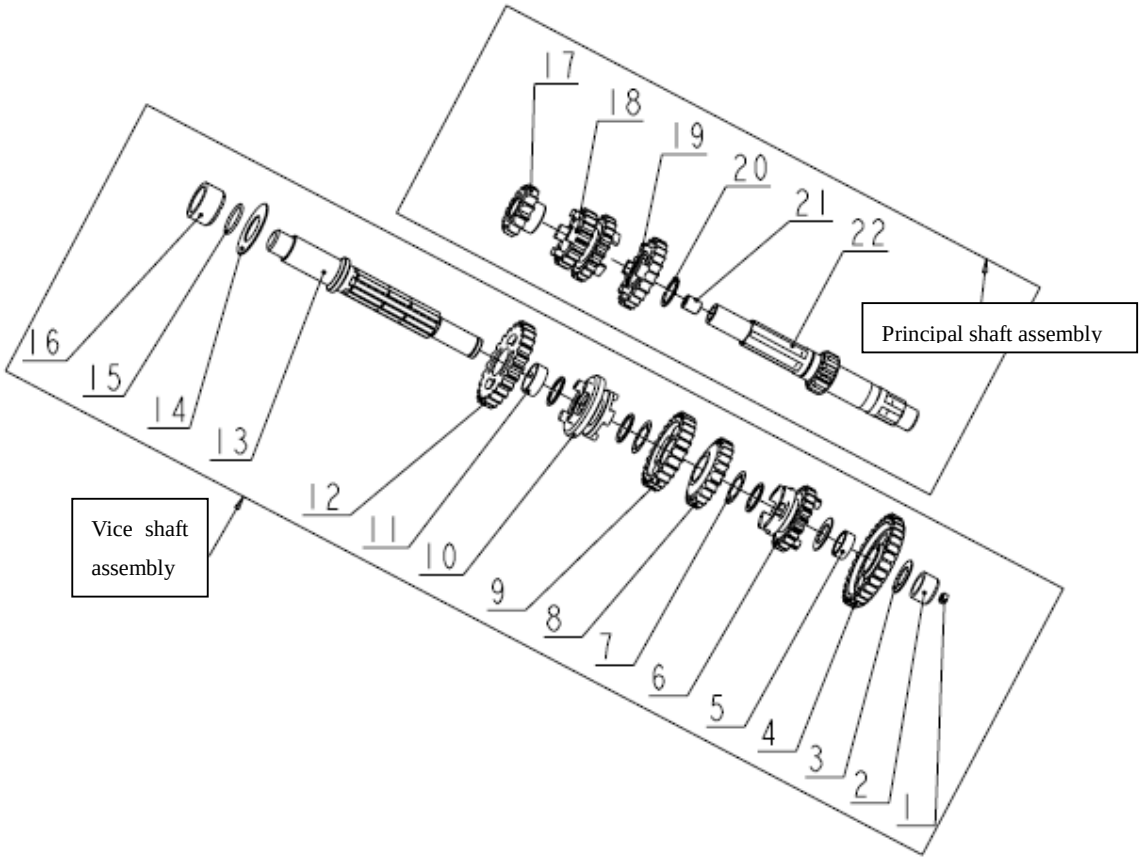


14.6 Gear box assembly

Remove the principal shaft assembly.
Remove the vice shaft assembly.



Dismantling drawing of the principal and vice shaft assemblies

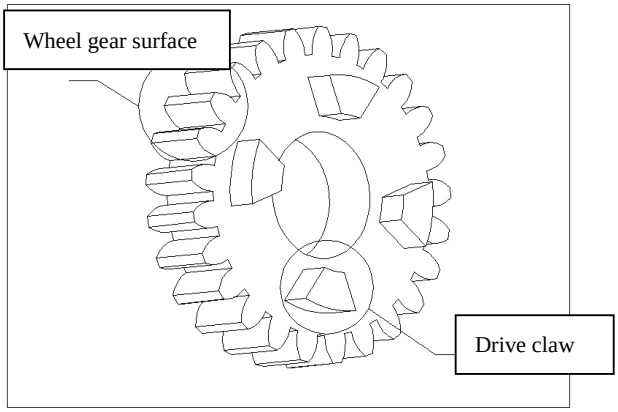


1 plug; 2 shaft sleeve; 3 washer; 4 first gear wheel on the vice shaft; 5 needle roller bearing; 6 fifth gear wheel on the vice shaft; 7 spline washer; 8 fourth gear wheel on the vice shaft; 9 third gear wheel on the vice shaft; 10 gearshift wheel; 11 shaft sleeve; 12 second gear wheel on the vice shaft; 13 vice shaft; 14 thrust washer; 15 O-seal ring; 16 shaft sleeve; 17 second gear wheel on the principal shaft; 18 third and fourth gear wheel on the principal shaft; 19 fifth gear wheel on the principal shaft; 20 retainer ring; 21 plugging column; 22 principal shaft

Check

Check the abrasion of the wheel gear surface and the drive claw.

