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K5

Maintenance Manual



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ZHEJIANG KAYO MOTOR CO., LTD
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Description

This manual describes in detail the maintenance and adjustment procedures, disassembly and assembly essentials, inspection and repair points, troubleshooting methods and repair technical data for the K5 model Dirt Bike, with detailed graphic information to guide the operation.

Please read this manual carefully and follow the standard operating methods to effectively extend the service life of each component, improve engine performance and vehicle reliability.

Chapter 1 introduces general operational matters, tools used, basic techniques and maintenance parameters.

Chapter 2 introduces the assembly and disassembly practices of entire vehicle covers.

Chapter 3 introduces the periodic inspection and adjustment of the entire vehicle.

Chapter 4 introduces the disassembly of supply and exhaust system assembly components.

Chapter 5 introduces the methods and precautions for disassembling, inspecting, repairing and assembling various parts of the engine.

Chapter 6 introduces information on vehicle chassis.

Chapter 7 introduces information on testing and repairing signaling and lighting systems throughout the vehicle.

Appendix: Electrical Schematic

The contents of this manual are subject to change without further notice due to improvements in the vehicle. Maintenance should be based on the actual state of the vehicle.

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Research and Development Department
December 2023

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Unit Conversion Tables

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
Force	1kgf=9.80665N
Length	1in=25.4mm

DANGER / WARNING / CAUTION

Please read the following explanatory notes carefully, which emphasize the specific meanings of the words "**DANGER**", "**WARNING**" and "**CAUTION**" and which should be given special attention when servicing the engine.

DANGER: Indicates alertness to high risk

WARNING: Indicates caution for moderate risk.

CAUTION: Expresses concern about minor hazards

However, please note that the "**DANGERS**" and "**WARNINGS**" contained in this service manual cannot cover all potential hazards in the use and maintenance of the engine. Therefore, in addition to the "**DANGERS**" and "**WARNINGS**", the service technician must also have a basic knowledge of mechanical safety. If you are unsure of how to complete the entire service procedure, please consult a more experienced technician.

1 Maintenance information

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1.1 Precautions for operation

Safety Precautions

- 1、 Must wear work clothes (coveralls, etc.), hats, safety boots that are appropriate for the job, and if necessary, dust-proof glasses and dust masks, gloves and other safety gear to protect your body.
- 2、 Because the exhaust contains harmful components, it is prohibited to run the engine for a long time in closed places and poorly ventilated places.
- 3、 When the engine is just shut down, the temperature of the engine and muffler is still very high, so do not touch it before cooling to avoid burns.
- 4、 Battery solution (dilute sulfuric acid) is a strong corrosive agent, stained skin, eyes will have burns, blindness risk. If clothes, skin accidentally stained with battery solution, please immediately rinse with plenty of water and go to the hospital for treatment. The battery and battery solution should be strictly kept in a safe place out of the reach of children. When charging the battery, flammable and explosive hydrogen gas will be produced, once there is a source of fire or electric spark close to it, there is a danger of explosion. Therefore, please charge the battery in a well-ventilated place.
- 5、 Since gasoline is flammable, fireworks are strictly prohibited in the workplace. Pay attention not only to open flames but also to electric sparks. In addition, evaporated gasoline may explode, so please choose a well-ventilated place to work.
- 6、 Do not let the rear wheel, clutch and other rotary parts and movable parts clip your hands and clothes at any time during maintenance.
- 7、 When two or more people are working, they must greet each other constantly to confirm safety.

Disassembly and assembly precautions

- 1、 Parts, lubricants and grease must use the recommended products of KAYO brand.
- 2、 The parts of each system should be organized and stored separately so that each part can be installed back to its original position.
- 3、 Please clean the dirt and dust on the car before maintenance.
- 4、 Gaskets, O-rings, piston pin retaining rings, cotter pins, etc. must be replaced with new products after disassembly.

- 5、 Elastic retaining ring will be deformed if the opening is too wide during disassembly, and will be easily dislodged after reassembly. Do not use elastic retaining rings that have lost their elasticity.
- 6、 After disassembling and checking the parts, clean them before measurement and blow away the cleaning agent with compressed air. Apply lubricant on the moving surface before assembly.
- 7、 Disassembly should be necessary to check the place, determination of relevant data, so that in the assembly can be restored to the state before disassembly.
- 8、 Bolts, nuts and screws should be pre-tightened first, and then tightened in accordance with the principle of from big to small, from inside to outside on the diagonal according to the specified tightening torque.
- 9、 Rubber parts in the disassembly should be checked for aging, if necessary, replaced in advance. In addition, because the rubber parts are not resistant to gasoline, kerosene and other erosion, try not to let the volatile oil, grease attached to it.
- 10、 Should be in accordance with the requirements of the maintenance manual, in the designated areas coated or injected with the recommended grease.
- 11、 Should use the correct special tools for dismantling and assembling operation.
- 12、 Ball bearings can be used to rotate the inner ring or outer ring with fingers to confirm whether the rotation is flexible and round, if the dismantling method is adopted in the dismantling of the ball, the dismantled bearings should not be used again:
 - Bearings with excessive axial and radial clearance are replaced.
 - Bearings that rotate with a sense of stagnation should be cleaned, and those that still feel stagnation after cleaning should be replaced, and those that cannot be cleaned should be replaced directly.
 - With the body or shaft diameter on the original compression fit, disassembly and installation of the fit is not tight when the bearing should be replaced.
- 13、 Bearings should be coated with oil or grease before assembly. Single-sided dustproof bearings should pay attention to the installation direction when assembling. Open type or double-sided dustproof bearings should be assembled with the face engraved with the manufacturer's logo and size facing outward.
- 14、 Install the rectangular retaining ring with the chamfered side facing the direction of force. Do not use a retaining ring that has lost its elasticity. Turn the rectangular retaining ring after assembly to make sure it is securely seated in the groove.
- 15、 After assembly, you must check whether the fastening parts are tightened and work properly.
- 16、 Brake fluid and coolant can damage painted surfaces, plastic parts, rubber parts, etc. Do not allow them to adhere to such parts, and in the unlikely event that they do, rinse them immediately with water.
- 17、 The oil seal should be installed with the side with the manufacturer's logo facing outward (no oil direction):
 - When assembling, be careful not to curl the lip of the oil seal or allow burrs to scratch the lip of the oil seal.

- Apply grease to the oil seal lips before assembling.
- 18、 When installing hose parts, insert the hose to the root of the fitting. If there are hose clamps, install the clamps in the indentation marks of the hose. Replace hoses that are not tight when installed.
- 19、 Do not get dust, dirt, etc. inside the engine and inside the oil pressure system of the brake.
- 20、 Gasket material adhering to the bonding surfaces of each engine case must be cleaned before assembly. Bumps on the contact surfaces must be removed by evenly sanding with an oil stone.
- 21、 Do not overly twist or bend the cable type. Deformed and damaged cables will produce poor movement or breakage.
- 22、 When assembling cap guard type parts, be sure to insert the cap into the groove if there is one.

Engine break-in

Engine has a lot of relative motion parts, such as pistons, piston rings, cylinder block, intermeshing transmission gears, etc., therefore, in the early stages of its use, the specification of the break-in is necessary, the break-in can make the moving parts of each other to adapt to each other, correct the working gap, the formation of a good smooth friction surface capable of withstanding the large loads, the specification of the break-in of the engine, only with excellent performance and reliability.

The recommended break-in time is 10 hours with the following specifications:

0~10 hours: Avoid continuous operation under more than 1/2 throttle, change the speed frequently, it is not recommended to run for a long time under a fixed throttle position; cool the engine for 5 to 10 minutes after every 1 hour of work; avoid rapid acceleration, the throttle change should be slow, not sudden and sudden, do not drag the goods during the break-in period.

CAUTION:

- Follow the routine maintenance regulations during the break-in period, and troubleshoot promptly when found;
- At the end of the break-in period, the entire machine is subjected to post-break-in period maintenance before entering the normal driving phase.

1.2 Vehicle identification number

- ①VIN on chasis
- ②Vehicle nameplates
- ③Engine number

Model	K5
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ZHEJIANG KAYO MOTOR CO., LTD.

VIN	KAYOBDPLA~
Engine number	ZS174MN-5~



1

2



3

1.3 Main parameter list

Item		Parameter
Model		K5
Length (mm)		2145
Width (mm)		815
Height (mm)		1240
Wheelbase (mm)		1475
Engine model		174MN-5
Total displacement (ml)		279.6
Fuel type		RQ-93
Vehicle Weight (kg)		119.1
Number of Passenger		1 person (driver)
Maximum loading mass (kg)		90
Tire Specification	Front wheel	80/100-21
	Rear wheel	110/100-18
Rim Specification	Front wheel	1.60×21 Black Aluminum Ring
	Rear wheel	2.15×18 Black Aluminum Ring
Minimum ground clearance (mm)		280
Engine	Starting method	Electric
	Engine type	Single-cylinder, four-stroke, water-cooled, tilting type, overhead cams
	Air distribution	Chain drive
	Bore × Stroke (mm)	74×65
	Compression ratio	10.5 : 1
	Lubrication method	Pressure + Splash
	Oil pump type	Rotor type
	Lube oil filter type	Filtered
	Oil Grade	SJ 10W/40
	Cooling method	Water-cooled

Item		Parameter	
Air filter type		Sponge cartridge filter type	
Fuel tank volume(L)		7. 5	
Transmission system	Clutch type	Manual Wet Multi-Piece	
	Variable speed mode	Normally engaged two-stage transmission with six speeds	
	Gear shift	Six-speed gearbox	
	Shift mode/sequence	1-N-2-3-4-5-6	
	Output type	Sprocket output	
Brake unit type		Front	Double piston pump hydraulic brake system Φ270mm disc brake disk
		Rear	Single piston pump hydraulic brake system Φ240mm disc brake disk with walk-up brake pedal
Buffering method	Suspension method	Front	Single Adjustable Inverted Reduction Black L=880mm
		Rear	Double Adjustable Black Seat White Spring L=470mm
Frame type		Special Steel Frame	
Others			
Fuel Control System		PWK34J Carburetor	
Batteries		GTZ7S 6.5AH	
Chain		#520H; 13T/49T	
Rear flat fork		Steel straight flat fork	
Steering handle		Aluminum reducing steering handle	

1.4 Maintenance parameter list

润滑装置

Item		Specification
Engine capacity	Oil	
	First refill	1100ml
	Maintenance Refill	1000ml
	Full capacity	1200ml
Recommended Engine Oils		Use only SJ 10W/40 oil, do not substitute or mix different grades of oil, as this can cause engine damage and accidents.
Oil pumps	Radial clearance between inner and outer rotor	0.06~0.15
	End face clearance between rotor and cover plate	0.04~0.1

Intake system (see 05-Engine section for details)

Wheels (same front and rear)

Item		Specification	Limit
Rim Runout	Vertically	0.8mm	2.0mm
	Orthogonal	0.8mm	2.0mm
Wheels	Residual grooves	—	3mm
	Air pressure	Front: 200kPa (29PSI) Rear: 250kPa (36PSI)	—

Brake system

Item		Specification	Limit
Front brake	Brake handle stroke	2~ 6mm	—
	Brake disc thickness	4.0mm	3.5mm
Rear brake	Brake pedal stroke	10 ~ 25mm	—
	Brake disc thickness	4.0mm	3.5mm

Battery / Charger / Trigger Coil

Item			Specification
Rectifier Type			Full wave Rectification
Battery	Capacity		12V 6.5Ah
	Voltage between Terminals	Fully charged	14.4V
		No Fully charged	<9.6V
Ignition method			CDI
spark plugs	Model		Resistive Spark Plugs
	Specification		CR8EB
	Spark plug gap		0.7~0.8mm
	Spark		Blue and white light

Lights / Switch

Item		Specification
Light, bulb	Headlight	12V
	Rear light / brake light	12V
fuse		15A

Distributor + Cylinder Head (see 05-Engine section for details)**Cylinder + Piston + Piston Ring + Crank Rod (see 05-Engine section for details)****Clutch + Transmission Mechanism (see 05-Engine section for details)**

1.5 Tightening torque

CAUTION:

Before installing the screws, apply antirust grease to the threaded parts and the bonding surface

Tightening torque for specified parts - Vehicle parts

No.	Item	Fastener code	Quantity	Tightening torque (N·m)
1	U-shape rocker arm mounting bolts	White zinc Φ 12*110*M12*1.25 mm	1	80-90
2	Triangle rocker mounting bolts	White zinc M12*90*1.25	1	35-45
3	Rear disc brake disk mounting bolts	White zinc M6*20 thread 11	4	10-12
4	Rear sprocket mounting bolts	White zinc M8*31	6	25-30
5	Front disc brake disk mounting bolts	White zinc M6*20 Thread 11	6	10-12
6	Engine mounting bolts	White zinc M10*110*1.25 10.9 grade	2	30-40
7	Under engine mounting bolts	White zinc M8*115	1	34-41
8		White zinc M8*90*1.25	1	34-41
9	Engine mounting bolts	White zinc M8*60	2	25-30
10	Flat fork shaft mounting bolts	White zinc Φ 17*246*M16*1.5mm	1	80-90
11	Rear shock upper mounting bolts	White zinc M10*70*1.25 10.9 grade	1	30-40
12	Rear shock lower mounting bolts	White zinc M10*42*1.25+Φ 10*28	1	30-40
13	Triangle rocker and U-shaped rocker fixing bolts	White zinc Φ 12*95*M12*1.25mm	1	35-45
14	Single brace fixing bolts	White zinc M10*35*1.5 S17 Thread 21	1	20-30
15	Mounting bolts on front shocks	White zinc M8*40 full thread	4	25-30
16	Large cap nut	White zinc hexagonal head M26*1	1	35-40
17	Front shock lower mounting bolts	White zinc M8*40 full thread	4	25-30
18	Mounting bolts on rear attachment beam	White zinc M8*20 full thread	2	25-30
19	Mounting bolts under rear attachment beam	White zinc M8*25*1.25 with steps	2	20-30
20	Front disc brake oil pipe mounting bolts	White zinc M6*16	2	10-12
21	Rear axle mounting bolts	White zinc Φ 15*250*M14*1.5mm	1	80-90
22	Engine side cover mounting bolts	Hexagon socket flange bolts M6*25	1	10-12
23		Hexagon socket flange bolts M6*30	1	10-12
24	Shifter mounting bolts	White zinc M6*20	1	10-12
25	Silencer mounting bolts	White zinc M8*20 full thread	1	25-30

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26		White M8*35 full thread	1	25-30
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Tightening Torque for Specified Parts - Motor Section (see 05-Motor Section for details)**Tightening torque of fasteners in unspecified areas**

Item	Torque N·m	Item	Torque N·m
5mm Bolt, Nut	4.5~6	5mm Screw	3.5~5
6mm Bolt, Nut	8~12	6mm Screw	7~11
8mm Bolt, Nut	18~25	6mm Convex Bolt	10~14
10mm Bolt, Nut	30~40	8mm Convex bolts, Nuts	20~30
12mm Bolt, Nut	35~50	10mm Convex bolts, Nuts	30~40

Repair tool for engine (section 05-Engine)**Specific tools for engine (section 05-Engine)****1.6 Lubricating Grease, Sealant, Thread Tightening Adhesive**

Location	Notice	Kind of grease
Frame to Flat Fork Connection	A small amount at the rear brake pedal bearing is sufficient	Lightweight lithium soap grease
Rear brake pedal bearing		
Front and rear axle parts		

Lubrication of operating cables, bearings, and rotating parts

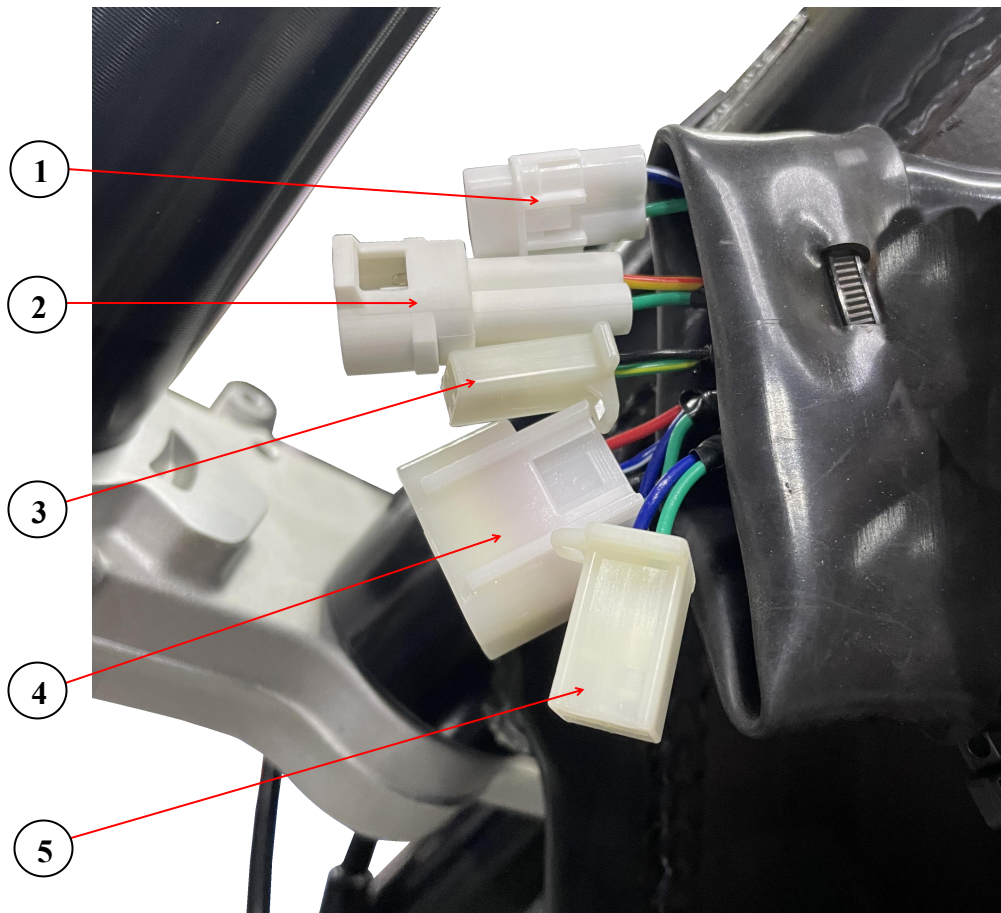
Location	Notice	Kind of grease
wheel bearing	Lubrication	Lightweight lithium soap grease
Triangular and U-shaped rocker		
steering column		
Clutch and brake handle		
gear lever		
Single prop		

Location	Notice	Kind of grease
Guide sprocket mounting bolts	fasteners	Thread adhesive Red Xindeli 2271
Sprocket disk mounting bolts		
Rear shock lower with triangular rocker		
Brake pedal mounting post		Thread adhesive Blue Xindeli 2242
Disc brake disc mounting bolts		

Engine auxiliary running materials and installation accessories (see 05-Engine section for details)

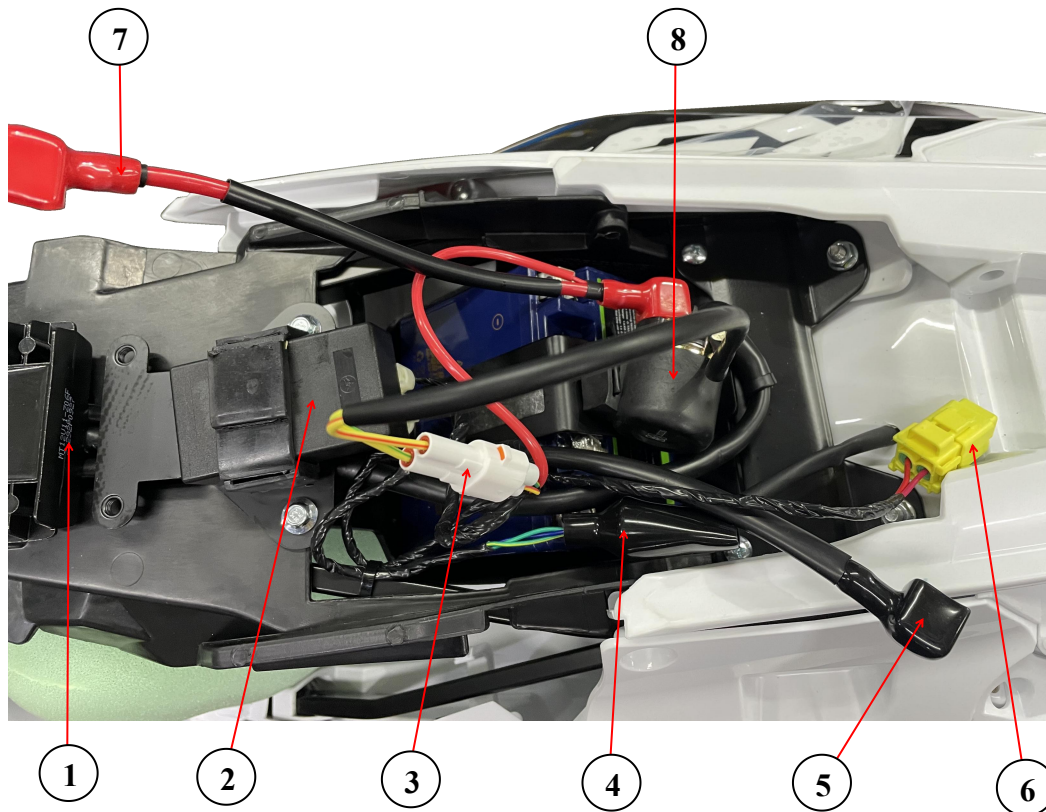
Engine running materials include lube (oil), grease (grease) and coolant, etc.; installation accessories include flat sealant, thread adhesive, etc.

1.7 Cable, hose and cable wiring diagrams

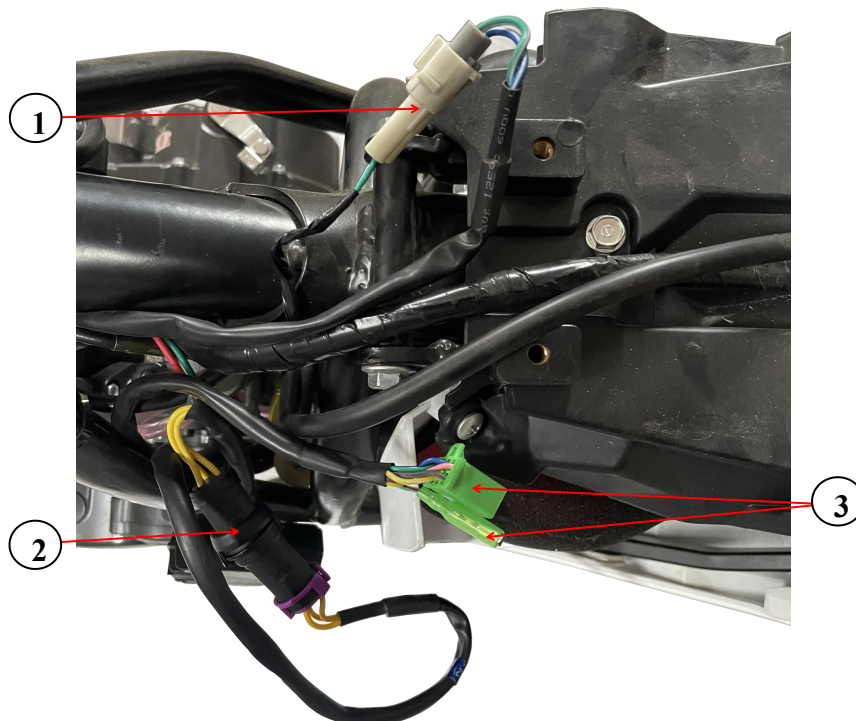


1、 Kill switch connector 2、 Start switch connector 3、 Front brake switch connector
4、 Electric door lock connector 5、 Headlight connector

CAUTION: Please remove the front panel before inspecting the above components.
For specific disassembly, check Chapter 2 Vehicle coverings.



