KAYO MOTO

AT125-D

Maintenance Manual

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ZHEJIANG KAYO MOTO CO,.Ltd
2024 07

Description of the preparation

This service manual describes in detail the maintenance and adjustment procedures, disassembly and assembly points, inspection and repair points, troubleshooting methods and maintenance technical data of AT125-D ATV, and is accompanied by detailed graphic information to guide the operation.

Please read this manual carefully and follow the standardized operation procedures for maintenance, which can effectively extend the service life of each component, improve the engine performance and the reliability of the whole vehicle.

The first chapter introduces the general operation matters, tools, basic techniques and maintenance parameters.

The second chapter introduces the assembly and disassembly operation of the whole vehicle cover parts.

Chapter 3 introduces the periodic inspection and adjustment of the whole vehicle

Chapter 4 introduces the disassembly of engine peripheral assembly parts.

Chapter 5 introduces the methods and precautions for disassembly, inspection, repair and assembly of various parts of the engine

Chapter 6 introduces the vehicle chassis related information

Chapter 7 introduces the inspection and maintenance information of the whole vehicle signal and lighting system

Chapter 8 introduces the EFI system

Appendix: Electrical schematic diagram

The contents of this manual are subject to change without notice due to improvement of the vehicle. Maintenance should be carried out in the actual condition of the vehicle.

ZHEJIANG KAYO MOTO CO,.Ltd
R&D center
2024 07

CONTENTS

Repair Information	1
Body Coverings	2
Periodic Inspection and Adjustment	3
Engine Periphery	4
Engine	5
Vehicle Chassis	6
Signal and Lighting Systems	7
EFI	8
Electrical Schematics	appendix

Table of unit conversions in this manual

Project	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 a high degree of alertness to danger.
WARNING: Indicates caution for moderate danger.
ATTENTION: Indicates concern for 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 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

1.1 Precautions for operation……...1-1
1.2 vehicle identification number…….1-3
1.3 Main Parameter Table……1-5
1.4 Inspection Parameter List……...1-7
1.5 Tightening torque…….....1-10
1.6 Lubricants, sealants…….....1-11
1.7 Cable, hose and cable type wiring diagrams……...1-12

1.1 Precautions for operation

Safety Precautions

1. You 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 opened 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 to 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 disassembly and assembly operations.
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 in the dismantling of the dismantling method of applying force on the ball, the dismantled bearings should not be used again:
Bearing axial and radial clearance is too large to be 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.
And the body or shaft diameter on the original compression fit, disassembly and assembly 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 dust-proof bearings should pay attention to the installation direction when assembling. Open type or double-sided dust-proof bearings should be assembled with the face engraved with the manufacturer's logo and size facing outward.
14.When installing rectangular retaining rings, the chamfered side should be oriented to the direction of force. Don't use the retaining ring which has been loosened and lost its elasticity. Rotate the rectangular retaining ring after assembly to make sure that it is firmly installed in the groove.
15. After assembling, check whether the fastening parts are tightened and work normally.
16. Brake fluid and coolant will damage painted surfaces, plastic parts, rubber parts, etc. Do not let it adhere to such parts, in case of attachment, immediately rinse 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 on the oil seal lip before assembling.

18.When installing hose parts, insert the hose to the root of the joint. If there is a hose clamp, install the hose clamp in the indentation mark of the hose. Installation of hoses without tightness to be replaced.
19. Don't get dust, mud, etc. into the inside of the engine and the inside of the oil pressure system of the brake.
20. The gasket material attached to the bonding surface of each case of the engine should be cleaned up before assembly. Bumps on the contact surface must be removed by evenly grinding with an oil stone.
21. Do not distort or bend the cable ties excessively. Deformation and damage to the cable will result in poor movement or breakage.
22. When assembling cap guard parts, be sure to insert the cap into the groove if there is a groove.

Engine break-in

Engine has many relative motion parts, such as piston, piston ring, cylinder block, meshing transmission gears, etc., therefore, in the early stage of its use, it is necessary to regulate the break-in, the break-in can make the moving parts to adapt to each other, correct the working clearance, the formation of a good smooth friction surface capable of withstanding large loads, regulate the break-in of the engine, only with excellent performance and reliability.

The recommended break-in time is 10 hours, and the specifications are as follows:

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

CAUTION:

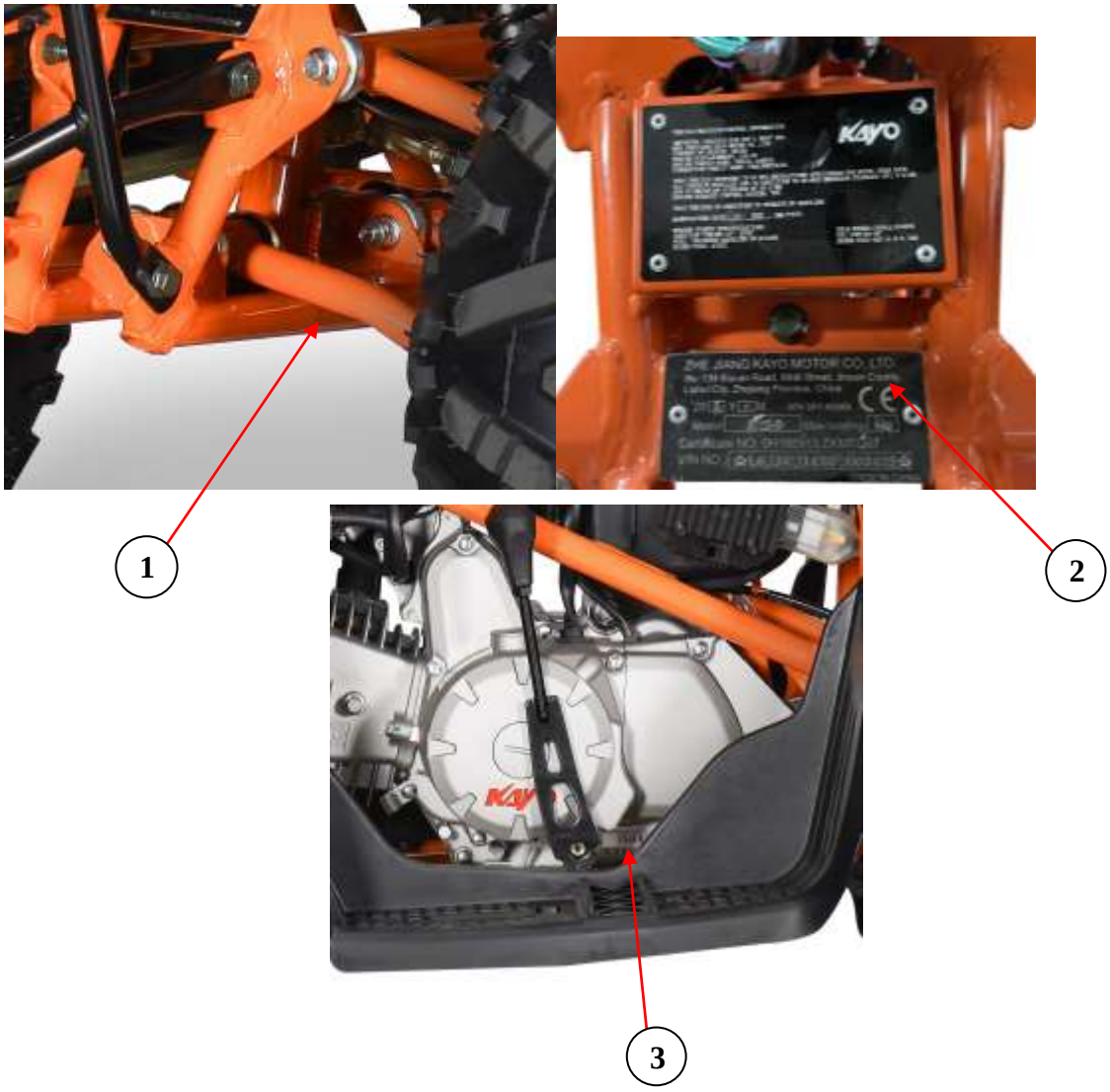
During the break-in period, carry out maintenance in accordance with the provisions of routine maintenance, and troubleshooting is found in time;

After the end of the break-in period, the whole machine will be maintained after the break-in period before entering the normal driving stage.

1.2 Vehicle identification number

①Frame number
②Vehicle nameplate
③Engine number

Vehicle Type	AT125-D
Frame Number	L6JAGJLC~
Engine number	154FMI~



1.3 Main Parameter Table

Item		Parameters
Vehicle Model		AT125-D
Length (mm)		1440
Width (mm)		860
Height (mm)		890
Wheelbase (mm)		910
Engine Model		154FMI
Total Displacement (cc)		124
Seat height (mm)		670
Fuel type		Unleaded petrol
Vehicle mass (kg)		108.2
Number of Passengers		1 person (driver)
Maximum loading mass (kg)		65
Tire Specification	front wheel	AT19*7.0-8
	rear wheel	AT18*9.5-8
Minimum Ground Clearance		115mm
Turning circle diameter (minimum turning diameter at nearest point)		3600mm
Engine	Starting method	Electric starter
	Engine type	Single-cylinder, four-stroke, naturally air-cooled
	Gas distribution method	SOHC/chain drive
	Bore × Stroke (mm)	54×54
	Compression ratio	9.0:1
	Lubrication method	Pressure + Splash
	Oil pump type	Rotor type
	Oil grade	15W/40 SF
	Cooling method	Air-cooled

Item		Parameter	
Air filter type		Sponge cartridge filter type	
Intake manifold	Mixing valve diameter	19mm	
Fuel tank volume (L)		4	
Transmission system	Clutch type	Automatic Clutch	
	Transmission Type	Left-hand operated reciprocating	
	Gearshift	One forward gear, one neutral gear, one reverse gear	
	Gear Shift Type/Sequence	Hand-operated/F-N-R	
	Output Type	Rear axle output	
	Direction of engine output rotation	In forward gear, the front is clockwise when viewed from the rear of the vehicle	
Right and left steering angle		＜45°	
Lateral Stabilization Angle		≥25°	
Maximum Hill Climbing Performance		≥17°	
Brake Unit Type		front	Disc Brake
		rear	disc brake
Braking force (n)		Front: ≥300	
		Rear: ≥300	
Buffering method	Suspension	Double rocker independent suspension at wheels, non-independent suspension at rear wheels	
Frame type		Steel pipe steel plate welded type	

1.4 Inspection Parameter List

Lubrication device

Item		Specification	Limit
Engine Oil capacity	Oil Change	700ml (without oil filter change)	—
	Oil Change	600ml (oil filter changed at the same	
	Full Capacity	800ml	—
Recommended Engine Oils		Use only 15W/40 SF oil, do not substitute or mix different grades of oil, as this can cause engine damage and accidents.	
Oil pump	Radial clearance between inner	0.06~0.15mm	—
	Rotor combination and cover plate end face clearance	0.04~0.1mm	—

Intake system (see 05-Engine section for details)

Wheels (front and rear identical)

Item		Specification	Limit
Wheel Jump	Vertical	0.8mm	2.0mm
	Horizontal	0.8mm	2.0mm
Tire	Residual grooves	—	3mm
	Pneumatic pressure	28kPa（0.28kgf/cm^2）	—

Braking system

Item		Specification	Limit
Front Brake	Brake Disc Thickness	3.5mm	3mm
Rear brake	Brake handle travel	3 ~ 5mm	—
	Brake Disc Thickness	3.5mm	3mm

Battery / Charger / Starter / Shift mechanism

Item			Specification
Rectifier type			Full-wave DC
Battery	capacity		12V 5Ah
	Voltage between terminals	Fully charged	11.8V
		Undercharged	Less than 9.6V

Ignition device (diving)

Item		Specification
Ignition method		ECU Controlled Ignition
Spark plugs	Resistive Spark Plugs	Resistive Spark Plugs
	A7RTC	A7RTC
	0.6-0.7mm	0.6-0.7mm
	Blue-White	Blue-White

Lights / Instruments / Switches

Item		Specification
Lights, bulbs	Front Left Lighting	12V
	Front Right Light	12V
	Tail/Brake Lights	12V

Fuse

Item		Specification
Fuse	Main Fuse	20A
	ECU Fuse	15A

Gas Distribution + Cylinder Head (see 05-Engine section for details)

Cylinder + Piston + Piston Ring + Crank Rod (see 05-Engine section)

Clutch + Drive Train (see 05-Engine section for details)

1.5 Fastener tightening torque

CAUTION：

Before installing the threads, apply rust preventive grease to the threaded area and the bonding surface.

Tightening torque for specified parts - Vehicle parts

No.	Item	Fastener Designator	Qty.	Tightening torque（N·m）
1	Chainstay bolts	White zinc M8*16	4	25-30
2	Rear reduction fixing bolts	White zinc M10*40*1.25 Semi-threaded	1	55-66
3	Rear sprocket fixing bolts	Army green M8*16	4	25-30
4	Bend Bolt	M6*25*1.25	2	10-12
5	Rear disc brake disk mounting	Army Green M8*16	4	25-30
6	Lower pressure block fixing	Zinc white M10*30*1.5 S14	2	49-59
7	Front disc brake mounting	White zinc M6*16 10.9 grade	4	10-12
8	Rocker arm ball joint assembly	M10*1.25	4	49-59
9	Lower engine mounting bolts	Army Green M8*20 Full Thread	2	25-30
10	Upper engine lug mounting	Army Green M8*16 with spring/flat pads	4	25-30
11	Upper engine mounting bolts	White zinc M8*110	1	25-30
12	Rear engine mounting bolts	White zinc M8*105	1	60-68
13	Rear Flat Fork Bolts	Orchid white zinc Φ12*35*H8+Φ27.5*6.5	1	60-68
14	Brake tee fixing bolts	Military Green M8*35	1	25-30
15	Rear axle fixing bolts	Zinc M12*30*1.25 S15	4	60-68
16	Chain cover fixing bolts	Army green M6*12	2	10-12
17	Rear disc brake disk mounting	Color zinc M27*1.5*H10	2	86-103
18	Front rim mounting nuts	M8	8	49-59
19	Rear disc brake lower pump	Army Green M8*25 Full Thread	2	25-30
20	Front Hub Mounting Nuts	Army green M14*1.5*H18	2	49-59
21	Rear Hub Mounting Nuts	Army green M16*1.5*H18 Slot depth 6	2	77-92
22	Front disc brake lower pump	Army green M8*16	4	25-30
23	Fuel tank mounting bolts	Army green M6*25	4	25-30
24	Upper pressure block fixing	Army green M8*30	4	25-30
25	Rear rim mounting bolts	White zinc M10*1.25	8	55-66

Tightening torque for specified parts

Tightening torque of fasteners in unspecified areas

Kind	Torque N·m	Kind	Torque N·m
5mm bolts and nuts	4.5~6	5mm Screws	3.5~5
6mm Bolt, Nut	8~12	6mm Screws	7~11
8mm bolt, nut	18~25	6mm Convex Bolts	10~14
10mm Bolt, Nut	30~40	8mm Convex Bolt, Nut	20~30
12mm bolt, nut	35~50	10mm Convex Bolt, Nut	30~40

Engine service tools (see 05-Engine section for details)

Engine-specific tools (see 05-Engine section for details)

1.6 Lubricating grease, sealants

Coating position	Caution	Grease
Steering bearing		Lightweight lithium soap-based grease
Throttle cable connection		
Rocker arm movable part		
Inside circumference of steering		
Seat cushion lock movable part		

Lubrication of operating cables, bearings, and rotating parts

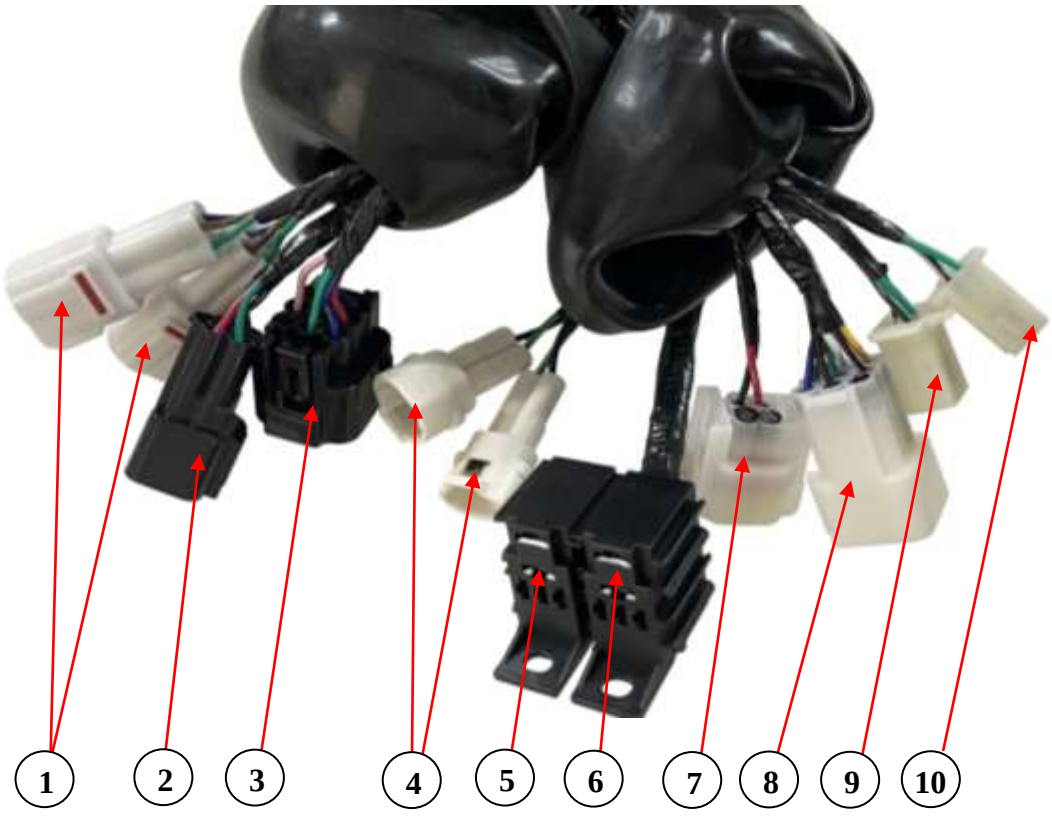
Part	Contents	Grease
Steering shaft spherical bushing	Lubrication	Automobile general-purpose lithium grease
Rear axle support		
Front and rear shock absorber joints		
Throttle handle pivot and cable joint		
Left and right brake handle pivots		

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

Engine operating materials include lubricants (oil), grease (grease), etc.; installation accessories include flat sealants, thread locking adhesives, etc.

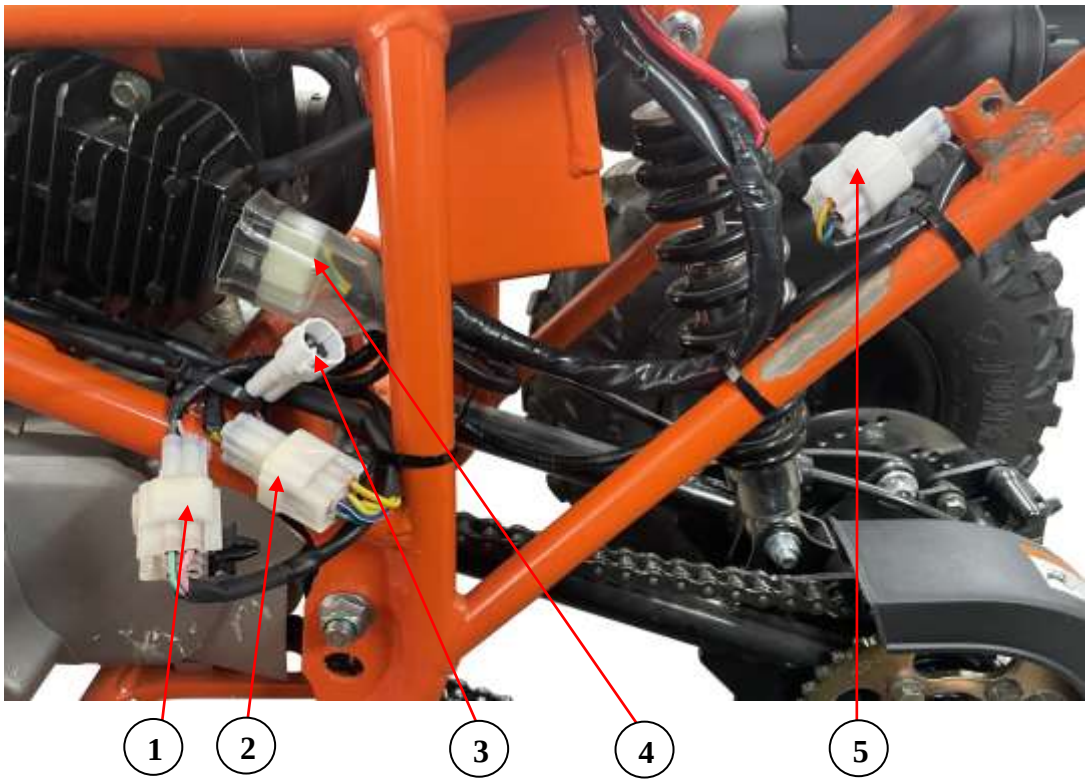
1.7 Cable, hose and cable type wiring diagrams

1、Parking handle 2、Front brake switch 3、Front brake hose 4、Throttle cable 5、Combination switch 6、 Rear brake hose 7、 Rear brake switch 8、 Combination switch 9、 Parking handle

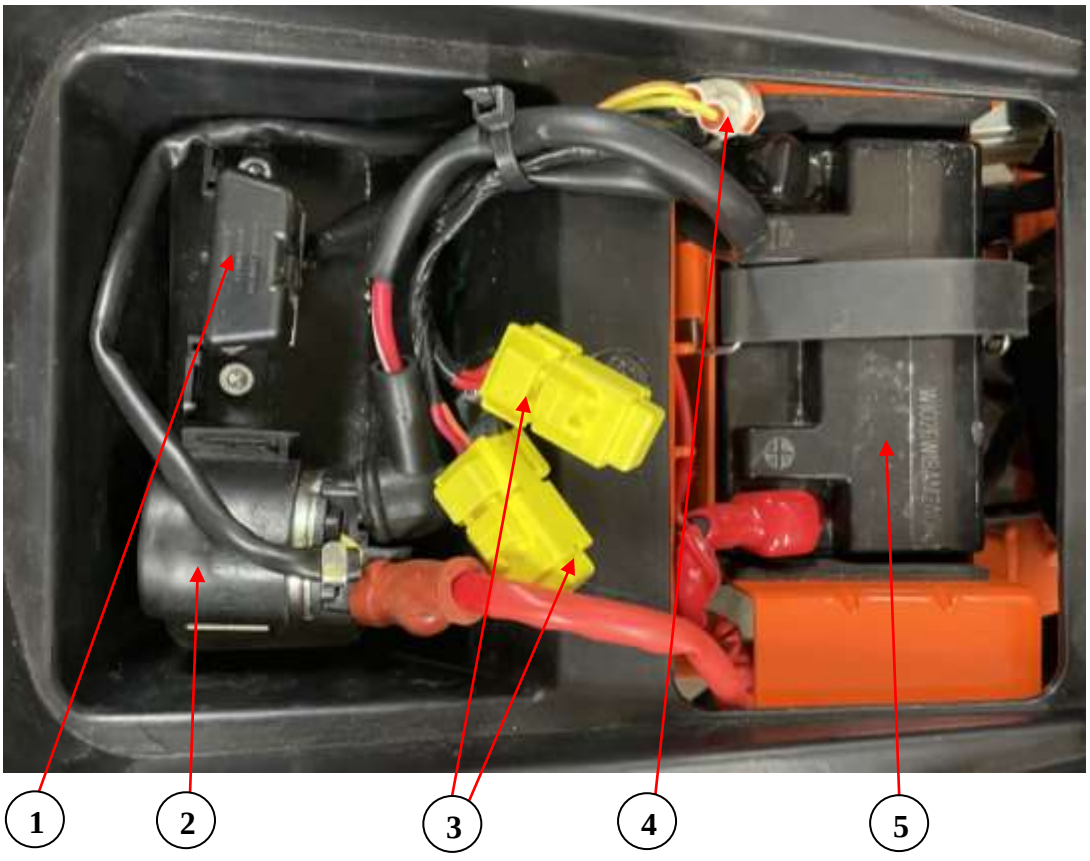


1、 Left and right headlight connector 2、Meter connector 3、Meter connector 4、Brake switch connector 5、ECU relay connector 6、Fuel pump relay connector 7、Electric door lock connector 8. Combination switch connector 9, Remote control connector 10, Emergency