Replace it if there is too much abrasion or damage.

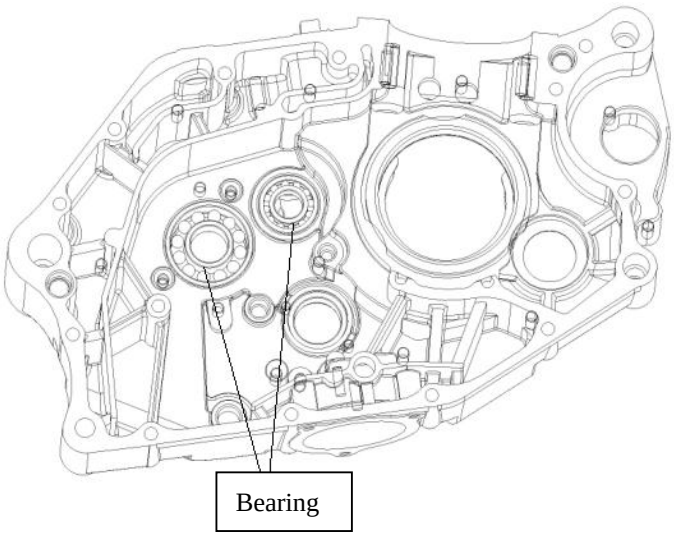


Remove the bearing in the left crank case.

Check possible damages on the bearing and the oil seal. Replace them if there are damages.

Note: the removed bearing can not be used any more. It should be replaced with a new one.

Special tool should be used to dismount the bearing and oil seal.

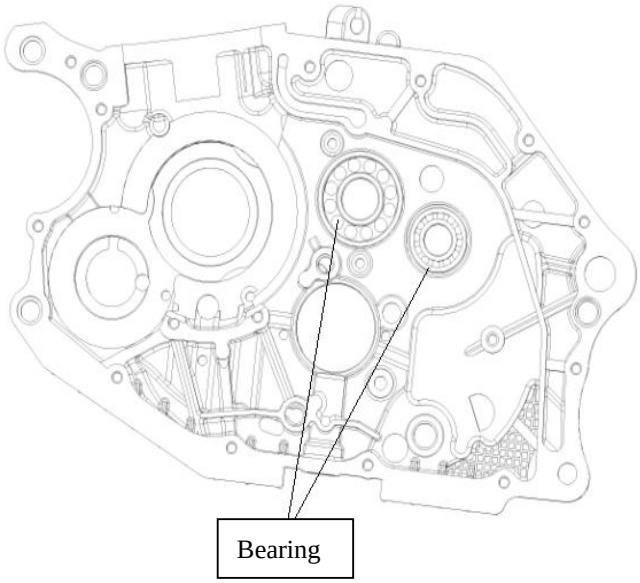


Remove the bearing in the right crank case.

Check possible damages. If there are damages, replace it.

Note: the bearing removed can not be used any more. It should be replaced with new one.

Special tool should be used to dismount the bearing and oil seal.