1、 Voltage regulator 2、 Ignitor 3、 Relay connector 4、 Rear lamp connectors
5、 Battery negative insert 6、 Fuse 7、 Battery positive insert 8、 Relay

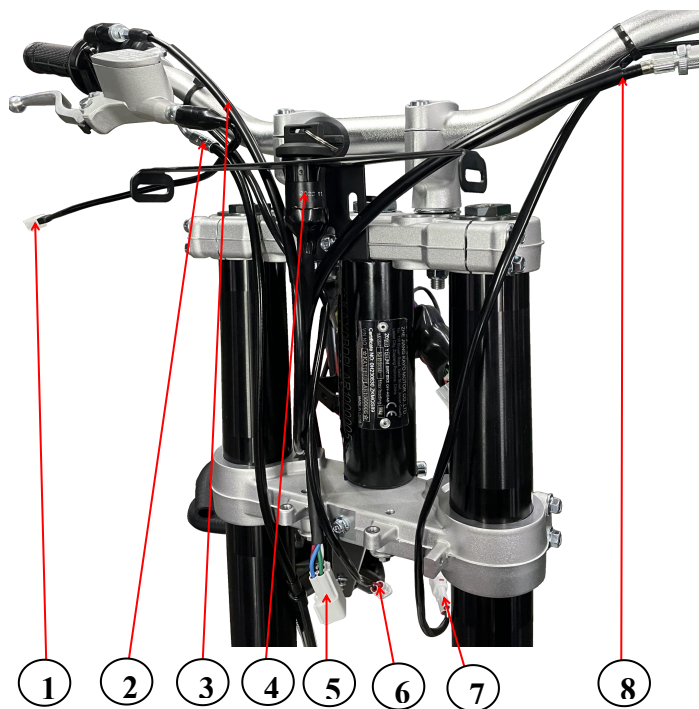


1、 Magneto connector 2、 Connection connector for rectifier regulator and magneto 3、
Instrument connector (optional)

CAUTION: Please remove the front panel before inspecting the above components.
For specific disassembly, check Chapter 2 Vehicle coverings.



1、 Fan connectors 2、 High voltage package 3、 Ignition coil and spark plug Connectors 4、 Rectifier regulator connector



1、 Brake light connector 2、 Brake fluid hose 3、 Accelerator pedal 4、 electric door lock
5、 Electric door lock connector 6、 Start switch connector 7、 Kill switch connector 8、 Clutch pedal

2 Vehicle coverings

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2.1 Maintenance Information

Operating Precautions

When replacing covering parts that have regulatory warning labels affixed or riveted on the vehicle, ensure that the corresponding labels are correctly and completely reapplied in the original manner.

This chapter describes the order of disassembling and assembling the body covering parts, and can be referred to when disassembling the relevant covering parts for overhauling the internal parts of the vehicle.

This chapter describes the disassembling operation of rack, seat cushion and exterior parts.

Tubes and cable ties Please follow the cable, tube and cable tie wiring diagram to pass through from the correct position.

2.2 Mounting torque

M8 bolt	21 (2.1)	Torque N·m(kgf·m)
M6 bolt	10 (1.0)	Torque N·m(kgf·m)
M5 bolt	5 (0.5)	Torque N·m(kgf·m)
Self-tapping screw	4 (0.4)	Torque N·m(kgf·m)

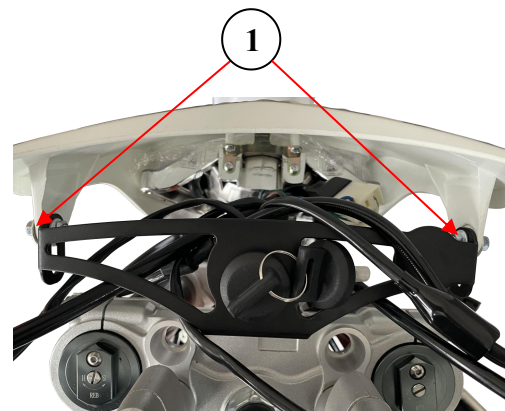
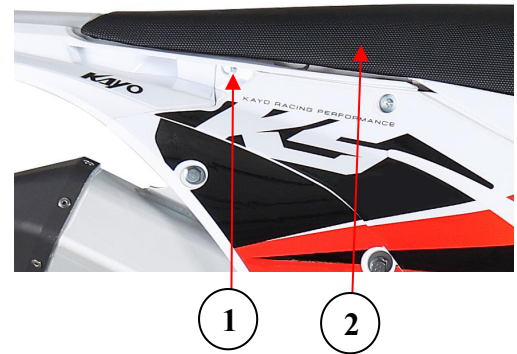
2.3 Removal and installation of Cushion

Disassembly

1. Remove fixing bolts No.1 (one on each side)
2. Pull back the Cushion No.2

Assembly

Perform disassembly in reverse order and in reverse direction
Check that the Cushion is in place and secure after installation.



2.4 Removal and installation of headlight

Disassembly

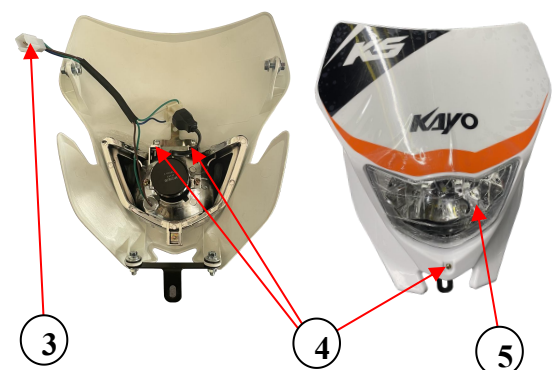
1. Remove the bolts securing the bracket on the headlight No.1
2. Remove the bolts fixed to the lower coupling plate No.2
3. Pull out the headlight insert No.3
4. Remove the bolts securing the headlights No.4
5. Remove headlight housing No.5

CAUTION

If only the headlight assembly is removed, step 4 can be omitted

Assembly

Perform disassembly in reverse order and in reverse direction



2.5 Removal and installation of front left and right guards and tank guards

2.5.1 Removal and installation of front left and right guards

- 1.Remove the cushion (→2.3)
- 2.Remove mounting bolts No.1
- 3.Remove mounting bolts No.2
- 4.Remove front right guard retaining bolt No.3
- 5.Remove front right guard No.4

CAUTION

Removal of the front left guard is the same as the front right guard.

Assembly

Perform disassembly in reverse order and in reverse direction

CAUTION

The left and right front guards can also be split into upper and lower guards by removing the five self-tapping screws circled in red.

2.5.2 Removal and installation of tank guards

Disassembly

- 1.Remove mounting bolts No.1
- 2.Remove tank guard No.2

CAUTION

The left and right tank guards are removed in the same way

Assembly

Perform disassembly in reverse order and in reverse direction

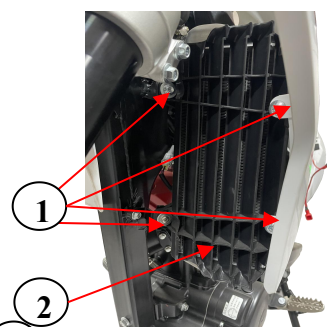
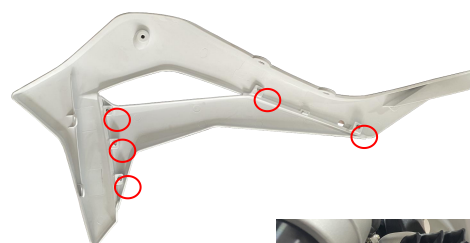
2.6 Removal and installation of the upper left cover of the air filter

Disassembly(The forth picture)

- 1.Remove the cushion (→2.3)
- 2.Break both gaps upwards at the same time No.1
- 3.Remove the air filter left upper guard No.2

Assembly

Perform disassembly in reverse order and in reverse direction



CAUTION

The upper left cover of the air filter is held in place by round snaps, so be careful to align the three holes when installing it and install it in place.



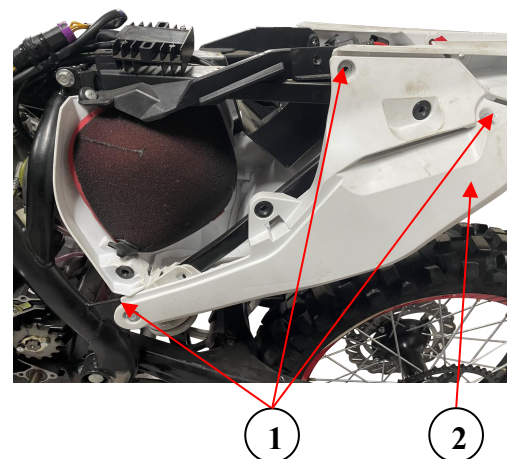
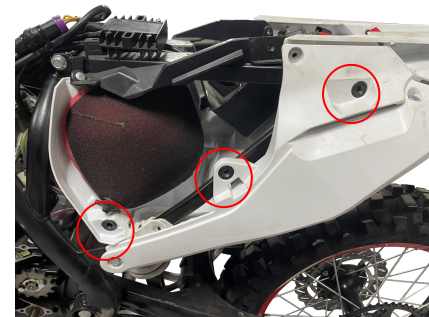
2.7 Removal and installation of the left lower cover of the air filter

Disassembly

1. Remove the cushion (→2.3)
2. Remove the upper left cover of the air filter (→ 2.6)
3. Remove bolt No.1
4. Remove the left lower cover of the air filter No.2

Assembly

Perform disassembly in reverse order and in reverse direction



2.8 Removal and installation of rear right guard

Disassembly

1. Remove the cushion (→2.3)
2. Remove bolt No.1
3. Remove rear right guard No.2

Assembly

Perform disassembly in reverse order and in reverse direction



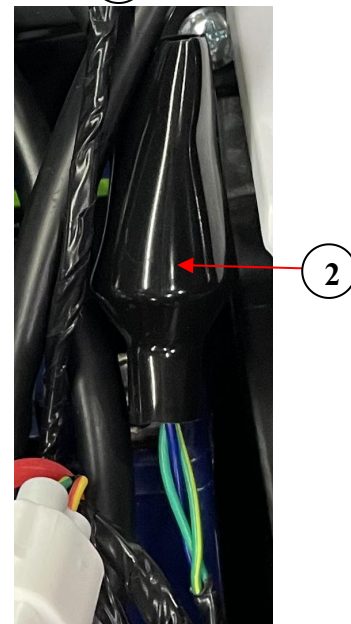
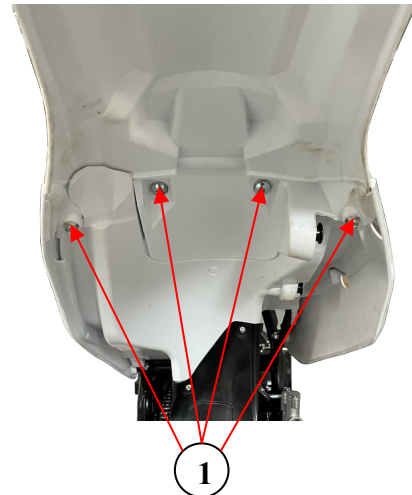
2.9 Removal and installation of rear center guard

Disassembly

1. Remove the bolts securing it to the frame No.1
2. Unplug the Rear lamp insert 2 (Inserts are normally wrapped in insulating tape)
3. Remove rear center panel No.3

Assembly

Perform disassembly in reverse order and in reverse direction



CAUTION

If you need to replace the Rear lamp, just remove the three bolts circled.



2. 10 Removal and installation of air filter assembly, air filter lower cover, battery box and battery holder Disassembly

1. Remove the seat cushion, rear right guard, upper left cover of the air filter, lower left cover of the air filter (→ 2.6-2.8)
2. Unplug the relay, lithium battery, Rear lamp, voltage regulator, ignition, etc. (→ 1.7)



1

2. 10. 1 Removal and installation of air filter assembly, air filter lower cover

Disassembly

1. Remove the bolts holding the rear attachment beam to the frame No.1 (two on each side)
2. Remove the air filter clamp No.2
3. Remove fixing bolts No.3
4. Remove air filter assembly No.4 and air filter lower cover No.5

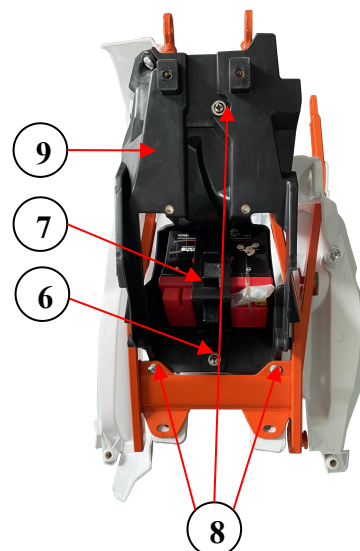


2

2. 10. 2 Removal and installation of battery box and battery mounting bracket

Disassembly

1. Remove the bolts holding the bracket No.6
2. Remove the battery mounting bracket No.7
3. Remove fixing bolts No.8
4. Remove the battery compartment No.9



Assembly

Perform disassembly in reverse order and in reverse direction

2.11 Removal and installation

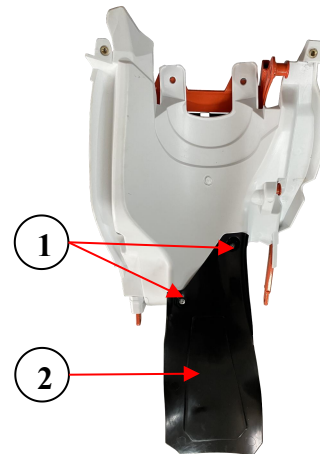
of small mudguards

Disassembly

1. Remove the bolts securing the lower cover of the air filter No.1
2. Remove small mudguard No.2

Assembly

Perform disassembly in reverse order and in reverse direction



2.12 Removal and installation of

front mudguard removal

Disassembly

1. Remove the bolts securing the lower coupling plate No.1
2. Remove front mudguard 2

Assembly

Perform disassembly in reverse order and in reverse direction

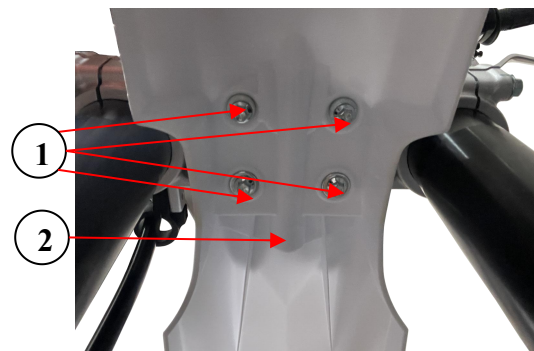


2.13 Removal and installation

of shock guards

Disassembly

1. Remove the disc brake hose clamp retaining bolt No.1
2. Remove the bolts securing the front shock absorbers No.2
3. Remove the shock absorber left guard No.3



CAUTION

The front right shock guard and front left guard were disassembled consistently except at the snaps.

Assembly

Perform disassembly in reverse order and in reverse direction.

3 Periodic inspection and adjustment

Driver's safety.....	3-1
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3.1 Determination of maintenance intervals.....	3-3
3.2 Inspection and maintenance methods.....	3-5
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Driver's safety

FIRE WARING

Gasoline, the fuel used in vehicles, is an extremely flammable and highly explosive toxic liquid, and the vapors produced by gasoline have the same properties. Fuel vapors can spread and be ignited by a spark or flame at a distance from the vehicle. During and for a period of time after the vehicle is in operation, high temperatures in the muffler section can ignite flammable materials, and contact between the muffler and a flammable object may result in a fire. Examples include: driving through an area with a lot of hay; parking in a fuel storage area, etc.

To reduce the risk of explosion or combustion, follow the instructions below:

1. Use an approved gasoline tank to store fuel.
2. Do not refuel the gasoline tank in the vehicle cargo box or car, as an electrostatic discharge could ignite the fuel.
3. Strictly follow proper refueling procedures.
4. Not start or operate the engine when the Fuel tank filler cap is not properly tightened, gasoline is specifically toxic and can cause injury or death.
5. Do not siphon gasoline by mouth.

If gasoline is swallowed or gets in your eyes or if you inhale gasoline vapors, seek medical attention immediately.

7. If gasoline splashes on you, wash with soap and water and change clothes immediately.

WARNING

Gasoline is highly flammable and explosive under certain conditions, allow the engine and exhaust system to cool down before filling the tank, be alert at all times when handling gasoline, and refuel outdoors or in a ventilated area with the engine off. Do not place a plastic fuel tank filled with gasoline in the cargo area while driving. The static electricity generated between the cargo box and the plastic fuel tank could cause sparks. Do not smoke while operating the fueling and do not allow open flames or sparks near the fueling or gasoline storage area.

Do not overfill the tank and do not fill to the neck of the tank.

If gasoline is splashed on skin or clothing, immediately rinse with soap and water and change clothing. Do not start and run engines in enclosed areas. Engine exhaust is toxic and can cause unconsciousness or death in a short time. This product's engine exhaust contains chemicals known to cause cancer, birth defects or other reproductive defects or other reproductive harm. Operate this vehicle only outdoors or in a well-ventilated area.

Inspection Information

Precautions for operation

CAUTION

- Do not run the engine for a long time in a closed place or a poorly ventilated place because the exhaust gas contains carbon monoxide (CO) and other toxic components.
- When the engine has just stopped, the temperature of the muffler and the engine is still very high, and if it comes into contact with your skin, burns can occur. If you must perform maintenance when the engine has just stopped, you must wear long-sleeved coveralls and gloves.
- Gasoline is very easy to catch fire, and smoke and fire are strictly prohibited in the workplace. Pay special attention not only to open flames but also to electrical sparks. In addition, work should be performed in a well-ventilated area because of the risk of explosion from evaporated gasoline.

CAUTION

Don't let rotary parts such as the drive system pinch your hands and clothes.

CAUTION

Vehicles must be placed on flat, stable ground

3.1 Determination of maintenance intervals

Engine maintenance is a regular cycle of work, according to certain time intervals for engine maintenance is very important, standardized maintenance, in order to ensure excellent engine performance, reliable, economical and durable, the following is the engine maintenance cycle table:

CAUTION: The following table is designed for normal conditions of use, and the service intervals of the engine should be shortened accordingly under adverse conditions

Maintenance items	Item	Odometer (km)				
	cyclical	750	3000	6000	9000	daily checks before ride
Valve reset			I	I	I	
Spark plugs			I	R	I	
Fuel system			I	I	I	
lube		R	R	R	R	I
valve lash			I/A	I/A	I/A	
Cylinder head bolts			I	I	I	
Oil filter		C	C	C	C	
Gasoline filter			C	R	C	
Air filter			C	R	C	
Drive chain			I/L	I/L	I/L	
Engine mounts			I	I	I	
Fuel line			I	I	I	
Gas pedal control			I	I	I	
Worn brake pads			I	I	I	
Braking system			I	I	I	

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Brake fluid			I	I	I	
Clutch			I	I	I	
Suspension system			I	I	I	
Fasteners			I	I	I	
Spoke		I	I	I	I	
Wheel			I	I	I	
Spark arrestor (optional)			I	I	I	
Water cooler			I	I	I	

Vehicles should be serviced in accordance with the specified maintenance schedule. The significance of the various designations in the table is as follows:

I : Inspection, including overhauling, cleaning, lubricating, refueling, repairing or replacing if necessary

A : Check and adjust if necessary C : Clean R : Replacement

L : Lubrication

CAUTION: Driving in dusty places, should be frequently cleaned about the engine part of the inspection, adjustment and replacement, please consult the Huayang service center, so as to avoid damage to the engine

Inspection and maintenance program			Period			Benchmark
Inspection area		Inspection items	Daily	Half a year	One year	
Steering device	Steering wheel	Operational flexibility	○			
	Steering system	Impairment	○			
		Installation status of the steering system	○			
		Ball pin wobble	○			
Braking device	Brake pedal	Pedal stroke	○	○		
		Braking effect	○	○		
	Connecting rods and tubes	Looseness and damage	○		○	
	Hydraulic brakes and discs	Front and Rear Brake Fluid Levels	○	○		Brake fluid should be at or above the lower (LOWER) or higher
		Brake disc wear and damage	○	○		If the thickness of the working disk of the front brake disc is less than 4.5mm, or the thickness of the working disk of the rear brake disc is less than 4.5mm, it should be replaced in time.
	Brake pad	Brake pad wear and damage	○	○		Minimum brake pad (friction plate) thickness $\geq$ 1mm; replace if less than 1mm.
Walking device	Wheel	Tire pressure	○	○		Front wheel: 200kPa(29PSI) Rear wheel: 250kPa(36PSI)
		Cracked and damaged tires	○		○	
		Tire groove depth and abnormal wear	○		○	If there is no indication of wear on the tire tread, the residual groove depth should be no less than 3 mm.
		Loose wheel nuts and wheel spindles	○	○		
		Front wheel bearing wobble	○		○	
		Rear wheel bearing wobble	○		○	
Buffer device	Rear flat fork	Wobbling of the connecting part	○		○	
		Bearing Inspection	○		○	
	Shock absorber	Oil leakage and damage	○		○	

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		Function			○	
Transmission	Front shock absorber	Transmission, lubrication	○		○	
	Rear shock absorber	Transmission, lubrication	○		○	
	Gearbox	Oil Leakage and Oil Volume	○		○	Loosen the filler bolt opening and oil to the orifice

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Inspection and maintenance program			Period			Benchmark
Inspection area		Inspection items	Daily	Half a year	One year	
Transmission	Chain drive pulley	Loose connections	○	○		
		Wobble at the Chain	○	○		Chain swings up and down 20-30 mm
Electrical installations	Ignition device	Spark Plug Condition		○		Spark plug gap: 0.6mm~0.7mm
		Ignition period		○		
	Battery	Terminal connection status			○	
	Electrical wiring	Loose and damaged connections			○	
Fuel fabrication equipment		Fuel leakage		○		
		State of the Throttle			○	
Exhaust pipes and mufflers		Installation is free of looseness and damage			○	
		Muffler function			○	
Chassis		Loose and damaged			○	
Other		Lubricating grease condition of each part of the frame			○	
The part of the run where exceptions can be recognized		Confirmation of any abnormalities in the relevant parts	○			

3.3 Steering column, brake system

Place the car on a level place, hold the steering handle firmly in the direction shown in the diagram and check for wobble.

If you feel wobbling, confirm whether it is the wobbling of the steering column or the wobbling of the coupling plate, and carry out the corresponding maintenance.

If it is the wobbling of the steering column or the upper and lower plates, increase the locking force of the steering column locking nut or disassemble the steering column for repair.

Put the car in a horizontal position and slowly turn the steering handle to the left and right to confirm whether it can be turned round and flexibly, and whether the left and right limits are the same. If you feel that there is obstruction in some places, check the main cable assembly and pull cable type for any interference, confirm whether there is any interference, and whether the steering bearing is damaged.

CAUTION:It is important to make sure that the steering is flexible, otherwise an accident will occur due to the inability to control the direction of the handlebar.

Front brake handle clearance:

Operate the front brake handle and check the braking effect and handle action.

Check the clearance at the front brake handle.

Clearance: 2~6mm



Front Brake Pump Combination

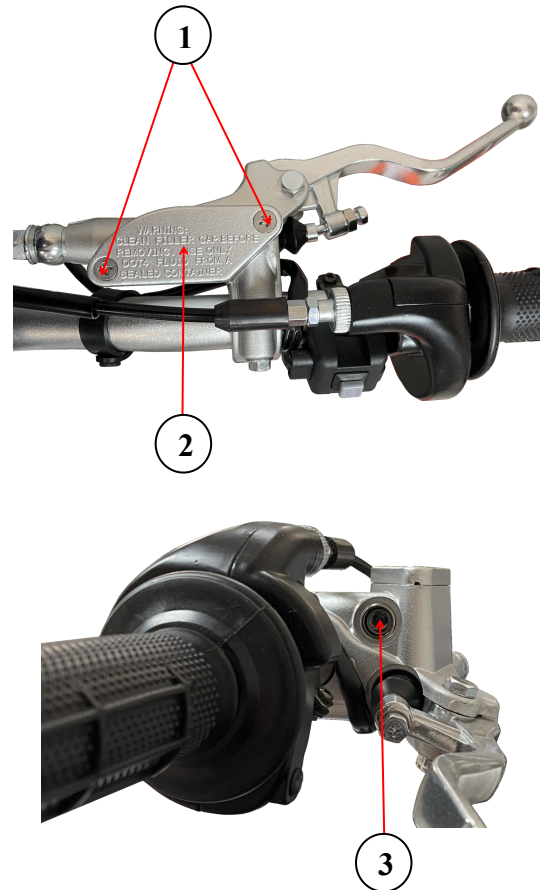
Fluid Level

Checking the brake fluid level

Check the amount of brake fluid through the observation hole 3, when the amount of brake fluid decreases to 50% of the observation hole, the vehicle will not be able to continue to use at this time, you need to check the brake pump, brake pipe and leakage of each connection, if the check is normal, you need to check the wear of the brake disc and brake pads. If there is damage or wear below the service limit, replace them.

It is also necessary to check these items before each use of the vehicle

- 1.Remove the 2 exhaust screws No.1
- 2.Remove the oil cup cover No.2
- 3.Replenish the brake fluid recommended by Kayo up to the top of the viewing hole



CAUTION

- When replenishing brake fluid, do not mix in dust and water
- To prevent chemical changes, use the specified grade of brake fluid
- Because brake fluid can damage plastic and rubber surfaces, do not spill it on these parts

Turn the steering handle slightly to the left or right and remove the oil cup cover after the brake pump combination is level.

