S350

Service Manual

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Zhejiang KAYO Motor Co., Ltd.

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The contents of this manual may change due to vehicle improvements or other reasons without prior notice. Maintenance and repair should be based on the actual condition of the vehicle.

Zhejiang KAYO Motor Co., Ltd.
Research and Development Center
November 2025

Preparation Notes

This maintenance manual provides a detailed introduction to the maintenance and adjustment procedures, disassembly and assembly essentials, inspection and repair points, troubleshooting methods, and technical repair data for the S350 model four-wheel all-terrain vehicle (SSV), and is accompanied by detailed gra ϕ cal materials to guide operations.

Please read this manual carefully and perform maintenance according to the standard operating procedures, which can effectively extend the service life of various components, improve engine performance, and enhance the reliability of the entire vehicle.

Chapter One mainly introduces general operational matters, the tools used, basic techniques, and maintenance parameters.

Chapter Two introduces the assembly and disassembly techniques for full vehicle cover parts.

Chapter Three introduces the regular inspection and adjustment of the entire vehicle.

Chapter Four introduces the disassembly of peripheral assembly components around the engine

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

Chapter Six introduces information related to the vehicle chassis.

Chapter Seven introduces the inspection and repair information for the vehicle's signaling and lighting systems.

Appendix:Wiring Diagram

Contents

Conversion table of units in this book

Project	Unit Conversion
Stress	1 kgf/cm2 = 98.0665 kPa; 1 kPa = 1000 Pa
	1 mmHg = 133.322 Pa = 0.133322 kPa
Torque	1 kgf·m = 9.80665 N·m
Volume	1 mL = 1 cm^3 = 1 cc
	1L = 1000 cm^3
force	1 kgf = 9.80665 N
Length	1 inch equals 25.4 mm

Danger / Warning / Caution

Please carefully read the following explanations, which emphasize the specific meanings of the terms 'danger', 'warning', and 'caution', and special attention should be paid to their highlighted meanings when performing maintenance on the engine.

Danger: Indicates the need for alertness in the face of high danger.
Warning: Be vigilant about medium-level risks.
Attention: Indicates attention should be paid to minor dangers.

However, please note that the 'Danger' and 'Warning' notices contained in this repair manual may not cover all potential hazards associated with the use and maintenance of the engine.Therefore, in addition to the provisions concerning 'danger' and 'warning', maintenance personnel must also possess basic knowledge of mechanical safety. If you are not confident in completing the entire maintenance operation process, please consult a more experienced senior technician.

1 Maintenance Information

1.1 Work precaution

Safety Precautions

1. It is mandatory to wear work clothes suitable for the job (such as jumpsuits), hats, safety boots, and when necessary, to also wear dust-proof goggles and masks, gloves, and other safety protective equipment to safeguard one's body.
2. Due to the presence of harmful components in exhaust gas, it is prohibited to run the engine for an extended period in enclosed spaces or places with poor ventilation.
3. Immediately after the engine is shut down, the engine and muffler are still very hot; do not touch them before they have cooled to avoid burns.
4. Storage battery solution (dilute sulfuric acid) is a strong corrosive agent, which can cause burn and blindness hazards if it comes into contact with the skin or eyes.If clothing or skin accidentally comes into contact with battery acid, immediately rinse with large amounts of water and seek medical treatment.Storage batteries and battery solutions should be strictly managed and must be placed in a safe location out of reach of children.Hydrogen, which is flammable and explosive, is produced when storage batteries are charged. There is a risk of explosion if a fire source or electrical spark is nearby.Therefore, please charge in a well-ventilated area.
5. As gasoline is flammable, smoking is strictly prohibited in the work area.Not only should you pay attention to open flames, but also to electrical sparks.Additionally, evaporated gasoline is explosive and poses a risk; please select a well-ventilated area for operations.
6. During maintenance, always be careful not to get your hands or clothing caught by rotating parts such as the rear wheel, clutch, and other movable components.
7. When two or more people are working together, they must constantly communicate with each other to ensure safety.

!Warning
Always refuel in a well-ventilated area.Do not refuel in the vicinity of open flames or operating engine fuel tanks.Do not smoke when refueling.

8、Since gasoline expands with an increase in temperature, the fuel tank can only be filled up to its specified capacity.The expansion chamber must be kept inside the fuel tank, especially when the tank is filled with cold gasoline and then moved to a warm area.

!Warning
Please ensure that gasoline does not overflow when refueling.There may be a risk of fire.Make sure the engine has cooled down before refueling.

9、After refueling, make sure to tighten the fuel tank cap.

Disassembly and assembly precautions

1. Parts, lubricating oils, and greases must use products recommended by the KAYO brand.
2. Parts of each system should be sorted and stored separately to ensure they can be assembled back to their original positions.
3. Please clean off the mud and dust from the vehicle before conducting maintenance.
4. Gaskets, O-rings, piston pin retainers, split pins, etc., must be replaced with new ones after disassembly.
5. If the opening of the elastic retaining ring is stretched too far during disassembly, it will deform and is likely to fall off after reassembly.Please do not use elastic retaining rings that are already relaxed and have lost their elasticity.
6. After disassembling and inspecting the components, they must be cleaned and then blown with compressed air to remove the cleaning agent before measurement.Apply lubricating oil on the moving surface before assembly.
7. During disassembly, necessary locations should be inspected and relevant data measured to ensure that the assembly can be restored to its Pre-Disassembly state.
8. Fasteners such as bolts, nuts, and screws should be Pre-tightened first, then tightened diagonally in the sequence from the largest to the smallest, from the inside to the outside, according to the specified torque for tightening.
9. Check for aging when dismantling rubber parts, and replace them in advance if necessary.Additionally, since rubber parts are not resistant to the erosion of gasoline, kerosene, and the like, it is best to avoid letting volatile oils and greases adhere to them.

10. Lubricating grease recommended in the maintenance manual should be applied or injected at the specified parts.

11. The correct special tools should be used for disassembly and assembly operations.

12. Ball bearings can be rotated by hand to check if the inner or outer rings revolve smoothly. If a removal method that applies force to the balls was used during disassembly, the bearing should not be reused:

- Bearings with excessive axial and radial clearance should be replaced.
- Bearings with a sensation of sticking should be cleaned; if they still feel stuck after cleaning, they should be replaced. Those that cannot be cleaned should be replaced directly.
- If the fit was originally interference fit on the shaft or bore, the bearing should be replaced if it becomes loose after disassembly and reassembly.

13、Bearings should be coated with oil or grease before assembly.One-way dust-proof bearings should be installed with attention to the direction during assembly.Open or double-sided dust-proof bearings should be installed with the side engraved with the manufacturer's mark and size facing outward during assembly.

14、When installing the rectangular retaining ring, the chamfered side should face the direction of force.Do not use a locking ring that has lost its elasticity and become loose.After assembly, rotate the rectangular retaining ring to ensure it is securely fitted into the groove.

15. After assembly, it is necessary to check whether each fastening part is tightened and whether the operation is normal.

16. Brake fluid and coolant can damage painted surfaces, plastic parts, and rubber components. Do not allow them to come into contact with these parts, and if they do, rinse immediately with water.

17. The oil seal should be installed with the side that has the manufacturer's mark facing outward (away from the oil).

- During assembly, care should be taken to prevent the lip of the oil seal from curling and to avoid damaging the lip with burrs.
- Apply grease to the oil seal lip before assembly.

18. When installing parts such as rubber hoses, insert the hose into the root of the connector.Those with clamps should install the clamps in the groove of the pipe.Hoses without tension during installation should be replaced.

19. Do not allow dust, dirt, or other particles to enter the engine interior and the brake hydraulic system.

20. The gasket material attached to the mating surfaces of the engine components must be cleaned before assembly.The scratches on the contact surface must be evenly sanded and removed with an oilstone.

21. Do not excessively twist or bend cable-like structures.Deformed or damaged cables can cause malfunctions or breakages.

22. When assembling protective cap parts, those with grooves must have the cap inserted into the groove.

Engine break-in

The engine has many parts that move relative to each other, such as pistons, piston rings, cylinder blocks, and interlocking transmission gears. Therefore, it is necessary to perform standardized running-in during the initial period of use. Running-in allows the moving parts to adapt to each other, correct working clearances, and form a smooth friction surface capable of withstanding heavy loads. Only engines that have undergone standardized running-in possess excellent performance and reliability.

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

0 to 10 hours:Avoid continuous operation at more than 1/2 throttle; frequently vary the vehicle speed and do not run the engine for extended periods at a fixed throttle position. After every hour of operation, cool the engine for 5 to 10 minutes. Avoid sudden acceleration; throttle changes should be gradual, without abrupt increases or decreases. During the break-in period, do not tow any loads.

Attention:

- During the running-in period, perform maintenance according to the daily maintenance regulations, and promptly address any malfunctions found;
- After the break-in period ends, perform maintenance on the entire machine before it can enter the normal operation phase.

Vehicle storage

It is recommended to store the vehicle in the following manner:

Caution
Before storing this vehicle, it must be properly maintained to prevent rust and component deterioration.

1. Clean the cushion with a damp cloth and then air dry it.
2. Thoroughly clean the vehicle by removing dirt, grease, grass, and other objects from the entire surface.Allow the vehicle to dry completely.Do not allow water to enter any part of the engine or intake port.
3. Drain the gasoline from the fuel tank.
4. Change the engine oil.
5. Block the hole on the exhaust system with a clean cloth.
6. Apply anti-rust oil to the upper steering shaft bushing and plunger of the shock absorber.
7. Tighten all fasteners, and fasteners that have been calibrated must be tightened according to the

specified torque.

8. Disconnect the battery cables (first disconnect the negative cable); then remove the battery, clean the battery and cables, and store them in a clean, dry place.

Attention:When storing, please ensure the battery is fully charged.

10、Park the vehicle indoors in a horizontal position.

Caution
Avoid storing under direct sunlight and do not use plastic covers, as moisture can accumulate on the vehicle and cause rusting.

Unlock the vehicle

Remove the vehicle from the warehouse, to ensure trouble-free operation for the next few hours, it is recommended to proceed as follows:

1、Thoroughly clean the vehicle.

2、Clean the engine, remove the fabric from the engine.

3、Inspect all control lines and cables for signs of wear or abrasion, and replace them if necessary.

4、Change the engine transmission oil and filter.

5、Charge the battery, then install it.Ensure to connect the positive cable first when connecting the battery.

Caution
Before installing the battery, please ensure that the ignition switch is in the OFF position.

6、Inspect the entire braking system (fluid level, brake pads, etc.), all control devices, front lights, rear lights, brake lights, and turn signals; adjust or replace as necessary.

7、Check the tire pressure.inflate to the recommended pressure if necessary.

8、Tighten all fasteners, and for calibrated fasteners, it is recommended to tighten them according to the torque specifications.

9、Ensure that the steering mechanism can move freely without restriction.

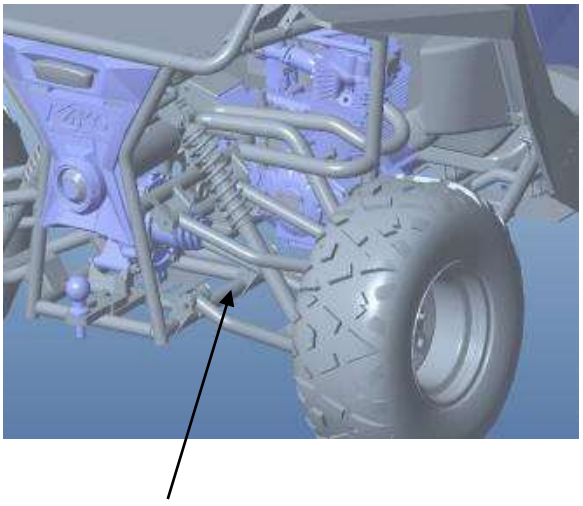
10、Check the spark plugs.Clean or replace as necessary.

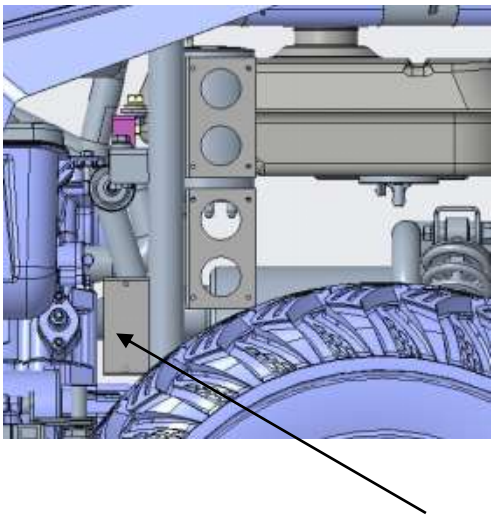
11、Check the fuel filter and air filter housing, and clean or replace them if necessary.

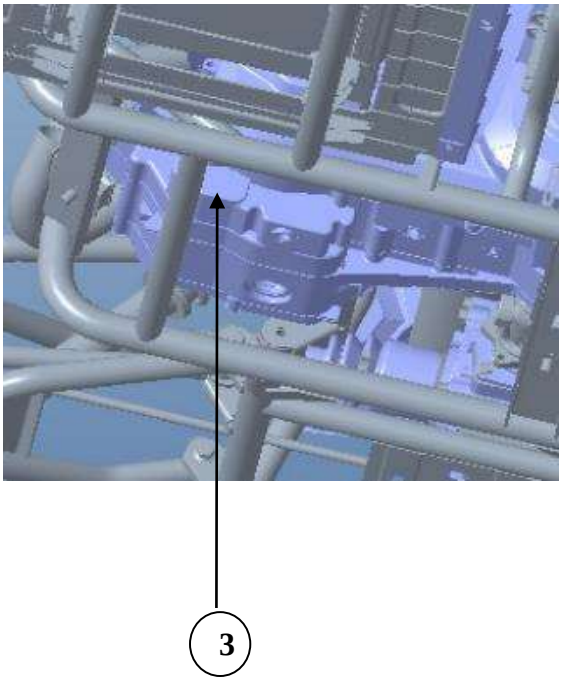
1.2 Vehicle Identification Number (VIN)

①Frame number
② Vehicle nameplate
③Engine Number

Model type	S350
Chassis number	L6JUDRZA~
Engine number	177MP approximately



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1.3 Main Parameter Table

Project		Parameter
Vehicle model number		S350
Length (mm)		2580
Width (mm)		1520
Height (mm)		1467
Wheelbase (mm)		1940
Engine Model		177 million
Total displacement (ml)		326.3
Fuel type		Gasoline with octane rating of 92 or above
Curb weight (kg)		387±5
Number of occupants		2 (including the driver)
Rated load capacity		200 kilograms
Tire specification	front wheel	AT25*8.0-12
	rear wheel	AT25*10-12
Minimum Ground Clearance		250 mm
Turn radius (minimum turn radius at the closest point)		4800 mm
Engine	Starting method	Electric start
	Engine type	Single cylinder, vertical, four-stroke, liquid-cooled, four-valve
	Distribution mode	SOHC
	Bore x Stroke (mm)	76.5 by 71
	Compression ratio	11:1
	Maximum power	22/7500
	Maximum torque	37/5500
	Lubrication method	Splash lubrication
	Oil pump type	Rotary type
	Lubricating oil filter type	Full flow filtration rotary
	Engine oil grade	10W/40-SG
	Cooling method	Liquid Cooling

Project		Parameter	
Air Filter Type		Sponge core filter type	
Throttle body	Type	Valve plate type	
	Mixed gas valve diameter	34 mm	
Fuel tank capacity		15L	
Drivetrain	Clutch type	Dry centrifugal	
	Shift mode	Continuously Variable Transmission (CVT)	
	Gear shift	Forward gear, neutral gear, reverse gear	
	Shift mode/sequence	Manual operation/D—N—R	
	Continuously Variable Transmission (CVT)	(0.82～2.32)	
	Output format	Rear Axle Output	
	Engine output rotation direction	When shifting into drive, looking from the rear of the vehicle towards the front, the direction is clockwise.	
Steering gear	Left and right steering angles	＜40°	
Brake System Type		front	Hydraulic disc
		after	Hydraulic disc
Buffering mode	Hanging method	Dual wishbone independent suspension for both front and rear wheels	
Chassis type		Steel pipe and steel plate welded type	

1.4 Maintenance Parameter Table

Lubrication device

Project		Standard	Usage Limit
Engine Oil Capacity	Change the engine oil	1600ml (oil filter not replaced)	-
	Change the engine oil	1600ml (also replace the oil filter)	
	Full capacity	1700 milliliters	-
Recommended engine oil		Only use 10W/40-SG engine oil; do not substitute or mix with different brands or grades of oil, as this can cause engine damage and lead to accidents.	
Oil pump rotor	Internal and external rotor radial clearance	0.08 ~ 0.20	0.75 mm
	External rotor and pump body radial clearance	0.05 ~0.12	0.2 mm

□ Intake system (see details in section 05-Engine part)

• Wheel (front and rear wheels are the same)

Project		Standard	Usage Limit
Wheel rim bounce	Vertical	0.8 mm	2.0mm
	Horizontal	0.8 mm	2.0mm
Tire	Residual groove	-	3 mm
	Atmospheric pressure	100 kPa (1 kgf/cm²)	-

Braking System

Project		Standard	Usage Limit
Front brake	Brake Disc Thickness	3.5 mm	3.0 mm
Rear brake	Brake Pedal Travel	2 ~ 6 mm	-
	Brake Disc Thickness	4.0 mm	3.0 mm

Storage battery / Charging device / Trigger coil

Project			Standard
Magneto-electric machine	Type		Flywheel external rotor type
	Output		12V
	Magnetic motor trigger coil resistance		480 Ω
	No-load voltage of the magnetic motor (engine at		1500 rpm 32V
	Maximum output power of the magnetic motor		330W
	Stabilized voltage		14V
Rectifier type			Short circuit
Storage battery	Capacity		12V14AH
	Terminal voltage	Fully charged	13V
		Insufficient	Below 12.6V

Ignition device

Project		Standard
Ignition method		ECU controls ignition
Spark plug	Type	Resistor spark plug
	Standard	CR7E
	Spark plug gap	0.7-0.8 mm
	Spark characteristics	Blue and white light
Ignition coil resistance	Beginner	0.59 Ω ± 20%
	Subordinate	8KΩ±20% (at room temperature 23℃±5℃)
Starting relay coil resistance		3.7 Ω ± 20%

□Light/Dashboard/Switch

Project		Standard
fuse		15A
Lighting, light bulbs	Headlights (High beams)	12V-12W
	Headlights (low beam)	12V-6W
	Daytime Running Lights	12V-4W
	Taillight/Brakelight	12V-2W

Air distribution mechanism + Cylinder head (see details in section 05-Engine part)

Cylinder + Piston + Piston Ring + Crankshaft Connecting Rod (see details in section 05-Engine)

Clutch + Transmission mechanism (see details in section 05-Engine part)

1.5 Fastener Tightening Torque

Attention:

Before installing the thread, apply anti-rust grease to the threaded part and the mating surface.

Torque for specified tightening location - Vehicle components

Serial Number	Project	Fastener code	Quantity	Torque (N·m)
1	Front brake disc Master Cylinder Mounting Bolt and Nut	GB6187-86 M8	2	25-30
2	Brake pedal mounting bolt and nut	GB6187-86 M10*1.25	1	55-66
3	Throttle pedal fixing bolt and nut	GB6187-86 M8	1	25-30
4	Carburetor Mounting Bolt and Nut	M8（included with the engine）	2	25-30
5	Gear Shift Bracket Assembly Installation Screw	M6 (engine-mounted)	3	10-12
6	Front wheel hub brake disc mounting screw	GB70.3 M6x16 10.9 grade	12	14-17
7	Rear hub brake disc mounting bolt	M8 (step bolt, with integral brake disc rotor)	8	25-30
8	Steering wheel mounting screw	GB70-85 M6x16	6	10-12
9	Upper intake cover fixing screw	GB5787 M6x12	2	10-12
9	Taillight mounting nut	GB6187-86 M6	2	10-12
12	Door lock fixing screw	GB5787 M6*16	4	10-12
13	brake disc fluid reservoir bolt	GB5787 M6x20	2	10-12
14	Footpeg Mount Bolt and Nut	GB6187-86 M8	4	25-30
15	Engine installation fixing bolts and nuts	GB6187-86 M10*1.25	2	55-66
16	Engine shock absorber mounting nut	GB6187-86 M10*1.25	4	55-66
17	Engine lifting lug bolt and nut	GB6187-86 M10*1.25	1	55-66
18	Engine mounting bracket bolts and nuts	GB6187-86 M8	2	25-30
19	Differential Lock Bolt and Nut	GB6187-86 M10*1.25	2	55-66

20	Front upper and lower arm fixing bolt and nut	GB6187-86 M10*1.25	8	55-66
21	Swivel ball stud fixed slot nut	GB6187-86 M10*1.25	4	33 to 45
22	Steering rod fixed slot nut	GB6187-86 M10*1.25	2	33 to 45
23	Front and rear shock absorber mounting bolts and nuts	GB6187-86 M10*1.25	8	55-66
24	Front wheel hub fixed slot nut	GB9457-1988 M16*1.5*H18	2	120~140
25	Front and rear brake disc left and right pump mounting bolts	GB5789 M8x25	8	25-30
26	Steering Gear Mounting Bolt and Nut	GB6187-86 M8	4	25-30
27	Rear horn mounting bolt and nut	GB6187-86 M12x1.25	4	94-114
28	Rear wheel hub fixed slot nut	M20 (rear axle half shaft included)	2	72-89
29	Suction pipe fixing bolt nut	GB6187-86 M6	2	10-12
30	Handbrake Locking Bolt and Nut	GB6187-86 M8	2	25-30
31	Fuel tank mounting bolt	GB5789 M8x25	4	25-30
32	Cross-head self-tapping screw	GB845-85 ST2.9*14	8	—
33	Cross-head flat-head machine screw	TM6*20	8	—
34	Cross-head flat-head machine screw	TM6*16	—	—
35	Cross-head self-tapping screw	GB845-85 ST4.2*12	—	—
36	Rim installation nut	M10x1.25 60°	16	45-59
37	Door Swing Seat Fixed Bolt	GB6187-86 M8	2	25-30
38	Rear shelf mounting bolt	GB5789 M8x16	7	25-30
39	Front protective mounting bolt	GB5789 M8x16	4	25-30
40	Trailer ball mount bolt and nut	GB6187-86 M10x1.5	4	76-90
41	Left and right ceiling bracket fixing bolts	GB70-85 M10*20*1.5	12	45-59
42	Back Seat Beam Bolt and Nut	GB6187-86 M8	2	25-30
43	Upper intake manifold bolt nut	GB6187-86 M10x1.5	2	76-90
44	Ceiling joist fixing bolt	GB70-85 M8x16	8	25-30

Torque for specified tightening - Engine section (see details in 05-Engine section)

Fastening torque for unspecified parts

species	Torque N·m	species	Torque N·m
5mm bolt, nut	4.5 to 6	5mm screw	3.5~5
6mm bolt, nut	8 to 12	6mm screw	7-11
8mm bolt, nut	18-25	6mm convex bolt	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 repair tools (see section 05-Engine part for details)

Engine-specific tools (see details in section 05-Engine part)

1.6 Lubricating oils and sealants

Application position	Points to note	Fats and oils
Steering bearing		Lightweight lithium soap-based grease
Throttle cable connection		
Rocking arm moving part		
Inner circumferential surface of the direction column		
Cushion lock moving parts		
Gear shift mechanism active parts		

Manipulate cables, bearings, and lubricate all moving parts.

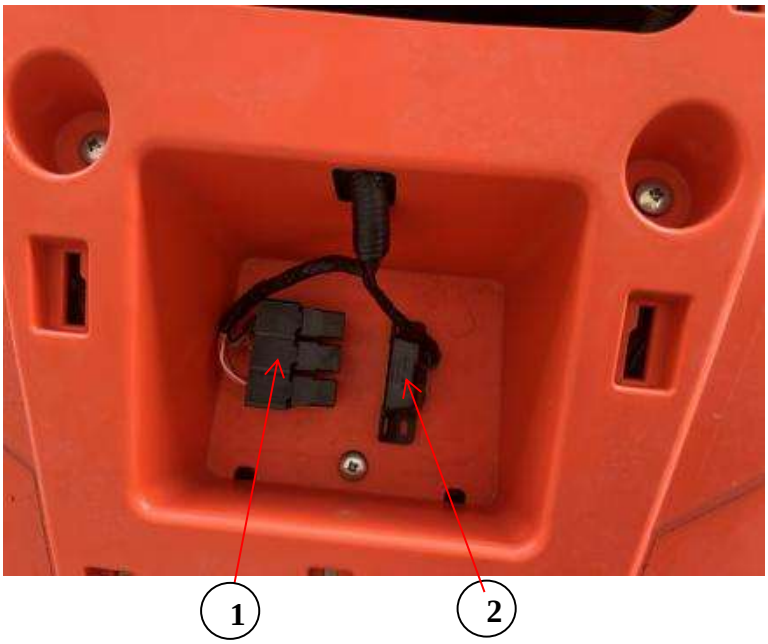
Location	Content	Oil crops
Spherical bearing sleeve for steering shaft	Lubrication	Automotive Universal Lithium-Based Grease GB/T5671
Rear axle bracket		
Front and rear shock absorber joints		
Throttle pedal shaft and cable connector		
Brake pedal pivot point		
Parking Brake Cable Connection		

Engine operating materials and installation accessories (see section 05-Engine part for

details)

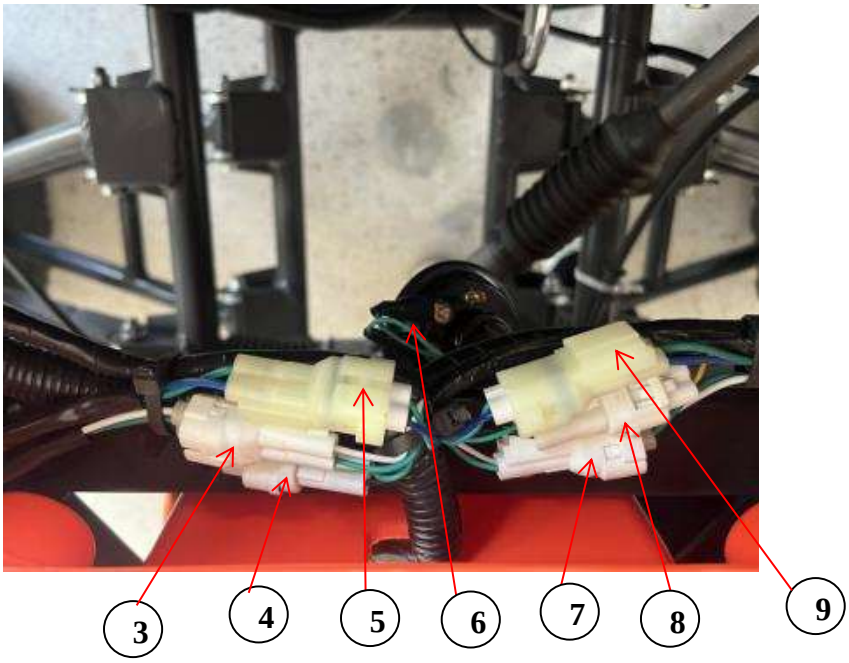
Engine operating materials include lubricating oil (motor oil), grease (lithium grease), and coolant, among others; installation auxiliary materials include flat sealant and thread locking adhesive.

1.7 Cable, hose, and cable harness diagrams



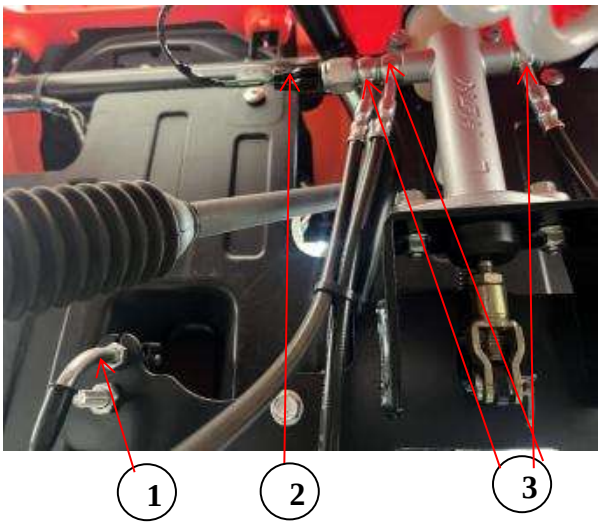
1、Four-foot relay plug 2, OBD interface

Attention:The front cover must be removed before inspecting and repairing the aforementioned components.For specific disassembly instructions, refer to Chapter 2: Body Panels



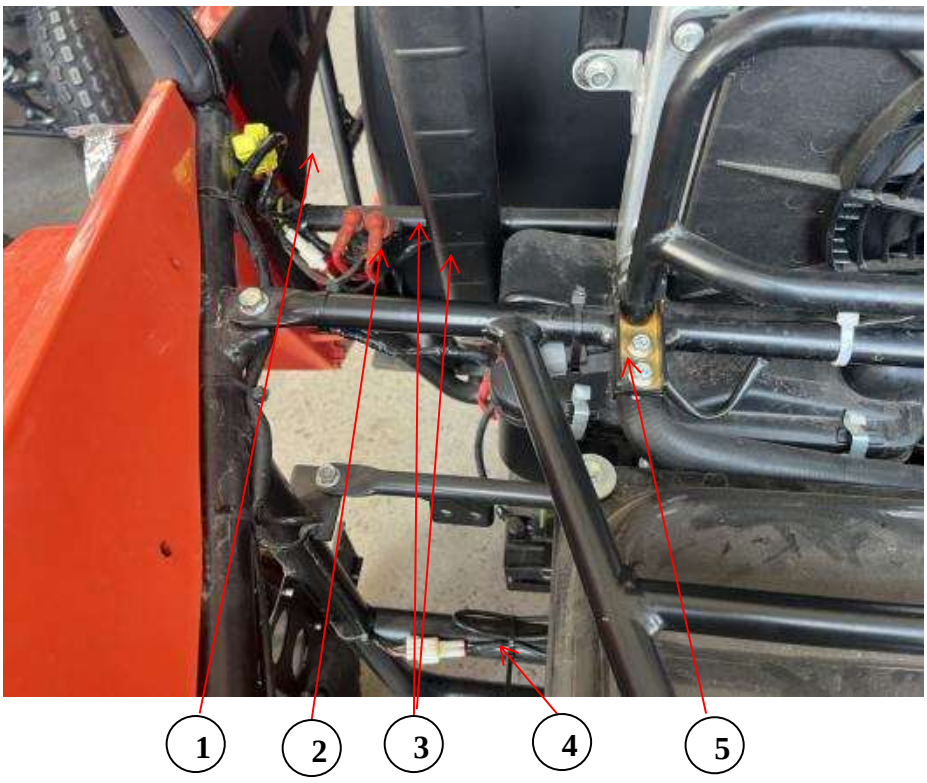
3. Front right low-beam connector 4. Front right daytime running light connector 5. Front right high-beam connector 6. Horn connector

7. Front left low-beam connector 8. Front left daytime running light connector 9. Front left high-beam connector

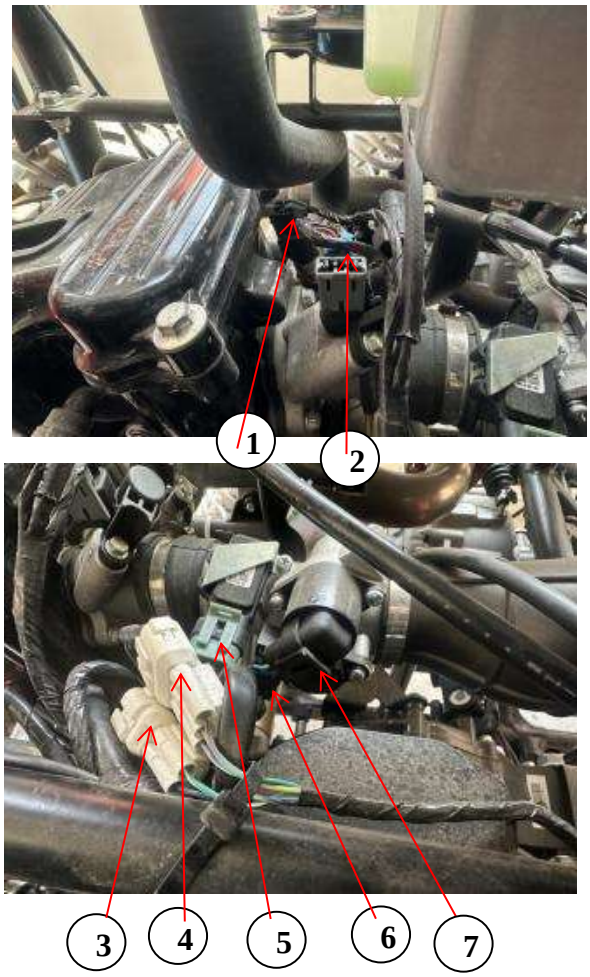


1、Throttle cable 2, foot brake switch plug 3, brake oil pipe

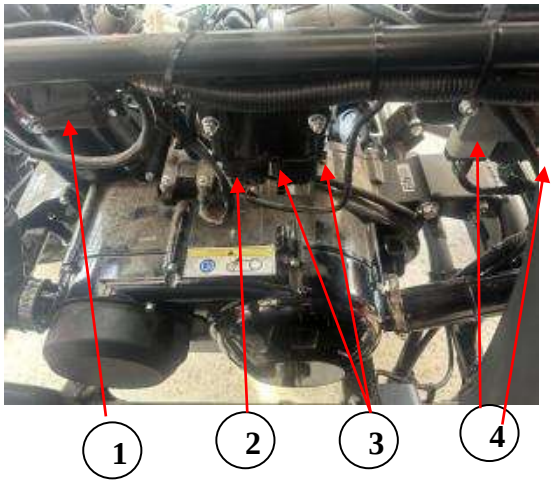
Attention:The front body assembly plastic parts must be removed before inspecting and repairing the aforementioned components.For specific disassembly instructions, refer to Chapter 2: Body Panels

