ZHEJIANG KAYO MOTOR CO., LTD.

Model A150

STORM 150

Service Manual

WWW.RIDEKAYO.COM

Introduction

This manual contains detailed information for Kayo A125 (ATV), maintenance, adjustments, disassembly, installation, inspection points and specifications.

Please read the manual carefully and follow the instructions closely when performing inspections and repairs, this will increase the reliability, performance and overall lifespan of the vehicle.

All contents in this manual are subject to improve and update without notice.

Contents

Conversion table

Item	Unit conversion
pressure	1kgf/cm^2=98.0665kPa； 1kPa=1000Pa
	1PSI=0.0689kgf/cm^2
	1mmHg=133.322Pa=0.133322kPa
Torque	1kgf·m=9.80665N·m
volume	1mL=1cm^3=1cc
	1L=1000cm^3
Moment	1kgf=9.80665N
Length	1in=25.4mm

Danger/warning/attention

Take the following warnings seriously, it's important for regular maintenance, especially important during engine maintenance.

Danger: Be on high alert for danger.

Warning: Be on alert for moderate danger.

Attention: Be on alert for minor danger.

This manual may contain some potential risks when performing engine work and maintenance, Please pay close attention to the above explanations, Service technician or mechanics should have basic mechanical knowledge before performing any service, maintenance, or inspection.

1. Service Information

1.1 Safety precautions

Safety first

1. Wearing work clothes (coveralls), hat and safety boots suitable for the operation. In some conditions safety glasses, dust masks, gloves and other safety protective supplies are needed to protect you from injury.

2. Do not run the engine in unventilated places.

3. To prevent burns, do not touch the engine or exhaust until cooled.

4. Battery solution (dilute sulfuric acid) is a strong corrosive agent; contact with the skin, contact with eyes may cause blindness. If the battery solution accidentally touches clothes or skin, rinse immediately with clean cold water. If the battery solution is touches eyes, please flush immediately with plenty clean cold water and get medical treatment as soon as possible. Battery and battery solution should be kept out of reach of children. Battery charging will produce flammable and explosive gases, if exposed to a source of fire or spark there is a risk of explosion or fire. Please charge in well-ventilated places.

5. As gasoline is flammable and explosive. Pay attention to sparks as well as open flames. Vaporized gasoline may explode if exposed to open flame or sprks , please choose well-ventilated areas away form these hazards when refueling.

6. Attention, the rear wheel, clutch or sprockets and other rotating parts and movable parts as hands and clothes may be caught during maintenance.

Disassembly and installation precautions

1. All Parts, lubricants oils and fluids must be Kayo brand parts or Kayo recommends.

2. During disassembly, Please sort and separate out the parts and fasteners of each system to ensure that everything is put back together properly.

3. Clean the vehicle or parts to be serviced before inspection.

4. Gaskets, o-rings, piston pin, piston ring, cotter pin and other onetime use parts must be replaced after disassembling.

5. Snap rings can be deformed if opened too much during disassembly. DO NOT re-use deformed snap rings.

6. After disassembly and inspection, clean parts and blow the cleaning agents away with compressed air before measuring. Grease the moving surfaces before assembly.

7. During disassembly, check all the necessary specifications and measure according to directions in this manual. Make sure measurements and conditions are within specification.

8. Bolts, nuts, screws and other fasteners shall be pre-tightened and then tightened in accordance with the specified torque in a diagonal sequence. From large to small, and from inside to outside.

9. Inspect all rubber parts during disassembly and replace if necessary. In addition, as some rubber pieces are not resistant to corrosive materials, please keep them from contacting volatile oils, grease, or liquids.

10. Pack or inject recommended grease in specific places as stated in service manual .

11. Use special tools when needed for disassembly and installation.

12. Ball bearings can be rotated with finger to confirm whether the rotation is flexible and smooth.

- Bearing axial and radial clearance is oversized.
- Clean and grease bearings with a tight spots when rotated. If the bearings still feel stuck after cleaning, replace. If the bearings can’t be cleaned, replace.
- If the bearing is a press fit, and becomes deformed after disassembling, replace it.

13. Bearings should be lubricated or packed with grease before assembly. Take note of the direction of installation when assembling. When installing open or double-sided dustproof bearing, make the manufacturer's logo and dimensions outwards.

14. Let the chamfered side towards force direction when install the Snap-ring. Do not use the rings without elasticity. After assembly, rotate the snap-ring to confirm that it is firmly installed in the slot.

15. It’s important to check that all fastening parts are tightened and that functions are normal after assembling.

16. Brake fluid and coolant can damage surfaces, painted parts, plastic parts, rubber parts, etc., do not let brake fluid contact to these parts, If brake fluid contacts these parts rinse and dilute with water immediately.

17. When installing oil seals manufacturer's mark and sizes face outward.

- Check the oil seal before using.
- Grease the oil seal lip before assembly.

18. When installing rubber hose parts, insert the rubber pipe into the fitting. If there is a hose-clamp, install the hose-clamp in the hose indentation. Replace rubber hoses if dried, cracked, or deformed

19. Clean all gasket material from surfaces of before installing new parts or reassembling.

20. Do not bend cables excessively. Kinked or damaged cables may cause poor response and inner cables to fray and eventually break.

21. When assembling any protective caps, covers or boots make sure they are seated correctly in the respective grooves.

Engine Break-in

Proper Engine break in is necessary on new engines and newly rebuilt engines to help ensure that longevity and reliability of the engine components .

Recommended break-in time is 20 hours, as follows:

0~10 hours: Operate at no more than ½ throttle, keep gear changes and speed variances to a minimum. Do not operate for extended amounts of time with a fixed throttle position. Let the engine cool for 5 to 10 minutes after each hour of operation. Avoid quick acceleration.

0~20 hours: Operate at no more than 3/4 throttle, Do not operate for extended amounts of time with a fixed throttle position. Change gears and vary speeds as necessary. Let the engine cool for 5 to 10 minutes after each hour of operation. Avoid quick acceleration.

Note:

- During break-in period, inspect for noises and wear and follow maintenance

schedule.

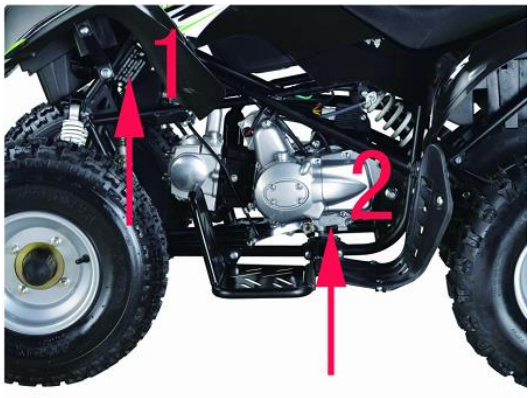
After Break-in period is complete schedule the unit for an inspection and service

1.2 VIN Number

Model	**STORM 150（A150）**
VIN number	
Engine number	

1 VIN number

2Engine number



1.3 Specifications, Model information

No.	Item	
1	**Brand**	**KAYO**
2	**Type**	**A150**
3	**Name**	**150cc utility ATV**
4	**Company**	**ZHEJIANG KAYO MOTOR CO., LTD.**

● Dimensions, Vehicle Specifications

1	Dimension（L*W*H）（mm）	1535*920*950
2	Handlebar height（mm）	930
3	Handlebar width（mm）	730
4	Rear fender height（mm）	700
5	Seat height （mm）	705
6	Min. ground clearance（mm）	90
7	Wheelbase（mm）	1040
8	Front width outside of tires （mm）	725
9	Rear width outside of tires （mm）	705
10	Turning radius（mm）	2500
11	Turning angle（degree）	46°±1°
12	Net weight（Kg）	105

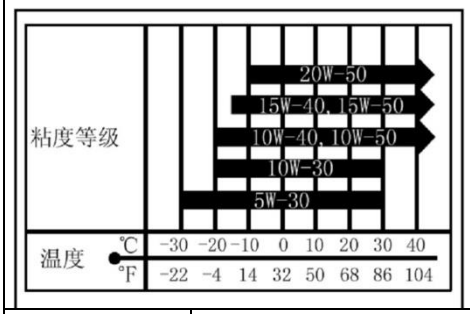
13	curb weight（battery+fuel）（Kg）	119
14	Max. Speed Km/h	60（limited speed）

● Engine Specifications

No.	Item	
1	Engine model	156FMI
2	Type	horizontal，Single cylinder, four stroke, oil cooling
3	displacement（ml）	140CC
4	Cylinder diameter × mileage（mm*mm）	57*56
5	Compression ratio	9.2:1
6	engine weight (kg)	21
7	Max. Power (kg/rpm)	8.2/8000
8	Max. torque(N.m/rpm)	8.0:5500
9	Ignition method	CDI non-adjustable ignition
10	Lubrication mode	Combination oil slinger and oil pump
11	Fuel consumption (g/Kw.h)	<367
12	Start type	Electric
13	Tank volume	6.5L
14	Clutch type	Multiple-disc and oil-bath clutch
15	Carburetor	PZ27
16	Gear range	3 forward gear, 1 reverse gear
17	Shift type	R~N~1~2~3

●**Frame**		
18	Drive sprocket ratio	45/14
19	Output type	Chain drive,rear wheel drive
20	Brake type	Front and rear disc
21	Suspension type	Double A-arm/coilover front Swingarm /single shock rear
22	Frame type	Steel tube and steel plate

●Lubrication system

Item		Standard	Limitatio
Engine oil capacity	Change oil	800mL（No oil filter element replaced ）	—
	Change oil	800mL（replace the oil filter element）	
	Full capacity	800mL	—
Recommended engine oil（original） 		• four-strokes motorcycles SAE-15W-40 For replacements, it must be within following scope: •API classification：SG or upper grade engine oil • SAE specification：refer to left table	
Oil pump rotor	Radial clearance of inner	0.07 mm～0.15mm	0.2mm
	Radial clearance between	0.03 mm～0.10mm	0.12mm
	Axial clearance between rotor surface and pump body	0.023 mm ～0.055 mm	0.12 mm
	Oil pressure	1500r/min ， 90℃: 200 kPa ~400kPa， General 240 kPa 6000r/min ， 90℃:600 kPa ~700kPa，	

●Air intake system（see engine section）

●Oil cooling device

●Wheel (front and rear wheels)

Item		Standard	Limitation
Rim jump	Vertical	1.0mm	2.0mm
	Horizontal	1.0mm	1.8mm
Tire	Tread	~	3.0mm
	Air pressure	4.0 PSI	~

●Brake system

Item		Standard	Limitation
Front brake	disc thickness	3.5mm	3mm
	Brake lever stroke	5~10mm	~
	Braking force	400N*m	~
Rear brake	disc thickness	3.5mm	~
	Brake lever stroke	10~20mm	~
	Braking force	500 N*m	~

●Ignition device

Item		Standard
Ignition method		CDI electric ignition
Spark plug	Type	Resistor type spark plug
	Standard	A7RTC/（torch）
	Gap	0.6~0.7mm
	Spark character	>8mm, one bar

Spark advance angle		**15 btdc**
Ignition coil resistance	**Primary**	**0.43~0.57Ω**
	Secondary	**10.1~11KΩ**
Peak voltage	**Primary ignition coil**	**>150Vac**
	Pulse	**2Vac**

●Light / Instrument / Switch

Item		**Standard**
Accesory inline fuse		**15A**
Light	**Headlight**	**E4 35W**
	Taillight/brake light	**LED**
	Gear indicator	**Digital**

●Valve mechanism + cylinder cover（see engine section）

●Cylinder + piston + piston ring + crank connecting link（see engine section）

1.4 Fastener Torque Specifications

Note: When installing threads, please manually attach 2~3 turns of thread first.

Torque Specifications chart

No.	Item	install position	Bolt specification	Class	Moment N*m
1		Lower mounting bolt	M8	10.9	37~50

2	Engine	Upper mounting bolt	M8	10.9	37~50
3		Bottom mounting bolt	M8	8.8	18~25
4		Muffler	M8	8.8	15~20
5	Suspension	Brake bolts	M10*1.25	8.8	35~45
6		A-arm bolts	M10*1.25	8.8	35~45
7		Rear swing arm bolt	M10*1.25	10.9	58~71
8		Shock bolts	M12*1.25	8.8	50~60
9	Brake	Rear disc	M8	8.8	18~25（with blue thread sealants）
10		Front disc	M6	10.9	15~20（with blue thread sealants）
11		Caliper	M8	10.9	29~35（with blue thread sealants）
12		Front brake tee	M8	8.8	18~25
13	Rear axle	Rear axle	M12*1.25	8.8	55~65
14		Nut	M27*1.5		80~90
15		Chain tensioner bolt	M6	8.8	8~12
16		Handlebar clamps	M8	10.9	18~25

17	Turning	Steering column bolts	M8	8.8	18~25（with blue thread sealants）
18		Handlebar riser bolt	M10*1.5	10.9	50~60
19	Electrical components	Battery box	M8	8.8	15~20
20		Voltage regulator ignition coil	M6	8.8	7~11
21	Fuel tank, body parts, plastic	fuel tank	M6	8.8	7~11
22		fuel tank switch	M6	8.8	7~11
23		Pegs, floorboards	M8	8.8	18~25（with blue thread sealants）
24		Brush guards	M6	8.8	8~12
25		Plastic screw	TM6		7~11
26		Screw for headlight and plastic	ST4.2		3~5

- **Tightening moment at specified position - engine（see engine section）**

- **Engine service tool（see engine section）**

- **Engine special tool（see engine section）**

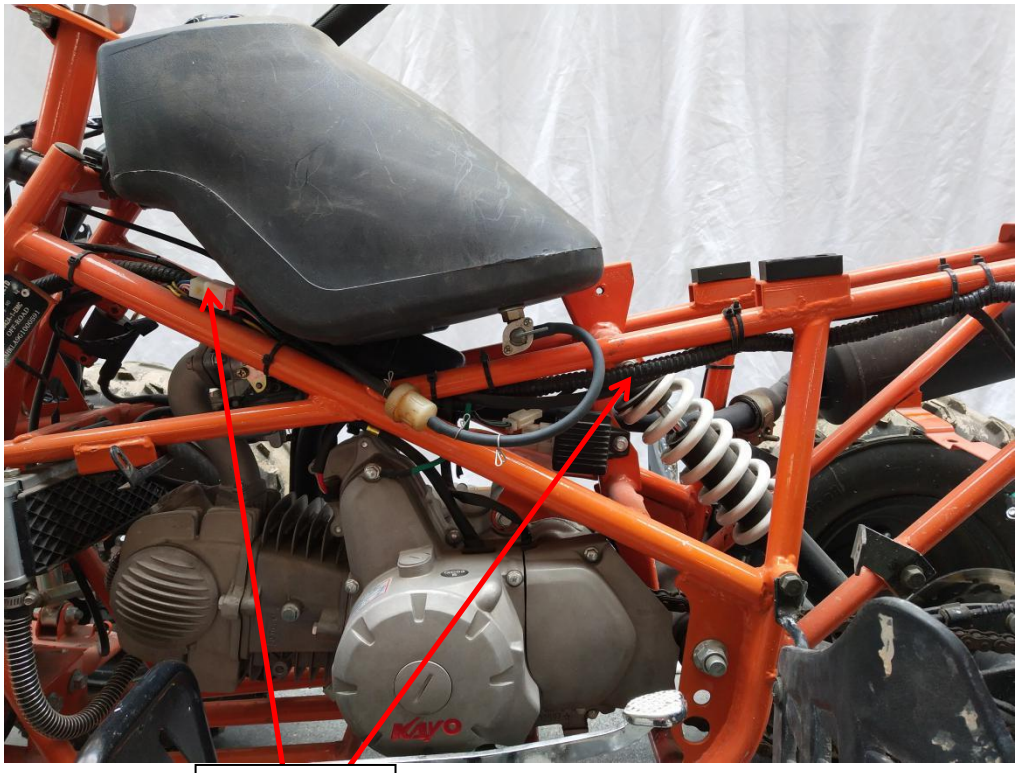
1.5 lubricating grease and sealant

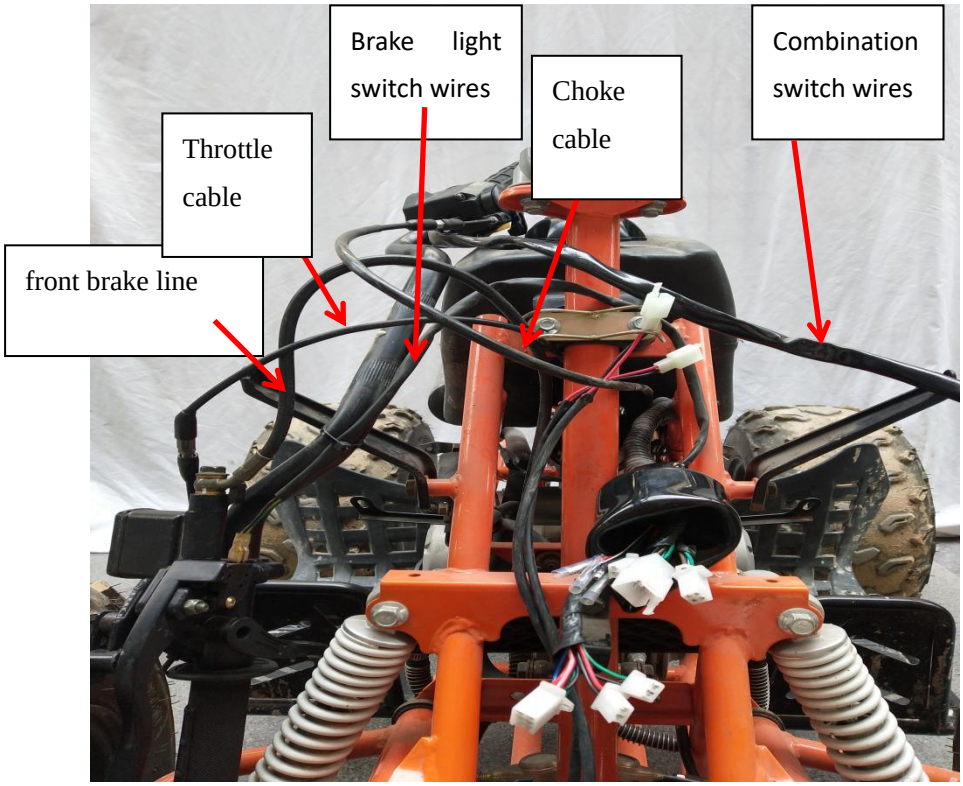
No.	Position	Effect	Grease
1	Dust cap for rocker arms	lubrication	XHP222 High temp grease
2	Ball joints of rocker arms		
3	Steering column bottom		
4	steering knuckle/spindle and wheel hubs		
5	Pivot bolts (swing arm, a-arms)		
6	Bushings, Bearings		
7	Rear axle liner bushings, tubes		
8	Rear axle bearing and oil seal		
9	Steering column clamp		

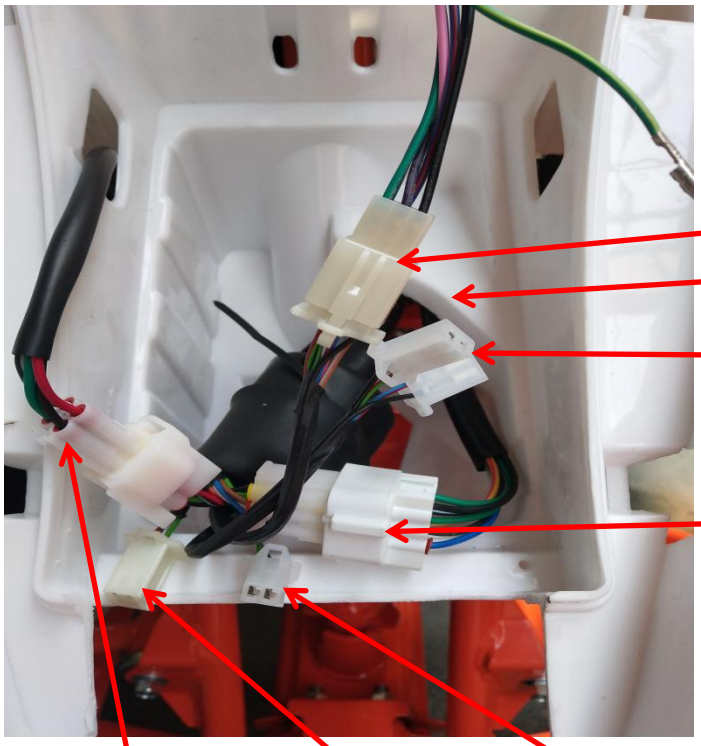
Note: please coat inside of handlebar grip with grip glue before installing.