Principal and vice shaft assemblies

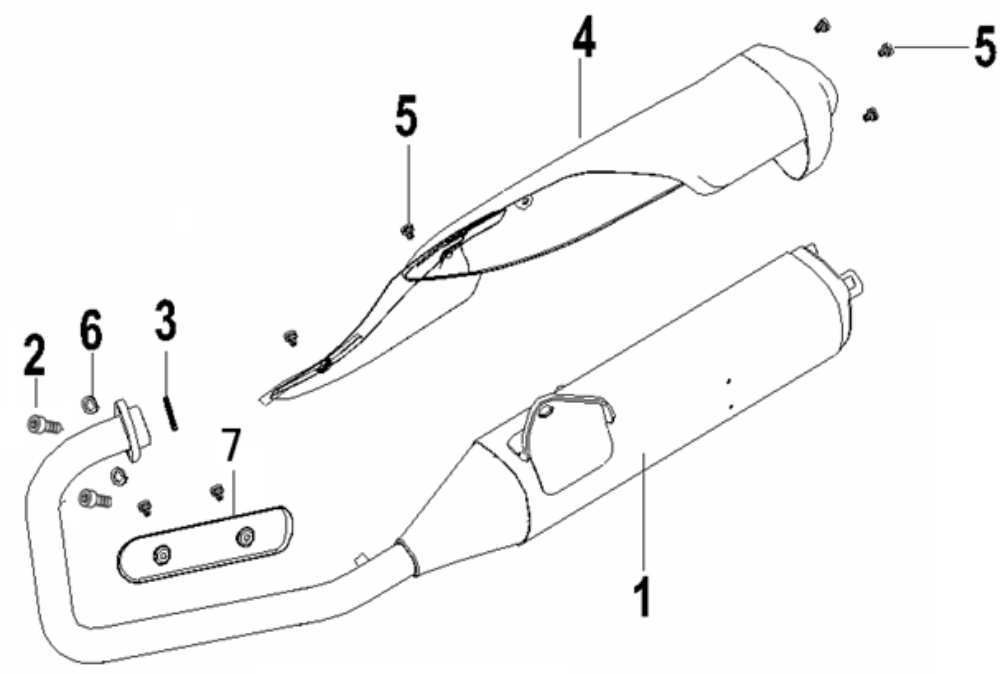
Note: lubrication oil should be used on the wheel gears and shafts while assembling them. Ensure the wheel gear works normally after the completion of the assembling work.

Note: the assembling work of the crank case should be done in the reverse order.

Exhaust System Inspection and Maintenance

Muffler

A	Torsion force of the locating bolt 5 in the connector of the muffler in the figure: 5-9N • m
B	Torsion force of the protective shield 6 in the connector of the muffler in the figure: 5-9N • m



1 welded components on the muffler; 2 socket head cap screw; 3 liner components on the exhaust pipe; 4 welded components on the muffler tail cover; 5 combination screw M6×10; 6 spring washer 8; 7 protective shield on the exhaust pipe

ⅩⅦ Emission Control System

15.1 Emission Control System Guarantee

1. This emission control system is in accordance with the revised versions of the EU EC/97/24/5/I and 2003/77/EC B. Our guarantee is set for products in effective service life that are maintained absolutely following our instruction.

2. Scope of guarantee

a. guarantee on the function of the emissions control system

During the service life (15,000 km), it can pass all the periodic and non-periodic emissions control inspection of the government authorities.

3. The following cases are out of the scope of the guarantee. If maintenance services are needed, services from the franchisers or service centers of our company in different places will be available for the customers at a reasonable price.

a. maintenance is not conducted according to the intervals or distance of drive specified in our instructions.

b. periodic maintenance, adjustments or repair work is not done in our franchisers or service centers, or no evidence of maintenance is available.

c. overload or improper use.

d. the vehicle is modified, the original components are removed or replaced with other components privately.

e. the vehicle is used in racing or frequently operated in roads that are used for non-motor vehicles.

f. the vehicle is damaged by such climate disasters as typhoons and floods, or in improper use, car accidents and clashes;

g. not in use for a long time and lack of periodic maintenance.

h. the odometer is damaged but not repaired immediately, or it is modified, stopped or replaced.

i. please send the vehicle to the inspection place every three months to check emission control.

- The new vehicles produced in our company have passed the EU standard of EC 97/24/9.

15.2 Periodical Maintenance Instructions

- To prevent deterioration of environmental pollution, the government requires all the manufacturers to ensure their products meet the emissions control standards. Our products meet those standards. We are also making our due contribution to air purification and reducing air pollution.

- This vehicle has passed strict inspection. It completely meets the emissions control standards. Due to the varying concrete conditions of use of the vehicles, we made the following inspection table for periodic emissions inspection. To ensure normal levels of emissions, the user should follow the specified intervals of maintenance, adjustment or repair.
- Please consult the franchisers or the service centers of Qianjiang if you have other problems.
- Relevant emission standards are as follows:

Emission regulation	CO	HC	NO_X
Emission standard	≤2.0g/km	≤0.3g/km	0.5 g/km

※effective emission standards are subject to the newest updated changes made by the government.

- If periodic maintenance is not done in our franchisers or service centers, we will not be responsible for possible case of being canceled. Please do necessary checks at all times to ensure optimal functions of the vehicle.

Note: ① the air filters on vehicles running on gravel pavements or severely polluted environment need to be cleaned more frequently, so as to lengthen their service life.

② better maintenance should be given to vehicles that are constantly used or frequently running at high speeds.