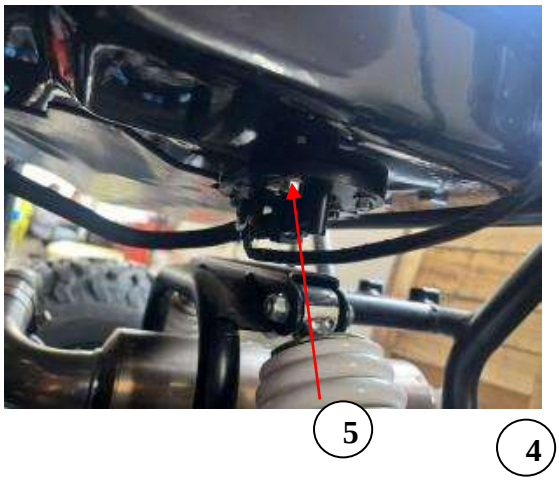


1. Fuse 2. Starter Relay Connector 3. Starter Relay Wire Harness 4. Speed Sensor Connector 5. Radiator Cooling Fan Connector



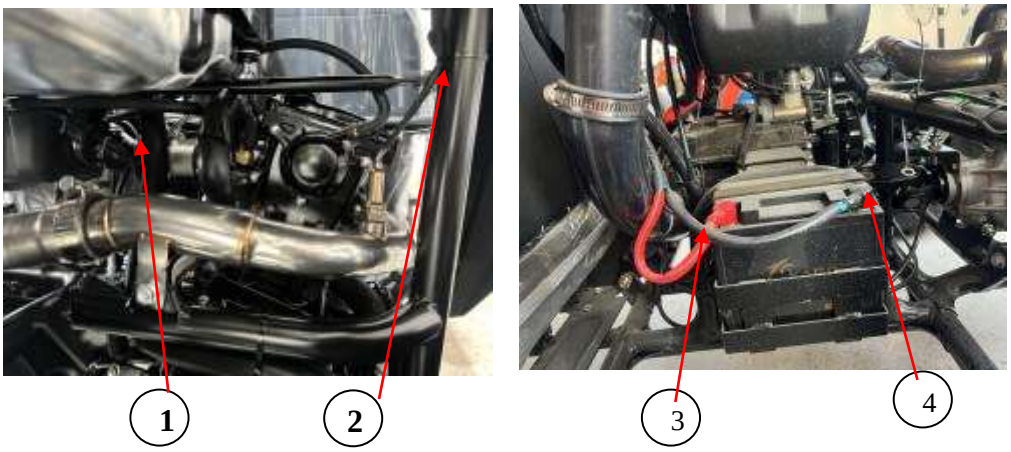
1、Cylinder temperature sensor plug-in 2, injector plug-in 3, gear display plug-in 4, magneto trigger plug-in 5, temperature and pressure sensor plug-in 6, stepper motor plug-in 7, throttle position sensor plug-in



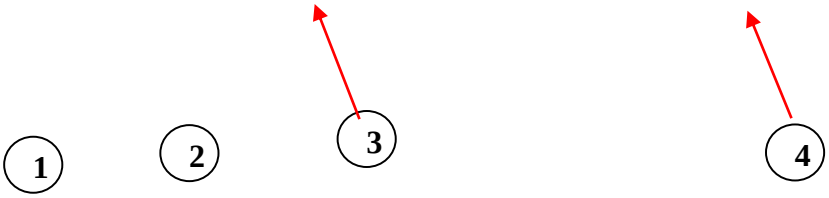


1、Ignition coil plug 2, engine grounding wire 3, voltage regulator plug 4, ECU plug 5, oil level sensor plug

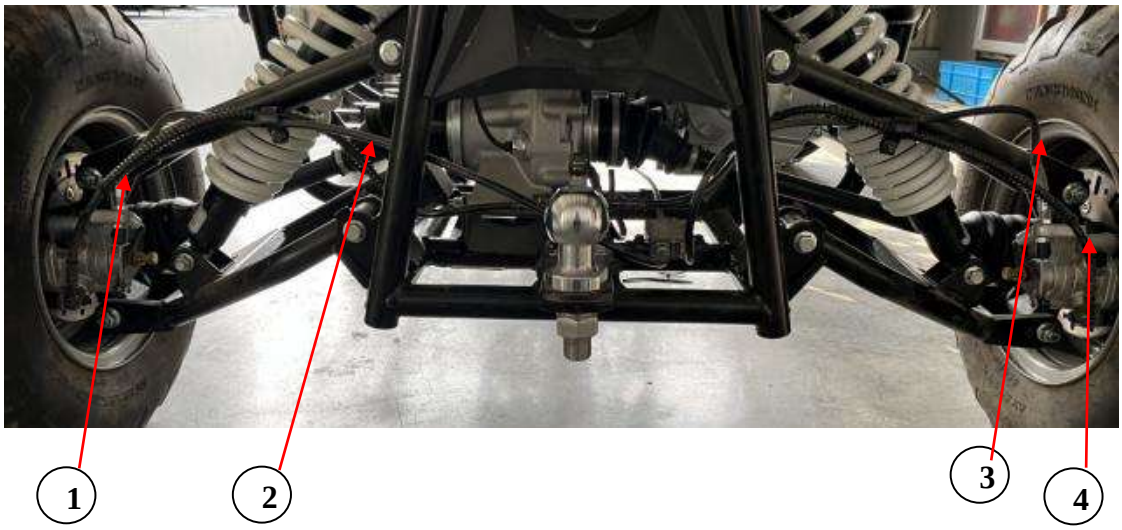
Attention:When inspecting or servicing the above components, it is necessary to remove the rear rack tarpaulin and the rear rack. For specific removal procedures, please refer to Chapter 2: Body Covers.



1.Charcoal Canister Solenoid Valve plug 2.Oxygen sensor plug 3, battery positive terminal 4, battery negative terminal



1、Fuel filter 2, throttle cable 3, gear shift cable 4, rear light cable



1. Brake oil line 2. Parking cable 3. Parking cable 4. Brake oil line

2 Body Panels

2.1 Maintenance Information

Work precaution

When replacing the covers of regulatory warning signs affixed or riveted to vehicles, it is necessary to correctly and completely replenish the corresponding signs in their original form.

This chapter describes the disassembly sequence of the body panels. When it is necessary to dismantle related panels for the maintenance of the vehicle's interior components, refer to this chapter.

This chapter describes the disassembly and assembly operations for ceiling frames, cushions, and exterior parts.

Please route pipes and cables according to the wiring diagrams for cables, pipes, and guy wires from the correct position.

2.2 Installation Torque

M10 bolt	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 bolt	5 (0.5)	Torque N·m(kgf·m)
self-tapping screw	4 (0.4)	Torque N·m(kgf·m)

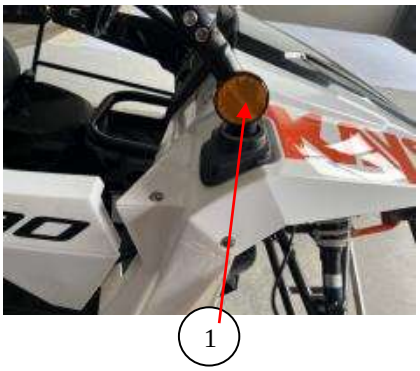
2.3Removal and Installation of Front Reflectors and Ceiling Frame

2.3.1 Front left and right reflectors

Disassembly

Turn the reflector 1 counterclockwise (one on each side)

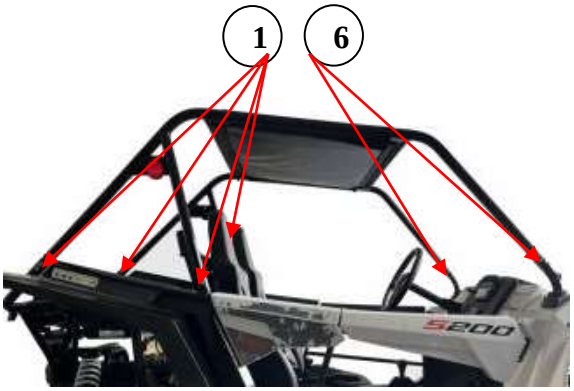
Remove reflective sheet 1



Install

The installation is carried out in the reverse order of disassembly.

2.3.2 Ceiling Frame and Back Seat Beam



Disassembly

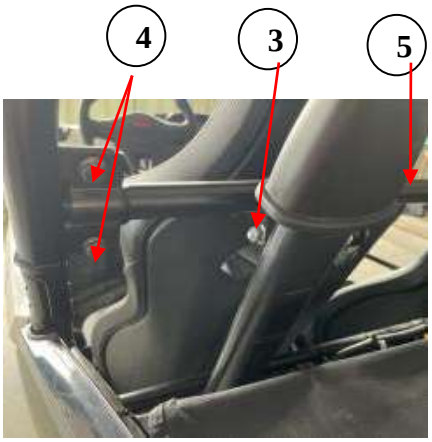
Remove the ceiling frame fixing bolt 1 (total of 12 bolts)

Remove the upper intake tube fixing bolt 3 (one on each side)

Remove the backrest crossbeam fixing bolts 4 (2 on each side)

Remove the backrest crossbeam 5

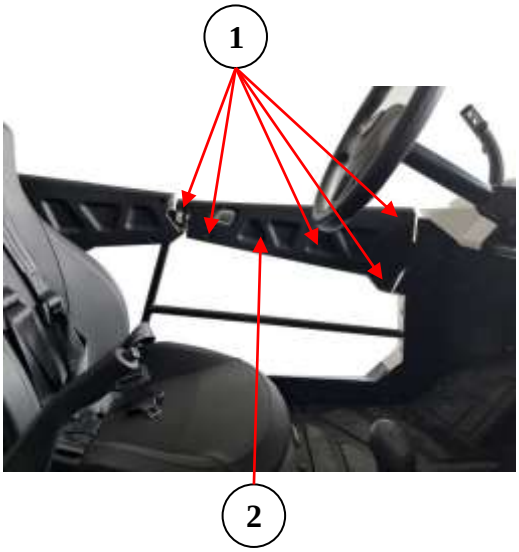
Remove the ceiling frame upward 6



Install

The installation is carried out in the reverse order of disassembly.

2.4 Removal of door inner panel, door side panel, door frame, inner support of armrest panel, and the armrest panel itself.



2.4.1 Left Internal Support Plate

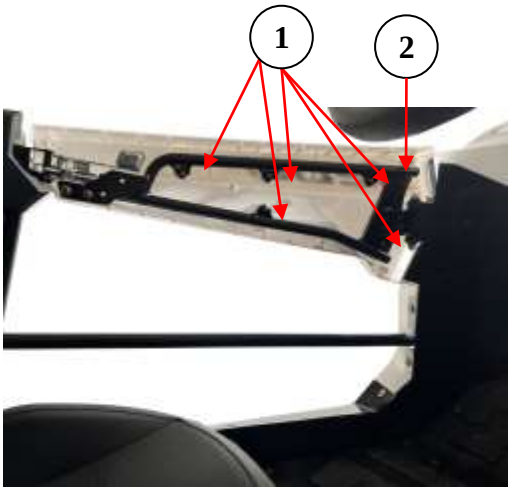
Disassembly

Remove the left inner support panel and install screw 1 (total of 5 screws)

Remove Left Door Insider Brace2

Install

The installation is carried out in the reverse order of disassembly.



2.4.2 Left Door Panel

Disassembly

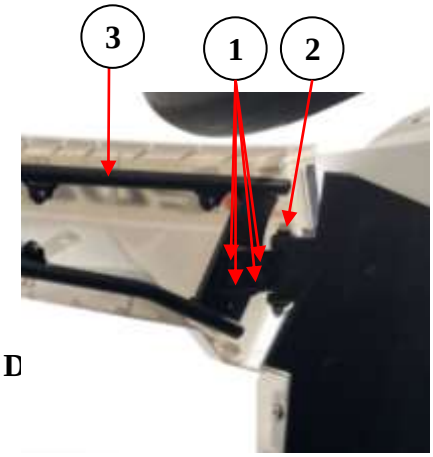
Remove Left Door Insider Brace（→ 2.4.1）

Remove the left door panel screw 1 (total of 5 screws)

Remove Left Door Panel2

Install

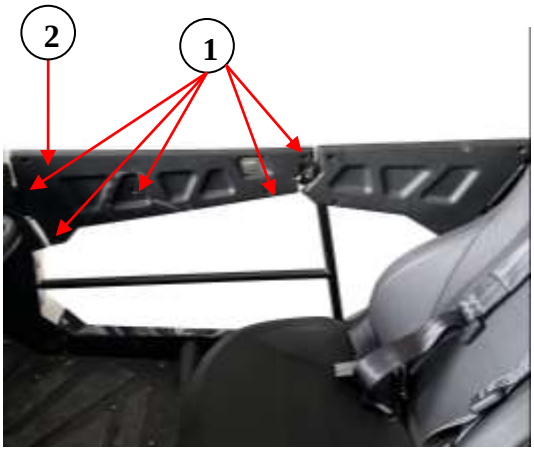
The installation is carried out in the reverse order of disassembly.



2.4.3 Left Door Frame

D

Remove the left door inner support panel (→ 2.4.1)
Remove the left door panel (→ 2.4.2)
Remove the bolt 1 of the left door frame mounting component
Remove the left door armrest mounting bolt 2
Remove the left door frame 3

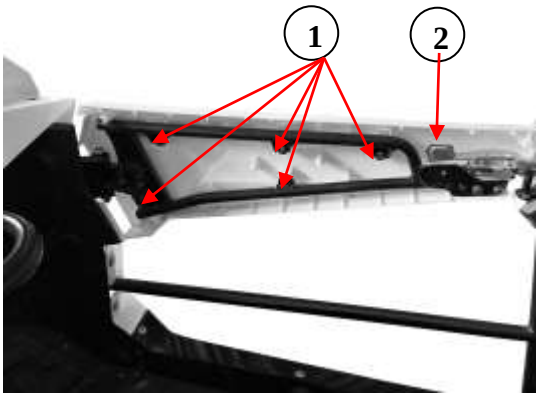


Install
The installation is carried out in the reverse order of disassembly.

2.4.4 Right inner support plate

Disassembly
Remove the right inner support panel and install screw 1 (total of 5 screws)
Remove the right inner support plate 2

Install
The installation is carried out in the reverse order of disassembly.



2.4.5 Right-side Panel

Disassembly
Remove the right door inner panel (→ 2.4.4)
Remove the right door side panel screw 1 (total of 5 screws)
Remove the right door side panel 2

Install
The installation is carried out in the reverse order of disassembly.

2.4.6 Right Door Frame

Disassembly

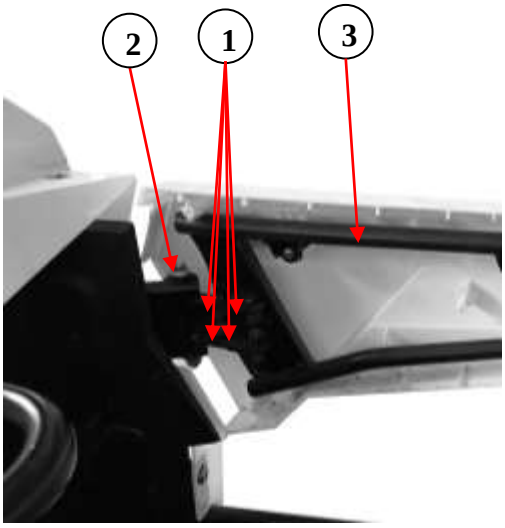
Remove the right door inner panel (→ 2.4.4)

Remove Right Door Panel（→ 2.4.5）

Remove the bolt 1 of the right door frame mounting component

Remove Right Door Hinge Bracket Mounting Bolt2

Remove the right door frame 3



Install

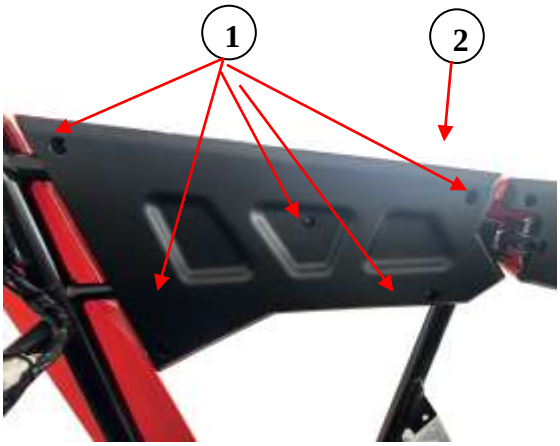
The installation is carried out in the reverse order of disassembly.

2.4.7 Left-hand board inward support

Disassembly

Remove the left-hand side panel fastening screw 1

Remove the inner support of the left armrest 2



Install

Proceed in the reverse order of disassembly

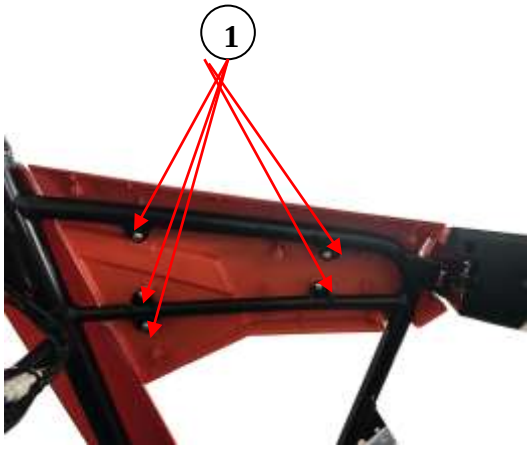
2.4.8 Left Armrest Panel

Disassembly

Remove Left Handrest Insider Brace （→ 2.4.7）

Remove the left-hand armrest fastening screw 1

Remove the left armrest panel 2

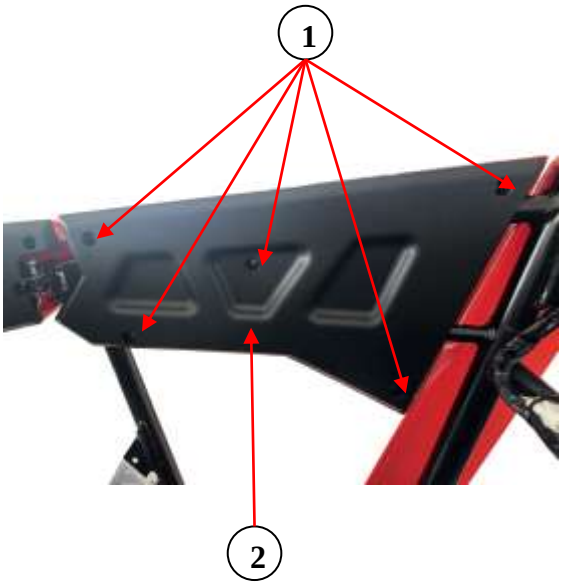


Install

Proceed in the reverse order of disassembly

2.4.9 Right-hand panel internal support

Disassembly
Remove the right-hand panel fastening screw 1
Remove the right-hand panel inner support 2



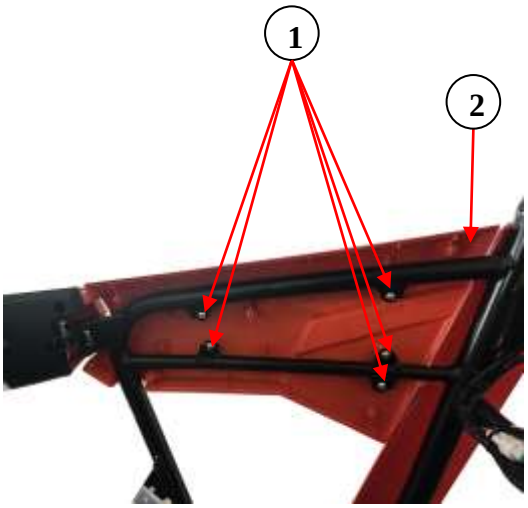
Install
Proceed in the reverse order of disassembly

2.4.10 Right Armrest Panel

Disassembly
Remove the right-hand panel (→ 2.4.9)
Remove the right-hand panel fixing screw 1
Remove Right Armrest Panel2

Install
Proceed in the reverse order of disassembly

2.5 Front cover, front body assembly, left and right fenders, left and right pedal outer guards, rear left and right mudguards, and the installation and removal of the air deflector

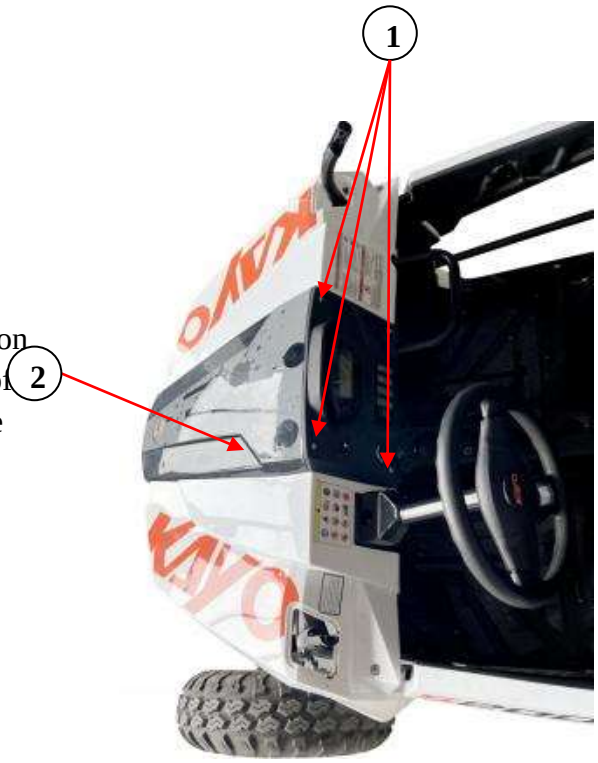


2.5.1 Front cover plate

Disassembly

Remove the front instrument panel

mounting bolt 1
Remove Front Bumper2



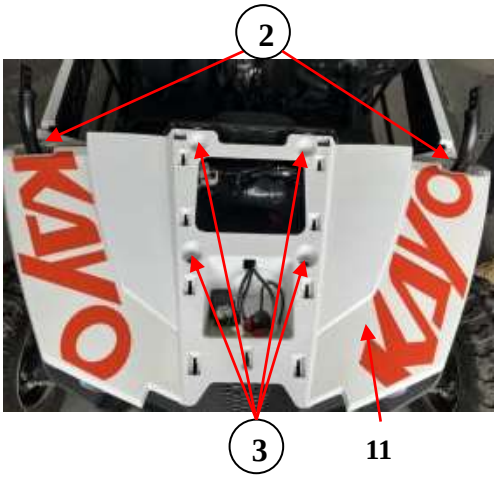
Install

Proceed in the reverse order of disassembly (note that the clip nuts on the front cover are prone to falling off, check if they are still in place before installation)

2.5.2 Front Body Assembly

Disassembly

Remove the front cover (→ 2.5.1)
Remove the body trim cover 1 (left/right)
Remove the two retaining screws
Remove the fixing screw 3
Remove the 4 mounting screws (6 on each side)
Remove Light Cover Mount Bolt5
Remove the left and right high beam cable plug 6
Remove the left and right low beam cable plug 7
Remove the left and right daytime running light cable plug 8
Remove the four-legged relay plug 9
Remove the OBD interface plug 10
Pull out the cable
Remove the front body assembly 11

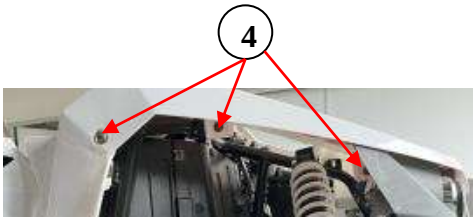


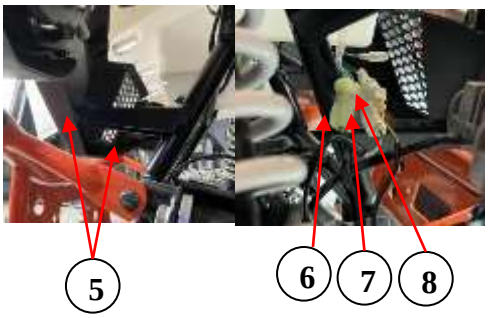
Install

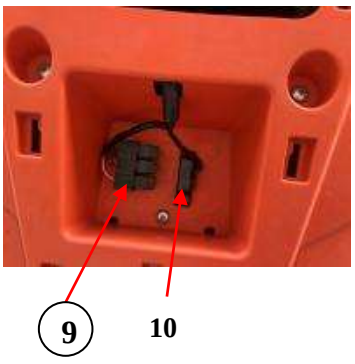
Proceed in the reverse order of disassembly

Caution

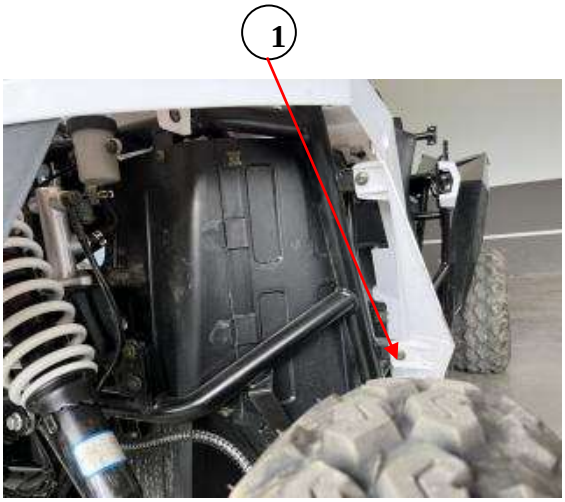
Before disassembly, the cables on the front body, as well as the connectors for the left and right front headlights, should be removed. After installation, inspect the cables and connectors to prevent incorrect connections.







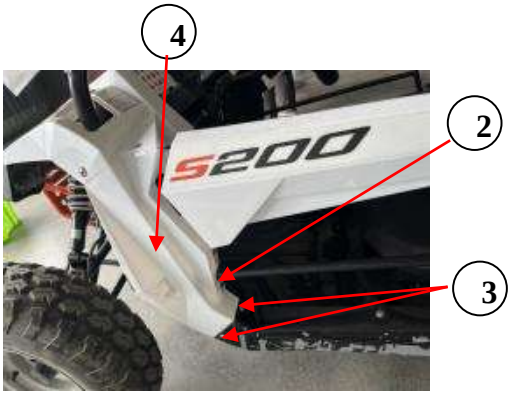
2.5.3 Left Wing Panel



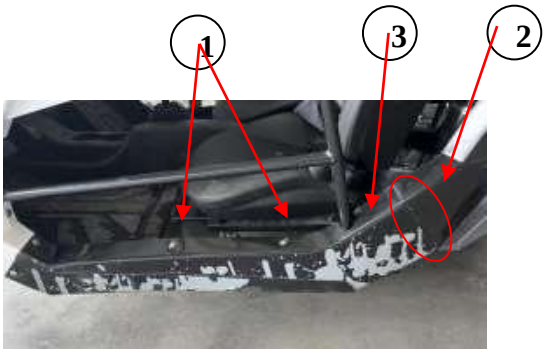
Disassembly

Remove the front cover (→ 2.5.1)
Remove the front body assembly (→ 2.5.2)
Remove screw 1
Remove the mounting screw. 2
Remove the fixing screw 3
Remove the left wing panel 4

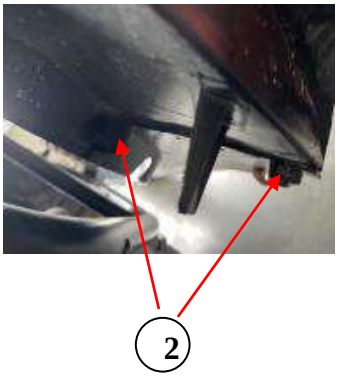
Install
Proceed in the reverse order of disassembly



Left Foot Outer Cover



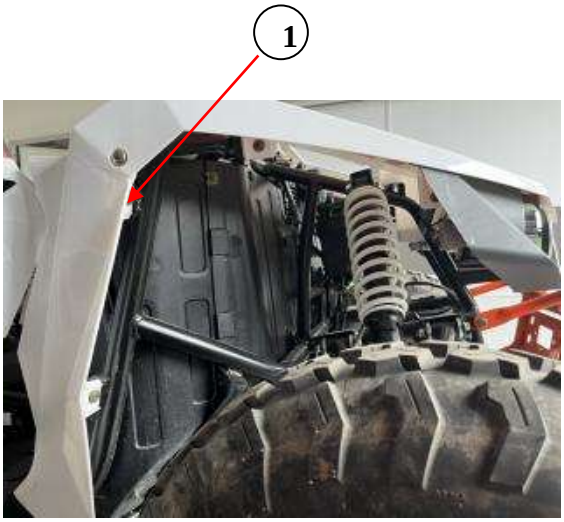
Disassembly
Remove the front cover (→ 2.5.1)
Remove the front body assembly (→ 2.5.2)
Remove the left wing panel (→ 2.5.3)
Remove screw 1
Remove the screw securing the rear left mudguard (note that when removing this screw, the plastic part needs to be pulled slightly backward to uninstall the fixing screw).Alternatively, after removing the left mudguard, the outer cover of the left pedal can be taken off as well.
Remove the left pedal outer cover 3



Install
Proceed in the reverse order of disassembly

2.5.5 Right Wing Panel

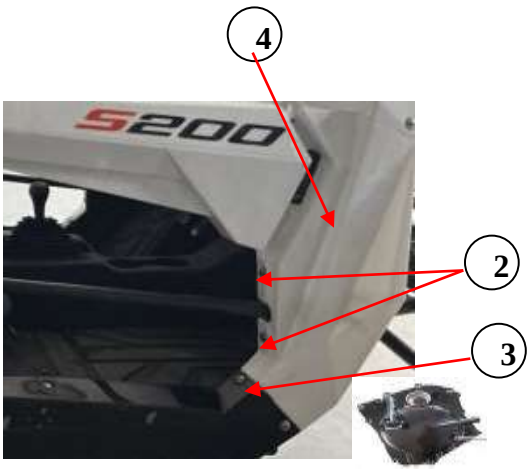
Disassembly
Remove the front cover (→ 2.5.1)
Remove the front body assembly (→ 2.5.2)
Remove screw 1
Remove the mounting bolt2
Remove the fixing screw 3
Remove the right wing panel
Install
Proceed in the reverse order of disassembly

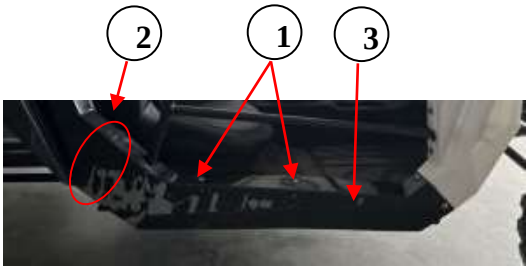


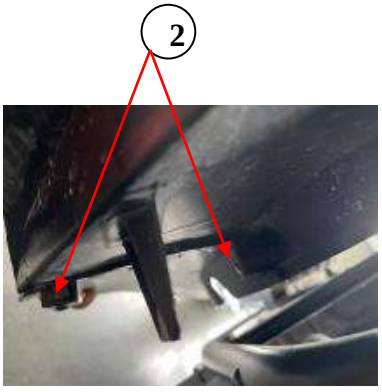
2.5.6 Right Foot Outer Cover

Disassembly
Remove the front cover (→ 2.5.1)
Remove the front body assembly (→ 2.5.2)
Remove the right wing panel (→ 2.5.5)
Remove screw 1
Remove the screw securing the rear left mudguard (note that when removing this screw, the plastic part needs to be pulled slightly backward to uninstall the fixing screw).Also, after removing the right mudguard, the left pedal's outer cover can be taken off.
Remove the right foot pedal outer cover 3

Install
Proceed in the reverse order of disassembly

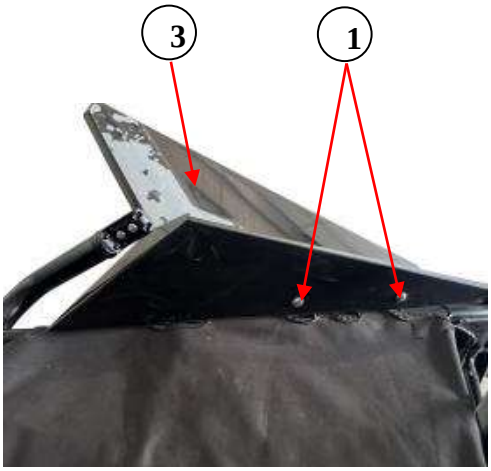


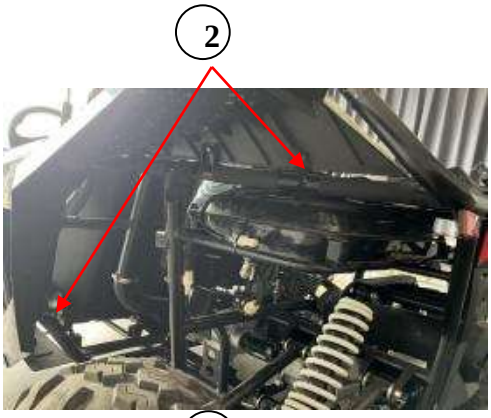




2.5.7 Left Rear Fender

Disassembly
Remove Front Panel Cover（→ 2.5.1）
Remove the front body assembly (→ 2.5.2)
Remove the left wing panel (→ 2.5.3)
Remove the left foot pedal outer cover (→ 2.5.4)
Remove screw 1
Remove bolt 2
Remove the left rear mudguard 3