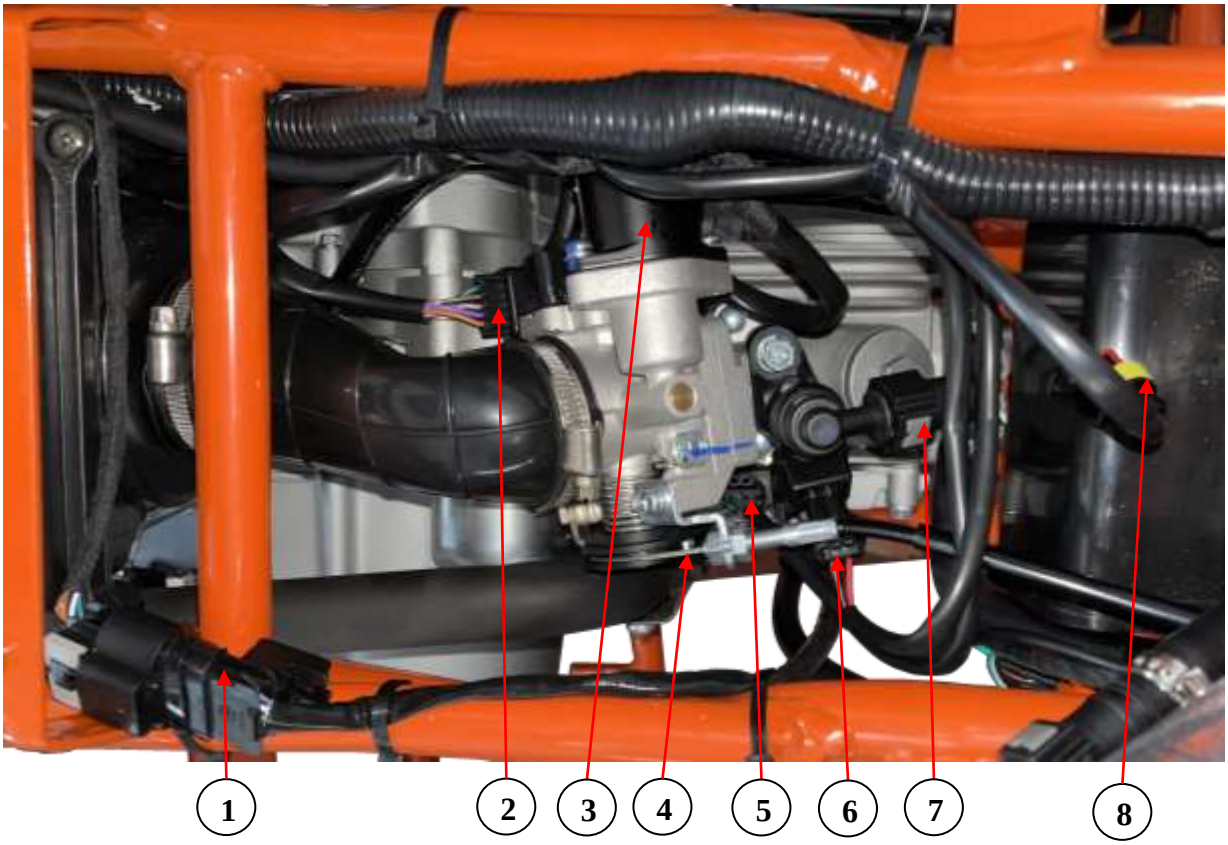
switch connector



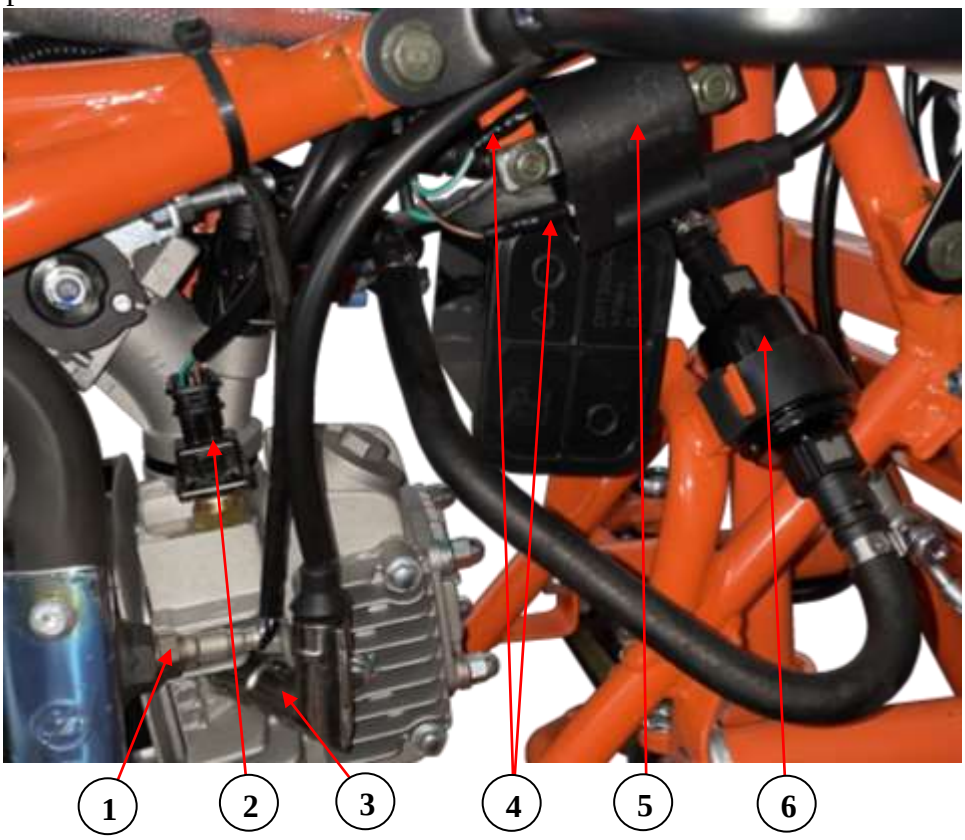
1、Gear display connector 2、Magnetic motor connector 3、Wheel speed sensor connector 4、Voltage regulator connector 5, Tail light connector



1、OBD interface 2、Starter relay 3、Fuse 4、Relay connector 5、Battery

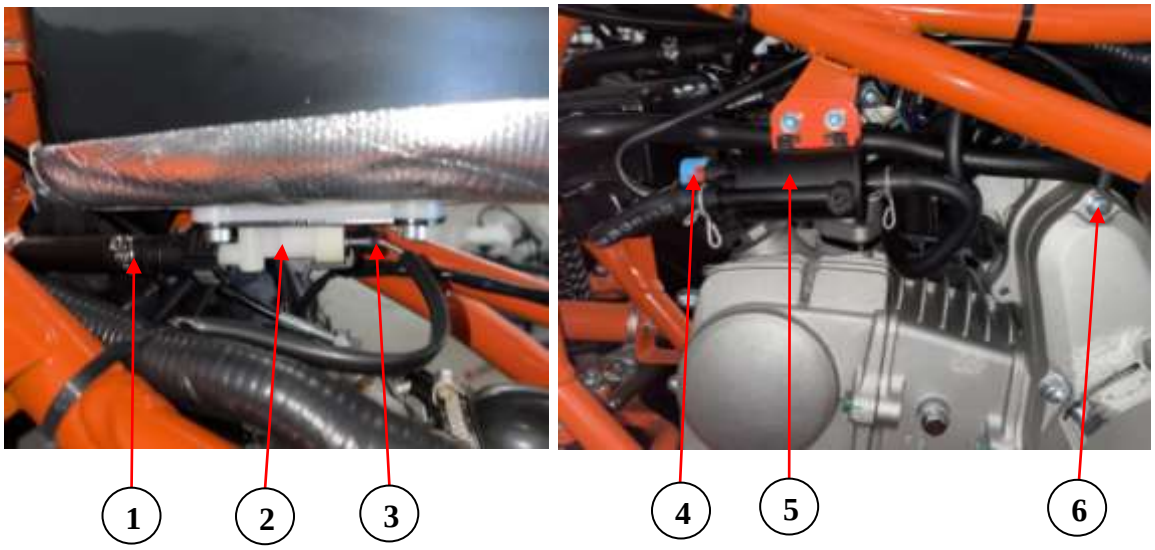


1、Oxygen sensor connector 2、Three-in-one sensor connector 3、Step motor connector 4、Throttle cable 5、Cylinder temperature sensor connector 6、Injector connector 7、Fuel pipe 8、Fuel pump connector

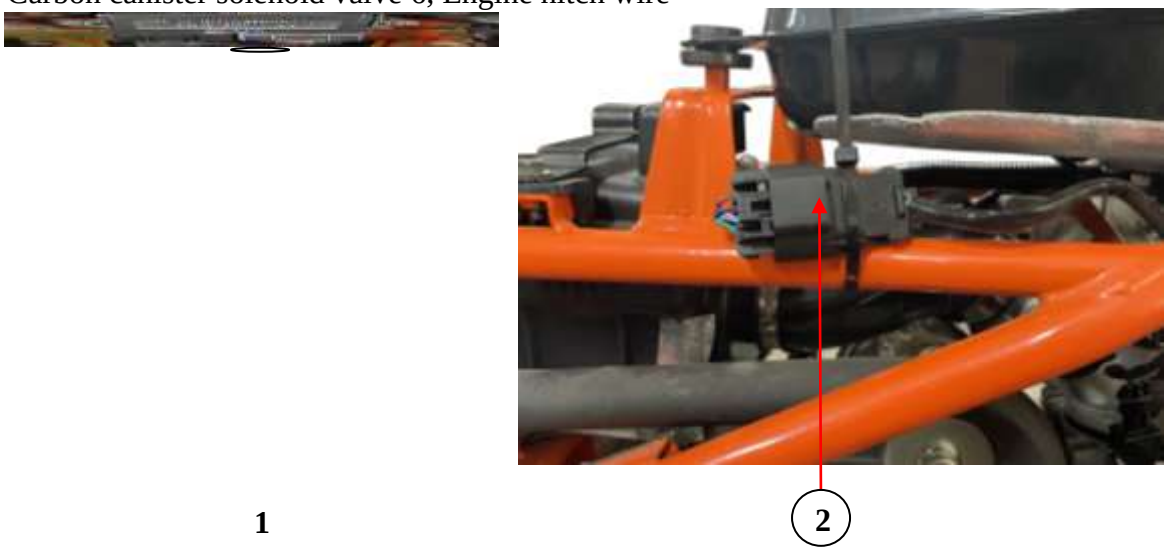


1、Oxygen sensor 2、Cylinder temperature sensor connector 3、Spark plug 4、High pressure

pack connector　5、High pressure pack 6、Fuel fine filter



1、Fuel pipe 2、Fuel pump 3、Fuel pump connector 4、Carbon solenoid valve connector 5, Carbon canister solenoid valve 6, Engine hitch wire



1、ECU　2、Oxygen sensor connector

CAUTION: The molded parts assembly must be removed prior to inspection and repair of the above parts. See Chapter 2, Body Cladding, for specific disassembly.

2 Body Cover

2.1 Inspection Information……..2-2
2.2 Mounting torque……....2-2
2.3 Removal and installation of seat cushions and front and rear racks, front and rear covers.....2-3
2.4 Removal and installation of the front gear display lampshade…….....2-3
2.5 Removal and installation of front bumper, front plastic bumper and front panel.2-4
2.6 Removal and installation of left and right footrests……..2-7

2.1 Inspection Information

Operating Precautions

When replacing the coverings on the vehicle that are affixed or riveted with regulatory warning labels, the corresponding labels must be correctly and completely made up in their original form.

This chapter describes the order of disassembly and installation of 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 disassembly operation of roof rack, seat cushion and exterior parts.

For tubes and cable pulls, please follow the cable, tube and cable pull wiring diagram to pass through from the correct position.

2.2 Mounting torque

M10 bolts	45（4.5）	Torque N-m(kgf-m)
M8 bolt	22（2.2）	Torque N-m(kgf-m)
M6 bolt	10（1.0）	Torque N-m(kgf-m)
M5 bolts	5（0.5）	Torque N-m(kgf-m)
Self-tapping screws	4（0.4）	Torque N-m(kgf-m)

2.3 Seat cushion removal

Dismantle

1.Toggle the seat cushion hook upwards 1
2.Lift up the back of the seat cushion and pull out the seat cushion backward 2
3.Remove the seat cushion

Mounting

Installation is done in the reverse order of removal.
Check that the seat cushion is in place and secure after installation.

2.4 Hood Removal

Dismantle

1.Remove the fixing bolts 1
2.Pull up the cowl 2

Mounting

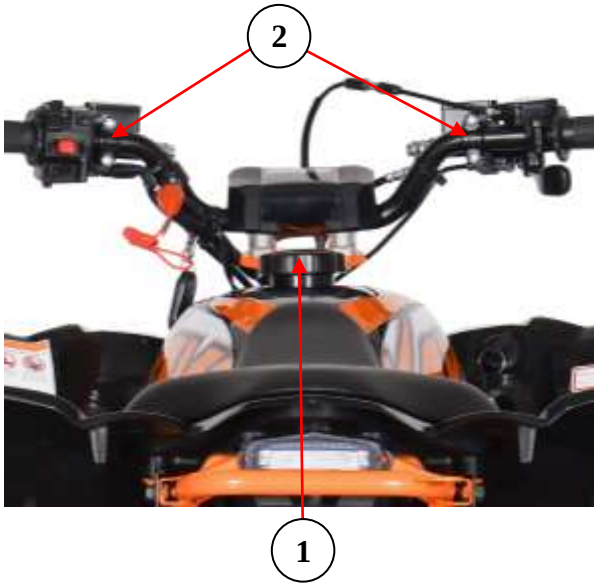
Installation is done in the reverse order of removal.

2.5 Removal and installation of front and rear body assemblies and footrests

2.5.1 Body Assembly Removal

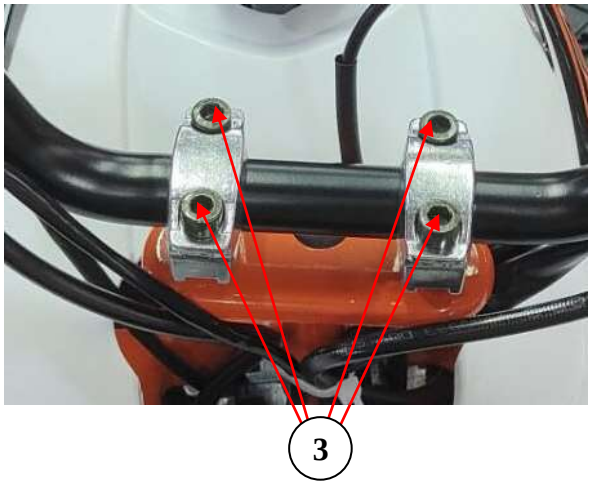
Dismantle

1.Remove the cushion and throttle cable
2.Unplug the instrument plug-in, the combination switch plug-in, the ignition off switch plug-in, the door lock plug-in, and the headlight plug-in.



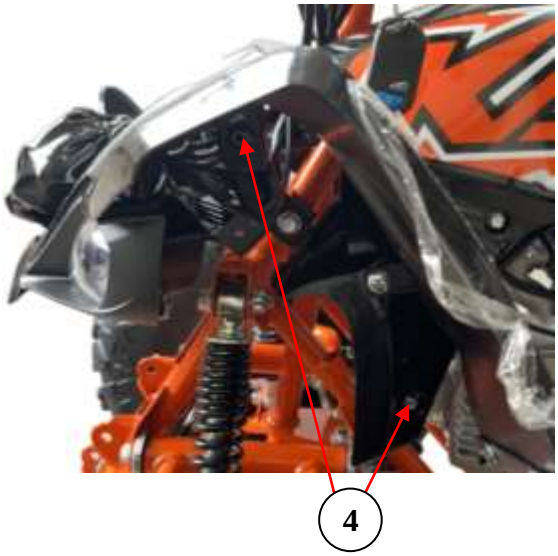
3.Remove the gas cap 1

4.Remove the front and rear disk brake upper pump 2



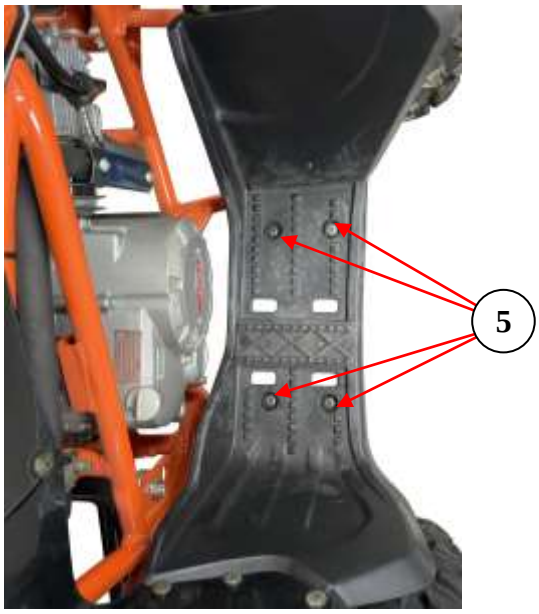
5.Remove the bolts securing the steering handle assembly 3

6.Remove the steering handle assembly



7.Remove the bolts securing the front body 4
(two on each side)

8.Remove the bolts securing the footrest to the frame 5



9.Remove the bolts that secure the rear body to the frame 6

The body assembly can be removed

2.5.2 Removal of footrest

Dismantle

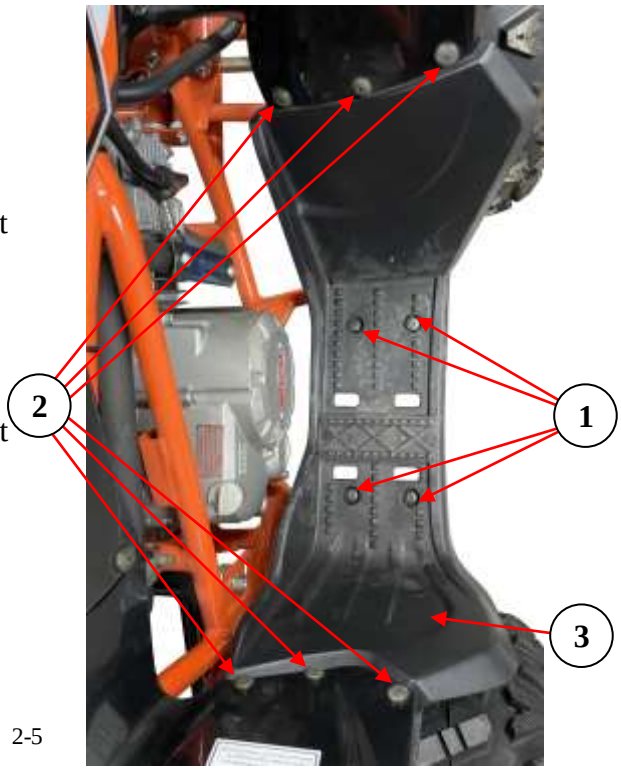
1.Remove the bolts securing the frame 1

2.Remove the bolts securing the front and rear bodies 2

3.Remove the footrests 3

CAUTION

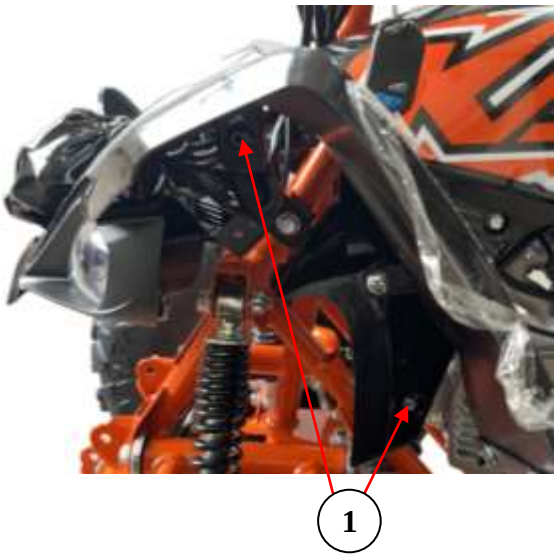
Left and right pedals are identical except for the direction of disassembly



Mounting

Installation in reverse order of removal

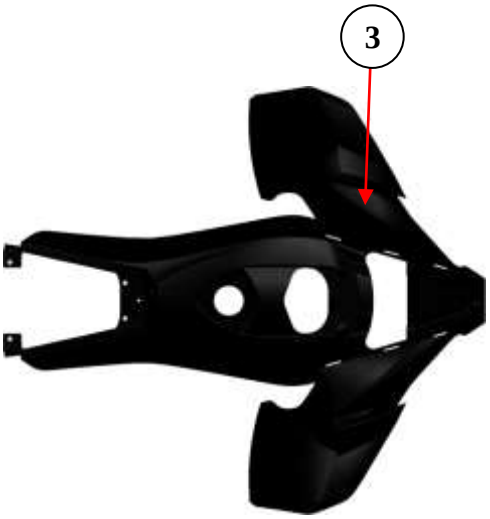
2.5.3 Front Body Removal



Dismantle

1.Remove the bolts securing to the front body 1
(two on each side)

2.Remove the bolts securing the footrest to the rear body 1
(five on each side)



3.Remove front body 3

Mounting
Installation in reverse order of removal

2.5.4 Rear body assembly removal

Dismantle

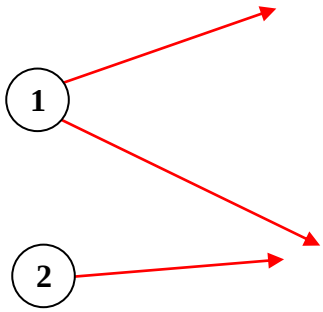
1.Remove the seat cushion
2.Remove the rear body fixing bolts 1
3.Remove rear body to front body bolts 2
4.Remove the bolts securing the rear body to the footrests 3
(Three on each side)

Mounting
Installation in reverse order of removal

CAUTION
Disconnect the cables from the taillight before removing, and when removing the battery, turn the ignition switch
off, remove the positive battery terminal first and install the
When removing the battery, turn off the ignition switch and remove the positive battery terminal first, while installing the negative battery terminal first. After installation, check the removed
electrical appliances, cables, etc.