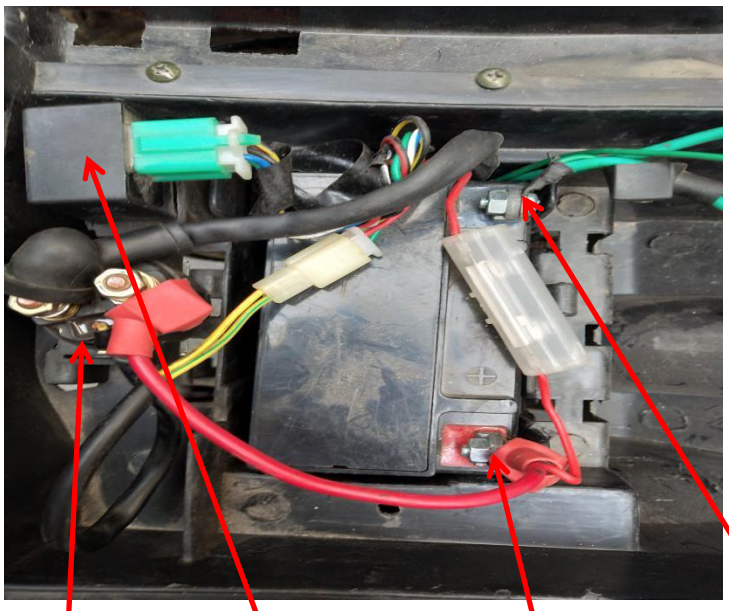
Engine operating materials and installation accessories (see engine section) Engine operating materials include lubricating oil (engine oil), Grease and may require thread sealant or thread lock.

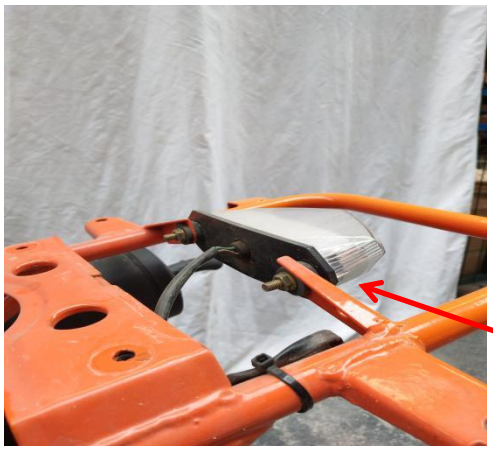
1.6 Wiring and cable Routing diagrams


Main Harness

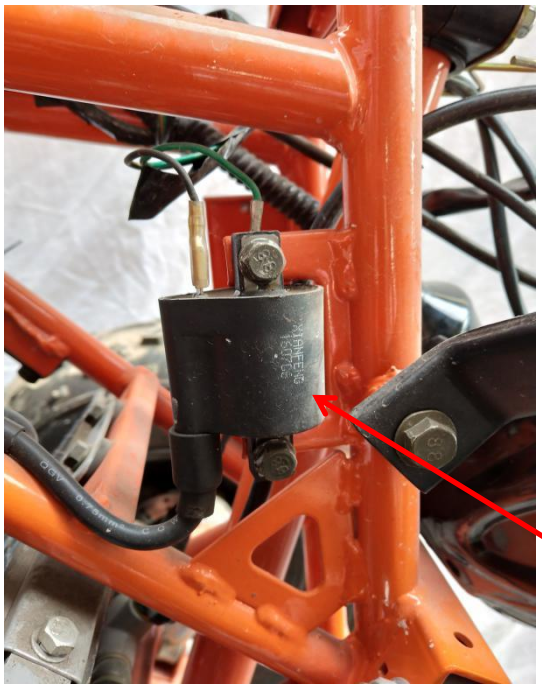

Brake light switch wires
Choke cable
Combination switch wires
Throttle cable
front brake line


Gear indicator connector (Digital indicator models)
Neutral gear connector (analog models)
Reverse gear indicator (analog models)
combination switch connector
Electric lock/ Key switch
headlight
Stop switch

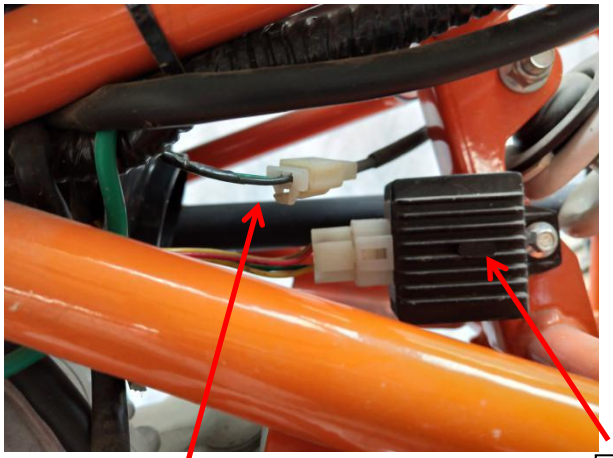

Starter Relay
CDI
Battery positive
Battery negative



Rear light

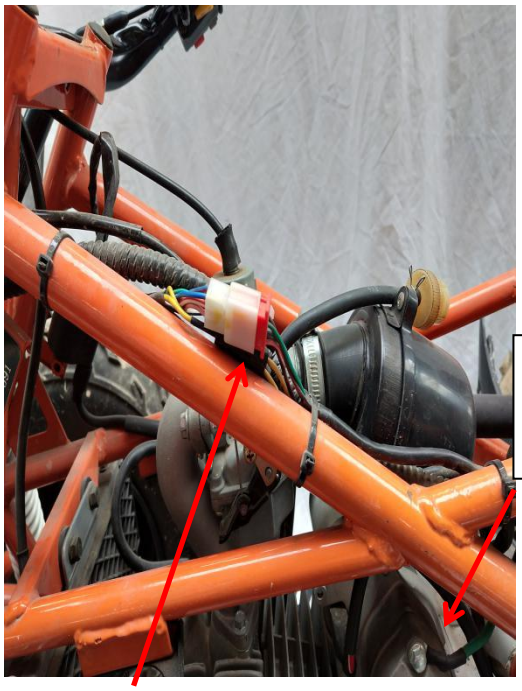


Ignition coil



Voltage regulator

Brake light switch connector


Ground cable
Stator/ignition pickup, gear indicator connector

2 Plastic body

2.1 Maintenance warnings

2.2 Installation torques

2.3Seat, front guard, hood, rear body, left and right guard, plastics foot guards, dismounting left and right footpegs

2.1 Maintenance cautions

Operation cautions

1. When replacing plastics parts, please install new warning labels, stickers and riveted tags to the new plastics.

2. This chapter is about the dismounting the body plastics.

2.2 Installation torque

M8 bolt：18~25N*m

TM6 bolt：7~11 N*m

M6* bolt：8~12 N*m

2.3 Hood, handlebar, seat, plastic parts (rear body, front body and middle guard), front guard, plastic pedals

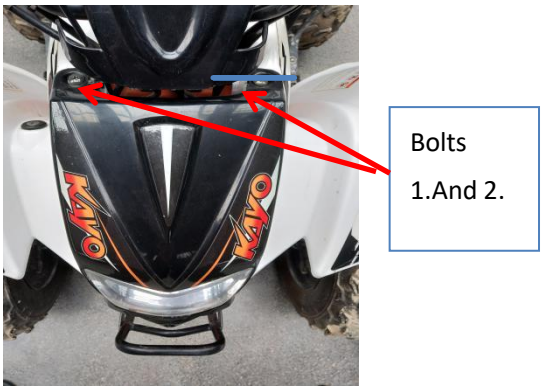
2.3.1 Hood

Disassembly

1. Remove the bolts 1 and 2.

2. Push down and gently pull the hood forward to remove. (Be careful as the tabs are easy to break)

3. **Installation:** In reverse order of disassembly. Locate tabs into slots and push to lock into place then install bolts 1 and 2 (note: replace hood plastic if any of the tabs broke during disassembly)



2.3.2 Handlebar

Disassembly

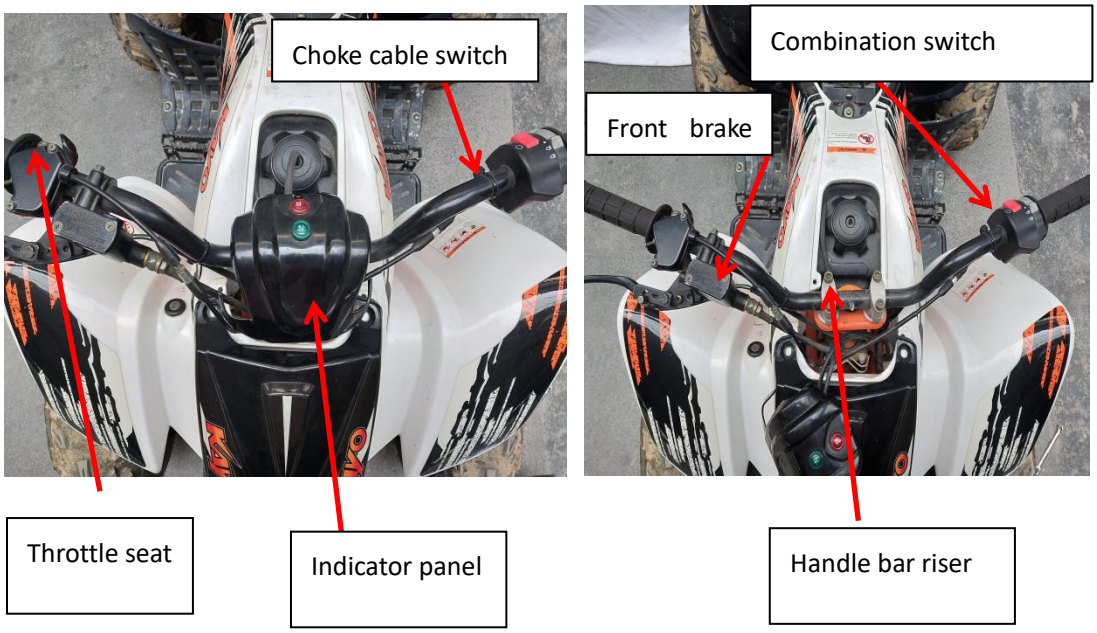
1. Cut off power first. (disconnect battery)

2. Cut plastic cable ties, then disconnect the combination switch, stop switch and remove right grip.

3. Remove the screws from the throttle cap to access and disconnect the throttle cable.

4. Remove combination switch screws and choke cable

5. Remove the 4 handlebar clamp bolts. Then remove the handlebars.



Installation

In reverse order from disassembly, follow steps 5. Through 1.

*after install, make sure to double check electrical connections, wire, cable and hose routing)

2.3.3 Seat

Disassembly

Locate the seat latch under the seat

Pull the latch to release, Then pull and lift to remove the seat.

Installation

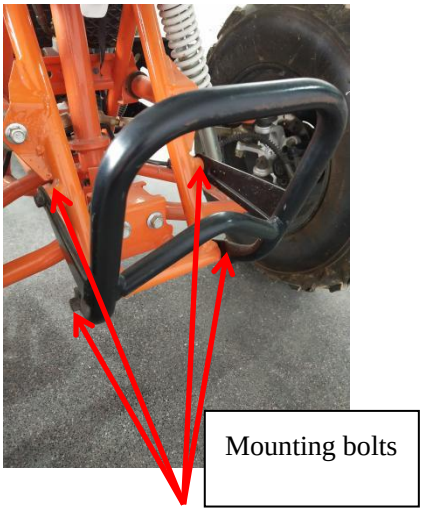
To install line the front hook up with the corresponding post. Then simultaneously push down and forward until the latch locks into place.

2.3.4 Front Bumper

Disassembly

1. The mounting bolts in order.

Then remove the front bumper.



Installation

1. Position the front bumper lining up mounting holes install the mounting bolts loosely. Then adjust bumper into position and tighten bolts.

2.3.5 Plastic Body

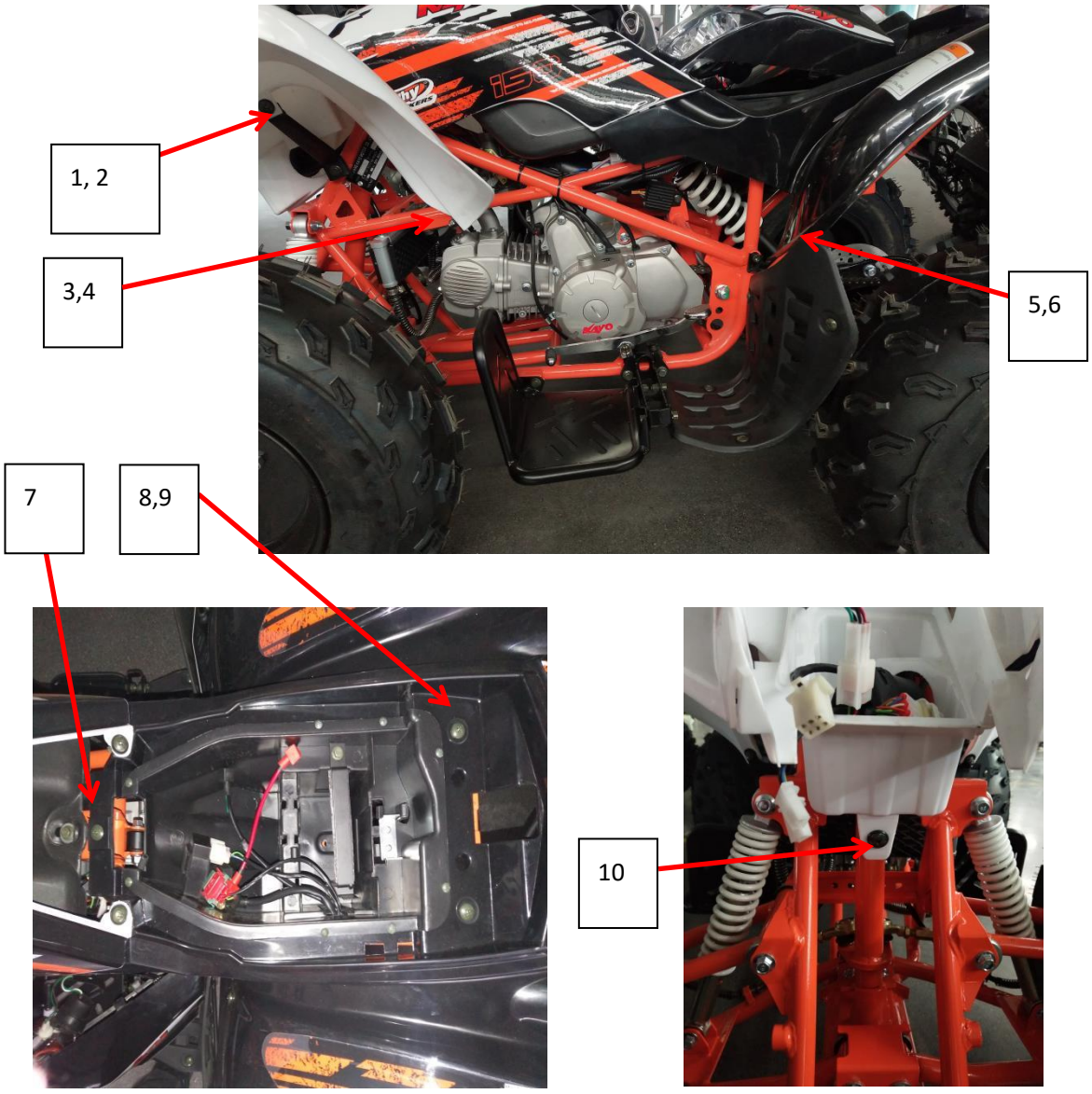
Disassembly

1. Disconnect all necessary electrical connectors.

2. Disassemble plastic parts fixing bolts1,2，3,4，5,6，7, 8,9, 10 in order on both sides

3. Remove the plastic body.

(note: remove the handlebar and hood before removing plastic body.)



Installation

Install the plastic body in reverse order from disassembly.

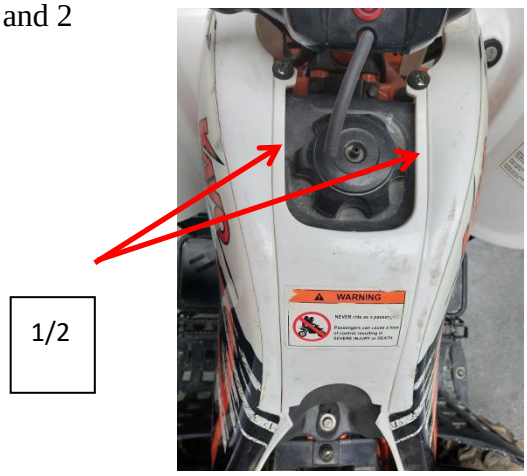
*check all electrical connectors, cable, and hose routing after installation.

2.3.6 Middle guard

Disassembly

1. Remove the mounting bolt 1 and 2

2. Remove the middle guard



1/2

Installation

Install in reverse order from disassembly

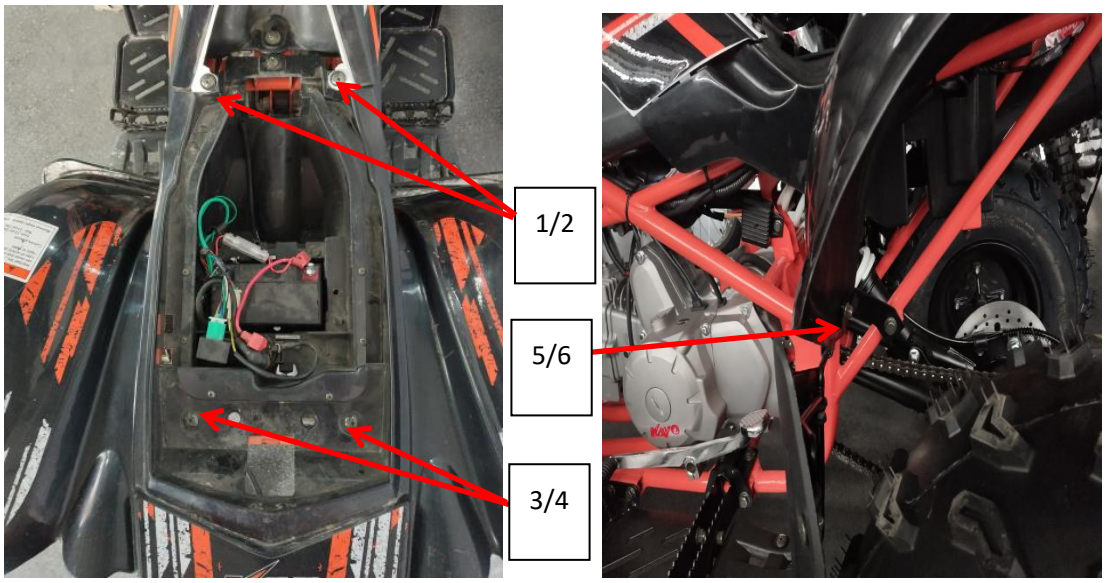
（Note: replace mounting bolts, nuts and rubber washers if damaged or worn)

2.3.7 Rear body

Disassembly

1. Remove the mounting bolts1/2，3/4,5/6 (and corresponding bolts on opposite side）

2. Take the rear body off.



Installation

Install in reverse order from disassembly.