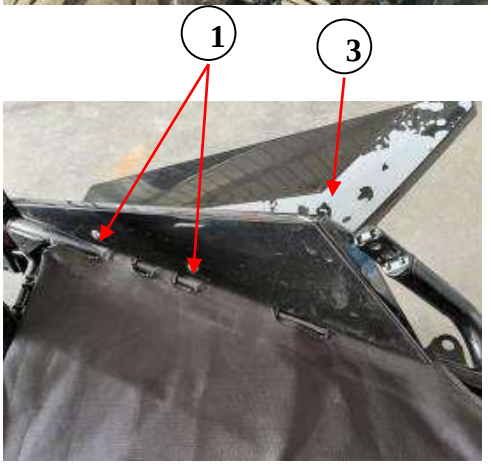


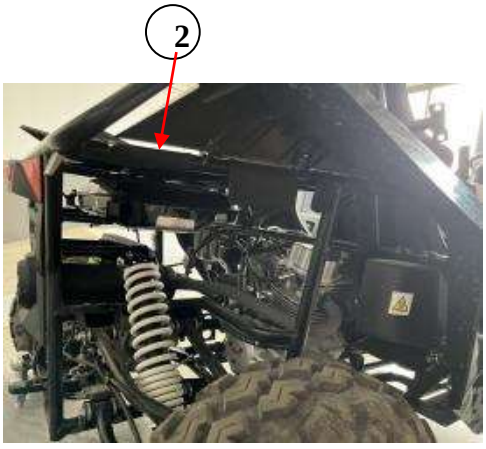
Install
Proceed in the reverse order of disassembly

2.5.8 Right Rear Fender

Disassembly

Remove the front cover (→ 2.5.1)
Remove Front Body Assembly（→ 2.5.2）
Remove the right wing panel (→ 2.5.5)
Remove the right foot pedal outer cover (→ 2.5.6)
Remove screw 1
Remove bolt 2
Remove the right rear mudguard 3





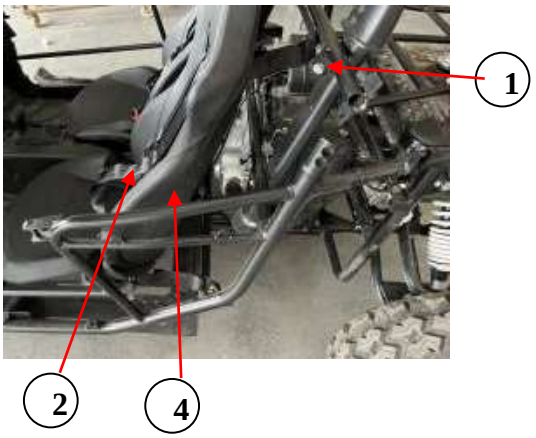
Install
Proceed in the reverse order of disassembly

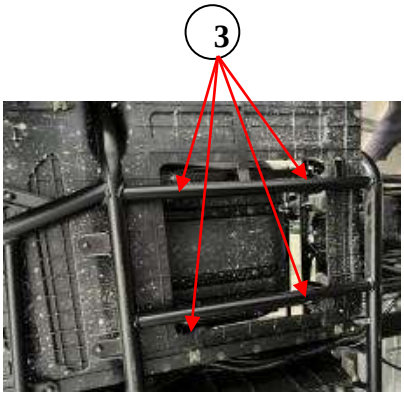
2.6 Removal and installation of the seat belt, cushion, inner covers of the left and right foot pedals, left and right foot pedals, center console components, and interior front panel components

2.6.1 Seat belts and cushions (left and right)

Disassembly

Remove the seat belt mounting screw 1
Remove the safe belt.2
Remove the seat cushion fixing bolt 3
Lift the seat in the upward direction. 4





Install

Proceed in the reverse order of disassembly

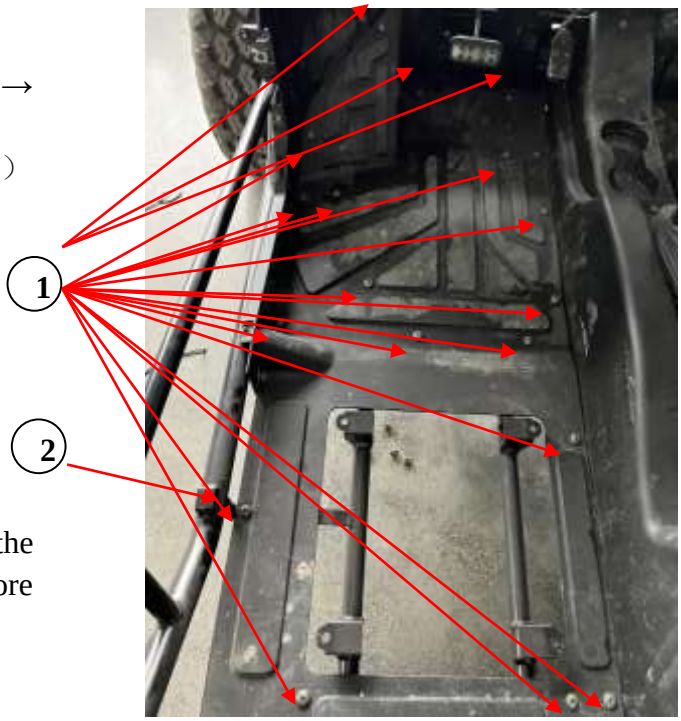
2.6.2 Left Foot Pedal

Disassembly

Remove the safe belt and seat.（→ 2.6.1）

Remove the mounting screw.1（19）

Lift up and remove the left pedal.



Install

Proceed in the reverse order of disassembly

Note whether the clip nut on the plastic part has fallen off before installation.

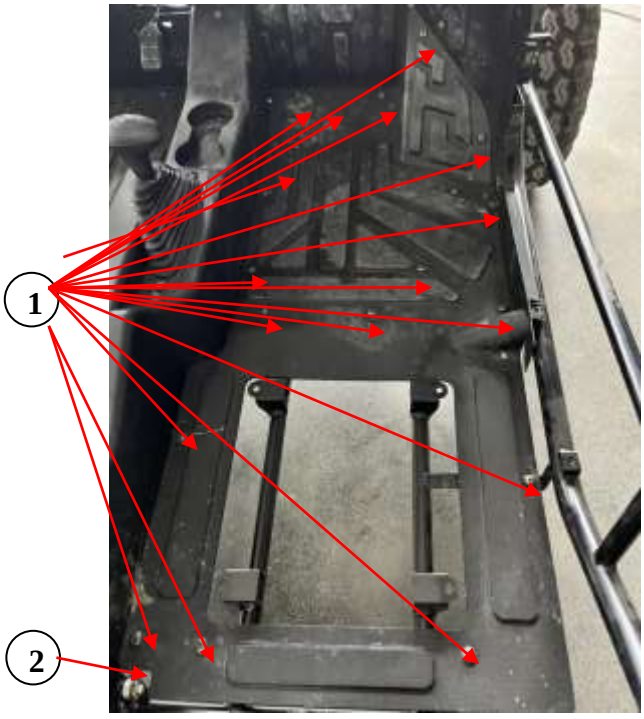
2.6.3 Right Foot Pedal

Disassembly

Remove the seat belt and cushion (→ 2.6.1)

Remove screw 1 (19 pieces)

Lift up and remove the right pedal.

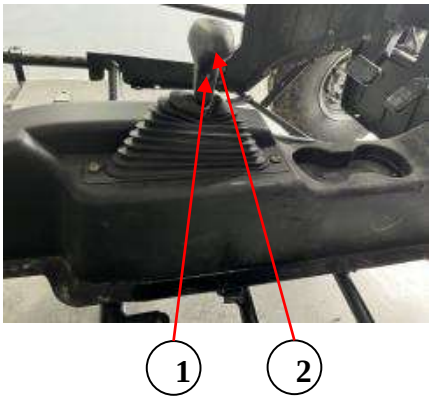


Install

Proceed in the reverse order of disassembly

（Check whether the clip-on nuts on the front plastic parts have come loose or fallen off）

2.6.4 Central Control Component



Disassembly

Remove screw 1

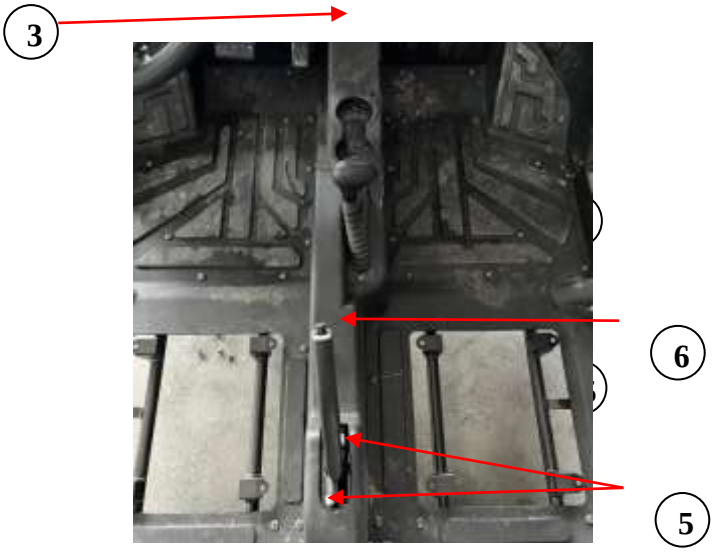
Remove shift lever 2

Remove the brake cable mounting screw.4

Remove the brake cable locking nut 5

Pull the handbrake lever all the way up.

Lift up to remove the central control unit 6

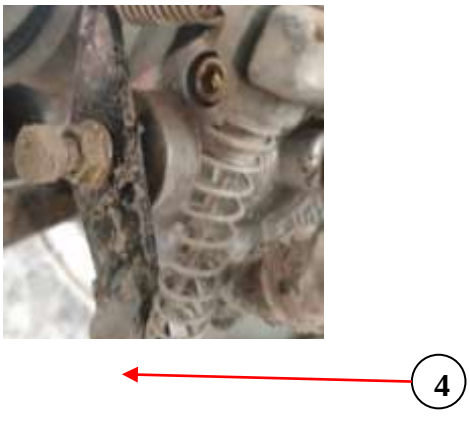


Install

Proceed in the reverse order of disassembly

Caution

After loosening the brake cable locking nut, the brake cable bolt needs to be slightly pulled backward, and the handbrake lever should be pulled to its highest position.



2.6.5 Left Foot Pedal Inner

Cover

Disassembly

Remove the seat belt and cushion (→ 2.6.1)

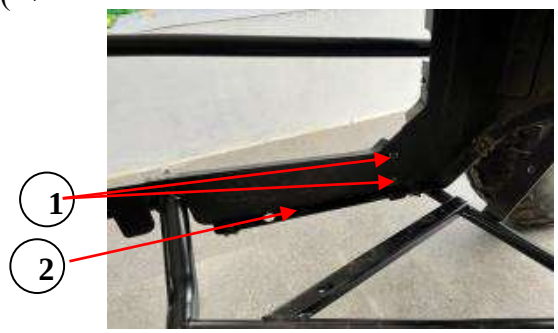
Remove the left pedal (→ 2.6.2)

Remove screw 1

Remove the left pedal inner cover 2

Install

Proceed in the reverse order of disassembly



2

2.6.6Right Footrest Inner Plastic

Cover

Disassembly

Remove the seat belt and cushion (→ 2.6.1)

Remove the right pedal (→ 2.6.3)

Remove screw 1

Remove the right foot pedal inner cover 2

Install

Proceed in the reverse order of disassembly

2.6.7 Front Left Interior Panel

Disassembly

Remove the left pedal (→ 2.6.2)

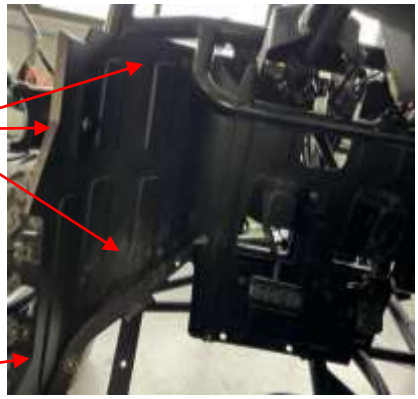
Remove the left pedal inner cover (→ 2.6.5)

Remove screw 1

Remove the front left panel of the interior before disassembly

Install

Proceed in the reverse order of disassembly



2.6.8 Front Right Interior Panel

Disassembly

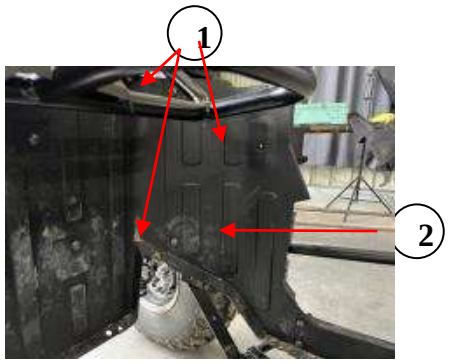
Right Footrest Inner Plastic Cover

（→ 2.6.3）

Remove the right pedal inner cover (→ 2.6.5)

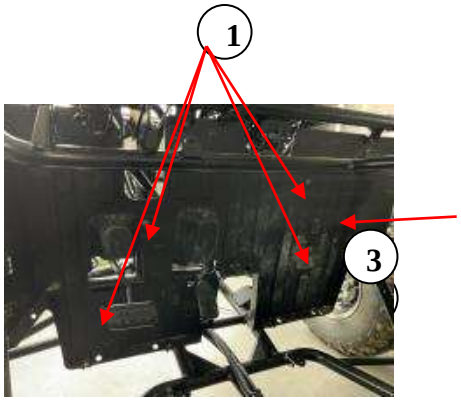
Remove screw 1

Remove the front right panel of the interior before disassembly



Install

Proceed in the reverse order of disassembly



2.6.9 Front panel interior

Disassembly

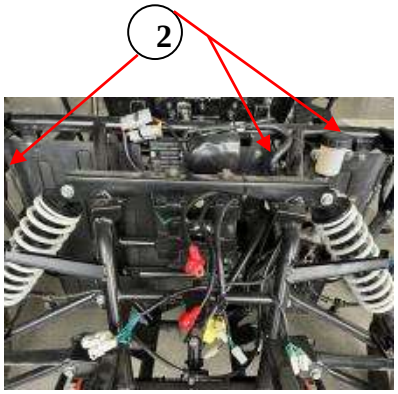
Remove the front left panel of the interior (→ 2.6.5)

Remove the front right panel of the interior (→ 2.6.6)

Remove screw 1

Remove the two retaining screws

Remove the interior front panel 3



Install

Proceed in the reverse order of disassembly

2.7 Front protection, rear shelf, water tank guard, taillight cover, and instrument panel disassembly

2.7.1Front Guard

Disassembly
Remove front protective fixing bolt 1
Remove front guard 2

Install
Proceed in the reverse order of disassembly

2.7.2Rear Rack

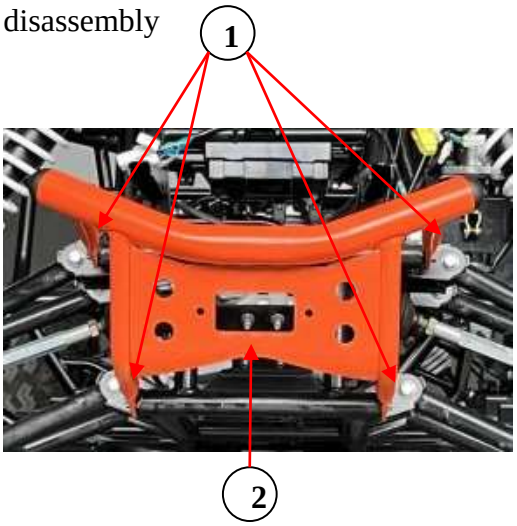
Disassembly
Remove the shelf canopy 1
Remove the shelf mounting bolt 2
Remove the shelf assembly 3

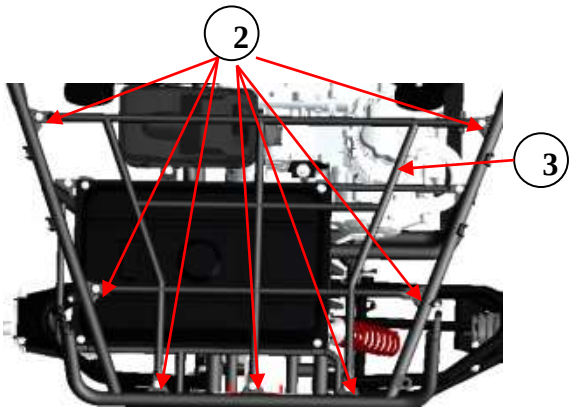
Install
Proceed in the reverse order of disassembly

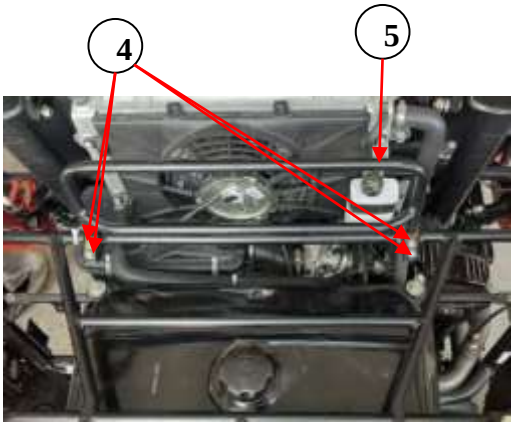
2.7.3 Water Tank Guardrail

Disassembly
Remove the shelf canopy
Remove the radiator guard mounting bolt.4
Remove the water tank guardrail 5

Install
Proceed in the reverse order of disassembly

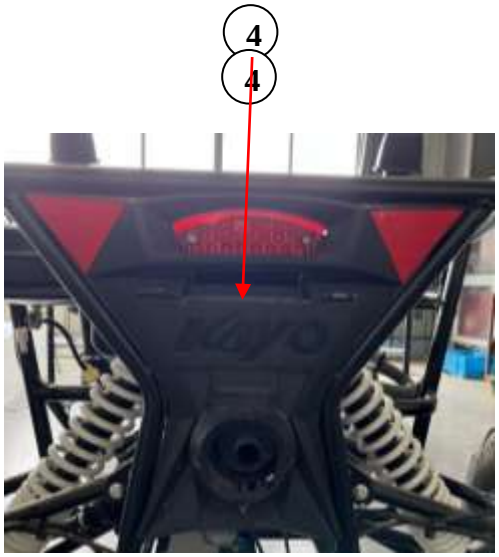






2.7.4Tail Light Bracket

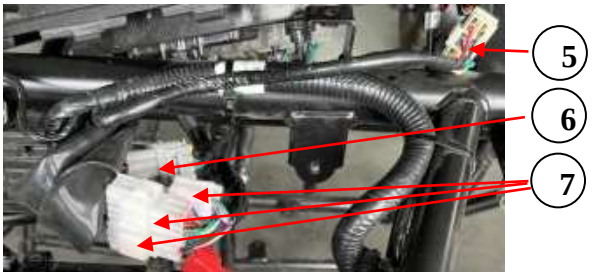
Disassembly
Remove the rear light plug 1
Remove the two retaining screws
Remove the plastic retaining clip 3
Remove the tail light bracket.4

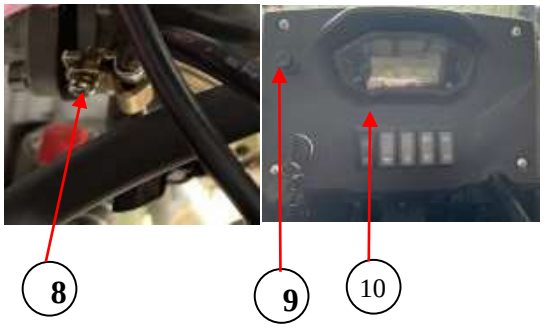


Install
Proceed in the reverse order of disassembly

2.7.5Meter Cover

Disassembly
Front body assembly (→ 2.5.2)
Disconnect the ignition lock connector. 5
Disconnect the panel switch connector. 6
Release Dashboard plugin 7
Release the air valve line 8
Remove the air gate switch 9
Remove the meter cover.
Install
Proceed in the reverse order of disassembly





3 Regular inspections and adjustments

Maintenance Information

Work Precaution

Caution

- As the exhaust contains toxic components such as carbon monoxide (CO), please do not run the engine for an extended period in enclosed or poorly ventilated areas.
- When the engine has just stopped, the muffler and the engine are still very hot, and if they come into contact with the skin, they can cause burns. If it is necessary to carry out maintenance immediately after the engine has stopped, it is essential to wear long-sleeved work clothes and gloves for the task.
- Gasoline is highly flammable; smoking is strictly prohibited in the workplace. Not only should you pay attention to open flames, but also be particularly cautious of electrical sparks. Additionally, due to the explosive risk of evaporated gasoline, operations should be conducted in a well-ventilated area.

Caution

Do not let the drive system or rotating parts catch your hands and clothing.

Caution

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

3.1 Maintenance Cycles

Engine maintenance is a frequently performed periodic task. It is very important to carry out maintenance on the engine at regular intervals. Only standardized maintenance can ensure the engine's superior performance, reliability, and economy. Below is the maintenance schedule for the CVT300 engine:

Attention:The table is designed based on normal operating conditions; under adverse conditions, the engine maintenance interval should be correspondingly shortened.

Maintenance period / Maintenance cycle / Items Maintenance items	Odometer (km) Mileage											
	750	1000	2000	3000	4000	5000	6000	7000	8000	9000	10,000	Perform a daily check before each bike ride.
Engine oil	R			R			R			R		I
Spark plug				I			R			I		
齿轮油	R			R			R			R		I
Engine oil filter	C			C			C			C		
Fuel precision filter				R:Every 1800 miles (3000 kilometers) or annually								
Barrel bolt	I			I			I			I		
Air Filter				C			R			C		
Coolant	I			I			I			I		I
Valve clearance				I/A			I/A			I/A		
Oil pump					I				I			
Belt				I			I			I		
Spark arrester		C:The first to arrive shall be considered, every 100 hours or 6 months or 620 miles (1000 kilometers).										
Front and rear brake disc pads			R:Every 2000 km									I
Brake fluid	R:Every 5000 km											
Upper and lower arm	L			L			L				R	I
Front and rear shock absorbers												I
Gear oil (rear main reducer)	Left/Right:Initial maintenance at 300 km, then change every 800 km thereafter.											I
Hydraulic braking						R/L					R/L	I

Wheel Rim/Tire				I			I			I	R	I
Steering system				I			I			I		I
Storage battery						I / R					R	I
Mechanical components grease lubrication (rear fork, front wishbone ball joint, drive shaft, steering gear assembly)	L:Lubricate every 750 km											
Rear Axle Input Shaft	L:Lubricate every 750 km											
Seat Rails	L:Lubricate every three months											

Inspection, cleaning, lubrication, adjustment, and replacement of parts are all necessary.

Attention:Parts may need to be replaced after inspection. Please contact your dealer and use genuine parts.

Maintenance and adjustment have strict requirements. If you are not familiar with the maintenance and adjustment of SSV, please visit your dealer for service.

Vehicles should be maintained according to the prescribed maintenance schedule. The meanings of the various codes in the table are as follows:

C:Cleanse

R:Replace

A:Adjustment

L:Lubrication

I:Inspection, including overhaul, cleaning, lubrication, oiling, repair, or replacement if necessary.

Footnote 1:When driving in areas with a lot of dust, it is advisable to clean the vehicle frequently.

3.2 Inspection and Maintenance Methods

Inspection and maintenance projects			Maintenance period			Judging criteria
Inspection site		Inspection items	Daily inspection	Half Annual Inspection	Annual Inspection	
Steering gear	steering wheel	Operational flexibility	○			
	Steering system	Injury	○			
		Steering system installation status	○			
		Ball pin sway	○			
Braking system	Brake pedal	Pedal travel	○	○		
		Braking effect	○	○		
	Connecting rods and oil pipes	Relaxation, loosening, and damage	○		○	
	Hydraulic brakes and brake discs	Front and rear brake fluid volume	○	○		The brake fluid should be at the minimum level. (LOWER) above
		Brake disc wear and damage	○	○		Current working thickness of the brake disc When the thickness of the working surface of the rear brake disc is less than 3mm, it should be replaced promptly.
	Brake Pads	Brake pad wear and damage	○	○		Minimum brake pad (friction material) thickness ≥1mm; please replace if less than 1mm
		Tire pressure	○	○		Front wheel:100 kilopascals (1

Walking mechanism	wheel					kilogram-force per square centimeter) (14.5 pounds per square inch) Rear wheel:100 kilopascals (1 kilogram-force per square centimeter) (14.5 pounds per square inch)
		Tire Cracking and Damage	○		○	
		Tire tread depth and abnormal wear	○		○	If there is no appearance on the tire surface Wear indicator: the remaining groove depth should not be less than 3mm.
		Wheel nuts and wheel shaft loosening	○	○		
		Front wheel bearing play	○		○	
		Rear wheel bearing play	○		○	
Buffering device	Swing Arm	The sway of the connecting part and the damage to the rocker arm	○		○	
	Shock absorber	Oil leakage and damage	○		○	
		Function			○	
Transmission	Maebashi	Transmission, lubrication	○		○	
	Rear axle	Transmission, lubrication	○		○	
	Transmission box	Oil leakage and oil volume	○		○	Loosen the fuel bolt outlet, oil quantity To the mouth of the Kong (Confucius)

Inspection and maintenance projects			Maintenance period			
Inspection site		Inspection items	Daily inspection	Half Annual Inspection	Annual Inspection	Judging criteria
Transmission	Output shaft Drive shaft	Loosening of the connecting part	○	○		
		Flower key part vibration			○	
Electrical installation	ignition device	Spark plug condition		○		Spark plug gap:0.7mm to 0.8mm
		ignition period		○		
	Storage battery	Terminal connection status			○	
	Electrical circuit	Loosening and damage at the connection point			○	
Fuel assembly		Fuel leak		○		
		Throttle position			○	Throttle pedal free play:2 to 6 mm
Lighting fixtures and turn signal indicators		Function	○	○		
Alarm and locking devices		Function			○	
Instrument panel		Function			○	
Exhaust pipe and muffler		Check for any looseness or damage in the installation.			○	
		Muffler function			○	
Chassis		Loosening and damage			○	
Other		Condition of lubricating oil on various parts of the chassis			○	
The part that can confirm anomalies while in operation		Confirm whether there are any abnormalities in the relevant parts	○			

Tighten all nuts, bolts, and washers.It is necessary to tighten all calibrated nuts, bolts, and locknuts to the specified torque.

It is recommended to lubricate certain parts regularly to ensure their free movement.Use the following list as a reference and apply lubricant to the components.

A、Throttle pedal shaft

B、Brake pedal shaft and handbrake lever

C、Shift lever

3.3 Steering wheel, braking system

Place the car in a level position, and slowly turn the steering wheel left and right to confirm whether it has equal left and right turning capabilities.If the steering angles differ, check whether the indicator lines of the steering mechanism are aligned (as indicated by the red arrow). If confirmed to be aligned, inspect the spline area of the steering wheel and adjust the steering wheel accordingly.Turn the steering wheel left and right; if you feel resistance in certain positions, add lubricating oil at the steering mechanism 1.

Attention::It is essential to ensure that the steering is agile; otherwise, an accident may occur due to loss of control when manipulating the steering wheel.

1. Steering gear

Brake pedal free play:
Operate the brake pedal (the left one is the brake pedal), and check the braking effect and the movement of the pedal.
Check the free play at the brake pedal

Front brake disc, brake pads
Inspect the wear on the brake pads
If the wear has reached the wear limit, replace the brake pads.

Caution
The brake pads need to be replaced as a set.

Brake disc inspection and replacement
Inspect the sliding surface of brake disc 1 for wear or damage. If the current brake disc thickness is ≤3.0mm, replace the brake disc.

Front brake disc minimum usable thickness:3.0 mm

Check the minimum thickness of the brake friction material 2
Minimum friction plate thickness ≥ 1 mm
If less than the minimum friction material thickness, please replace with new brake friction linings.
Check the brake friction plates for damage or cracks; if any damage or cracks are found, replace them with new brake friction plates.

Attention:Please regularly check the brake fluid level and maintain it at a safe position. Inspect the oil lines and connection points for damage, and

replace them if necessary. Also, check the main pump/calipers for any damage and replace them promptly if found.
Attention:Do not leave the brake fluid reservoir cap open for an extended period.

Change oil
Brake fluid should be changed once a year.

Change oil
The brake fluid should be changed once a year.

Combination of front and rear brake

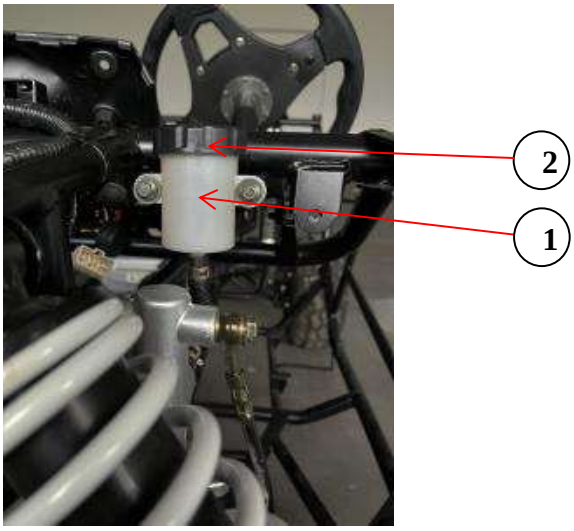
pumps

< Liquid Volume >

Check the brake fluid level.When the brake fluid level decreases to near the lower limit (LOWER), an alarm will be displayed on the instrument panel. At this point, the vehicle cannot be used and it is necessary to check for leaks in the brake pump, brake lines, and all connections. If the inspection is normal, then the wear of the brake discs and brake pads should be checked.If there is damage or wear beyond the limit of use, please replace it.It is also necessary to check these items before each use of the vehicle.

Remove the oil cup cover 2

Add the brake fluid recommended by KAYO until it reaches the upper limit line.



Caution

- Do not mix dust or water when adding brake fluid.
- To prevent chemical changes, please use the specified brand of brake fluid.
- Do not splash the brake fluid on plastic or rubber surfaces as it may damage them.

Turn the direction slightly to the left or right, and wait until the brake pump assembly is level before removing the oil cup cover.

Rear brake disc, brake pads

Inspect the wear on the brake pads

If the wear has reached the wear limit, replace the brake pads.

Caution
The brake pads need to be replaced as a set.

Brake disc inspection and replacement
Inspect the sliding surface of brake disc 1 for wear or damage. If the current brake disc thickness is ≤3.0mm, replace the brake disc.

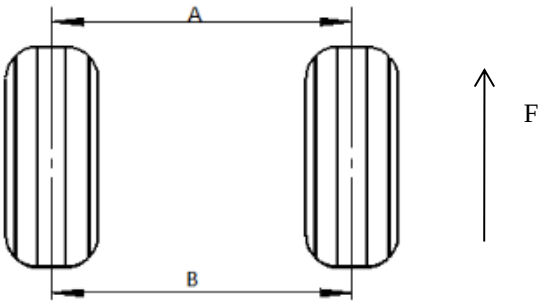
Rear brake disc minimum usable thickness:3.0 mm

Check the minimum thickness of the brake friction material 2
Minimum friction plate thickness ≥ 1 mm
If less than the minimum friction material thickness, please replace with new brake friction linings.
Check the brake friction plates for damage or cracks; if any damage or cracks are found, replace them with new brake friction plates.

Change oil
Brake fluid should be changed once a year.

3.4 Wheel

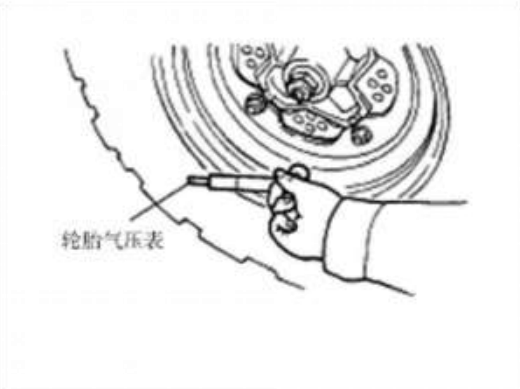
Jack up the front wheel at the horizontal position using a tool, ensure that there is no force acting on the wheel from the body of the vehicle, rock the front wheel from side to side to check if the connections are secure and to see if there is any play.
If there is any vibration, check and tighten the arm, wheel spindle, rim bolts, and nuts.
If there is still shaking, check and replace:Bearing, rocker arm buffer sleeve, ball pin



Front Wheel Size
Place the body of the car in a horizontal position and measure the front wheel toe size; the front of the front wheel relative to the direction in which the vehicle travels forward is:A, the following is behind the wheel:B
Front track width:A-B=1.5 ~ 2.5 mm
F for forward direction

If not within this range, adjust the locking nut 2 of the steering lever 1.
Attention:After adjusting the front-end toe size, drive the vehicle slowly to ensure that the handlebar can correctly control the direction of the body.