- 1、 Exhaust screw
- 2、 Oil cup cover
- 3、 Observation hole

Front brake discs, brake pads (brake pad wear)

Check brake pad wear

Replace brake pads if wear has reached wear limits

CAUTION

Brake pads should be replaced as a set

Inspection and replacement of brake disk

Check the sliding surface of the brake disc 1 for wear and damage, and replace the brake disc if the current thickness of the brake disc is $\leq 4.5\text{mm}$

Thickness of front brake disk: 3.5mm

Check the minimum thickness of the brake friction disk 2

Minimum friction disk thickness $\geq 1\text{ mm}$

If it is less than the minimum thickness, replace the brake friction disk with a new one.

Check the brake friction discs for damage or cracks, if there are any, replace them with new ones.

CAUTION: Please check the brake fluid level from time to time to keep the fluid level in a safe position, check the oil circuit and connection points for damage, if any, please replace them in time, check the main pump/caliper for damage, if any, please replace them in time.

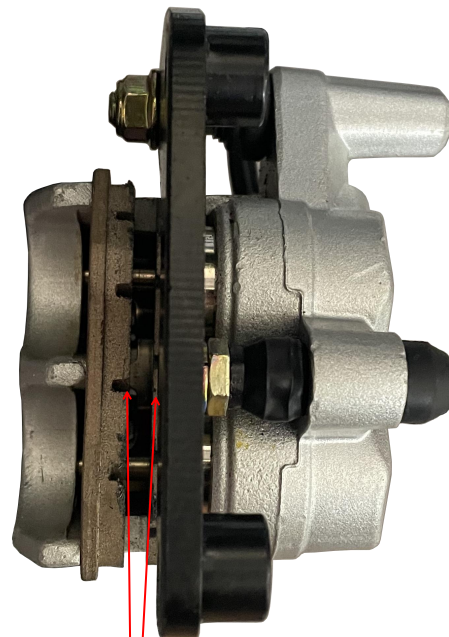
CAUTION: Do not open the brake fluid cup for a long period of time

Oil change (brake fluid change)

Brake fluid changed annually



1



2

Rear Brake Pump Combination (Fluid Level)

Checking the brake fluid level

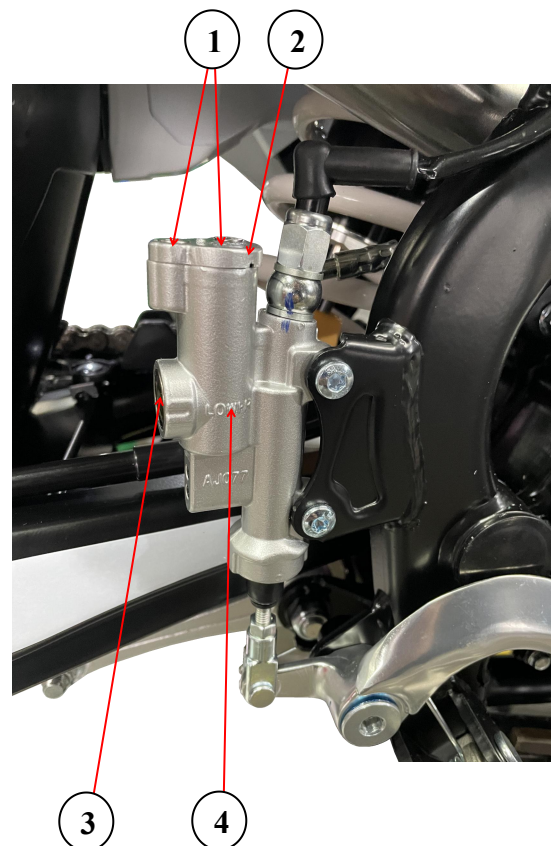
Check the brake fluid level through the observation hole 3, when the brake fluid level decreases near the lower limit line (LOWER) 4, the vehicle will not be able to continue to be used at this time, and it is necessary to check the leakage of the brake pump, the brake pipe and the connections, if the check is normal, it is necessary to check the wear of the brake discs and the brake pads. If they are damaged or worn below the service limit, replace them. It is also necessary to check these items before each use of the vehicle

- 1.Remove the two exhaust screws of the oil cup cover No.1
- 2.Remove the oil cup cover No.2
- 3.Replenish the brake fluid recommended by Kayo up to the upper limit line

- When replenishing brake fluid, do not mix dust and water.
- To prevent chemical changes, use the specified grade of brake fluid.
- Because brake fluid can damage plastic and rubber surfaces, do not spill it on these parts.

CAUTION: Please check the brake fluid level from time to time, keep the fluid level in a safe position, check the oil circuit and connection points for damage, if so please replace them in time, check the main pump/caliper for damage, if so please replace them in time.

CAUTION: Do not open the brake fluid cup for a long period of time



Rear brake disk, brake pads (brake pad wear)

Check brake pad wear

Replace brake pads if wear has reached wear limits

CAUTION

Brake pads should be replaced as a set

Inspection and replacement of brake disk

Check the sliding surface of the brake disc 1 for wear and damage, and replace the brake disc if the current thickness of the brake disc is $\leq 4.5\text{mm}$.

Thickness of rear brake disk: 3.5mm

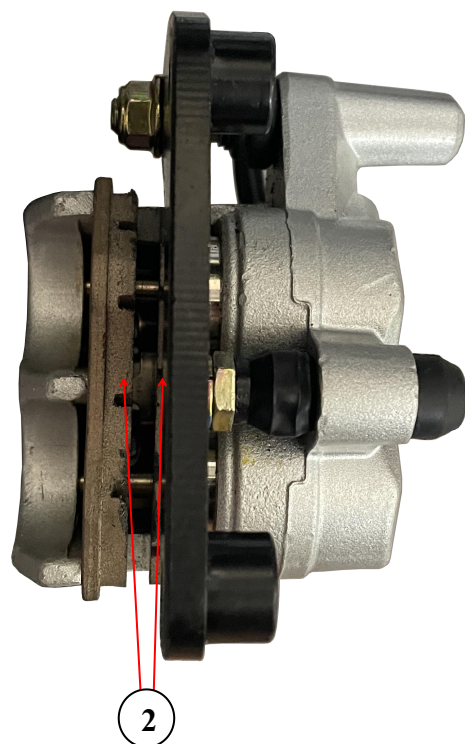


Check the minimum thickness of the brake friction disk 2

Minimum friction disk thickness $\geq 1\text{ mm}$

If it is less than the minimum thickness, replace the brake friction disk with a new one.

Check the brake friction discs for damage or cracks, if there are any, replace them with new ones.



Oil change (brake fluid change)

Brake fluid changed annually

3.4 Wheel

Jack up the front wheel with a tool in a horizontal position, make sure that the vehicle body does not have any force on the wheel, shake the front wheel from side to side, check whether the connection of the front wheel is firm, check whether there is any wobble

If there is any wobble, check and tighten the axle and rim bolts and nuts.

If there is still wobbling, check and replace: bearings and other related tire parts.



Chain Inspection

Chain transmits the power output from the engine to the wheels, enabling the motorcycle to move properly, and is an important part on the motorcycle. Therefore, Chain needs to be checked and maintained frequently to protect its normal use.

Chain tension can be adjusted according to demand, the steps are shown below:

- ◆ Secure the motorcycle so that the rear wheel is fully suspended

- ◆ Measure the distance between the rear of the flat fork and the Chain, the normal distance A should be within 20-30 millimeters

- ◆ Loosen the rear axle nut

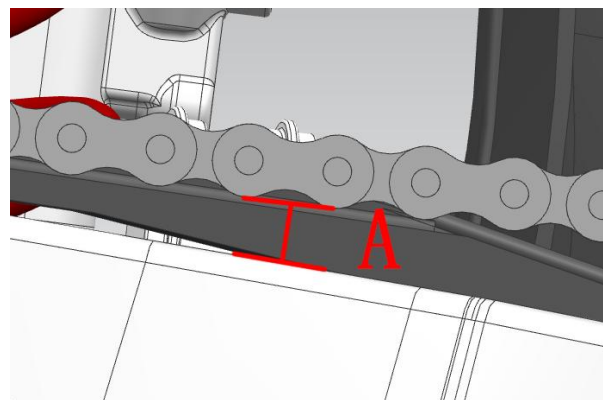
- ◆ Find the location on the Chain where there is the most tension.

- ◆ Adjust the front and rear position of the tensioner so that the ends of the flat forks are aligned.

- ◆ Tighten the tensioner nut

- ◆ Tighten the rear axle nut

- ◆ Check the maximum tension point and readjust the tension if necessary

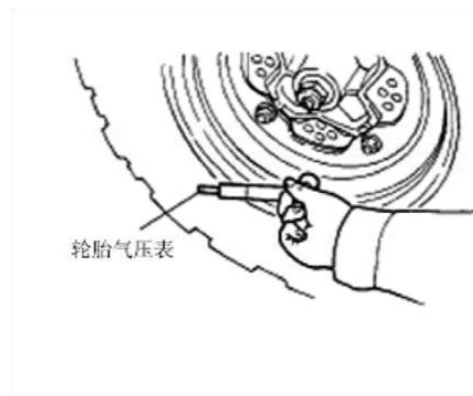


Tire pressure

Use an air pressure gauge to check the air pressure in your tires.

CAUTION

Tire pressure should be checked in the tire cooling state. If the tire pressure is not appropriate state use, will make the operation and ride comfort deteriorate, resulting in tire bias wear and other adverse effects.



Specify air pressure/tire

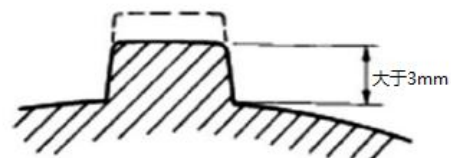
	Front wheel	Rear wheel
Tire pressure	200kPa (29PSI)	250kPa (36PSI)
Tire size	See chapter 1	See chapter 1

Tire tread

Check the tire tread and replace the tire with a new one if the tread height is less than 3mm.

CAUTION

Tire tread less than 3mm must be replaced immediately



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Wheel Nuts and Wheel Axles

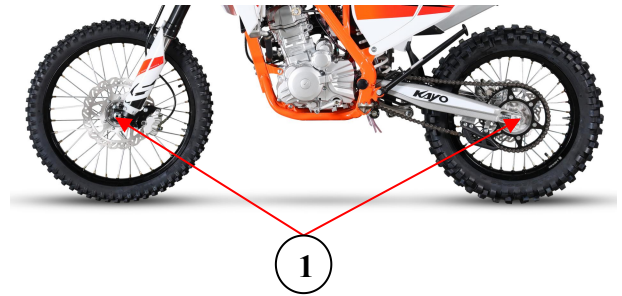
Check front axle and rear axle nuts No.1 for looseness.

If loose, tighten to specified torque.

Torque:

Front axle nut: 80N-mm to 90N-mm
(8kgf-mm to 9kgf-mm)

Rear axle nut: 80N-mm to 90N-mm
(8kgf-mm to 9kgf-mm)



Use a tool to rack the front wheels, and when the body has no force on the front wheels, crank the wheels laterally to check for wobble, proper limits for conflict with cable ties.



3.5 Suspension system

Put the car body on the horizontal position, according to the position shown in the diagram were up and down compression of the car body several times, if there is shaking or noise, check whether the rebound of the shock absorber is appropriate, whether there is any oil leakage, the fastening parts of the damage, loosening and so on.



Shock absorber adjustment

When the ambient temperature is high, the gas in the shock absorber is expanded by heat, at this time, it is necessary to exhaust the gas through the exhaust screw No.1 at the upper end of the front reduction, otherwise, it is easy to expand the oil seal, which affects the use of the shock absorber. Use a screwdriver to turn the damping adjustment screw No.2 to adjust. If you need to reduce the compression damping, turn the adjusting screw counterclockwise; if you need to increase the compression damping, turn the adjusting screw counterclockwise. (Same for front and rear shock absorbers)

3.6 Shift mechanism, fuel unit

Shift mechanism

Replace the gear, check whether the shift lever No.1 is flexible and whether the gear is in gear, if the gear shift is not flexible and there is movement, you should lock the shift lever fixing nut No.2

(Installation angle 10° down parallel to the ground)

Fuel fabrication equipment

Condition of the fuel system

Check the fuel line 3 for deterioration and damage.

Replace the fuel line with a new product if there is aging or damage.

Check whether the throttle switch No.4 is normal. Check whether the Fuel tank vent tube or the adsorption tube of the fuel evaporation system is cracked or bent, and replace it with a new product if it is damaged.

Check the gasoline filter to make sure it is clean, if there are too many impurities and stains in it, it needs to be replaced.

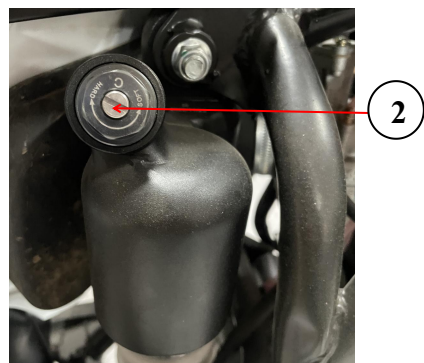
This vehicle's fuel tank switch 4 has three positions,

from top to bottom: (sub-tank on), (fuel tank switch off), and (fuel tank switch on). If the tank switch is in position, there is no fuel in the carburetor and the engine will not run. If the fuel tank is low, turn the tank switch to position and refuel immediately.

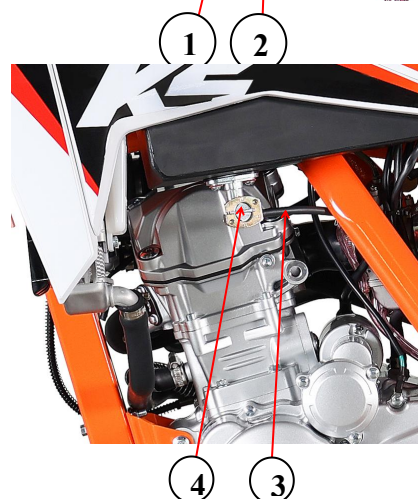
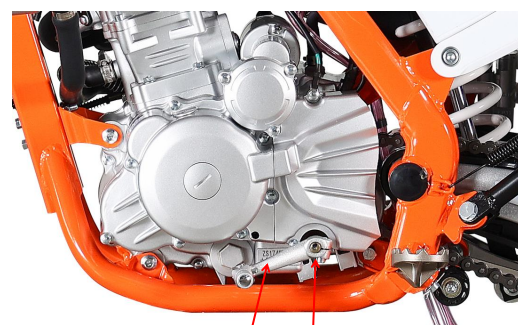
CAUTION: With the engine off turn the tank switch to 



(Front shock absorber)



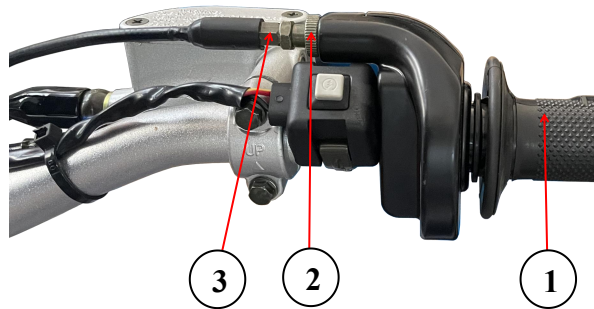
(Rear shock absorber)



3.7 Throttle Inspection

Check the free travel of the throttle grip
No.1

If the travel is uncomfortable, loosen the
tightening nut No.2 on the grip and then
adjust the throttle cable No.3 according to
the tightness of the travel.



3.8 Brake mechanism inspection

Brake handlebar

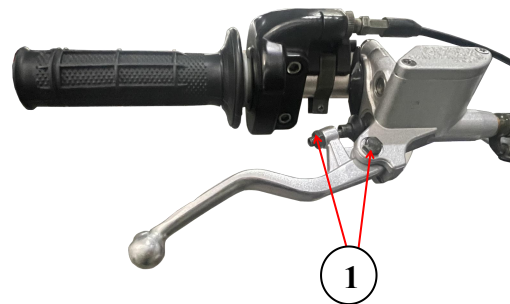
Check the disc brake hose for deterioration
and damage.

Replace the disc brake hose with a new one
if there is aging or damage.

Check the brake handle before starting the
vehicle, check the braking effect and
whether the stroke of the handle is
appropriate.

(Brake handle travel: 2~6mm)

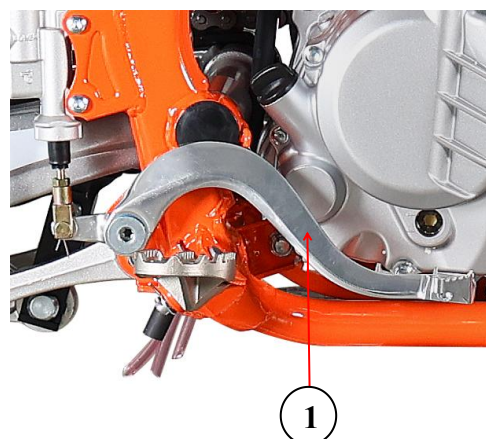
Remove the two bolts No.1 can replace the
handle



Brake pedal

Check the brake pedal No.1 before starting
the vehicle, check the braking effect and the
travel of the pedal to see if it is appropriate,
check whether its torsion spring and other
fasteners are installed in place and whether
the rebound is normal.

(Installation angle 10° down parallel to the
ground)



3.9 Carburetor Inspection

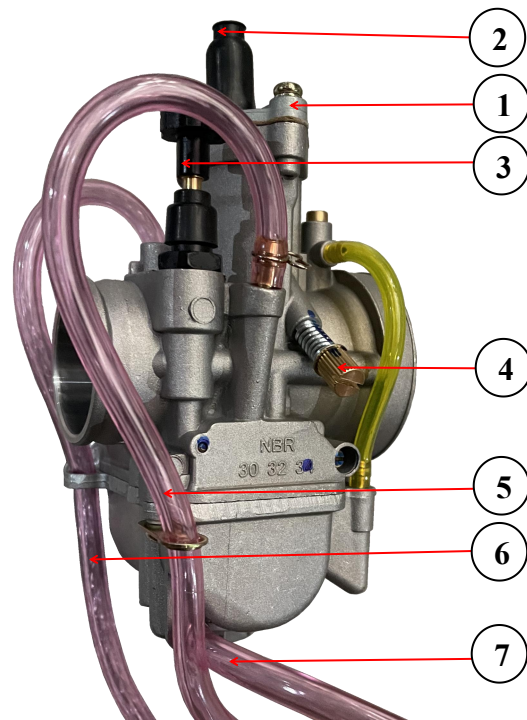
Check that the end cap No.1 at the top of the carburetor is tight and see that the throttle cable No.2 on the end cap is screwed down.
Free travel of the throttle handle: 2-6mm
If for any other reason the vehicle does not start properly, it can be started by pulling the damper No.3. Reset the damper back to the initial position when starting is complete.

CAUTION

After all other items of the engine have been adjusted to specification, then check, carburetor idle speed.

The engine should be warmed up for this.

- 4、 Idle bolt
- 5、 Balance hose
- 6、 Balance hose
- 7、 Oil drain hose



3.10 High voltage pack and spark plug check

High voltage pack

Before starting the vehicle check if the ends of the high voltage pack No.1 are tight and connected properly.

If it does not start properly, check the wiring diagram for correctness

(→ 1.7 Cable, hose and cable wiring diagram)



Spark plug

Remove the high pressure pack cap 2

Remove the spark plug with a spark plug socket wrench3

The engine spark plug torque is 25 to 30 N-m.

The spark plug must be removed periodically to check the distance between the electrodes (0.6 to 0.7 mm). If the spark plug contains oil or cinders, it should be wiped off with a wire brush or similar. Measure the distance between the electrodes with a gauge and adjust to prevent abnormal bending of the external electrodes. If the spark plug electrodes are rusted, damaged, or the insulator is broken, the spark plug must be replaced.

CAUTION: Spark plugs should be checked every cumulative 10 hours and replaced every cumulative 20 hours.

CAUTION: If engine performance drops, replace spark plugs to restore normal performance

3.11 Air filter

Check for loose fasteners on the air filter before starting the car, or it may cause a drop in RPM or even stalling.

A dirty air filter element will affect air intake and reduce engine power. If the operating area is dusty, maintenance should be performed more frequently than the maintenance schedule.

The inside air filter sponge can be replaced by removing the two catches No.1.

3.12 Inspection of light fixtures

CAUTION

Before checking the light fittings, the entire vehicle system is required to be energized

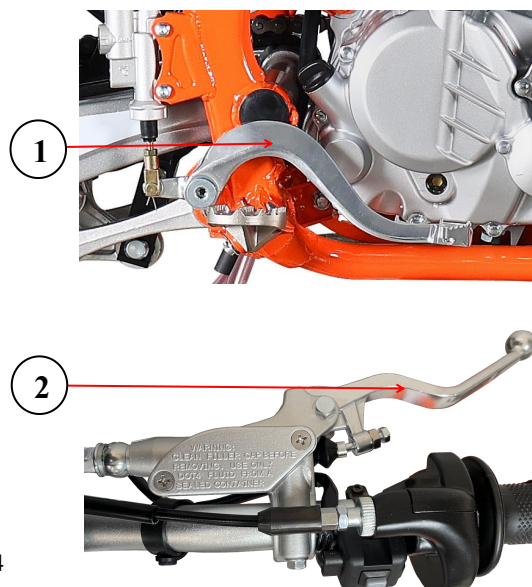
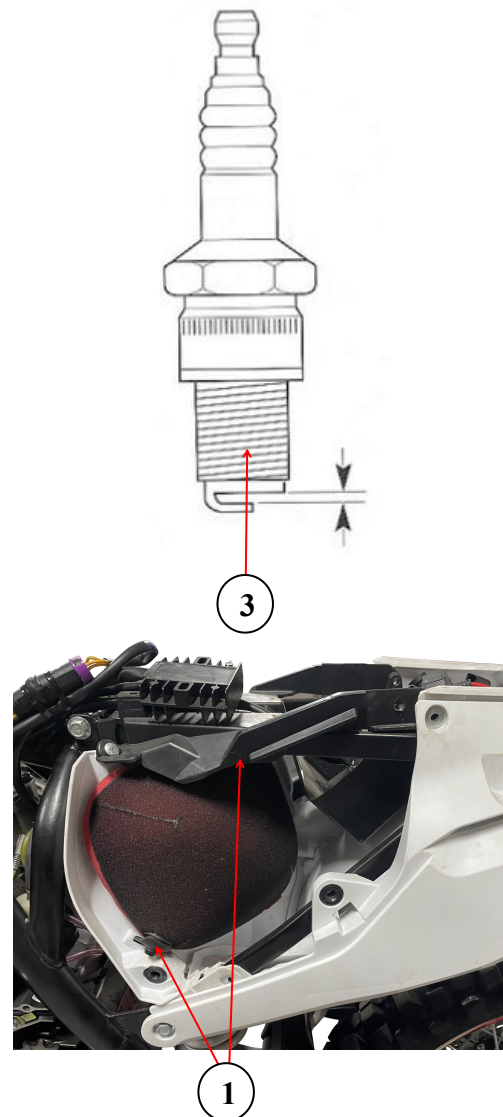
Headlight Inspection

After the vehicle is started, check whether the headlights are always on, if not, please check whether the wiring is connected incorrectly, if the wiring is correct, please replace the headlights in time

Front brake, rear brake light check

Step on the rear brake pedal 1 or pinch the brake handle 2, observe the Rear lamp, if the Rear lamp does not light up, check whether

the wiring is connected incorrectly, if the wiring is correct, please replace the Rear lamp in time.



4 Supply and exhaust system

Inspection Information.....	4-1
4.1 Fuel system.....	4-2
4.2 Air intake system.....	4-2
4.3 Exhaust system.....	4-3
4.4 Engine Removal and Installation.....	4-4

Inspection Information

Precautions for operation

- Please make sure that the vehicle is turned off and left to stand for not less than 1 hour to make sure that the heated parts are cooled down before carrying out repairs, so as not to cause injuries to the maintenance personnel.
- Be careful not to damage the frame, engine body, bolts and cables during operation.
- When the engine is disassembled, the frame, etc. should be wrapped to protect the frame.
- When the engine is removed, the appropriate containers should be prepared to receive oil and fuel to protect the environment, and the oil should be replenished as required during installation.
- When the vehicle is running and for a period of time after running, some parts of the vehicle are hot, and touching hot parts at this time can cause burns, such as the muffler and engine. Please touch the vehicle after it has cooled down completely.

4.1 Fuel system

Disassembly

Remove the Cushion, front left and right

guards.