（Note: replace locking nuts and rubber washers as needed.)

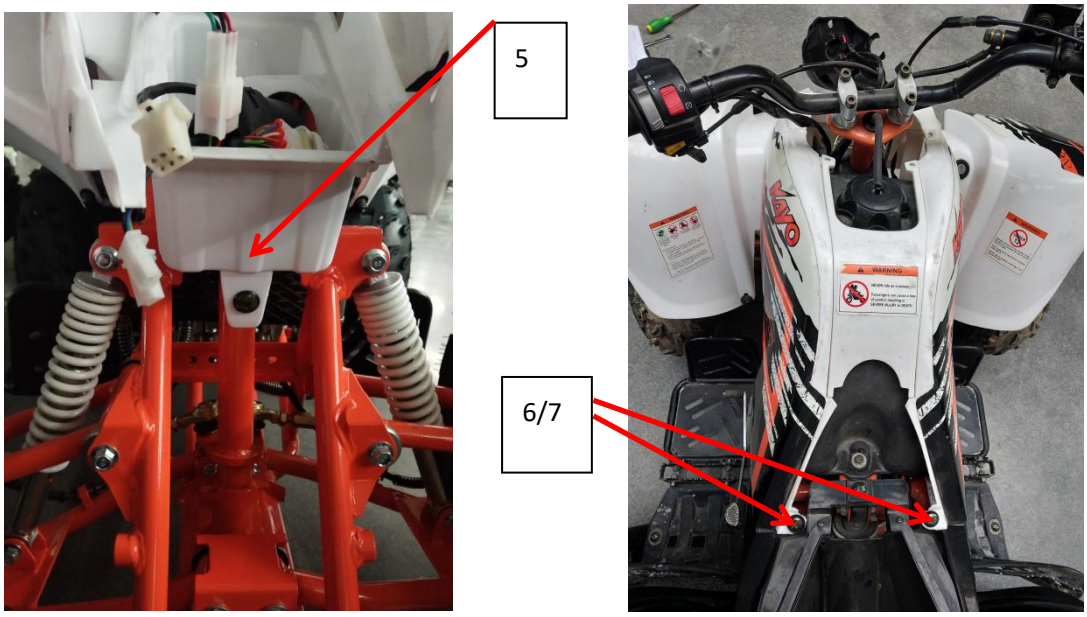
2.3.8 Front body

Disassembly

（Note: remove the handlebar, hood, and middle guard)

1. Remove the front body mounting bolts1/2, 3/4, 5, 6/7.

2. Remove the key switch, headlight connector, then remove the front body.



Installation

1. Install in reverse order from disassembly.

Replace mounting bolts, nuts and rubber washers as needed when worn.)

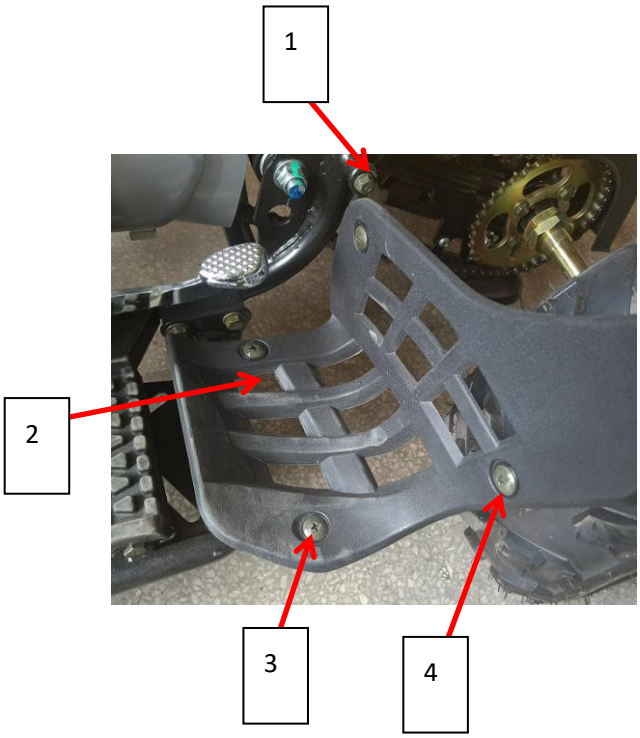
*check all electrical connectors, cable, and hose routing after installation

2.3.9 Foot peg guards

Disassembly

1. Remove mounting bolts 1、2、3、4，

2. Remove the foot guard.



Installation

Install in reverse order of disassembly.

（Note: replace mounting bolts, nuts and rubber washers in time, once they worn.)

2.3.10 Pedal

Disassembly floorboard/ foot peg

1. Remove the mounting bolts 1/2、3/4.

2. Remove peg bracket and foot peg.

Installation

Install in reverse order of disassembly.

（Note: replace mounting bolts, nuts and rubber washers in time, once they worn.)

3. Regular maintenance and adjustment

3.1 Maintenance information

Warnings

Note:

- Do not run the engine in unventilated places, because the exhaust contains carbon monoxide (CO) and other toxic components.
- To prevent burns, don't touch the engine or exhaust until it has cooled down., please wear long sleeves work clothes and gloves.
- Gasoline is flammable and explosive. Pay attention to sparks as well as open flames. Vaporized gasoline may explode if exposed to open flame or sparks, please refuel in well-ventilated areas..
- Being careful of drive system and rotating parts, keep fingers, loose clothing and hair away from these parts

3.2 Maintenance period

Engine maintenance is a regular periodic work,due at certain time intervals for engine maintenance, keeping up on standard maintenance will increase the lifespan and reliability of the components , the following is the A150 engine maintenance period table.

Note: the contents in the table is based on normal conditions, if bike is ridden in dusty muddy or wet areas maintenance should be performed more often and as needed.

A：adjustment C：clean I：inspection L：lubrication	10 hours or 300km	20 hours or750km	per 50 hours or 1500km	per 100 hours or 3000km or one year	per 200hours or 6000km 2 years	Remark
Engine						
Lubricating oil and air filter		R		R		
Damper adjustment		I，A		I，A		
Engine	I			I		
Engine suspension	I			I		
Air filter		C	R			
Sparking plug		I		I	R	
Fuel system						
carburetor	I			I，L		
Driving wheel, driven wheel				I，C		

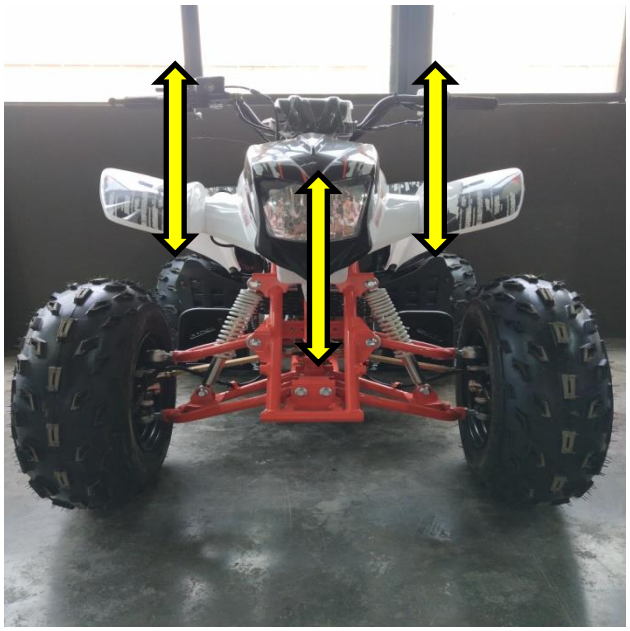
clutch				I		

Item			Period			Criterion
Parts		Item	Daily	Half year	One year	
Steering system	Steering wheel	Operating flexibility	○			
	Steering system	Damage	○			
		Steering linkages and movements	○			
		Ball joint shaking	○			
Braking system	Brake pedal, lever	Pedal, lever travel	○	○		
		Braking effect	○	○		
	Connecting rod and oil pipe	Slackness, looseness and damage	○		○	
	Hydraulic brake and brake disc	Brake fluid	○	○		Above the brake fluid lower limit
		Tear and damage of brake disc	○	○		Replace the disc in time, when front or rear brake working disc's thickness is less than 3mm.
	Brake pad	Tear and damage of brake pad	○	○		The minimum brake pad （ friction plate ） thickness≥1.5mm ； less than 1.5mm, replace it.
Driving system	Wheel	Tire pressure	○	○		front：45kPa（0.45kgf/cm2）(4.0PSI) rear：45kPa（0.45kgf/cm2）(4.0PSI)
		Crack and damage of wheel	○	○	○	
		Tire groove depth and abnormal wear	○		○	If there's no tear indicator on the wheel, the residual groove depth should greater than3mm
		Axle torque	○	○		
		Front wheel bearing vibration	○		○	
		Rear wheel bearing vibration	○		○	
Suspension	Suspension	Shaking of connection part	○		○	

	Damper	Leakage and damage	○		○	
		Function			○	
Transmission	Chain	Transmission and lubrication, tightness	○		○	Chain deflection>20mm
	Flywheel, sprockets	Transmission and lubrication, tightness of fixing bolt	○		○	If chain wheel and chain wear severity, replace it.
Electrical device	Ignition device	State of spark plug		○		
		timing		○		
	Battery	Terminal connections			○	
	Electric circuit	Corrosion or damage, connectors			○	
Fuel device		Fuel leak		○		
		Throttle condition			○	Throttle knob clearance: 3 ~ 5mm
Lighting device and indicators		function	○	○		
Exhaust pipe and muffler		Torque on all fasteners			○	
		Function of muffler			○	
Frame		Joints and welds			○	
Other		state of grease in frame			○	
Exception can be identified in operation.		Make sure relevant parts are normal.	○			

3.4 Steering column and brake system

Keep vehicle in steady place and hold handlebar firmly as it shown in the picture to check if it’s shaking.



If there is a shaking, check it's caused by steering column, linkages, ball joints, or fastening hardware then repair.

If it's caused by steering column, tighten the bottom lock nut on steering column, or you can also disassemble the steering column to check bearing and clamps.

Keep vehicle in steady place and turn the handlebars slowly making sure movement is smooth.

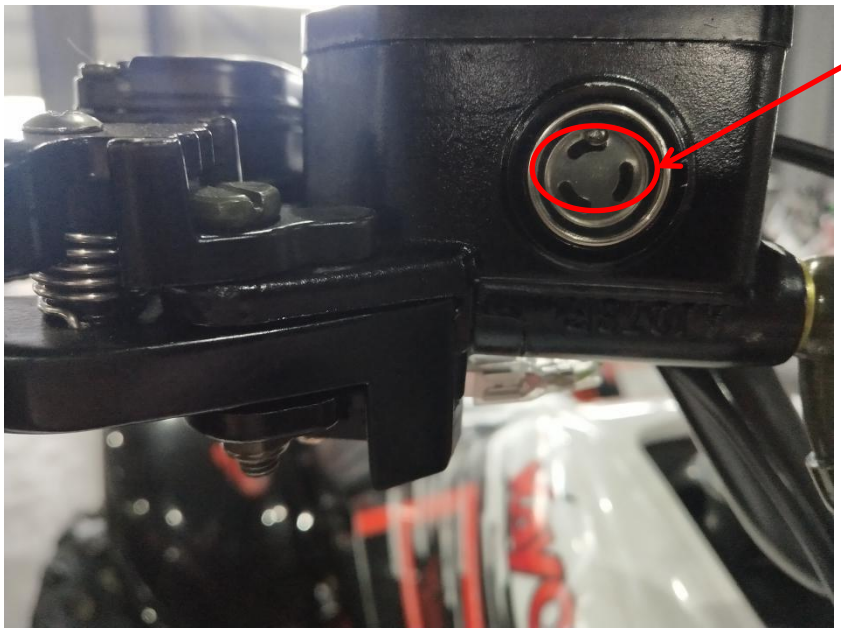
If it is hard to turn, check cable, hose and wire routing, if there is no problem, check steering rods and connecting points for damage.

Note: the steering must be smooth, and move freely between left locked position to right locked position .

Steering system freeplay: Check movement before operation. Freeplay in steering should be less than 10mm.

Brake pump assembly

Check the fluid level at the sight glass on the master cylinder. If brake is below the lower limit, stop using the vehicle immediately and ispect for leaks at master cylinder, hoses, fittings and connections. If fluid is low remove top of master cylinder and add DOT4 brake liquid to limit position.



Note:

- When adding brake fluid, do not mix with dust or water, always add fluid from a new sealed container.
- Brake fluid can damage plastic, painted, and rubber surfaces. Wipe clean immediately if any is spilled

Front brake disc and brake pads

The brake pads, caliper and disc are normal wear and tear items

Check or replace the brake disc

- Check the surface of brake disc, if it is worn, damaged, bent, or grooved replace.
- If the disc thickness is less than 3.0mm, replace.

Check or replace brake pads

- Check thickness of pads, If it's less than 1.5mm, replace.
- Check for damage, cracks, and uneven wear. Replace pad set if out of specification

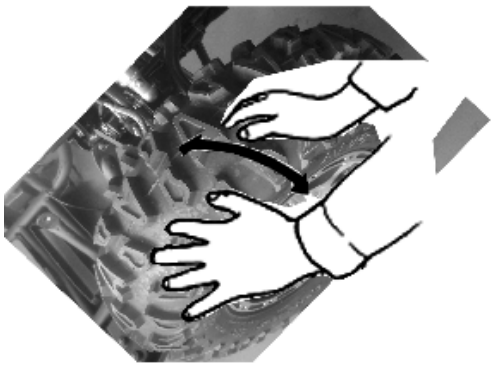
Note: Replace pads in sets.

3.5 Wheel

With the atv on a jack of atv lift. Lift the front wheels off the ground. Push and pull the wheel in and out as shown in the diagram.

If there is movement, check torques on hub, steering shafts, spindles.

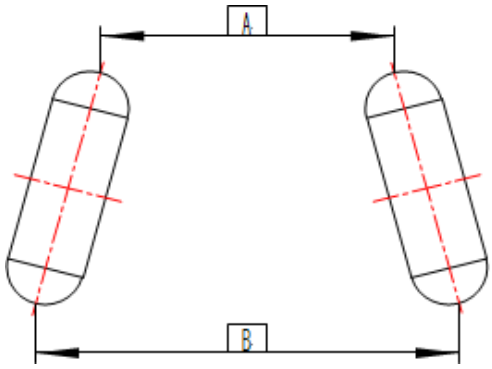
If there is still movement, check the bearings, ball joints, a-arm bushings. Replace if worn or damaged.



Front wheel size

On a level surface with handle bars straight check the front wheel toe-in. The front wheel relative to the forward direction of the vehicle is: A in front and B behind the wheel

Toe-in specification：B-A=4 ~ 10mm



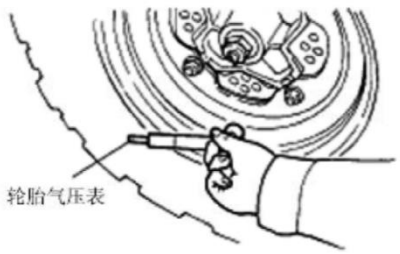
If not in this range, adjust steering rods, adjust the wheel toe-in to within 4~10mm, and lock into place.

Note: after the adjustment of front toe-in, drive the vehicle slowly and make sure vehicle tracks straight and true. After test ride check measurement again to make sure toe in is locked into place .

Tire pressure

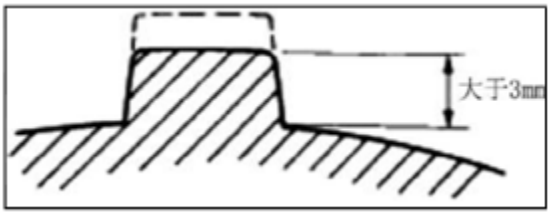
Check the tire pressure with a tire pressure gauge. (Pressure range: 4~6PSI)

Note: Check the tire pressures while the tire is cool. If tire pressure is out of specification please adjust to within range specified. Riding with tires out of specified range will affect vehicle handling and may cause premature wear and or damage to tire tread.



Tire tread

Check Tire tread, if tread is less than 3mm, replace it.



3.6 Suspension system

Keep vehicle in a horizontal position and compress up and down several times according to the pictures. If there is shaking or abnormal sounds, check whether there is oil leakage in the shock absorber, or check for damage or loosening in the fastening parts.

3.7 Gear shifter and fuel system

Changing gears, with the shift lever should be smooth and gear changes should have a positive firm feeling.

Fuel device

Remove the plastic parts first.

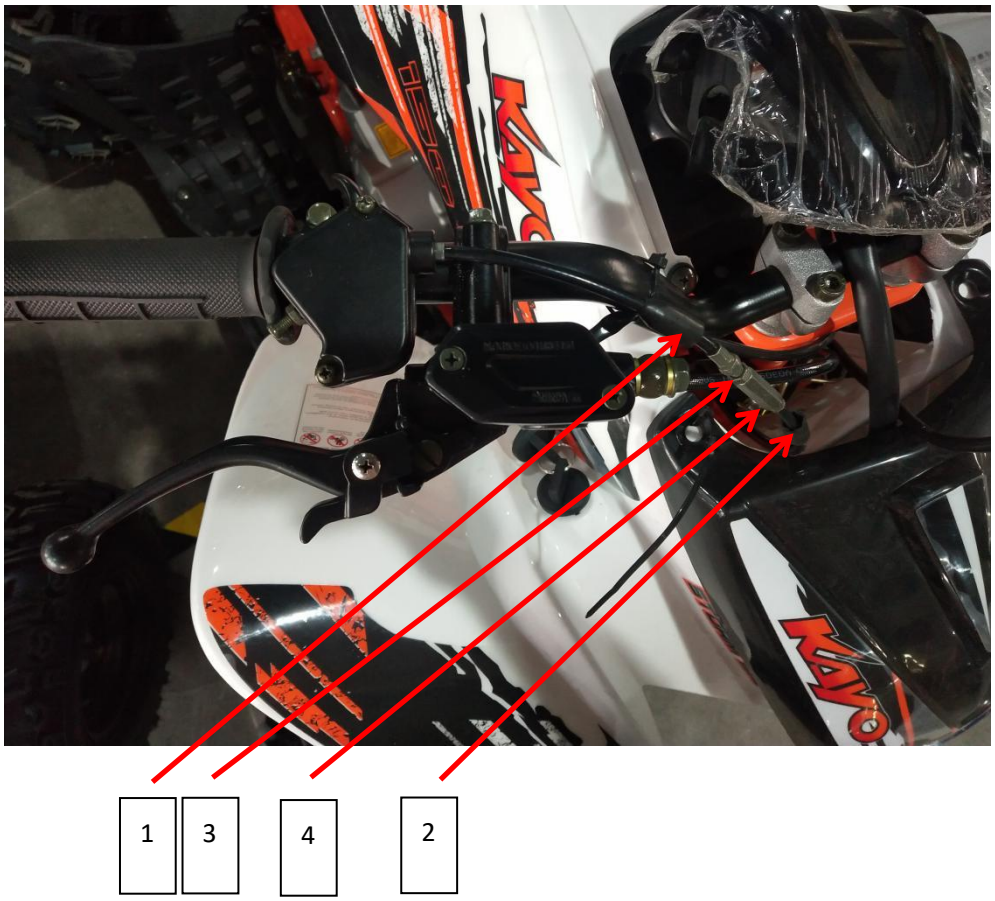
Check fuel vacuum and vent lines for aging, dry rot cracks and damage. Replace if any damages are found or if more than 2 years old.