Tire pressure
Use a barometer to check the tire pressure.

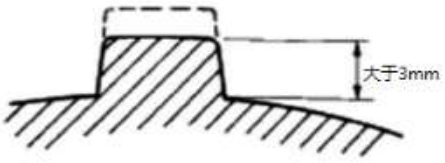


Caution
Tyre pressure should be checked when the tires are cool.Using the vehicle with inappropriate tire pressure will result in poor handling and ride comfort, and cause adverse effects such as uneven tire wear.

Designated air pressure/tires

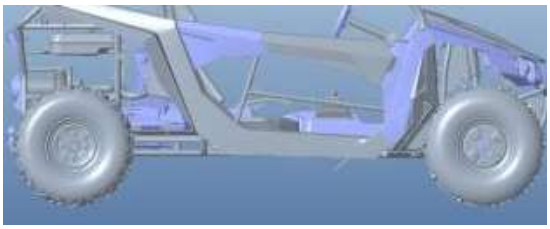
	front wheel	rear wheel
Atmospheric pressure	100 kPa (1 kgf/cm²)	100kPa（1kgf/cm²）
Tire Size	See Chapter One	See Chapter One

Tire tread pattern
Check the tire tread; once the tread depth is less than 3mm, replace with new tires.



Caution
The tire tread must be replaced immediately when it is less than 3mm.

Wheel nuts and wheel spindles
Inspect the front wheel spindle, the rear wheel spindle nut 1, and the pin for looseness.
Tighten to the specified torque when there is play.
Torque:
Front wheel axle nut:72N·mm to 89N·mm (7.3 kgf·mm to 9.0 kgf·mm)
Rear wheel axle nut:72N·mm to 89N·mm (7.3 kgf·mm to 9.0 kgf·mm)



1

The wobble of the wheel rim
Use a tool to jack up the front wheel, and when there is no force acting on the front wheel from the body of the vehicle, rock the wheel axially to check for any play.

Remove the front wheel when there is vibration and inspect the wheel hub.

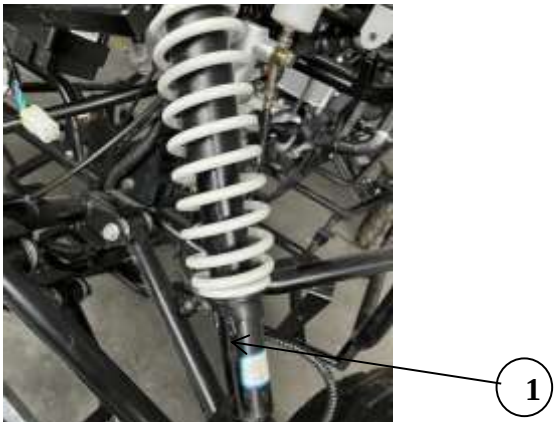
3.5 Suspension System

Place the body of the car in a horizontal position, compress the body up and down several times as shown in the diagram. If there is any sway or unusual noise, check for oil leaks in the shock absorbers, and inspect for any damage or looseness in the fastening parts.

Shock absorber adjustment

Adjust the cam 1 of the shock absorber with a special tool according to the load.

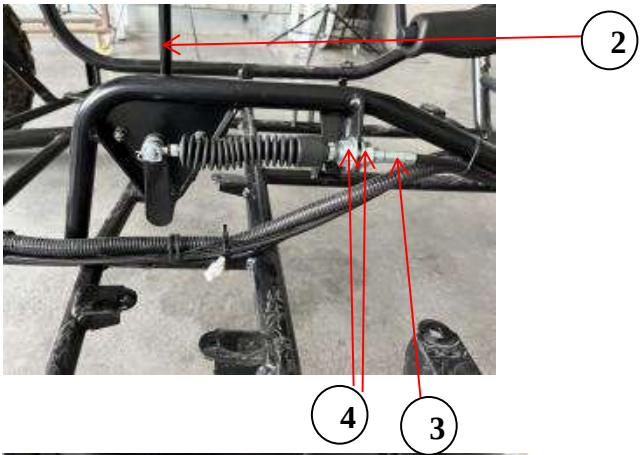
Clockwise rotation adjusts from high to low, while counterclockwise rotation adjusts from low to high, allowing for bidirectional adjustment.



3.6 Shift Mechanism

Shift mechanism

Shift gears and check if the shifting mechanism (2) operates smoothly and engages correctly. If shifting is difficult, adjust the length of the shift linkage rod (3). Loosen nut 4 and adjust the length of the shift linkage rod.



3.7 Fuel Assembly

Fuel assembly

Fuel system status

Remove the shelf (→ 2.4.2)

Check for aging or damage to the fuel line.

Replace with a new part when the fuel line shows signs of aging or damage.

Check the fuel tank vent pipe or the adsorption tube of the fuel evaporation system for cracks or bends, and replace with a new one if any damage is found.

3.8 Throttle inspection

Check the free travel of throttle pedal 1
Game break:2 ~ 5 mm

When the clearance is not within the specified range, adjust the clearance.
Loosen the throttle cable locking nut 2
Turn the regulator to adjust the free travel of the throttle pedal
After adjustment, tighten the locking nut 2
If adjusting the regulator still fails to achieve the specified clearance or if the movement remains unsmooth, replace the new throttle cable.

If the throttle pedal height is too low or too high, adjust the limit bolt 3.

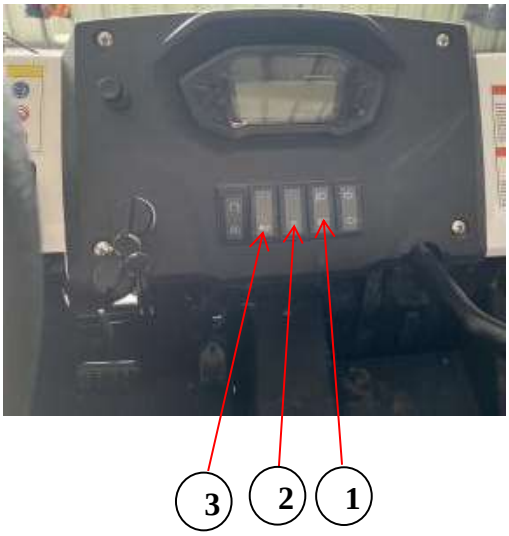
3.9 Instrument Panel

Check the instruments.
Upon the first power-up of the entire vehicle system (or after the first replacement of the instrument panel), with the engine not running, the speed should be at the zero position. Start the engine and pay attention to whether there is any change in the speed value indication. If there is no change, timely maintenance should be performed.

3.10 Lighting fixture

Headlight inspection

First press the front light switch button 1, then press the light conversion button 2. If neither the high beam nor the low beam lights up, please check if the wiring is incorrect. If the wiring is correct, please replace the headlight in a timely manner.



Taillight inspection

Press the brake pedal with your foot and check the taillights. If the taillights do not illuminate, please check if the wiring is incorrect. If the wiring is correct, replace the taillights promptly.

Horn Check

Press and hold the horn switch (3) and observe the horn. If the horn does not sound or is too quiet, check if the wiring is incorrectly connected. If the wiring is correct, replace the horn promptly.

Attention:Before inspecting the lighting system, the entire vehicle system requires power-up.

Engine Surrounding Area 4

Maintenance Information

Work Precaution

- When performing maintenance, please ensure the vehicle is turned off and stationary for no less than 1 hour, and only proceed with the maintenance after confirming that the hot components have cooled down to prevent injury to the maintenance personnel.
- When working, be careful not to damage the frame, engine block, bolts, and cables.
- During the disassembly and assembly of the engine, the chassis should be wrapped and protected to prevent damage to it.
- When removing the engine, appropriate containers should be prepared to collect the coolant, engine oil, and fuel to protect the environment. During installation, the coolant and engine oil should be replenished as required.

Fastening torque

Engine mount installation bolt GB5787 M10×1.25×160 55~66N·m

4.1 Fuel System

Disassembly

Remove the rear shelf canopy and rear shelf (→ Chapter 2, Body Coverings)

Remove the fuel tank installation bolt 1

Remove the formed high-pressure oil pipe 2

Remove the fuel injection pump mounting bolt 4

Remove the fuel tank 3

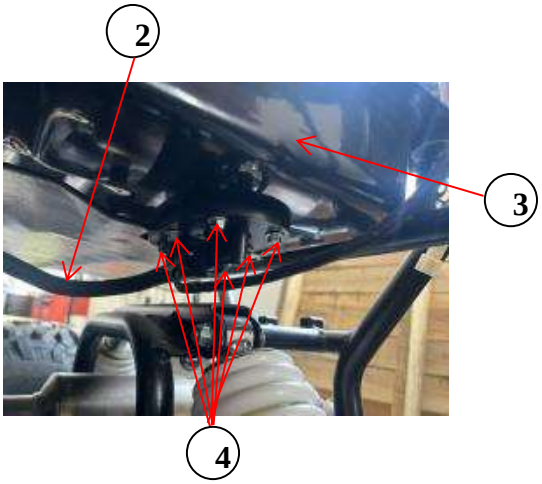
Caution

Gasoline is highly flammable, therefore smoking and open flames are strictly prohibited in the workplace.

Not only should open flames be taken seriously, but also great care should be taken with electrical sparks.

Additionally, due to the risk of explosion from gasoline evaporation (vaporization), operations should be conducted in a well-ventilated area.

When disassembling the fuel tank, if there is still fuel in the tank, first close the tank valve to prevent fuel leakage, then remove the tank.



Install

The installation is carried out in the reverse order of disassembly.

The connector must be properly engaged, with a distinct 'click' sound indicating that it is fully installed.

The installation process checks the integrity of each oil line.

4.2 Intake System

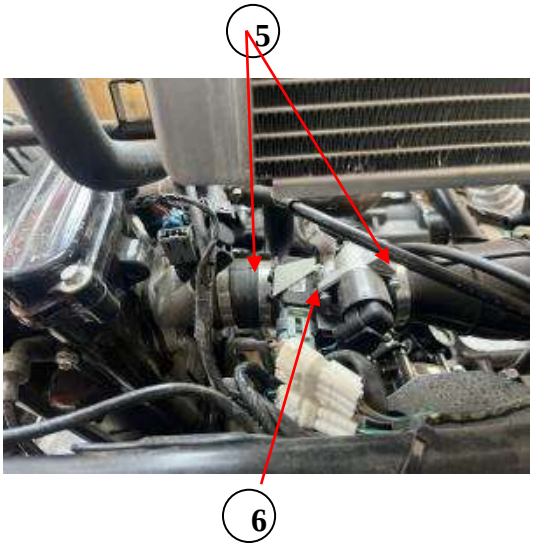
Disassembly

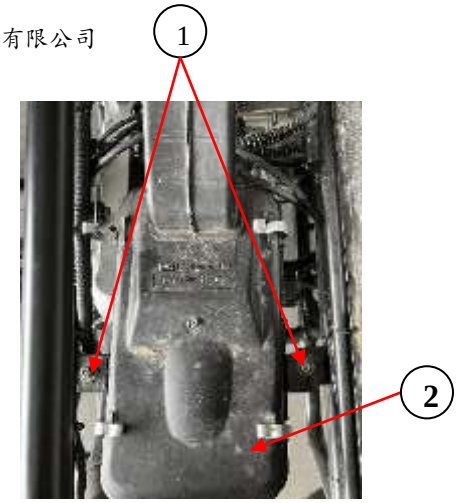
Remove the rear shelf canopy and rear shelf (→ Chapter 2, Body Coverings)

Remove the plug-in of the throttle valve body

Release clamp 5

Remove the throttle body assembly 6



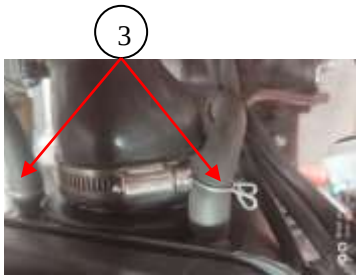


Remove two installation screws 1
Remove the engine exhaust pipe 3
Remove the air filter assembly. 2

Install

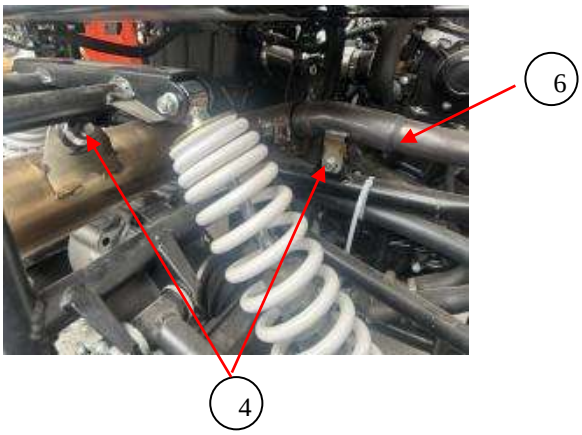
The installation is carried out in the reverse order of disassembly.

4.3 Exhaust System



Disassembly

Remove bolt 4
Remove and install nut 5
Remove the muffler assembly 6



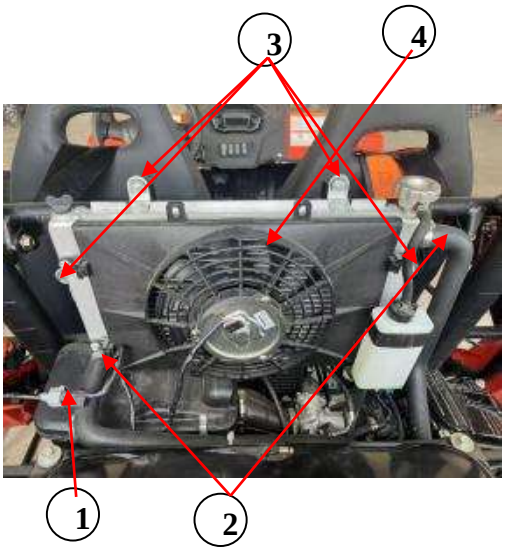
Install

The installation is carried out in the reverse order of disassembly.

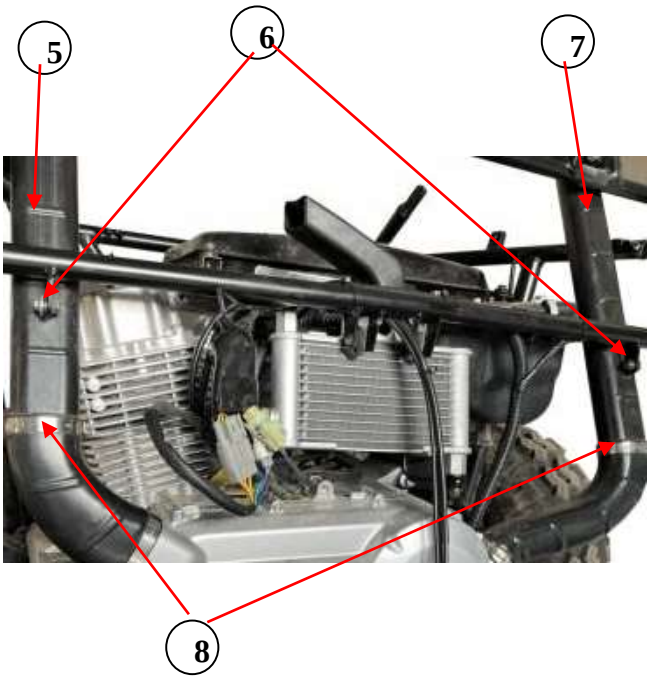
Removal and installation of the 4.4 engine

Disassembly

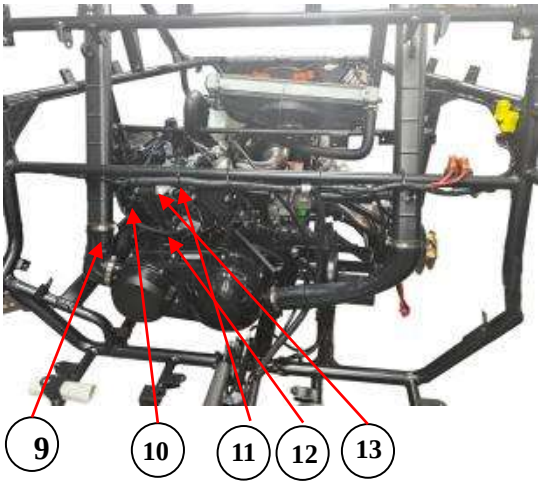
Remove the rear shelf canopy and rear shelf (→ Chapter 2, Body Coverings)
Remove the fuel tank (→ 4.1 Fuel system)
Remove the air filter and throttle body (→ 4.2 Intake System)
Remove the exhaust manifold assembly (→ 4.3 Exhaust System)



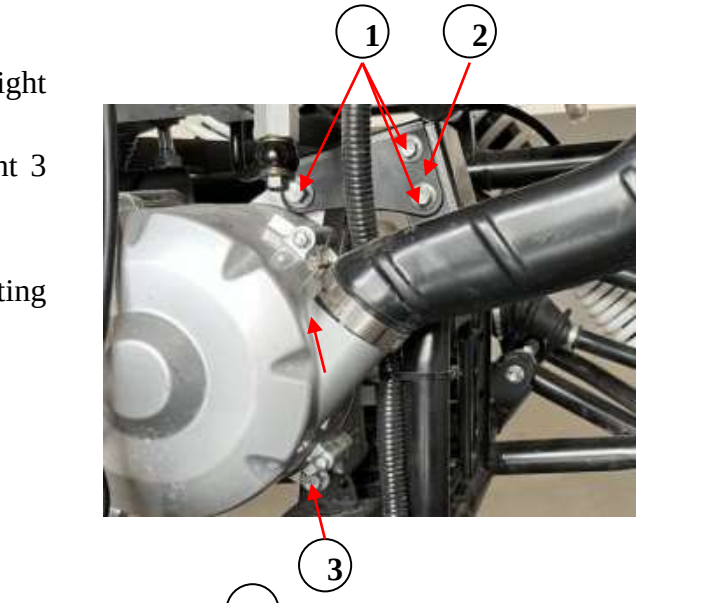
Release the cooling fan plug-in 1
Remove the drainpipe 2
Remove the water tank mounting bolt 3
Remove the water tank 4

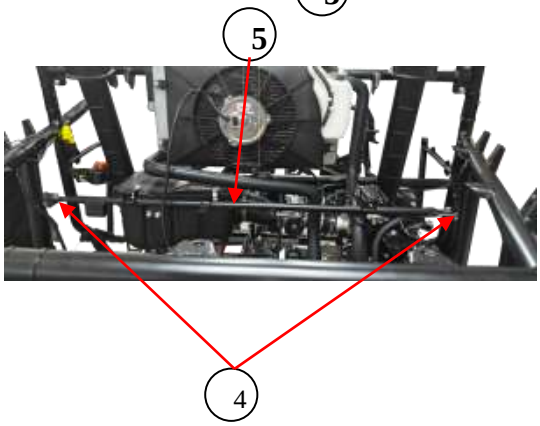


Remove the intake tube fixing bolt 6
Release clamp 8
Remove the left intake tube 5
Remove the right intake tube 7
Remove engine mounting bolt 9
Remove the ignition coil plug 10
Unplug the magnetic motor trigger plug 11
Remove the grounding wire 12
Unplug the display plugin 13

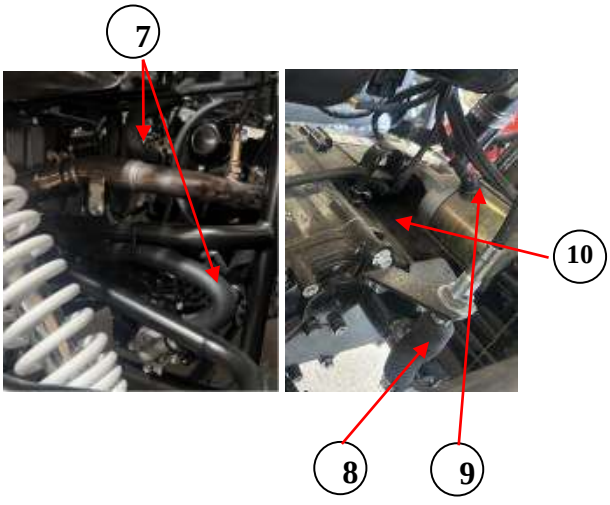


Remove the engine mounting bolt - right 3
Remove the engine lifting lug - right 3 bolts 1
Remove engine lifting lug 2
Remove the air filter bracket mounting bolt 4
Remove the air filter bracket 5





Pull out the oil pipe 7
Remove the shift cable 8
Remove the power cord for starting 9
Remove engine 10



Install

The installation is carried out in the reverse order of disassembly.

Engine 5

5.1 Main Performance Technical Parameters

Project			Model/Specification/Parameters
Engine	Model		177MP
	Type, number of cylinders		Single-cylinder, vertical, four-stroke, liquid/oil-cooled, four-valve, continuously variable transmission (CVT).
	Bore × Stroke (mm)		76.5×71
	Cylinder displacement (ml)		326
	Compression ratio		11:1
	Carburetor form		Delphi EFI
	Air Filter		Sponge filter, dry type
	Lubrication method		Stress + Splash
	Starting method		Electric start
	Maximum power Kw/corresponding speed rpm		22/7500
	Maximum torque N.m / Corresponding engine speed rpm		37/5500
	Idle RPM		1500±100
Drivetrain	Clutch		CVT Dry Clutch Centrifugal
	Transmission		Constant mesh two-speed transmission (forward/neutral/reverse) shifting
	Shift mode		Manual reciprocating
	Primary reduction ratio		2.35～0.83 (combined at 3100 rpm, locked at 5000 rpm)
	Gear ratio	Advance	4.93
		Reverse gear	9.74
Ignition system	Ignition method		ECU controller
	Spark plug		CR7E
	Spark plug gap		0.7mm to 0.8mm
Oil materials	Fuel brand number		>=RQ92
	Hot machine lubricating oil	Specification	10W/40-SG
		Capacity	1.6L
	Variable gear lubricating oil	Specification	85W/140 GL-5
		Capacity	0.8 liters

5.2 Cylinder Head and Valves

Maintenance Notice

Notes:

- The lubrication of the camshaft and other valve-gear mechanisms is achieved through a combination of pressure and splash lubrication from the crankcase oil passage, cylinder block and cylinder head oil passages, and the camshaft oil passage. It is absolutely essential that no foreign objects enter the oil passages in the cylinder head, and they must be kept clear and unobstructed.
- The gasket and other vulnerable parts must be replaced, and the sealing surfaces of the components should be clean and free of debris.
- Before installing the cylinder head, the locating pins must be assembled properly, and the A and B bolts connecting the cylinder head must be tightened to the specified torque.
- The camming surface of the camshaft must not have any scratches; apply engine oil during assembly to ensure initial lubrication.

Component repair parameters

Project	Standard value mm	Maintenance limit value (mm)
Axial clearance between the rocker arm and the cylinder head rocker arm slot	0.00 to 0.25	0.5
Radial clearance between the rocker arm and the rocker arm shaft	0.013 to 0.042	0.08
Valve spring free length	40±0.5	39
Valve spring free length	39±0.5	38
Valve clearance	Intake valve 0.06～0.08 Exhaust valve 0.06～0.08	------ ------
Camshaft journal runout	0.02	0.04

Project			Standard value mm	Maintenance limit value (mm)
Valve	Valve stem outer diameter	Intake	ϕ 4.950 to ϕ 4.965	ϕ 4.93
		Exhaust	φ4.940～φ4.955	ϕ 4.92

	Valve Seal Band Width	Intake	1.9±0.1	----
		Exhaust	1.9±0.1	----
Cylinder head	Valve guide inside diameter	Intake	ϕ 5 to ϕ 5.012	ϕ 5.035
		Exhaust	ϕ 5 to ϕ 5.012	ϕ 5.035
	Gate seat working surface width	Intake	1±0.1	----
		Exhaust	1±0.1	----
	Flatness	Cylinder Head Combustion Face	0.05	0.08
		Cylinder head surface	0.05	0.15
Valve Guide Clearance	Valve Stem-to-Guide Clearance	Intake	0.035 to 0.062	0.08
		Exhaust	0.045 to 0.072	0.09

Troubleshooting

Cylinder Pressure Low or Unstable 1. Valve Valve clearance adjustment is incorrect Valve seal is not airtight Incorrect valve timing Valve spring breakage 2. Cylinder Head The spark plug is not tightly connected to the cylinder head. Cylinder head gasket damage ---------- Cylinder head has cracks or sand holes 3. Cylinder, piston, piston ring Excessive clearance or breakage of piston ring ----------The piston has cracks or excessive wear Excessive diameter of the cylinder or sand eyes	**Exhaust has black smoke** 1. Valve guide wear 2. Oil splash guard is leaking or damaged 3. Cylinder head gasket leakage 4. Excessive piston ring clearance **Excessive noise or unusual sounds** 1. Incorrect valve adjustment 2. The valve is stuck or the valve spring is broken. 3. Excessive wear of the upper arm 4. The valve timing is not accurate. 5. Camshaft wear

Removal of cylinder head cover and right cylinder head cover

1. Remove 4 M6 cylinder head cover bolts; take off the cylinder head cover and the cylinder head gasket; pay attention to the protection and damage of the gasket.

2. Remove the three GB5787-M6×20 bolts from the left cover of the cylinder head; take off the left cover assembly of the cylinder head, taking care to protect the sealing ring and prevent damage.

Cylinder head removal

1. Remove two GB5787 M6×16 bolts connecting the oil-gas separator B cover and the timing driven chain sprocket pressure plate; take off the timing driven chain sprocket pressure plate and the oil-gas separator B cover.
2. Remove the two GB5787-M6×90 bolts connecting the cylinder head and cylinder body.

3. Remove the tensioner seal bolt, and take off the tensioner seal bolt, O-ring seal, and tension spring; be careful not to damage the O-ring seal and tension spring.
4. Remove the two bolts GB5787-M6×20 securing the tensioning device, and take off the tensioning assembly and the tensioning seal gasket; be careful not to damage

the tensioning seal gasket, and hold the tensioning device's ratchet to allow the tensioning bar to return to its initial position, then release the ratchet and retract the tensioning bar.

5. Loosen the timing chain, remove the timing driven sprocket from the chain; be careful not to let the timing chain get stuck on the cylinder head or cylinder block.

6. Remove four hexagonal flange nuts M10×1.25, and take off the nuts and four iron washers Φ10×Φ20×2

7. Remove the cylinder head assembly; take care to protect the cylinder head gasket.

Cylinder head cover, left cover disassembly

1. Remove the cylinder head cover and take off the cylinder head cover gasket; protect the gasket, and there is no need to remove it if not necessary.

2、Remove the cylinder head left cover seal; handle the seal with care to avoid damage, and if removal is not

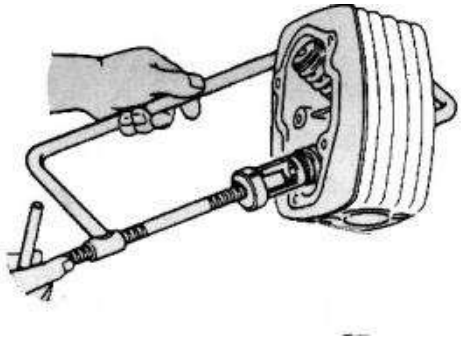
necessary, leave it in place.。Remove two GB818 cross-slot pan head screws M5×12, take off the oil-gas separator A cover and the oil-gas separator shell A cover gasket; take care of the gasket protection, and it is not necessary to remove it if not needed; ensure that the small holes on the oil-gas separator A cover align with the small holes on the oil-gas separator shell A cover gasket and remain unobstructed.

Cylinder head disassembly

1. Remove one GB5787-M6×14 bolt with a washer, then take off the rocker arm shaft pressure plate, two rocker arm shafts, intake rocker arm, exhaust rocker arm, and camshaft assembly; note the protection of the cam surface of the camshaft assembly.
2. Remove the CR7E spark plug; take note of the spark plug's protection.
3. Water temperature sensor (carburetor, electronic injection), thermostat housing, thermostat (rectangular seal ring assembly), exhaust port double-ended bolts, etc.; note that there is no need to disassemble if not necessary.

4. Use a valve remover to compress the valve spring, and remove the valve lock; then relax the valve remover to take off the lock, the upper valve spring seat, the valve spring, the lower spring seat, and the valve.
5. The valve oil baffle is a wearing part and should be replaced during maintenance.

Attention:
1. To prevent permanent deformation of the valve spring, it should not be compressed excessively; it only needs to be loose enough to remove the valve lock.
All disassembled parts should be marked properly to ensure they are reassembled to their original positions.



Inspection of the valve and valve spring

Inspect the valve stems, disks, and seat lines for carbon buildup and remove the carbon deposits and clean; check for bent, burnt valves, or abnormal wear grooves on the valve stems or ends; measure the outer diameter of the valve stems, maintenance limit value:

Intake: φ4.93mm

Exhaust: φ4.92mm

Attention:

If the valve stem is bent, has burns, or exhibits abnormal wear.

If the diameter of the valve stem is less than the maintenance limit value, it should be replaced.

Width tolerance limit for door line contact surface:2.0mm

Attention:

If the valve contact surface is rough, the erosion is uneven, or the contact with the valve seat is abnormal, the sealing performance cannot be guaranteed, and the valve should be replaced.

Inspect the intake and exhaust valve springs for visible bending, fracturing, or abnormal wear; measure the free length of the valve springs, and determine the maintenance limit value:

External spring:39 mm

Inner Spring：38 mm

Attention:

If the spring has visible bending, fractures, or abnormal wear and tear, and its free length is less than the maintenance limit value, the spring should be replaced.

Inspection of the rocker arm and rocker arm shaft

Inspect the chrome-plated surface of the rocker arm R, the ball head of the valve adjusting screw R for any abnormal wear, damage, or depression; check for erosion in the rocker arm shaft hole and any other cracks in the rocker arm.

Inspect the rocker arm shaft for any abnormal wear or erosion.

Inspect the clearance between the arm shaft hole of

the rocker arm and the rocker arm shaft, checking for serious sticking or noticeable abnormal large clearances.

Attention:
If there is obvious abnormal wear, erosion, or large gaps, the relevant parts should be replaced.

Camshaft component inspection

Inspect the camshaft surface for any abnormal wear or damage, and check whether the bearings at both ends of the camshaft rotate smoothly without any sticking. If there is severe wear or the bearings exhibit sticking during rotation, the camshaft component should be replaced with a new one.

Cylinder Head Inspection

1. Inspect the cylinder head combustion chamber and valve seat rings for carbon deposits, remove the carbon deposits, and clean thoroughly.
2. Check the sealing of the cylinder head gasket using a new valve and the light transmission method. If there is severe light transmission, grind the gasket; if grinding still cannot ensure the sealing of the cylinder head, a new cylinder head should be replaced.
2. Check if the spark plug holes and the ends of the screw holes are intact and free from serious damage that could affect sealing; otherwise, remove the harmful defects.
3. Check if the cylinder head combustion chamber is severely deformed, and use a steel rule and feeler gauge to inspect the flatness of the cylinder head combustion chamber surface. The maintenance limit value must not exceed 0.07; otherwise, replace the cylinder head.
4. Check the flatness of the waterway end face, the maintenance limit value must not exceed 0.07; otherwise, replace the cylinder head.

Valve seat insert line inspection and lapping

Maintenance Limit Value:1.9 mm
Grinding Method:If the valve seat is too wide, too narrow, or has indentation, it should be ground to achieve the correct sealing degree.When lapping the valve, use an electric gun fitted with a rubber tube (using a tight fit), then place the valve stem over the rubber tube. Apply a small amount of grinding paste used for lapping on the valve sealing band, and then fit it against the sealing line of the valve seat. Start the electric gun, rotate the valve, and perform the lapping to achieve the proper fit between the valve and the seat.After grinding,

check if the sealing line between the valve and the seat has been formed; otherwise, re-grind it.If the grinding is indeed inadequate, the valve or cylinder head should be replaced.

1. Completely remove the carbon deposit inside the combustion chamber, especially the carbon around the seat ring and valve line; apply a thin layer of red seal oil evenly on the valve seat, place the valve on the seat and gently tap it without rotating, then pull out the valve. If there are interruptions in the contact marks on the working surface of the valve, the valve seat should be ground and repaired.

2、First, clean off the carbon deposits from the intake and exhaust valve seats. Then, apply lapping compound to the valve seats. Next, use a rubber-tipped lapping tool to attach the valve and perform a matched-pair lapping on the valve seat (one-to-one lapping)

.3. Remove foreign objects from the grinding valve and seat ring lines and clean thoroughly, then inspect the grinding seal condition using the light transmission method.

Valve guide inspection

Use a dial indicator to measure the inner diameter of each valve guide and record the data.

Maintenance Limit Value:

Intake: φ5.035 mm

Exhaust: φ5.035 mm

Attention: Before measuring the internal diameter of the valve guide, any carbon deposits or foreign objects inside the guide should be completely cleaned out.

If it is necessary to replace the valve guide, the valve seat should be re-machined for surface finishing, and then each valve should be inserted into the guide to observe its movement. Finally, calculate the clearance between the valve stem and the valve guide.