2.6 Removal and installation of chain cover

Dismantle



1.Remove fixing bolt 1
2.Remove the chain cover 2

Mounting
Installation in reverse order of removal

3 Periodic Inspection and Adjustment

Inspection Information……3-1
3.1 Determination of maintenance intervals……3-2
3.2 Inspection and maintenance methods……3-3
3.3 Steering column, brake system……..3-6
3.4 Wheel……..3-10
3.5 Suspension system……..3-13
3.6 Shift mechanism, fuel unit……..…3-14
3.7 Throttle check…….3-15
3.8 Air intake system check……..3-15
3.9 Lighting……..3-16

Inspection Information

Precautions for operation

CAUTION

As the exhaust contains carbon monoxide (CO) and other toxic components, do not run the engine for a long time in a closed place or a poorly ventilated place.

When the engine is stopped, the temperature of the muffler and engine is still very high, and if it comes into contact with your skin, you may get burned. If you must perform maintenance when the engine has just stopped, you must wear long-sleeved coveralls and gloves.

Gasoline is very flammable, and fireworks 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

The vehicle must be placed on a flat, stable surface.

3.1 Determination of maintenance intervals

To keep the performance good, the motorcycle should be checked and maintained at certain interval. The meanings of capital in following table are:

I: Inspection, including check, clean, lubricate, refuel, repair or replacing if necessary. A: Inspection, adjusting if necessary

C: Cleaning R: Replacing L: Lubricate

Maintenance period / Items	Odometer(km)						
	750	3000	4000	6000	8000	9000	Everyday check before riding
**Re-seating Valve		I		I		I	
**Spark Plug		I		R		I	
**Fuel System		I		I		I	
*Engine Oil	R	R		R		R	
*Valve Gap		I/A		I/A		I/A	
*Idle Speed		A		A		A	
*Engine Bolt	I	I		I		I	
*Engine Oil Filter	C	C		C		C	
*Fuel Pump			I		I		
*Air Cleaner		C		R		C	
*Fuel Filter		R		R		R	
*Cooling System		I		I		I	
Engine Mount		I		I		I	
Fuel Line		I		I		I	
Throttle Operation		I		I		I	
Brake Shoes/Pad Wear		I		I		I	
Brake System		I		I		I	
Brake Liquid		I		I		I	
Suspension		I		I		I	
Nuts,Bolts,Fasteners		I		I		I	
Wheel/Trye		I		I		I	
Steering System		I		I		I	

3.2 Inspection Inspection Method

Inspection and overhaul program			Overhaul period			Benchmark
Inspection area		Inspection items	Daily	Semi-Annual	Annual	
turntable	steering wheels	Operational Flexibility	○			
	steering system	Damage	○			
		Installation status of the steering system	○			
		Ball pin wobble	○			
Detent	Brake Grip	Grip travel	○	○		
		Braking effect	○	○		
	Connecting rods and tubes	Slack, 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 working disk thickness of the front brake disk is less than 3mm, the rear brake disk should be replaced in time. If the working disk thickness of the front brake disk is less than 3mm and the working disk thickness of the rear brake disk is less than 3mm, it should be replaced in time.

	brake pad	Brake pad wear and damage	○	○		Minimum brake pad (friction plate) thickness ≥ 1mm; replace if less than 1mm.
Walking device	wheel	tire pressure	○	○		Front wheel: 28kPa (0.28kgf/ cm2) Rear wheel: 28kPa (0.28kgf/ cm2)
		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 less than 3mm. If there are no wear indications on the tread, the residual grooves should have a depth dimension of not less than 3 mm.
		Loose wheel nuts and wheel spindles	○	○		
		Front wheel bearing wobble	○		○	
		Rear wheel bearing wobble	○		○	
Buffer	suspension arm	Wobbling of joints and damage to swingarms	○		○	
	shock absorber	Oil leakage and damage	○		○	
		Function			○	
Transmission	Front axle	Transmission, lubrication	○		○	
	rear axle	Transmission, lubrication	○		○	
	transmission	Oil leakage and oil quantity	○		○	Loosen the filler bolt port,

						oil To the orifice

Inspection and overhaul program			Overhaul period			
Inspection area		Inspection items	Daily	Semi-Annual	Annual	benchmark
transmission	Output shaft (Drive shaft)	Loose connection	○	○		
		Spline wobble			○	
Electrical installations	Ignition	Spark plug condition		○		Spark plug gap: 0.6mm~0.7mm
		Ignition period		○		
	Batteries	Condition of terminal connections			○	
	Electrical wiring	Loose or damaged connections			○	
fuel fabrication equipment		Fuel leakage		○		
		State of the throttle			○	Throttle knob clearance: 3 ~ 5mm
Lights & Turning Indicators		action	○	○		
Alarms & Locking Devices		action			○	
Gauges		action			○	
Exhaust pipes and mufflers		Installation without looseness and damage			○	
		Muffler function			○	
Frames		Looseness and damage			○	
Others		Lubrication and grease condition of all parts of the frame			○	
Parts that can be recognized as abnormal during operation		Confirmation of any abnormalities in the relevant parts	○			

Tighten all nuts, bolts and nuts. Care must be taken that all calibrated nuts, bolts and locknuts are tightened to the specified torque.

3.3 Steering column, brake system

Place the vehicle on a level surface and hold the steering handle firmly in the direction shown in the illustration to check for wobble.

If you feel wobbling, confirm whether it is the steering column wobbling or other wobbling, and carry out maintenance accordingly.

If it is a wobble of the steering column, increase the locking force of the steering column locking nut or disassemble the steering column for repair.

Place the car in a horizontal position and slowly turn the steering handle to the left and right to confirm that it turns smoothly and flexibly. If you feel an obstruction in some places, check if there is any interference in the main cable assembly and pull cable type, if not observe the position of the end of the steering tie rod to confirm if there is any interference and if the steering bearing is damaged.

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

Front brake handle play:

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

Check the clearance at the front brake handle: 7-12mm

Front Brake Pump Combination (Liquid volume)

1.Check the brake fluid level

2.Remove the 2 exhaust screws and check the fluid level, when the fluid level is less than 2/1, the vehicle will not be able to continue to use at this time, you need to check the brake pump, brake pipe and the leakage of each connection, if the check is normal, you need to check the wear of the brake disc and brake pads. If they are damaged or worn below the service limit, replace them.

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

4.Remove the 2 exhaust screws1.

5.Remove the oil cup cover2

6.Replenish the brake fluid with KAYO's recommended fluid up to the upper limit line.

CAUTION

When replenishing brake fluid, do not mix in dust and water

To prevent chemical changes, use the specified grade of brake fluid.

Do not splash brake fluid on plastic or rubber surfaces as it may damage these parts.

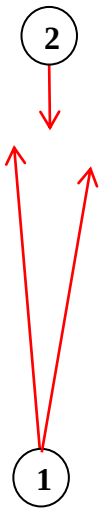
Turn the steering wheel slightly to the left or right, and remove the oil cup cover after the brake pump assembly is level.

CAUTION: The rear brake pump combination is checked in the same way as the front brake pump combination.

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 any, please replace them in time, check the main pump/caliper for damage, if any, please replace them in time.

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.

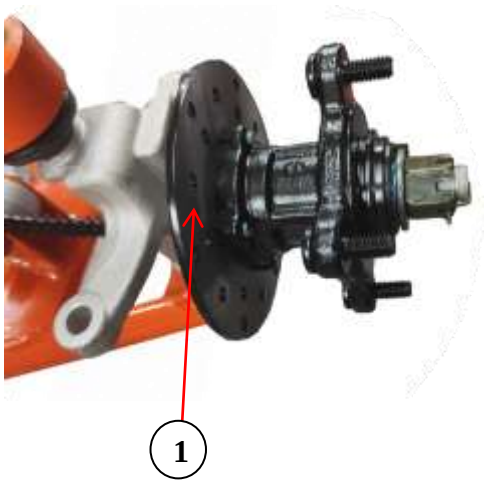
Note: Do not open the brake fluid cup for a long time.



Front brake discs, brake pads (wear of brake pads)

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 Disc

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 ⩽3.0mm

Thickness of front brake disk: 3.0mm

Check the minimum thickness of the brake friction disk 2

Minimum friction disk thickness ⩾ 1 mm

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

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

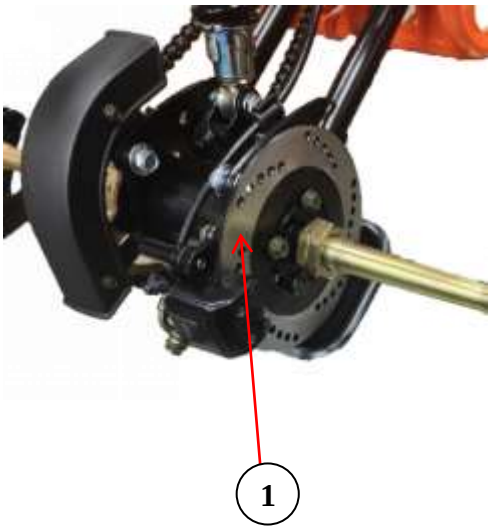
Rear brake disk, brake pads (brake pad wear)

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 Disc

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 ⩽3.0mm.

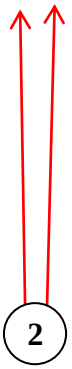
Thickness of the rear brake disk: 3.0mm

Check brake friction pads 2 for faults and wear.

Minimum friction disk thickness A ⩾ 1 mm

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

Check the brake friction pads for damage or cracks, if damaged or cracked, replace with new brake friction pads.



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 car 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 wobbling

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

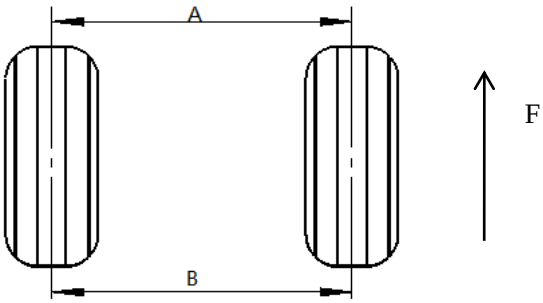
If there is still wobble, check and replace: bearings, rocker arm cushion bushings, ball pins.

Front Wheel Dimensions

Place the car body in horizontal position and measure the front beam size of the wheels; the front wheel in front of the wheel relative to the forward direction of the vehicle is: A, and the back of the wheel is: B.

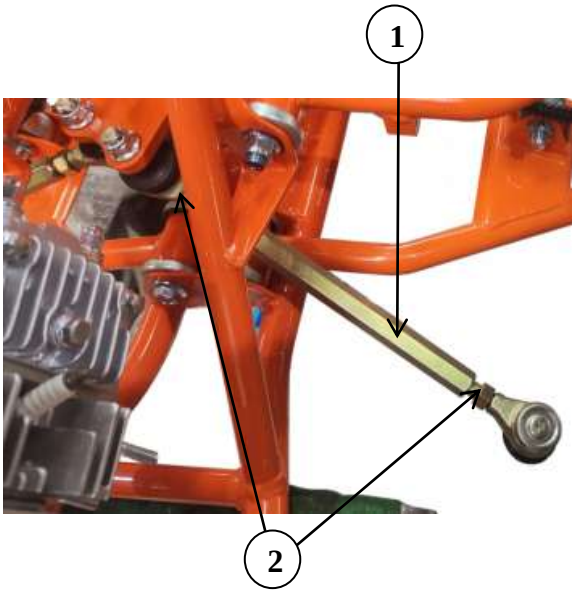
Front beam size: A-B=1.5 ~ 2.5mm

F is the forward direction



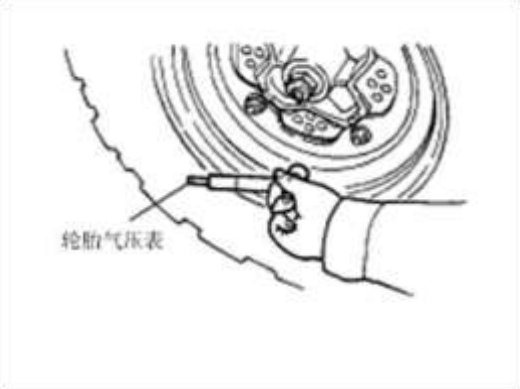
If not, adjust the lock nut 2 of the steering tie rods 1

CAUTION：After the front beam size is adjusted, drive the whole car slowly to make sure that the handlebar can correctly constrain the direction of the car body



Tire pressure

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



CAUTION

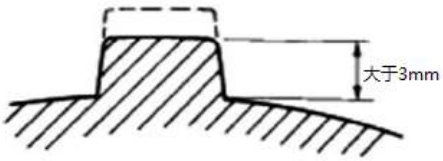
Tire pressure should be checked in the tire cooling state. If the tire pressure is not appropriate state use, will make the operation and ride comfort deteriorate, resulting in tire bias wear and other adverse
effects.

Specify air pressure/tire

	front wheel	rear wheel
Air Pressure	28kPa（0 .28kgf/cm²）	28kPa（0.28kgf/cm²）
Tire Size	See chapter I	See chapter I

tread (on tires)

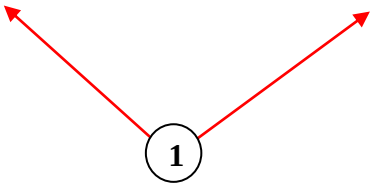
Check the tire tread and replace the tire with a new one if the tread height is less than 3mm.



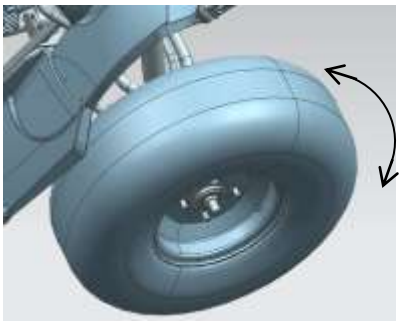
CAUTION

Tire tread less than 3mm must be replaced immediately

Wheel nuts and wheel axles
Check front axle, rear axle nut 1 and pin for looseness.
If loose, tighten to specified torque.
Torque:
Front axle nut: 49N-mm to 59N-mm (5.0kgf-mm to 6.0kgf-mm)
Rear axle nut: 55N-mm to 66N-mm (5.5kgf-mm to 6.6kgf-mm)



Wheel hub wobble
Set up the front wheel with a tool and check for wobble by rocking the wheel axially with no body force acting on the front wheel.



If there is wobble, remove the front wheel and check the wheel hub.

3.5 Suspension system

Put the car body on the horizontal position, according to the position shown in the figure up and down compression of the car body several times, if there is shaking or noise, check the shock absorber has no oil leakage, the fastening parts of the damage, loose and so on.

Shock absorber adjustment

Adjustment of the shock absorber with a special tool according to the load 1
Clockwise rotation is from high to low, counterclockwise rotation is from low to high two-way adjustable, can be adjusted according to the comfort of riding according to the needs of customers.
(Note: the front shock absorber is not adjustable)

3.6 Shift mechanism, fuel unit

Shift mechanism

Change gears, check whether the gearshift mechanism 1 is flexible and whether the gears are in gear, if the gearshift is not flexible, adjust and tighten the gearshift tie rod bolts 2

Fuel Installation

Status of the fuel system

Remove the seat cushion (→ 2.3.1).

Check the fuel pipe for deterioration and damage.

Check the gasoline fine filter for accumulation of impurities or damage, and replace it with a new product in time.

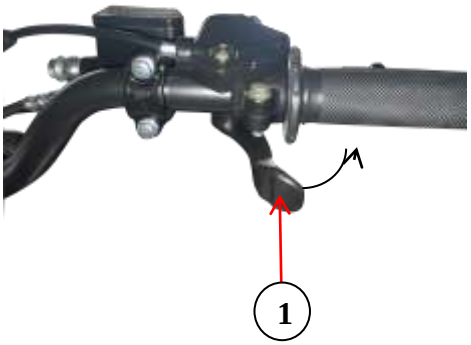
Replace the fuel pipe with a new product if there is aging or damage.

Check the fuel tank vent pipe or the adsorption pipe of the fuel evaporation system for cracks and bends, and replace with a new product if it is damaged.

3.7 Throttle check.

Check free travel of throttle pushbutton 1

Clearance: 2 ~ 6 mm



If the clearance is not within the specified range, adjust the clearance.

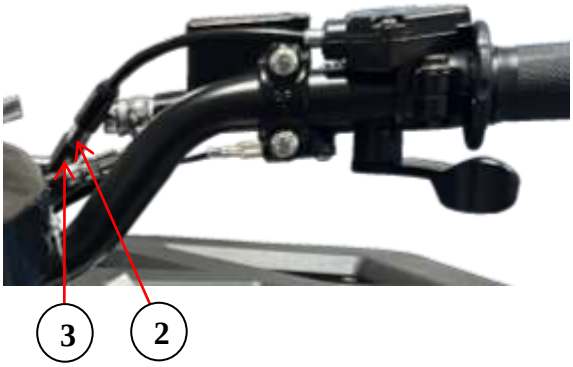
1.Remove the sleeve 3

2.Loosen the throttle cable lock nut 2

3.Adjust the free travel of the throttle button by turning the adjuster.

After adjustment, tighten the lock nut 2 and install the throttle cable sheath 3.

If the adjustment of the regulator still fails to achieve the required clearance or if the movement is still not flexible, replace the throttle cable with a new one.



3.8 Air intake system check

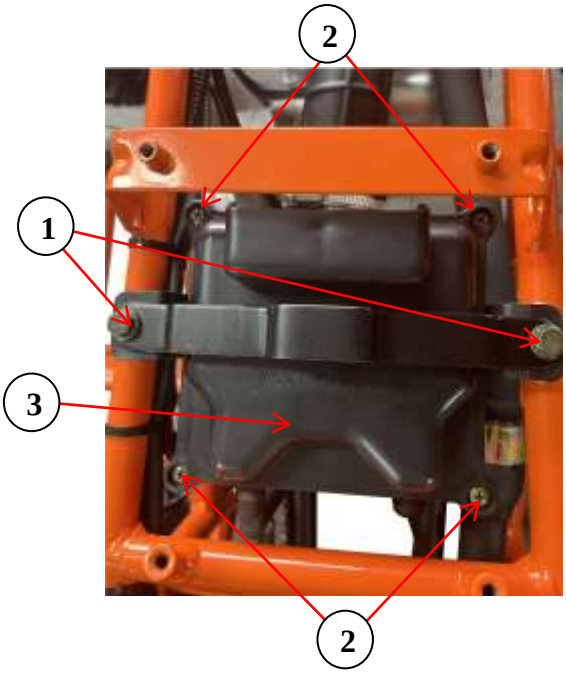
A dirty air filter element will affect air intake, reduce engine power, and should be serviced more frequently than the maintenance schedule if the operating area is dusty.

1.Remove the seat cushion and front body assembly

2.Remove the air filter retaining bolt 1

3.Remove the air filter upper cover fixing bolts 2

4.Remove the upper cover of the air filter 3



Cleaning or replacing the cartridge

3.9 Lighting

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

Headlight Inspection

Push the headlight switch 1 forward, observe whether the vehicle headlights are on, if not, please check the wiring is not connected to the wrong, if the wiring is correct, please replace the headlights in time

Tail light inspection

Squeeze the brake handle with your hand and observe the tail light, if the tail light does not light up, please check whether the wiring is connected incorrectly, if the wiring is correct, please replace the tail light in time.

4 Engine Periphery

Inspection Information……...4-1
4.1 Fuel system……..4-2
4.2 Air intake system…….4-3
4.3 Exhaust system……4-4
4.4 Engine Removal and Installation…….....4-6

Inspection Information

Precautions for operation

Please ensure that the vehicle is turned off and left to stand for not less than 1 hour to confirm that the hot parts are cooled down before carrying out repairs, so as not to cause injury to the maintenance personnel.

Be careful not to damage the frame, engine body, bolts and cables during operation.

When removing the engine, the frame should be wrapped to protect the frame.

When the engine is dismantled, appropriate containers should be prepared to receive coolant, oil and fuel to protect the environment, and coolant and oil should be replenished according to the requirements when installing the engine.

Tightening torque

Lower engine fixing bolts, army green M8×20 full thread 25~30N-m
Upper engine lug fixing bolts M8×16 with spring/flat washers 25~30N-m
Upper engine fixing bolts zinc blue-white M8×110 J390019 25~30N-m

4.1 Fuel system

Dismantle

1.Remove the seat cushion, fuel tank cover, steering handle assembly, and front body assembly (→Chapter 2, Body covering parts).

2.Remove the mounting bolts 1

3.Remove the oil pipe to the carbon tank solenoid valve 2

4.Remove the fuel pump connecting pipe and its insert 3

5.Remove the fuel tank 4

CAUTION

Gasoline is very flammable, so fireworks are strictly prohibited in the workplace.

Pay close attention to not only open flames but also electric sparks.

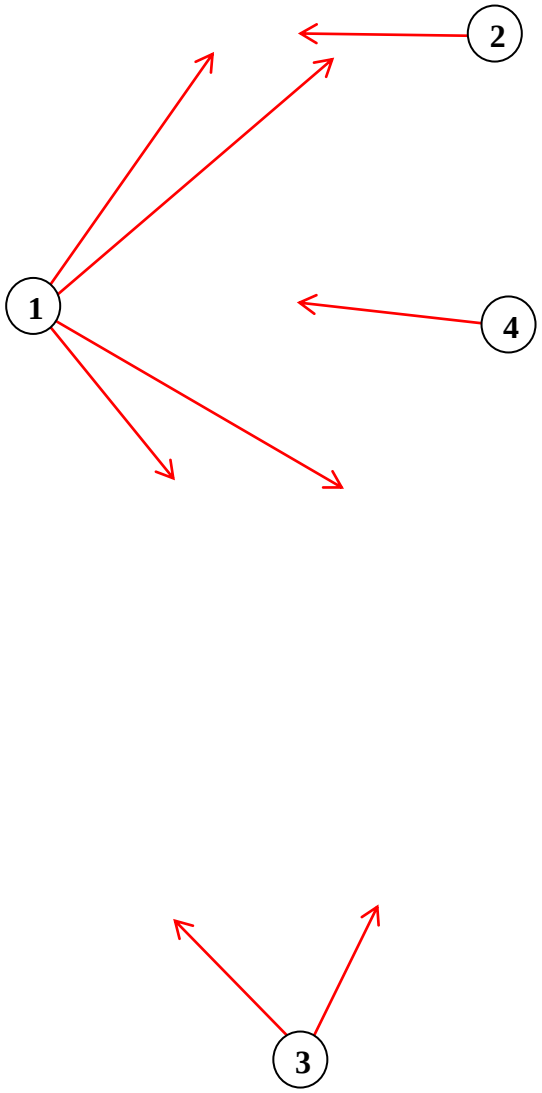
In addition, since there is a risk of explosion when gasoline evaporates (vaporizes), work should be done in a well-ventilated area.