3.8 Throttle check

Check the free stroke of the thumb throttle lever. Press the accelerator several times as shown in the Diagram. check the free-play of the thumb throttle. Check for any sticking or slow return of the lever. Thumb throttle should be easy and smooth to push and should snap back quickly when released.

Freeplay : 3~5mm

Adjust throttle free play if out of specification.



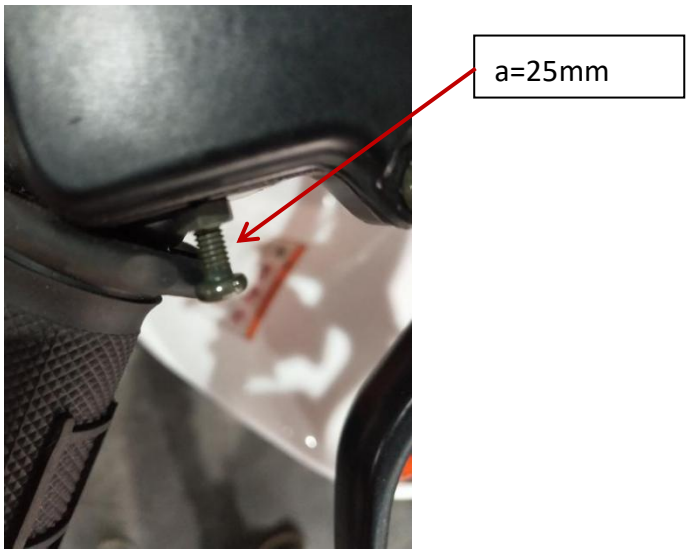
Pull back rubber sleeves 1-2. Loosen lock nut 3 and barrell adjuster 4 then adjust throttle free-play to within specification.

Speed limiting device adjustment

Speed limit device is used to restrict throttle opening.

Inspect the thread length limit of speed limit screw. Thread length a=25mm

Adjustment: Loosen the lock nut, then adjust it with a phillips screwdriver.



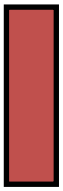
For beginners, Throttle limiter should be adjusted inward to limit throttle as much as possible for safety. As the riders skills progress the limiter screw can be adjusted outward.

***Throttle limiter is set from the factory, with a tamper proof screw. If necessary the screw can be removed with pliers and replaced with a phillips head screw.**

Suspension pre-load adjustment

Front shock is non adjustable.

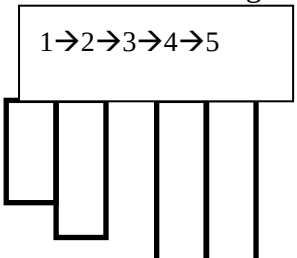
Rear shock can be adjusted from 1 to 5. This is set in the middle at 3 from the factory.



Adjustment:

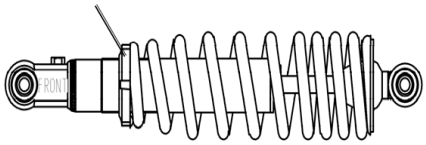
1. Using a shock absorber Spanner wrench.

Turn left to soften and right to stiffen。



Spanner wrench

Spanner wrench slots



4.2 Fuel system

4.3 Air intake system

4.4 Exhaust system

4.5 Disassembly and installation of engine

4. 1 Maintenance information

Precautions

- Before performing maintenance, please make sure that the engine is not running, battery is disconnected and that the heated parts have cooled, to avoid injury.
- To protect finishes, please wrap the frame, plastics or any vulnerable finishes before removing engine parts or performing maintenance on engine.
- Please dispose of liquid such as oils and coolants properly. Use drain pans to prevent spills.
- The engine does not need to be removed for the following operations.

－oil pump

－carburetor, air filter

－cylinder head cover, start motor, cylinder head, cylinder block, camshaft

－left cover, AC magneto

－piston, piston ring, piston pin

- Remove the engine in following operations.

－Crankshaft, main and counter shaft

Tightening torque

See 1.5

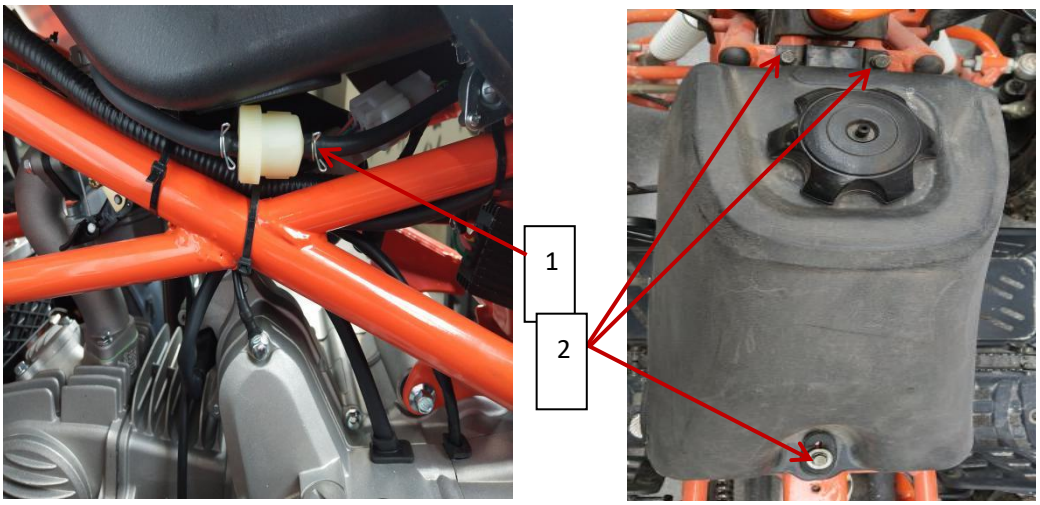
4.2 Fuel system

Gasoline is flammable and explosive. Pay attention to sparks and open flame. Vaporized gasoline may explode if exposed to open flame or sparks , please choose well-ventilated areas away form these hazards when refueling or working on the fuel system and its related components.

Fuel tank removal

Remove the plastic body parts, remove fuel lines from tank and fuel valve, then remove tank mounting bolts and tank.

*Fuel tank pictures may differ from tanks on U.S. models



Installation

Install tank in reverse order from disassembly.

*Check for aged, worn, dried or cracked hoses replace before installing when necessary

4.3 Air filter system

Disassembly

Loose the air filter clamp to remove air filter.

Installation

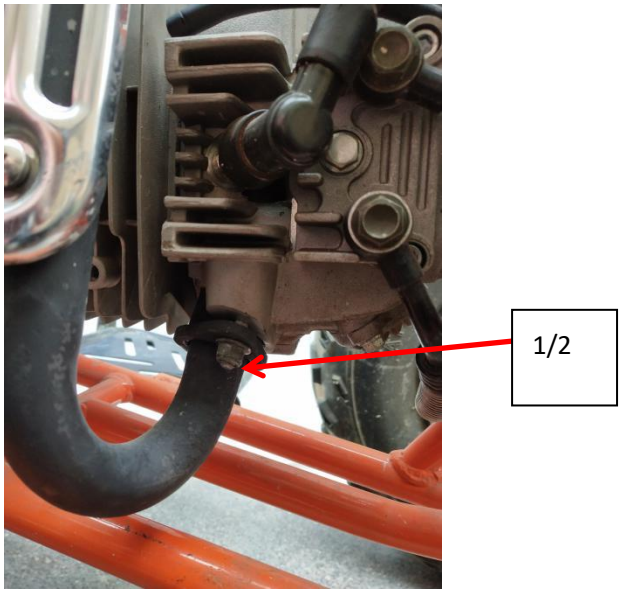
Installation shall be in the reverse order of removal. Make hose clamp is in the groove and any vacuum lines are hooked up correctly.

4.4 Exhaust system

Disassembly

Disassemble the clamp between muffler and exhaust head pipe, then remove the muffler mounting bolt to remove muffler.

Remove exhaust flange nuts. then remove exhaust pipe.



Assembly

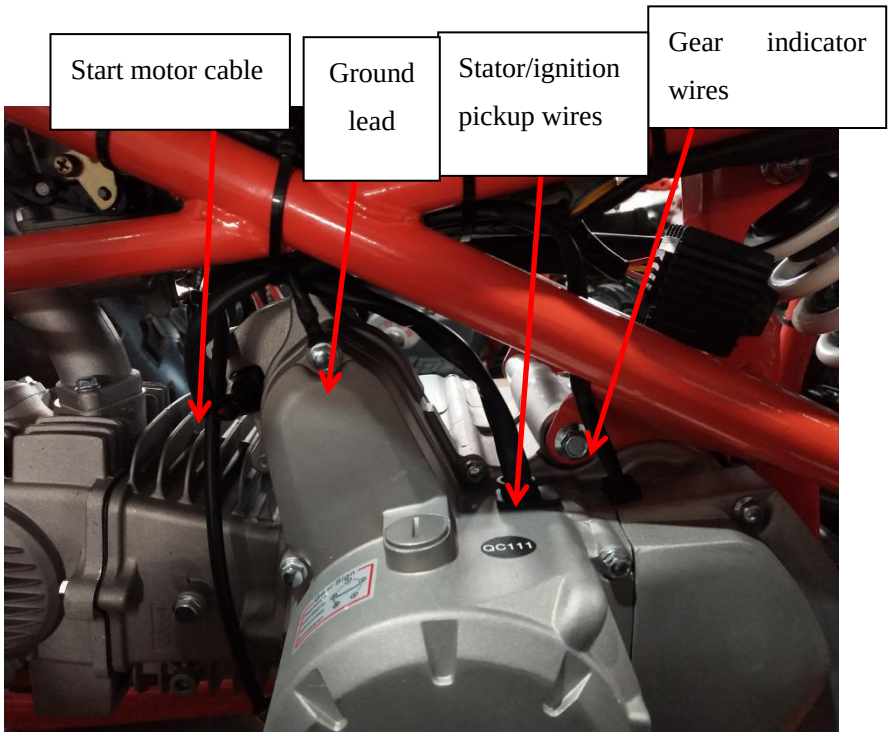
Installation shall be in the reverse order of removal. *do not reuse exhaust head pipe gasket always replace, replace muffler gasket and any hardware for exhaust if damaged or deformed.

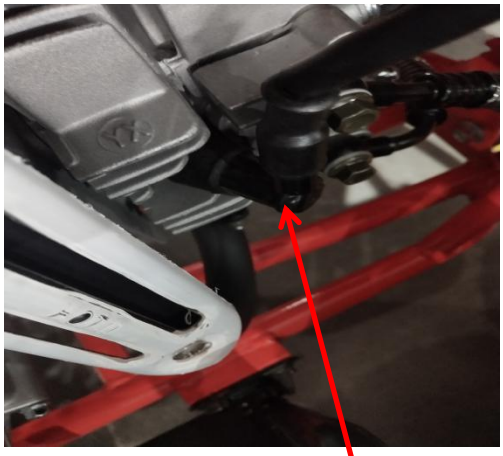
Disassembly and installation of engine

Disassembly (Note: Remove floorboards/ pegs, carburetor, intake manifold and oil cooler first)

1. Remove the engine front sprocket side cover, then remove chain.

Remove the ground lead, and all electrical connectors, exhaust pipe, and gearshifter.



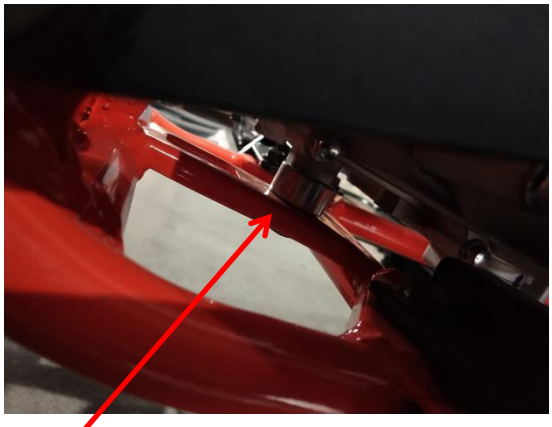


Ignition coil cap

Gear shift lever

Remove the 3 engine mounting bolts

Engine mounting bolt



Bottom engine mounting bolt

2. Remove the engine from the right side of vehicle.

Installation

Installation shall be in the reverse order of removal.

5. Engine

5.1 Maintenance information

Conversion table refers

Item	Unit conversion
Pressure	1kgf/cm^2=98.0665kPa 1kPa=1000Pa 1mmHg=133.322Pa=0.133322kPa
Torque	1kgf·m=9.80665N·m
Volume	1mL=1cm^3=1cc 1L=1000cm^3
Moment	1kgf=9.80665N

Danger/Warning/attention.

Danger: Be on high alert for danger.

Warning: to be alert to moderate danger.

Attention: to be alert to minor danger.

This manual may doesn't contain some potential risks in engine work and maintenance; the service operator should also have basic mechanical knowledge.

General precautions

Warning: Proper maintenance is very important to engine reliability vehicle lifespan and safety.

- When starting the engine indoors, be sure to vent the exhaust outside.

● If toxic or flammable substances are used, handle that in accordance with the manufacturer's instructions strictly and make sure workplace must be well ventilated.

● Don't use gasoline as a cleaning fluid.

● To avoid burns, do not touch uncooled engine oil, exhaust system parts

● If the fuel, lubrication and exhaust systems are serviced, please check for leaks

● In order to protect the environment, Dispose of used oil, coolants, acids and other toxic chemicals properly

Warning:

- If parts need to be replaced during maintenance, please use parts recommended or provided by Kayo.

- Disassembled parts that need to be reused should be arranged in order to aid in re assembly.

- Choose special tools as specified in the maintenance manual.

- Ensure that parts used in assembly are clean and lubricated where required.

- Use special lubricants, binders and sealants.

- When fastening bolts, screws and nuts, tighten from large to small, and tighten from inside to outside according to the specified torque.

- Use a torque wrench to tighten the torque required bolts, Always clean grease and oil from threads Use threadlocker where necessary

- Clean the disassembled parts before inspection and measurement.

- After assembly, check the fastening torque and running status of components.

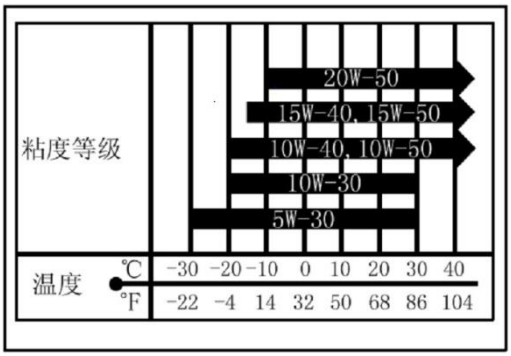
- Do not re-use any removed oil seals, o-rings, gaskets, locking nuts, lock washers, cotter pins, elastic baffle and other parts.

5.2 Engine oil and fuel

Warning: Avoid mixing different oil brands and grades

Fuel: Use octane 93# or higher unleaded gasoline.

Engine oil: Use sae15w-40 oil for 4 stroke motorcycle, quality grade according to the classification of the API SG level or by the superior, if no SAE15W - 40 oil, according to the engine using the environment temperature, as the picture on the right is shown.



5.3 Engine break-in

Engine has a lot of relative motion components, such as pistons, piston ring, cylinder block, mutually meshing transmission gear wheel, etc. therefore, a standard break-in is very important at the beginning of the its use, it can make the moving parts to adapt to each other, correctly work, form a smooth mating surface. Through this process the engine will have excellent performance and reliability. Recommended break-in time: 20 hours, details as follows:

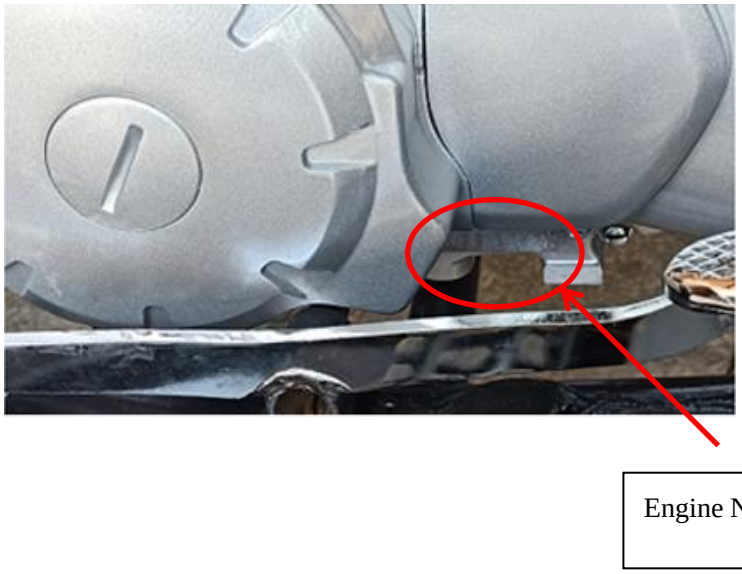
0～10 hours

Avoid continuous operation, constantly changing speed and not operating in a fixed throttle position when the throttle is more than 50%; Cool the engine for 5 to 10 minutes after each hour of operation. Avoid rapid acceleration, throttle change should be slow.

10～20 hours

Avoid operating longer than 3/4 throttle. Use freely but do not use full throttle.