Maintenance Limit Clearance:

Intake Valves:： 0.08 mm

Exhaust emissions:0.09 mm

Valve guide replacement

1. Place the cylinder head in a thermostatic box and heat it to 100-150 degrees Celsius, then remove it and prop up the cylinder head (be careful not to burn yourself), and use the valve removal and installation tool to strike the valve guide towards the rocker arm chamber side.

Attention:When removing the valve guide, do not damage the cylinder head.

Install the new valve guide by pressing it into place, and after the cylinder head has cooled down, ream the newly installed valve guide.

Attention: When expanding the hole, cutting oil must be applied to the reamer, and the reamer should be rotated when inserting or removing it.

Finally, clean the cylinder head with a cleaner and use compressed air to remove the metal shavings accumulated on the cylinder head.

2. After replacing the hinge hole of the catheter, it is necessary to inspect and confirm the coaxiality of the catheter hole with the sealing line of the seat ring and its sealing property:

Attention:
Use new valves and the light transmission method to check the sealing of the cylinder head gasket. If there is severe light transmission, a good pair of valves can be used one by one to lap the seat rings to ensure their sealing quality.

6

Valve stem seal (oil baffle) inspection and treatment

Ensure the cylinder head components (primarily the processed and confirmed good valve guides and valve seats) and valves are assembled properly, then apply engine oil to the smaller end of the valve stem. After that, remove the valve to inspect the oil film on the upper part of the valve stem. A lack of oil film indicates that the oil sealing is effective.Otherwise, replace the valve stem seal

Attention:
It is best to replace the valve stem seals.

Lock clip, lock clip seat, spring seat inspection and treatment

Inspect and confirm that the parts have no indentation, cracks, or other harmful corrosion; otherwise, replace them.

Cylinder head assembly

1. Gently place the cylinder head on the workbench with the combustion chamber facing up, clean the combustion chamber with a blow gun, then aim at the intake and exhaust ports and pause to blow air for 1-2 seconds each, checking to ensure that there are no foreign objects such as aluminum shavings pressed against the inner wall of the valve seat ring.

2. After applying an appropriate amount of clean engine oil to the surface of the intake and exhaust valve stems, they are respectively inserted into the correspondingValve Guide Bore (guide tube holes).

3. Invert the cylinder head combustion chamber downward, clean the inside of the cylinder head with a blast gun, then take two oil deflector covers and guide them onto the locking groove of the intake and exhaust valve stems respectively, and finally use the oil deflector cover assembly jig to install them in place.

4. Install the four exhaust valve spring lower seat rings with their protruding surfaces facing up into the intake and exhaust valve recesses respectively.

5. Install the four intake valve springs with the painted end or the end with a sparser coil density facing outward into the inner spring seats, then take the four exhaust valve springs with the painted end or the end with a sparser coil density facing outward and install them into the outer spring seats respectively.

6. Insert the two valve lock cotters with their small ends downward into the spring seat cone holes, then compress the valve spring with a valve remover and install the valve lock cotters inside the valve spring; subsequently, place the spring seat onto the intake and exhaust valve springs and set it down steadily.

Then, use a valve spring compressor to compress the valve spring, and install the valve collets into the valve spring retainer. Release the compressor and ensure the collets are securely seated.Attention: To prevent permanent deformation of the valve spring, the spring should not be compressed excessively, only enough to fit the valve lock; after installation, a rubber hammer can be used to gently tap the valve axially to ensure better fit of the conical surface and the R groove.

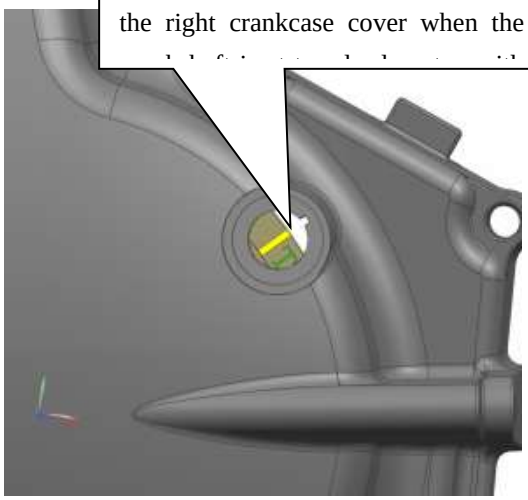
7. Check if the valve lock clips are assembled in place; conduct airtightness testing on the assembled cylinder head assembly, and if there are no leaks in the cylinder head assembly, proceed to the next step.

Cylinder Head Cover (Valvetrain - Camshaft, Rocker Arm Components) Assembly

1. Align the camshaft cover downward with the camshaft hole of the cylinder head, assemble it in place, and then use an oil can to inject approximately 3-5ml of clean engine oil into the camshaft oil hole.

2. Align the intake rocker arm component hole and the exhaust rocker arm component hole with the intake and exhaust rocker arm shaft holes of the corresponding cylinder head, then insert the notched ends of the two rocker arm shafts outward through the rocker arms and smoothly fit them into the rocker arm shaft holes of the cylinder head cover.

The 'T' mark on the magnetic motor rotor aligns with the recess of the small inspection hole cover screw on the right crankcase cover when the



Attention:
1. The camshaft intake and exhaust base 〇 is opposite to the rocker arm R surface.
2. The rocker arm shaft may be coated with some engine oil before installation, and at the same time, the oil storage holes on the rocker arm should be filled with engine oil to ensure initial lubrication during operation.

3. Install a pair of Locating Plate (Positioning plate) with positive thread holes, then insert M6×14 bolts into the threaded holes of the positioning plate, first perform a preliminary tightening and then fasten it into place, with a torque of 8-12 N·m.

4. Check the camshaft and rocker arms:The rotation should be flexible, with an axial clearance, and a valve clearance must be present; if not, slightly loosen the valve adjusting screw, then check again; ensure that the rotation is flexible and there is an axial clearance.

5. Water temperature sensor, thermostat, and other

assemblies

Attention:
The rocker arm shaft locating plate must effectively limit the movement of the rocker arm shafts and the camshaft.Apply a suitable thread sealant to the threads of the coolant temperature sensor. Torque: 12–15 N·m. Ensure no sealant falls into the water passage.

Cylinder head installation

1. Rotate the crankshaft in the direction of its working rotation, so that when the piston is at top dead center, the 'T' mark on the magnetic motor rotor aligns with the groove on the inner wall of the small inspection hole cover on the right crankcase cover (the crankshaft is in the timing position, with the piston at top dead center).

The '|' mark on the chain wheel is vertically aligned with the cam hole

Attention:
The timing chain should engage properly with the crankshaft drive sprocket and rotate together with the crankshaft without slipping or jamming, staying in the correct position; please confirm:
The chain tensioner and guide bars are intact, in the correct position, and not stuck.

1. The 'T' mark on the magnetic motor rotor aligns with the recess of the small inspection hole cover screw on the right crankcase cover (with the crankshaft at top dead center, the piston at the upper stop point).
2、Align the '|' mark on the sprocket with the cylinder head upper cover surface, perpendicular to the camshaft bore

2. Clean the cylinder body and the top of the piston; install the positioning pin (which may not need to be replaced), remove the old cylinder head gasket, and install a new cylinder head gasket.

3. Clean the cylinder head combustion chamber; pass the A and B bolts through the A and B bolt holes of the cylinder head, thread the timing chain through the cylinder block and the cylinder head chain cavity in the correct position, install the cylinder head properly and in place, and hang the timing chain on the neck of the camshaft; assemble the 4 iron washers with the protruding side facing up on the A and B bolts, then install the 4 cap nuts on the A and B bolts, and use an air gun to first pre-tighten the nuts at the oil passage and then sequentially tighten them into place.

The valve clearance is adjusted to 0.08mm, with a slight resistance when

Attention:
1. Do not allow dust and debris to enter the cylinder;
2.A, B nut tightening torque:40-45 N·m (set value:45N·m）。

4. Install two GB5787-M6×90 bolts for connecting the cylinder head and cylinder body, with a torque of 10 to 14 N·m.

5. Install the driven sprocket and check the timing of the sprocket for valve timing, install the oil-gas separator B cover, timing chain sprocket pressure plate, and two GB5787-M6×16 bolts.

Attention:
1. Confirm the piston is at top dead center—the 'T' mark on the magnetic motor rotor aligns with the recess on the side of the small inspection hole cover screw on the right crankcase cover; at the same time, press the timing chain through the tensioner hole with your hand.
2. The camshaft is in the timing position and can rotate freely with a certain angle (if it cannot rotate, the valve adjusting screw can be loosened to allow for clearance), and align the chain wheel hole with the two screw holes on the camshaft flange plate 2.
3, two pieces of GB5787-M6×16 bolts with torque 10-14N·m

6. Install the tensioner - Assemble the tensioner with the tension bar in its initial position, the sealing pad, and two GB5787-M6×20 bolts in place, torquing the bolts to 10-14 N·m; then use the tension spring to deform and push out the tension bar, properly tensioning the chain; install the O-ring and the tensioner sealing bolt.

7、Rotate the crankshaft in its normal direction of rotation by multiples of two complete revolutions until it is at the timing position and correctly timed. Then, check the chain tension by hand—the chain plates on the sprocket should have axial movement.

Attention:
Timing position and valve timing are correct, chain tension is OK; otherwise, reassemble and adjust.

8、Valve Clearance Adjustment：First, confirm the valve timing position, adjust with a 0.08mm feeler gauge and a special adjustment tool, the clearance of the valve should be 0.08±0.01mm; then tighten the adjusting nut, with a torque of 10-14N·m.

Attention:
Adjust the feel of the clearance, ensure the nut torque does not damage the threads; rotate the crankshaft by an integer multiple of 2 turns to the timing position, then confirm the intake and exhaust valve clearances.

The sealing pad with a Φ3 hole aligns with the small hole in the A cover and ensures smooth passage.

9. Install the cylinder head cover gasket, cylinder head top cover, and four cylinder head cover bolts; ensure the gasket is in good condition without extrusion or cutting edge phenomena, and the bolt torque is between 10 to 14 N·m; install the right cylinder head cover with a 3-M6×16 bolt, with a torque of 10 to 14 N·m.

Attention:
Cylinder Head Right Cover Assembly – Any dust and debris in the separation chamber of the right cover should be cleaned out. The Φ3 hole in the gasket must be aligned and kept unobstructed with the corresponding hole on Cover A.

5.3 Cylinder and Piston

Maintenance Notice Troubleshooting Disassembly of water inlet pipes, etc. Tensioner removal Cylinder disassembly	Piston disassembly Inspection of pistons and piston rings Piston ring installation Piston installation Cylinder Installation

Maintenance Notice

Notes:

- The cylinder head lubricating oil is channeled to the cylinder head through a small oil hole located next to the left AB plug of the engine. Before installing the cylinder head, ensure that the small oil hole next to the left AB plug is unobstructed.
- Do not allow dust or debris to enter the crankcase.
- Take care to protect the components from bumps and bruises; ensure the sealing surface is cleaned without causing scratches.
- Do not allow foreign objects such as particles and dust to enter the water channels of the cylinder; the water channels must be kept clean and unobstructed.

Component repair parameters

Project			Standard value mm	Maintenance limit value (mm)
Cylinder	Cylinder bore surface roughness		Ra0.4 honing, free of harmful defects such as material porosity and sand holes.	Slash
	Cylinder Bore Diameter		75 mm ～ 75.015 mm	φ75.023
	Cylinder bore roundness		0.003	0.01
	Cylinder bore roundness		0.005	0.01
	Flatness of the upper and lower cylinder surfaces		0.04	0.05
	Verticality of the cylinder bore to the lower cylinder face		0.04	0.05
Piston Piston ring Piston pin	Piston Outer Diameter (H10 Skirt Grouping Diameter)		74.96-74.98 mm	ϕ 74.94
	Piston pin bore diameter		ϕ 17.002 ～ ϕ 17.008	ϕ 17.018
	Piston ring groove width		1.005～ 1.02	1.04
	Piston second ring groove width		1.005～1.02	1.04
	Piston Ring Groove Width		2.005-2.02	2.04
	Piston pin clearance		0.005 to 0.016	0.03
	Piston ring clearance	First Ring	0.15 to 0.30	0.5
		Second Ring	0.20 to 0.35	0.6

		Oil seal	0.2 to 0.7	1.4
	Piston ring to piston ring groove end face clearance	First Ring	0.015 to 0.05	0.08
		Second Ring	0.015 to 0.05	0.08
	Cylinder and piston clearance		0.02 to 0.055	0.07
	Piston pin outer diameter		16.992 mm to 16.997 mm	16.98 ϕ
connecting rod small end	Hole inside diameter		φ17.010～φ17.018	φ17.03
	Clearance between the small-end bushing of the connecting rod and the piston pin		0.013～0.026	0.05

Troubleshooting

Low or unstable cylinder pressure **1. Valve** Valve clearance adjustment is incorrect Valve seal is not airtight Incorrect valve timing Valve spring breakage 2. Cylinder Head The spark plug is not tightly connected to the cylinder head. Cylinder head gasket damage ---------- Cylinder head has cracks or sand holes 3、Cylinder Block, Piston, Piston Ring Excessive clearance or breakage of piston ring ----------The piston has cracks or excessive wear Excessive diameter of the cylinder or sand eyes	**Exhaust has black smoke** 1. Valve guide wear 2. Oil splash guard is leaking or damaged 2. Cylinder head gasket leakage **3. Excessive piston ring clearance** **Excessive noise or unusual sounds** 1. Incorrect valve adjustment 2. The valve is stuck or the valve spring is broken. 3. Excessive wear of the upper arm 4. The valve timing is not accurate. 5. Camshaft wear 6. Excessive carbon buildup in the piston, causing detonation and knocking

Disassemble the intake pipe of the cylinder block

1. Use a 7# socket wrench to rotate and loosen the 2 spiral clamps on the hose connection of the water pump, until the hose connection can be easily pulled out to an appropriate position.

2、Rotating-type Rubber Hose Pull-Off

3. Remove the M6×16 bolt GB5787, and take off the upper water inlet nozzle and the rectangular sealing ring assembly from the cylinder body.

Attention:
1. Do not completely remove the screw from the spiral clamp's strap, as it may damage the spiral connection structure.
2. Do not tear, rupture, or damage the hose and rectangular seal components.

Remove the tensioner

1. Remove the tensioner seal bolt, take off the tensioner seal bolt, O-ring seal, and tension spring.

2. Remove the two bolts GB5787-M6×20 securing the tensioning device, and take off the tensioning assembly and the tensioning seal gasket; be careful not to damage the tensioning seal gasket, and hold the tensioning device's ratchet to allow the tensioning bar to return to its initial position, then release the ratchet and retract the tensioning bar.

Attention:
1. Pay attention to the damage of O-ring seals and tension spring guards, and replace them in case of abnormalities.
2. Pay attention to the protection of the tensioner seal from damage, and replace it in case of abnormalities.

Cylinder, piston, piston ring, etc., disassembly

1. Remove the cylinder head gasket and two φ12×20 positioning pins; remove the chain guide plate and disassemble the cylinder block.

Attention:
1. The cylinder head gasket is a wearing part and must be replaced. Check for any abnormalities in the original cylinder head gasket, such as leaks, oil leaks, or bedplate issues; try not to damage the positioning pins to keep them available for future use.
2. Inspect and confirm the condition of the chain guide

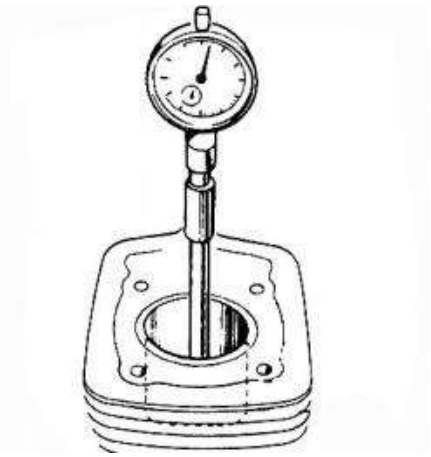
plate - such as fractures, severe wear, etc., and replace if necessary.

3、When removing the cylinder block, check for any seizing, damage, or abnormal conditions between the piston and the cylinder block. Be careful not to damage the cylinder block and related components.

2. Remove the piston pin retainer, piston pin, and piston; take off the cylinder block seal gasket and two φ12×16 positioning pins.

Attention:

1. Check for any abnormalities in the piston, whether there are fractures in the piston rings, and whether the first and second stages of the piston ring damage are misaligned.
2. Use a special tool to remove the piston pin retainer without damaging the piston. When removing the piston pin retainer, ensure it does not fall into the crankcase.
3. The cylinder gasket, which is a vulnerable part, must be replaced. Check for any abnormalities in the original cylinder gasket; try not to damage the positioning pins to keep them available for future use.

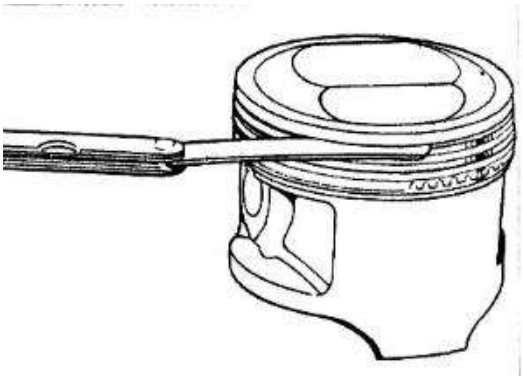


Cylinder block inspection

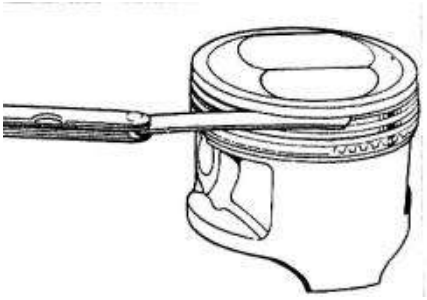
1. Visual inspection to confirm that the cylinder bore wall has no scratches, obvious wear, or other harmful defects; otherwise, replace.

2. Measure the bore diameter of the cylinder:Three positions should be measured, namely the top, middle, and bottom of the piston stroke, with measurements taken in two directions perpendicular to each other.Using an internal diameter micrometer or a pneumatic measuring instrument.

Service Limit：φ75.023mm



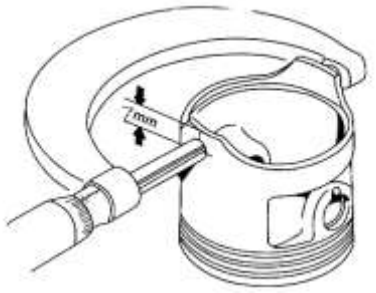
3. Check and confirm the upper and lower planes of the cylinder block:Remove foreign objects from both sides (care not to scratch the substrate surface, clean the foreign objects thoroughly; for future use.)



Inspection of pistons and piston rings

1. The piston rings on the piston are not broken, the first and second rings are properly spaced, there is no adhesion, and they move flexibly; also, check the end clearance between the piston ring and the piston ring groove.

Maintenance Limit Value:
First stage:0.08 mm
Second ring:0.08 mm
Oil ring:0.08 mm



Then, remove the piston rings.

Attention:
Do not damage the piston rings during disassembly.

2. Piston inspection:

A. Visually inspect the piston skirt and top for any scratches or pressure damage; check for wear or cracks on the piston, and for wear in the piston ring grooves; clean carbon buildup, especially in the first ring and the ring grooves; inspect the width of the ring grooves.

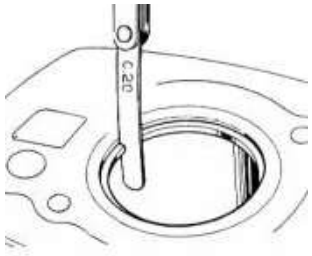
Maintenance Limit Value:
First stage:1.04 mm
Second ring:1.04 mm
Oil ring:2.04 mm

B. Measure the outer diameter of the group located 10 meters above the piston skirt

Maintenance Limit Value:
74.94mm

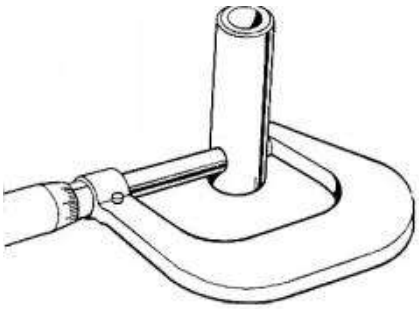
Calculate the clearance between the cylinder and the piston:

Maintenance Limit Value:0.1 mm



C, visually inspect that the pin hole has no retaining ring groove intact, measure the inner diameter of the piston pin hole

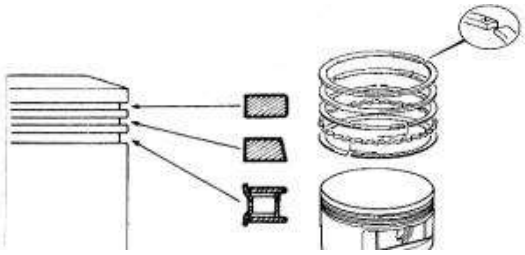
Piston Pin Bore Diameter Service Limit
ϕ 17.018



3. Inspection of piston rings

Mouth opening size:Install the piston ring in the cylinder, then measure the gap of the open end dimension.

Maintenance Limit Value:
First stage:0.5 mm
Second ring:0.6mm
Oil ring:1.4 mm



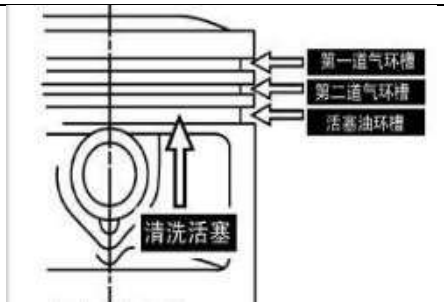
4、Piston Pin Outside Diameter Inspection

Measure with an outside micrometer

Maintenance limit value: φ16.98 mm

Calculate the clearance between the piston and the piston pin

Maintenance Limit Value:0.025 mm

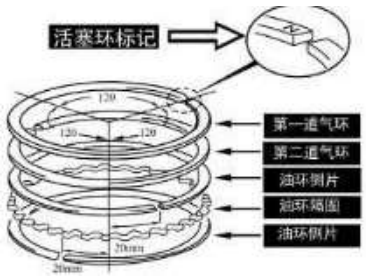


Piston ring, piston assembly

1. Clean and wash the piston (especially the carbon deposits in the ring grooves), and clean the piston rings; pay attention to the identification of the first and second rings, and make clear marks for those that are not distinct.

2. According to the assembly direction, first install a piston pin retainer; position it properly and ensure the opening is offset by an angle from the slot of the pin hole.

3. Install the piston ring correctly into the piston ring groove:First install one scraper ring of the oil ring assembly, then the backing ring, followed by the other scraper ring; then the second stage (second compression ring marked with 'D'), and finally install the first compression ring (first compression ring marked with 'DY').



Attention:

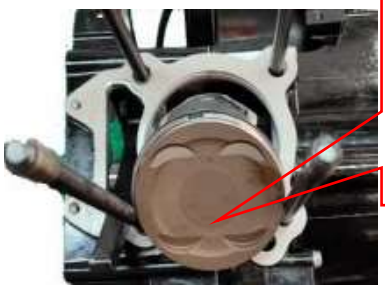
1、Assembly Precautions: During installation, take care to prevent damage to the piston and piston rings.。

2. When installing the oil seal ring, the gasket should be properly aligned and the scraper ring should be in the correct position.

3. When installing the gas ring, the side with the piston ring mark should face towards the piston combustion chamber (if the piston ring has no mark or the mark is not clear, it should be installed according to the mark made during disassembly)

4. When installing the piston ring, separate the ends of the rings by 120 degrees and ensure they are misaligned with the piston pin hole. Do not align the end gaps of different rings.

5. Check that each ring rotates freely and flexibly in the piston ring groove without any jamming, with a firm and responsive feel.



Piston IN marking oriented towards the intake

One, two-way opening misalignment 120° to 160°

The card slot is completely engaged in the groove, misaligned by more than 3mm from the opening.

Cylinder body seal gasket, piston pin, piston assembly

1. Clean the mating surface of the combined crankcase, remove all foreign objects, flatten the gasket at the mating paper pad area of the left and right crankcase halves, and apply a layer of flat silicone sealant.

2. Install 2 pieces of φ12×16 positioning pins and a new cylinder block seal gasket.

3. Apply lubricating oil to the piston skirt, lubricating oil to the piston pin; install the piston, piston pin, and piston pin retainer.

Attention:
1、Trim the gasket material flush at the parting line of the left and right crankcase halves, and apply a suitable non-hardening sealant to the mating surfaces to ensure sealing integrity.
2. When installing the piston, the side with the 'IN' mark on the top of the piston should face the intake side of the engine and must not be installed backwards.
3. The piston pin retainer must fully seat into the groove, with the opening misaligned by more than 3mm.
4. If the piston pin retainer is severely deformed, a new retainer must be replaced.
5. Do not allow the piston pin retaining ring to fall into the crankcase.

Cylinder body, cylinder head gasket

1. Adjust the opening direction of the first and second piston rings to be offset by 120° to 160°, and neither should face towards the intake and exhaust or the piston pin direction.

2. Use a special tool to evenly apply an appropriate amount of engine oil around the inside of the cylinder; smoothly fit the cylinder onto the A and B studs, gently sway the piston in the intake and exhaust direction, and easily press the first and second compression rings into the cylinder bore.

3. After installation, rotate the crankshaft to seat the cylinder block properly, ensuring the piston is at the top dead center, and clean any foreign objects such as oil from the top of the piston; at this point, hold the cylinder block and rotate the crankshaft for more than two full turns, bringing the piston back to the top dead center.

Attention:
1. The opening directions of the first and second rings should be offset by 120° to 160°, and neither should face towards the intake and exhaust or the piston pin direction.
2. When installing the cylinder block, care should be taken to avoid damaging the piston rings.
3. The piston is smoothly and flexibly pressed into the cylinder block, and the crankshaft rotates smoothly without any sticking.

5.4 CVT left cover, CVT clutch

Maintenance Notice Troubleshooting CVT left cover removal CVT clutch removal Oil seal, gear display removal	Air duct inspection, removal and cleaning of foreign objects from CVT chamber CVT clutch inspection Oil seal, gear position display installation CVT installation CVT left cover removal

Maintenance Notice

Notes:

- Removal, installation, and servicing of the CVT cover and CVT clutch can be performed without removing the engine.。
- During the maintenance process, pay attention to cleaning—the belt and the working surface of the pulley are contaminated with oil, particles, and other foreign objects as well as damage.
- During the maintenance process, the sliding vice in the CVT clutch ensures the adequacy of lubrication.
- Control of the torque for tightening nuts.

Technical specifications

Project		Standard value	Maintenance Limit Value
CVT clutch	Type A belt angle	30±0.5 degrees	28°
	Type A belt angle face	Check for No Scorching or Cracking.	Ablation, cracking, severe wear; needs replacement.
	Master-slave wheel face angle	14°±10′	13 degrees
	Master-slave gear face roughness	No ablation, no cracking.	Cracking, severely worn; needs replacement.
	Pulizhu weight	18±0.1g	15g
	Pulizhu working face	No ablation, no cracking.	Ablation, cracking, severe wear; needs replacement.
	Centrifugal hoof block , outer cover	No ablation, no cracking.	Ablation, cracking, severe wear; needs replacement.
	Bearing, oil seal		Replace in case of abnormalities

Troubleshooting

Powerless, skidding, significant reduction in vehicle speed **1. The belt and pulley are severely worn.** 2. The main compression spring force value has seriously decayed. 3. Prolizhu damage 4. The centrifugal block and the outer cover are severely worn and damaged. 5. Oil leakage causing adhesion to the belt and pulley surfaces	**Excessive noise or unusual sounds, rough and fluctuating rotation speed** 1. There is damage, oil shortage, etc. in sliding bearings, roller bearings, ball bearings, and others. 2. Ring, guide pin, cam wear and damage, oil shortage, etc. 3. Other parts are broken or damaged 4. Failure to maintain timely - The clutch should be inspected and replaced every 3,000 to 5,000 kilometers.

Telescopic pull starter, left cover assembly

1、Using an 8mm open-end wrench and an impact wrench, remove the four GB5787 M6×14 flange bolts.

2. Disassemble the 5-GB 5783 M8×28 bolt and iron washer

3. Disassemble 9-GB5787 M6×35 bolt

4. Remove the left cover assembly, paper gasket, and positioning pin.

5. Check the 6006-2RS bearing — it should rotate smoothly without any jamming, with no abnormal axial or radial clearance, no grease leakage, and proper lubrication; otherwise, replace the bearing.

The 6006-2RS bearing operates smoothly, without any jamming or grease leakage, and is well-lubricated.

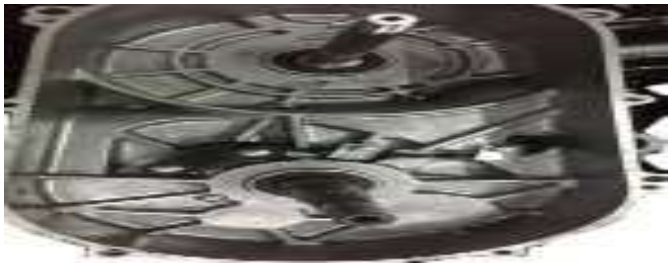
Disassemble CVT clutch, A-type belt

1. Use a pneumatic (electric) gun with a 19# sleeve to remove the front and rear clutch nuts.

Attention:When loosening a nut, apply torque in a circular direction to avoid bending deformation of the shaft due to radial force.

2. Remove the nut, washer, bearing sleeve, etc.

3. Remove the CVT clutch assembly (front and rear, clutch), hand-crank starting wheel, and bearing bracket, etc.



4、Inspection& Confirm：Left crankshaft, drive main shaft with M14×1.25 thread, spline in good condition; left crankshaft oil seal Φ27×Φ42×7, drive main shaft oil seal Φ25×Φ40×7 sealed well without leakage

5. Clean the CVT left body cavity, left crank, drive main shaft, etc., removing foreign objects, oil stains, etc.

The 6006-2RS bearing operates smoothly without any jamming; the bearing and oil seal are well-sealed without leakage.

Inspection of CVT clutch assembly, Type A belt, and other components

1 、 Drive Clutch (Primary Sheave) Component Inspection：

The active plate and the moving plate have no obvious wear or depression on the surface, with even wear across the entire surface; the clutch fixed sleeve moves and rotates flexibly along the axis without any jamming; both sides of the moving plate have good oil seals, with no leakage, shedding, or displacement; the six universal joints show no abnormal severe wear, no cracking, or material deficiency; the wear on the six joints is basically consistent; the three

The fixed clutch sleeve allows for smooth axial movement and rotation of the moving

Six pieces of Puli Zhu with no abnormal severe wear, no cracking, and

lifting plate sliding components show no abnormal severe wear, no cracking, or material deficiency.

The sheave face shows no significant wear depressions, and wear is even across the entire surface.

Seal is good, no leakage or detachment.

The sliding parts have no serious wear, no cracks, and no

2. Inspection of the clutch assembly and its components after heavy load operation:

Assembly:Press and hold the fixed shaft, rotate the moving disk in the direction indicated by the arrow (clockwise), ensuring smooth movement without jamming and accurate positioning; after releasing the tension, the moving disk automatically returns to its original position smoothly, without jamming and accurately.

Centrifugal block:Wear is normal and not excessive; no cracking, detachment, scorching, or caking. The friction material has sufficient thickness, with no base material exposed ("showing bone") or melting.

Fixed, mobile board:The surface wear is normal, without cracks or peeling, and the wear pattern is even.

Driven Clutch (Secondary Sheave) Housing Assembly： The working surface shows no significant wear, no anomalies, cracks, or ablation, with uniform wear.

Type A belt:Working surface wear is normal and not excessive, with no cracking or scorching. Wear is even across the surface.

The mobile disk moves flexibly, without jamming, and is

Frictional wear on the leather is normal and not severe; the abrasive leather is sufficient, the

The surface wear is normal, without cracks or peeling, and the wear pattern is even.

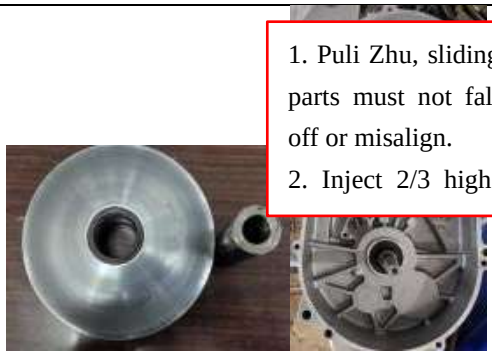
No significant wear, no abnormalities, cracks, or erosion, with even wear on the surface.

Install CVT clutch, A-type belt, left front cover

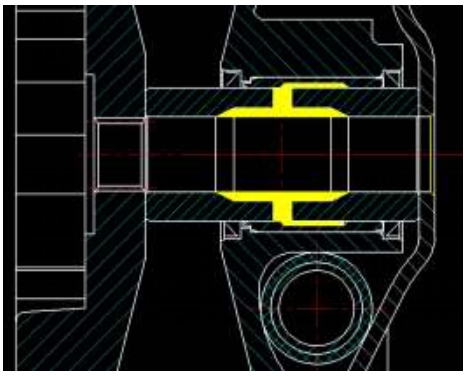
1. Front Clutch (Driver's Side) Assembly:Confirm that the left crankshaft, the drive main shaft with M14×1.25 thread, oil seal, etc., are all intact. Assemble the main wheel moving disc component, pulley ball, sliding piece, lifting plate, and fixed plate sleeve, then move the lifting plate to the right and fit it into the left neck of the crankshaft.