(→Chapter 2 Body covering)

- 1.Turn oil switch to OFF No.1
- 2.Remove the fuel line No.2 (where it connects to the carburetor)
- 3.Remove the bolts fixed to the frame No.3
- 4.Remove the fuel tank No.4

CAUTION

There is a gasoline filter No.5 in the middle of the pipeline No.2, if there is too much dust, the two sides of the snap can be replaced by pulling outward respectively. Gasoline is very easy to fire, so the workplace is strictly prohibited fireworks, not only open flame, electric sparks should also be highly attention.

In addition, since there is a danger of explosion when gasoline evaporates (vaporizes), work should be done in a well-ventilated place. There is a fuel pipe inserted into the steering column at the top of the Fuel tank filler cap to prevent gasoline from spilling out when it is too full, so pay attention to inserting it into the steering column when you are driving.

Assembly

Installation in reverse order of removal

Checking the integrity of each fuel line during installation

4.2 Air intake system

Carburetor

Disassembly

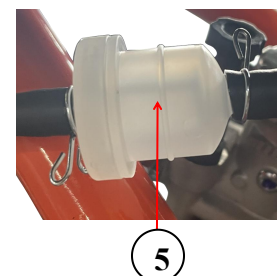
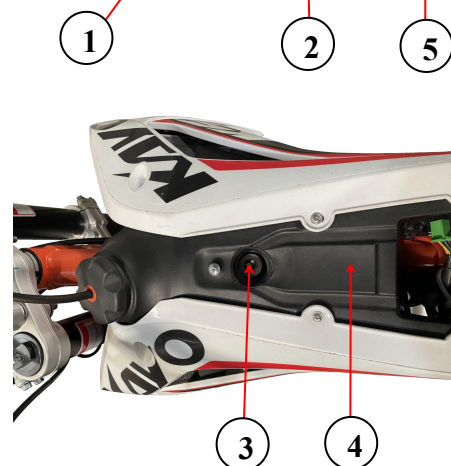
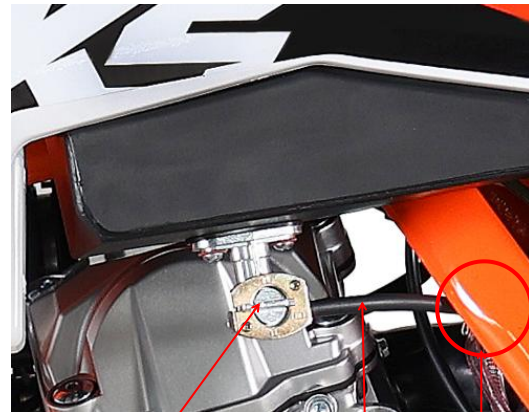
Fuel tank, front left guard and seat cushion

(→Chapter 2 Body covering)

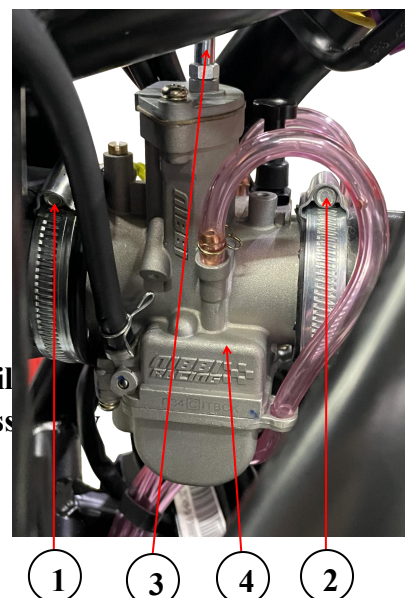
- 1.Loosen the clamp No.1 for the air filter.
- 2.Loosen the engine clamp No.2

3.Remove the throttle cable No.3

4.Remove the carburetor No.4



Air filter
Disassembly



Remove the Cushion, fuel tank, front left guard and upper left cover of the air filter.

(→Chapter 2 Body Cover)

- 1.Loosen clamp No.1
- 2.Remove the two clamps No.2
- 3.Remove the air filter sponge No.3
- 4.Remove the bolts No.4
- 5.Remove the air filter assembly No.5

Assembly

Installation in reverse order of removal



4.3 Exhaust system

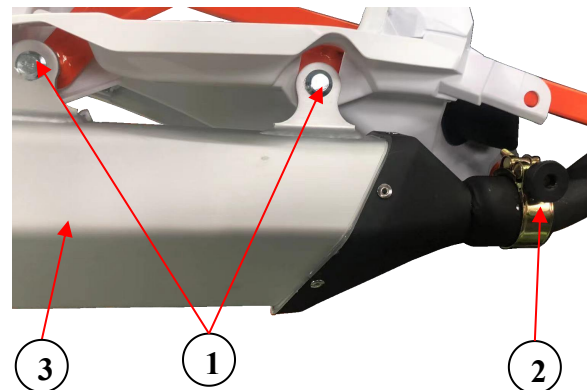
Silencer

Disassembly

Cushion, Rear right guard

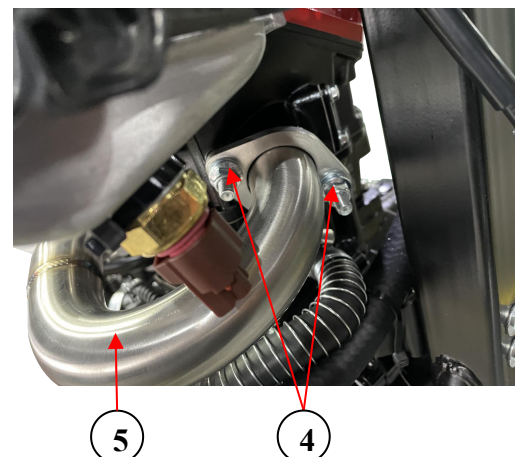
(→Chapter 2 Body Cover)

- 1.Remove the muffler fixing bolt No.1
- 2.Remove the muffler clamp No.2
- 3.Remove the muffler No.3



Silencer

- 1.Remove the muffler mounting bolts No.4
- 2.Remove the muffler No.5

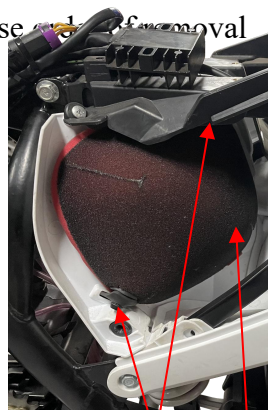


CAUTION

There is a gasket No.6 at the muffler connection, do not lose it.

Assembly

Installation in reverse order of removal



4.4 Engine Removal and Installation

Disassembly

1.Remove the Cushion, front left and right guards,

(→Chapter 2 Body Cover)

2.Remove the hitch cable, motor cable, magneto, and other inserts from the engine.

(→1.7 Cable Wiring Diagram)

3.Remove the fuel tank.

(→ 4.1 Fuel System)

4.Remove the air filter and carburetor

(→ 4.2 Intake System)

5.Remove the exhaust pipe assembly

(→ 4.3 Exhaust System)

6.Remove the fixing bolts of the engine side cover No.1

7.Remove the engine side cover No.2

8.Remove the Chain No.3

9.Remove the engine mounting bolts No.4

(4 on each side)

10.Remove the water pipe clamp No.5

11.Remove the engine No.6

Assembly

Installation in reverse order of removal

Engine Shift Lever

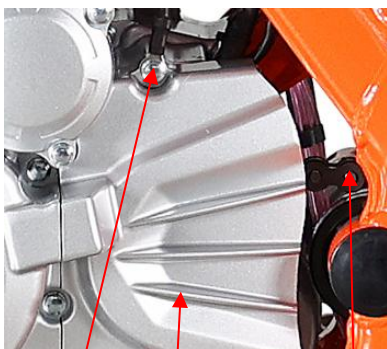
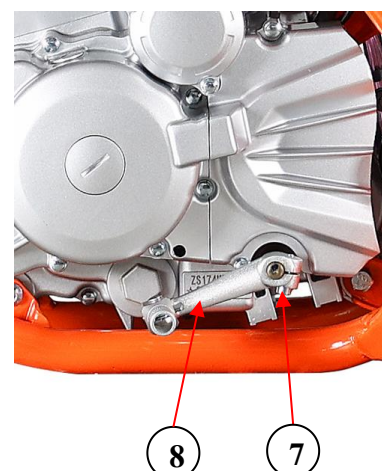
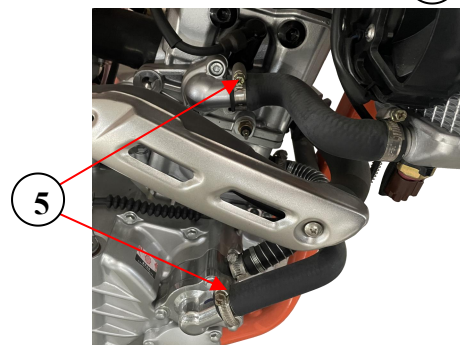
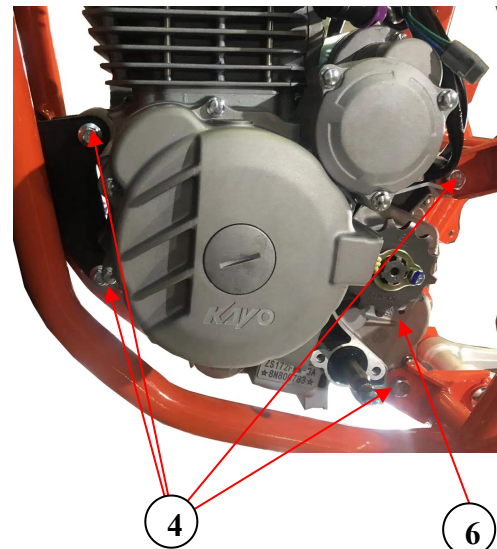
Disassembly

1.Remove fixing bolts No.7

2.Remove the footrest No.8

Assembly

Installation in reverse order of removal



5 Engine

Contents

Operational quality.....	5-1
5.1 Main engine performance parameters.....	5-2
5.2 Cylinder head component repair.....	5-6
5.3 Cylinder block, piston.....	5-16
5.4 Left cover, electric starter system, magneto.....	5-21
5.5 Right cover, clutch, master gear, gearshift.....	5-26
5.6 Crankcase disassembly and assembly.....	5-33

Operational quality

- Engine at low temperature (-10 ± 2)°C, room temperature (0-38)°C and hot engine, starting time is not more than 15s (excluding auxiliary time), the starting pedal should be able to reset flexibly after stepping on it, and the electric starting mechanism should be disengaged automatically after starting;
- There should be no abnormal rattling throughout the range of operating conditions;
- The operation should be smooth, with little vibration, and there should be no fire-breaking, uneven exhaust, hiccups, discharge, backfire, or abnormal smoke, etc.;
- When changing working conditions, it should be able to smooth the transition, and there shall be no backfire or flameout phenomenon;
- All parts should be well lubricated, heat dissipation, there should be no overheating;
- Within the range of normal operating conditions, the clutch should not slip when engaged and should be in a normal disengaged state when disengaged;
- There shall be no leakage from the connections of the oil circuit.

5.1 Main engine performance parameters

Item			Specification
Engine	Model		ZS174MN-5
	Type, number of cylinders		Single-cylinder, water-cooled, four-stroke, tilting type, overhead cams
	Cylinder bore×stroke		φ74×65mm
	Cylinder working volume		279.6ml
	Compression ratio		10.5: 1
	Carburetor form		Vacuum diaphragm
	Air filter		Sponge dry
	Lubrication method		Pressure + Splash
	Starting method		Electric
	Maximum power/corresponding speed		19(1±5%)kW/8500(1±5%)rpm
	Maximum torque/corresponding speed		23(1±5%)N.m/7500(1±5%)rpm
	Idle		1500±100 r /min
Transmission system	Clutch		Manual wet multi-piece
	Transmission		Normally engaged two-stage transmission with six speeds
	Transmission mode		Left foot manipulated reciprocating
	Primary reduction ratio		3.09 (68/22)
	Gear ratio	1st gear	2.583 (31/12)
		2nd gear	1.857 (26/14)
		3rd gear	1.437 (23/16)
		4th gear	1.167 (21/18)
		5th gear	1.0 (19/19)
		6th gear	0.857 (18/21)
Ignition system	Ignition method		CFW Capacitor storage type
	Spark plugs		CR8EB
	Spark plug clearance		0.7mm-0.8mm
Oil	Fuel grade		≥RQ93
	Engine oil	Specification	SJ 10W/40
		capacity	1.2L

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Cylinder head repair parameters

Item			Specification mm	Limit mm
Axial clearance between rocker arm and cylinder head cover rocker arm openings			0.05~0.3	0.5
Radial clearance between rocker arm and rocker arm shaft			0.016~0.045	0.08
Valve clearance			0.02~0.04	-----
Camshaft base circle run out			0.02	0.04
pistons	Valve stem outer diameter	intake	$\phi 4.972 \sim \phi 4.987$	$\phi 4.96$
		exhaust	$\phi 4.96 \sim \phi 4.975$	$\phi 4.94$
	Valve guide inner diameter	intake	$\phi 5 \sim \phi 5.015$	$\phi 5.025$
		exhaust	$\phi 5 \sim \phi 5.015$	$\phi 5.025$
	Valve seal tape width		1.5	----
Cylinder head	Flatness		0.04	0.05
	Valve seat working surface width		0.8	----

Unit: mm

Cylinder repair parameters

Item			Specification mm	Limit mm
Cylinder	Cylinder inner diameter		$\phi 74 \sim \phi 74.01$	$\phi 74.018$
	Roundness		0.004	0.008
	Cylinder surface flatness		0.03	0.06
Piston Piston Rings Piston pin	Piston outer diameter		$\phi 73.96 \sim \phi 73.97$	$\phi 73.94$
	Piston pin bore diameter		$\phi 16.001 \sim \phi 16.006$	$\phi 16.015$
	Piston ring closing clearance	Top ring/second ring	0.2~0.35	0.5
		Oil ring	0.2~0.7	1.4
	Piston ring to piston ring groove clearance	Top ring	0.03~0.07	0.08
		Second ring	0.02~0.06	0.08
	Cylinder and piston clearance		0.035~0.045	0.07
	Piston pin outer diameter		$\phi 15.994 \sim \phi 16$	$\phi 15.99$
	Piston pin to piston pin bore clearance		0.001~0.012	0.025
Small end of connecting rod	inside diameter		$\phi 16.015 \sim \phi 16.025$	$\phi 16.04$
	Connecting rod small end to piston pin clearance		0.015~0.03	0.05

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Clutch Repair Parameters

Item		Specification mm	Limit mm
clutch	Friction active plate free thickness	2.8~2.9	2.7
	Clutch plate flatness	0.08	0.11
	Clutch housing to friction plate gap	0.1~0.25	0.5

Crankcase parts repair parameters

Item			Specification mm	Limit mm
Gearshift fork	Fork inner diameter		$\phi 12.00 \sim \phi 1.018$	$\phi 12.020$
	Jaw thickness		4.925~5	4.8
Shift fork shaft	Fork shaft outer diameter		$\phi 11.966 \sim \phi 11.984$	$\phi 11.95$
	Convexity		0.010	----
Crankshaft	Connecting rod small head inner diameter		$\phi 16.021 \sim \phi 16.028$	$\phi 16.04$
	Connecting rod big end side clearance	Axis	0.1~0.3	0.5
		Radial direction	0.008~0.016	0.02
Balance axis	Shaft diameter		$\phi 19.98 \sim \phi 19.993$	$\phi 19.96$

Tightening torque standard

Torque of oil filter cover: 15~20N.m

Torque of oil drain bolt: 25 N.m

Torsion torque of double-head bolts: 8~12 N.m

Spark plug tightening torque: 10~15 N.m

Tensioning torque of tensioning plate bolt: 11~13N.m

Torsion torque of official driven sprocket: 11~13 N.m

Torsion torque of rocker shaft positioning plate bolt: 11~13 N.m

Torsion torque of oil circuit bolts: 8~10 N.m

Torsion torque of magneto stator mounting bolts: 8~12

Torsion torque of magneto rotor lock nut: 80 N.m

Torsion torque of M6 bolts of closing box: 11~13N.m

Torsion torque of gear display screw: 5~7 N.m

Positioning plate, five-star plate torque: 11 ~ 13N.m

Torsion torque of oil filter nut: 80 N.m

Torsion torque of oil pump bolts: 8~12 N.m

Right cover M6 bolt torque: 11-13N.m

A, B bolt torque: 11-13N.m

A, B bolt nut torque: 40~45N.m.

Head cover M6 bolt torque: 11-13N.m.

Tensioner bolt torque: 11~13N.m

Tensioner Seal Bolt Torsion Torque: 5~7 N.m

Torsion torque of active sprocket: 8~16 N.m

Torsion torque of active tooth lock nut: 80 N.m

5.2 Cylinder head component repair

1、 Standards for the use of spare parts	5-7
2、 Maintenance Instructions	5-8
3、 Troubleshooting	5-8
4、 Disassembly and assembly of cylinder head assembly	5-8

1、Standards for the use of spare parts

Unit: mm

Item	Specification mm	Limit mm
Axial clearance between rocker arm and cylinder head cover rocker arm openings	0.05~0.3	0.5
Radial clearance between rocker arm and rocker arm shaft	0.016~0.045	0.08
Valve clearance	0.02~0.04	-----
Camshaft base circle run-out	0.02	0.04

pistons	Valve stem outer diameter	Intake	$\phi 4.972 \sim \phi 4.987$	$\phi 4.96$
		Exhaust	$\phi 4.96 \sim \phi 4.975$	$\phi 4.94$
	Valve guide inner diameter	Intake	$\phi 5 \sim \phi 5.015$	$\phi 5.025$
		Exhaust	$\phi 5 \sim \phi 5.015$	$\phi 5.025$
	Valve seal tape width		1.5	----
cylinder head	Flatness		0.04	0.05
	Valve seat working surface width		0.8	----

2、Maintenance Instructions

CAUTION:

- The camshaft is lubricated by the oil passage holes in the cylinder head, and the oil passage in the cylinder head should never have foreign objects in it and should be kept clear.
- Before installing the cylinder head, the head locating pin must be assembled.
- The camshaft must not be scored, and it should be oiled first when assembled.

3、Troubleshooting

Low air pressure in cylinder

1.Pistons

- Incorrect valve lash adjustment
- Poor valve sealing
- Incorrect gas timing
- Broken valve springs

2.cylinder head

- Spark plug not tightly connected to cylinder head
- Damaged cylinder head gasket
- Cracks or grit in cylinder head

3.Cylinders, Pistons, Piston Rings

- Excessive or broken piston ring clearance
- Cracked or excessively worn pistons
- Cylinder block with excessive bore or sand holes

Black smoke from exhaust

- 1、Worn valve guides
- 2、Oil shield leakage or damage
- 3、Cylinder head gasket leakage
- 4、Excessive piston ring clearance

Excessive noise or rattling

- 1、Incorrect valve adjustment
- 2、Valve stuck or valve spring broken
- 3、Over wear of upper rocker arm
- 4、Incorrect timing
- 5、Camshaft wear

4、Disassembly and assembly of cylinder head assembly

Removal of cylinder head cover

- 1, remove the cylinder head head intake, exhaust both sides of the valve cover of the 4 GB/T16674 small disk M6 × 20 fastening bolts.
- 2, remove the cylinder head intake, exhaust both sides of the valve cover.
- 3, Remove 2 GB/T16674 small disk bolts M6×105, 2 GB/T16674 small disk bolts M6×20, 1 GB/T16674 small disk bolt M6×32, 1 GB/T16674 small disk bolt M6×28, and 2 GB5789 large disk bolts M6×65 that fasten the cylinder head cover.

CAUTION:

Each of the 2 large disk bolts has a copper spacer (φ6.2×2×φ13).

4. Remove the cylinder head cover.



Cylinder head removal

1. Remove the NC250 cylinder head sealing sleeve, NC250 camshaft gear plate.

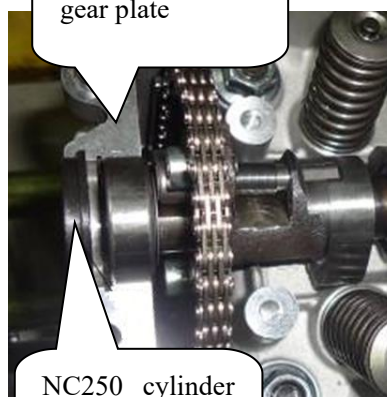


NC250 camshaft
gear plate

2. Remove the 2 GB5789 large disk bolts M6×28 that fasten the starter motor and remove the starter motor.

CAUTION:

There is a motor mounting seat ring on the bottom of the motor near the waste pipe side, don't miss it.



NC250 cylinder
head sealing
sleeve

3. remove the CB125Z tensioner sealing bolt M6 × 6, remove the 2 fastening tensioner GB70.1 hexagonal bolts M6 × 16, and then in the removal of the tensioner, tensioner gasket.

CAUTION:

Avoid dropping the O-ring on the tensioner



4. Remove camshaft bearing 6201 and bearing gear plate.

5. Remove the camshaft combination.



6, Remove 4 pcs of ZS500A and B peg nuts M10×1.25, then remove 4 pcs of flat washers (10.5×2×20).

7、 Dismantle the cylinder head.

Disassembly of the cylinder head cover

1. Remove the 2 NC250 rocker arm shaft locating plate bolts M14×1 from the cylinder head cover.

CAUTION:

O-ring $\phi 9.4 \times 2.4$ is attached to the bolt.

2. Remove the top 2 GB16674 small disk bolts M6×18, 2 copper gaskets ($\phi 6.2 \times 1 \times \phi 10$).

3. Remove the intake and exhaust rocker arm shaft, intake and exhaust rocker arm.

Disassembly of the cylinder head

Remove the valve locking clips by pressing down the valve springs with a valve remover; then loosen the valve remover and remove the valve spring seats, valve springs and valves.

CAUTION:

1. In order to prevent permanent deformation of the valve springs, the valve springs should not be compressed excessively, and only the valve locking clips should be removed;

2. All parts removed should be marked to ensure that the original assembly position is reached during assembly.

Inspection of valves and valve springs

Check valves for bends, burns or abnormal wear on valve stems, measure valve stem OD. Repair the limit value:

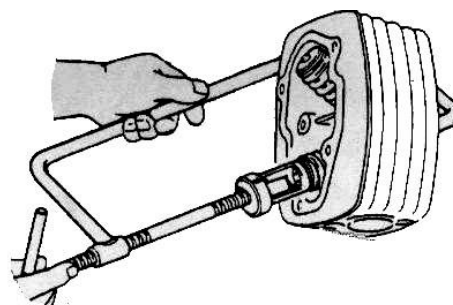
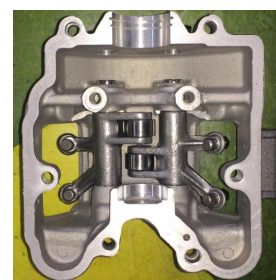
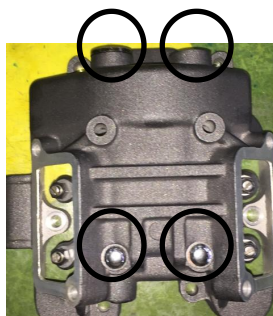
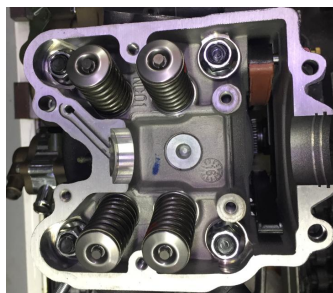
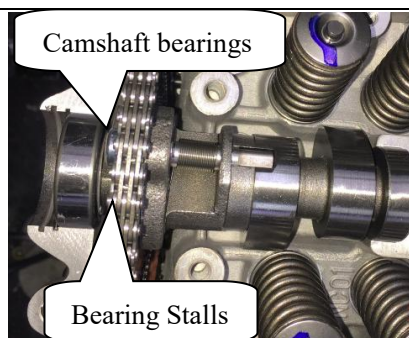
Intake: $\phi 4.96 \text{ mm}$

Exhaust: $\phi 4.94 \text{ mm}$

Limit value for repairing the width of the contact surface: 1.5mm

CAUTION:

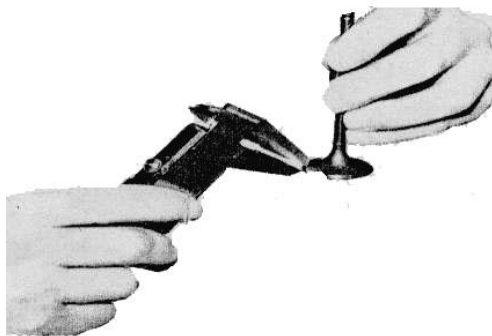
Valves should be replaced if the valve contact surfaces are rough, unevenly abraded or do not contact the valve seat properly to ensure sealing performance.