5.4 Engine number



Engine head displacement label

5. 4 Maintenance

Subsidiary

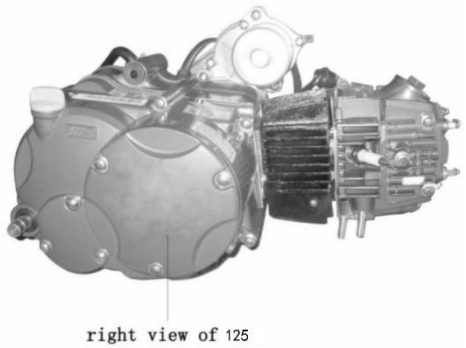
maintain times / Items	Odometer reading			
	1000km	4000km	8000km	12000km
Fuel system	Clean	Clean	Clean	Clean
Oil filter	Clean	Clean	Clean	Clean

Control	Adjust	Adjust, clean	Adjust, clean	Adjust, clean
Carburetor	Clean	Clean	Clean	Clean
Air cleaner	Clean	Clean	Clean	Clean
Spark plug gap	Adjust	Adjust, clean	Adjust, clean	Adjust, clean
Valve clearance	Adjust	Adjust	Adjust	Adjust
Engine lubrication	Replace	Replace once per 2000km		
Filter media	Clean	Clean	Clean	Clean
Timing chain	Check	Adjust	Adjust	Adjust
Carburetor idle speed	Adjust	Adjust	Adjust	Adjust
Drive chain	Adjust and lubricate per 5000km			
Battery	Charge	Charge	Charge	Charge
Brake disc	Check	Adjust	Adjust	Replace
Brake system	Adjust	Adjust	Clean	Clean
Brake light switch	Adjust	Adjust	Adjust	Adjust
Illuminating system	Check	Check	Adjust	Adjust
Clutch	Adjust	Adjust	Adjust	Adjust
Shock absorber	Adjust	Adjust	Clean	Clean
Nuts/bolts	Tighten	Tighten	Tighten	Tighten
Front and rear wheel	Check	Check	Check	Replace
Turn handlebar bearing	Check	Adjust	Adjust	Replace

5.4 Maintenance of Engine Body

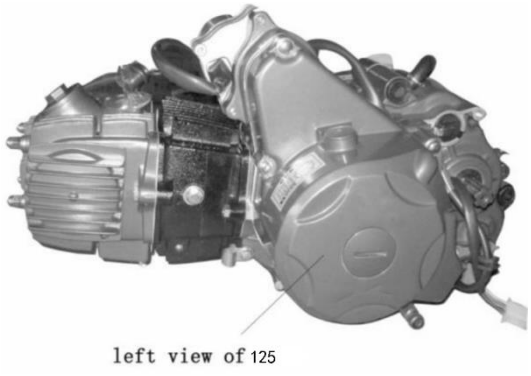
5.4.1 Disassemble, assemble and maintain cylinder head

Right view of the 150 engine is shown in the figure.

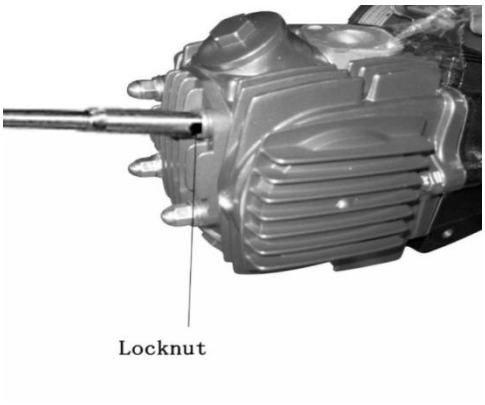


right view of 125

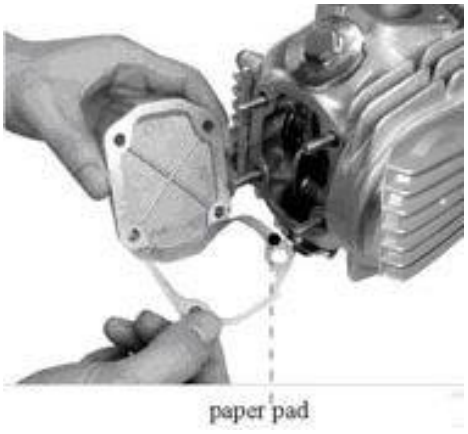
Left view of the 150 engine is shown in the figure



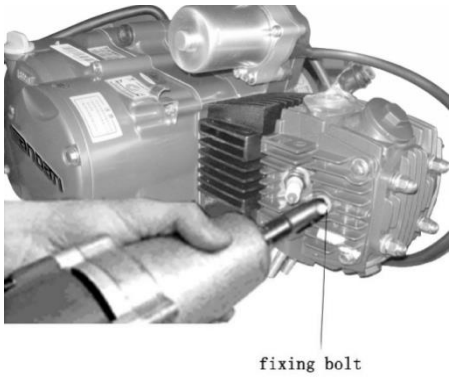
Remove the acorn nuts of cylinder head from cylinder studs



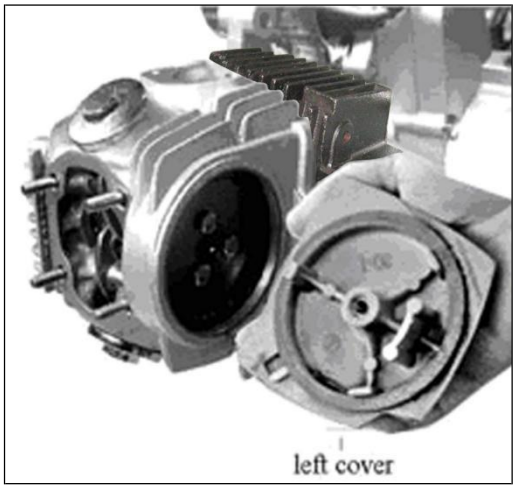
Remove cylinder head. Check the state of paper pad/ gasket. Replace if necessary.



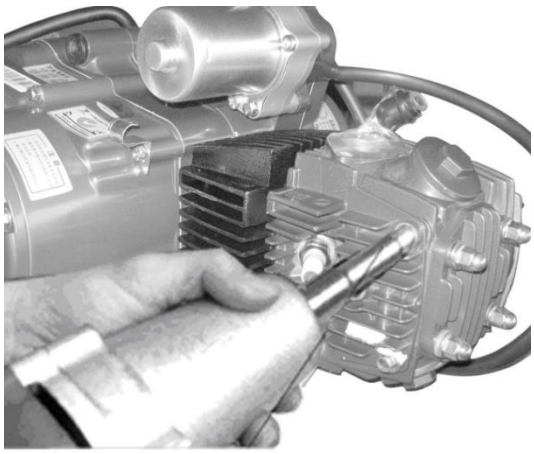
Dismantle the fixing bolt of left cover.



Remove left cover and inspect the paper pad/gasket for damage. Replace if necessary.



Dismantle the fixing bolt of right cover.

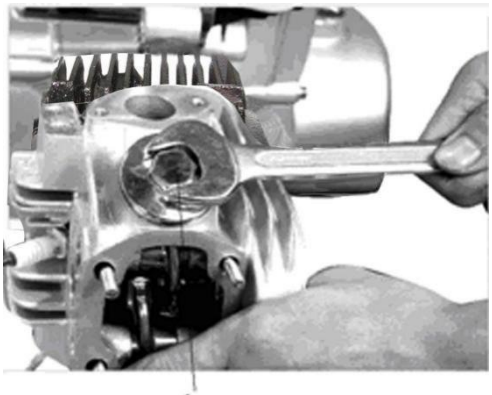


Remove the right cover of cylinder head.

Inspect the gasket for damage and replace if necessary.

paper pad

o-rings and replace if worn or if reuse is questionable.



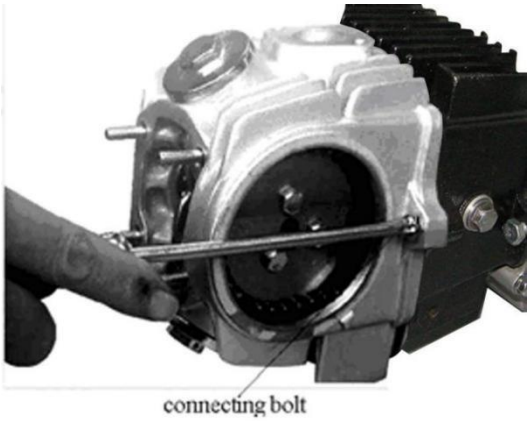
valve cap

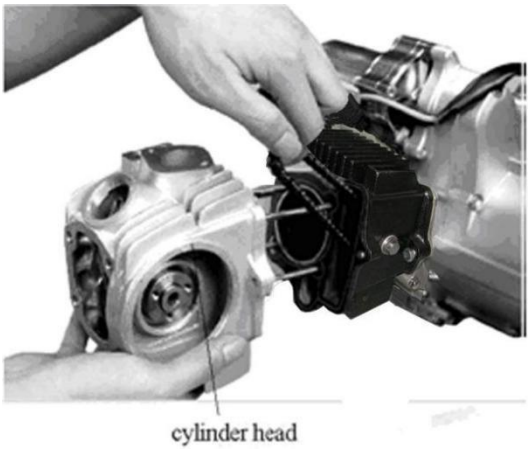
Remove intake and exhaust valve caps .Check

Remove the fixing bolts of cam sprocket.

fixing bolt

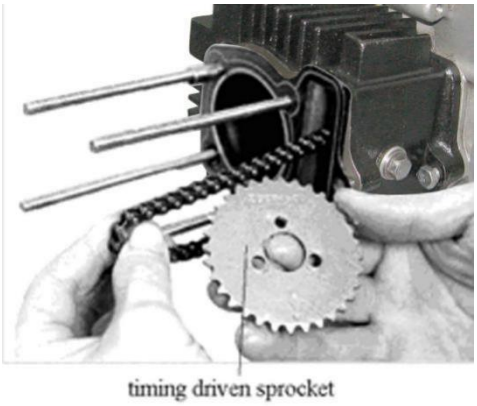
Remove the connecting bolt of cylinder head.





Remove cylinder head assembly.

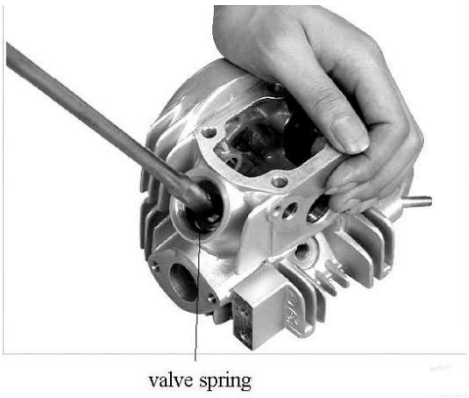
Remove timing driven sprocket. Inspect the timing driven sprocket for wear and damage. Replace if necessary.



Check whether there is excessive carbon deposit in combustion chamber. Clean and replace if necessary.

Remove the cylinder head. Pour gasoline into inlet/exhaust pipe to inspect the seal condition. Grind the valve and valve seat if there is gasoline leak into the combustion chamber.

Remove intake and exhaust valve springs and check condition. Replace if necessary.



Inspect the oil seal intake and exhaust valves for damage. Replace if necessary.

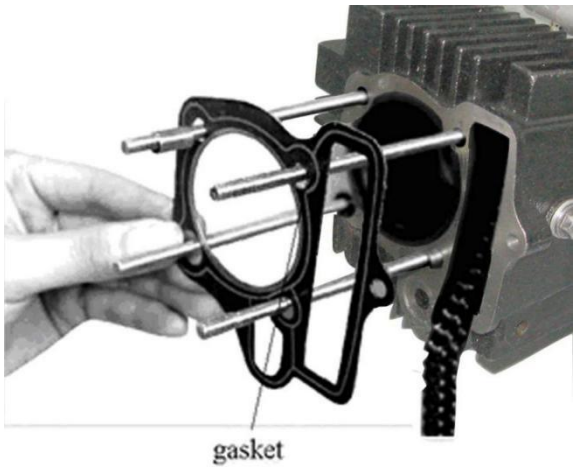
Remove the spark plug to clean the carbon deposits and dirt .Check the spark plug gap and set it to 0.6 to 0.7 if necessary.

For the troubleshooting of cylinder head ,please refer to the following table

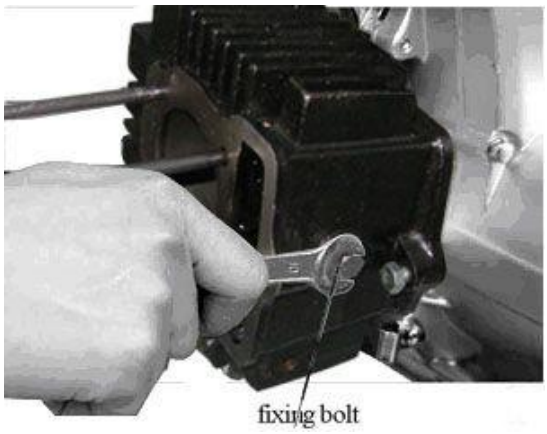
Description	Damage Form	Problem	Cause	Correction
	Too much oil dirt or sand on the cooling fins.	Poor heat radiation of the fins on cylinder head.	The engine overheats.	Remove the oil dirt or sand
	Carbon deposit in the combustion chamber	Overheating head	The engine overheats	Remove the carbon deposit
	Failure of sparking plug threaded hole	Air leakage between the sparking plug and cylinder head	The engine starts hard or fails to start	Repair the threaded hole or replace the cylinder head
	Serious deformation of cylinder head end surface	Air leakage between the cylinder head and cylinder	The engine starts hard or fails to start. Insufficient engine output ;Engine speed changes during idle run	Grind the cylinder head end surface or replace the cylinder head
	There are pits, ablation or pock marks, damages on the working surface of valve seat.	Air leakage between the valve and valve seat due to improper tightness	The engine starts hard or fails to start. Insufficient engine output; engine speed changes during idle run	Repair the valve seat
	The inner hole of valve guide is over worn	The fitting clearance between the valve and the valve is too large	Thick blue and white fume form the exhaust muffler pipe	Replace the valve guide
	The cylinder gasket is broken	Air leakage between the cylinder head and cylinder	The engine starts hard or fails to start. Insufficient engine output; Engine speed changes during idle run	Replace the cylinder head gasket
	The fixing nut is not properly tightened	Air leakage between the cylinder head and cylinder	The engine starts hard or fails to start. Insufficient engine output; Engine speed changes during idle run	Tighten the fixing nut
Spark plug	Improper clearance between electrodes	Weak or no sparking from the spark plug electrodes	Oil leakage between the cylinder and crankcase	Adjust electrode gap to 0.6~0.7mm
	The spark plug electrodes are jointed by carbon deposit	No sparking from the spark plug electrodes	The engine starts hard or fails to star	Remove the carbon deposit between the electrodes
	Excessive carbon deposit or oil dirt in the spark plug	Weak or no sparking from the spark plug electrodes	The engine starts hard or fails to start. Insufficient engine output; Engine speed changes during idle run	Remove the carbon deposit or oil dirt
	The spark plug insulator is damaged	Weak or no sparking from the spark plug electrodes	The engine starts hard or fails to start. Insufficient engine output; Engine speed changes during idle run	Replace with a new spark plug of the same type
	The spark plug is not properly tightened	Air leakage between the spark plug and cylinder head	The engine starts hard or fails to start. Engine speed changes during idle run	Tighten the spark plug

5.4.2 Disassemble, assemble and maintain cylinder

Remove cylinder gasket and dowel pins check for wear and damage. Replace if necessary.

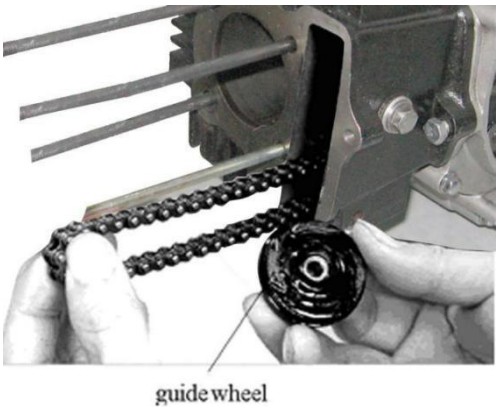


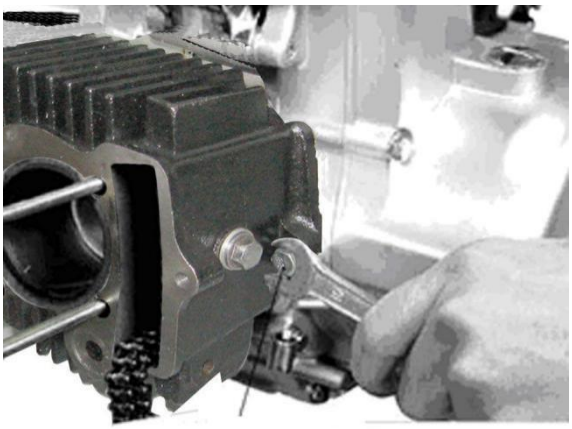
Dismantle the fixing bolt of timing chain of guide wheel.



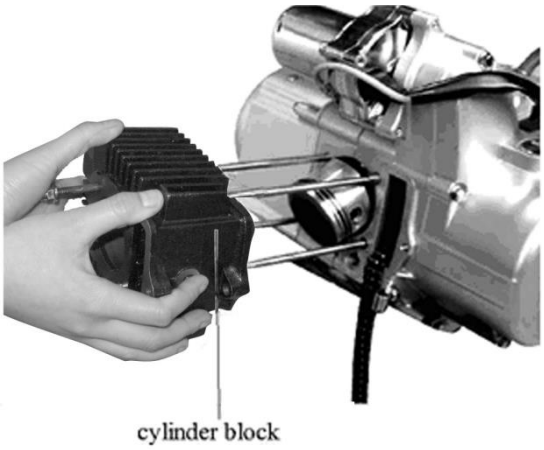
Remove the guide wheel of timing chain to inspect for wear and damage. Replace if necessary.

Dismantle connecting bolt of cylinder block.

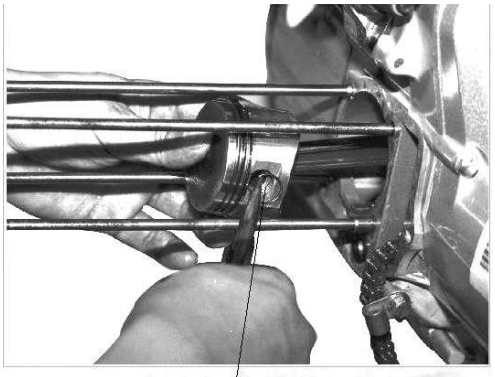




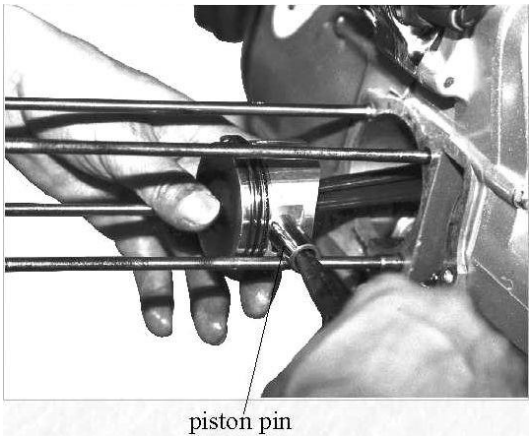
Remove the cylinder block.



Remove the circlip of piston pin.



Remove the piston of piston pin to check whether it is damaged. Replace if necessary.



Remove and replace gaskets.

Check whether there is residual gasket on cylinder. Clean and scrape if necessary.

Check the condition of cylinder walls .Replace if worn or if reuse is questionable.