When dismantling the fuel tank, if there is still fuel in the tank, the fuel pipeline should be tightly tied to prevent fuel leakage before dismantling the tank.

After the engine stops running for quite a long time, the fuel pressure in the fuel line also remains high. So do not easily dismantle the fuel pipe in the maintenance process, in the dismantling of the fuel pipe before the fuel system should be pressure relief.

Pressure relief method: 1, the vehicle transmission is in “neutral” state; 2, disconnect the fuel pump assembly harness and vehicle wiring harness connection plug; 3, start the engine until the engine automatically shut off, and then continuously switch the ignition key 2-3 times, each time interval of 3 seconds, and then turn off the key switch;

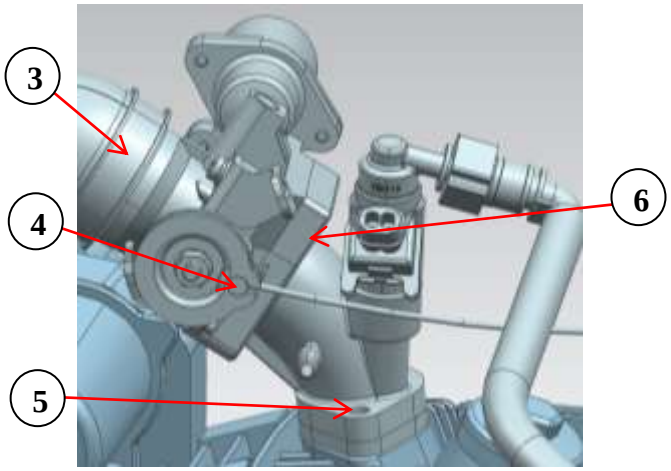
After completing the above operations, the fuel line can be disassembled, and then reconnect the fuel pump assembly harness plug after the fuel line is reassembled.



4.2 Air intake system

Dismantle

Remove the seat cushion, front and rear body assemblies (→ Chapter 2, Body covering parts), and fuel tank assembly.

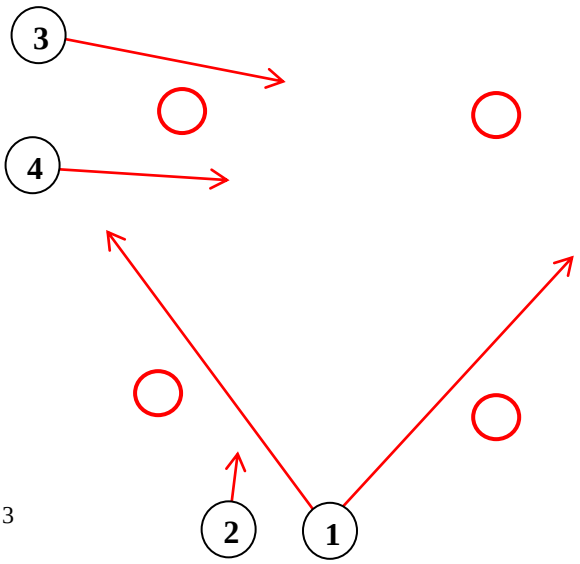


Throttle

1.Remove the insert 1
2.Remove the fuel line to the carbon canister solenoid valve 2
3.Empty the air filter clamp 3
4.Remove the throttle cable 4
5.Remove the bolts securing it to the engine 5
6.Remove the throttle valve 6

Air filter

1.Remove air filter retaining bolt 1
2.Pull out the air hose 2
3.Loosen the clamp 3
4.Remove the air filter 4

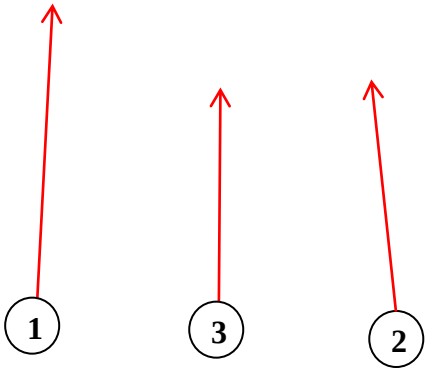


CAUTION
Remove the upper cover of the air filter
by removing the four bolts in the red circles to
replace and clean the filter element 5

Mounting
Installation in reverse order of removal

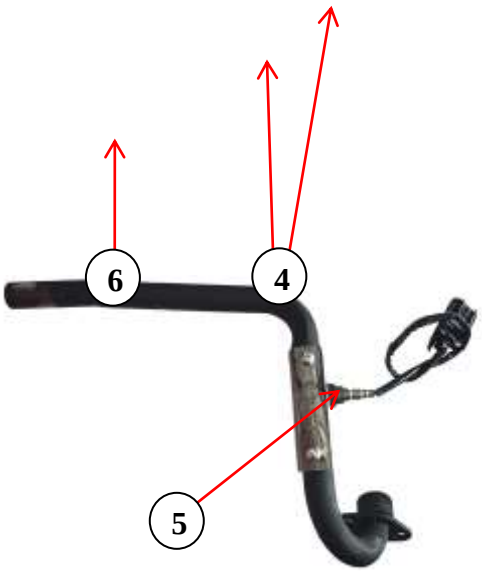
4.3 Exhaust system

Dismantle
1.Remove the seat cushion, steering handle
2.assembly and front and rear body assemblies
3.(→ Chapter 2 Body Covering Parts).
4.Body assembly (→Chapter 2 Body covering parts)
5.Remove the muffler fixing bolt 1.
6.Loosen the muffler clamp 2.
7.Remove the muffler rear end 3



8.Remove the muffler and engine
9.attachment bolts 4(1 each on the left and right)
10.Remove the oxygen sensor insert 5
11.Remove the muffler front section 6

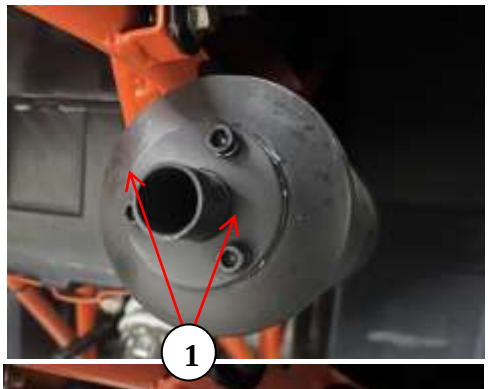
Mounting
Installation in reverse order of removal



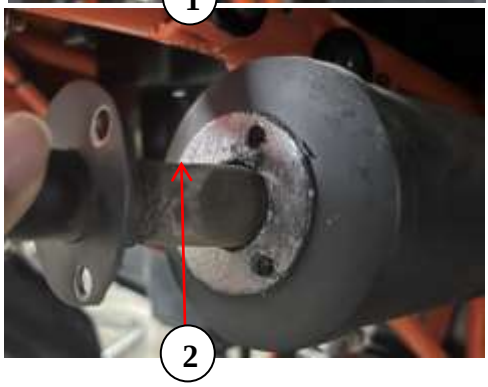
Spark arrester

Dismantle

1.Remove the bolts securing the spark arrestor 1



2.Remove the spark arrestor 2



Cleanse

1.Make sure the exhaust system is completely cool before cleaning.

2.Unscrew the screw securing the muffler end clamp to the flange of the spark arrester using a screwdriver.

3.Remove the exhaust end cap of the muffler and then carefully remove the spark arrester gasket from the muffler assembly.

4.Remove accumulated carbon on the spark arrester screen with soap and water and

remove hard to remove carbon carefully with a brass wire brush and then rinse and dry the spark arrester.

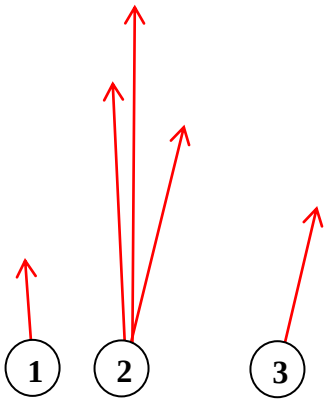
5.Clean and remove any carbon residue at the joint of the muffler flange and muffler.

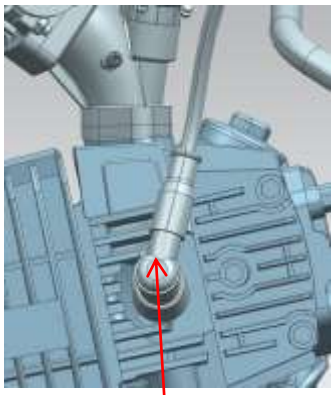
6.Insert the cleaned and dry spark arrester along with the gasket into the muffler assembly and replace the muffler end cap of the muffler assembly. And, then tighten the screw of the clamp securely. If the spark arrester clamp or gasket is torn or damaged, a new gasket can be ordered from our service department.

4.4 Engine Removal and Installation

Dismantle

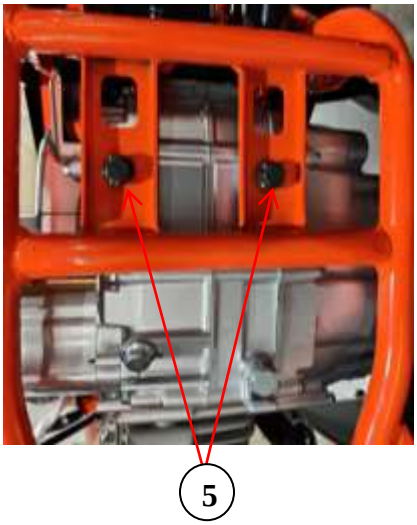
1.Remove the seat cushion, cowl, steering handle
2. assembly, front and rear body assemblies,
3. left and right footrests
4.(→Chapter 2 Body assembly, left and right footrests
5.Remove the intake and exhaust systems
6.Remove the engine cover1.
7.Unscrew the connectors of the voltage regulator, gear display, magneto, etc. 2.
8.Remove the chain3





9.Remove the spark plug cap 4
10.Remove the engine mounting bolts 5

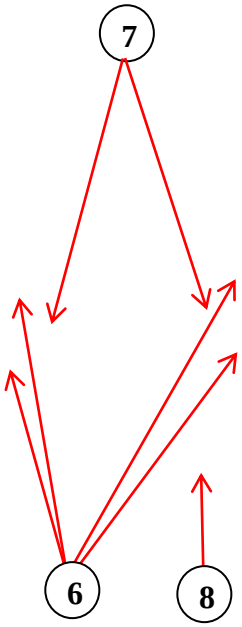
11.Remove engine mounting bolts 5



12.Remove engine left and right lug bolts 6

13.Remove the left and right engine lugs7

14.Remove the engine8



Mounting

Installation in reverse order of removal

5 Engine

Catalog

1、 Summarize·····5-3

2、 Repair·····5-6

3、 Cylinders and Pistons·····5-11

4、 Left case cover and magneto combination·····5-19

5、 Right case cover and clutch·····5-24

6、 Drive Gear and Shift Shaft·····5-28

7、 Primary and secondary shafts and cranks·····5-32

8、 Oil seal·····5-36

1 Summarize

Maintenance Code……5-4

Main technical parameters……5-5

Maintenance Code

1. Please use the spare parts, lubricants and other auxiliary materials provided and recommended by Zhejiang KAYO Racing Co. If the materials used do not meet the specifications or requirements of “KAYO”, the entire vehicle may be damaged.

2. Do not use non-metric tools when servicing the vehicle. Metric bolts, nuts and screws are not compatible with imperial fasteners.
Metric bolts, nuts and screws are not interchangeable with inch fasteners.

3. Replace gaskets, washers, o-rings, retaining rings, and circlips with new ones when reassembling after disassembly.

4. When tightening bolts or nuts, tighten the larger diameter bolts or inner bolts first. Then gradually tighten each bolt in diagonal order to its specified torque value, unless a special order is specified.

5. Clean the disassembled parts with detergent. Apply lubricant to the sliding surfaces of the parts before assembly.

6. After reassembly, check that the component parts are correctly installed and operated properly by performing rotation, movement and operation checks.

Main technical parameters

Item			Specification
Engine	Model		154FMI
	Type, number of cylinders		Single-cylinder, four-stroke, natural air-cooled
	Cylinder Bore×Stroke		Φ54×54mm
	Cylinder working volume		123.6ml
	Compression ratio		9.0:1
	Air filter		Foam cartridge
	Lubrication method		Pressure + Splash
	Starting mode		Pure electric start
	Maximum power/corresponding speed		7.2/8000 rpm
	Maximum torque/corresponding speed		10.0/5500 rpm
	Idle speed		1500±150 r /min
Transmission system	Clutch		Oil bath centrifugal
	Transmission		Gear drive
	Transmission type		Reciprocating type with left side operation
	Primary reduction ratio		4.059
	Gear Ratio	Forward Gear	1.353
		reverse gear	2.583
Ignition system	Ignition Method		E.C.U Ignition
	Spark Plug		A7RTC
	Spark Plug Gap		0.6mm-0.7mm
Oil	Fuel Grade		≥RQ93
	engine oil	15W/40 SF	15W/40 SF
		0.80L	0.80L

2 Repair

Maintenance Interval Table·····5-7

Valve lash·····5-8

Crankcase oil·····5-9

Spark plugs·····5-10

Clutch gap·····5-11

Maintenance Interval Table

	First maintenance	maintenance cycle	
	After 300km or 1 month of use	After every 1000km or 6 months of use, whichever comes first.	Every 2000km or 1 year of use After 2000km or 1 year of use, whichever comes first
Oil-Change	√		√
Oil Filter Cleaning	√		√
Air filter element-clean and inspect	Every 20~40 hours (150~300km)		
Idle speed - check	√	√	
Valve lash-check	√		√
Vent tubes and ports-inspection		√	
Spark plugs-cleaning and clearance check	√		√
Spark Plug Replacement			√
Fuel lines and ports-inspection			√
Valve cleanliness-inspection	√		√
Spark cap-cleaning			√
Clutch gap - adjust			√
Valve reinstallation-inspection	√	√	√
Fuel system-Inspection	√	√	√
Engine bolts-Inspection	√	√	√
Fuel Pump-Inspection			√
Fuel Filter-Replacement			√

*Repairs should be performed by a KAYO dealer unless the owner has the required tools and has some basic mechanical knowledge, and should also refer to this manual when overhauling on his/her own.

*From a safety standpoint, we recommend that these items be serviced by a KAYO dealer.

Caution:

1. If the odometer reading is high, maintenance should be performed at the intervals specified above.

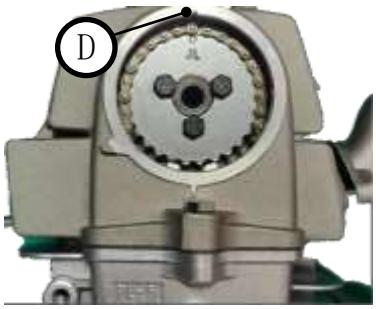
2.Driving under adverse conditions such as dusty, muddy, wet, high speeds or frequent starts/stops should result in more frequent
Maintenance work should be carried out more frequently.
3. If necessary, clean, adjust, lubricate, review torque and replace parts.

Valve lash

• Remove valve cover
CAUTION：The engine needs to be cold to adjust the Throttle clearance.

·Dismantle：
2×Valve cover Ⓐ
2×O-ring
Cylinder left cover Ⓑ
Cylinder left cover bolt
Gasket
Large viewport cover Ⓒ
Small sight hole cover Ⓓ

• Timing：
Place the sleeve on the magneto rotor nut and turn the rotor clockwise until it is on the magneto rotor.
Turn the rotor clockwise until the “T” mark on the magneto rotor Ⓐ meets the “T” mark on the right crankcase cover.



T” mark Ⓐ on the magneto rotor is aligned with the notch Ⓑ on the right crankcase cover and the timing sprocket mark Ⓒ is aligned with the notch on the right crankcase cover.
notch Ⓑ on the right crankcase cover, and the timing sprocket mark Ⓒ is aligned with the cylinder head notch Ⓓ.
cylinder head notch Ⓓ aligned.
The cylinder is in the timing position as shown.
★**CAUTION**：Cannot rotate crankshaft counterclockwise

·Check valve lash
Measure the valve lash with a plug rule Ⓐ and measure the clearance between the valve clearance between the end of the rod and the adjusting screw Ⓑ.
-Valve lash (when cold)
exhaust door：0.02～0.03mm
Inlet valve：0.02～0.03mm

★If the valve lash is incorrect, adjust the valve

clearance.

• **Adjust valve lash**

Loosen the lock nut and turn the adjusting screw until the clearance is correct;
Hold the adjusting screw Ⓐ in a pair of sharp-nosed pliers and tighten the locking tighten the locknut Ⓑ;
Tightening torque of locknut: 9 to 11 N-m.
Review valve lash.

★If lash is incorrect, readjust.

★If clearance is correct, adjust the other valve

Crankcase oil

• **Oil change**

-After the engine has warmed up, leave the engine in the front and rear left and right in a horizontal position.
-Remove the oil drain screw plug Ⓐ and drain the oil.
-Remove the oil filter and spring, and use tweezers and cleaner to remove impurities and contamination from the chamber.
and cleaner to remove impurities and dirt from the chamber.
-Check that the oil filter screen is not damaged or dislodged.
If the oil filter is damaged, replace it.
-Reassemble the oil filter and spring firmly.
-Add the specified type and volume of oil or use the recommended lubricant according to the actual operating environment.
Use the recommended lubricant according to the actual operating environment.
Viscosity
Viscosity: 15W/40 SF
Viscosity: 15W/40 SF
Volume: 0.8L (engine completely dry).

★Oil drain bolt tightening torque: 15-20N-m

★CAUTION： Please use the specified oil and do not add other chemical additives to the oil.
Do not add other chemical additives to the oil.

• Check engine oil level.

• To routinely check the oil level,
place the entire vehicle horizontally and
Idle the vehicle for one minute,
turn off the engine and let it stand for one minute.
Unscrew the oil dipstick, wipe the
surface of the oil clean and reinsert
it into the engine.

Insert it back into the engine and take it out, and observe the oil level of the dipstick should be on the mark.

The oil should be above the scale line Ⓐ.

Spark plugs

Clean spark plugs

-Remove the spark plugⒶ.
-Clean the spark plug, preferably in a sandblasting unit.
Then wash off the abrasive particles. It can also be cleaned with a steel
wire brush or other suitable tool for cleaning.
-If the spark plug electrodes are corroded or damaged,
or if the insulation material is cracked, replace the spark plug.
material is broken, replace the spark plug. Use standard or equivalent spark plugs.
Use a standard spark plug or equivalent.

Spark Plug Gap Check

-Measure the clearance with a plug gauge Ⓐ.
-If the gap is not correct, use a suitable tool to carefully bend the side electrode to obtain the correct gap.

★**Spark plug gap：** 0.6mm-0.7mm

Clutch gap

Adjusting the clutch gap

-Remove the trademark cover Ⓐ of the right cover.
-Loosen the nut Ⓑ and turn the adjusting bolt counterclockwise until there is a noticeablesense of resistance and then turn it back 1/8 (45°) clockwise to retighten the adjusting bolt Ⓑ.
tighten the nut Ⓑ, tightening needs to use a one screwdriver Ⓒ to hold the clutch adjusting bolt.
Tighten the clutch adjusting bolt with a screwdriver.

★**Clutch adjusting nut solid torque：15-18N·m**

3 Cylinders and Pistons

Cylinder head·····5-12

Valve rocker arms and camshafts·····5-15

Inlet and exhaust valves·····5-16

Cylinder block·····5-17

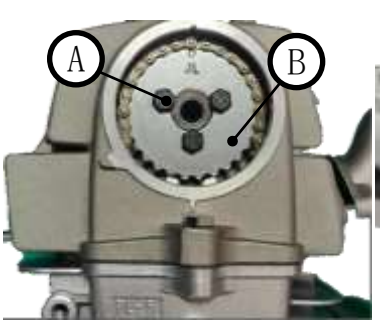
Piston combination·····5-18

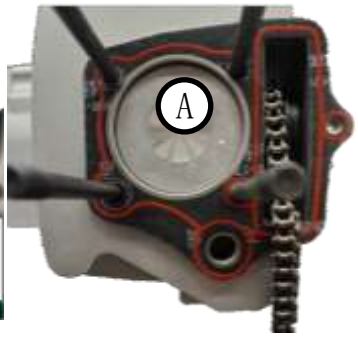
Cylinder head

1. Remove cylinder head cover

·Dismantle:
4×cap nut
3×Steel washers
Copper washers
Cylinder head head cover Ⓐ
Cylinder head cover gasket
Cylinder head left cover bolt Ⓑ
Aluminum washer
Cylinder head left cover
Cylinder head left cover gasket
2 x Cylinder head right cover bolt
Cylinder head right cover Ⓒ
Cylinder head right cover gasket
2×Valve cover Ⓓ
2×O-ring

2. Removing the cylinder head





• Dismantle：
3 x Timing sprocket bolts Ⓐ
Timing sprocket Ⓑ
Hexagon head bolts Ⓒ
-Remove the cylinder head assembly.

-Remove the 2 × locating pin Ⓐ, cylinder head gasket Ⓑ, rectangular seal Ⓒ, bushing, and rectangular seal.

3. Check cylinder head

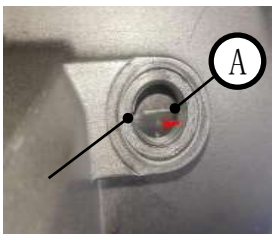
-Clean the bottom of the cylinder head

★Clean without scratching the end surface

-Check the spark plug holes and valve seats for cracks
-Place the cylinder head on a marble plane and use a plug ruler to

Check the flatness of the cylinder head,
if it is greater than 0.07mm, please
Replace the cylinder head

4. Timing



• **Dismantle:**

Large Viewport Cover (O-Ring) Ⓐ
Small sight hole cover (O-ring)Ⓑ
-Place the sleeve on the magneto rotor nut and clockwise
clockwise rotation of the crankshaft until the magneto rotor has a
"T" mark Ⓐ on the magneto rotor aligns with the notch Ⓑ on the left case cover.
The piston Ⓒ is flush with the end face of the cylinder block.

★**CAUTION:** The magneto rotor cannot be rotated counterclockwise.

5. Installation of cylinder head

-Replace the cylinder head gasket with a new one
-Clean the cylinder head and cylinder block end faces of any residual paper Gasket and oil
-Install:
New cylinder head gasket
2 x locating pins Ⓐ
Rectangular sealing ring Ⓑ
Bushings
Rectangular seal
Cylinder head
Cylinder head bolts Ⓒ (preloaded)

★**CAUTION:** The cylinder head bolts should be tightened after installing the cylinder head cover
tightened after installation of the cylinder head
cover, otherwise air leakage from the cylinder
head may result.