Inspection of rocker arms and rocker arm shafts

Check the rocker arm for wear and tear, destruction, axial clearance of the rocker roller, if the wear and tear phenomenon is serious or the axial clearance of the rocker roller is large, it is necessary to replace the new rocker arm.

Check the rocker shaft for wear and tear, if the wear and tear phenomenon is serious, you need to replace the new rocker shaft.



Inspection of camshaft components

1.,check the camshaft surface whether there is wear, destruction phenomenon and camshaft ends of the bearing rotation is flexible, such as wear phenomenon is serious or the bearing rotation has the phenomenon of carding, then should be replaced with a new camshaft parts.

2.Check the camshaft decompression valve dumping block combination for cracks, rupture and other phenomena and decompression valve centrifugal dumping block and decompression valve mandrel for loosening phenomena, if there is a need to replace the decompression valve dumping block combination.



Cylinder head inspection

1.Check if the sealing of the cylinder head is good, if the sealing of the head is poor, then replace the cylinder head or valve with a new one.

2.Check the spark plug hole and valve seat for cracks.

3.Check if the cylinder head is deformed, and check the flatness of the cylinder head with a cutter gauge and plug gauge.



Inspection and grinding of valve seats

The carbon in the combustion chamber is completely removed, a thin layer of red seal oil is evenly applied to the valve seat, the valve is placed on the valve seat and gently tapped on the valve do not rotate, and then pull out the valve, if there is an interruption of the contact marks on the working surface of the valve, it should be repaired by grinding the valve seat.

First, remove the carbon on the intake and exhaust valve seat, and then apply abrasive on the valve seat, and then use a rubber-tipped grinding tool to suck up the valve and grind the valve seat.

Inspection of valve guides

Measure the inside diameter of each valve guide with a percent gauge and make a record.

Maintenance limit value:

Intake: $\phi 5.025$ mm

Exhaust: $\phi 5.025$ mm

CAUTION:

Before measuring the inside diameter of the valve guides, the guides should be completely cleaned of any carbon buildup.

If it is necessary to replace the valve guides, the valve seats should be resurfaced and the valves should be inserted into the guides to observe their movement, and finally the clearance between the valve stems and the valve guides should be calculated.

Valve guide replacement

After heating the cylinder head in a thermostat to 100 to 150 degrees Celsius, remove and support the cylinder head (be careful not to burn it), and use a valve removal tool to drive out the valve guides toward the rocker arm chamber side.

CAUTION: Do not damage the cylinder head when removing the valve guides.

Press fit the new valve guides and ream the newly installed valve guides after the cylinder head has cooled.

CAUTION:

When reaming, the reamer shall be coated with cutting oil and shall be turned when loading or removing the reamer.

Finally, the cylinder head is cleaned with a cleaning agent and compressed air is used to remove metal swarf that has accumulated on the cylinder head

Measure the width of the valve seat contact surface

Repair limit value: 1.5 mm

If the valve seat is found to be too wide, too narrow, or dented, the valve seat should be ground to achieve the correct degree of sealing.

When grinding the valve, use the electric gun to put on the rubber tube (using a tight fit), then put the valve stem on the rubber tube, apply a little graphite paste for grinding on the valve sealing tape, then fit it on the valve seat sealing line, turn on the electric gun, rotate the valve, and carry out the grinding for the fit between the valve and the seat ring.

After grinding, check whether the sealing line between the valve and the seat has been ground out, otherwise it should be reground. If the grinding is really not in place, the valve or cylinder head should be replaced.

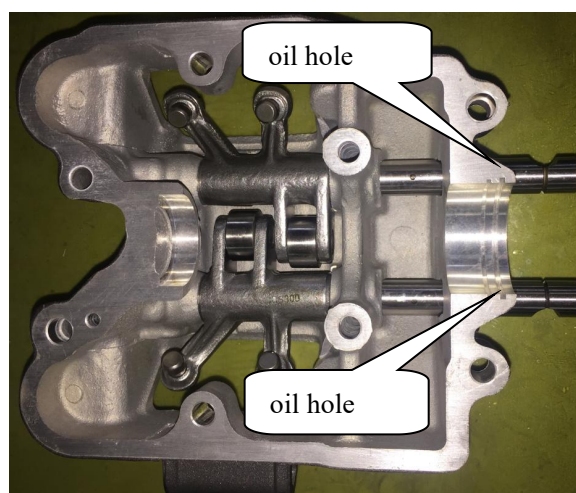
Assembly of cylinder heads

- 1、 Attach the valve spring lower seat and oil retainer to the valve guide.
- 2、 After lubricating the intake and exhaust valve stems, install them into the valve guides, and install the valve springs, valve spring upper seats and valve lock clips.
- 3、 Press down the valve spring with the valve remover, and then install the valve locking clip into the valve spring seat.

CAUTION:

To prevent the valve spring from becoming permanently shaped, the spring should not be compressed excessively, so that it will fit into the valve locking clip.

- 4、 Check whether the valve locking clip assembly is in place.
- 5、 Test the airtightness of the assembled cylinder head combination, if the cylinder head combination has no leakage then the next operation can be carried out.
- 6、 Install the tensioning plate to the cylinder head.



Assembly of cylinder head cover

First, put the intake and exhaust rocker arms into the cylinder head cover, assemble the intake and exhaust rocker arm shafts through the cylinder head cover and the intake and exhaust rocker arm shaft holes in place respectively, then install 2 GB16674 small disk bolts M6×18 to fasten the rocker arm shafts, and lastly, install the NC250 rocker arm shaft locating plate bolts into the corresponding holes on the cylinder head cover and fasten them.

CAUTION:

1. When installing the rocker arm shaft, the side of the rocker arm shaft with the cut edge should face the top of the cylinder head cover, and the side with the oil hole should face the bottom.

2. After installing the cylinder head cover, rotate the rocker arm, the rocker arm should rotate flexibly without any stagnation.

3. Small disk bolt M6×18 tightening torque: 8~10N-M. 4.

4. rocker arm shaft positioning plate bolt fastening torque: 8~16N-m.

Cylinder head installation

1、Fit a new cylinder head gasket, then 2 cylindrical pins $\phi 6 \times 12$.

2、Attach the cylinder head to A and B pins.

3、Play silicone at the position indicated in the right picture.

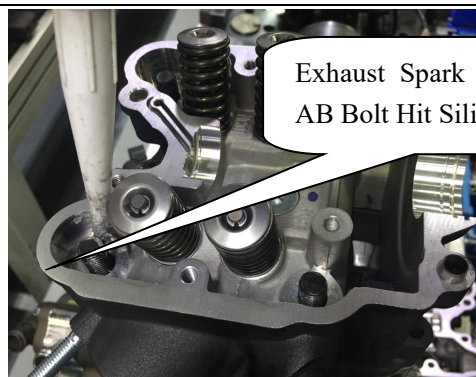
4、Again put the gasket onto A and B pegs, then put ZS500A and B peg nuts onto A and B hitch and tighten them.

CAUTION:

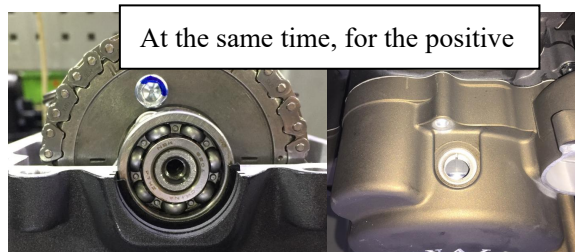
1. Dust and scum must not be allowed to enter the cylinder;

2. A and B peg nut tightening torque: 40-45N.m.

the camshaft will be installed to the cylinder head, and then the timing chain will be installed to the camshaft on the timing driven Chain, and then check whether the engine is in the timing position, if not in the timing position need to re-adjust the timing position of the engine.



Exhaust Spark Plug Side
AB Bolt Hit Silicone



At the same time, for the positive

CBS300 engine timing adjustment

method:(1) Remove the large and small view hole covers of the left front cover;

(2) Rotate the magneto locking bolt with a 14# socket, and at the same time, observe whether the timing line " | " on the rotor of the magneto (non-electro-injection state with "T" mark) and the timing mark on the left front cover are aligned with each other through the small view hole;

(3) After the above timing marks are aligned, pay attention to whether the timing mark on the timing driven sprocket is on the same plane with the cover surface;

Only when both (2) and (3) are satisfied is the engine in the correct timing position.

6、 After adjusting the timing position, assemble the large sight hole cover and small sight hole cover to the left front cover.

7、 Assemble the tensioner to the corresponding hole on the cylinder block and use 2 GB/T16674 small disk bolts M6×20

CAUTION

Before installing the tensioner, use the sheet to rotate the screw clockwise to retract the clockwork spring. 2 fastening screws check to install, remove the sheet so that the spring pops out and the tensioner is under tension.

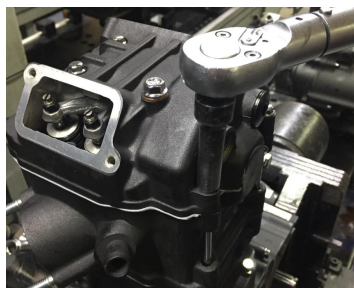
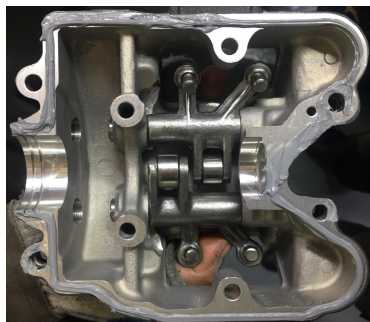
8. Install the camshaft baffle and bearing 6201 onto the camshaft, then install the NC250 camshaft baffle into the baffle groove of the cylinder head, and finally install the NC250 cylinder head sealant set into the sealant sleeve groove of the cylinder head.

Cylinder head cover installation

1、 Clean the cylinder head cover and cylinder head bonding surface, and evenly apply a layer of silicone rubber plane sealant on the cylinder head cover bonding surface;

2、 Assemble the cylinder head cover to the cylinder head;

3、 Assemble 2 GB/T16674 small disk bolts M6×105, 2 GB/T16674 small disk bolts



M6×20, 1 GB/T16674 small disk bolts
M6×32, 1 GB/T16674 small disk bolts
M6×28, 2 GB5789 large disk bolts M6×65,
and 2 copper spacers $\phi 6.2 \times 2 \times \phi 13$ into place
and fasten.

CAUTION

Tightening torque: 11~13N·m

4, adjust the clearance of the intake and
exhaust valves, the valve clearance value:
0.04 ~ 0.06mm.

5、 Attach the valve cover to the cylinder
head cover and fasten it with GB/T16674
small disk bolts M6×20, fastening torque:
11~13N.m.

6. Install the starter motor into the
corresponding hole of the left cover and
fasten it with 2 GB5789 large disk bolts
M6×28, taking care not to miss 1 motor
mounting seat ring.

5.3 Cylinder block, piston

1. Standards for the use of spare parts	5-17
2. Troubleshooting	5-18
3. Cylinder block component disassembly and assembly (including inspection)	5-19

1. Standards for the use of spare parts

Unit: mm

Item		Specification mm	Limit mm
Cylinder	Cylinder inner diameter	$\phi 74 \sim \phi 74.01$	$\phi 74.018$
	Roundness	0.004	0.008
	Cylinder surface flatness	0.03	0.06
Piston Piston Rings Piston pin	Piston outer diameter	$\phi 73.96 \sim \phi 73.97$	$\phi 73.94$
	Piston pin bore diameter	$\phi 16.001 \sim \phi 16.006$	$\phi 16.015$
	Piston ring closing clearance	Top ring/second ring	0.2~0.35
		Oil ring	0.2~0.7
	Piston ring to piston ring groove clearance	Top ring	0.03~0.07
		Second ring	0.02~0.06
	Cylinder and piston clearance		0.035~0.045
	Piston pin outer diameter		$\phi 15.994 \sim \phi 16$
	Piston pin to piston pin bore clearance		0.001~0.012
Small end of connecting rod	Inside diameter		$\phi 16.015 \sim \phi 16.025$
	Connecting rod small end to piston pin clearance		0.015~0.03

2. Troubleshooting

1、 Low or unstable compression force

Cylinder or piston rings are worn.

2、 Overheat

Excessive piston carbon buildup

3、 Excessive black smoke

Wear on cylinder, piston or piston rings

Incorrect installation of piston rings

Scratched or scraped piston or cylinder wall

4、 There is a popping or abnormal noise

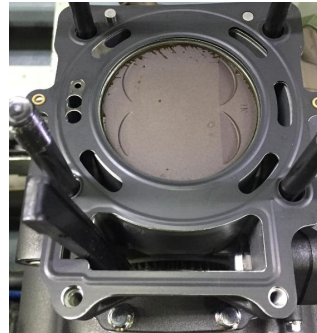
Worn piston or cylinder

Excessive carbon buildup on piston

3、Cylinder block component disassembly and assembly (including inspection)

Disassembly of cylinders

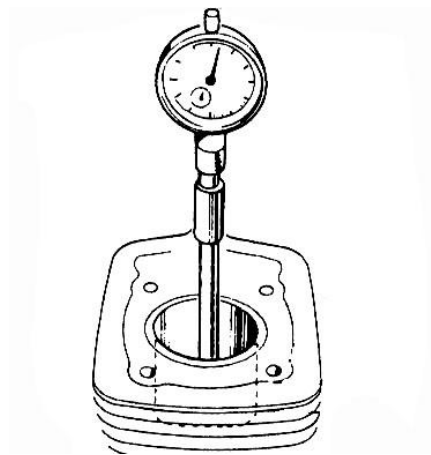
- 1、Remove the cylinder head gasket and Chain guide plate.
- 2、Remove 2 GB5789 large disk bolts M6×30.
- 3、Remove the water pipe clamp on the cylinder block and remove the water pipe.
- 4、Finally remove the cylinder block, cylinder block paper gasket, cylinder block locating pin.



Inspection of the cylinder

1. Check the cylinder for wear or destruction.
- 2、Measure the inner diameter of the cylinder, it should be measured in three positions, i.e. the top, middle and bottom of the piston stroke, and the measurement should be made in two directions at right angles to each other.

Maintenance limit value: $\phi 74.018\text{mm}$



Disassembly of piston

Remove the piston pin retaining ring with sharp-nosed pliers and remove the piston pin and piston.

CAUTION:

Do not drop the retaining ring into the crankcase when removing the piston.

Inspection of pistons and piston rings

Remove the piston ring;

CAUTION: Do not damage the piston rings during disassembly.

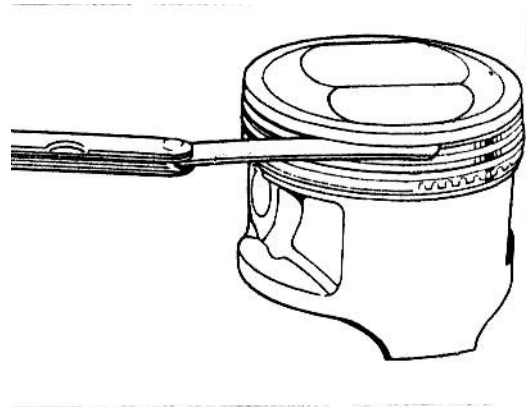
Measure the clearance between the piston ring and the piston ring groove, service limit:

first ring: 0.8 mm

Second ring: 0.8 mm

Oil ring: 0.8 mm

Check the piston for wear or cracks and the piston ring grooves for wear.



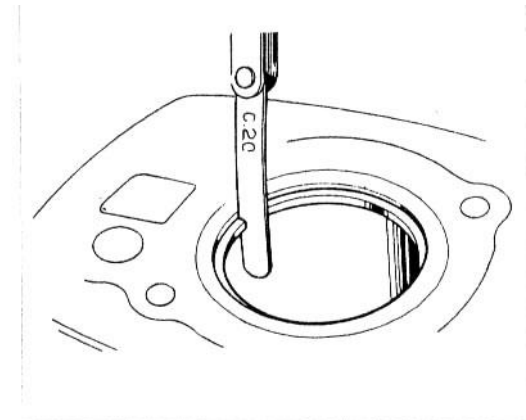
Insert the piston ring into the cylinder and measure the end gap.

Repair limit values:

First ring: 0.5mm

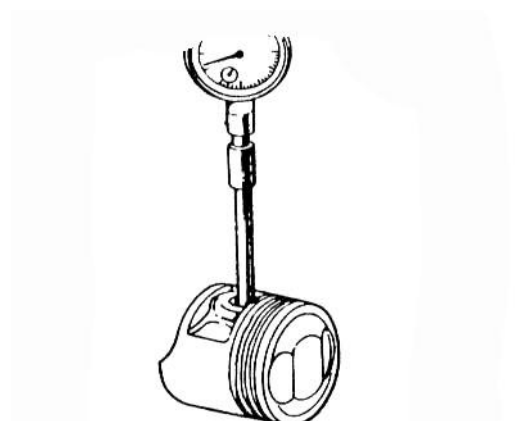
Second ring: 0.5 mm

Oil ring: 1.4 mm



Measure the inner diameter of the piston pin hole.

Maintenance limit value: $\phi 16.015$ mm

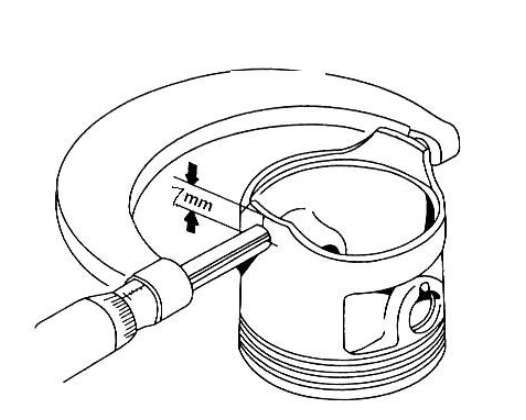


Measurement of outer diameter at 7 mm height from the piston skirt.

Repair limit value: $\phi 73.94$ mm

Calculate the clearance between the cylinder and piston.

Maintenance limit value: 0.07 mm



Measurement of piston pin outer diameter

Repair limit: 15.99 mm

Calculate the clearance between the piston and the piston pin.

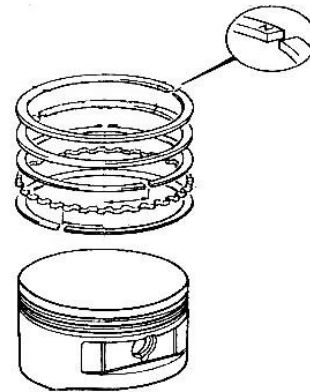
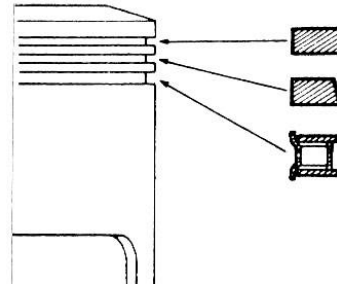
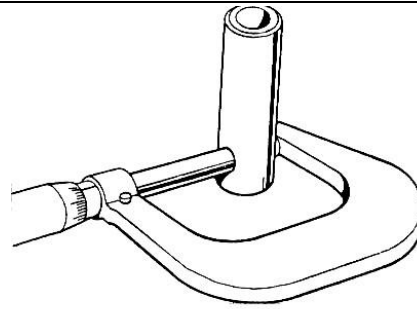
Maintenance limit value: 0.025 mm

Installation of piston ring

- 1、Clean the piston ring groove thoroughly.
- 2、Assemble the piston ring.

CAUTION:

- 1、When installing, the piston and piston ring should be prevented from being destroyed;
 2. When installing piston rings, the first and second rings should not be installed incorrectly.
 3. The marked side of the first and second rings should face the top of the piston;
 4. After installation, the piston ring should rotate flexibly.
3. The gap between the rings in the oil ring should be matched with the gap of the spacer ring; when installing the oil ring, the spacer ring should be installed first, and then install the side guide.



Piston installation

Install the piston, piston pin and new piston pin retainer.

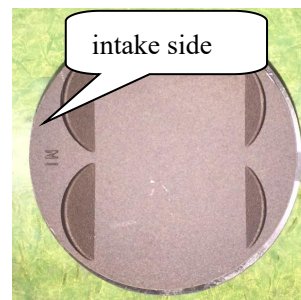
CAUTION:

1. When installing the piston, the side with the "IN" mark should be toward the intake side of the engine;
2. The piston pin retaining ring must be replaced with a new one if it is seriously deformed;
3. Do not allow the piston pin retaining ring to fall into the crankcase.

Installation of cylinder block

- 1, Install the cylinder block locating pin and new cylinder block gasket.
- 2, Apply an even layer of oil to the surface of the cylinder block, piston and piston rings.
- 3、First stagger the openings between the piston rings by 120° from each other, then gently assemble the cylinder block in place.
- 4、Assemble the Chain guide plate in place.
- 5、Install 2 GB5789 large disk bolts M6×30.

CAUTION: When installing the cylinder block, avoid destroying the piston rings.



5.4 Left cover/electric starter system/magneto

1.Troubleshooting	5-23
2.Removal and installation of left cover and magneto	5-23

1.

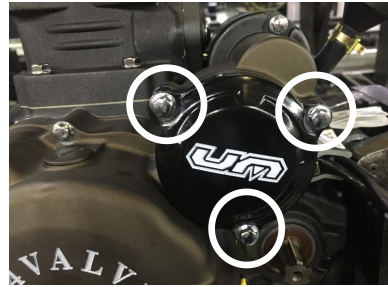
1. Troubleshooting

- 1、 Starting motor rotates, but engine does not rotate
 - Faulty starter clutch
 - Reduction gear damaged
- 2、 Engine can't be charged
 - Generator stator aging

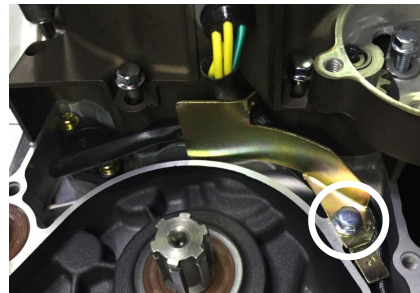
2. Removal and installation of left cover and magneto

Removal of the left crankcase cover

1, remove the 3 duplex gear cover bolts
GB16674 small disk M6 × 20, duplex gear
cover, duplex gear, duplex gear shaft in
order to remove

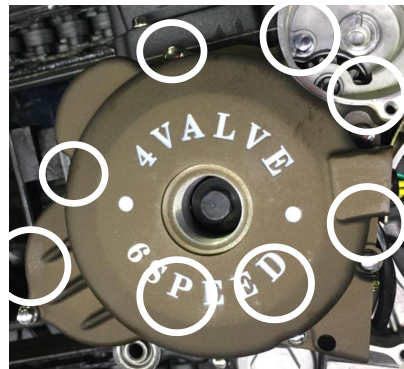


2, remove the pressure plate bolt
GB16674 small disk M6 × 12, remove the
pressure plate



3, remove the left cover bolts: 5 GB16674
small disk bolts M6 × 40, 2 GB16674 small
disk bolts M6 × 50, 1 GB16674 small disk
bolts M6 × 25

4, remove the left cover, left cover No.2
positioning pin, paper pad.



Magneto Stator Removal

- 1, Remove the 2 GB5783 bolts M5×16 fastening screws for the sensing;
- 2, Remove the 3 GB5783 bolts M5×25 fastening screws of the stator coil, then remove the magneto stator combination from the left crankcase cover.



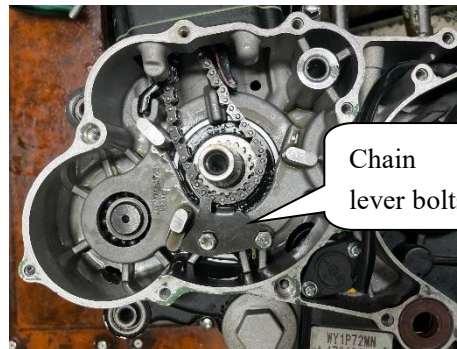
Dismantling of magneto rotor, starter gear, duplex gear two

- 1、 Remove the magneto rotor locking bolt and remove the magneto rotor with a special tool.
- 2、 Remove the starter large gear and duplex gear II.

CAUTION:

1. The magneto rotor can only be disassembled with special tools, and it is not allowed to knock the magneto rotor;

2. If the magneto rotor is accidentally shocked during disassembly and assembly, such as the magneto rotor falling to the ground or being struck by foreign objects, the magneto rotor should be replaced with a new one.



Removal of the gear display harness

- 1, Remove the 2 gear display screws.
- 2.Remove the gear display harness.



CAUTION

Take out the O-ring that comes with the gear display.

Inspection of the left crankcase cover

Check the left crankcase cover for breakage, etc.

Inspection of magneto stator and rotor

- 1、 Check the magneto stator tiles for cracks or damage, if any, replace the magneto rotor with a new one.
- 2、 Check whether the magneto rotor is worn or damaged, if so, need to replace the new magneto rotor.