Check whether the internal diameter has exceed the limit value. Measure the diameter at top, middle and bottom of cylinder. The limit value is 52.05 mm. Replace the cylinder block if it worn beyond repair, out of round or gouged

Troubleshooting of the cylinder body, please refer to the following table

Maintenance of Cylinder Body

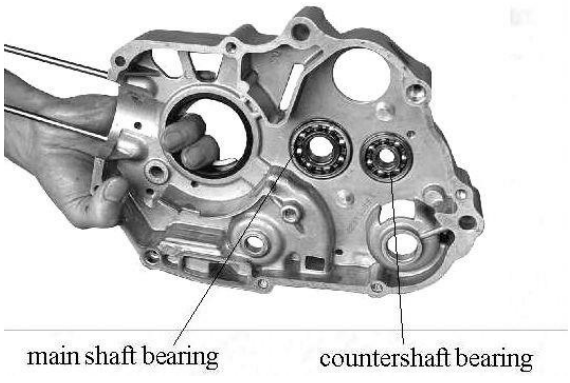
Description	Damage form	Trouble	Cause	Correction
Cylinder body	Excessive oil dirt or sand on the radiating fins	Poor heat radiation of the fins on cylinder body	The engine overheats	Remove the oil dirt or sand
	Cylinder end surface badly distorted	Air leakage between the cylinder and cylinder head	The engine starts hard or fails to start .Insufficient engine output; poor idle speed and high fuel consumption	Grind the cylinder end surface or replace the
	The cylinder is badly worn	The fitting clearance between the cylinder and position, position ring is too wide	The engine starts hard or fails to start .Insufficient engine output; Poor engine idle speed. Thick blue and white fume form the exhaust muffler pipe	Repair with boring machine or replace the cylinder body.
	The cylinder		Oil leakage between the cylinder and crankcase.	Replace the cylinder gasket

5.4.3 Disassemble, assemble and maintain crankcase

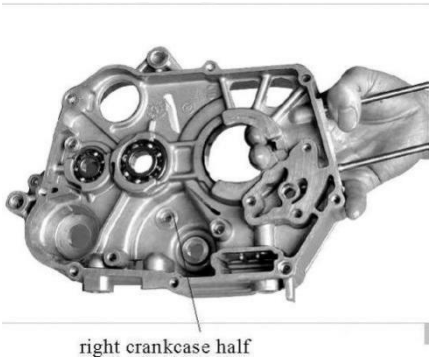
Remove the cover of right crankcase half. Check whether the oil seal of starting shaft and seal edge of gearshift lever are worn. Replace if necessary.

Check the conditon of right crankcase cover and replace if necessary.

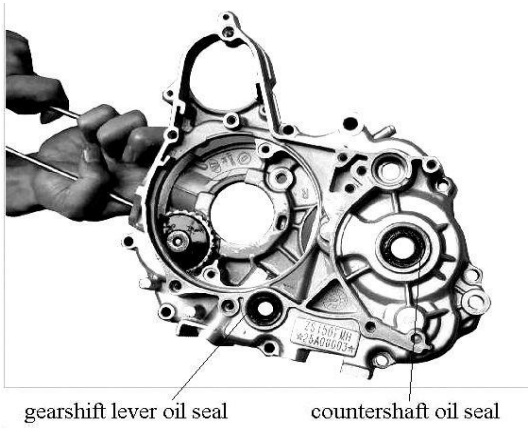
Left view of right crankcase half is shown in fig and check whether bearing of main shaft and countershaft are worn. Replace if necessary.



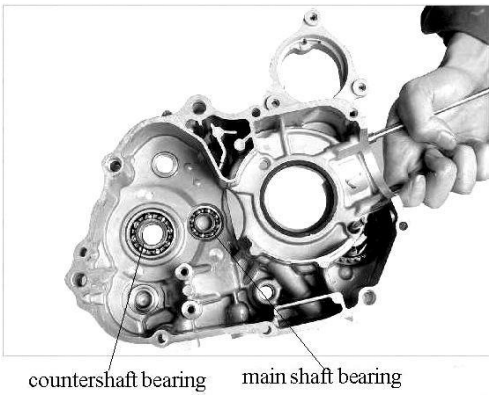
Right view of right crankcase half is shown in fig and check the state of right crankcase half. Replace if necessary.



Left view of left crankcase is shown below and check whether the oil seal of countershaft and oil seal edge of gearshift lever are worn .Replace if necessary.



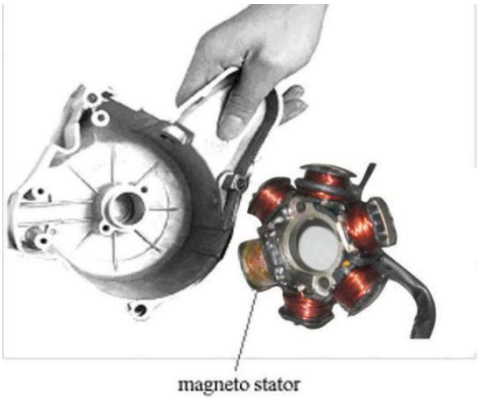
Right view of right crankcase half is shown in fig and check whether bearing of main shaft and countershaft are worn. Replace if necessary.



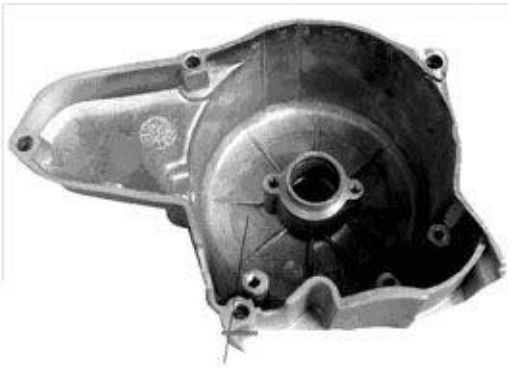
Dismantle fixing bolt of left crankcase cover.

Remove the neutral indicator and check the state. Replace if necessary.

Dismantle the fixing bolt of magneto stator and remove the stator.



Check the condition of left crankcase cover and replace if necessary.



left crankcase cover

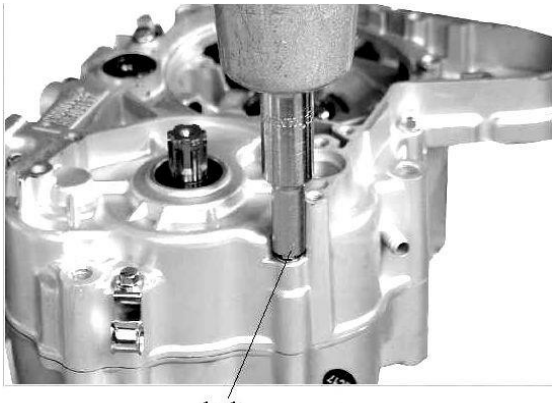
Troubleshooting of crankcase, please refer to the following table.

Description	Problem	Trouble	Compucation	Correction
	Crack in the crank case		Oil leakage from the	Repair or replace the
	Oil leakage from the joint of left and right		The crankcase gasket is worn out	Replace the gasket
	The threaded hole of oil drain plug screw is		Oil leakage from the threaded hole of plug	Repair of replace the crankcase
	The threaded holes of cylinder bolt are ineffective	Cylinder head retaining nut is impossible to screw up firmly, resulting in air leakage	The engine starts hard or fails to start. Insufficient engine output; Engine speed changes during	Repair the threaded or replace the crankcase
	The bolt of the cylinder	The same as front	The same as front	Replace the cylinder bolt
	The oil seal is damaged or the oil seal edge is	Oil leakage is ineffective	Oil leakage from the oil seal	Replace the oil seal 更换油封
Right crankcase cover	The right crankcase cover is worn or cracked		Oil leakage form the case cover	Repair or replace the case cover
	The gasket of right crankcase is broken		Oil leakage between the case cover and the	Replace the gasket
Left crankcase cover	The left crankcase cover is worn or cracked		Oil leakage form the case cover	Repair or replace the case cover
	The gasket of left crankcase is broken		Oil leakage between the case cover and the	Replace the gasket

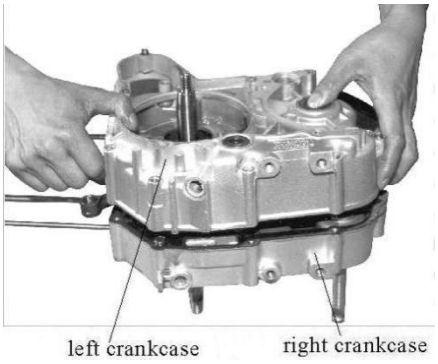
5.4.4 Maintenance of Crankshaft Connecting Rod

Disassemble, assemble and maintain crankshaft connecting rod

Remove the fixing bolt of crankcase from its holding place.



Remove left crankcase half. Take care not to forget the washer of mainshaft and countershaft when removing the left crankcase.

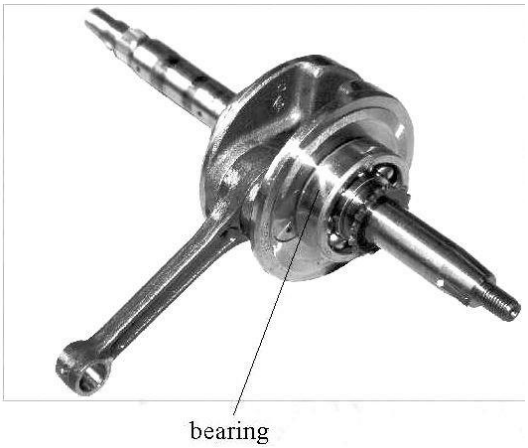


Remove the paper pad to inspect for wear and damage. Replace if necessary.

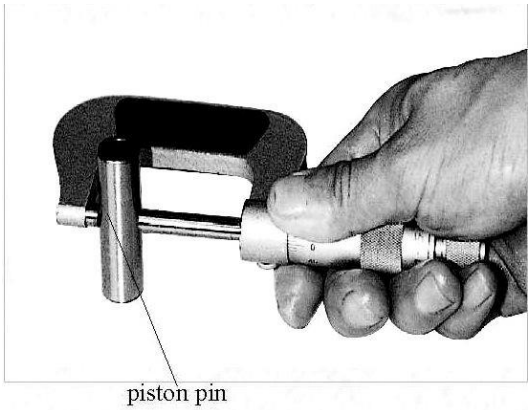
Remove the connecting rod assembly.

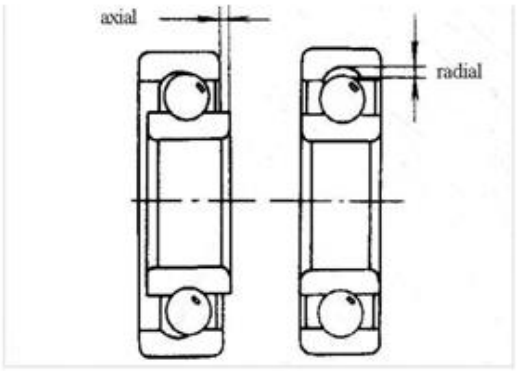
Check gap of big-end of connecting rod. Reset the gap if necessary.

Inspect connecting rod bearing for wear and damage. Replace if necessary.

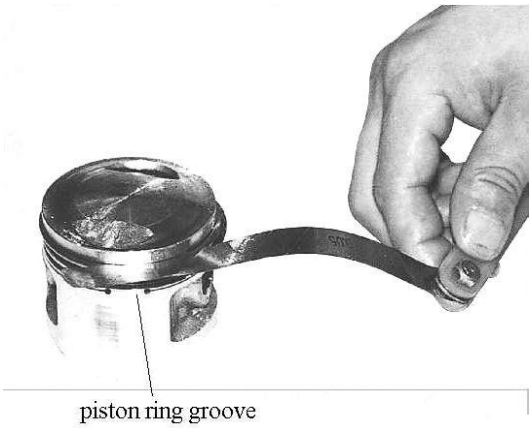


Check diameter of piston pin using a micrometer. Replace the piston pin if the value is over the maintenance limit value.

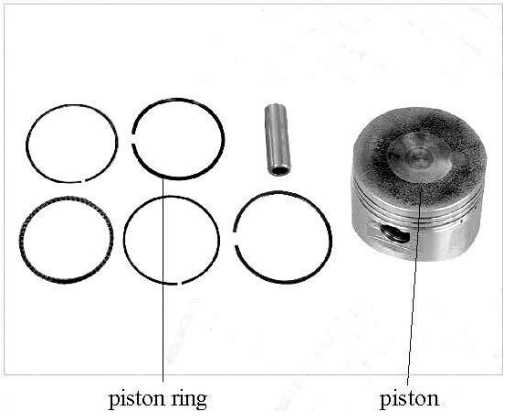




Check the axial and radial jumping of connecting rod bearing. Replace the conrod if the jumping is large.

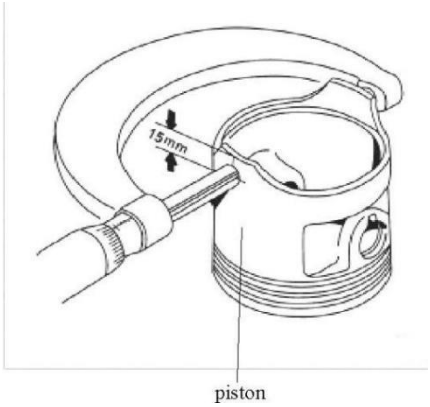


Check the side gap between piston ring and piston groove using a feeler gauge. Replace the piston if the gap is too wide.

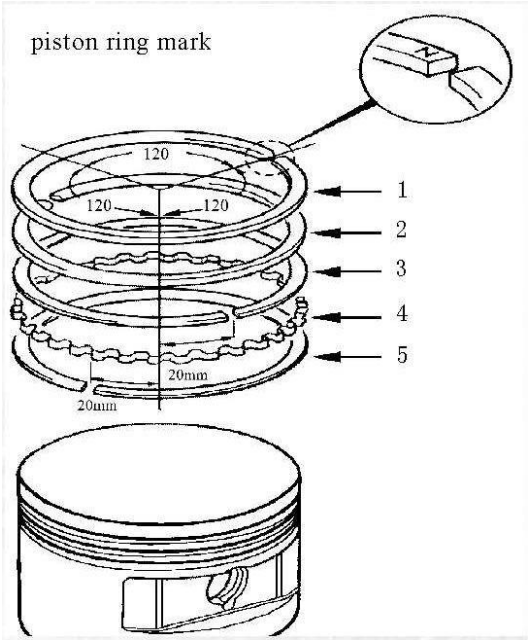


Check whether there is excessive carbon deposit on piston top and groove. Remove if necessary.

Check the state of piston and replace if worn or if reuse is questionable. Measure diameter of piston skirt. Replace it if the value is beyond the maintenance limit value.



Assemble the piston ring according to the size and check whether piston ring is damaged or the elasticity is weaken. Replace if necessary.



For the troubleshooting of crankshaft connecting rod mechanism, please refer to the following table.

Maintenance of Crankshaft Connecting Rod Mechanism

Description	Damage from	Trouble	Cause	Correction
	Carbon deposit on piston		The engine over- heats	Remove the carbon

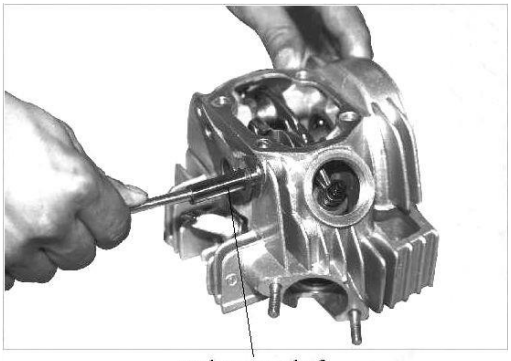
Piston	Carbon deposit in the ring groove	The piston ring is seized in ring groove	The engine starts hard or fails to start. Insufficient engine output; Thick blue and white fume form the exhaust muffler pipe	deposit
	Scuffing or scratches on the surface of piston skirt	Scuffing or scratches on the surface of piston skirt		
	The piston and ring groove are over worn	Excessive fitting clearance between the piston and the cylinder	The engine starts hard or fails to start. Insufficient engine output; Thick blue and white fume form the exhaust muffler pipe	Replace the piston
	The piston pin hole is over worn	Excessive fitting clearance between the piston ring and the hole.	Striking sound of the piston pin and of the cylinder	
Crank pin	The crank pin is over worn	Radial and axes gap of the connecting rod big end is too large	Striking sound of the big-end bearing; Striking sound of the cylinder	Replace the crankshaft connecting rod
Bearing	The big-end needle bearing is over worn	Radial and axes gap of the connecting rod big end is too large	Striking sound of the big-end bearing; and of the cylinder	Replace the crankshaft connecting rod
	The crankshaft bearing is over worn or damaged		Abnormal sound during the crankshaft bearing transmission	Replace the crankshaft bearing
Piston ring set	The piston ring is fractured	The piston ring is fractured	The engine starts hard or fails to start. Insufficient engine output; Thick blue and white fume form the exhaust muffler pipe	Replace the piston ring set
	The piston ring is over worn	The piston ring opening gap or the side gap is too wide		
	Insufficient elasticity of piston ring	It is impossible to tight the piston ring and the cylinder properly		
	Improper fixing	The piston ring gap is not staggered	Thick blue and white fume form the exhaust muffler pipe	Refixing the piston ring set
Piston pin	The piston pin is over worn	The fitting clearance between the piston pin and the hole is too wide	Striking sound of the piston pin and of the cylinder	Replace the piston pin

Connecting rod	The connecting rod small-end hole is over worn	The fitting clearance between the piston pin and the small-end is too wide	Striking sound of the piston and of the cylinder	Replace the connecting rod
	The connecting rod is crooked or twisted	The connecting rod is crooked or twisted	Striking sound of the cylinder	Replace the connecting rod
	The big-end hole is over worn	Radial and axes gap of the connecting rod big end is too large	Striking sound of the big-end bearing and of the cylinder	Replace the connecting rod
Timing sprocket	The gear is over worn of damage	———	Abnormal sound during sprocket driving	Replace the timing sprocket

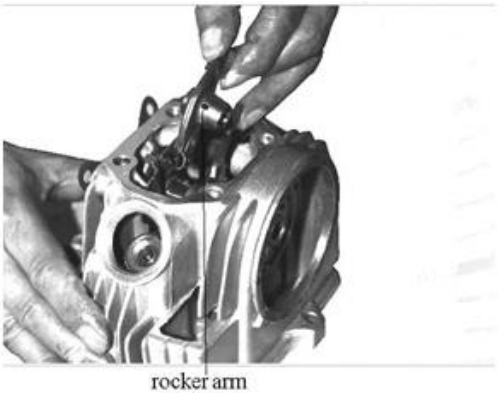
5.5 Maintenance of Mechanism

Disassemble, assemble and maintain valve mechanism

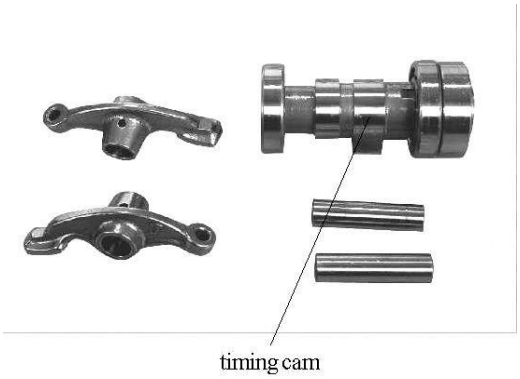
Remove rocker arm shaft



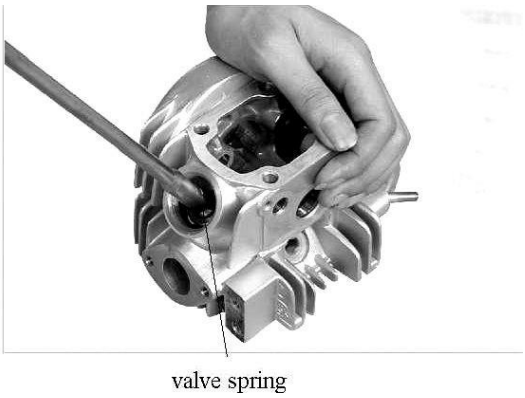
Remove the rocker arm of inlet/exhaust valve and check the state



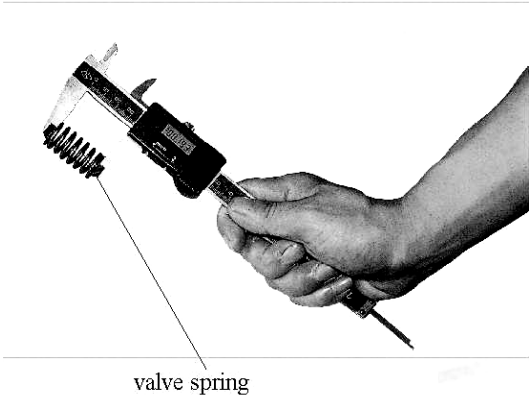
Remove the timing cam, rocker arm , rocker arm shaft to inspect for worn.Replace if necessary.