Please notice the following items to ensure consistence with emission standards:

a. fuel: only 92# or 95# unleaded gas can be used.

b. Lubricant oil: only specified lubricant oil can be used.

c. maintain it according to the instruction in the periodic maintenance table.

d. no private adjustment or replacement can be done to the emissions control system, including: use of spark plug, idling adjustment, ignition timing and adjustment to the carburetor.

e. Note:

- Problems in ignition system, charging system and fuel system have great impacts on the catalytic device, so if there are problems in the engine, please send it to the franchisers or service centers for check, adjustment or repair without delay.
- Only 92# or 95# unleaded gas can be used in the vehicle, or else, the catalytic device (four stroke system) can be damaged.

f. the emissions control system of this vehicle complies with the national regulation, so only the components produced in our company can be used while replacing any components in the system, and it should be done in our franchisers or service centers.

15.3 Mechanical Functions of Emission Control System

Profile

The emission solution is based on the use of the four stroke single cylinder engine and the carburetor, air inhaling device, high standards of emission control and use of charcoal canister for emission evaporation.

※ **Improvements in the engine**

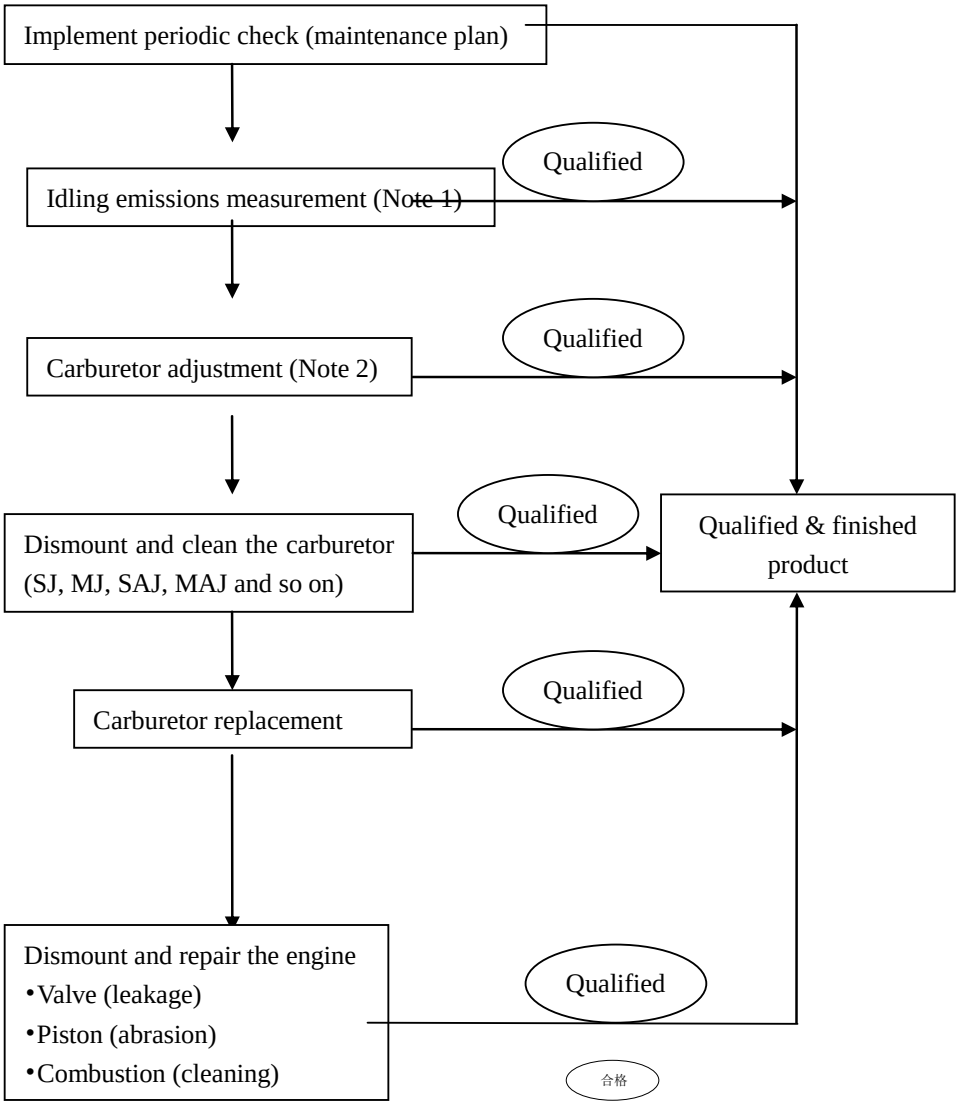
Exhaust and combustion are improved by improving the spark plug, spherical combustion chamber, compression ratio, ignition time and exhaust system in the engine.