Installation of magneto rotor

1. Install the starter large gear and duplex gear II to the corresponding position.

CAUTION

There is a spacer $\phi 10.5 \times 0.5 \times \phi 18$ at each end of duplex gear II.

2. Install the magneto rotor onto the left crank and tighten it with the locking bolt.

CAUTION:

1. At one end of the thread from the second tooth to play 3 ~ 5 teeth (full circle) Kaiten 7262 thread locking sealing anaerobic adhesive;
2. Magneto rotor lock nut tightening torque: 60 ~ 70N-m.



Magneto Stator Installation

1. Fasten the magneto stator assembly to the left crankcase cover with 2 GB5783 bolts M5×16 and 3 GB5783 bolts M5×25.

CAUTION:

Tightening torque: 8~12N-m



Installation of the gear display harness

1. Install the stall display in the appropriate position.

CAUTION:

Before installation, make sure the O-ring is on the gear show and intact, if damage occurs need to be replaced.

2. Fix the stall display with 2 stall display screws.

Torque of gear display screw: 5~7N-m



Installation of the left crankcase cover

- 1, Install the two locating pins and install a new gasket ;

- 2、 Assemble the left crankcase cover in place

- 3, Install to the corresponding position with five GB16674 small disk bolts M6×40, two GB16674 small disk bolts M6×50, and one GB16674 small disk bolt M6×25.



Apply Sanwa adhesive to the threads of the bolt in this position.

CAUTION

1、Bolts shown in the figure on the right are coated with Sanwa glue.

2. Tightening torque: 11 to 13

N-m.

4、Install the gear display wire and magneto stator wire harness to the corresponding position and fix them with the crimping plate.

5、Fix the crimp plate with GB16674 bolt M6×12.

CAUTION

Tightening torque: 8~12 N-m

Installation of duplex gear cover

1、Install the duplex gear shaft and duplex gear to the corresponding position and cover the duplex gear cover.

2、Fasten the duplex gear cover with 3 duplex gear cover bolts GB16674 small disk M6×20.

5.5 Right cover/clutch/active gear/gear shift

1.Troubleshooting	5-27
2.Standards for the use of spare parts	5-27
3.Clutch, active gear, oil pump, shift mechanism disassembly, inspection, assembly	5-28

1.Troubleshooting

Clutch

Clutch operation, in the event of a malfunction, can usually be better corrected by adjusting the freewheeling travel of the clutch lever.

Clutch slips when accelerating

1. Insufficient free travel
- 2.Disc has wear and tear
- 3.Clutch plate bending

When the clutch is released, the vehicle will move slowly.

1. Too much free travel
- 2.Clutch plate bending

Excessive pressure on the handgrip

1. Clutch cable bonded, destroyed or uncleaned
- 2.Damage to the lifting mechanism

Difficulty in operating the clutch

- 1.Clutch cover groove has burrs

Oil pressure too low

- 1.The oil pump is faulty
- 2.Oil pump driving gear rupture

Trouble shifting

1. Stop plate bent or worn
2. Incorrect clutch adjustment

Shift gear jumping

1. Broken stop arm spring or insufficient spring force

Shift pedal won't return

- 1.Broken return spring
2. Gear shaft interferes with crankcase cover

Cylinder temperature too high

- 1.Faulty water pump gears or impellers

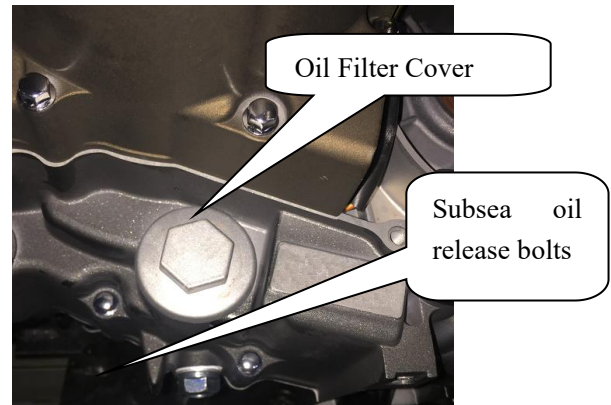
2. Standards for the use of spare parts

Item		Specification mm	Limit mm
Clutch	Friction active plate free thickness	2.8~2.9	2.7
	Clutch plate flatness	0.08	0.11
	Clutch housing to friction plate gap	0.1~0.25	0.5

3.Clutch, active gear, oil pump, shift mechanism disassembly, inspection, assembly

Right crankcase cover removal

1. Drain the oil first (remove the oil filter cover on the left side of the engine and take out the oil filter combination in the case, or remove the bottom oil drain bolt and wait until the oil in the case runs out);



2、 Remove 10 GB16674 small disk bolts M6×40, 1 GB16674 small disk bolts M6×50.

3、 Finally remove the right crankcase cover, gasket, 2 positioning pins

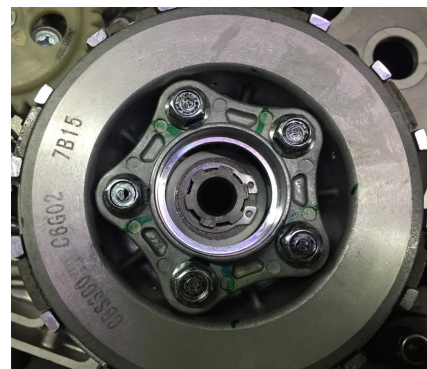
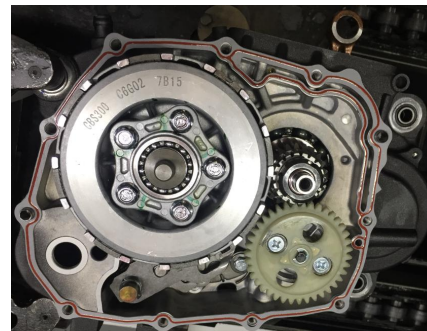


Clutch Removal

1. Remove the clutch push rod and bearing 16003 in turn.

2、 Remove the retaining ring ($\phi 20$) with expansion pliers and remove the center sleeve assembly.

3、 Remove the spline spacer of the clutch, remove the outer cover, and remove the bushing in order.



Oil pump removal

1, remove 2 oil pump mounting bolts GB819.1 screws M6×30;

2、 Dismantle the oil pump and take out 2 O-rings ($\phi 9.4 \times 2.4$);

Disassembly of the gearshift mechanism

- 1、Dismantle the shift arm parts;
- 2、Dismantle the five-star plate fastening bolt, spring spacer, remove the five-star plate and GB119.1 cylindrical pin $\phi 4 \times 10$
- 3、Dismantle the positioning plate fastening screw GB5783 large disk M6 $\times$ 20, remove the positioning plate spring and positioning plate combination.



Removal of main gears and oil pump drive gears

- 1, Remove the active gear lock nut and disk washer;
- 2, Remove the oil pump drive tooth, active tooth, and disk tooth washer.



Disassembly of water pumps

- 1.Remove 3 water pump cover bolts GB16674 small disk M6 $\times$ 45;

CAUTION:

Don't miss the copper spacer under the drain bolt.

- 2.Use expansion pliers to remove the water pump tooth retaining ring, remove the water pump gear.
- 3.Remove the water pump.



Disassembly of clutch center sleeve assembly

- 1.Remove the clutch cover bolt;
- 2.Remove the spring, pressure plate, and finally remove the friction plate

Inspection of the right crankcase cover

- 1, check the right crankcase cover crankshaft oil seal whether there is damage, if found oil seal rupture then need to replace the new oil seal;

When replacing the crankshaft oil seal pay attention to two points:

1. Make sure the oil seal is in the correct condition;
2. The marked side should face outward during assembly.

Inspection of clutch friction plates

If the clutch friction plates show signs of scuffing or discoloration, they should be replaced. Measure the thickness of each clutch friction plate.

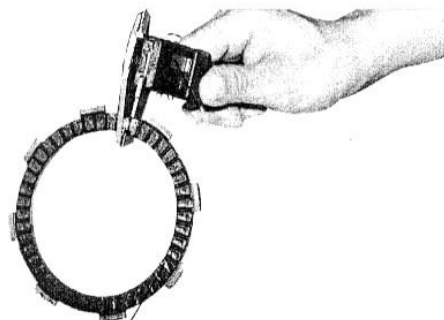
Repair limit value: 2.7mm

Check the surface of the clutch follower plate for distortion with a gap gauge.

Repair limit value: 0.11 mm

Check the gap between the clutch cover and the friction plate.

Repair limit value: 0.6 mm

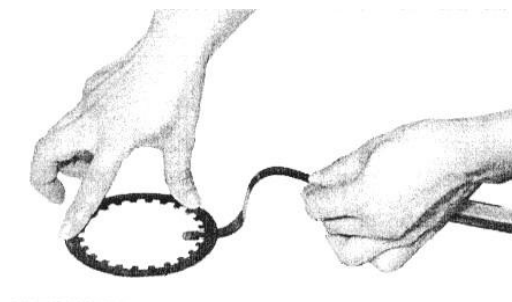


Inspection of the clutch housing

Check the teeth and grooves on the drum of the outer cover for nicks and scars due to friction of the clutch disk, if severe, the cover will need to be replaced.

Inspection of the active teeth

Check the active teeth for wear and damage, and replace with new active teeth if the wear and damage is severe.



Inspection of oil pump

Check whether the rotor of the oil pump is worn, whether the rotation is flexible, if so, you need to replace the new oil pump.

Inspection of the gearshift mechanism

Check that the positioning plate rollers are not worn and that the rollers rotate flexibly.

Assembly of water pumps

1. Paint a small amount of oil in the O-ring of the water pump and the corresponding hole of the right cover.

2. The water pump will be installed to the right cover of the corresponding hole, pay attention to the bottom of the water pump to install a O-ring ($\phi 7 \times 2$)

3. Remove the old water pump cover sealing ring, install the new water pump cover sealing ring to the water pump cover.

4. Install 2 positioning pins, the water pump cover cover to the water pump;

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5. with 3 GB16674 small disk bolts M6 × 45 will be fastened to the water pump cover, pay attention to the drain bolt should be replaced with a new copper gasket $\phi 6.2 \times 1 \times \phi 12$.

CAUTION

Tightening torque of water pump cover bolts: 11~13 N·m

6. Installation of water pump gears, installation of water pump teeth gear ring

CAUTION

Gear orientation needs to be installed correctly as shown in the diagram to the right

Installation of active teeth

1. Install the disk tooth washer, active gear, and oil pump drive tooth onto the right crank in order.

2. Assemble the active tooth lock nut washer to the active tooth

3. Apply 3 to 4 teeth of thread tightening adhesive to the active tooth lock nut, install it on the right crank and tighten it.

CAUTION:

Tightening torque of active tooth locknut: 50~65 N·m

Assembly of the gearshift mechanism

1. Fit the locating plate combination to the right body and tighten it;

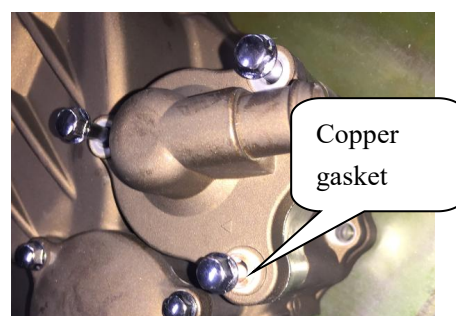
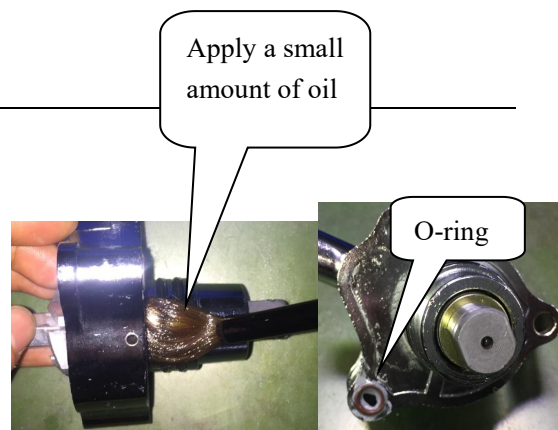
2. Install the five-star plate onto the speed drum, note the notch aligned with the speed drum pin, install the fastening screws and tighten;

CAUTION:

Five-star plate screws coated with 271 fastening adhesive

Torque: 8~12N·m

3. Install the gearshift arm, gearshift arm assembly after the first test shift is correct, shift error-free and then continue to install the machine.

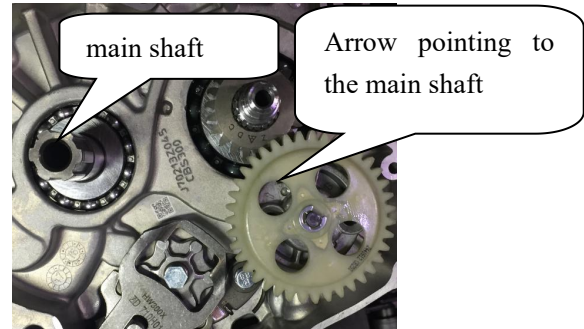


Oil pump assembly

1. Place 2 O-rings ($\phi 9.4 \times 2.4$) into the corresponding countersunk holes.
2. Install the oil pump to the corresponding position, pay attention to the arrow pointing to the main shaft.
3. Use two GB819.1 screws M6 $\times$ 30 to fasten the oil pump.

CAUTION:

1. When installing the oil pump, the arrow points to the clutch;
2. Tightening torque of oil pump bolts: 8 to 12 N.m;



Clutch Installation

1. Install the clutch sleeve, clutch housing, spline and clutch center sleeve washer onto the main shaft;

CAUTION: Evenly lubricate the inner ring of the clutch sleeve with grease.

2. Install the gear ring into the corresponding slot of the main shaft;
3. Assemble the bearing and push rod to the clutch in turn,

Installation of right crankcase cover

1. Remove the old right crankcase gasket, install the new gasket, the right crankcase cover assembly in place and with 10 GB/T16674 small disk bolts M6 $\times$ 40 fastening, 1 GB/T16674 small disk bolts M6 $\times$ 50 fastening, **fastening torque: 11 ~ 13N-m**
2. Install the cylinder inlet pipe and pipe hoop, and fasten the pipe hoop.

5.6 Crankcase disassembly and assembly

1.Standards for the use of spare parts	5-34
2.Troubleshooting	5-35
3.Crankcase, crankshaft, variable speed drive, balance shaft disassembly, assembly	5-35

1. Standards for the use of spare parts

Unit: mm

Item			Specification mm	Limit mm
Gearshift fork	Fork inner diameter		$\phi 12.00 \sim \phi 1.018$	$\phi 12.020$
	Jaw thickness		$4.925 \sim 5$	4.8
Shift fork shaft	Fork shaft outer diameter		$\phi 11.966 \sim \phi 11.984$	$\phi 11.95$
	Convexity		0.010	----
Crankshafts	Connecting rod small head inner diameter		$\phi 16.021 \sim \phi 16.028$	$\phi 16.04$
	Connecting rod big end side clearance	Axis	$0.1 \sim 0.3$	0.5
		Radial	$0.008 \sim 0.016$	0.02
Balance axis	Shaft diameter		$\phi 19.98 \sim \phi 19.993$	$\phi 19.96$

2.Troubleshooting

Trouble shifting

1. Shift fork bent
2. Shift fork shaft bent

Transmission jumps out of gear

- 1.Shift gear pawl has wear
- 2.Shift fork is bent or worn
3. Shift fork shaft bent

Noisy crankshaft

- 1.Connecting rod big end bearing has wear
- 2.Bending of connecting rod
3. Crankshaft bearings are worn

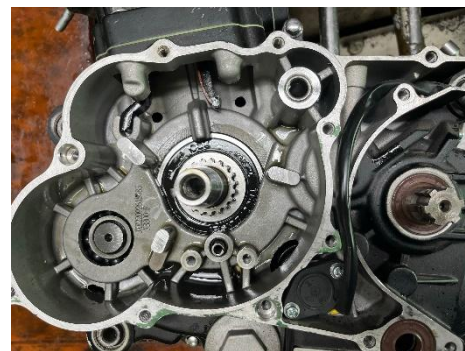
Noisy shift gears

- 1.Shift gear has wear
- 2.Spline shaft has wear

3.Crankcase, crankshaft, variable speed drive, balance shaft disassembly, assembly

Disassembly of the crankcase

- 1.Place the engine left crankcase facing up.
- 2.Remove 8 GB/T16674 small disk bolts M6×50, 1 GB/T16674 small disk bolt M6×70, 1 GB/T16674 small disk bolt M6×100 fastening screws.
- 3.Place the right crankcase upward, remove the right crankcase, remove the sealing paper gasket, and remove the 2 locating pins.



Crankshaft/balance shaft/main and secondary shaft removal

- 1、 Remove the fork shaft, shift drum, fork, and main and secondary shafts in order.
- 2.Remove the crankshaft assembly.

CAUTION:

Make sure that no parts can be left behind when picking up the main and secondary shaft assemblies.

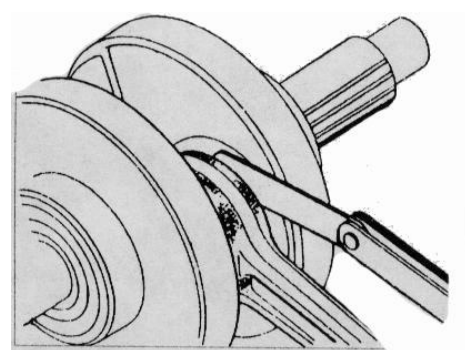


Crankshaft inspection

- 1.Place the crankshaft bearing on the V-iron.
- 2.Measure the radial runout of the crankshaft shaft diameter with a percentage gauge.

Measure the connecting rod big head side clearance with a plug gauge.

Repair limit value: 0.5 mm



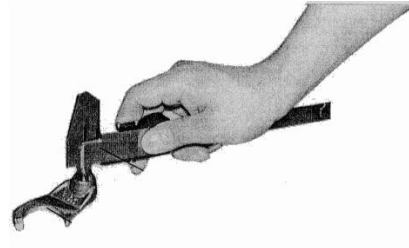
Inspection of left and right case bearings and oil seals

1. Check whether all the bearings of the left and right boxes are rotating flexibly; if they are not rotating flexibly or there is the phenomenon of hairpin, then the bearings of the same type should be replaced.
2. Check whether the oil seals of the sub-shaft and gearshift arm on the left case are normal; if they are damaged, the same type of oil seals should be replaced.

Shift Fork/Shift Fork Shaft/Shift Drum Inspection

Check each shift fork for wear, bending, or any other malfunction, and measure the inner diameter of the shift fork.

Fork repair limit value: $\phi 12.020$ mm



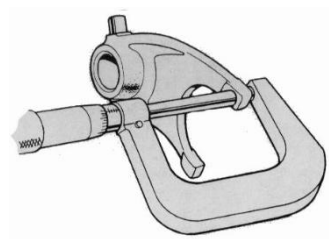
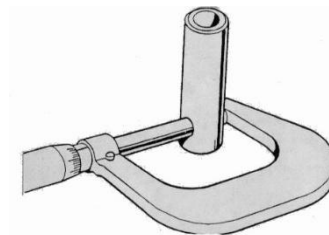
Check the fork shaft for wear, destruction or bending, and measure the outer diameter.

Fork shaft repair limit value: $\phi 11.95$ mm

Measure the thickness of the fork jaw.

Repair limit value: 4.8 mm

Check the surface and groove of the gear drum for wear or damage.



Inspection of main and secondary shaft assemblies

Check the gears of the main and sub-shaft assemblies for excessive or abnormal wear, and check the circlips between the gears for deformation and detachment.

Oil filter inspection

1. Check the cleanliness of the oil filter; poorly cleaned oil filters should be flushed with gasoline.
2. Check whether the oil filter is damaged; if it is damaged, replace it with a new one.

Oil filter assembly

1. Install the oil filter and spring into the corresponding holes of the left body in order.
2. Install the oil filter cover.

CAUTION:

Oil filter cover torque: (15 to 20) N-m.

Transmission/crankshaft/balance shaft assembly

1. Install the crankshaft and balance shaft together into the corresponding holes in the right body.

CAUTION:

Crankshaft active teeth and balance shaft drive teeth need to be fitted according to the points. For details, see the picture on the right.

2. Install the main and secondary shaft assemblies, shift drum, and fork into the corresponding holes in the left body, and then assemble the fork shaft to the corresponding position.

CAUTION:

2. The fork marked --R is mounted on the right body side of the secondary shaft;

3. The fork marked --L is mounted into the left body side of the secondary shaft;

4. The fork marked as --C is mounted into the main shaft.

CAUTION

1. Assemble the locating pins into the corresponding holes of the left box body, and assemble the new sealing paper gasket.

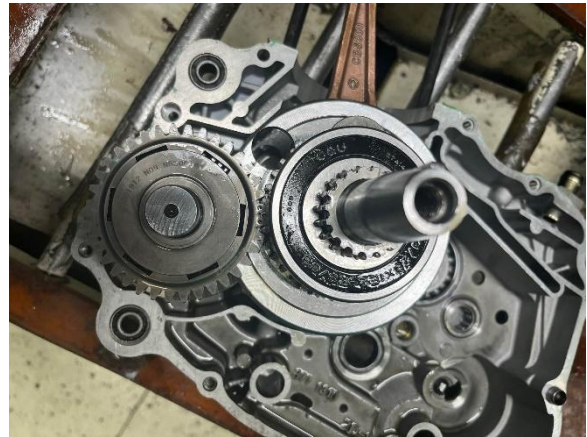
2. Close the left box body on the right box body.

CAUTION

The left crankshaft bearing is an interference fit with the left crankshaft bore and needs to be installed as a hot assembly, i.e., the left crankshaft bore needs to be baked hot before installing and then closing the left case onto the right case.

3. Put 8 GB/T16674 small disk bolts M6×50, 1 GB/T16674 small disk bolt M6×70, 1 GB/T16674 small disk bolt M6×100 through the corresponding bolt holes of the left body and fasten them;

CAUTION: Tightening torque of full case bolts: 11 to 13 N-m.



Assembly
according to points

6 Vehicle chassis

Inspection Information.....	6-2
6.1 Troubleshooting.....	6-3
6.2 Front wheel.....	6-3
6.3 Braking system.....	6-5
6.4 Steering system.....	6-7
6.5 Front Suspension.....	6-8
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6.7 Cooling system.....	6-14

Inspection Information

CAUTION

- When overhauling the front wheels and suspension system, the frame must be securely supported before work is performed.
- Refer to the appropriate section for overhaul and inspection of lights, instruments and switches.
- Do not use excessive force on the wheels. Caution should be taken not to damage the wheels.
- When removing tires from rims, use special tire and rim protectors to avoid damage to the rims.

Inspection benchmarks

Item		Specification	Limit
Rim	Axial run-out	0.8mm	2.0mm
	Radial run-out	0.8mm	2.0mm
Wheel	Residual groove	—	3mm
	Pneumatic	Front wheel: 200(29PSI) Rear wheel: 250(36PSI)	—
Front brake	Brake handle clearance	2-6mm	—

Tightening torque

Item	Specification	Torque
Front brake caliper mounting bolts	Hexagon socket head flange M8×45 half threaded	25-30N·m
Steering column nut	Aluminum silver M25×1×H9	35-40N·m
Front disc brake disk mounting bolts	External hexagonal opposite side M6×20	10-12N·m
Front Axle Mounting Nut	Hexagonal flange M16×1.5×H14	80-90N·m
Flat Fork Axle Mounting Nut	Hexagonal flange self-locking nut M16×1.5×H14.8	80-90N·m
Rear brake disk mounting bolts	Hexagon socket opposite side M6×20	10-12N·m
Rear Sprocket Mounting Screw	Hexagon socket countersunk head screw M8×31 10.9 grade	34-41N·m
Rear axle nut	Hexagonal self-locking nuts M14×1.5	80-90N·m
Rear brake pump mounting bolts	Hexagon socket half-round head M6×20	10-12N·m

Tools

Hexagon socket m6	Torque Wrenches
Open-end ratchet s8	Pneumatic wrench s12
Open-end wrenches s10-s12	Pneumatic wrench s14
Open-end ratchet s14	Socket wrench m12
Phillips screwdriver	Socket wrench m14
Flat blade screwdriver	Nose pliers
Hammers	

6.1 Troubleshooting

A. Steering weight

- 1.Damage and wear of steering bearing
- 2.Bearing inner and outer seat ring damage, wear and tear
- 3.Deformation of steering column
- 4.Low tire pressure
5. Tire wear

B.The steering handle shaking

- 1.Damage to steering bearings, poor fastening
- 2.Right and left shock absorber mismatch
- 3.Tires skewed
- 4.Frame deformation
- 5.Tire wear, bias grinding
- 6.Wheel bearing shaking

C.Front Wheel Hopping

- 1、 Deformed wheel rim
- 2、 Bad wheel bearing
- 3、 Bad tires
- 4、 Improper wheel balance
5. Poor fastening around the wheel axle

D.the wheel rotation is not flexible

- 1.Bad wheel bearings

2.Improper installation of the front wheel

- 3.Brake oil pipe, cable trip

E.the front suspension is too soft

- 1.Front shock absorber elasticity weakening
- 2.Tire pressure is too low

F. the front suspension is too hard

- 1.Front shock absorber damage
- 2.Tire pressure is too high

G. the front shock absorber rattles

- 1、 Bad front shock absorber
- 2、 Shock absorber fastening parts loose

H. poor braking effect

- 1.Poor brake adjustment
- 2.Damaged brake disc surface
- 3.Worn brake pads

6.2 Front wheel

Disassembly

- 1.Set the front wheel up with a tool and make sure no force is applied to the front wheel
- 2.Remove the front axle No.1
- 3.Remove the retaining nut mounted on the pump under the front brake No.2
- 4.Remove the front disc brake No.3
- 5.Remove the front wheel No.4



Rear wheel removal

- 1.Raise the rear wheel with a tool and make sure that no force is applied to the rear wheel.
- 2.Move the rear wheel slightly forward to remove the chain 1
- 3.Remove the rear axle mounted on the rear flat fork 2
- 4.Remove the rear disc brake 3
- 5.Remove the rear wheel assembly 4



Disc brake disc removal

- 1.Remove fixed bolts No.1 (6 in total)
- 2.Remove the disc brake disk No.2

Assembly

Installation is performed in the reverse order of disassembly.