Remove the circlip of inlet and exhaust valve. Remove inlet vale stem and exhaust valve stem take care and don`t miss the valve clip.

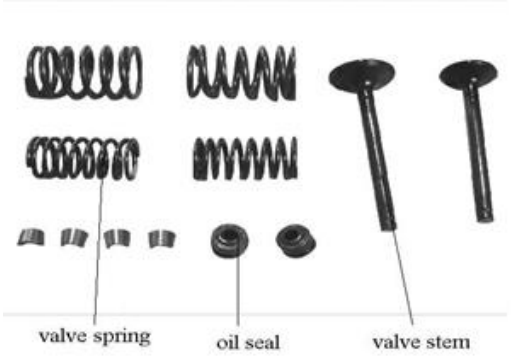


Measure length of valve spring to check whether the spring is damaged or worn. Replace if necessary.

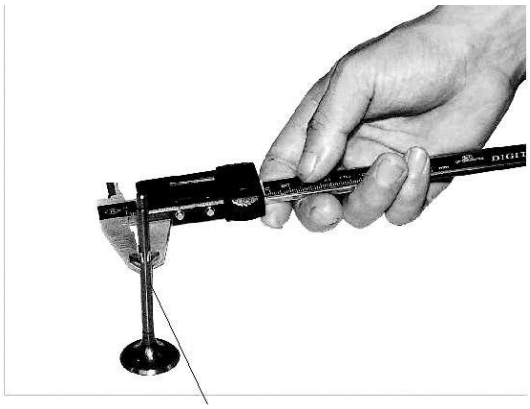


Remove the spring of inlet and exhaust valve to inspect for wear and damage.

Note: when assemble the valve spring, make sure its dense end downward.

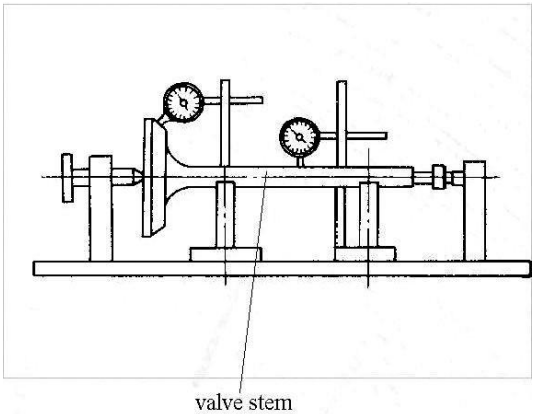


Check the external diameter of valve stem using a verier clipper. Replace the valve stem if the valve is beyond the maintenance limit valve.

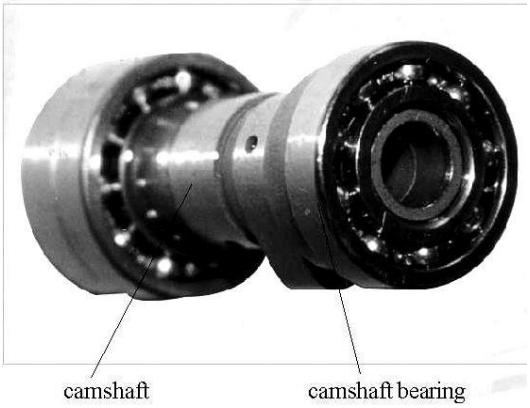


Measure the width of valve contact surface to check whether the contact surface is rough or abnormal. Replace the valve stem if the valve is large than 1.5mm.

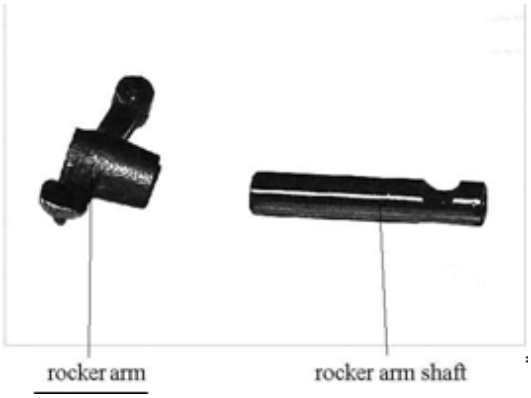
Check whether the valve stem is distored. Replace if necessary.



Inspect the timing camshaft bearing for wear and check the state of camshaft. Replace if necessary.

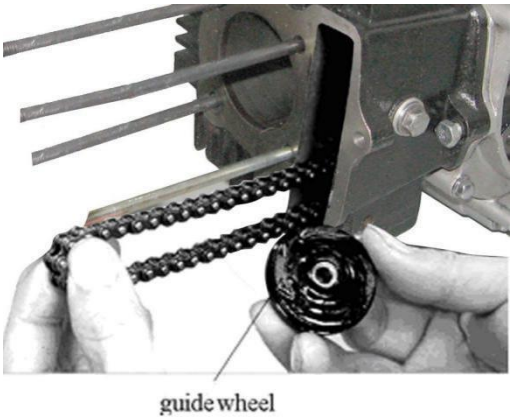


Check the gap of rocker arm shaft and rocker arm. Replace the rocker arm shaft and rocker arm if the gap is large.

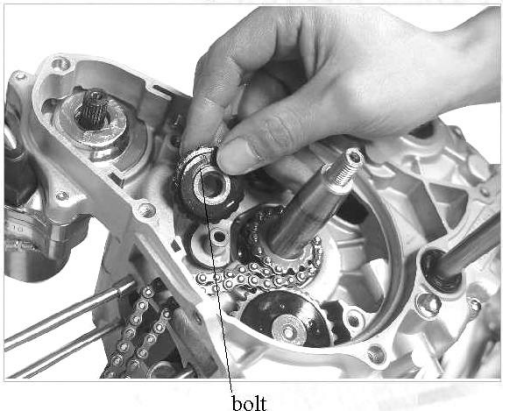


Check the external diameter of rocker arm using a micrometer. Replace the rocker arm shaft if the valve is beyond the maintenance limit valve.

Remove the guide wheel of timing chain to inspect for wear and damage. Replace if necessary.

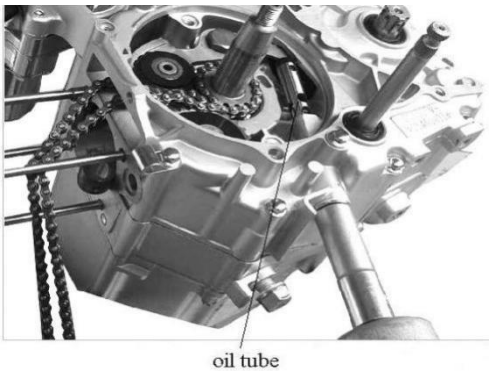


Remove the fixing bolt of timing tensioner and check the state. Replace if worn or if reuse is questionable

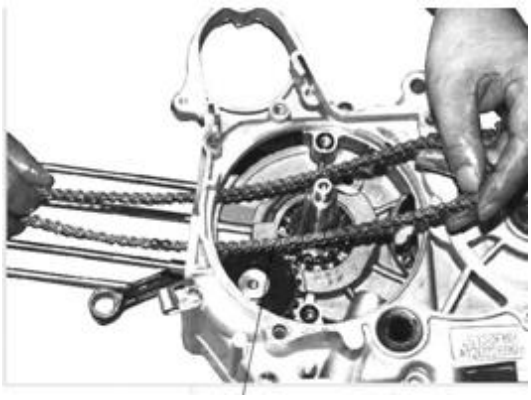


Remove the timing tensioner arm to inspect for wear and damage. Replace if necessary.

Remove the oil tube and spring and check the state. Replace if necessary.

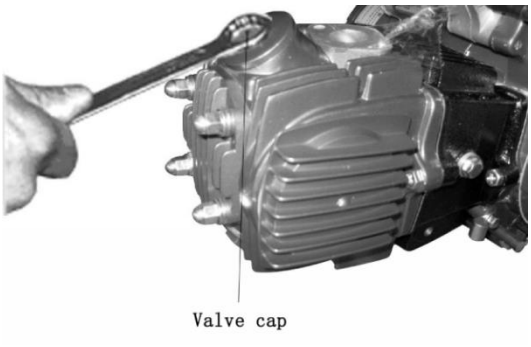


Remove the small timing chain and check the state. Replace if necessary.

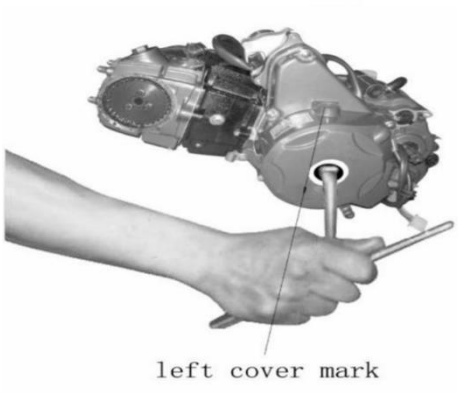


the valve cap and check the condition.

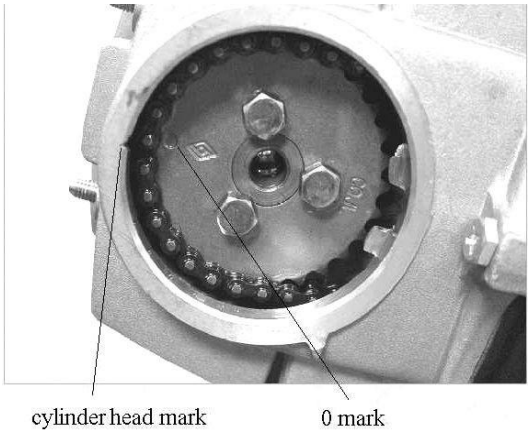
Adjust valve clearance as follows; Remove



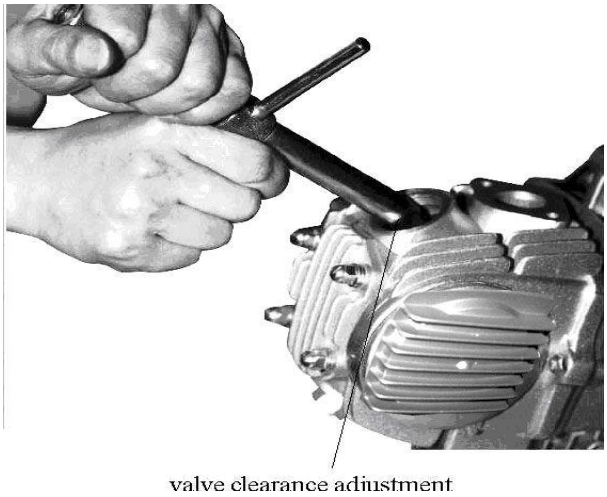
Adjust valve clearance of front cylinder. Turn magnetic rotor counterclockwise to make piston locate at top dead center and make T mark aimed to the mark of left crankcase cover.



Check whether the O-mark on cam sprocket is aimed to the gap of cylinder head. Readjust if necessary.



Set the valve clearance of rear cylinder to 0.05mm~0.06mm.



For the troubleshooting of engine distribution mechanism, please refer to the following table

Maintenance of Distribution Mechanism

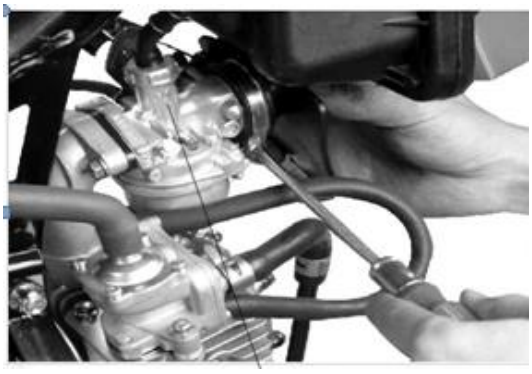
Descriptions	Damage form	Trouble	Cause	Correction

Valve oil seal	The edge of valve oil seal is worn, age or damage.		Thick blue and white fume form the exhaust muffler pipe.	Replace the complete set of valve oil seal
Camshaft	The cam is cover worn		Insufficient engine output	Replace the camshaf
	The bearing of the camshaft is over worn or damaged	The axial or radial clearance of the bearing is too wide. Ineffective bearing swiveling or abnormal sound during	Abnormal sound heard during camshaft transmission.	Replace he camshaf
Rocker arm	The working surface is scratched or over worn		Valve striking sound	Replace the rocker arm
	The rocker arm shaft hole is over worn	Big gap between the rocker arm and rocker arm shaft	Valve striking sound	Replace the rocker arm
	The rocker arm shaft is over worn	Big gap between the rocker arm and rocker arm shaft	Valve striking sound	Replace the rocker arm shaft
Valve	The valve clearance is too small	The valve is impossible to close completely	The engine starts hard or fails to start. Insufficient engine output; Engine speed changes during idle run	Readjust the valve clearance to 0.05~0.06mm
	The valve clearance is too big		Valve striking sound	Readjust the valve clearance to 0.05~0.06mm
	Carbon deposit on working surface	It is impossible to fit the valve and the valve seat tightly.	The engine starts hard or fails to start. Insufficient engine output; Engine speed changes during idle run	Remove the carbon deposit
	The working surface is over worn or has pits, pock marks, ablation or damage	It is impossible to fit the valve and the valve seat tightly.	The engine starts hard or fails to start. Insufficient engine output; Engine speed changes during idle run	Replace the valve

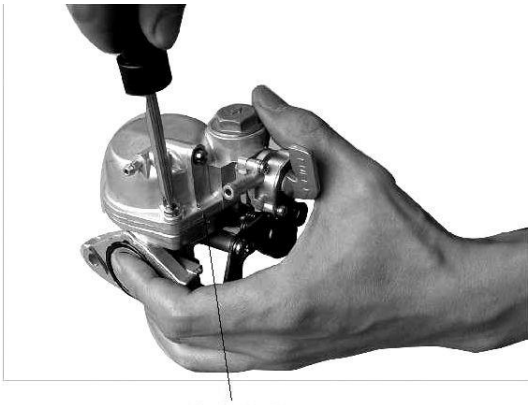
	The valve stem is over worn	The fitting clearance between the valve stem and the valve guide is too wide	Sound of valve leakage, Thick blue and white fume form the exhaust muffler pipe	Replace the valve
	The valve stem is deformed	It is impossible to close the valve completely	The engine starts hard or fails to star	Replace the valve
Valve spring	The spring is ineffective or fractured	It is impossible to fit the valve and the valve seat tightly.	The engine starts hard or fails to star. Sound of the cylinder head	Replace the valve spring

Disassemble, assemble and maintain carburetor

Dismantle the fixing bolt of carburetor and circlip of air cleaner. Remove the carburetor .Remove and clean throttle cap

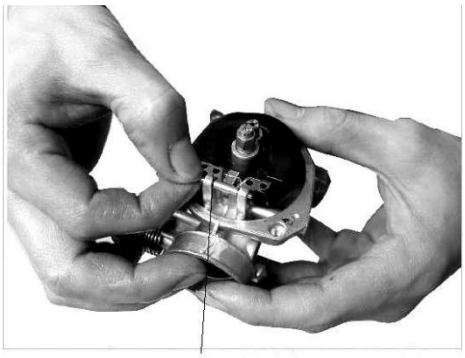


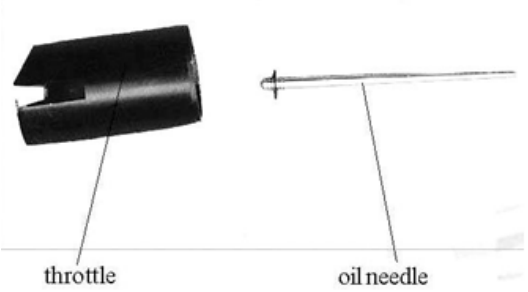
Clean the carburetor as follows: 。Remove the dirt and clean inner oil way.Dismantle the fixing bolt of float chamber cap.



Remove the float chamber cap. Remove the water and debris in the cap if necessary. Check the state of seal ring and replace if it is aging.

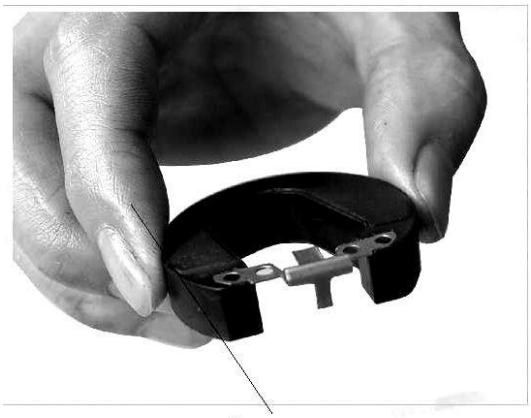
Remove the float needle valve to inspect for wear and damage. Replace if necessary.



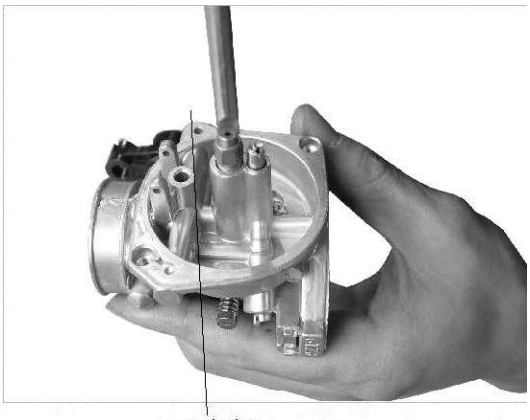


Remove the throttle and oil needle and check the condition replace if necessary.

Check the state of float case and replace as necessary. Adjust the height of float case by moving the float up or down.



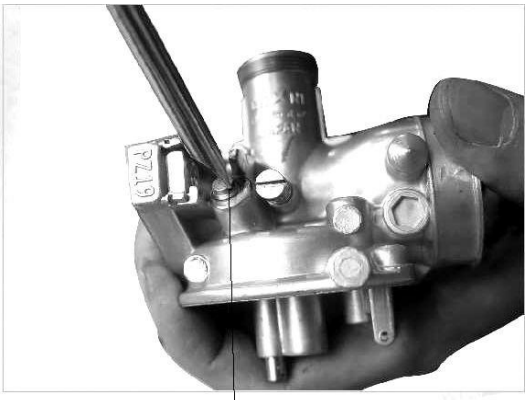
Take out the main jet to check whether the jet hole is clogged. Clean if necessary.



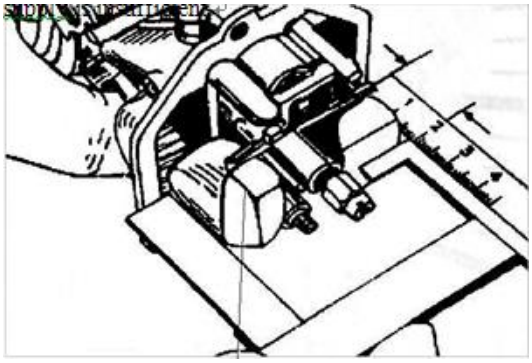
Remove the main nozzle to check whether small hole is clogged. Clean with compressed air if necessary.