6. Installing the Cylinder Head Cover

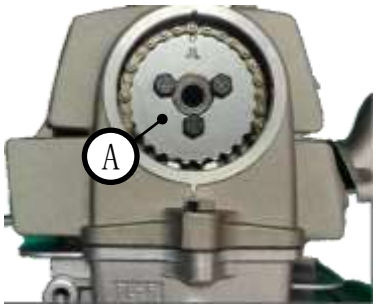
Ⓐ

-Replace the gasket with a new one
-Clean up the mounting surface
-Install:
Cylinder head covers Ⓐ
New cylinder head cover gasket
Copper gasket Ⓑ
3×Steel washers
4×Cap nut
-Fastening cylinder head bolts Ⓒ

• **Tightening torque：**

Cylinder head bolt torque 10-12N.m
Cap nut torque 13-15N.m

★**CAUTION：** As shown in the location of the diagram, the copper gasket Ⓑ should be placed at the cylinder head oil passage (lower left).

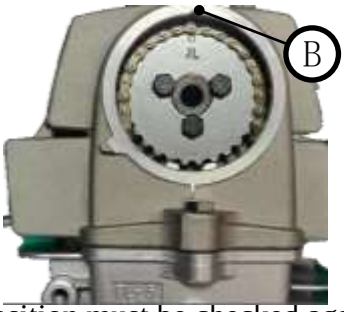


7. Installation of timing sprocket

• Mounting：
Timing Sprocket Ⓐ
3 x Timing sprocket bolts

• **Tightening torque：**
Timing sprocket bolt torque 9-11N.m

★**Checking the timing position：**
The timing sprocket mark Ⓐ is aligned with the cylinder head notch Ⓑ and the "T" mark on the magneto rotor Ⓒ is aligned with the notch on the left case cover Ⓓ.



★**CAUTION：** The chain must not be turned during installation, and the timing position must be checked again by turning the magneto rotor two revolutions after installation.

8. Adjusting intake and exhaust valve clearances

• Adjust valve lash

Loosen the lock nut and turn the adjusting screw until the the gap is correct;
Hold the adjusting screw Ⓑ with sharp-nosed pliers Ⓐ and tighten the locking
Tighten the locknut;
Tightening torque of locknut: 9 to 11 N-m.

Review valve lash.

★If lash is incorrect, readjust.

★If clearance is correct, adjust the other valve

★Check: rotate the rotor two revolutions to revert to the timing position

Check that the valve lash on both sides is normal, and when it is correct, tighten the Retighten the sight hole cover Ⓒ in place.

9. Installation of cylinder head left and right covers

-Replace the gasket with a new one
-Clean the cylinder head mounting surface

·mounting：

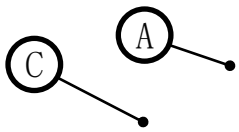
New cylinder head right and left head gasket
Cylinder head right head Ⓐ
2 x Cylinder head right cover bolt
Cylinder head left cover Ⓑ
Cylinder head left cover bolt
Gasket
2×Valve cover Ⓒ
2×O-ring

- **Tightening torque：**

Cylinder head left cover bolt torque 8-10N.m
Cylinder head right cover bolt torque 10-12N.m

Valve rocker arms and camshafts

1. Remove valve rocker arms and camshafts



- **Dismantle：**

2 × rocker arm shafts Ⓐ
2×Valve rocker arm Ⓑ
Limit plate Ⓒ
Camshaft Ⓓ

2. Check

·Check rocker arm shaft：

Check the rocker arm shaft for abnormal wear;
if there is a problem, replace the part promptly.

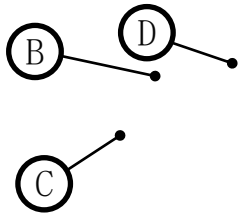
·Check the valve rocker arms：

Check whether there are cracks on the surface of the valve rocker arm, whether there is abnormal wear on the inner wall of the valve rocker arm shaft hole, whether the adjusting bolt and adjusting nut can be used normally, if there is any problem, please change the parts more timely.

·Check camshafts：

Observe whether there is any damage to each part of the gas distribution cam combination, and whether the intake and exhaust cams of the gas distribution camshaft assembly are badly worn; if there is any problem, replace the parts promptly.

3. Install valve rocker arms and camshafts



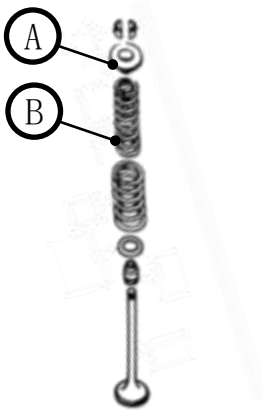
·mounting：

Camshaft Ⓐ
Limit plate Ⓑ
2 x valve rocker arms Ⓒ
2× Rocker arm shaft Ⓓ

★ The rocker arm shaft has the threaded side facing out.

Inlet and exhaust valves

1. Remove intake and exhaust valves



★Preparation of specialized tooling

- **Dismantle：**

2×Valve spring seat Ⓐ
4×Valve locking clip
2×Valve inner spring Ⓑ
2×Valve outer spring
2×Valve oil seal Ⓒ
2×Valve spring seat
Intake valve Ⓓ
Exhaust valve

★**CAUTION：** Specialized tools are required to disassemble the valves, so do not disassemble them if you do not have the conditions to do so.

2. Check

·Check the intake and exhaust valves;

Measure and check whether the intake and exhaust valves are bent, worn, serious carbon accumulation, if there is a problem, please change the parts in a more timely manner.

★**Maximum size**：air intake： ϕ4.955mm

ventilate： ϕ4.940mm

• Checking internal and external springs;

Measure and check the inner and outer springs for damage and deformation, measure the free height of the inner and outer springs with a suitable gauge, if there is any problem, please replace them in time.

★**Maximum size**：internal spring:31.78mm

Outer spring:34.55mm

3. Installation of intake and exhaust valves

·Preparing special tooling

·Replacement of new valve oil seals

·Mount：

2 x valve spring seat rings Ⓐ

2 x new valve oil seals

Intake valve Ⓑ

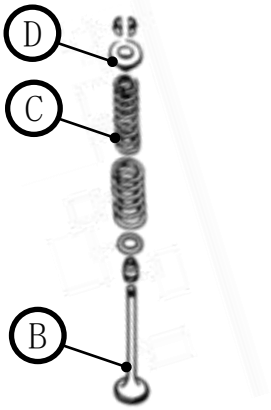
Exhaust valve

2×Valve inner spring Ⓒ

2 × valve outer spring

2×Valve spring seat Ⓓ

4 × valve locking clips



Cylinder block

1. Disassemble the cylinder block

• Dismantle：

Chain guide roller pins Ⓐ

Washers

Chain guide roller assembly Ⓑ

Cylinder block bolts Ⓒ

Cylinder block

Cylinder block gasket

Rectangular seal Ⓓ

2 x locating pins Ⓔ

2. Check

• **Check chain guide roller assembly**

Observe the chain guide roller assembly for wear and hardening, and replace it if there is a problem.

• **Check the cylinder block**

Clean the oil on the inner wall of the cylinder, observe whether there is any abnormal wear on the inner wall, and measure the inner diameter of the cylinder by using the appropriate inspection tool, if there is any problem, please replace it in time.

★**Maximum size**：Cylinder bore：φ54.02mm

3. Installation of cylinder block

-Replace the gasket with a new one

-Clean end faces of residual paper gaskets and oils

• mounting：

2 x locating pin Ⓐ

New cylinder block gasket

Rectangular seal Ⓑ

Cylinder block

Cylinder block bolts Ⓒ

Chain guide roller assembly Ⓓ

Chain guide roller pin

Washers

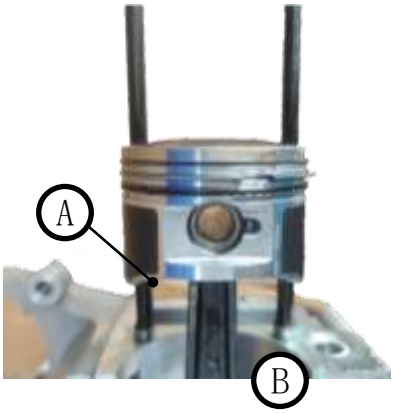
• Tightening torque：

Cylinder block bolt torque 10-12N.m

Chain guide roller pin torque 14-16N.m

Piston combination

1. Disassemble the piston



·**Dismantle**：

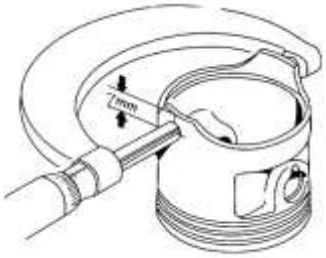
Piston retaining ring Ⓐ

Piston pin

Piston Ⓑ

Piston ring assembly Ⓒ

★**CAUTION**：**When disassembling the piston ring assembly, record the installation position and opening direction of the piston ring, if th piston ring is not damaged, it may not be dis**



• Check piston

Inspect piston surfaces and piston ring grooves for abnormal wear,destruction.

Use a feeler gauge to check the outside diameter at a height of 7 mm from the piston skirt.

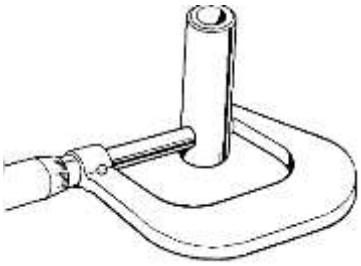
Check piston ring groove clearance using a plug gauge.

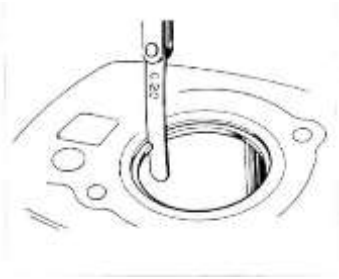
★Maximum size：

Piston outer diameter： φ53.945mm

first ring：0.08mm　second loop：0.08 mm

oil ring：0.15 mm





• Check piston pin

Check the surface of the piston pin for abnormal cracks, and measure the outside diameter of the

★Maximum size： Piston pin outer diameter: φ13.99

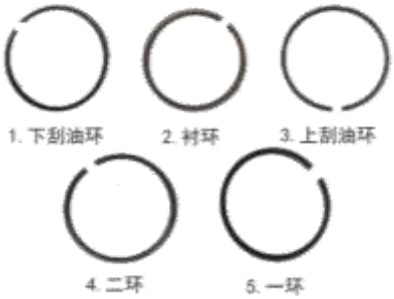
• Check piston ring combination

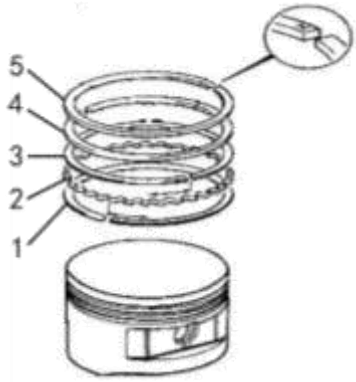
Check the piston rings for damage.

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

★Maximum size： first ring：0.5mm

second loop：0.5mm　oil ring:1.4 mm





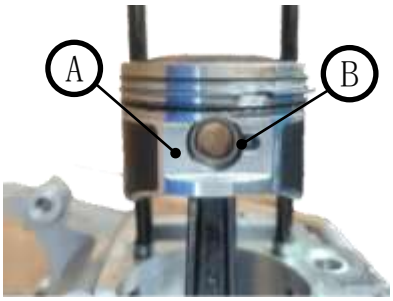
2. Piston ring assemblies

• Assembling Piston Ring Sets：

Install the piston rings sequentially from bottom to top in the specified installation order and opening direction as shown in the figure.

★CAUTION： The first and second ring markings face up, the rest of the piston rings are not positive or negative, and care is taken not to scratch the piston.

3. Installation of piston



·mounting：

Piston Ⓐ

Piston pin

New piston retaining ring Ⓑ

·Check piston ring opening position

4 Left case cover and magneto combination

Left box cover……5-20

Magneto combination……5-21

Starter motor……5-22

Grease trap……5-23

Left box cover

1. Removing the left box cover

·Dismantle：
Left box cover Ⓐ
4 x left box cover bolts
Left box cover gasket
2×Locating pin

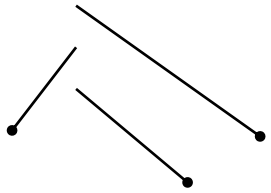
2. Check

·Check the left box cover
Observe the left box cover for breaks and cracks
Replace if there is a problem.

3. Installation of the left box cover

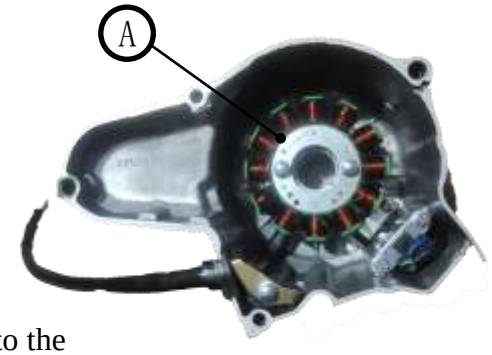
·Installation of the left box cover：
2×Locating pin
Left box cover gasket
Left box cover Ⓐ
4×Left case cover bolts
·Tightening torque：
Left case cover bolt 10-12N.m

• **CAUTION：** There is no sealing requirement for the left box lid, so if the gasket is not broken it does not need to be replaced.



Magneto combination

1. Removal of magneto stator



• Dismantle:
Magneto stator
2×Stator bolt Ⓐ
2 × Trigger bolts
Trigger wire lever Ⓑ
Trigger wire platen bolt
Wiring harness lever Ⓒ
Harness platen bolt
·**Check**: Check the magneto stator for damage to the coil for wear and breakage.

2. Disassembly of magneto rotor

• Dismantle:
Rotor Nuts
Magneto Rotor Ⓐ
• Check: Check the magneto rotor for knocks and wear and tear.

★**CAUTION**: Special tooling is required to disassemble the rotor, and the magneto rotor must not be struck during disassembly.

3. Mounting the magneto stator

·**Mounting:**
Magneto Stator
2×Magneto stator bolts Ⓐ
2 × Trigger bolts
Trigger wire lever Ⓑ
Trigger wire platen bolts
Wiring harness lever Ⓒ
Harness platen bolts

·**Tightening torque：** Stator bolt: 10-12N.m
Trigger wire pressure plate bolt: 10-12N.m
Trigger bolt: 7-9N.m
Trigger wire pressure plate bolt: 5-7N.m

★**CAUTION：**Keep the magneto rotor harness at the proper length when installing, not too long or it will be broken by the rotor.

4. Mounting the magneto rotor

• **Mounting：**
Magneto Rotor
Rotor Nut Ⓐ
·**Tightening torque：** Magneto rotor nut 40-45N.m

★**CAUTION：** Thread locking adhesive is required to install the magneto rotor nut.

Starter motor

1. Removing the starter motor

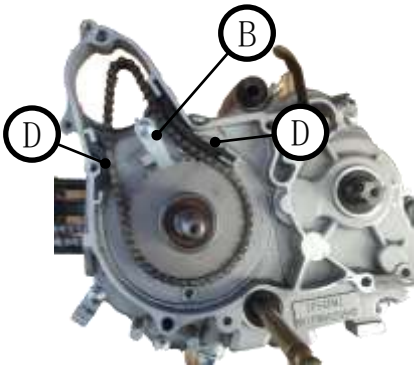
·**Dismantle：**
Starter motor Ⓐ
3 x starter motor bolts

·**Check：** Check the starter motor for bump damage and O-rings for damage and breakage.

2. Removing the electric starter sprocket

·**Dismantle：**
Starter Sprocket Locating Plate
Starter sprocket locating plate bolt Ⓐ
Electric starter sprocket Ⓑ
Electric starter chain
Starter chain guide plate I
Starter chain guide II

·**Check：**
Electric starter sprocket for cracks and damage
Starter chain guide for severe wear
Electric starter chain for wear and damage



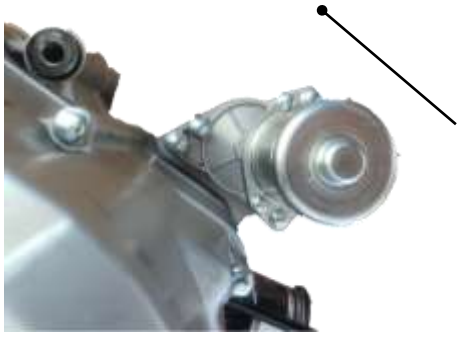
3. Installation of electric starter sprocket and starter motor

• **Mounting：**

Electric starter sprocket (41T) Ⓐ
Electric starter chain
Starter sprocket positioning plate
Starter sprocket positioning plate bolt Ⓑ
Starter motor Ⓒ
3 x starter motor bolts
Starter chain guide plate I Ⓓ
Starter chain guide II Ⓓ

• Tightening torque：

Starter sprocket positioning plate bolts:9-11N.m
Starter motor bolt:10-12N.m



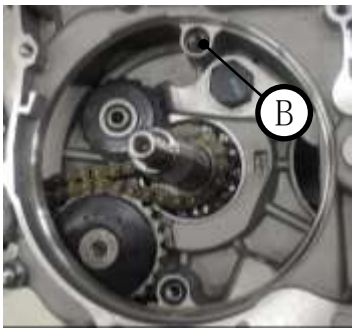
Grease trap

1. Remove grease trap

·Dismantle：

Grease Trap
2×Grease trap bolts Ⓐ
2×O-ring Ⓑ

·Check： Check grease trap for damage and O-rings for wear and breakage.



2. Installation of grease traps

·mounting：

2×O-ring Ⓐ
Grease trap
2×Grease trap bolts Ⓑ

★CAUTION： Apply appropriate amount of oil at the O-ring of the grease trap, tighten the bolts after installing in place, and when installing, you should use tools with soft texture such as wooden sticks to knock the grease trap evenly to prevent the O-ring from being squeezed and damaged to affect the airtightness.

5 Right case cover and clutch

Right box cover·····5-25

Clutch ·····5-26

Right box cover

1. Removing the right box cover assembly

• Dismantle：
Right box cover Ⓐ
8 x right box cover bolts
Right case cover gasket Ⓑ
2 × Locating pin

• **Check：** Check the right box lid for bump damage.

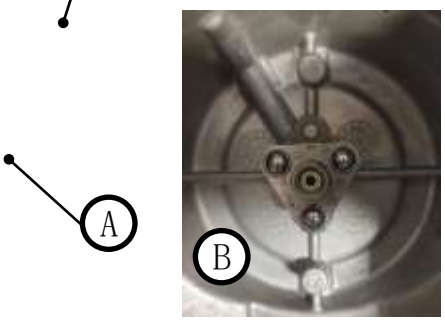
★Clean： Clean the right crankcase body and right case cover end surfaces
Paper gasket and oil residue on the end faces of the right crankcase and right case cover

2. Disassembling the right box cover assembly

·Dismantle：
Right logo cover Ⓐ
2 x logo cover bolts
Nut
Gasket
O-ring
Clutch adjusting bolt Ⓑ

Clutch tappet assembly

3. Assembling the right box cover combination



·Mounting:
Clutch adjusting bolts
Clutch Tappet Assembly
New O-Ring
Gasket
Nut Ⓐ

★**CAUTION:** The clutch tappet assembly's locating post needs to snap into the right case cover locatorⒷ.

4. Install right box cover

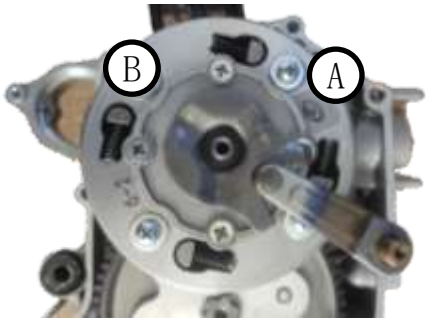
·mounting:
2 x locating pin Ⓐ
New right box cover gasket
Right box cover Ⓑ
8 × right box cover bolt

★Adjusting the clutch gap: See P10 for method.

Right logo cover
2 x logo cover bolts

Clutch

1. Removing the Clutch



·Dismantle:
Oil Through Hose Ⓐ
Oil feed tube spring
Clutch cam plate assembly Ⓑ
Clutch lever arm assembly Ⓒ
End cover (including bearing)
End cover gasket
4 x End cap bolts

Round nut Ⓓ
Butterfly washer
Check washers
Clutch Ⓔ

·**Check：** Check the clutch and other parts for damage.

★Clutch performance should be tested before

dismantling the whole vehicle such as hill climbing
test, if the test result is poor or the clutch slips, the
If the test result is poor or the clutch slips, it is recommended to replace the clutch directly.

2.Disassembling the clutch

★If you do not have relevant experience, you cannot dismantle the clutch and directly replace the entire clutch.

-Disassembly：

Retaining ring
Upper pressure plate
2×Steel plate
3×Friction plate
4×Spring
Lower pressure plate

★CAUTION： When disassembling, you need to pay attention to the position and direction of the parts and mark them well, and you should not be able to combine them randomly when assembling.

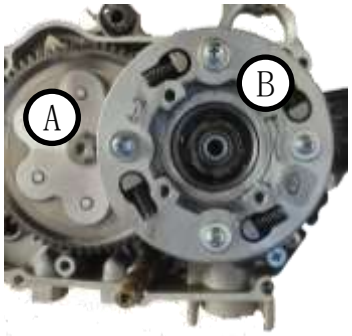
3.Assembly of clutches

·**Assemble and install：**

Lower pressure plate
4×Spring
3×Friction plate
2×Steel plate
Upper pressure plate
Retaining ring

★CAUTION： Assemble in the order in which it was disassembled.

4.Installation of the clutch



·Installation:

Clutch Ⓐ
Stop Washer
Butterfly Nut
Round nut Ⓑ

★After tightening the round nut it is necessary to snap the non-return washer

After tightening the round nut, it is necessary to snap the backstop washer into the groove of the round nut Ⓑ.

End cap (with bearing)Ⓒ Ⓑ Ⓒ Ⓒ Ⓒ End cap gasket
End cap gasket
4 x end cap bolts
Clutch operating arm assembly Ⓓ
Clutch cam plate assembly
Oil feed tube spring
Oil feed pipe

★Note: When installing the round nut, apply thread locking adhesive to the threads.

-Tightening torque:

Round nut: 45-50N.m
End cap bolts: 5-7N.m

6 Drive Gear and Shift Shaft

Drive gear·····5-29

Gear shift system·····5-30

Timing chain·····5-31

Drive gear

1. Removing the drive gear

-Disassembly:

Primary drive gear (17T)Ⓐ
Bushings
Primary driven gear (69T) Ⓑ
Retaining ring
Spacer pad

-Check: Check the drive gear for wear and damage.

★CAUTION: The retaining ring is a disposable part, and after disassembly, it is recommended to replace the retaining ring with a new one.

2. Installation of drive gears

-Mounting:

Spacer Pad

Bushings

Primary driving gear (17T)Ⓐ

Primary driven gear (69T)Ⓑ

New retaining ring

★ Caution: After installation is completed, the secondary shaft needs to be checked for up and down play, if there is no play the case needs to be disassembled for inspection.

Gear shift system

1. Removing the gear display cable

-Disassembly:

Stall display line lever Ⓐ

Stall display line lever bolt

Stall display wire Ⓑ

Moving contact Ⓒ

Moving contact bolt

-Check: Check that the gearshift wire is not broken and that the movable contact is not worn.