※ **Air inhaling device**

Air is led into the exhaust pipe to compose the CO and HC that are not completely burned into harmless emission.

Division	Device	Component	Purposes and functions
Exhaust system	Catalytic device	Catalytic converter	Canned oxidation catalyst contained in the center of the exhaust pipe oxidizes CO, HC and NO_X.

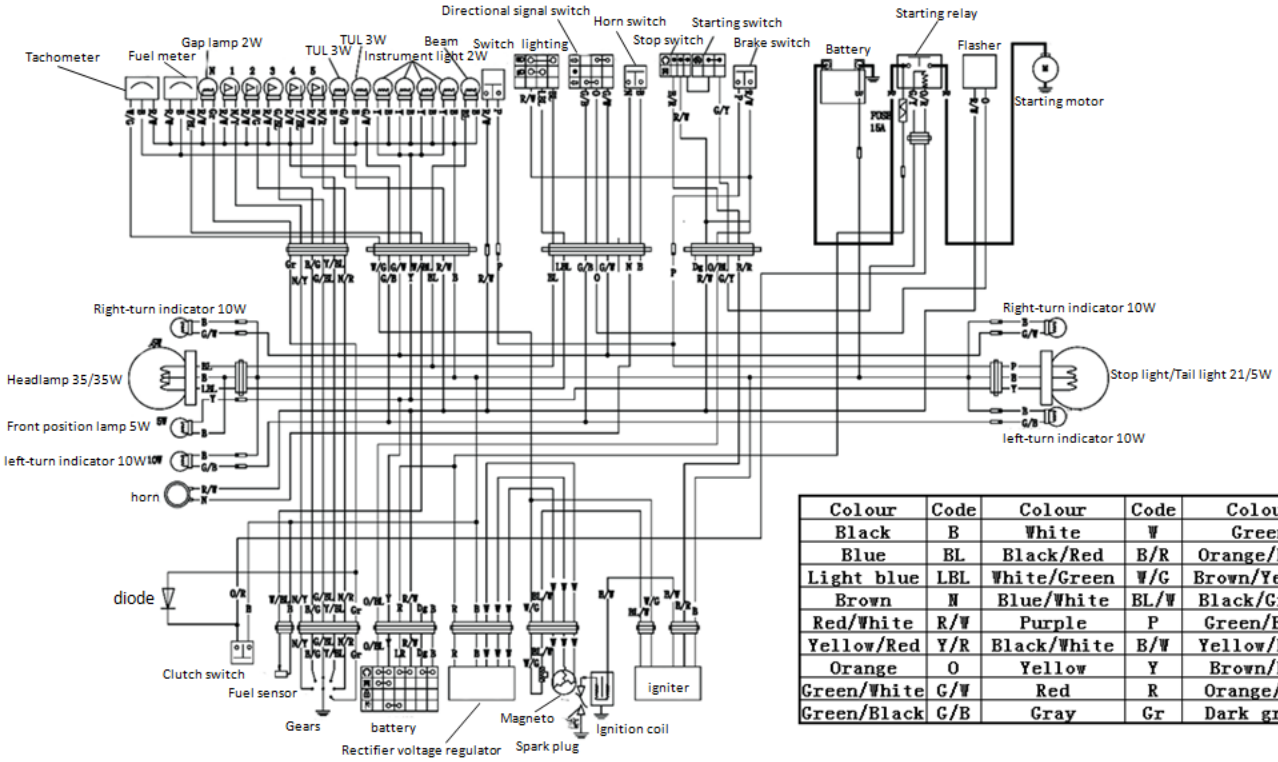
15.4 Solutions to the problem of idle exhaust exceeding specified value (four- stroke)



Note 1: test it according to the idling testing procedure.

Note 2: adjust the speed of the engine to reach the specific value with the lock screw, and test CO/HC in idling.

Complete QJ200-2A Schematic Circuit Diagram



Colour	Code	Colour	Code	Colour	Cod
Black	B	White	W	Green	G
Blue	BL	Black/Red	B/R	Orange/Blue	O/BL
Light blue	LBL	White/Green	W/G	Brown/Yellow	N/Y
Brown	N	Blue/White	BL/W	Black/Green	B/G
Red/White	R/W	Purple	P	Green/Blue	G/BL
Yellow/Red	Y/R	Black/White	B/W	Yellow/Blue	Y/BL
Orange	O	Yellow	Y	Brown/Red	N/R
Green/White	G/W	Red	R	Orange/Red	O/R
Green/Black	G/B	Gray	Gr	Dark green	Dg