Remove the idle jet and check for plugged. Clean the jet with compressed air if necessary

Dismantle the mixture adjustment screw and inspect for worn. Replace if necessary.Adjust mixture screw of carburetor as the following. Standard: Tighten mixture screw, and turn it one And a half turns clockwise.



Measure height of float case to check whether it is distorted or there is fuel inside. If height is incorrect which indicates carburetor leaks or the fuel supply is insufficient.

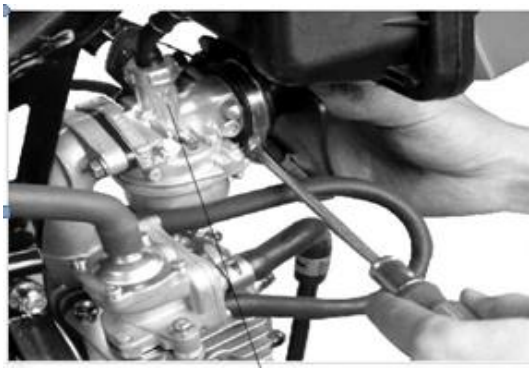


Adjust the oil needle to the third tier. If the clip rises, concentration of mixture becomes dilute and if falls it becomes thick.

5.7 Maintenance of Intake/Exhaust System

5.7.1 Disassemble, assemble and maintain intake system

Remove the clamp from air filter to take off the air filter



Clean the cover of air filter, then dispatch it for cleaning. The filter element is paper filter, it can't clean, please replace directly.

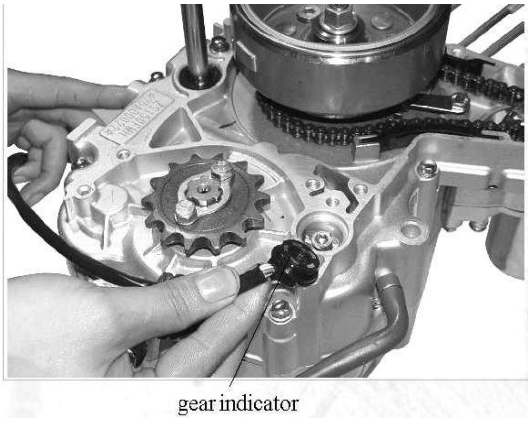
For the troubleshooting of the air cleaner, please refer to the following table.

Description	Damage form	Trouble	Cause	Correction
Air filter	Too much dust on the filter core	Engine start difficulty or starting failure. Insufficient engine output; The engine performed poorly at idle. Excessive fuel consumption.Exhaust muffler pipe smoke is	The engine starts hard or fails to start. Insufficient engine output; poor performance of engine during idle run. Excessive fuel consumption. The exhaust muffler pipe fumes strongly (black)	Clean the filter core
	The filter core is fractured or chapped.		Engine air suction noise is too loud	Replace the filter core

5.8 Disassemble, assemble, maintain and manage motor starter

Remove the fixing bolt from left crankcase cover.

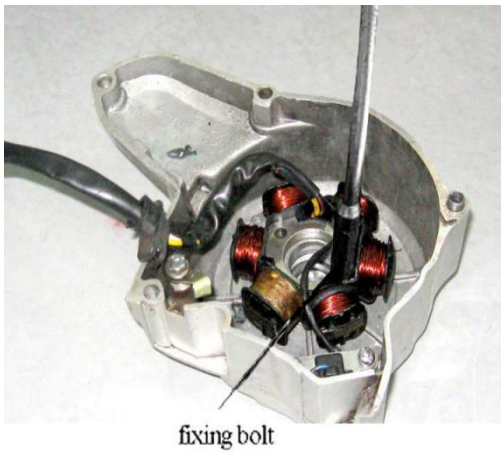
Dismount gear indicator switch fixing bolt, remove gear indicator to check the wear or damage condition, replace it if necessary.

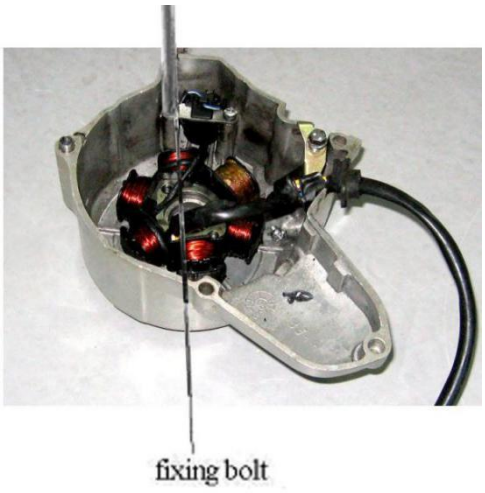


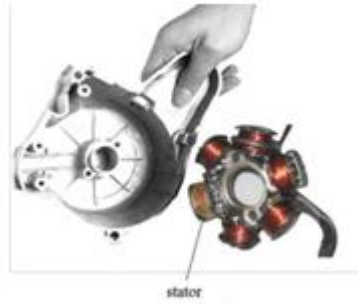
Remove left crankcase cover/ stator cover

Remove gasket to check it's condition. If the gasket is worn or reusable, please replace.

Remove fixing bolts of stator and trigger .

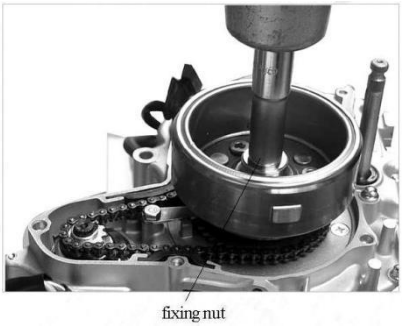


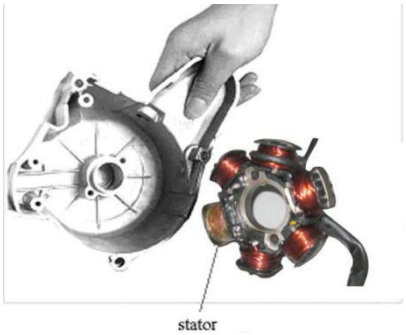




Check stator status with multimeter.If wear and tear or re-use problems, please replace the new accessories

Remove rotor fixing nut

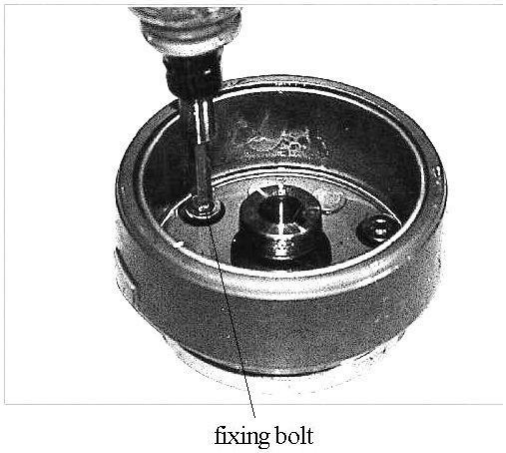




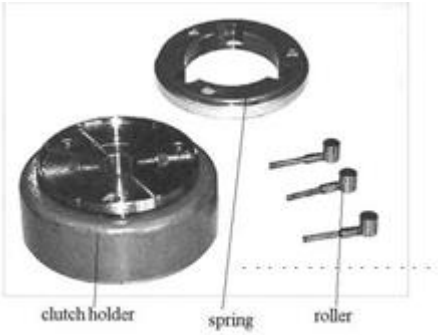
Remove rotor with puller

Remove rotor to check magnets, if necessary replace.

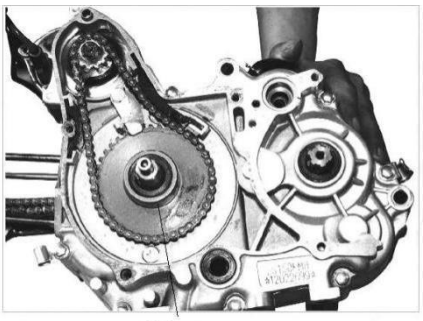
Remove starter clutch fixing bolt.



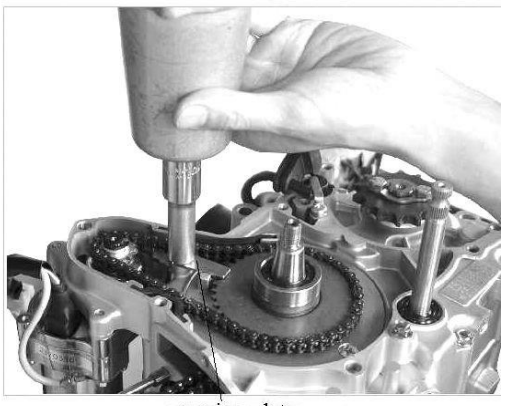
Remove clutch to check for wear and damage. condition of clutch seat,pulley and spring. If it necessary replace it.



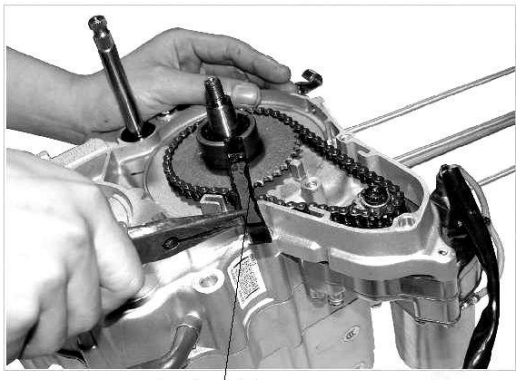
Check the condition of drive sprocket and transmission gear. If necessary replace.


driving gear

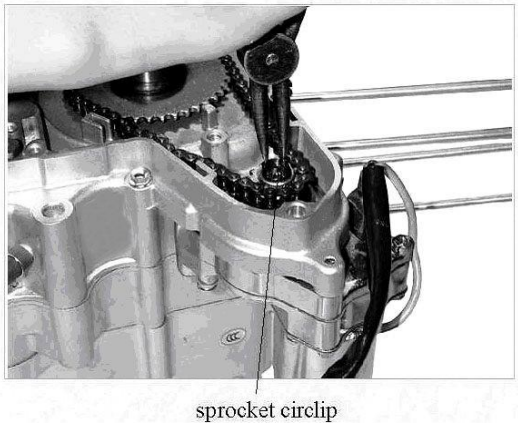
Disassemble start sprocket press board


pressing plate

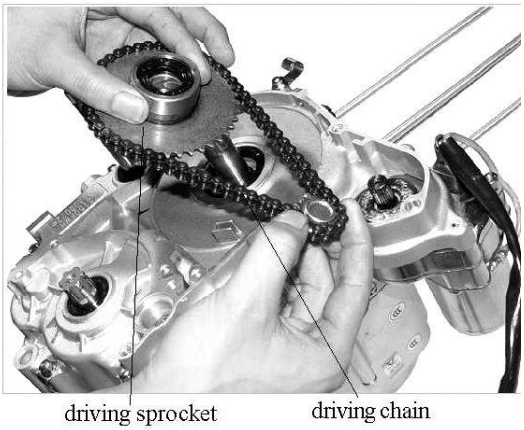
Dismount starter chain tensioner check the condition. If worn or damaged, replace it.


tension strip

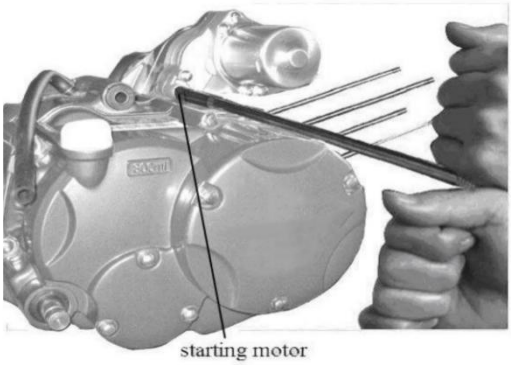
Remove the snap ring from start motor sprocket.



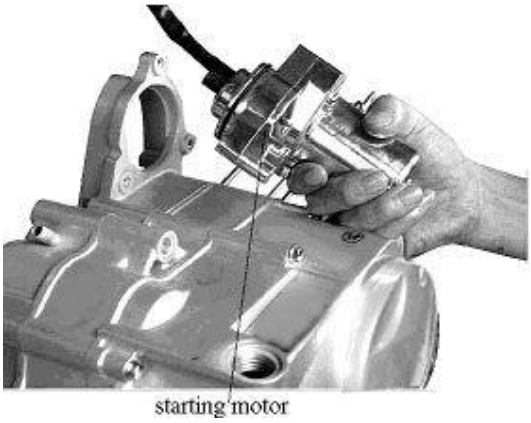
Disassemble the drive sprocket and chain.



Dismount the fixing bolt of start motor.

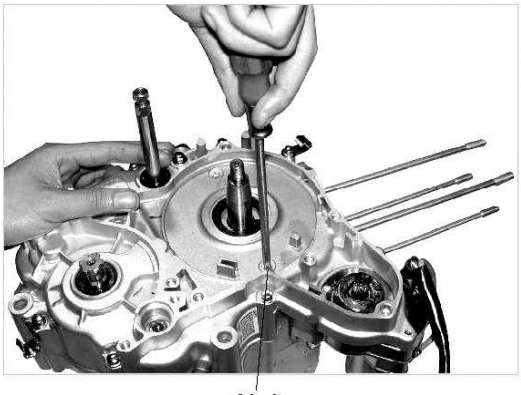


Remove starter motor.

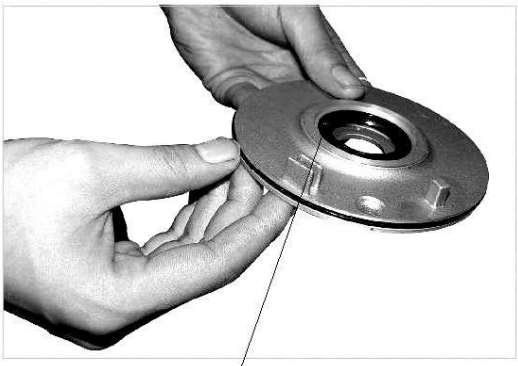


Check the starter motor wiring and spline condition if necessary replace it.

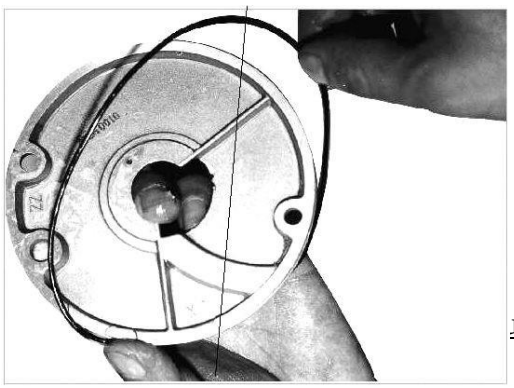
Disassemble the oil separation disc and check the condition, if it necessary replace it.



Check oil seal edges for wear. Replace as necessary.



Remove the seal and check the oil ring condition, if it worn, replace.

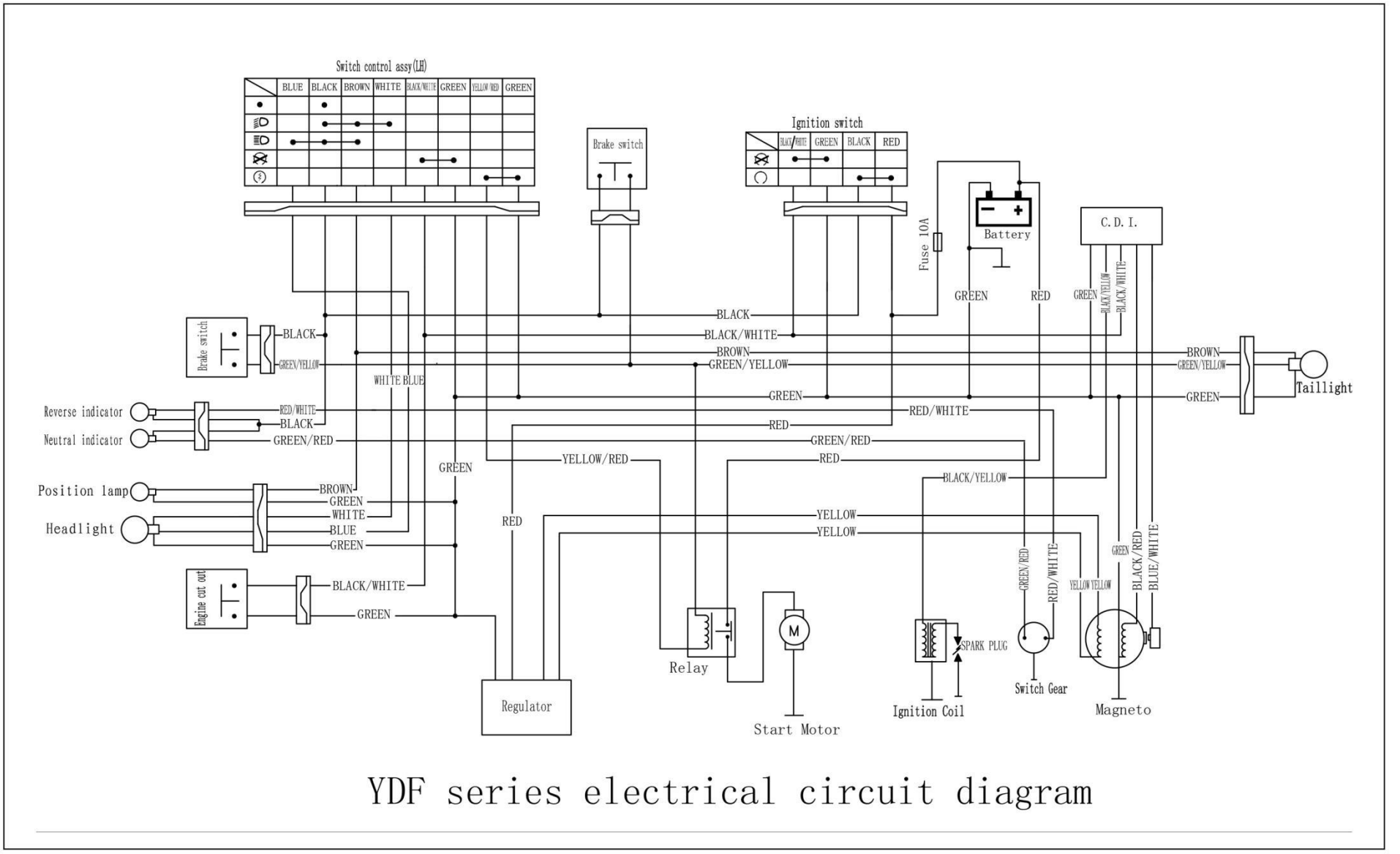


For the troubleshooting of engine electric starter, please refer to the following table.

Maintenance of Electric Starter

Description	Damage form	Trouble	Cause	Correction
Starter motor	Carbon brush is over worn. The carbon brush spring is		Starter motor has insufficient rotation force or it is out of work.	Replace carbon brush
	fractured or has insufficient elastic force.		Starter motor has insufficient rotation force	Replace carbon brush spring
	Armature commentator surface is fouled.		Starter motor has insufficient rotation force	Clean the commentator surface With gasoline or alcohol
	Armature commentator surface is spotted, burnt or damaged.		Starter motor has insufficient rotation force.	Polish the surface against the Commentator with fine abrasive Paper. Make the cut on the mica Plate between each commentator
	Armature commentator surface is ablation or over worn.		Starter motor has insufficient rotation force or is out of work.	Replace starter motor

Circuit diagram



YDF series electrical circuit diagram