2. Removing the shift shaft

-Disassembly:

Locating plate assembly Ⓐ

Locator plate reset spring

Shift shaft Ⓑ

★Shift drum cam plate bolt

★Shift drum five-star plate Ⓒ

★Shift drum pin Ⓓ

-INSPECTION: Check the shifter shaft spring and hook plate for damage.

★CAUTION: Remove the shifter drum pin and store it away, being careful not to lose it or fall into the case. If the case is not disassembled, do not disassemble here.

Record the direction of the shifter drum five-star plate.

3. Installation of the shift shaft

-Installation:

Variable speed drum pin Ⓐ

Shift drum cam plate

Shift drum cam plate bolt

Shift shaft Ⓑ

Locator plate assembly Ⓒ

Locator plate reset spring

-Tightening torque:

Locating plate assembly: 9-11N.m

Shift drum cam plate: 10-12N.m

★Caution: Install the shifter drum five-star plate in the same direction as when it was removed.

4. Installation of the stall display line

·Installation:

Moving Contacts Ⓐ

Moving contact bolts

Stall display wire Ⓑ

Stall show wire lever

Stall line lever bolt Ⓒ

-Tightening torque:

Movable contact bolt: 7-9N.m

Stall line lever bolt: 10-12N.m

Timing chain

1. **Disassemble the chain**

-Disassembly:
- Sealing screw plug Ⓐ
- Washers

Chain tensioner spring
- Chain tensioner bar assembly Ⓑ
- Timing chain Ⓒ
- Chain tensioning roller I Ⓓ
- Chain tensioner rod assembly

Chain tensioner arm pin
- Chain tensioning roller II Ⓔ
- Chain tensioning roller II pin

-Inspection: Check the disassembled parts for damage.

Chain tensioning rollers I and II need to be replaced if they are badly worn.

2.**Installation of chain**

-Installation:

Timing Chain Ⓐ
Chain tensioning roller I Ⓑ
Chain tensioner arm assembly
Chain tensioner arm pin
Chain tensioning roller II Ⓒ Chain tensioning arm pin
Chain tensioning roller II pin
Chain tensioner assembly Ⓓ Chain spring
Chain tensioner spring
Washers
Sealing plug Ⓔ

-Tightening torque:

Chain tensioning arm pin: 14-16N.m
Chain tensioning roller II pin: 10-12N.m
Sealing screw plug torque: 18-20N.m

7 Primary and secondary shafts and cranks

Left and right boxes·····5-33

Primary and secondary shafts and cranks·····5-34

Bearings and shock absorbing rubber bushings·····5-35

Left and right boxes

1. Disassemble the box

-Disassembly:

Case fastening bolts

Right crankcase body

Crankcase gasket

2×Locating pin

★CAUTION: It is recommended to replace the crankcase gasket with a new one, and and need to clean off the residual gasket and oil on the end face of the case body.

-**Inspection**: Check the crankcase for cracks and damage, and make sure the oil passages are clear.

2. Installation of the box

-Check that the left and right box end faces are clean

-Mount:

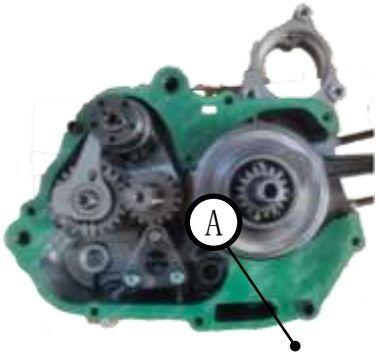
2 x locating pins Ⓐ

New crankcase gasket
Right crankcase body
Case Tightening Bolts

★CAUTION: Installation requires the right crankcase body to be in place before driving the bolt.

-Tightening torque:

Case tightening bolt torque: 10-12N.m



Primary and secondary shafts and cranks

1. Disassembly of main and secondary shafts and cranks

-Disassembly:

Main shaft combination
Subshaft combination Ⓐ
Shift drum
Reverse gear shaft locating plate
2 x reverse gear shaft locating plate bolts
Reverse idler gear assembly Ⓑ
Reverse gear shaft sleeve
Reverse gear shaft
2 × locating pin
Crank connecting rod combination Ⓒ

-Check:

1, Check if the main and secondary shaft gears are badly worn.
2, Variable speed drum jaws rotate flexibly
3, Crank connecting rod combination rotates flexibly without damage
4、Oil filter is not broken and clean.
5, the case on the oil seal is not broken
-Check: The oil and impurities in the box using cleaning
Clean the oil and impurities in the case with cleaning agent.

2. Installation of main and secondary shafts and cranks
-Installation:
Crank connecting rod combination Ⓐ
Main shaft combination Ⓑ
Subshaft Combination
Shift drum
2 x locating pins
Reverse gear shaft
Reverse gear bushing
Reverse idler gear combination
Reverse gear shaft locating plate Ⓒ
2×Reverse gear shaft locating plate bolts

★ Caution: The main and secondary shafts and gear drums should be combined and installed together, and the crank linkage combination should be tapped clockwise when installing.

Installation, crank connecting rod assembly should be clockwise tapping when installing.
Ensure that the crank connecting rod combination is subjected to even force.
-Tightening torque:
Torque of reverse gear shaft locating plate bolts: 10-12N.m.

Bearings and shock absorbing rubber bushings

1. Disassemble the bearings and shock absorbing rubber bushings
-Disassembly:
Bearing (TM) Ⓐ
Bearing Ⓑ
Bearing Ⓒ
Bearing Ⓓ
3 x Shock absorbing rubber bushing (short) Ⓔ
Shock absorbing rubber sleeve (long)

★Note: Specialized equipment is required for both disassembly and assembly, so do not disassemble if not necessary.

2.Installation of bearings and shock absorbing rubber bushings
-Mounting:
Bearing (TM)
Bearing
Bearing
Bearing
3 x Shock absorbing rubber sleeve (short)
Shock absorbing rubber sleeve (long)

8 Oil seal

1、Dismantle the oil seal
Disassembly:
Starter sprocket oil seal
Oil sealing disk oil seal
Shift shaft oil seal
Sub-axle oil seal

★Note: The oil seals are all disposable parts and must be replaced with a

After disassembling, the oil seals must be replaced with new ones.
Even if the oil seal is not damaged, it is recommended to replace it directly.

2. Installing the Oil Seal
Installation

Starter sprocket oil seal
Oil sealing disk
Shift shaft oil seal
Sub-shaft oil seal

Note: Apply appropriate amount of oil to the lip of the oil seal when installing, and be careful of oil seal damage.

The oil seal should be installed flush with the end face and sunk 0.5mm.

6 Vehicle chassis

Inspection Information…… 6-2
6.1 Fault diagnosis……6-3
6.2 Front wheel……..……6-4
6.3 Braking system……6-5
6.4 Front Suspension……..…6-7
6.5 Steering system……6-9
6.6 Rear Suspension……..6-11
6.7 Rear Drive Shaft Assembly……..…6-11

Inspection Information

CAUTION

-When overhauling the front wheels and suspension system, the frame must be securely supported before work is performed

-Do not use excessive force on the wheels. Be careful not to damage the wheel.

-When removing a tire from the rim, use a special tire and rim protector to avoid damaging the rim.

Inspection benchmarks

Item		Specification	Limit
Rim	Axial runout	0.8mm	2.0mm
	Radial runout	0.8mm	2.0mm
Tires	Residual groove	—	3mm
	Pneumatic pressure	28kPa(0.28kgf/cm^2)	—
Front brake	Brake handle play	0mm	—

Tightening torque

Item	Fastener Designator	Tightening torque（N·m）
Rear reduction mounting bolts	White zinc M10*40*1.25 half-threaded	55-66
Rear sprocket mounting bolts	Army green M8*16	25-30
Rear Disc Brake Disc Mounting Bolts	Army green M8*16	25-30
Front disc brake mounting bolts	White zinc M6*16 10.9 grade	10-12
Rocker arm ball joint assembly slotted nut	M10*1.25	49-59
Rear Disc Brake Disc Mounting Nut	Color zinc M27*1.5*H10	86-103
Front rim mounting nuts	GB6187-86 M8	49-59
Rear disc brake lower pump bolts	Army Green M8*25 Full Thread	25-30
Front Hub Mounting Nuts	Army green M14*1.5*H18	49-59
Rear Hub Mounting Nuts	Army green M16*1.5*H18 Slot depth 6	77-92
Front disc brake lower pump	Army green M8*16	25-30

bolts		
Rear rim mounting bolts	White zinc M10*1.25	55-66

Tools

Hexagon socket m6	Assembly tool shafts
Open-end ratchet s8	Pneumatic wrench s12
Open-end wrenches s10-s12	Pneumatic wrench s14
Open-end ratchet s14	Socket wrench m12
Open-end wrenches s17-s19	Socket wrench m14
Open-end ratchet s22	Socket wrench m20
Open-end ratchet s24	Socket wrench m24
Phillips screwdrivers	Nose plier, pincers

6.1 Fault resolution

Steering weight

1、The upper bolts of the steering column are too tightened

2、The steering knuckle and frame are too tightly locked.

3、Deformation of steering column

4、Low tire pressure

5、Tire wear

Steering handle shaking

1、Damage to steering bearing, poor fastening

2, Left and right shock absorber mismatch

3、Tires are skewed

4、Frame deformation

5、Tire wear, bias grinding

6、Wheel bearing shaking

Front Wheel Bouncing

1、Deformation of wheel rim

2、Bad wheel bearing

3、Bad tires
4, Improper wheel balance
5、Poor fastening around the wheel axle

The wheel rotation is not flexible

1、Bad wheel bearing
2, improper installation of the front wheel
3, brake fluid pipe, cable trip

Rear suspension is too soft

1, the rear shock absorber elasticity is weakened
2, tire pressure is too low

Rear suspension is too hard

1、Rear shock absorber damage
2、Tire pressure is too high

Rear shock absorber noise

1、Bad rear shock absorber
2、Shock absorber fastening parts loose

Poor braking effect

1、Brake adjustment is bad
2、Damaged brake disc surface
3、Worn brake pads

6.2 Front wheel

Dismantle

1.Set up the front wheel with a tool and make sure that no force is applied to the front wheel
2.Remove the retaining nut 1
3.Remove the front wheel 2

Inspection of wheel rims

Check wheel rim 3 for damage, deformation, or scars, and replace if abnormal. Turn the wheel slowly and measure the runout of the rim 3 with a micrometer
Limit of use: Axial: 2.0mm
Radial: 2.0mm

Installation of rims

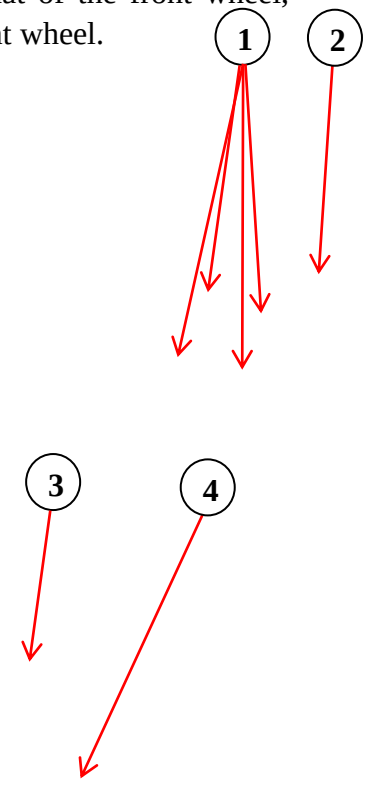
Pressing the rim 4 into the tire on a special machine

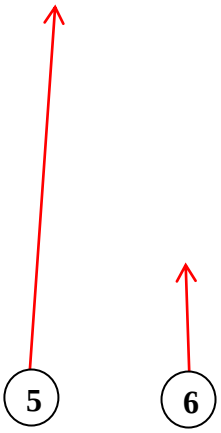
Front wheel mounting bracket removal

1.Remove front wheel
2.Remove the front caliper body 5
3.Remove cotter pin
4.Remove the rim axle mounting nut 6
5.Remove the brake disk and mounting bracket together
6.Remove the front wheel mounting bracket

Mounting

Installation is performed in the reverse order of disassembly.
Rim axle mounting nut torque: 49N-m to 59N-m
Note: Removal and installation of the rear wheel is similar to that of the front wheel, please refer to the front wheel.





4.Remove the brake disk 7 and the front wheel bracket 6 from the vehicle.
5.Remove the brake disk 7

Check

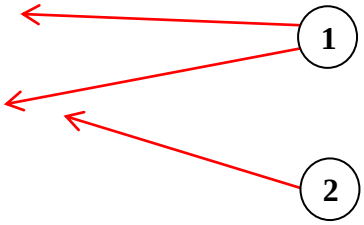
Thickness of front brake disc: less than 3mm, replace with new disc.

Mounting

Installation of brake disk

Brake disk fixing bolt torque: 10N-m～12N-m

6.3 Braking system



Front caliper removal

1.Remove the front wheel
2.Remove the 2 bolts mounted on the brake disk 1
3.Remove the brake caliper 2

Check

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

Mounting

Brake caliper fixing bolt 2 Torque: 10N-m to 12N-m (coated with thread fixer)

Brake Pad Removal

1.Loosen one of the fastening bolts
2.Lift up the shoe bracket 3
3.Remove the brake pads 4

Check

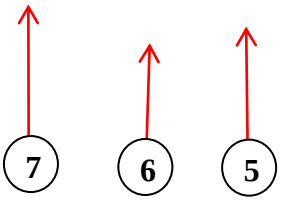
Measure the thickness of shoe 4. When the thickness of shoe 4 is less than or equal to 3 mm, replace both brake pads with new ones at the same time.

Mounting

Installation in reverse order of removal

Front Brake Disc Removal

1.Remove front wheel
2.Remove the brake caliper
3.Remove the slotted nut 5



Front brake handbrake pump removal

1.Unplug the brake switch insert 1

2.Remove the bolt 2

3.Separate the front brake handbrake pump 3 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

Mounting

Installation in reverse order of removal

CAUTION：

Do not hang the brake pump by the brake fluid line!

For fear that tipping the front brake handbrake pump will cause air to enter the hydraulic system, keep it mounted on one side and secure it to the steering handle on the other.

The direction of the oil pipe on the car body, according to the first chapter of the cable, wire class alignment arrangement, must ensure that the brake oil circuit is free of obstruction

When the brake system assembly is installed, the braking force must be checked.

Removal of the brake tee fitting

1.Remove bolt 4

2.Separate brake tee fitting 5 from body

Mounting

Installation in reverse order of removal

CAUTION： Oil pipe in the body of the direction, according to the first chapter of the cable, wire class alignment diagram, must ensure that the braking oil circuit of the smooth braking system, the assembly is installed, you must check the braking power

Rear Brake Caliper Body Removal

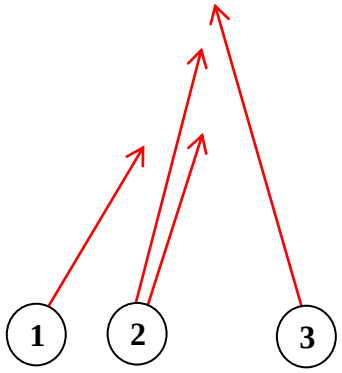
1.Remove bolt 6

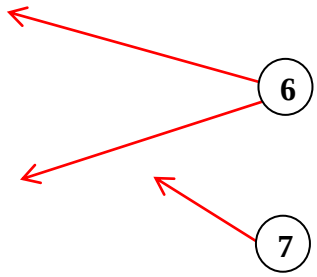
2.Remove the rear caliper body 7

Mounting

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 whether the brake switch and brake light work normally.





6.4 Front Suspension

Removal of the left front suspension combination

CAUTION: When servicing the suspension, the left and right suspensions must not be removed at the same time, otherwise the vehicle will fall down without support.

1.Park the vehicle on a level surface and support the front of the vehicle with a jack to stabilize it.

2.Remove the front body

3.Remove the front wheels

4.Remove the brake caliper

5.Remove the front wheel hub bracket.

6.Remove the left front shock absorber mounting bolts from the vehicle body and the left front lower rocker arm 1.

7.Remove the front shock absorber 2

8.Remove the left front upper rocker arm frame mounting bolts and the nuts that fasten the bolts 3

9.Remove left front upper rocker arm ball pin mounted to left steering knuckle cotter pin and nut 4

10.Remove the left front upper rocker arm 5 Remove the cotter pin and lock nut from the steering tie rod ball pin 6

11.Remove left front lower rocker arm frame mounting bolts and nuts 7

12.Remove left front lower rocker arm ball pin locking bolt 8

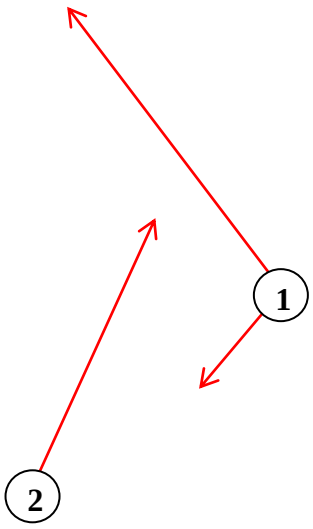
13.Remove the left front lower rocker arm 9

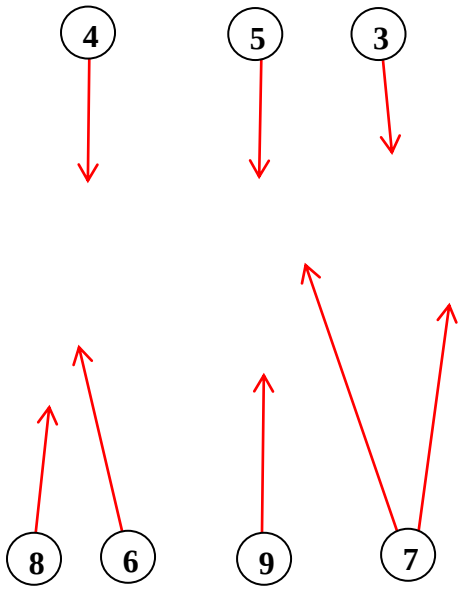
14.Pull the steering knuckle out of the drive shaft. The suspension system of this vehicle is available in various configurations to suit different customer groups. The above introduction for the basic configuration of the suspension system, other configurations of the suspension system maintenance method is similar, you can refer to the above method of maintenance

Mounting

Installation in reverse order of removal

Removal and installation of the right front suspension assembly is the same as that of the left front suspension assembly.





Disassembly and assembly of rocker arm combinations

1.Remove the left front shock absorber
2.Remove the left front upper rocker arm frame mounting bolts and nuts for the fastening bolts 3 (left front suspension assembly diagram)
3.Remove the left front lower rocker arm frame mounting bolts and the nuts for the fastening bolts 7 (left front suspension combination diagram)
4.Remove the wheel, caliper and rim bracket before removing the shock absorber
5.Remove the steering tie rod before removing each bolt
6.Pull the steering knuckle from the front isokinetic drive shaft before removing the left front rocker arm assembly.

7.Remove the left front rocker arm combination
8.Check the upper and lower rocker arms
9.Remove the left front upper rocker arm and weld in assembly 4 (left front suspension assembly diagram).
10.Remove the left front lower rocker arm and weld in assembly 8 (left front suspension assembly).
11.Check whether the grease inside the ball pin is deteriorated (grease model: No.2 lithium grease GB7324-87), whether the dust cover on the ball pin is cracked and aging, such as the above problems should be replaced with a new ball pin.
12.Remove the buffer sleeve combination in the left front upper and lower rocker arm welding combination to check whether the buffer sleeve combination is damaged and aging, and replace it with a new one if necessary.

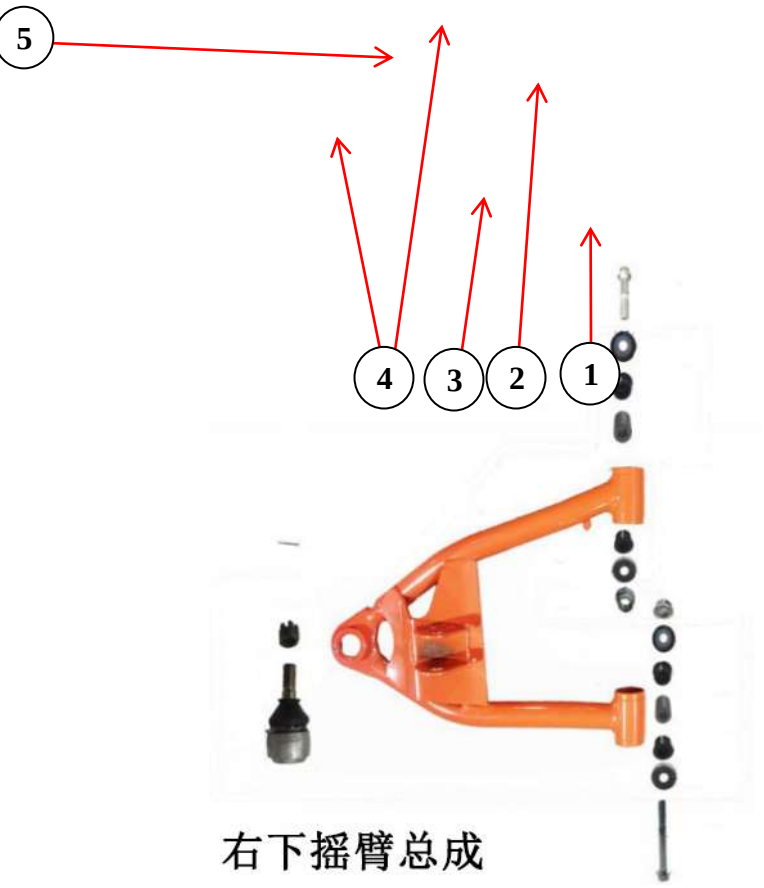
Mounting

Press the ball pin into the rocker assembly with the special tool.
Installation in reverse order of removal
CAUTION： Upper and lower rocker arms should not be shaken after installation, if shaken then replace the new buffer sleeve combination
1.Checking the left steering knuckle
2.Remove the left steering knuckle
3.Remove the wheel hub bearing with a special tool.
4.Check the wheel bearing for damage, rotation and clearance, and replace it with a new one if it is defective.