Attention:
1. Two-thirds of high-temperature extreme pressure grease should be injected between the sliding bearing of the mobile disk and the fixed sleeve (any excess grease that oozes out should be thoroughly cleaned up).
2. When inserting the mobile disk assembly, the cam

follower and sliding parts must not fall off or misalign.



1. Puli Zhu, sliding parts must not fall off or misalign.
2. Inject 2/3 high-



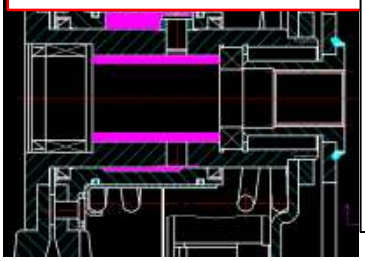
The bearing cavity should be adequately

2、Type A Belt、Driven Clutch Assembly、Drive Clutch Fixed Sheave：Rotate the rear clutch moving disk clockwise to its highest point, while inserting the belt into the space between the two disks to restrict sliding and retraction; gently hold the belt with your hand (to prevent it from slipping out), and fit the belt and the rear clutch together onto the drive main shaft; promptly assemble the crankshaft washer, nut M14×1.25 (or the hand pull starter wheel, bearing bracket, washer, nut M14×1.25), and manually pre-tighten them into place.Install a bearing sleeve (with 2 O-ring seals) and an M14×1.25 clutch nut, and tighten both nuts to the proper torque specification.

Attention:
1. The rear clutch guide ring, guide pin, and bearing cavity should be sufficiently filled with 2/3 high-temperature extreme pressure grease.
2. Tighten the nut to the proper torque (front 100-105 N·m, rear 60-65 N·m), and the belt should be loose enough not to interfere with the front fixed disc.
3. After assembly, check the rotation of the clutch cover assembly; it should rotate smoothly and completely detach from the brake shoe component without engagement.

1

The belt should be loose to prevent interference with the fixed disc; avoid false tightening of the nut, which may result in the lifting plate, fixed sleeve, and fixed disc not being rigidly tightened together



The rear clutch guide ring, guide pin, and bearing cavity should be sufficiently filled with 2/3 high-temperature extreme pressure grease.

The Φ14×Φ28×2 iron washer must not be omitted

3. Install the left front cover part and the hand-pull starter cover (hand-pull starter):Two φ8×14 positioning pins, left front cover seal pad, left front cover assembly part, 9 GB5787 M6×35 bolts, hand-pull start cover (the hand-pull starter requires installation of a bearing bracket, 5 5783/M8×28 bolts, 5 φ8×φ18×2.5 iron washers).

Attention:
1. GB5787 M6×35 bolt, 9 pieces tightened with torque of 10-14N·m
2, 5783/M8x28 bolts, 5 pieces, tightened to a torque of 28-32N·m with symmetrical and incremental tightening to the proper position.

Install 4 pieces of GB5787 M6×14 bolts, with a tightening torque of 10-14N·m.

The adapter sleeve (with 2 O-ring seals and greased) must not be omitted during assembly, and the torque for the rear clutch nut should

9pcs GB5787 M6×35 bolts. Tightening torque: 10-14 N • m.

5 pcs GB/T 5783 M8×28 bolts. Tightening torque: 28 – 32 N • m, and must be tightened to the specified torque in a symmetrical and incremental sequence.

5.5 magnetic motor, electric start, oil pump, water pump

Maintenance Notice

Notes:

- Proper and regular maintenance of the oil pump and lubrication system; maintenance of clean oil passages.
- Inspection and confirmation of stator trigger gap, gap 0.5±0.1 (mm); ignition timing and valve timing inspection and confirmation of correctness.
- Ensure that the conical surface of the magnetic motor rotor and the semi-circular key are properly connected.
- Torque inspection and control for the tightening of magnetic motor nuts.
- For the inspection of the performance of magnetic motors, refer to the methods in the section on the battery charging system.

Technical specifications

Project		Standard value	Maintenance Limit Value
Oil pump	Internal and external rotor meshing clearance of the oil pump	0.08 ~0.20	0.75
	Oil Pump (Inner/Outer Rotor to Body/Cover) End Clearance – Replace if out of specification.	0.05 ~ 0.12	0.20
Magneto-electric machine	Magnetic motor trigger gap	0.5 ± 0.1 mm	1.2
	Area of the joint between the magnetic motor rotor and the taper of the crankshaft	≥70%	
盘齿	Starting disk aperture	ϕ 25.002 to ϕ 25.004	ϕ 25.008
	Start-up disk-shaped gear shaft diameter	42.175 ~ 42.2 degrees	ϕ 41.12
Water pump	Water pump shaft rotation	Flexible movement without jamming, with axial movement and rebound force	
	Air tightness	0.3 MPa airtightness test with no leakage	
Other	Bearing, oil seal		Replace if abnormal.

Troubleshooting

Poor lubrication system - inadequate oil pumping, abnormal noises **1. Insufficient or no oil entering the oil pump; oil passage blockage or air leakage causing poor oil pumping; no lubrication issue with the inner and outer rotors, but abnormal noise** 2. Oil pump chain drive issues - chain slipping, sprocket removal, and other conditions such as failure to pump oil and abnormal noises. 3. The wear clearance of internal and external rotors is large, causing abnormal noises, sticking, and damage.	**Poor water circulation in the pump — failure to pump water, water-oil intermixing, unusual noises** 1、Sliding bearings, ball bearings, etc., are damaged. 2. Oil seal, water seal damaged, pressure spring broken 3、Other parts are cracked or damaged. **Do not ignite or poor ignition; poor charging** 1. Trigger coil and charging coil ablation; wire harness damage and short circuit, etc. 2. Magnetic material cores with foreign objects attached

Remove water pump, magneto cover, electric starter, oil pump.

1. Remove the outlet pipe of the water pump with a 2-spiral clamp; remove two M6×50 bolts, take out the water pump, and remove two M6× bolts and take down the starting motor.

2. Disassemble M6×45 bolt, remove the right crankcase cover, right crankcase cover gasket, and 2-φ8×14 positioning pins.

3. Disassemble the M14x1.25 magnetic motor nut, Φ14.5xΦ29x2.8 washer; use a special puller to extract the magnetic motor rotor, remove the rotor, semi-circular key, double spline, disc gear, etc.

4. Use a retaining clip remover to dismantle the Φ10 shaft retaining ring, and remove the oil pump driven sprocket and chain.

5. Remove the M6×28 bolt and take off the oil pump.

Magnetic motor cover assembly disassembly

1. Remove the 2-M5×16 hexagon head bolts and 3-M6×40 hexagon head bolts with washers, and take off the stator of the magnetic motor, trigger pressure plate terminal blocks, etc.

2. Remove the spacer for the 1-Φ32 hole, the spacer for the 2-Φ26 hole, the 6201RS bearing, the 12×22×5 oil seal, and the deep groove ball bearing 6000.

3、Remove dipstick, inspection cover, oil filter screen cover, filter screen, filter screen spring.

Magnetic motor cover assembly inspection and partial assembly

1、Clean the oil filter screen cover, filter screen, filter screen spring, oil passages, oil chambers of oil sludge, dust, and other contaminants

.2. Replace the 12x22x5 oil seal, inspect the O-ring and bearing for any damage or abnormalities;

if present, replace with new ones.

3. Check that the stator and other parts are intact.

Attention:
1. The assembly direction of the crankshaft oil seal (12×22×5) - the side with the model number should face outward, installed straight without tilting; the 6201RS bearing has a dust cover facing inward.
2. Install the Φ32 hole with a retaining ring in place.
3. Clean the oil filter cover, filter screen oil passage, oil cavity contamination, dust, and other foreign objects.

4. Install oil seal 12x22x5, bearing 6201RS, deep groove ball bearing 6000, retaining ring for 1-Φ32 hole, retaining ring for 2-Φ26 hole, filter mesh, filter mesh spring, O-ring φ35x3, filter mesh cover.

1. The assembly direction of the crankshaft oil seal (12×22×5) - the side with the model number should face outward, installed straight without tilting; the

Clean the oil filter cover, filter screen oil passage, oil cavity

Oil pump component inspection and assembly

1. Check that the oil return passage in the right housing is unobstructed, and ensure that the oil intake and outlet passages of the oil pump are clear and clean.

2. Clean the inner and outer rotor cavities of the oil pump, then blow them clean; pour in an appropriate amount of engine oil and rotate the oil pump shaft, which should rotate smoothly without any sticking.

Attention:Be sure to inspect, confirm, and clean the oil return passage, the oil pump intake passage, and the oil pump outlet passage to ensure they are unobstructed and free of foreign objects.

3、Install oil pump, 2 - M6×28 bolts (Torque: 8-14 N·m). Then manually rotate the oil pump shaft to check for smooth operation.： Confirm smooth rotation, no jamming

4. Assemble the oil pump driven sprocket and chain, and securely install the Φ10 shaft with a retaining ring using a retaining clip.

The return oil hole of the box is unobstructe

The oil inlet and outlet passages are clear and unobstructed.

Starter Pinion Inspection and Assembly

1、The φ25 bore of the duplex gear sliding metal bushing shows no abnormal wear or scoring. The bushing fits well in the body with no signs of displacement.

2. The φ42.2 shaft of the disc gear body (which mates with the rotor unidirectional clutch working surface) shows no abnormal wear, scoring, or pits.

Attention:
1、When installing the duplex gear, apply an appropriate amount of oil to the bore and rotate it a few times to ensure initial lubrication.

2. When installing double-toothed shafts and double-toothed gears, the shaft can be coated with an appropriate amount of engine oil.

3、Install the starter gear (pinion), duplex gear shaft, and duplex gear. Rotate the duplex gear to ensure there is no significant binding.

Magnetic motor rotor inspection and assembly

1、Clean the rotor of any iron filings, powder, or other foreign matter. Inspect the taper bore and taper surface for damage — they must be in good condition. The woodruff keyway must also be in good condition.

2. Spray 0.4ml-0.6ml of degreaser on the crankshaft taper surface and the rotor taper hole, then wipe clean with a clean cotton cloth; completely remove all oil and grease.

Attention:
1. The taper surface of the crankshaft and the taper hole surface of the rotor must be completely free of oil and grease.
2、Ensure the crankshaft and magneto nut (M14×1.25) threads are clean and in good condition. During assembly, apply an appropriate amount of high-strength thread locker to the threads.
3、The magneto nut must be tightened to the specified torque of 80–85 N·m. Verify the setting with a torque wrench set to 85 N·m.

3. Install the rotor, fit the semi-circular key properly, and gently tap the rotor to ensure good engagement of the conical face; apply thread locker to the nut threads, install the washer and the magnetoelectric motor nut, and tighten it to a torque of 80-85 N·m.

4、The starter pinion gear should rotate counter-clockwise and must not rotate clockwise. If it does rotate clockwise, replace the relevant parts.

Magnetic motor cover assembly component

1. Clean the mating surfaces of the right crankcase and magneto motor cover, install 2-φ8×14 positioning pins, magneto motor cover sealing pad, and then install the magneto motor cover.

Attention:
Replace the magneto cover gasket with a new one. The magneto cover should fit into place easily without forceful impact. If it does not, check for the cause.

2. Install 10 - M6×45 bolts, and tighten them in a crisscross pattern in 2-3 stages, with a torque of 10-14N·m.

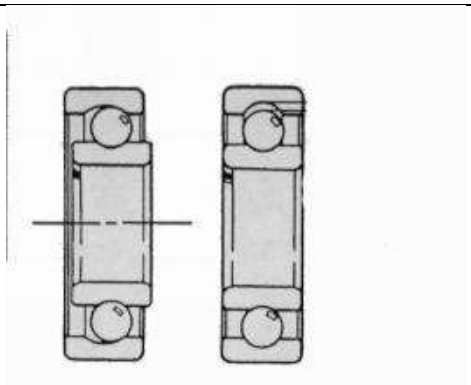
Pump Component Inspection and Assembly

1. Detachable water pump, impeller, clean the water chamber, and other foreign objects such as parts.

2. The pump shaft has a strong and flexible outward rebound.

3. Air tightness check:The pump assembly has been pressure-tested at 0.2-0.3 MPa and passed the airtightness test without any leakage.

4. Check and confirm that the O-ring Φ32.5×2 is not torn, damaged, deformed severely, or aged.

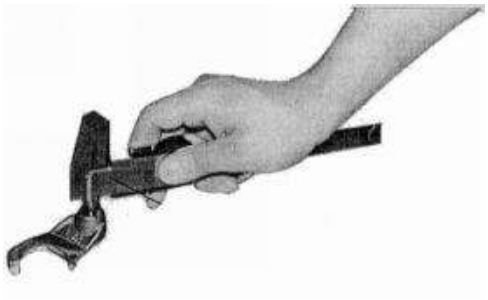


Removal of crankshaft/balance shaft/main and auxiliary shafts

Remove the crankshaft assembly, balance shaft, shift fork shaft, shift fork, shift drum, and main/sub shaft assembly from the box.

Attention:

Ensure that no components are left behind when removing the main and auxiliary shaft components.



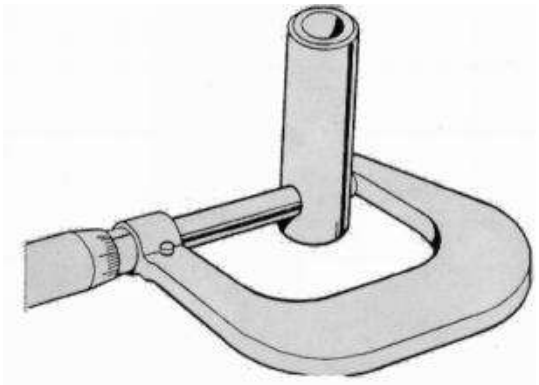
Crankshaft inspection

Place the crankshaft on the V-block.

Measure the radial clearance of the crankshaft journal with a dial indicator.

The actual radial clearance of the crankshaft is 1/2 of the total indicator reading (TIR).

Maintenance Limit Value:0.1 mm



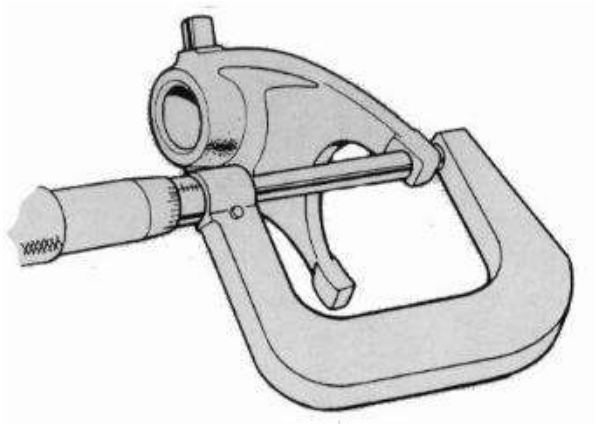
Measure the radial clearance of two points in the X and Y directions of the connecting rod's large end.

Maintenance Limit Value:0.02 mm

Measure the side clearance of the connecting rod big end with a feeler gauge. Maintenance Limit Value:0.7 mm	
Inspection of left and right box body bearings 1. Check if all bearings in the left and right boxes rotate smoothly; if they do not rotate smoothly or there is a sticking phenomenon, replace them with bearings of the same model; **2. Remove the crankshaft bearings from the left and right housing to check for runout and end play. If noise is detected or if the runout and end play are excessive, new crankshaft bearings should be replaced.**	
Inspection of shift fork/shift fork shaft/gear shift drum Inspect each shift fork for wear, bending, or any other faults, and measure the inner diameter of the shift fork. Main shaft fork repair limit: φ12.45 mm Sub-axis fork repair limit value: φ14.45 mm	
Inspect the main shaft, secondary shaft, and shift fork shaft for wear, damage, or bending, and measure the outer diameter. Main Shaft Shift Fork Shaft Service Limit：φ11.95 mm	

Sub-axis fork shaft repair limit value: φ13.95 mm	

Measure the thickness of the forked claw.
Maintenance Limit Value:4.7 mm



Inspect the surface of the speed drum and the grooves for wear or damage.

Main and auxiliary shaft component inspection

Inspect the main and auxiliary shaft components for excessive or abnormal gear wear, and check for deformation or detachment of the retaining rings between the gears.

Engine oil filter component and oil strainer inspection

1. Check the cleanliness of the oil filter components and the oil strainer; clean the oil filter components and oil strainer with clean gasoline if they are dirty.

2.Inspect the oil filter element and oil strainer for any signs of damage; if damage is found, replace the oil filter element and oil strainer with new ones.

Assembly of the transmission/gearbox, crankshaft, and balance shaft

1. Install the crankshaft and balance shaft into the corresponding holes of the left body,

2.Install the main and auxiliary shaft components into the corresponding holes of the left body, then assemble the fork to the appropriate position,

Attention:

1. The fork marked with --R is installed on the right side of the secondary shaft body.

2. The fork marked as --L is installed on the left side of the secondary shaft body.

The fork marked as --C is assembled onto the main shaft.

Install the speed change drum into the corresponding hole on the left body, then fit the other end of the shift fork into the corresponding slot of the speed change drum, and finally install the shift fork shaft into the corresponding shift fork.

Attention:

The long shift shaft passes through the shift forks marked with —R and —L, while the short shift shaft passes through the shift fork marked with —C.

Assembly of the oil pan and oil filter screen

1. Apply a uniform layer of sealant on the mating surface of the right box body, insert the positioning pins into the corresponding holes of the left box body, then place the right box body onto the left one. Pass five GB/T16674 small pan bolts M6×45 and eight GB/T16674 small pan bolts M6×65 through the corresponding bolt holes of the left body and tighten them; tightening torque:11-13 N·m.

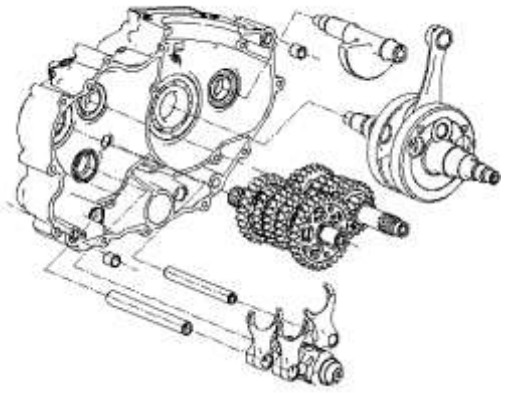
2. Install the Fine Oil Filter component into the corresponding hole in the box body,

Attention:

When installing the oil filter precision unit, the open end should face towards the left side of the housing.

Then install the oil filter cover onto the double-ended bolt, and secure it with two GB/T6177.1 nuts M5, torquing them to the specified torque.7 to 9 Newton meters (N·m).

3. Install the oil filter assembly into the corresponding holes of the left and right housings, then secure it with the oil filter cover, torque for securing:11-13 N·m.



This end is the sealed end of the

This end is the open end of the fine oil filter and should face towards the left crankcase half during assembly.

5.6 Crankcase, crankshaft, transmission, balance shaft

Maintenance Notice: Removal of Foot Start Device
Troubleshooting: Inspection of the Starter Shaft Drive Gear
Crankcase disassembly and inspection of the starting shaft
Crankshaft removal and starter shaft installation
Inspection of the crankshaft, install the starting shaft.
Transmission disassembly, installation of the speed drum and gears
Inspection of shift fork/shift fork shaft/gear shift drum, installation of crankcase

Maintenance Notice

This section introduces the installation and inspection of the transmission, crankshaft, and balancing mechanism. When performing the aforementioned work, the crankcase should be separated first, and the dismantling of other engine components should be carried out before the crankcase is separated.

Work before the separation of the crankcase

Cylinder head removal

Cylinder/Piston Disassembly

Clutch, oil pump, gear shift mechanism, and balance gear removal

Dismantling of a magnetic motor

Specification

Project			Standard value mm	Maintenance limit value (mm)
Shift fork	Sub-axis right shift fork inner diameter/Sub-axis left shift fork inner diameter		Φ14.016 to Φ14.043	ϕ 14.045
	Main shaft fork inner diameter		ϕ 12.016 to ϕ 12.043	12.045 degrees ϕ
	Clamp thickness		4.8 to 4.9	4.8
Shift fork shaft	Main shaft fork outer diameter		From φ11.973 to φ12	11.95 ϕ
	Sub-axis shift fork outer diameter		From φ13.973 to φ14	13.95 ϕ
	Cylindricity		0.006	----
crankshaft	Connecting rod small-end bore diameter		ϕ 16.015 to ϕ 16.025	ϕ 16.04
	Clearance on the side of the connecting rod big end	Axial	0.15 to 0.4	0.6
		Radial	0.008 to 0.016	0.02
Balance shaft	Shaft diameter		19.98 mm to 19.993 mm	19.96 ϕ

Troubleshooting

Gear shifting difficulty, crankshaft noise

1. Gear shift fork bending, 1. Linkage large-end bearing wear

2. Bent shift fork shaft 2. Bent connecting rod

3. The crankshaft bearing has wear.

Transmission gear shift malfunction

1. The shift gear pawl is worn, and the shift gear is noisy.

2. Gear shift fork is bent or worn, 1. Gear shift gears are worn.

3. Bent shift fork shaft, 2. Worn spline shaft

Crankcase disassembly

1. Place the left crankcase of the engine in an upward position;

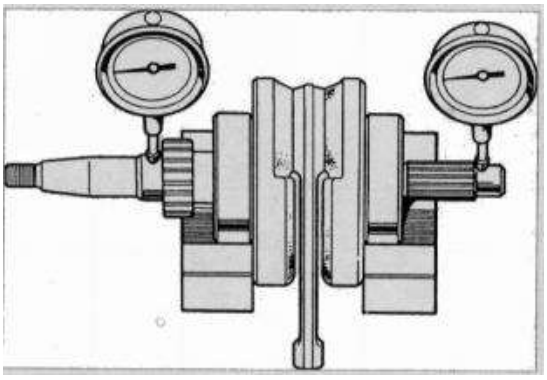
2. Remove 8 GB/T16674 small pan head bolts M6×65 and 5 GB/T16674 small pan head bolts M6×45 securing screws, separate the left crankcase from the right crankcase, and remove 2 positioning pins.

Removal of crankshaft/balance shaft/main and auxiliary shafts

Remove the crankshaft assembly, balance shaft, shift fork shaft, shift fork, shift drum, and main/sub shaft assembly from the box.

Attention:

Ensure that no components are left behind when removing the main and auxiliary shaft components.



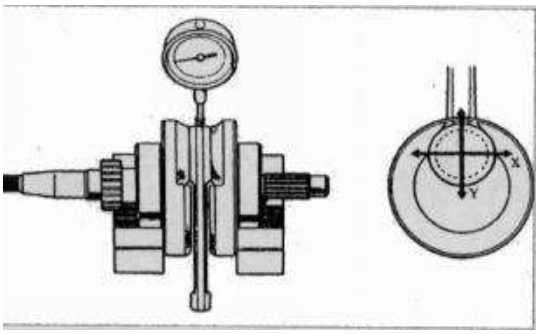
Crankshaft inspection

Place the crankshaft on the V-block.

Use a dial gauge to measure the radial clearance of the crankshaft journal.

The actual radial clearance of the crankshaft is 1/2 of the total indicator reading (TIR).

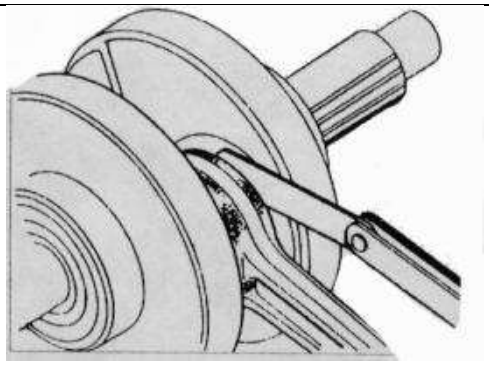
Maintenance Limit Value:0.1 mm



Measure the radial clearance of two points in the X and Y directions of the connecting rod's

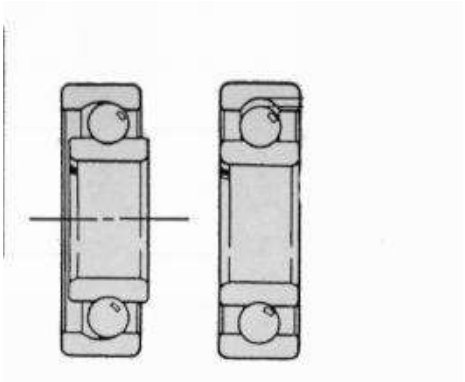
large end.

Maintenance Limit Value:0.02 mm



Use a feeler gauge to measure the side clearance of the connecting rod big end.

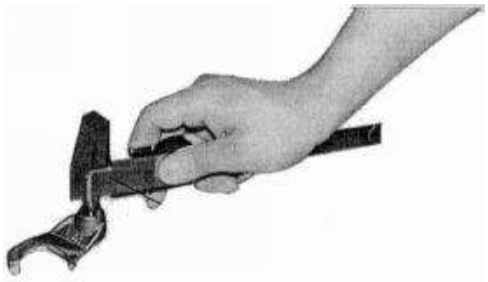
Maintenance Limit Value:0.7 mm



Inspection of left and right box body bearings

1. Check if all bearings in the left and right boxes rotate smoothly; if they do not rotate smoothly or there is a sticking phenomenon, replace them with bearings of the same model;

2. Remove the crankshaft bearings from the left and right housing to check for runout and end play. If noise is detected or if the runout and end play are excessive, new crankshaft bearings should be replaced.

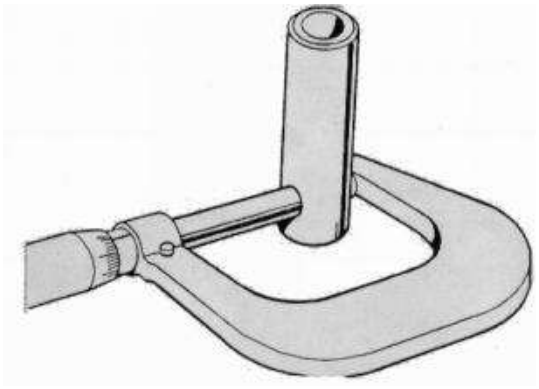


Inspection of shift fork/shift fork shaft/gear shift drum

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

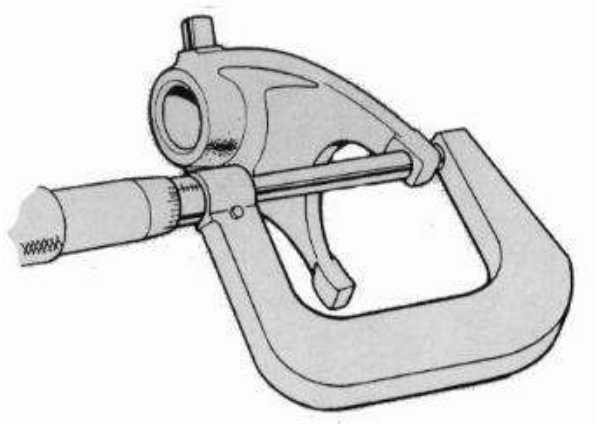
Main shaft fork repair limit: φ12.45 mm

Sub-axis fork repair limit value: φ14.45 mm



Inspect the main shaft, secondary shaft, and shift fork shaft for wear, damage, or bending, and measure the outer diameter. Main shaft fork repair limit: φ11.95 mm Sub-axis fork shaft repair limit value: φ13.95 mm	

Measure the thickness of the forked claw.
Maintenance Limit Value:4.7 mm



Inspect the surface of the speed drum and the grooves for wear or damage.

Main and auxiliary shaft component inspection

Inspect the main and auxiliary shaft components for excessive or abnormal gear wear, and check for deformation or detachment of the retaining rings between the gears.

Engine oil filter component and oil strainer inspection

1. Check the cleanliness of the oil filter components and the oil strainer; clean the oil filter components and oil strainer with clean gasoline if they are dirty.

2.Inspect the oil filter element and oil strainer for any signs of damage; if damage is found, replace the oil filter element and oil strainer with new ones.

Assembly of the transmission/gearbox, crankshaft, and balance shaft

1. Install the crankshaft and balance shaft into the corresponding holes of the left body,

2..Install the main and auxiliary shaft components into the corresponding holes of the left body, then assemble the fork to the appropriate position,

Attention:

1. The fork marked with --R is installed on the right side of the secondary shaft.

2. The fork marked as --L is installed on the left side of the secondary shaft body.

The fork marked as --C is assembled onto the main shaft.

Install the speed change drum into the corresponding hole on the left body, then fit the other end of the shift fork into the corresponding slot of the speed change drum, and finally install the shift fork shaft into the corresponding shift fork.

Attention:

The long shift fork shaft passes through the shift fork marked "-R" and the shift fork marked "-L". The short shift fork shaft passes through the shift fork marked "-C".

Assembly of the oil pan and oil filter screen

1. Apply a uniform layer of sealant on the mating surface of the right box body, insert the positioning pins into the corresponding holes of the left box body, then place the right box body onto the left one. Pass five GB/T16674 small pan bolts M6×45 and eight GB/T16674 small pan bolts M6×65 through the corresponding bolt holes of the left body and tighten them; tightening torque:11-13 N·m.

2. Install the Fine Oil Filter component into the corresponding hole in the box body,

Attention:

When installing the oil filter precision unit, the open end should face towards the left side of the housing.

Then install the oil filter cover onto the double-ended bolt, and secure it with two GB/T6177.1 nuts M5, torquing them to the specified torque.7 to 9 Newton meters (N·m).

3. Install the oil filter assembly into the corresponding holes of the left and right housings, then secure it with the oil filter cover, torque for securing:11-13 N·m.

This end is the sealed end of the

This end is the opening of the oil filter precision unit, and it should face towards

6 Vehicle Chassis

Maintenance Information

Caution

• The chassis must be securely supported before starting work on the front wheels and suspension system.

Inspection and maintenance of lighting, instruments, and switches should be carried out in accordance with the relevant chapters.

Do not exert too much force on the wheel.Caution not to damage the wheels

When removing or installing tires from the rim, it is necessary to use a special tire and rim protector to avoid damaging the rim.

Maintenance Benchmark

Project		Standard	Use the limit
Wheel rim	Axial runout	0.8 mm	2.0mm
	Radial runout	0.8 mm	2.0mm
Tire	Residual groove	—	3 mm
	Atmospheric pressure	100 kPa (1 kgf/cm²)	—
Front brake	Brake lever free play	zero mm	—

Fastening torque

Name	Specification	Torque
Steering wheel mounting screw	GB70-85 M6x16	10~12 N·m
Front wheel hub brake disc mounting screw	GB70.3 M6x16 10.9 grade	14-17 N·m
Front and rear brake disc left and right pump mounting bolts	GB5789 M8x25	25-30 N·m
Front wheel rim slot nut	GB9457-1988 M14*1.5*H18	72 to 89 N·m
Rear wheel hub fixed slot nut	**M20**	72 to 89 N·m
Front and rear shock absorber mounting bolts and nuts	GB6187-86 M10*1.25	55 to 66 N·m
Rim installation nut	M10 by 1.25 60 degrees	45-59 N·m
Front upper and lower arm fixing bolt and nut	GB6187-86 M10*1.25	55-66 N·m

Tool

hexagon socket m6	Assembly tool shaft
Open-end ratchet wrench S8	Pneumatic wrench S12

Open-end wrench S10-S12	Pneumatic wrench S14
Open-end ratchet wrench S14	Socket wrench M12
Open-end wrench s17-s19	Socket wrench M14
Open-end ratchet wrench S22	Socket wrench M20
Open-end ratchet wrench s24	Socket wrench M24
Cross-head screwdriver	Long-nose pliers
flat-head screwdriver	Outer card spring pliers
Hammer	

6.1 Troubleshooting

I. Steering wheel is heavy

1. Power steering fluid low
2. Front suspension system clearance is too large
3. Steering ball joint loose
4. Power steering fluid leak or absence
5. Low tire pressure
6. Tire Wear

II. Steering wheel vibration

1. Steering bearing damage, poor fastening
2. The left and right shock absorbers are not matched.
3. Wheel misalignment
4. Frame deformation
5. Tire wear, uneven wear
6. Wheel bearing play

III. Front Wheel Bounce

1. Wheel rim deformation
2. Poor quality of wheel bearing
3. Poor tire condition
4. Improper wheel balance
5. The fastening around the wheel shaft is poor.

Four, the wheels do not rotate smoothly.