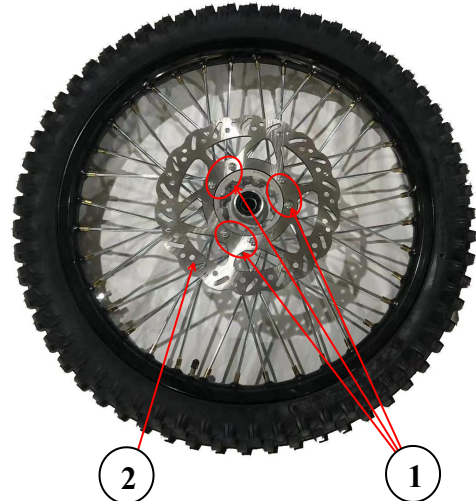
Axle mounting nut torque: 80N-m to 90N-m

Brake disk mounting bolt torque : 25N-m to 30N-m

(Apply thread fixing agent)

Inspection

Thickness of brake disc: less than 3.5mm, replace with new disc.

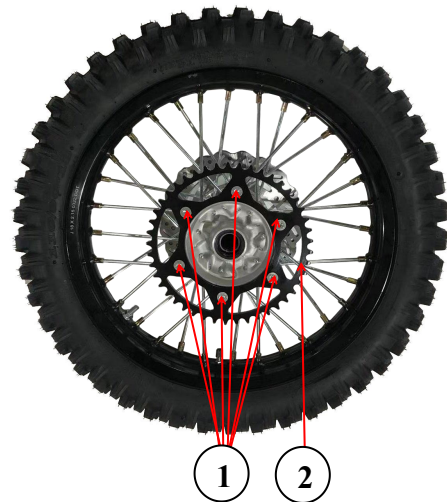


Removal of sprocket disk

- 1.Remove the fixing bolts No.1
- 2.Remove the sprocket disk No.2

CAUTION

The mounting bolts of the disc and sprocket disk have thread fasteners that are not easy to remove, so use a hair dryer to heat the bolts before removing them.



Inspection of rims

Check rim No.1 for damage, deformation, or scars, and replace if abnormal. Turn the wheel slowly and measure the runout of rim No.1 with a micrometer.

Limit of use: Axial: 2.0mm

Radial: 2.0mm

Installation of rims

Pressing the rim No.2 into the tire on a special machine



6.3 Braking system

Front caliper removal

- 1.Remove the 2 bolts mounted on the front shock absorbers No.1
- 2.Remove the caliper No.2

Inspection

Observe the brake caliper for cracks and oil leakage at each fastening, replace if available.

Assembly

Brake caliper fixing bolt No.2 Torque:
10N-m~12N-m



Shoe block replacement

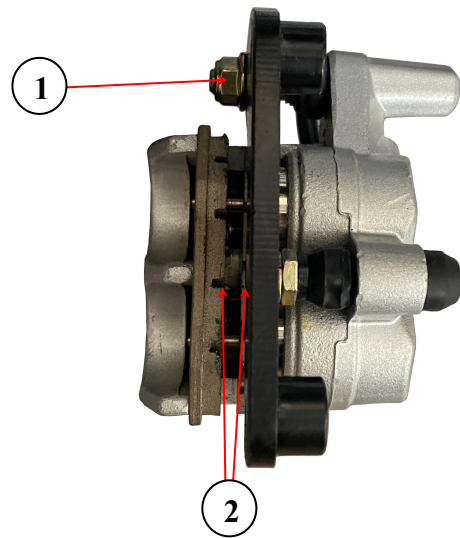
- 1.Loosen the fastening bolt No.1
- 2.Remove the hoof block No.2

Inspection

Measure the thickness of the friction layer No.2 of the front shoes. When the thickness of the friction layer No.2 of the shoes is less than or equal to 1 mm, replace both brake pads with new ones at the same time.

Assembly

Installation in reverse order of removal



Front brake handbrake pump removal

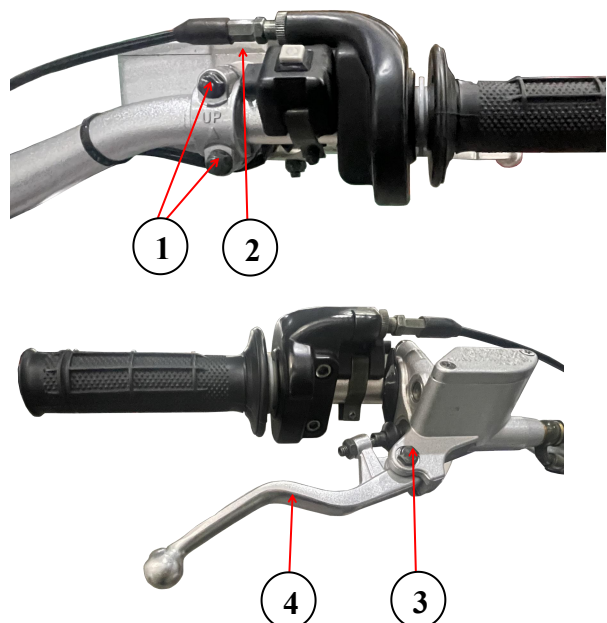
- 1.Remove bolt No.1
- 2.Separate the front brake handbrake pump No.2 from the steering handle, it is not necessary to remove the front brake handbrake pump from the body of the vehicle when not replacing the brake pump assembly

Replacement of handles

- 1.Remove the handle fixing bolt No.3
- 2.Remove the brake handle No.4

Assembly

Installation in reverse order of removal



Rear brake foot brake pump

Disassembly

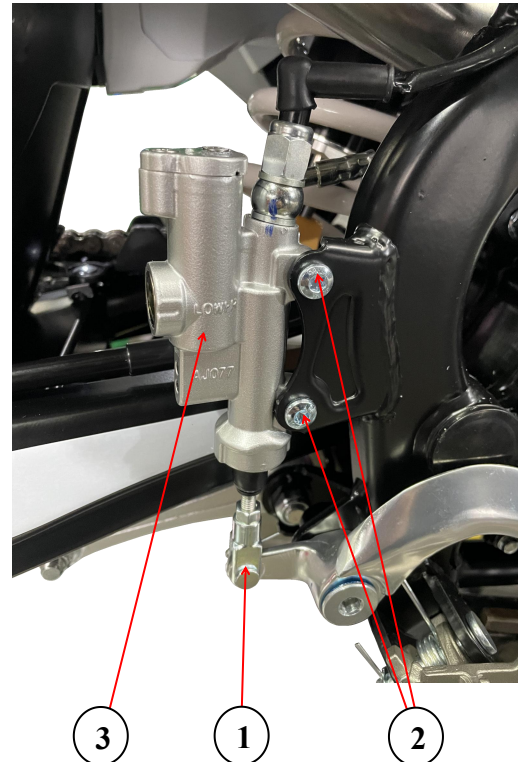
- 1.Remove cotter pin and pin No.1
- 2.Remove the bolt NO.2
- 3.Pull out the rear brake switch (→1.7)
- 4.Remove the rear brake foot brake pump No.3

Assembly

Installation in reverse order of removal

CAUTION: The direction of the oil pipe on the car body, according to the first chapter of the cable, wire class alignment diagram, must ensure that the brake oil circuit is smooth brake system assembly is installed, must check the braking force, if the front and rear can not be linked to control the braking system, check the joints are connected to check the amount of brake fluid in the brake oil cup is between the upper and lower limits of the scale line, if necessary, add the Huayang recommended braking fluid to the upper and lower limits of the scale line. Check the brake switch and whether it works normally.

Bolt No.1 torque requirement: 10-12N-m



Removal of the brake pedal

Disassembly

- 1.Remove the spring No.1
- 2.Remove the cotter pin etc. for the pedal and rear disc brake oil pump No.2
- 3.Remove the fixing bolts No.3
- 4.Remove the brake pedal No.4

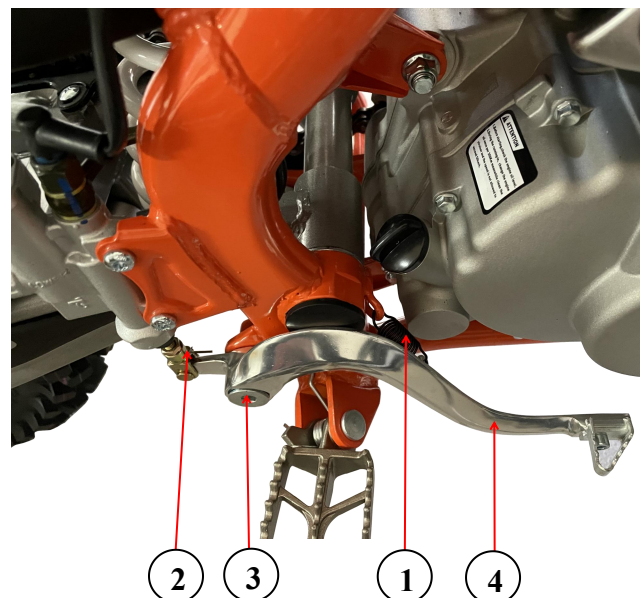
CAUTION

Place the pedal head 5° down parallel to the right foot pedal

Brake pedal travel should be 2-5mm.

Assembly

Installation in reverse order of removal



6.4 Steering system

Steering handle removal

Right Handlebar Assembly Removal

- 1.Remove the bolt securing the throttle seat
No.1 Remove the throttle knob
- 2.Remove the bolt holding the front disk
brake pump No.2
- 3.Remove the bolt holding the starter switch
No.3

Removal of the left handlebar assembly

- 1.Remove the bolt securing the kill switch
No.4
- 2.Remove the bolt holding the clutch lever
No.5
(There is glue inside the left handlebar
cover)

- 3.Remove the four bolts securing the upper
pressure block No.6
- 4.Remove the upper pressure block No.7
- 5.Remove the steering handle No.8

CAUTION: The main cable assembly, throttle cable, brake hose, and cable routing should be correctly arranged according to the diagram (→ 1.7)

Assembly

Steering handle assembly in reverse order of disassembly

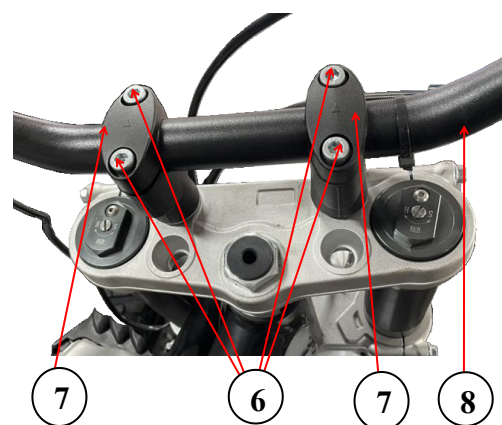
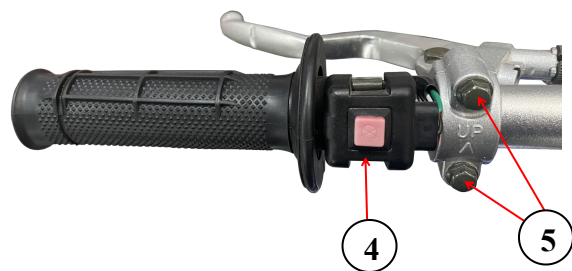
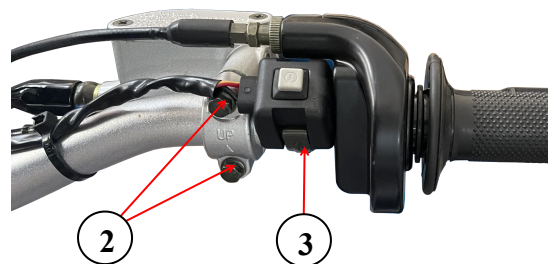
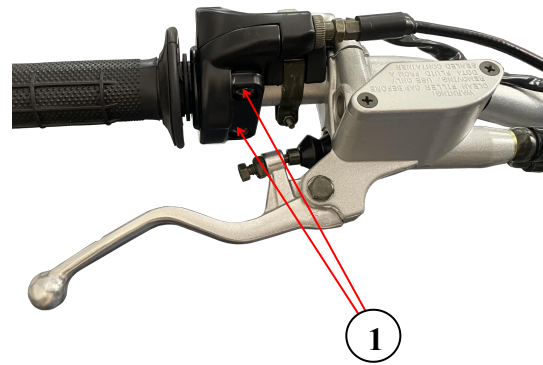
Tilt the steering handle back 3-5° from the ground after installation.

Turn off switch is mounted vertically facing upwards at 45° .

Install the starter switch 150-153mm to the left of the steering column.

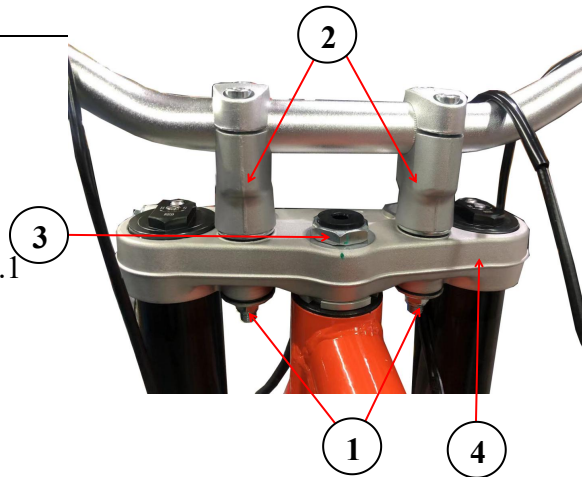
mm to the left of the steering column

The arrow of the pressure block is facing upwards.



Steering gear assembly removal

- 1.Start by removing the front wheel, front mudguard and front shock absorber
- 2.Remove the steering handle
- 3.Slightly loosen the double head bolts No.1
- 4.Remove the lower presser counterclockwise by hand No.2
- 5.Remove the cover nut No.3
- 6.Remove the upper coupling plate No.4
- 7.Remove the locking nut No.5
- 8.Remove the lower coupling plate No.6



Assembly

Installation in reverse order of removal

CAUTION

Do not lose gaskets and dust caps during disassembly.

The lower plate contains a directional column, do not disassemble it unless it is damaged.

Torque for large cap nut: 35-40N-m

Torque for double head bolts: 49-59N-m

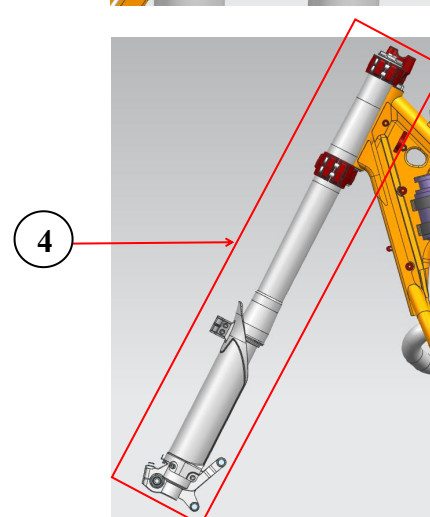
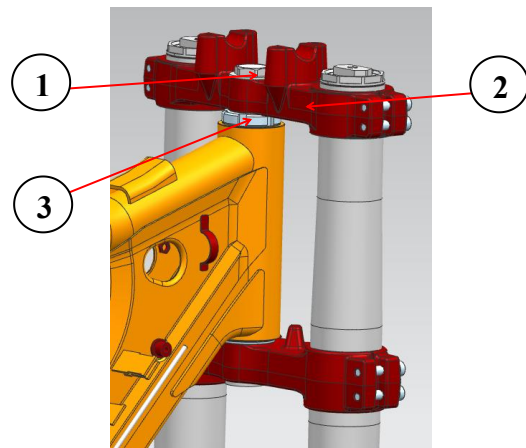


6.5 Front suspension

Front suspension assembly removal

CAUTION: When servicing the suspension system, park the vehicle on a level surface and support the front of the vehicle firmly with a lift table

- 1.Remove the headlight assembly (→7.1)
- 2.Remove the front mudguard (→2.12)
- 3.Remove the steering handle assembly (→6.4)
- 4.Remove the front wheel (→6.2)
- 5.Remove the front brake caliper
- 6.Remove the large cover mother No.1
- 7.Remove the upper coupling plate No.2
- 8.Remove the lock nut No.3
- 9.Remove the front suspension assembly No.4



Front shock absorber

Disassembly

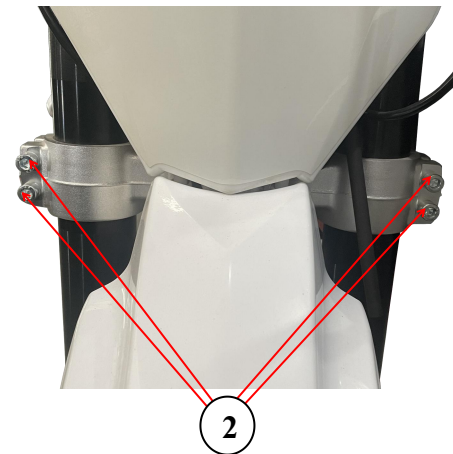
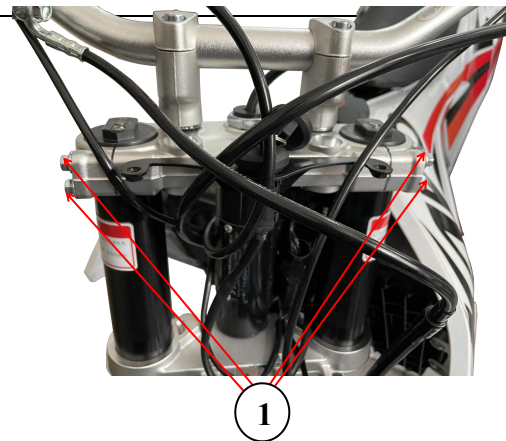
- 1.Remove the bolts securing the upper plate No.1
- 2.Remove the bolts securing the lower coupling plate No.2

CAUTION

The gap at the upper and lower joint plate, before removing the pre-shock should pay attention to the use of wooden strips to card the gap, otherwise it will be difficult to install the shock again when braced.

The bottom of the shock absorber red cover is flush with the plane of the upper plate.

Bolt torque: 25-30 N.m.



- 3.Remove the front brake hose from the disc brake hose clamp No.3
- 4.Remove the bolts securing the front brake lower pump No.4
- 5.Remove the front brake cylinder No.5
- 6.Remove the front axle No.6
- 7.Remove the front wheel No.7
- 8.Remove the front shock absorber No.8

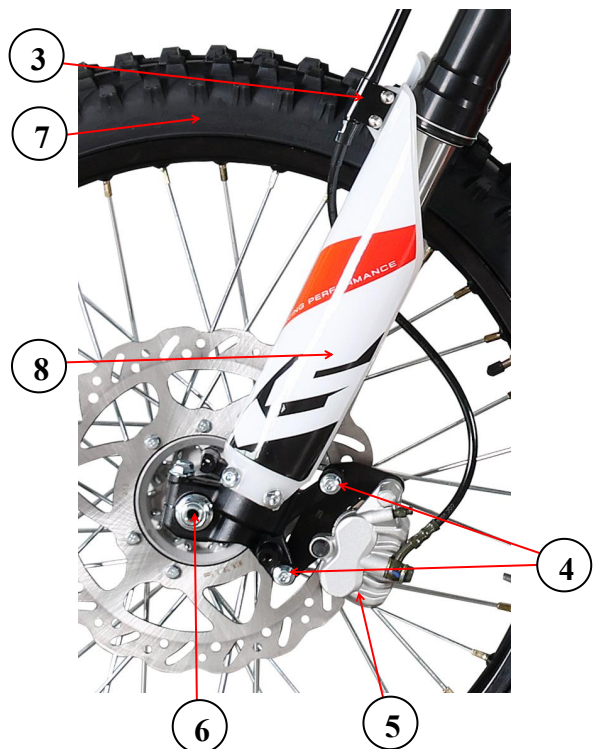
Assembly

Installation in reverse order of removal

CAUTION

The difference between the left and right front shock absorbers is only in the tube clamps and disc brakes.

If you need to remove the front shock absorber guards, please refer to (→2.13).



6.6 Rear Suspension

Rear attachment beam disassembly

- 1.Remove the seat cushions and coverings (→ Chapter 2 Vehicle coverings)
- 2.Remove the chain, air filter and other electrical connectors.
- 3.Remove the upper and lower fixing bolts of the rear attachment beam No.1(two on each side)
- 4.Remove the rear attachment beam assembly No.2.

Assembly

Installation in reverse order of removal

CAUTION

See Chapter 2 for details on plastic replacement on rear attachment beams

Torque requirement for this chapter: 20-30 N.m

Rear shock absorber removal

When servicing the suspension system, the vehicle body should be suspended before dismantling the rear suspension system, otherwise the vehicle body will fall down due to lack of support.

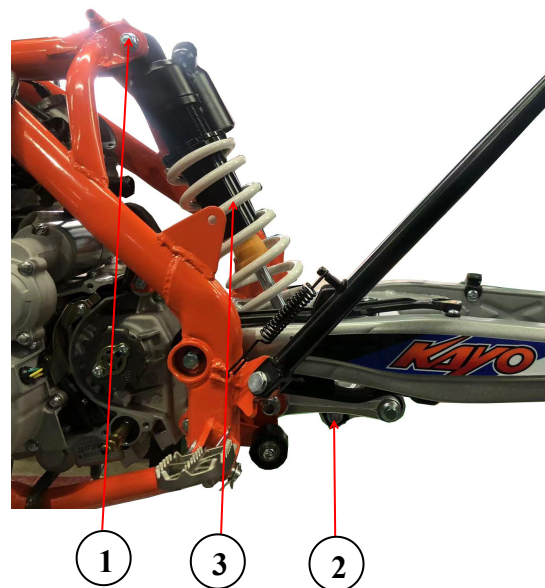
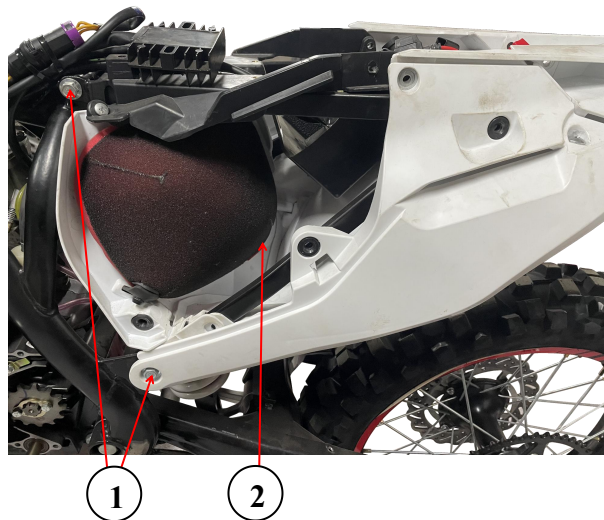
1. Park the vehicle on a level surface and stabilize the rear support with a service chair.
2. Remove the seat cushion, rear upper left and right upper guards, lower left guard, lower right guard, rear attachment beam assembly, air filter assembly and muffler.
3. Loosen the U-shaped rocker arm and triangular rocker arm connecting bolts.
(Do not remove)
4. Remove the rear shock absorber mounting bolts on the body No.1.
5. Remove the rear shock absorber mounting bolt on the rocker arm No.2.
- 6.Remove the rear shock absorber after making sure there is no interference 3

Inspection

Inspect the removed shock absorber and adjust the exhaust screws to the proper hardness

Assembly

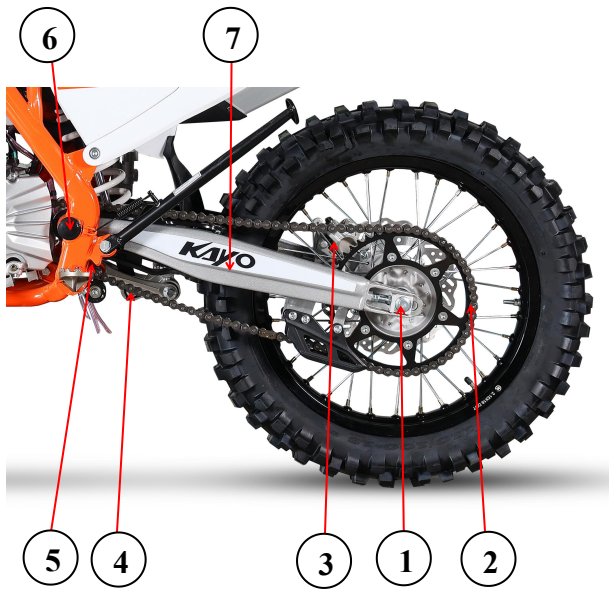
Installation in reverse order of removal



Removal of rear flat fork

When repairing the rear fork, the vehicle body should be suspended in the air before dismantling the rear fork, otherwise the vehicle body will fall down due to the lack of support.