Mounting

Installation in reverse order of removal

6-8 右上摇臂总成



6.Loosen the emergency stop switch insert (→1.7)
7.Loosen the combination switch insert (→ 1.7)
8.Pull out the left handle sleeve in the direction of the arrow 6
9.Remove the combination switch fixing bolt 7
10.Remove the combination switch 8

Mounting
Installation in reverse order of removal

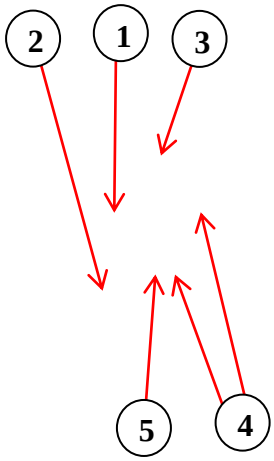
Right Handlebar Removal
1.Loosen the brake switch insert 1
2.Remove front brake set screw 2
3.Remove front brake upper pump 3
4.Remove the gas pedal top cover fixing screw 4
5.Remove the gas pedal upper cover5
6.Remove the throttle cable6
7.Remove the gas pedal fixing bolt7
8.Pull off the right handlebar cover in the direction of the arrow8.
9.Remove the accelerator9

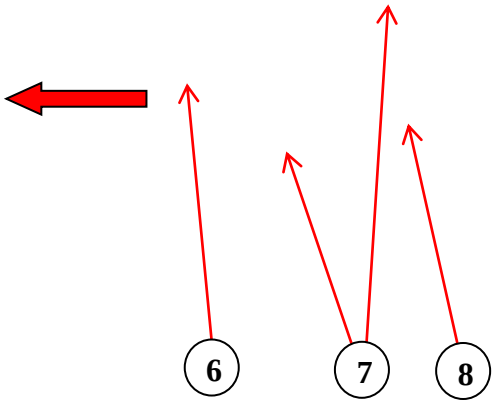
6.6 Steering system

Steering wheel

Left Handle Removal
1.Loosen the brake switch insert 1
2.Remove the rear brake retaining bolt 2
3.Remove the rear brake upper pump 3
4.Remove the emergency stop switch fixing bolt 4
5.Remove the emergency stop switch 5

Mounting
Installation in reverse order of removal





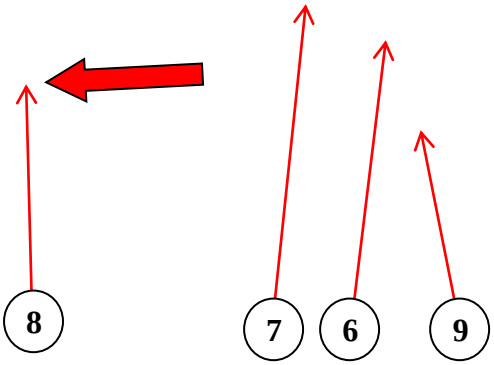
Dismantle

1.Remove steering handle assembly
2.Remove front body
3.Remove the front wheel
4.Loosen the lock nut on the steering tie rod 4
5.Remove the steering tie rods 5
6.Remove the steering rocker arms (1 set each for left and right)
7.Remove the fixing bolts 6
8.Remove the clamping plate and clamping block 7
9.Remove the cotter pin and locknut 8.
10.Remove the steering shaft assembly by lifting the steering shaft upward.

Mounting

Installation in reverse order of removal

CAUTION： Replace the cotter pin with a new one when installing the cotter pin; after the installation is completed, check whether the steering flexibility and the left and right steering angles are the same; when assembling the steering rocker arm, be sure to place the steering rocker arm in the center before assembling the steering axle; when assembling the steering axle, be sure to patiently assemble it, and make sure that the left and right steering angles are the same before locking up the various parts.

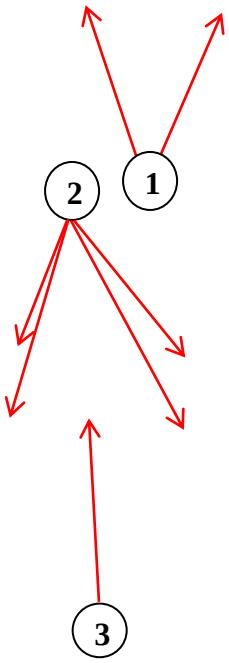


Steering Grip Tube and Gauge Removal

1.Remove left handlebar
2.Remove rear handlebar
3.Remove instrument mounting bolts 1
4.Remove the instrument and its bracket
5.Remove the pressure block fixing bolt 2
6.Remove steering handle tube 3

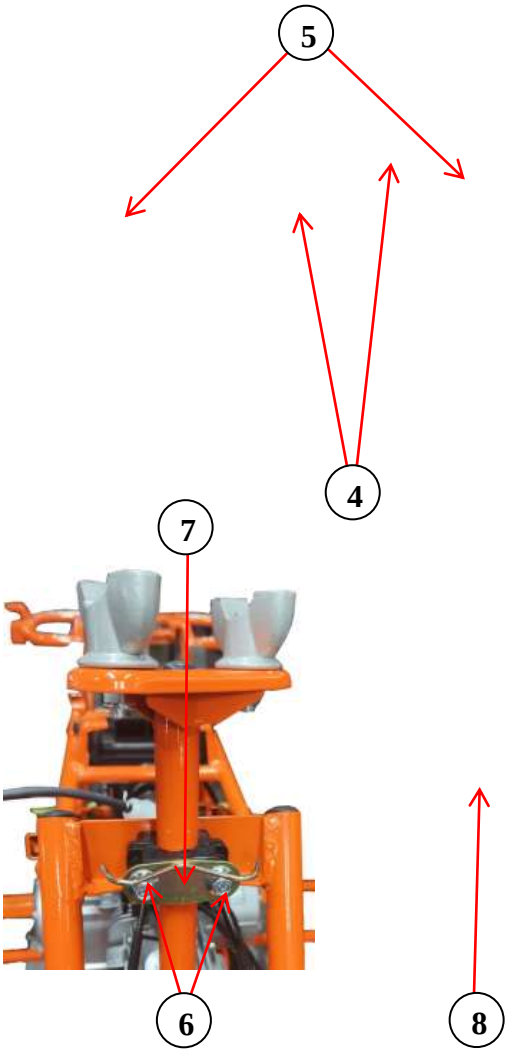
Mounting

Installation in reverse order of removal



Steering system disassembly

Steering Shaft Assembly



6.6 Rear Suspension

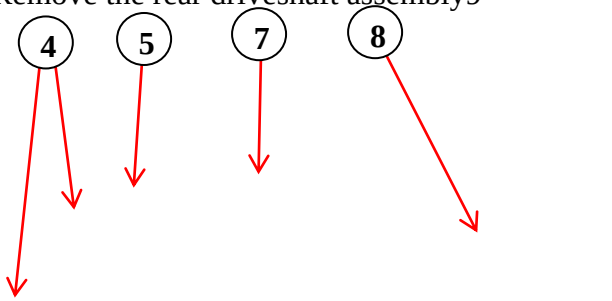
Rear shock absorber removal
Dismantle
When servicing the suspension system, the vehicle body should be suspended before removing the rear suspension system, otherwise the vehicle body will fall down due to unsupported force.
1.Park the vehicle on a level surface and use a jack to stabilize the rear support.
2.Remove the rear body
3.Remove the rear wheels
4.Remove the rear shock absorber mounting screws from the body and the flat fork assembly 1.
5.Remove the rear shock absorber 2

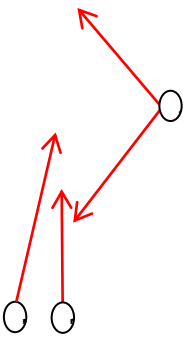
Check
Inspect the removed shock absorber and set the adjustment cam 3 to the proper position

Mounting
Installation in reverse order of removal

6.7 Rear Drive Shaft Assembly

Rear Drive Shaft Assembly Removal
Before removing the rear drive shaft, suspend the vehicle body, otherwise the vehicle body will fall down due to the unsupported rear of the vehicle.
1.Park the vehicle body on a level surface and use a jack to stabilize the rear support of the vehicle and start the operation.
2.Remove the rear body
3.Remove the rear wheels
4.Remove fixing bolts 4
5.Remove the chain cover 5
6.Remove the tensioner wheel and its fixing bolt 6
7.Remove chain 7
8.Remove rear caliper
9.Remove the rear shock absorber
10.Remove the bolts and nuts connecting the flat fork assembly to the frame 8
11.Remove the rear driveshaft assembly9





Check

An exploded view of the rear driveshaft assembly is shown below

No.	Name	Qty.	No.	Name	Qty.
1	Rear axle color zinc	1	9	Bouncing pad military green Φ8*13*2	4
2	Rear sprocket seat black	2	10	Rear disc brake disk Φ 48.4*180	1
3	Steel rear sprocket Color zinc	1	11	Oil seal 55*35*8	2
4	Hexagon socket head cap flange bolts, army green M8*16	8	12	Bearing 6006RS	2
5	Thin nuts	4	13	Rear axle liner	1
6	Zinc color M27*1.5*H10	2	14	White zinc Φ31*35*L88	1
7	Rear hub assembly Electrophoresis black	4	15	Rear axle cylinder black	2
8	Hexagon large head flange bolts zinc color M12*30*1.25	4	16	Bullet cushion	1

Inspection of rear driveshaft after disassembly

· check if the rear hub is damaged, if it is damaged, then it should be replaced with a new part

· check the thickness of the disc brake disk, if the thickness of the disc brake is ≤3mm, then the disc brake disk should be replaced with a new one

· check whether the rear drive shaft is bent or damaged, if so, replace with a new drive shaft

· check the flat fork assembly, if there is damage, replace with new parts

· check the rear sprocket, if there is damage to the teeth, replace with a new sprocket

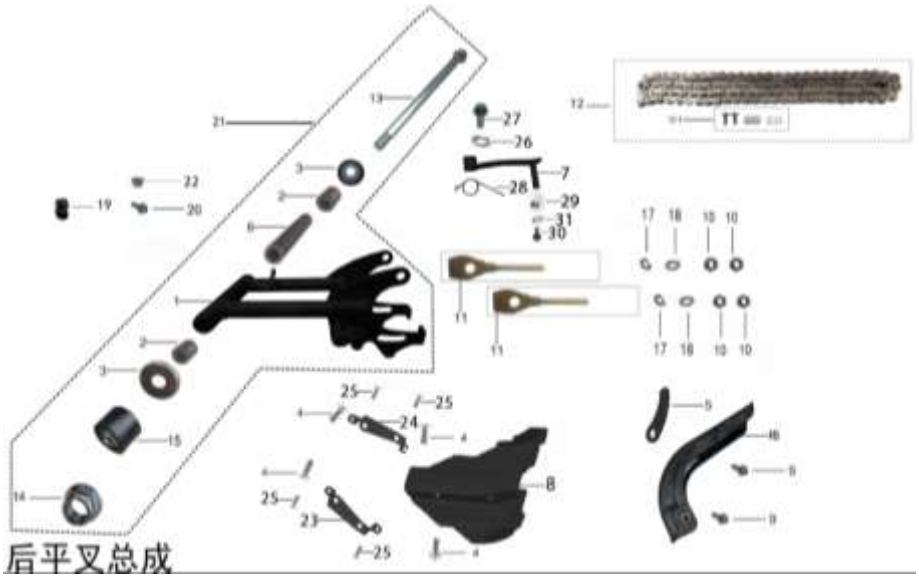
· check the rest of the parts are not damaged, if so, replace with new parts

Mounting

Proceed in reverse order of rear drive shaft disassembly

Caution: When installing the bushings, apply lithium grease containing molybdenum disulfide to both ends of the flat fork shaft.

An exploded view of the rear flat fork assembly is as follows



No.	Name	Qty.	No.	Name	Qty.
1	Flat Fork Assembly Black L=289	1	16	Chain cover black	1
2	Flat fork metallurgical spacer	2	17	Bouncing mat Trivalent color Φ8*13*2	2
3	Φ12.3*24*29	2	18	Flat pad Φ8*16*1.5 in color	2
4	Steering knuckle rubber sealing cover	4	19	Rear Disc Brake Hose Clamp	1
5	Φ12*35*H8+Φ27.5*6.5	1	20	Black/injection molding S-type Φ10 hole	1
6	Hexagon socket head cap screws	1	21	Hexagon socket big head flange bolts	1
7	White zinc M8*16	1	22	Army green M6*16	1
8	Fixed bracket on chain cover	1	23	Flat Fork Assembly	1
9	Flat fork liner tube	2	24	Hexagonal flange self-locking nut	1
10	Φ12.5*19*L143	4	25	Army green M6	4
11	Tensioner bracket black	2	26	Chainstay left fixing bracket	1
12	Rear flat fork lower plate black	1	27	Chainstay right fixing bracket	1
12-1	Hexagon socket head flange bolts	1	28	Hexagon socket head cap screws	1
13	Army green M6*12	1	29	M6*16	1
14	Hexagonal buttress nut Army green M8	1	30	Flat washers Φ8*28*1.5	1

15	Chain adjuster color zinc Φ 13*M8*85	1	31	Hexagon socket big head flange bolts	1

7 Signal and Lighting Systems

Maintenance Instructions……7-1
7.1 Fault resolution…….....7-2
7.2 Inspection of headlights…….....7-2
7.3 Headlight and Rear Tail Light Removal and Installation…….....7-3
7.4 Ignition switch…….....7-4
7.5 Handlebar switch…….....7-4
7.6 Brake light switch…….....7-5
7.7 meter ……7-5

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

Name	Specification	Qty.	Note
Front left headlight	LED Lights	1	Whole Replacement
Front right headlight	LED Lights	1	Whole Replacement
Rear Tail Lights	Rhombus	1	Whole Replacement
Instrumentation	LCD with Sensor/Magnet, Waterproof Plug	1	Whole Replacement

7.1 Fault resolution

First, the left headlight does not light

1、Damaged bulb

2、Connector contact is not good

3、Damaged handlebar switch

Second, the right headlight does not light

1、Damaged bulb

2、Connector contact is not good

3、Damaged handlebar switch

Third, the rear tail light does not light

1、Damaged bulb

2、Connector contact is not good

3、Damaged handlebar switch

Fourth, the meter does not light

1、Damaged screen

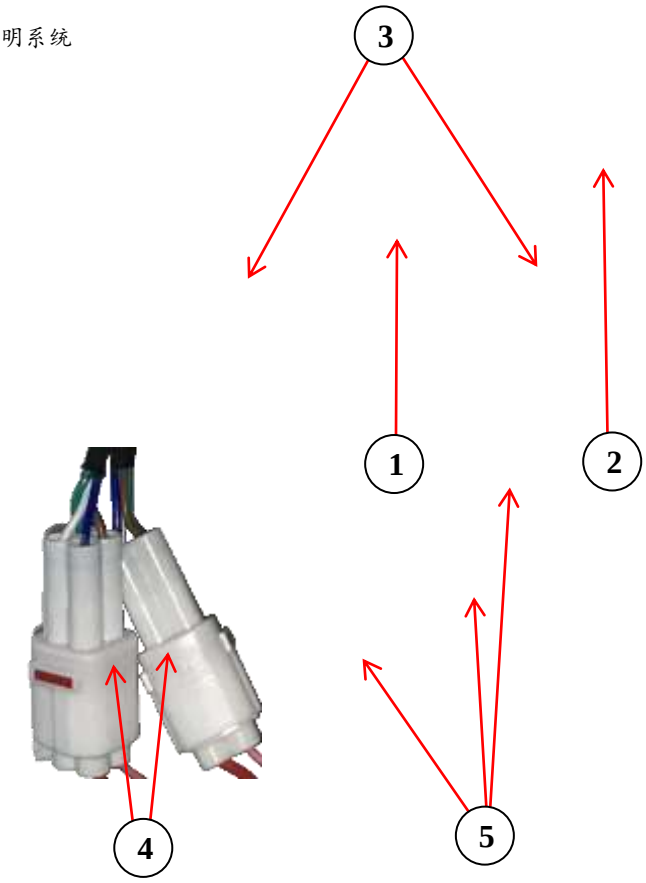
2、Connector contact is not good

7.2 Headlight Inspection

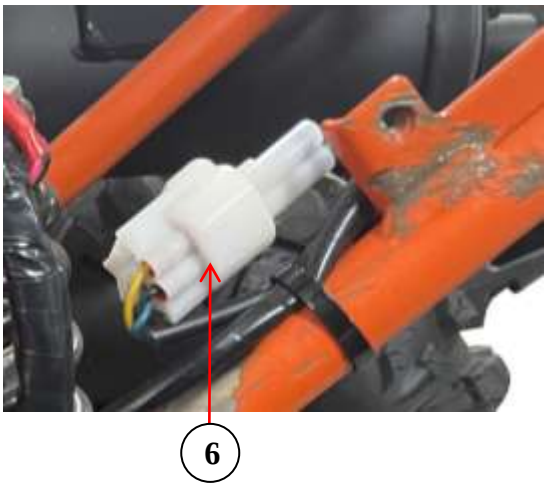
With the ignition switch set to ON, turn the light switch to the
Check if the headlight is on.
- Illuminated: Normal
- Not lit:
Main cable broken or short-circuited
Broken fuse
Damaged switch

If the headlight is damaged, the whole headlight should be replaced

7.3 Headlight and Rear Tail Light Removal and Installation

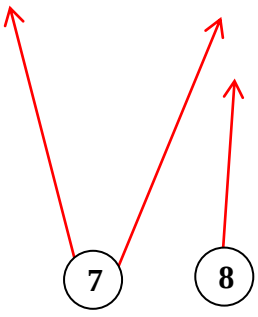


Headlamp
Dismantle
1.Remove cowl 1
2.Disconnect front left and right headlight inserts 4
3.Remove front body 2
4.Remove the headlight fixing screws 5
5.Remove the front left and right headlights 3



Mounting
Proceed in reverse order of disassembly

Tail light
Dismantle
1.Loosen the rear tail light insert 6
2.Remove the fixing screw 7
3.Remove the rear tail light 8



Mounting
Proceed in reverse order of disassembly

7.4 Ignition switch

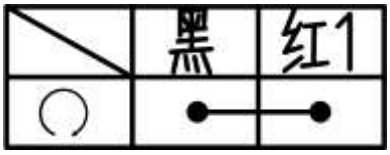
Dismantle

1.Removing the connection for the connection of the electric door lock insert 1
2.Removing the door lock
As shown by the arrow in the figure, press on the protrusion to remove the door lock.

Check

Check whether the terminals of each control switch connector are connected according to the following table.

● - ● is normal.



Mounting

Proceed in reverse order of disassembly

7.5 Modular switch

Dismantle

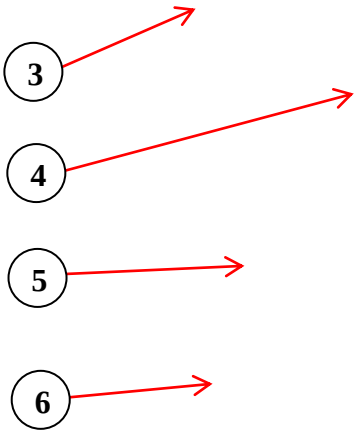
1.Remove the cowl
2.Disconnecting the connection of the left handlebar switch plug 2

Check

Check whether the terminals of each control switch connector are connected according to the following table.

● - ● is normal.

Lighting switch 3
High and low beam switch 4
Turn off switch 5



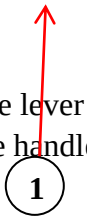
	蓝	黑	棕	白	黑白	绿	黄红
●							
≡D		●	●	●			
≡D	●	●	●				
⊠					●	●	
?						●	●

Mounting

Proceed in reverse order of disassembly

7.6 Brake light switch

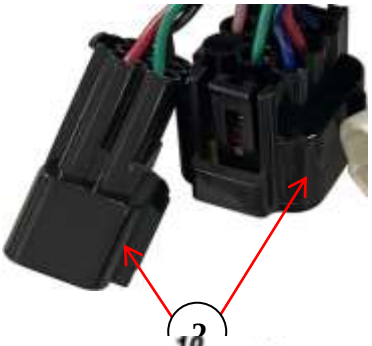
Check for continuity between terminals
Check that the brake light switch 1 is in place.
After confirming that the link is in place, when holding the brake lever when holding the brake handle, but not when releasing the brake handle. Normal. If any of the above checks are abnormal, replace the Brake light switch



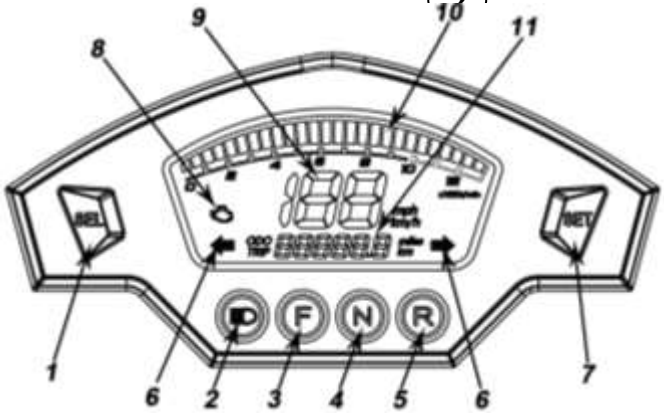
7.7 Meter

Dismantle

1.Remove the fixing bolts 1
2.Remove meter connector 2
3.Remove the meter 3



Mounting
Proceed in reverse order of disassembly
Functional Description
1、SEL
2、Driving beam(blue)
3、Driving Gear indicator(green)
4、Neutral indicator(green)
5、Reverse gear indicator(red)
6、Direction indicator /Hazard Warning Device(RES)
7、SET
8、MIL lamp
9、Speedometer
10、Tachometer
11、Odometer



Indicator Lights Button Instruction
(Button Duration: Long Press > 3 seconds, Short Press < 1 second)
Metric/Imperial and Odometer/Trip Reset Switching (Default: Metric)
- Short press the SET button to toggle between ODO and TRIP modes.
- In ODO mode, long press the SET button to switch between metric and imperial units.
- In TRIP mode, long press the SET button to reset the TRIP display to "0".

MIL Lamp
When the MIL (Malfunction Indicator Light) illuminates, it indicates a malfunction in your vehicle's power system. This may lead to reduced power, abnormal operation, or

even a complete power failure. Therefore, if the fault indicator light comes on, please contact your local dealer promptly to inspect and address any power system issues to avoid unnecessary risks. Specific model details can be found below the MIL fault display instructions.

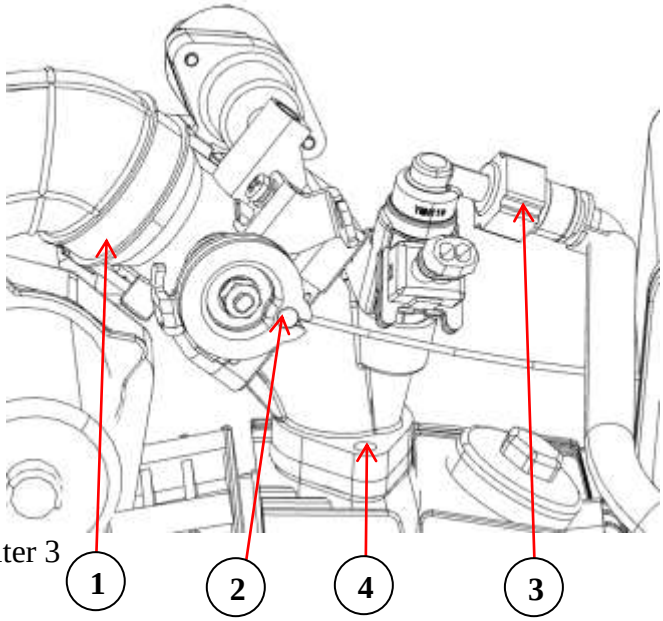
The Electronic Fuel Injection (EFI) system on your vehicle contains a self-diagnostic feature that will illuminate the malfunction indicator light (MIL) if it detects a problem. When this indicator is on, the fault code will display directly on the dashboard. Record the fault code and contact your dealer for diagnosis. Your dealer has the EFI tool required to diagnose, repair, and clear trouble codes. During normal operation, the EFI indicator will be off.

NOTE: The 16-Pin OBD-style connector (located under the seat) includes an OBD cap with an internal jumper circuit. The OBD cap must remain in place, or it will lead to no display of the engine RPM or coolant temperature. Do not lose the cap or misplace it.