1. Wheel bearing malfunction
2. Incorrect installation of the front wheel
3. Brake oil line, cable entanglement

Five, the front suspension is too soft

1. Front shock absorber spring force weakened
2. Low tire pressure

Sixth, the front suspension is too hard

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

Seven, abnormal noise from the front shock absorber

1. Front shock absorber malfunction
2. The shock absorber fastening parts are loose.

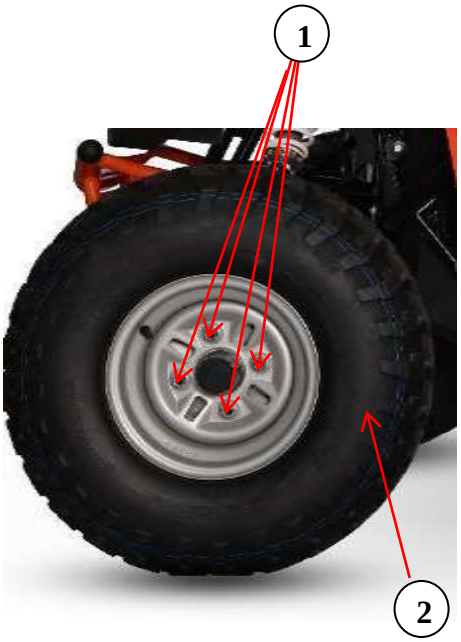
8. Poor braking performance

1. Improper brake adjustment
2. Brake disc surface contamination
3. Brake Pad Wear

6.2 Front Wheel

Disassembly

Lift the front wheel with a tool and ensure that no force is acting on the front wheel.
Remove the four nuts installed on the front wheel bracket 1
Remove front wheel 2



Wheel Rim Inspection

Inspect wheel rim 1 for damage, deformation, or scratches, and replace if any abnormalities are found.Slowly rotate the wheel and measure the runout of rim 1 with a micrometer.
Usage Limit:Axial:2.0mm
Radial:2.0mm

Rim installation

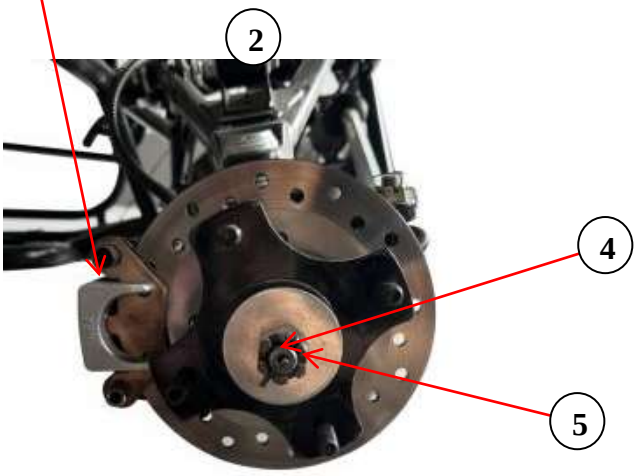
Press rim 2 into the tire on a special machine.

Front wheel mounting bracket removal

Remove the front wheel
Remove front brake caliper 3
Remove the cotter pin 4
Remove the wheel rim axle mounting nut 5
Remove the brake disc and the mounting bracket together.
Remove the front wheel mounting bracket

Install

The installation is carried out in the reverse order of disassembly.
Wheel Hub Mounting Nut Torque: 120–140 N·m
Brake Disc Installation Bolt Torque:14N·m to 17N·m (apply thread locking compound)
Note:The removal and installation of the rear wheel is similar to that of the front wheel, please refer to the front wheel procedure.



6.3 Braking System

Front brake caliper removal

Remove the front wheel

Remove the 2 bolts (size 6) mounted on the steering knuckle.

Remove brake caliper 7

Check

Inspect the brake calipers for cracks and check for oil leakage at all fastening points; replace if any issues are found.

Install

Brake Caliper Mounting Bolt 6 Torque:25N•m to 30N•m (apply thread locking compound)

Brake pad removal

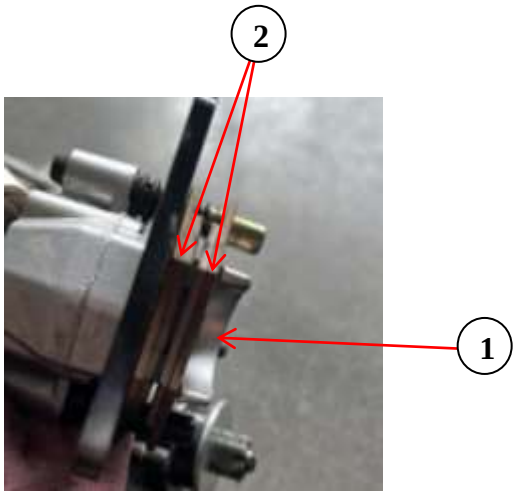
Loosen a tight bolt

Rotate the brake caliper 1

Remove brake pad 2

Check

Measure the thickness of the friction layer 2 of the brake pad. When the thickness of the friction layer 2 is less than or equal to 1 mm, both brake pads should be replaced with new ones at the same time.



Install

The installation is carried out in the reverse order of disassembly.

Brake disc removal

Remove the front wheel

Remove the brake caliper
Remove the brake disc 3 and the front wheel bracket 4 from the vehicle together.
Remove the brake disc 3

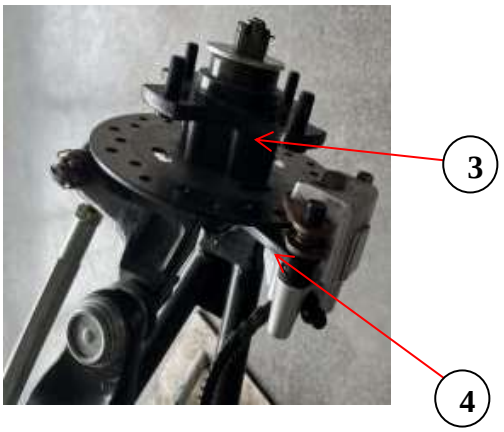
Check

Front brake disc thickness:Replace the brake disc if it is less than 3.0mm

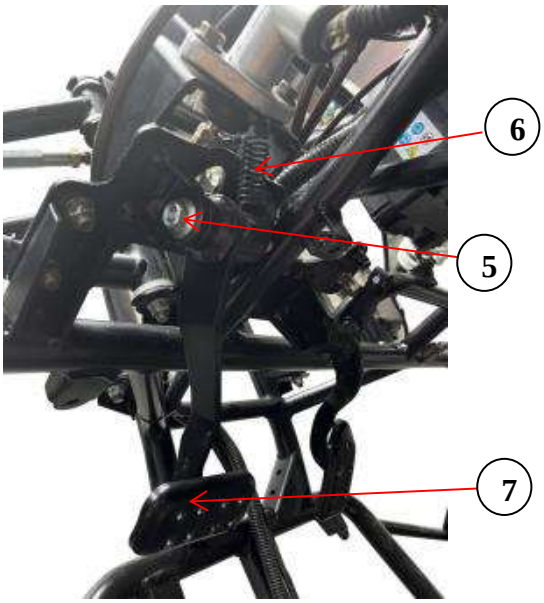
Install

Install the brake disc

Brake Disc Retaining Bolt Torque:14 to 17 Newton meters



Brake pedal removal
Remove bolt 5
Remove spring 6
Remove the brake pedal7
Install
The installation is carried out in the reverse order of disassembly.



Attention:

The routing of the oil pipeline on the body of the vehicle, as per the wiring layout of cables and similar items in Chapter One, must ensure the unobstructed flow of the braking oil line.

When the braking system assembly is installed, it is necessary to check the braking force.

Removal of the master cylinder brake fitting

Remove oil cup bolt 1

Remove bolt 2

Pull out the cotter pin 3

Pull out pin 4

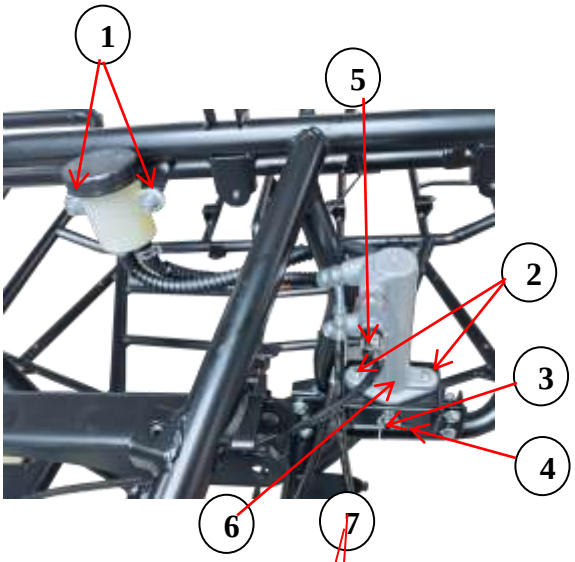
Disconnect the foot brake switch connector5

Separate the brake master cylinder connector 6 from the body of the vehicle.

Install

The installation is carried out in the reverse order of disassembly.

Attention: The routing of the oil pipeline on the body of the vehicle, as per the wiring diagram of cables and ropes in Chapter One, must ensure the unobstructed flow in the braking oil line of the braking system. When the assembly is installed, it is necessary to check the braking force.



Rear brake caliper body removal

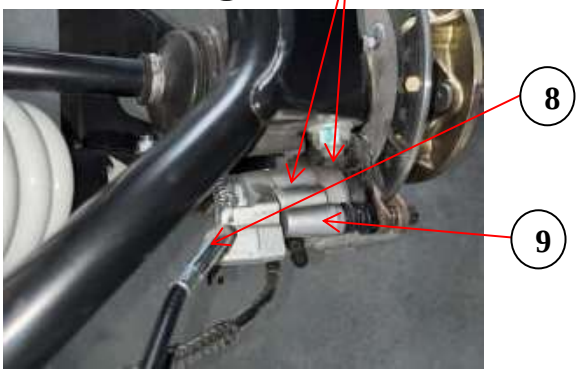
Unfasten bolt 7, parking brake cable 8

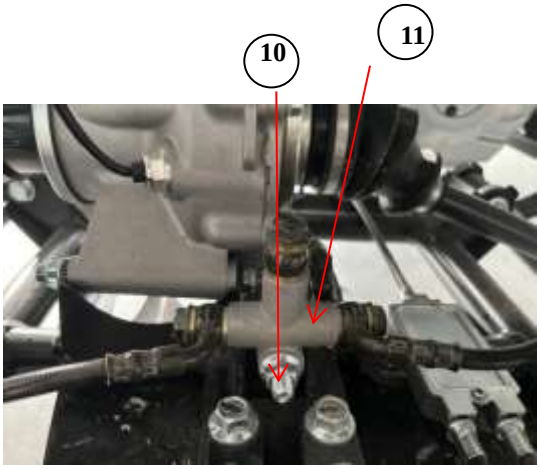
Remove the rear brake caliper assembly 9

Install

The installation is carried out in the reverse order of disassembly.

Attention: The routing of the oil pipeline on the body of the vehicle, as per the wiring diagram of cables and similar lines in Chapter One, must ensure the unobstructed flow of the braking oil line. When the braking system assembly is installed, it is necessary to check the braking force. If the front and rear cannot be controlled in the braking system, check whether the connections are properly connected. Also, inspect the level of the brake fluid in the brake reservoir to ensure it is between the upper and lower limit marks, and if necessary, add the recommended KAYO brake fluid to bring it within the range of the upper and lower limit marks.Check if the brake switch and brake lights are functioning properly.





Removal of the three-way brake connector

Unscrew bolt 10

Separate the brake T-joint 11 from the body of the vehicle.

Install

The installation is carried out in the reverse order of disassembly.

Attention: The routing of the oil line on the body of the vehicle, as per the wiring diagram of cables and ropes in Chapter One, must ensure the unobstructed flow in the braking oil circuit. When the assembly is installed, it is necessary to check the braking force.

6.4 Front Suspension System

Removal of the right front suspension assembly

Attention: When repairing the suspension system, the left and right suspension systems cannot be removed at the same time, otherwise the body of the vehicle will tip over due to lack of support.

Park the vehicle body on a level ground and use a jack to securely support the front part of the car.

Remove the front body assembly

Remove the front wheel

Remove the brake caliper

Remove the front wheel hub bracket

Remove the bolt 1 from the right front shock absorber mounted on the body and the right front lower control arm.

Remove front shock absorber 2

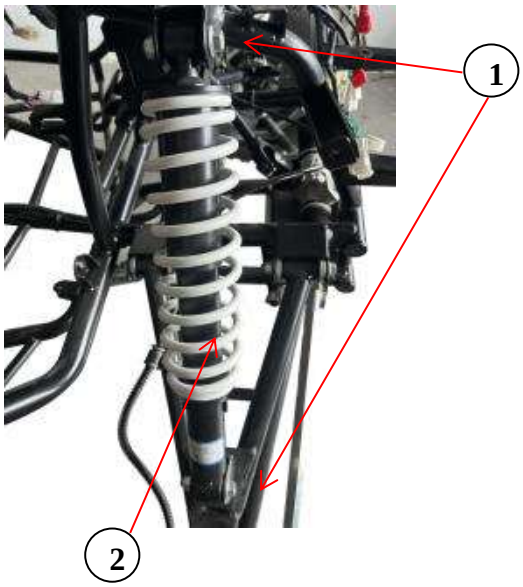
Remove the bolt and nut securing the right front upper arm mounted on the frame 3

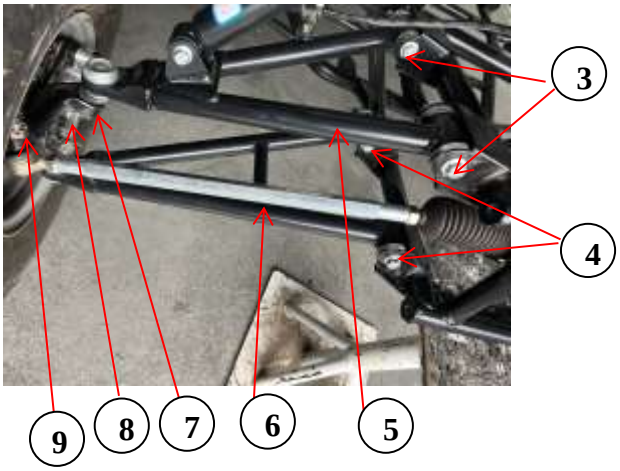
Remove the split pin and nut 7 from the upper right front rocker arm ball stud.

Remove the right front upper arm 5

Remove the split pin and locking screw from the steering lever ball pin 9

Remove the bolt and nut 4 of the right front lower arm mounted on the frame.

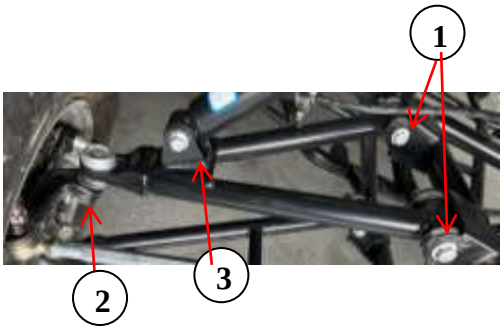




Remove the split pin and nut 8 from the lower right front ball joint arm
Remove the right front lower arm 6
Pull the steering knuckle off the drive shaft.The suspension system of this vehicle comes in various configurations, suitable for different customer groups.The above introduction pertains to the basic configuration of the suspension system; the maintenance methods for other configurations are similar, and maintenance can be carried out by referring to the aforementioned methods.

Install
The installation is carried out in the reverse order of disassembly.

The removal, installation, and inspection methods for the left front suspension assembly are the same as those for the right front suspension assembly.

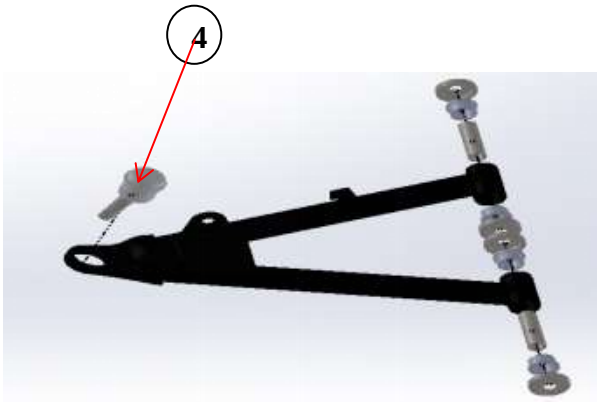


Disassembly and assembly of the right front suspension arm assembly
Remove the right front shock absorber.
Remove the bolt and nut 1 securing the right front upper arm mounted on the frame.
Remove the bolt and nut securing the right front lower control arm to the frame 2
Before removing the shock absorber, the wheel, brake caliper, and rim support must be dismantled first.
Before removing the bolts, the steering rod should be disconnected first.
Before removing the right front suspension arm assembly, the steering knuckle must be pulled out from the front constant velocity drive shaft.

Remove the right front arm assembly
Inspect the upper and lower arms

Remove the right front upper arm welding assembly 3

Check if the ball pin assembly 4 can rotate flexibly in all directions, as well as the clearance inside the upper ball pin. If it cannot rotate flexibly or the clearance is too large; inspect whether the grease inside the ball pin has deteriorated (grease type:Check if the dust cover on the ball pin is broken or aged (No. 2 lithium-based grease GB7324-87); if the aforementioned issues occur, replace the ball pin with a new one.



Remove the right front lower arm welding assembly

Check if the ball pin assembly 5 can rotate flexibly in all directions, as well as the clearance inside the upper ball pin. If it cannot rotate flexibly or the clearance is too large; inspect whether the grease inside the ball pin has deteriorated (grease type:Check if the dust cover on the ball pin is broken or aged (No. 2 lithium-based grease GB7324-87); if any of the aforementioned issues occur, replace the ball pin with a new one.

Install

Use a special tool to press the ball pin into the rocker arm assembly.

The installation is carried out in the reverse order of disassembly.

Inspect the right Knuckle

Remove the right Knuckle (steering knuckle)

Remove the wheel hub bearing using a special tool.

Check if the wheel hub bearing is damaged, if it rotates smoothly, and if there is excessive clearance; replace with a new one if any defects are found.

Install

The installation is carried out in the reverse order of disassembly.

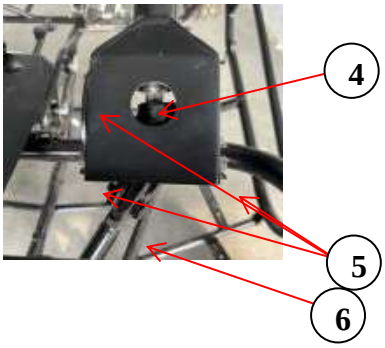
6.5 Steering System

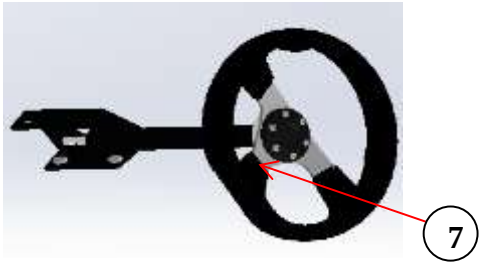
Steering wheel assembly and disassembly
Remove the steering wheel cover in an upward direction 1
Remove bolt 2
Remove the steering wheel 3

Install
The installation is carried out in the reverse order of disassembly.

Steering Wheel Assy. Removal and Installation
Remove the front cover plate
Remove Front Body Assembly

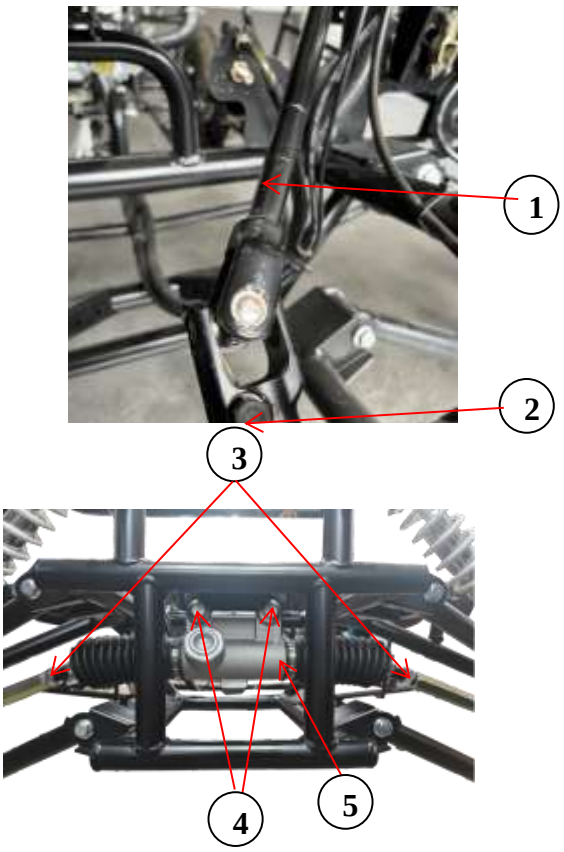
Remove bolt 4
Remove the directional seat bolt 5
Loosen bolt 6
Remove the steering wheel assembly 7
Attention:For the disassembly of the plastic part, refer to Chapter 2, Body Coverings. When removing bolt 4, align the bolt with the disassembly port by rotating in the direction indicated.





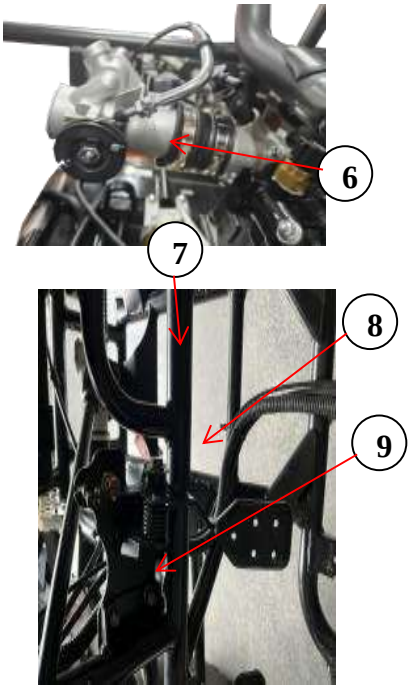
Install
The installation is carried out in the reverse order of disassembly.
Attention:When installing the steering wheel assembly into the steering shaft socket, align the marking line of the steering shaft.

Steering system disassembly
Remove the front cover plate
Remove the front body assembly
Front Guard
Remove the steering wheel assembly
Remove bolt 2
Remove steering column 1
Remove the steering lever nut 3
Remove bolt 4
Remove the steering gear 5



Install
The installation is carried out in the reverse order of disassembly.

accelerator pedal
Disassembly
Remove the interior front panel
Remove the throttle cable from the throttle body 6
Disassemble the throttle cable 7
Remove bolt 8
Remove the throttle pedal

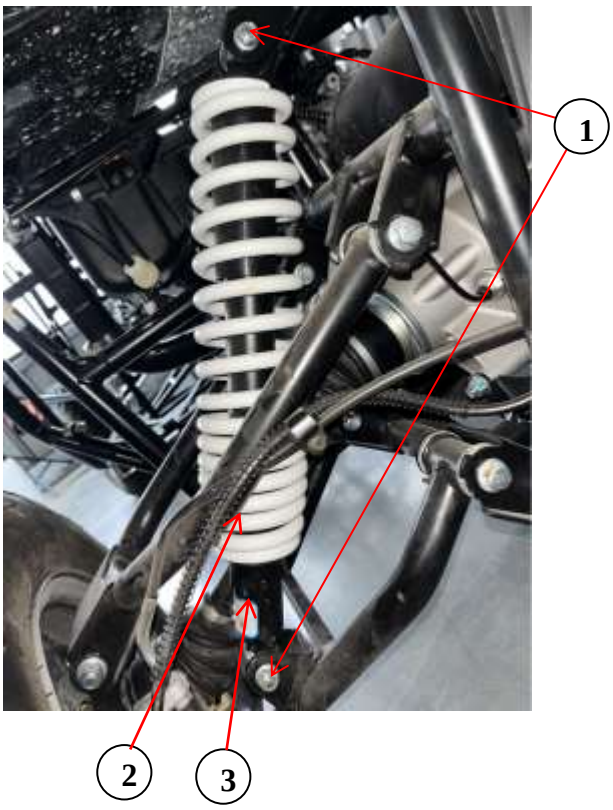


Install
The installation is carried out in the reverse order of disassembly.

6.6 Rear Suspension System

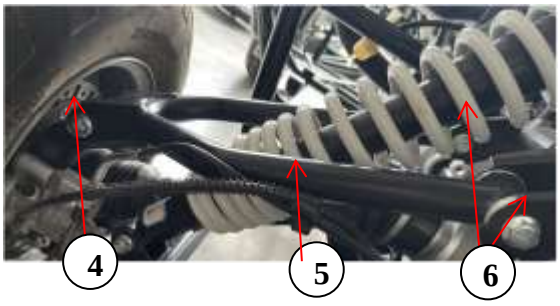
Disassembly of the left rear suspension assembly

When repairing the suspension system, the body of the vehicle should first be hoisted, and then the suspension system should be dismantled; otherwise, the body will collapse due to lack of support.
Park the vehicle body on a level ground and secure the rear support with a jack.
Remove the rear mudguard
Remove the rear wheel
Remove the brake caliper
Remove the bolt from the left rear shock absorber 1
Remove shock absorber 2
Remove and secure the upper arm bolt 4
Remove bolt 6
Remove and rock the upper arm
Remove and secure the lower arm fixed bolt 7
Remove and secure bolt 9
Remove the rear arm 8



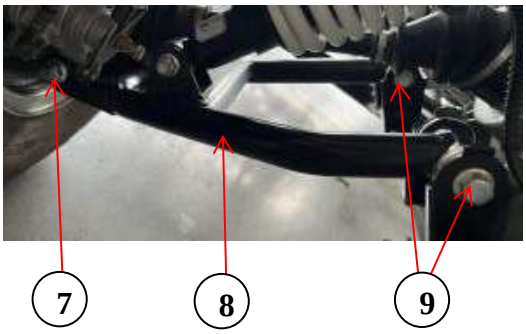
Check

Inspect the dismantled shock absorber and adjust cam 3 to the appropriate position.



Install

The installation is carried out in the reverse order of disassembly.
The removal, installation, and inspection methods for the right rear suspension assembly are the same as those for the left rear suspension assembly.

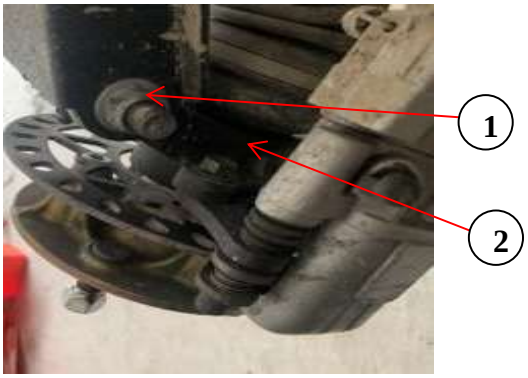


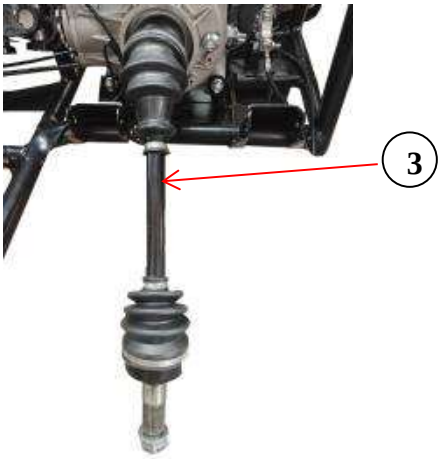
6.7 Rear-wheel Drive Assembly

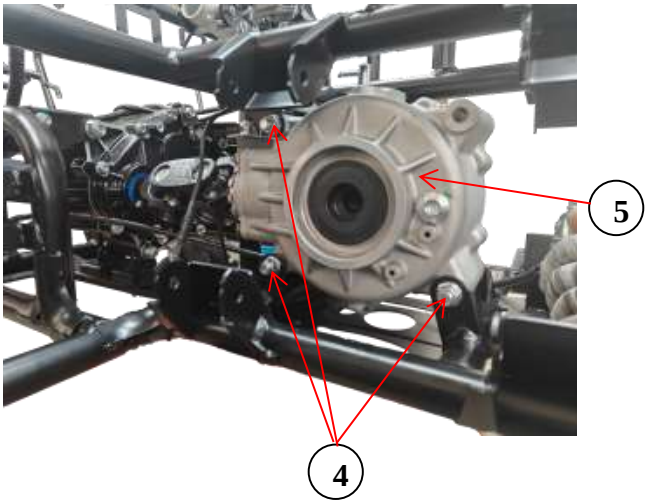
Disassembly

Disassembly

When repairing the suspension system, the body of the vehicle should first be hoisted, and then the suspension system should be dismantled; otherwise, the body will collapse due to lack of support.
Park the vehicle body on a level ground and secure the rear support with a jack.
Remove the rear mudguard
Remove the rear wheel
Remove the brake caliper
Remove the left and right rear shock absorbers
Remove the left and right rear arms
Remove the left and right rear arms
Demounted Wheel Hub Assembly 1
Remove the ram's horn 2
Remove the left and right rear axle shafts.3
Remove the rear drive assembly fixed bolt 4
Remove the rear drive assembly 5

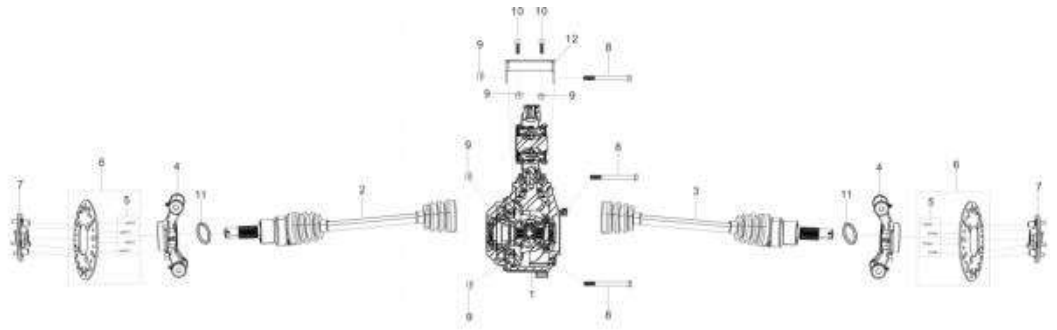






Check

The following is the exploded view of the vehicle's rear driveshaft assembly.



后驱组件

Number	Name	Quantity	Number	Name	Quantity
1	Rear-wheel drive assembly	1	7	Rear wheel hub assembly	2
2	Rear axle half shaft left assembly	1	8	External hexagon flange bolt GB5785 M10*110*1.25	3
3	Right rear axle half shaft assembly	1	9	Hexagon flange self-locking nut GB6187-86 M10*1.25	5
4	Rear horn assembly	2	10	External hexagon flange bolt M10*20*1.25	2
5	Internal hexagon rear brake disc bolt	8	11	Internal diameter snap ring, blackened, Φ50	2
6	rear brake disc	2	12	Tooth package mounting bracket, dark gray, dimensions 70*34*96*T=2.5	1

Inspection after the rear driveshaft disassembly

- Check if the rim is damaged, and if so, replace it with a new part.
- Check the brake disc thickness; if the brake disc thickness is ≤3mm, a new brake disc should be replaced.
- Check the driveshaft for bending or damage, and if present, replace with a new driveshaft.
- Inspect the rest of the items for damage, and if any are damaged, replace them with new ones.

Install

Assemble in reverse order when disassembling the rear driveshaft.

7 Signal and Lighting Systems

Maintenance Notice

When conducting a checkout of the assignment, the entire vehicle can be powered on; when performing disassembly and installation work, the vehicle should first be disconnected from power, and hands should be kept dry.

Item specifications

Name	Specification	Quantity	Remarks
Daytime Running Lights	LED model 12V-4W with 20 beads	1	Entire replacement
Left front high beam headlight	SJ-WZ8-L 12V 12W with 3 Osram beads, built-in constant current driver	1	Entire replacement
Right front high beam headlight	SJ-WZ8-L 12V 12W with 3 Osram beads, built-in constant current driver	1	Entire replacement
Left Front Lower Beam Headlight	SJ-WZ8-H 12V 6W with 2 Osram beads, built-in constant current driver	1	Entire replacement
Right front low beam	SJ-WZ8-H 12V 6W with 2 Osram beads, built-in constant	1	Entire replacement

headlight	current driver		
Rear lights	Waterproof LED	1	Full replacement
Instrument panel	2V Negative Display LCD Gauge Tachometer for Carburetor Version	1	Full replacement
Electric horn	12V-1.5A EEC II-E9-00.6287	1	Full replacement

7.1 Troubleshooting

1. Daytime running lights not working
   1. Light bulb damaged
   2. Poor contact in connectors
   3. Dashboard switch malfunction

II. The left front high beam does not light up.
   1. Light bulb damaged
   2. Poor contact in connectors
   3. Dashboard switch malfunction

III. The right front high beam does not light up.
   1. Light bulb damaged
   2. Poor contact in connectors
   3. Dashboard switch malfunction

Four, the left front low beam does not light up.
   1. Light bulb damaged
   2. Poor contact in connectors
   3. Dashboard switch malfunction

五、Right Front Lower Beam Headlight Does Not work
   1. Light bulb damaged
   2. Poor contact in connectors
   3. Dashboard switch malfunction

Sixth, rear lights
   1. Light bulb damaged
   2. Poor contact in connectors
   3. Brake sensor failure

Seven, the electric horn does not sound or is too faint
   1、Speaker damaged
   2、Poor contact in the connector
   3、Dashboard switch malfunction

7.2 Headlight Inspection

Turn the lighting switch to the lighting position and check if the front lights turn on.