1. Park the vehicle on a level surface and stabilize the rear of the vehicle with a service chair.
2. Remove the rear axle 1 that connects the tire to the rear fork.
3. Remove the chain No.2
4. Remove the rear disc brake and rear wheel No.3.
5. Remove the bolts of the triangular rocker of the U-shaped rocker No.4.
6. Remove the bolt that fixes the swingarm to the frame No.5.
7. Remove the flat fork plug and remove the flat fork axle which fixes the rear flat fork No.6
8. Remove the rear flat fork assembly No.7



Assembly

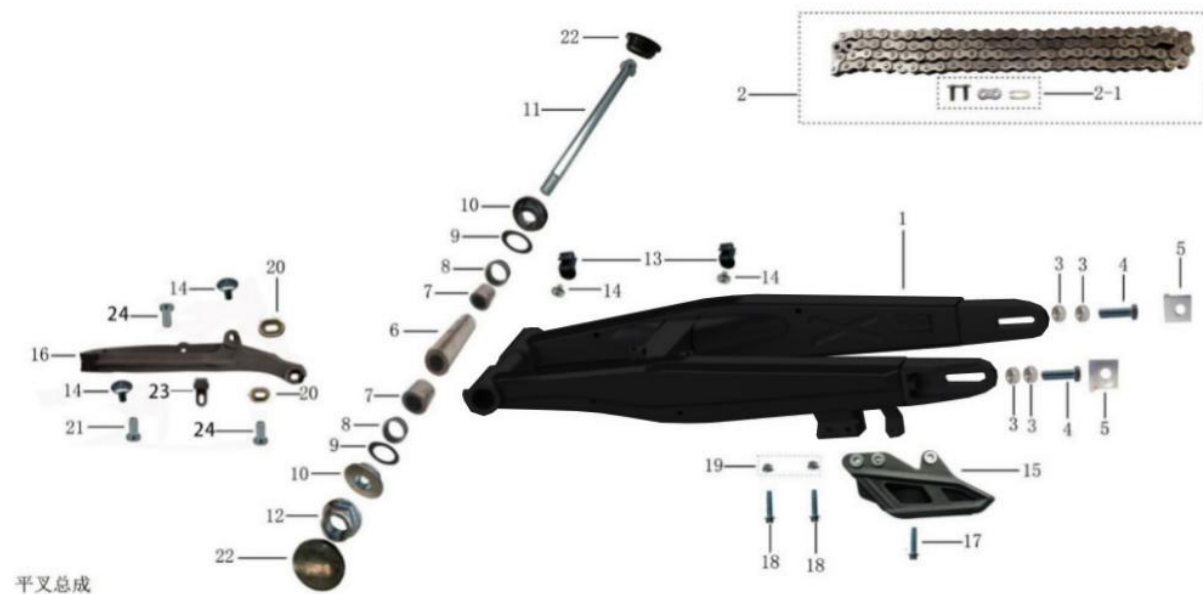
Installation in reverse order of removal

CAUTION

The rear axle is threaded from right to left
Rear flat fork torque requirement 80-90N-m

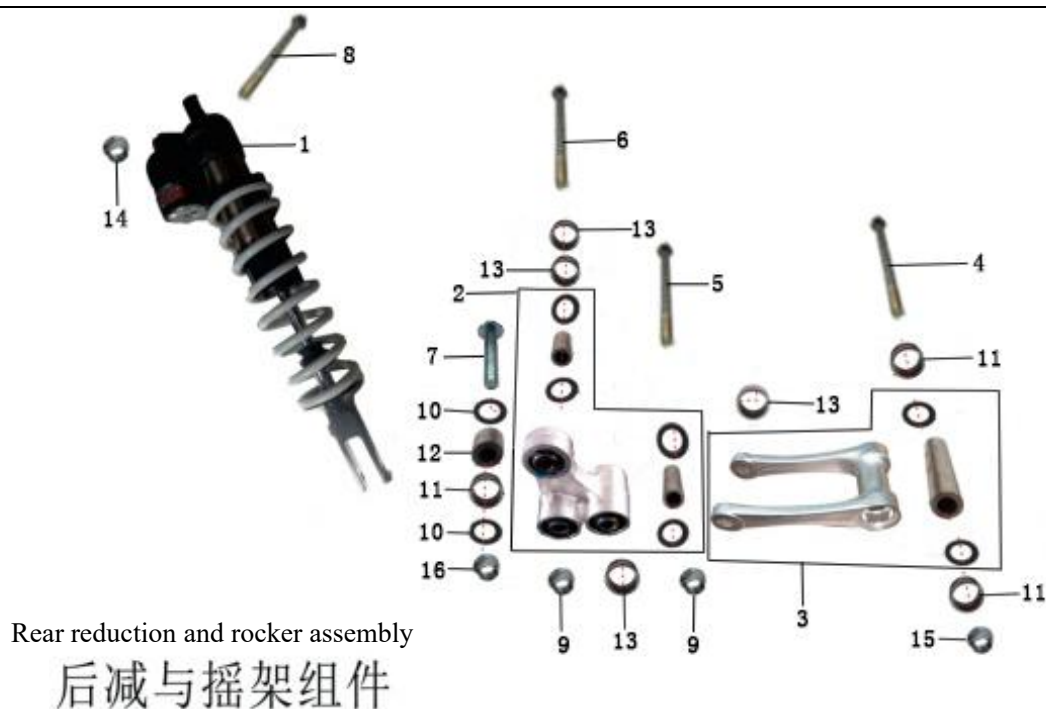
Inspection

The vehicle's rear flat fork assembly and the rear reduction and rocker assembly are shown as follows



Flat Fork Assembly

Item	Specification	Quantity	Item	Specification	Quantity
1	Steel flat fork	1	13	Rear disc brake hose clamp	2
2	Chain	1	14	Phillips large flat head screws white zinc TM6*12	3
2-1	Chain joints	1	15	Chain stopper	1
3	Hexagonal counter nuts zinc blue M8	4	16	Chain guide	1
4	Hexagon socket set screws M8*70S13 all thread	2	17	Hexagon socket head small flange bolts zinc plated M6*16	1
5	Aluminum adjustable chain block	2	18	Hexagon socket head bolts with flange white zinc M6*60	2
6	Bushings white zinc $\Phi 18*22*H125$	1	19	Hexagonal flange self-locking nuts MT M6	2
7	Flat fork bushing $\Phi 17.5*22*H30$	2	20	Basin gasket	2
8	Needle roller bearing	2	21	Phillips pan head machine screws white zinc M6*12	1
9	Flat fork O-ring $\Phi 28*3.1$	2	22	Flat fork plug	2
10	Step bushings in white zinc $\Phi 17*40*H12.5$	2	23	Panel upper bracket	1
11	White zinc flange $\Phi 17*246*M16$	1	24	Phillips pan head machine screws white zinc M6*16	2
12	Hexagonal flange self-locking nut white zinc M16*1.5	1	25		



Item	Specification	Quantity	Item	Specification	Quantity
1	Rear shock absorber assembly	1	9	Hexagonal flange self-locking nut white zinc M12*1.25	2
2	Triangle rocker arm assembly	1	10	Oil seals	2
3	U-shaped rocker arm assembly	1	11	Full complement needle roller bearings	3
4	Flange Shafts White Zinc $\Phi 12*110*M12*1.25mm$ 10.9 grade	1	12	Rocker arm bushings	1
5	Hexagon socket small head flange bolts white zinc M12*90*1.25	1	13	Full complement needle roller bearings	4
6	White zinc flange $\Phi 12*95*M12$	1	14	Hexagonal flange self-Locking nut white zinc M10*1.25	1
7	T-series oval head bolts with white zinc M10*42*1.25	1	15	Hexagonal self-locking nuts zinc plated M12*1.25	1
8	Hexagon socket head small head flange bolts white zinc M10*70*1.25	1	16	Hexagonal flange self-locking nuts zinc plated M10*1.25	1

Inspection of the rear flat fork after disassembly

- Check the chain to see if it is damaged, if so replace it with a new chain
- Check the rear axle for bends or damage, if so, replace with a new rear axle
- Check the steel flat forks and replace them with new ones if they are damaged.
- Check the chain guide bushings and replace them with new ones if they are damaged.
- Check the rest of the pieces for damage, if so, replace with new pieces

Assembly: Proceed in the reverse order of the decomposition of the rear flat fork

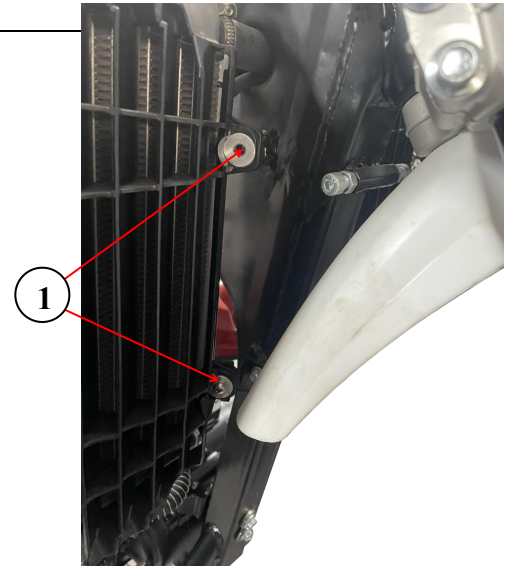
CAUTION: Apply Mobil XHP222 grease to both ends of the flat fork shaft when installing the bushings.

6.7 Cooling system

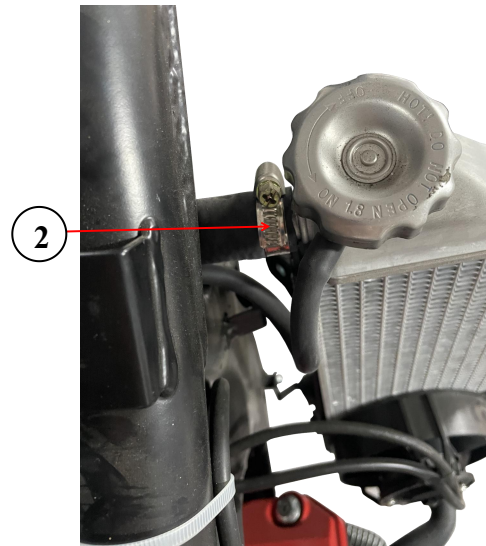
When servicing the cooling system,
it is necessary to remove the front left and rightguards.

Right water tank

1.Remove the fixing bolts No.1



2.Remove the clamps connecting the left
and right tanks No.2



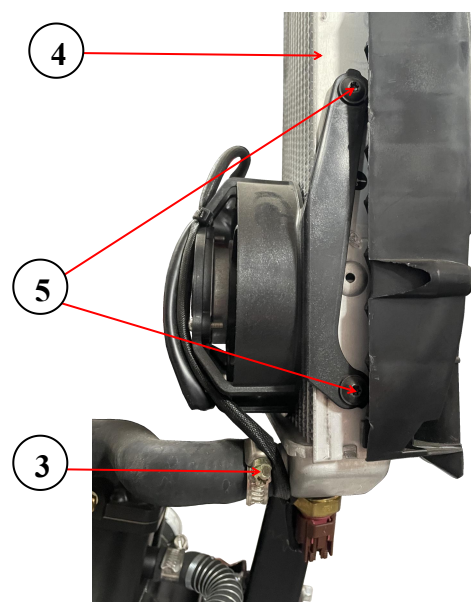
3.Remove the right tank clamp to the
engine No.3

4.Remove the fan connector

5.To remove the tank No.4

6.To remove the fan

Remove the fixing bolts No.5 (two on
the left and two on the right).

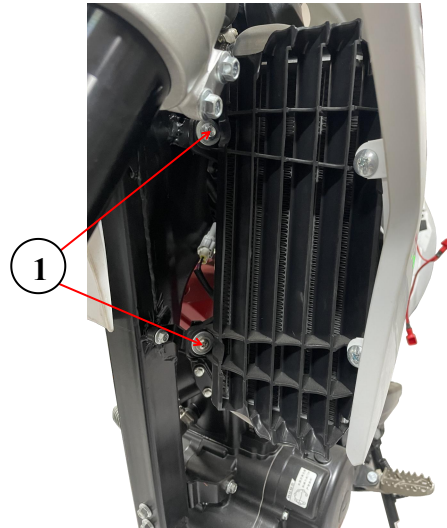


Assembly

In reverse order of disassembly

Left water tank

1.Remove the fixing bolts No.1



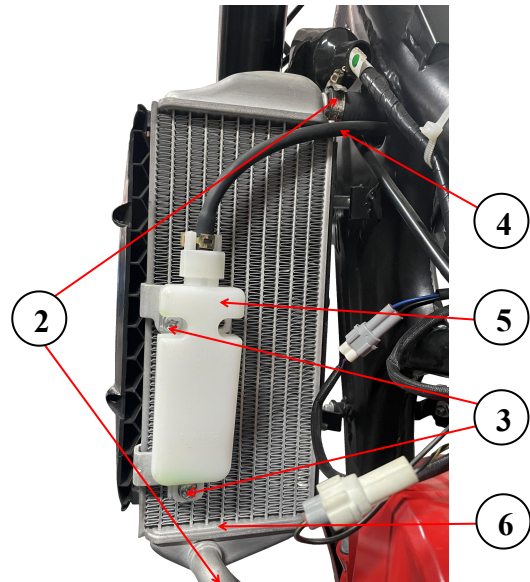
2.Remove the clamps connecting the left and right tanks No.2

3.Remove the fixing bolts that secure the water bottle No.3

4.Pull out the fuel line No.4

5.Remove the sub-tank No.5

6.Remove the left tank No.6



Assembly

In reverse order of disassembly

7 Signaling and lighting systems

Maintenance Instructions.....	7-1
7.1 Headlights.....	7-2
7.2 Taillight.....	7-4
7.3 Electric door lock.....	7-5
7.4 Battery.....	7-6

Maintenance Instructions

When carrying out inspection work, the whole vehicle can be energized; when carrying out dismantling and installation work, the whole vehicle should be de-energized first, and ensure that your hands are dry.

Specification of each piece

Item	Specification	Quantity	Note
Front headlight	White Lampshade w/Built-in Driver MT-LED Bulb	1	Bulbs can be replaced
Rear tail light	Black/Cord length 600	1	Whole replacement
Battery	GTZ7S 6.5AH	1	
Electric door locks	Three gears/includes waterproof insert	1	

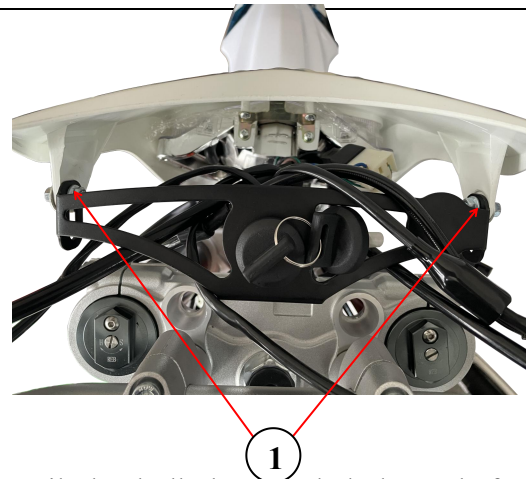
7.1 Headlights

CAUTION

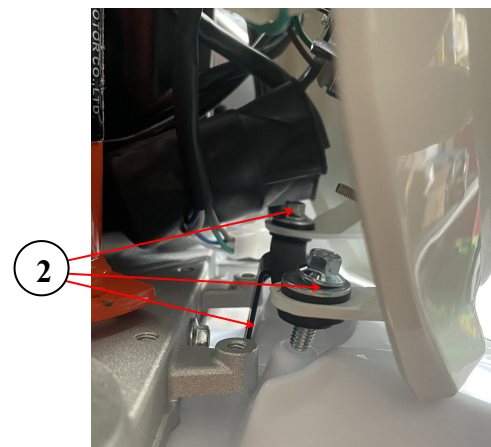
The headlight bulb has a high power and the temperature is very high when the light is on.

When the light is on, the temperature is very high, so if you touch it right after turning it off, you will be burned.

You may be burned if you touch the bulb immediately after it is turned off. Wait until the bulb has cooled down before working on it.



- 1.Remove the bolts securing the upper headlight bracket No.1
 - 2.Remove the bolts securing the lower coupling No.2
 - 3.Remove the headlight connector No.3
- The headlight assembly can be removed.



- 4.Remove the headlight rear fixing bolts No.4
- 5.Remove the headlight front fixing bolts No.5
- 6.Remove the headlight No.6

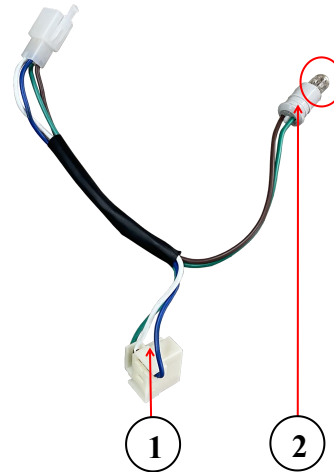
Assembly

In reverse order of disassembly

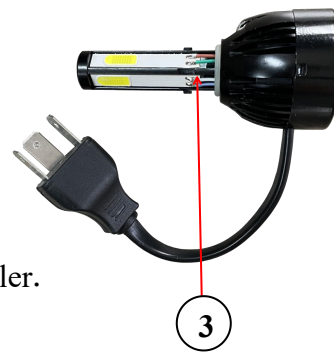


Replacement of light bulbs

After removing the headlight, pull out the connection with the high beam
Insert No.1, pull out the holster No.2 directly and replace the bulb at the red circle.
The bulb can be replaced at the red circle.。



After removing the headlight, simply turn the high beam counterclockwise to remove it, if any damage needs to be replaced, please contact your local Huayang dealer for replacement, please contact your local Kayo dealer.



Assembly

In reverse order of disassembly

7.2 Taillight

Disassembly

- 1.Remove the bolts fixed to the rear mudguard No.1
- 2.Remove the cushion
- 3.Unplug the rear taillight connector No.2.
- 4.Remove the left and right reflector fixing nuts No.3
5. Remove the left and right reflectors No.4.

Tail light can be removed



Assembly

Proceed in reverse order of disassembly

CAUTION

The rear tail light connector is normally wrapped with insulating tape. tape.

The rear taillight is a one-piece structure.

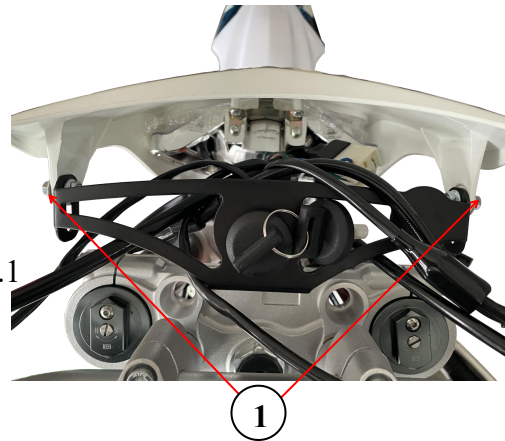
If the tail light is damaged, the entire rear tail light can only be replaced. assembly



7.3 Electric door lock

Disassembly

- 1.Remove the bolts securing the headlight No.1
- 2.Remove the bolts securing the upper plate No.2
- 3.Unplug the door lock connector No.3



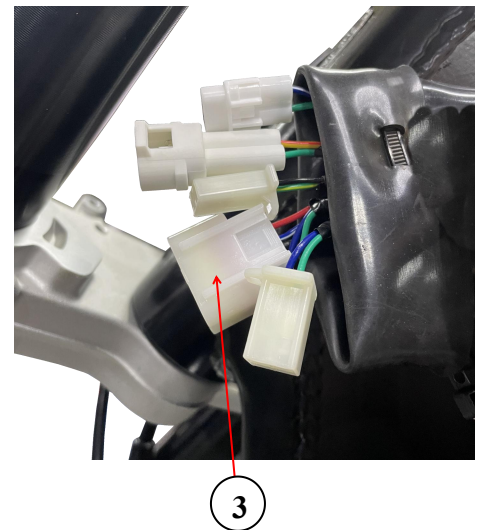
- 4.Remove and install on the upper door lock.
5. Find the latch on both sides of the door lock as shown in the picture. Press down and take out the latch from bottom to top. Remove the electric door lock No.4

Assembly

Proceed in reverse order of disassembly

CAUTION

Electric door lock connector No.3 is wrapped in a black rubber sleeve at the front of the car, remember to put it back on after disassembling and assembling to prevent dirt.



7.4 Battery

CAUTION

Wear protective equipment, such as gloves, goggles, etc., before dismantling the battery to avoid other harmful substances on the skin.

Goggles, etc., before disassembling the battery to avoid other harmful substances to the skin and eyes.

skin and eyes.

When disassembling the battery, you must first turn off the engine and the power supply. During the disassembly process, the disassembly tools should not touch the positive and negative terminals directly at the same time.

During disassembly, the disassembly tools should not touch the positive and negative terminals directly at the same time, which may cause a short circuit of the battery.

When disassembling, first remove the negative terminal connection cable, then remove the positive terminal.

When installing the battery, install the positive terminal first and then the negative terminal.

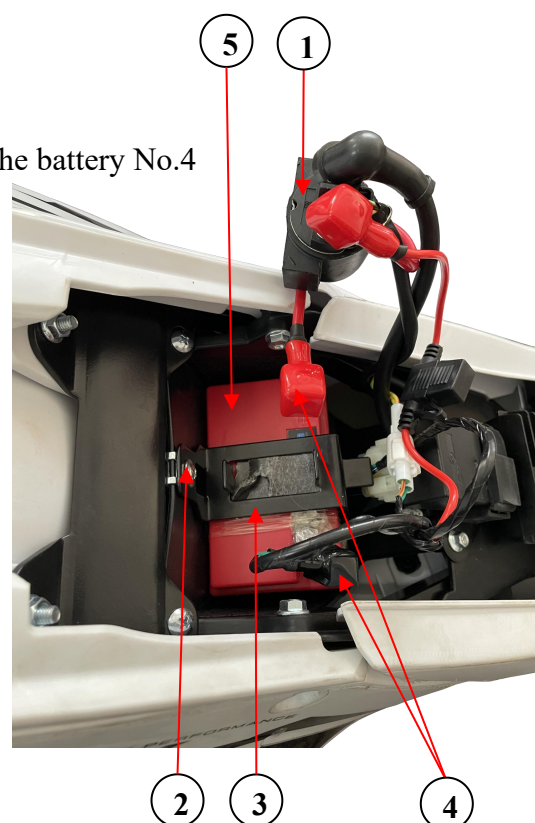
When installing the battery, install the positive terminal first and then the negative terminal.

Disassembly

- 1.Remove the cushion
- 2.Take the relay out from above the battery No.1
- 3.Remove the bolt on the battery holder No.2
- 4.Remove the battery holder No.3
5. Pull off the black and red quadrilateral sheaths.
- 6.Remove the positive and negative power cables from the battery No.4
7. Remove the battery No.5

Assembly

Installation in reverse order of removal



Appendix

Electrical Schematic