8 EFI

8.1 Throttle valve body…….8-2
8.1.1 Stepper motor……...…8-3
8.1.2 Three-in-one sensors……...….8-3
8.1.3 Manifolds and Injectors……...…8-3
8.1.4 Throttle body…….....….....8-4
8.2 Fuel pump……8-4
8.3 ECU…….8-5
8.4 Carbon canister…….....8-5
8.5 Fuel Fine Filter…….....8-6
8.6 Carbon canister solenoid valve…….....8-6
8.7 OBD……8-6
8.8 Use and Maintenance
8.8.1 Regular use……8-7
8.8.2 System self-inspection……8-7
8.8.3 Clean the throttle combination……8-8
8.8.4 Electric injection system maintenance instructions……8-9
8.8.5 Fuel Injection System Fault Diagnosis Tool Usage……8-11
8.8.6 Fault code（PCODE）list……8-14

8.1 Throttle valve body



Dismantle

1.Unplug the stepper motor, triple sensor, Injector plug-in
2.Remove the oil tube from the valve body that connects to the carbon solenoid valve.

3.Remove the clamp that connects to the air filter 1
4.Remove the throttle cable 2
5.Remove the fuel injector hose to the fuel fine filter 3
6.Remove the fixing bolts 4
(one on each side)
7.Throttle valve body can be removed

Mounting
Proceed in reverse order of disassembly

8.1.1 Stepper motor

Disassembly

Remove the fixing bolts
Remove stepper motor
Mounting
Proceed in reverse order of disassembly

8.1.2 Three-in-one sensors

Disassembly

Remove the fixing bolts
Remove the 3-in-1 sensor
Mounting
Proceed in reverse order of disassembly

8.1.3 Manifolds and Injectors

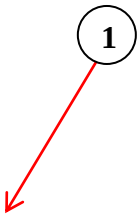
Disassembly

Remove retaining bolts
Remove manifold and injectors

Remove Retaining Bolts
Remove Manifold and Injectors

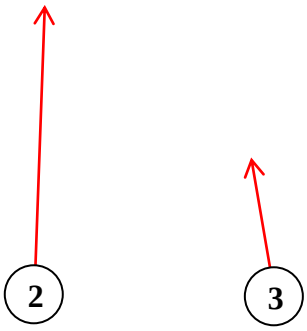
Mounting
Proceed in reverse order of disassembly

8.1.4 Throttle body



Dismantle

1.Remove the injector and its fixing bolt 1
2.Remove the stepper motor and its fixing bolt 2
3.Remove the 3-in-1 sensor and its fixing bolt 3
The throttle body can be removed

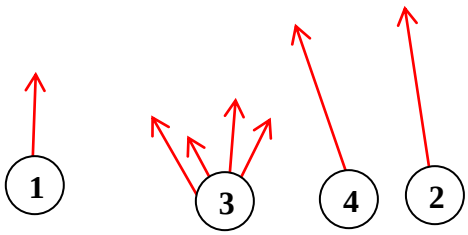


Mounting
Proceed in reverse order of disassembly

8.2 Fuel pump

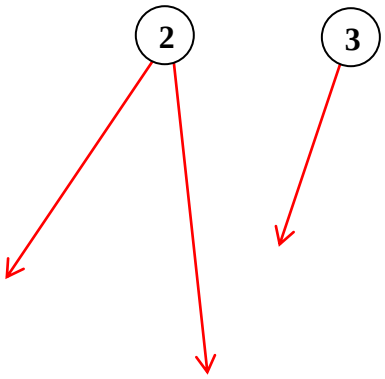
Dismantle

1.Remove the front body and the bolts holding the fuel tank in place
2.Unplug the insert on the left side of the fuel pump 1
3.Unplug the fuel hose from the right side of the fuel pump 2
4.Remove the fixing bolts 3 (Four in total)
5.Remove the fuel pump 4



Mounting
Proceed in reverse order of disassembly

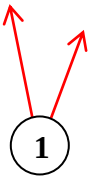
8.3 ECU



Dismantle

1.Remove the front body
2.Unplug the two inserts under the ECU 1
3.Remove the bolts securing the ECU 2
(Two in total)
4.Remove the ECU 3

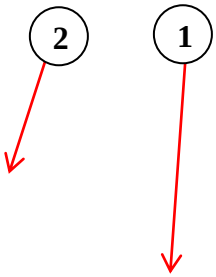
Mounting
Proceed in reverse order of disassembly



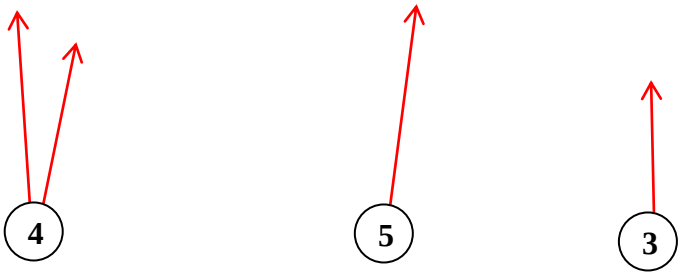
8.4 Carbon canister

Dismantle

1.Remove the front body
2.Unplug the fuel hose from the
carbon canister A port to the air filter 1
3.Unplug the fuel hose from port P of the carbon canister to the fuel tank 2.
4.Unplug the fuel line from the T port of the carbon canister to the solenoid valve of the carbon canister. 3.
5.Remove the bolts securing the carbon canister 4
(including the two clamp nuts).
6.Remove the carbon canister 5



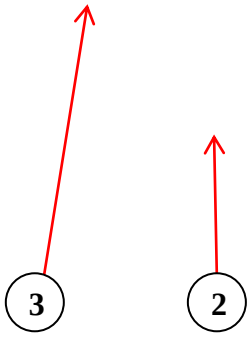
Mounting
Proceed in reverse order of disassembly



8.5 Fuel Fine Filter

Dismantle

1.Remove the upper fuel hose to the fuel pump 1
2.Remove the lower fuel line 2 to the fuel injector tip.
3.Remove the fuel filter 3 from the plug.



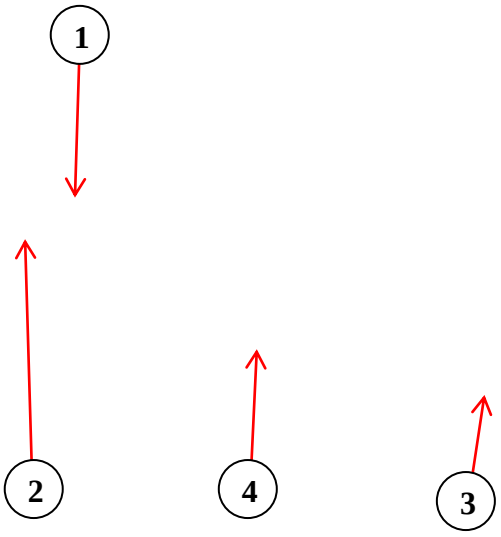
Mounting
Proceed in reverse order of disassembly

8.6 Carbon tube solenoid valve

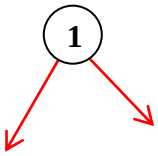
Dismantle

1.Unplug the carbon canister solenoid valve insert 1
2.Remove the fuel line connecting the T-port of the carbon canister 2
3.Remove the oil pipe connecting the throttle body 3
4.Remove the carbon canister solenoid valve 4

Mounting
Proceed in reverse order of disassembly



8.7 OBD



Dismantle

Remove the seat cushion

Remove the two fixing bolts 1

Remove the OBD connector 2

Mounting

Proceed in reverse order of disassembly

8.8 Use and Maintenance

8.8.1 Regular use

When the vehicle is used for the first time, it is recommended to continuously switch the key for three times before ignition. The interval between each time is recommended to be 15 seconds. The purpose is to eliminate the residual gas in the oil supply system and fully establish the oil pressure.

In the future normal use process, it is recommended to open the key until the end of the oil pump operation (or open the key) before the ignition, in order to fully establish the oil pressure to facilitate starting.

8.8.2 System self-inspection

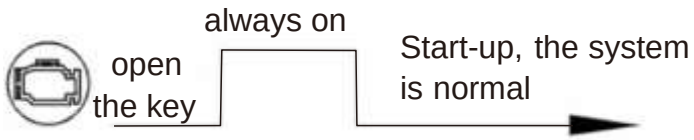
1）System self-test refers to the self-diagnosis and correction process of the system. In this process, the system will automatically solve the problems found. For the problems that cannot be solved automatically, the fault indicator will display the fault information, which will be solved manually.

2）System self-inspection is usually automatic, occurs at a certain point after the vehicle is running or stopped, and requires no manual operation. The fault indicator is located on the instrument panel. its function is to display the current status and fault information of the electric injection system, engine, etc.

3）After the vehicle turns on the ignition switch, the indicator light is "always on" and goes off after the vehicle starts, indicating that the system is normal.

4）After the engine starts, the fault indicator is always on, and the fault indicator is still on after the three diagnosis cycles, indicating that there is a current fault in the electric injection parts and should be checked.

5）After the ignition lock and ignition switch are on before the engine ignition, the fault indicator is always on， then after the engine starts, but the fault indicator is off after the three diagnosis, indicating that the electric injection system parts have no historical fault code removal, but the current electric injection parts are normal.



8.8.3 Clean the throttle combination

Throttle combination disassembly step：

1）Turn off the ignition lock；

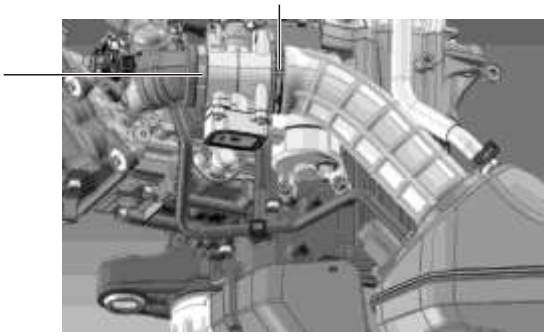
2）Open the cushion, remove the air support and the storage box；

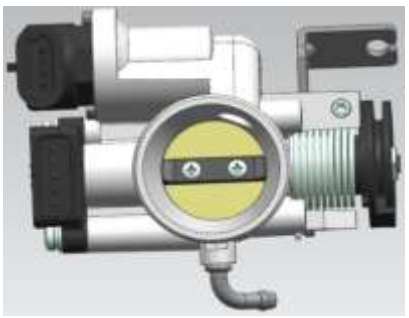
3）Remove the throttle cable；

4）Remove the 3-1 plug, the idle control valve connector and the vent tube (idle control valve)；

5）Release the clamp at both ends of the throttle combination，remove the throttle combination；

Note：The throttle body assembly needs to be cleaned every 6,000 km。





Release the inlet pipe end collar

Cleaning step of the throttle body assembly：

1）Clean the inner wall of throttle body assembly and throttle body air valve with special cleaning agent for throttle body assembly or gasoline ；

2）Turn the throttle body combination wheel to ensure smooth rotation, no lag or return phenomenon；

3）After the cleaning agent is fully evaporated, install the throttle body combination；

4）Install the throttle body assembly in the reverse order of removing the throttle body assembly。

8.8.4 electric injection system maintenance instructions

General maintenance instructions

1) Only digital multi meters are allowed to be used to check the electric injection system;

2) Please use genuine parts for maintenance operations, otherwise the normal operation of the electric injection system cannot be guaranteed;

3) During maintenance, only unleaded gasoline can be used. Please follow the standard maintenance diagnostic process for maintenance operation;

4) It is forbidden to decompose and dismantle the parts of the electric injection system during the maintenance process;

5) During maintenance, when taking up the electronic components (electronic control units, sensors, etc.), need to be very careful and not to let them fall to the ground;

6) Establish the awareness of environmental protection, effectively treat the waste generated in the maintenance process;

Notes for the maintenance process

1）Do not remove any parts or its connector of the electric injection system from its installation position at will, so as to avoid accidental damage or water, oil and other foreign bodies into the connector, and affect the normal work of the electric injection system。

2）When disconnecting and connecting the on connector, be sure to put the ignition switch in the closed position, otherwise the electrical components will damage。

3）Never make the temperature of the electronic control unit during the faulty thermal condition simulation and other maintenance operations that may increase the temperature exceed 80℃。

4）The oil supply pressure of the electric injection system is high (about 300 k pa), and all fuel lines are high pressure resistant fuel lines. Maintain

high fuel pressure in the circuit even if the engine is not running. Therefore, in the maintenance process, we should pay attention not to remove the oil pipe easily. If the fuel system is to be repaired, the fuel system should be unloaded with pressure before removing the oil pipe. The pressure discharge method is as follows: remove the fuel pump relay, start the engine to idle until the engine is itself out. Disassembly of tubing and replacement of fuel filters shall be performed in a well ventilated place by professional maintenance personnel.

5）Do not energize the oil pump when removing the electronic fuel pump support assembly from the fuel tank to avoid electric spark and fire.

6）The fuel pump is not allowed to operate in dry or water, otherwise it will be reduced. In addition, the positive and negative electrodes of the fuel pump must not be reversed.

7) When checking the ignition system, only conduct the jump spark detection when necessary, and the time should be as short as possible. The throttle should not be opened during the detection, otherwise it will lead to a large amount of unburned gasoline to enter the exhaust pipe and damage the three-way catalytic converter.

8）Since the adjustment of the idle speed is completely done by the electric injection system, no manual adjustment is required. The throttle limit screw of the throttle body has been adjusted at the factory, and the user is not allowed to change its initial position at will。

9）When connecting the battery, the positive and negative electrodes of the battery can not be connected to the wrong one, so as not to damage the electronic components. This system uses the negative electrode tie.

10）Remoof　battery cable is not allowed when the engine is running。

11) Before the welding operation on the vehicle, the battery positive, negative cable and electronic control unit must be removed.

12) Do not detect the electrical signals of the component by piercing the skin of the wire.

8.8.5 Fuel Injection System Fault Diagnosis Tool Usage

The fault diagnosis system, abbreviated as OBD (On-Board Diagnostic), is designed to detect faults in the fuel injection system. When a fault occurs, the malfunction indicator light (MIL) will turn on, and the OBD system will store the fault information in memory. Using standard diagnostic tools and interfaces, this information can be read in the form of fault codes. Based on the fault code, technicians can quickly and accurately determine the nature and location of the issue.

Malfunction Indicator Light (MIL) Explanation

1. Normal Mode, No Current Fault Code

When the ignition switch is turned on, the ECU initializes, and the MIL light will turn on. Once the engine starts successfully, the MIL light will immediately turn off.

2. When There Is a Current Fault Code

While the engine is running, if a fault occurs, the MIL will turn on, alerting the rider of a problem. Once the engine is turned off, the current fault will be saved as a historical fault in the fuel injection ECU.

Reading Fault Codes Using the Diagnostic Tool

Diagnostic Tool Functions:

Read fault codes, clear fault codes, display data stream.

1. Connect the diagnostic tool to the diagnostic interface on the fuel injection harness.

2. Turn on the ignition.

3. Read the fault codes, refer to the service manual to identify the faulty components and types, and develop a repair plan based on the information and experience.

4. After resolving the fault, use the diagnostic tool to clear the historical fault codes.

5. Read the data stream to analyze fault causes that the ECU cannot report with fault codes.

Fault Light Flashing Function Verification

Fault Flashing Control Function Description

After switching the ignition on and off 3 times, the system enters the fault flashing code mode.

1. In the flashing code mode, the fault is identified by the number of flashes of the fault light. After turning off the key and restarting the ignition, the flashing code mode is exited.

2. The flashing code mode, apart from the LAMP function, operates the same as the engine's normal functions.

Fault Flashing Light Working Mode

1. The flashing code follows a cyclic repetitive mode, with a 50% duty cycle (on for 0.5s, off for 0.5s). The first light-on time at the start of each cycle is 1 second.

2. Multiple fault flashing codes are separated and identified by a 3-second interval within each cycle.

3. Each cycle uses a 3-second interval to separate the identification of different faults.

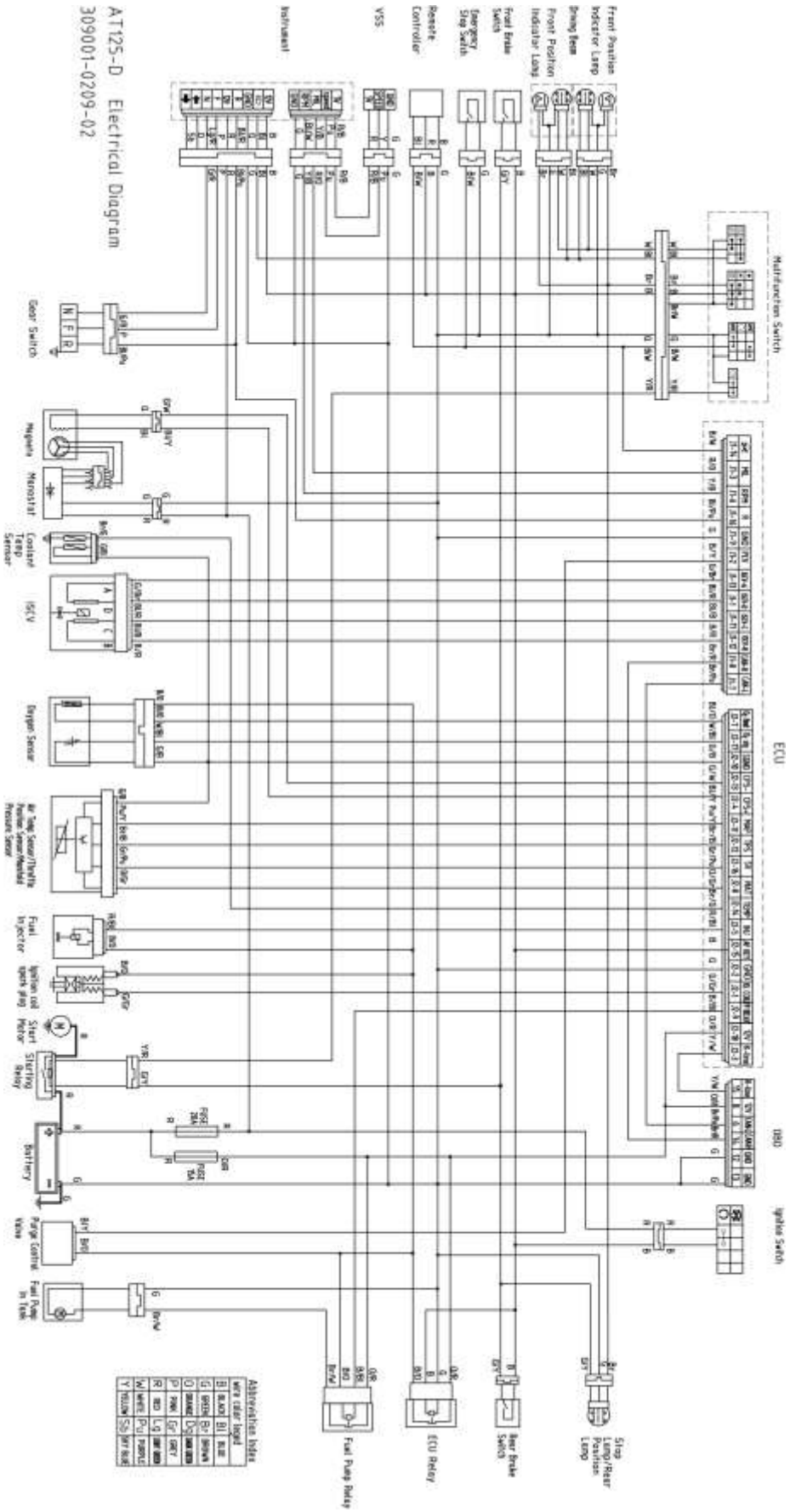
8.8.6 Fault code（PCODE）list

Number of times the fault lamp blinks repeatedly	fault list	trouble code
1	P0118	- Cylinder temperature sensor circuit high voltage/open circuit
2	P0117	- Cylinder temperature sensor circuit low voltage
3	P0116	- Cylinder temperature sensor signal performance fault
4	P1116	- High cylinder temperature at startup (Performance/Out of Range)
5	P2301	- Ignition coil "A" shorted to high voltage (Cylinder 1)
6	P2300	- Ignition coil "A" shorted to low voltage/open circuit (Cylinder 1)
7	P0123	- Throttle position sensor shorted to high voltage
8	P0122	- Throttle position sensor shorted to low voltage/open circuit
9	P0459	- Charcoal canister solenoid valve circuit shorted to high voltage
10	P0458	- Charcoal canister solenoid valve circuit shorted to low voltage/open circuit
11	P00D1	- Front oxygen sensor heater circuit current too low (Cylinder 1) (Heater performance fault)
12	P0232	- Fuel pump relay shorted to high voltage
13	P0231	- Fuel pump relay shorted to low voltage/open circuit
14	P014D	- Slow response from front oxygen sensor rich-to-lean (Cylinder 1)

15	P014C	- Slow response from front oxygen sensor lean-to-rich (Cylinder 1)
16	P0601	- ECM read-only memory checksum error
17	P0262	- Cylinder 1 fuel injector shorted to high voltage
18	P0261	- Cylinder 1 fuel injector shorted to low voltage/open circuit
19	P3106	- Intake pressure too low at steady state
20	P0108	- Intake pressure sensor circuit high voltage
21	P0107	- Intake pressure sensor circuit low voltage/open circuit
22	P0105	- Intake pressure sensor sticking
23	P0114	- Intake temperature sensor signal fluctuating
24	P0113	- Intake temperature sensor circuit high voltage/open circuit
25	P0112	- Intake temperature sensor circuit low voltage
26	P0111	- Intake temperature sensor model sticking
27	P0650	- Engine fault indicator light malfunction
28	P2195	- Front oxygen sensor PE too lean (Cylinder 1)
29	P0132	- Front oxygen sensor shorted to high voltage/open circuit (Cylinder 1)
30	P0131	- Front oxygen sensor shorted to ground (Cylinder 1)
31	P0300	- Detected engine misfire
32	P0301	- Cylinder 1 misfire
33	P0031	- Front oxygen sensor heater shorted to low voltage/open circuit (Cylinder 1)
34	P0032	- Front oxygen sensor heater shorted to high voltage (Cylinder 1)
35	P0563	- System voltage high

36	P0562	- System voltage low
37	P0505	- Idle control fault

APPENDIX


AT125-D Electrical Diagram
309001-0209-02
Instrument
VSS
Remote Controller
Emergency Stop Switch
Front Brake Switch
Front Position Indicator Lamp
Dimmy Beam
Front Position Indicator Lamp
Multifunction Switch
Gear Switch
Magneto
Thermostat
Coolant Temp Sensor
ISCV
Oxygen Sensor
Air Temp Sensor/Throttle Position Sensor/Manifold Pressure Sensor
Fuel Injector
Ignition coil
Spark plug
Start Motor
Starting Relay
Battery
Purge Control Valve
Fuel Pump in Tank
ECU
ISSD
Ignition Switch
Fuel Pump Relay
ECU Relay
Rear Brake Switch
Stop Lamp/Rear Position Lamp
Abbreviation Index
wire color legal