－ Light up:Normal

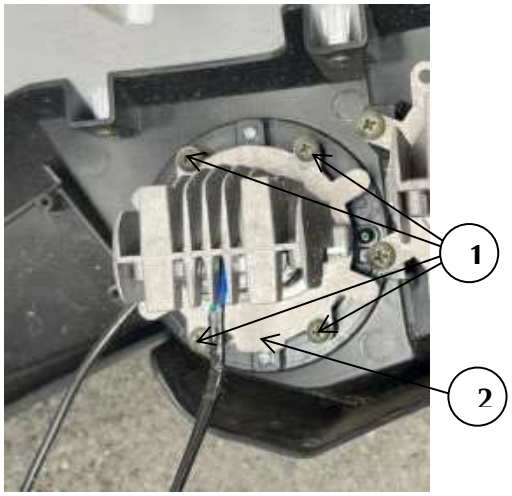
－ Not lit:

- Main cable breakage or short circuit
- Fuse blown
- Switch is broken
- Light bulb is broken.

If the headlight bulb is damaged, it should be replaced.

7.3 Light Replacement

Since the light bulb cannot be replaced individually, if it is damaged, the entire lighting fixture must be replaced.



Switch to high beams

Disassembly

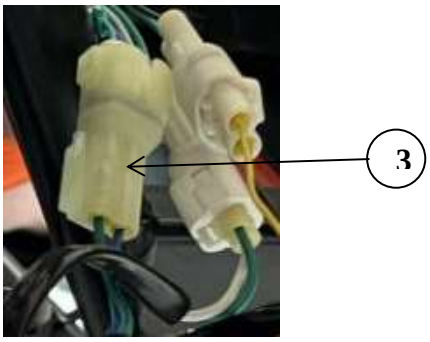
Remove the high beam mounting bolt 1

Remove the high beams 2

Disconnect the connector for the high beam 3

Install

Proceed in the reverse order of disassembly



Replace daytime running lights

Disassembly

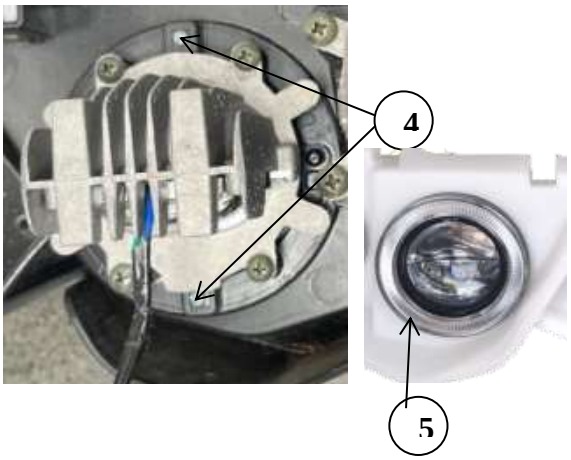
Remove the high beam headlight.Remove bolt 4

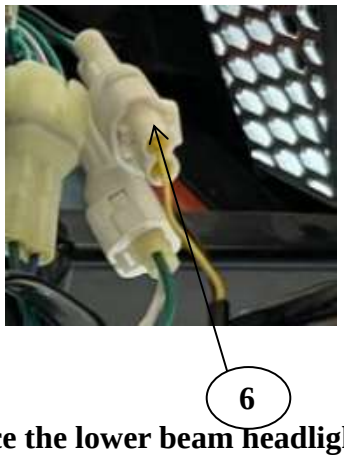
Remove the daytime running lights 5

Disconnect the daytime running light connector.6

Install

Proceed in the reverse order of disassembly





Replace the lower beam headlight.

Remove the lower beam headlight mounting bolt

Disassembly

1

Remove the low beam 2

Low Beam Disconnector Plug 3

Install

Proceed in the reverse order of disassembly

Replace the rear light

Disassembly

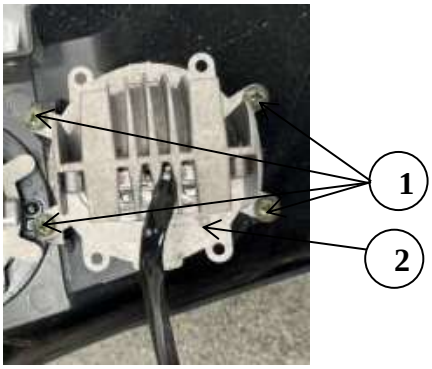
Remove bolt 4

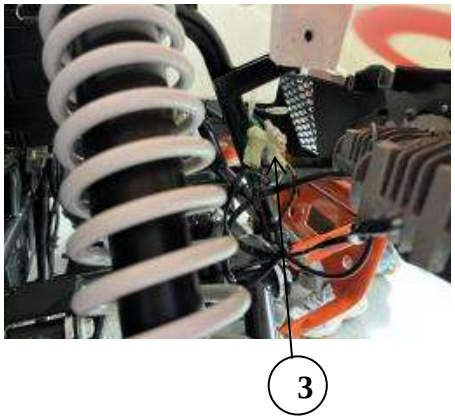
Remove the rear light 5

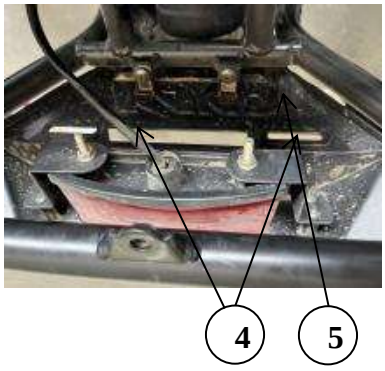
Post-break tail light plug-in 6

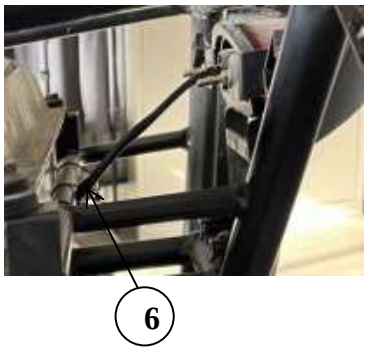
Install

Proceed in the reverse order of disassembly









7.4 Ignition switch lock

Disassembly

Remove the front cover plate

Remove the front body assembly

Remove the instrument panel 2

Release the ignition switch plug 1

Remove the ignition switch lock 3

Check

Check if there is a conductive path between the terminals of the switch lock connector as per the table below.

A connection between the ● — ● is normal.

Ignition switch wiring diagram

	蓝白	绿	黑	红	黄红	绿
	●	●				
			●	●		
			●	●	●	●

Install

Proceed in the reverse order of disassembly

7.5 Panel Switch

Remove the front cover plate

Remove the front body assembly

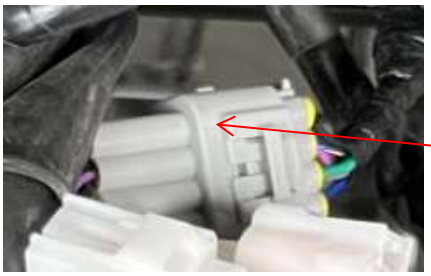
Remove the instrument panel 2

Release the panel switch plugin 4

Remove the panel switch 5

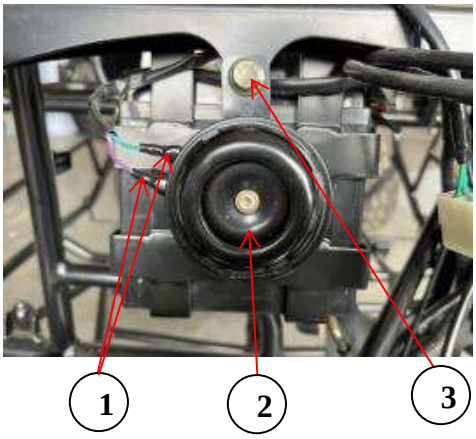
A connection between the ● — ● is normal.

Panel switch wiring diagram



	蓝	黑	棕	白	蓝白	绿	棕白	紫
		●	●				●	
				●			●	
	●						●	
					●	●		
		●						●

7.6 Brake Light Switch



Check if there is conductivity between the terminals

Check if the brake sensor is properly connected. Once confirmed, the circuit should be closed when the brake pedal is depressed and open when released. This indicates normal operation.If there is an abnormality in the aforementioned inspection, replace the brake light switch.

7.7 Horn

Disassembly

Remove the front cover plate

Remove the front body assembly

Remove the instrument panel cover

Remove speaker plug 1

Remove the speaker mounting bolt 3

Remove the electric horn 2

Check

When connecting a fully charged 12V battery, confirm that the electric horn sounds.

If any abnormalities are detected in the above checks, replace the electric horn.

Install

Proceed in the reverse order of disassembly

7.8 Instrument Panel

Start the vehicle body, drive at a slow speed, confirm that the instrument display is normal; if there is any abnormality in the above checks, replace the instrument panel.

Disassembly

Remove the front cover plate

Remove the front body assembly

Remove the instrument panel cover

Remove the instrument mounting bolt 4

Unplug the accessory
Remove dashboard5

Install

Proceed in the reverse order of disassembly.

8 EFI

Vehicle Operation Notes:

1. Ensure the vehicle has sufficient fuel; avoid prolonged fuel shortage. The battery must not be undercharged.
2 Before starting, turn the ignition key to the "ON" position and wait for the dashboard display to stabilize before attempting to start the engine.
3.If the Malfunction Indicator Lamp (MIL) is not illuminated, yet the vehicle experiences failure to start, hard starting, unstable idle,or persistently high RPM, a system reset procedure can be performed to resolve these issues.

Delphi EFI System Reset Procedure:

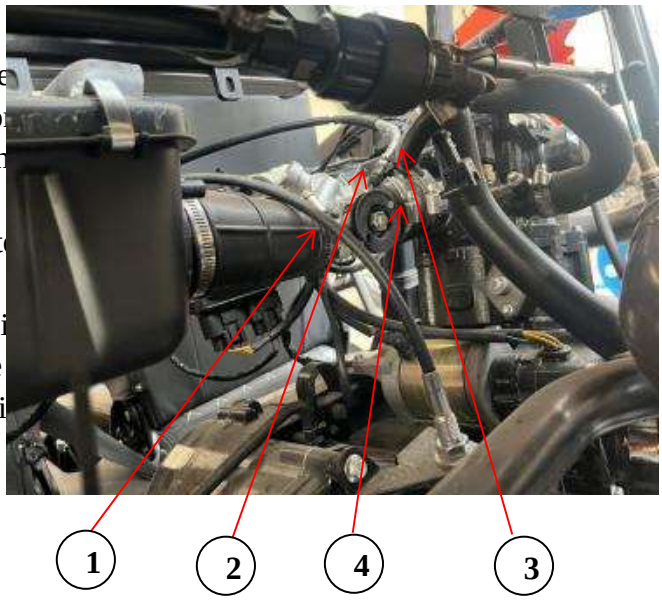
Step 1: Turn the ignition key to "ON," then turn it to "OFF" and keep it in the "OFF" position for more than 15 seconds.

Step 2: Within 5 seconds, rapidly turn the ignition key "ON" and "OFF" at least 5 times.

Step 3: Finally, leave the key in the "OFF" position for 15 seconds. The reset is now complete.

8.1 Throttle Body

Disassembly

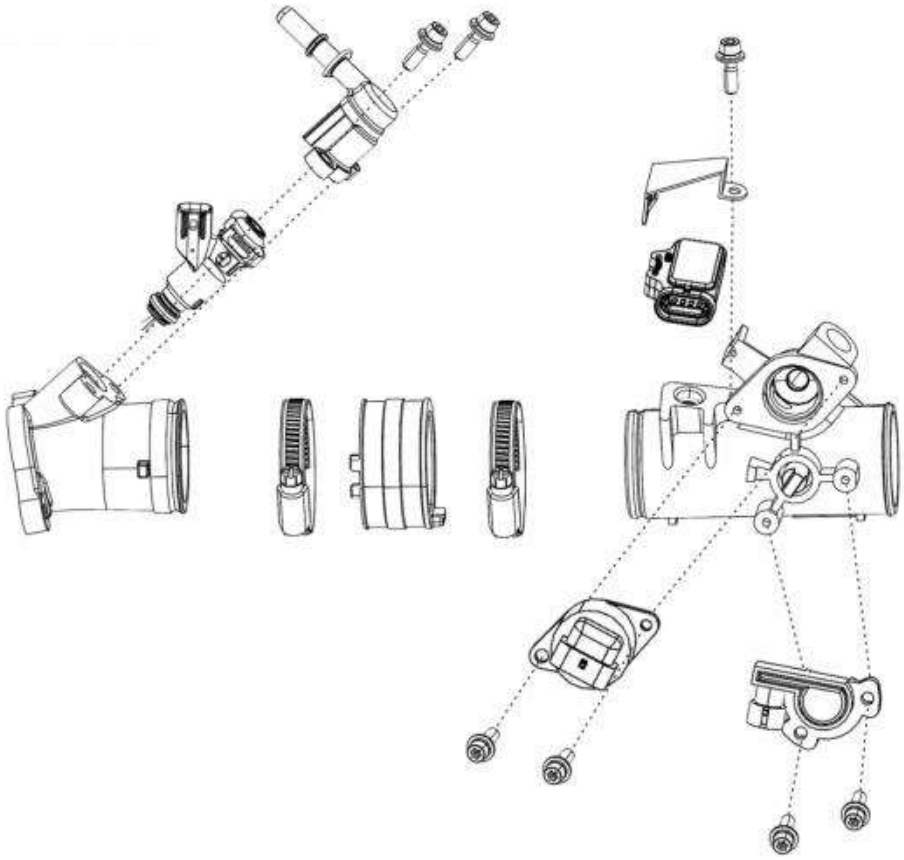


Disconnect the stepper motor and throttle
Injector, temperature and pressure senso
Remove the oil pipe connecting the solen

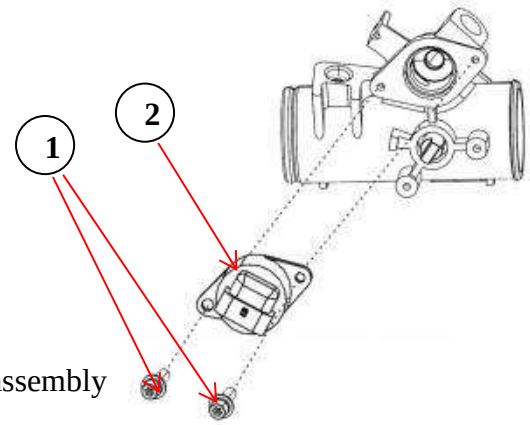
Remove the clamp connecting the air filt
Remove the throttle cable 2
Remove the oil pipe connecting the fuel i
Remove the clamp connecting the intake
The throttle valve body can be removed i

Install

Proceed in the reverse order of disassembly



8.1.1 Stepper Motor

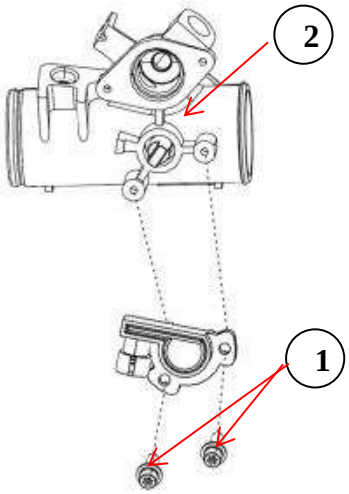


Disassembly

Remove bolt 1
Remove stepper motor 2

Install
Proceed in the reverse order of disassembly

8.1.2 Throttle Position Sensor

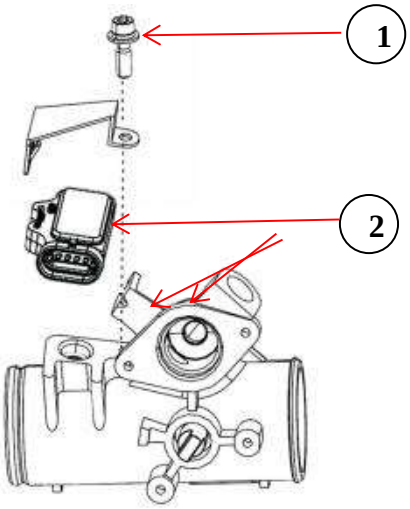


Disassembly

Remove bolt 1
Remove the 3-in-1 sensor 2

Install
Proceed in the reverse order of disassembly

8.1.3 Temperature and Pressure Sensor

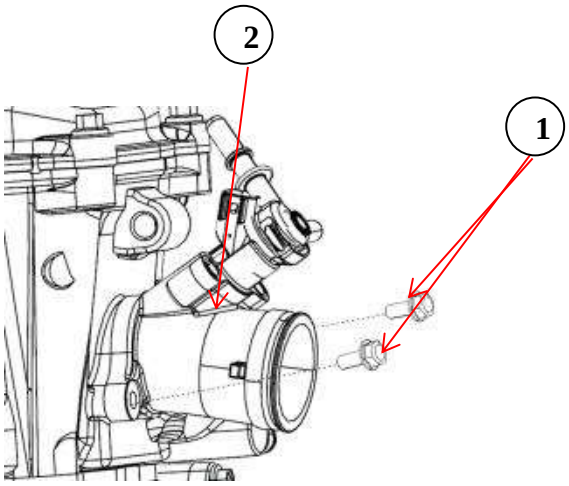


Disassembly

Remove bolt 1
Remove temperature and pressure sensor 2

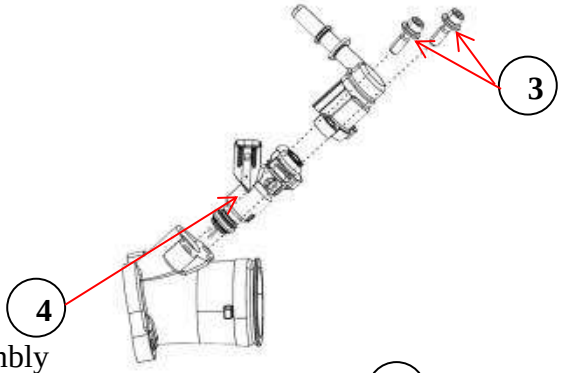
Install
Proceed in the reverse order of disassembly

8.1.4 Manifold and injectors



Disassembly

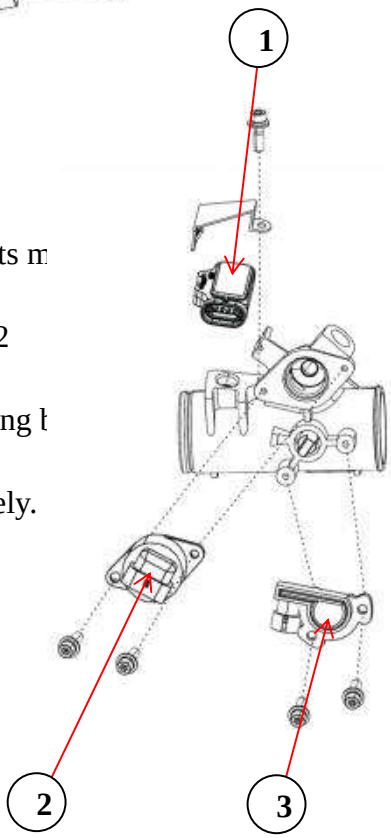
Remove bolt 1
Remove manifold 2



Remove the mounting nut 3
Disassemble the injector 4

Install
Proceed in the reverse order of disassembly

8.1.5 Throttle Body



Disassembly

Remove the temperature and pressure sensor and its m

Remove the stepper motor and its mounting bolts 2

Remove the throttle position sensor and its mounting b

The throttle valve body can be removed immediately.

Install

Proceed in the reverse order of disassembly

8.2 Fuel pump

Disassembly

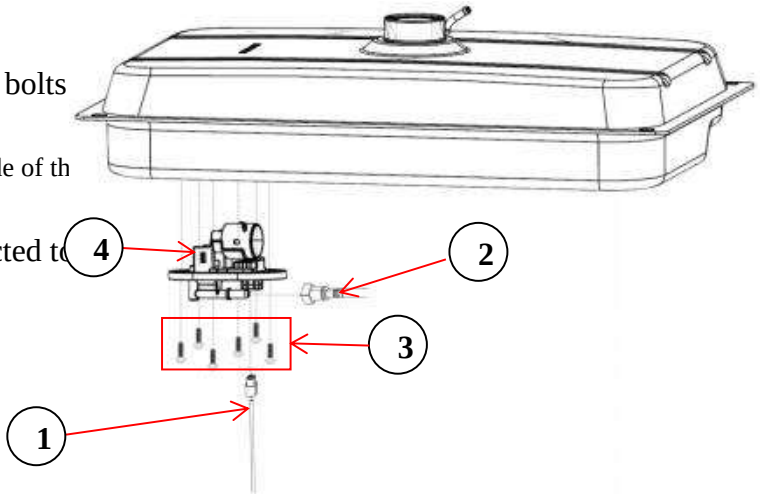
Remove the front body and the bolts

Unplug the connector 1 on the left side of th

Disconnect the fuel line connected t

Remove the retaining bolt 3
(Total of six)

Remove the fuel pump 4



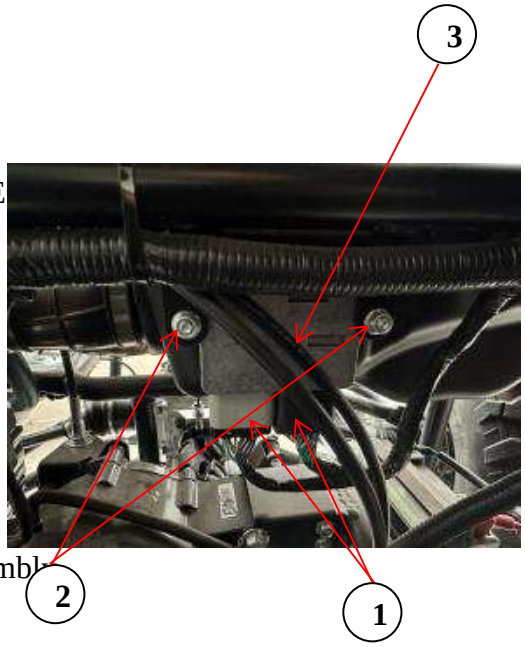
Install
Proceed in the reverse order of disassembly

8.3 European Currency Units

Disassembly
Unplug the two connectors below the E

Remove the bolts securing the ECU 2
(Total of two)

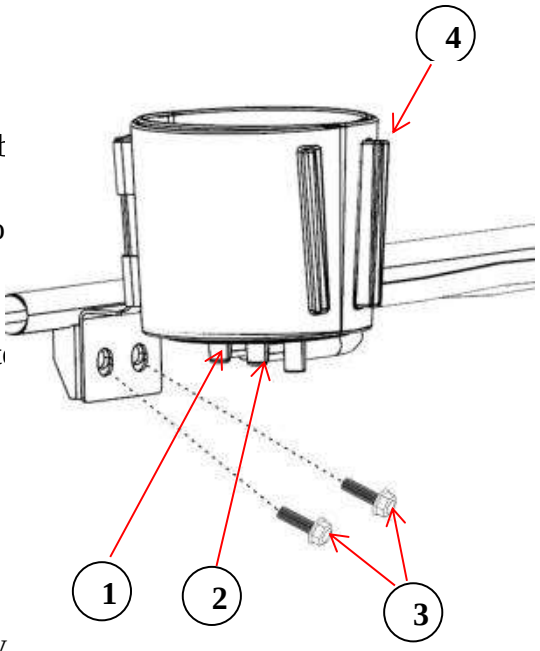
Remove ECU 3



Install
Proceed in the reverse order of disassembl

8.4 Carbon Canister

Disassembly



Disconnect the fuel line connecting the cart

Unplug the carbon can P port connection to
2

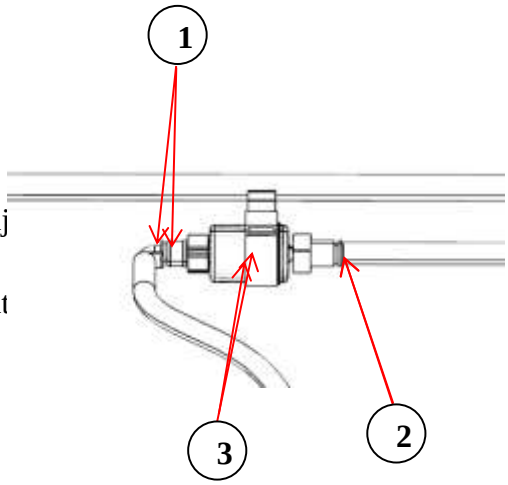
Remove the bolt securing the carbon canist
(Including two clip nuts)

Remove the carbon can 4

Install
Proceed in the reverse order of disassembly

8.5 Fuel Fine Filter

Disassembly



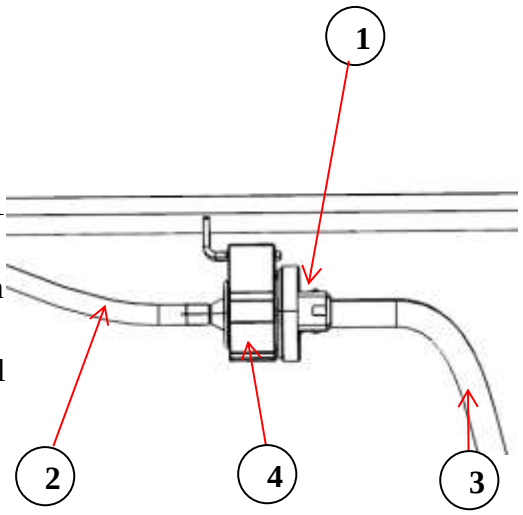
Remove the upper fuel line connected to the

Remove the oil pipe connected to the fuel inj

Then, pull the fine fuel filter out of its mount

Install
Proceed in the reverse order of disassembly

8.6 Carbon Tube Solenoid Valve



Disassembly

Unplug the carbon can solenoid valve plug 1

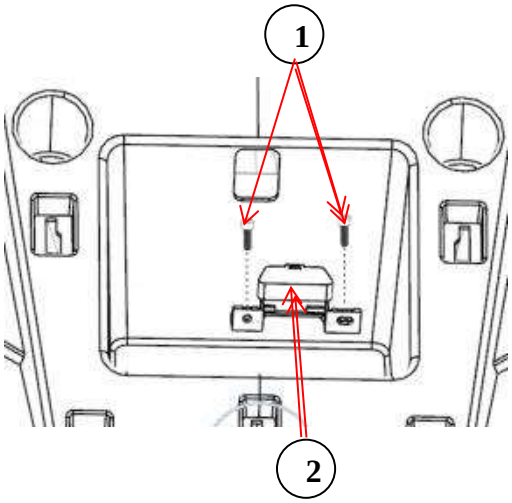
Remove the oil pipe connected to the carbon

Remove the oil pipe connecting to the throttl

Remove the carbon can solenoid valve 4

Install
Proceed in the reverse order of disassembly

8.7 OBD



Disassembly

Remove the front body cover plate

Remove two mounting bolts 1
Unplug the plugin
Remove OBD interface 2

Install
Proceed in the reverse order of disassembly

8.8 EFI System Fault Diagnostic Tool User Manual

The Fault Diagnosis System, commonly abbreviated as OBD, stands for On-Board Diagnostic in English.When the electronic fuel injection system malfunctions, the Malfunction Indicator Light (MIL) turns on, and at the same time, the OBD system stores the fault information in the memory. The relevant information can be read in the form of fault codes through standard diagnostic tools and diagnostic interfaces.Based on the fault code hints, maintenance personnel can quickly and accurately determine the nature and location of the fault.

1. Malfunction Indicator Light Description

① In normal mode, and no current fault codes present.

Turn on the ignition switch, the ECU initializes, the malfunction indicator light comes on, and the MIL light turns off immediately after the engine starts successfully.

When the current fault code exists

When the engine is running, if the current fault occurs, the malfunction indicator light transitions from off to steady on, alerting the driver to a fault.Once the engine is turned off, the current fault will be converted into a historical fault and stored in the electronic control unit (ECU) of the fuel injection system.

2.According to the diagnostic tool, read the fault code.

Diagnostics tool features:Read fault codes, clear fault codes, display data stream.

① Connect the diagnostic instrument to the diagnostic interface on the electronic fuel injection harness;

② Turn on the ignition switch;

Read the fault code, consult the repair manual to confirm the fault component and type, and develop a repair plan based on the information obtained and experience.

4 After troubleshooting, use the fault diagnostic tool to clear the historical fault codes;

Read the data stream to analyze the reasons for some ECU failures that do not report fault codes.

8.9 EFI fault code

No.	Fault Code	Fault Code Description	Troubleshooting
1	P0118	Cylinder head temperature sensor circuit fault/Hi/Open	1.Check if the cylinder temperature sensor pin is open 2.Check if the cylinder temperature sensor pin is short connected to 5V 3.Check if the cylinder temperature sensor is damaged
2	P0117	Cylinder head temperature sensor circuit malfunction	1. Check if the cylinder temperature sensor pin is short-circuited to ground. 2. Check if the cylinder temperature sensor is damaged.
3	P0335	Crankshaft Position Sensor 'A' Circuit	1. Check if the crankshaft Position Sensor pin is exposed. 2. Check if the crankshaft Position Sensor is damaged.
4	P0336	Crankshaft Position Sensor 'A' Circuit Performance	1. Check for poor contact between the pins of the Crankshaft Position Sensor and the wires. 2. Check if the ECU is damaged. 3. Check if the Crankshaft Position Sensor is damaged. 4. Check if the high-voltage output wire of the ignition coil is damaged.
5	P2300	Ignition Coil 'A' Primary Control Circuit Low/Open	1. Check if the primary pin of the ignition coil is short-circuited to the ground or open. 2. Check if the ignition coil is damaged.
6	P2301	Ignition Coil "A" Primary Control circuit short High	1. Check if the ignition coil pin is short-circuited to 12V. 2. Check if the ignition coil is damaged.
7	P0123	Throttle Position Sensor/Switch 'A' Circuit High	1. Check if the TPS signal pin is shorted to 5V. 2. Check if the TPS sensor is damaged.
8	P0122	Throttle Position Sensor/Switch "A" Circuit Low / Open	1.Check if the TPS signal pin is short connected to the ground, or open 2.Check if the TPS sensor is damaged
9	P0232	Fuel Pump circuit short High	1. Check if the fuel pump relay pin is short-circuited to 12V. 2. Check if the fuel pump relay is damaged.

10	P0231	Fuel Pump circuit short Low/Open	1. Check if the fuel pump relay pin is short-circuited to the ground, or if it is open. 2. Check if the fuel pump relay is damaged.
11	P0262	Fuel Injector 'A' Circuit Malfunction	1. Check if the fuel injector pin is short-circuited to 12V. 2. Check if the fuel injector is damaged.
12	P0261	Fuel Injector 'A' Circuit Low/Open	1. Check if the fuel injector pin is short-circuited to the ground, or open. 2. Check if the fuel injector is damaged.
13	P0108	Manifold Absolute Pressure Sensor Circuit High Voltage	1. Check if the MAP signal pin is shorted to 5V. 2. Check if the MAP sensor is damaged.
14	P0107	Manifold Absolute Pressure Sensor Circuit low/open	1. Check if the MAP signal pin is short-circuited to the ground, or if it is open. 2. Check if the MAP sensor is damaged.
15	P0113	Intake Air Temperature Sensor Circuit high/open	1. Check if the Intake Air Temperature Sensor pin is shorted to 5V or open. 2. Check if the Intake Air Temperature Sensor is damaged.
16	P0112	Intake Air Temperature Sensor Circuit Low	1. Check if the Intake Air Temperature Sensor pin is short-circuited to the ground. 2. Check if the Intake Air Temperature Sensor is damaged.
17	P0132	O2 Sensor Circuit High	1. Check if the O2 Sensor signal pin is shorted to 5V. 2. Check if the O2 Sensor is damaged.
18	P0131	O2 Sensor Circuit Low/Open	1. Check if the O2 Sensor signal pin is short-circuited to the ground, or if it is open. 2. Check if the O2 Sensor is damaged.
19	P0032	O2 Sensor Heater Control Circuit Malfunction	1. Check if the O2 Sensor Heater pin is short-circuited to 12V. 2. Check if the O2 Sensor Heater is damaged.
20	P0031	O2 Sensor Heater Control Circuit Low/Open	1. Check if the O2 Sensor Heater pin is short-circuited to the ground, or if it is open. 2. Check if the O2 Sensor Heater is damaged.
21	P0459	Evaporative emission system purge control valve 'A' Circuit High	1. Check if the Evaporative Emission Control System purge control valve pin is short-circuited to 12V. 2. Check if the Evaporative Emission Control System purge control valve is damaged.
22	P0458	Evaporative emission control system purge control valve 'A' circuit low/open	1. Check if the Evaporative Emission Control System purge control valve pin is short-circuited to the ground, or open. 2. Check if the Evaporative Emission Control System purge control valve is damaged.
23	P0505	Idle Air Control System Error	If the idle speed is low: 1. Check if the battery voltage is too low during startup; 2. Check if the stepper motor is stuck; 3. Check if there is excessive carbon buildup on the throttle valve body; 4. Check if the stepper motor is damaged. If the idle speed is high: 1. Check for air leaks in the intake system; 2. Check if the stepper motor is stuck; 3. Check if the stepper motor is damaged.
24	P0563	System voltage circuit high	Start the engine and verify if the voltage during refueling exceeds 16V
25	P0562	System voltage circuit low	Check if the battery voltage is below 10v

26	P0650	Malfunction Indicator Lamp Error	1. Check if the MIL pin is open, or short-circuited to 12V, or short-circuited to ground; 2. Check if the MIL is damaged.
27	P0500	Vehicle Speed Sensor error	1. Check if the VSS pin is open, or short-circuited to 5V, or short-circuited to ground; 2. Check if the VSS is damaged.

Appendix