ZHEJIANG KAYO MOTOR CO., LTD.

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S200

Maintenance Manual

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Zhejiang Kayo Motor Co., Ltd.
March 2023

Preparation instructions

This maintenance manual provides a detailed introduction to the maintenance and adjustment procedures, disassembly and assembly essentials, inspection and maintenance points, troubleshooting methods, and maintenance technical data of the S200 four-wheel all terrain vehicle (SSV), and is accompanied by detailed graphical materials to guide operation.

Please read this manual carefully and carry out maintenance according to the standard operation method, which can effectively prolong the service life of each component, improve the engine performance and the reliability of the whole vehicle.

The first chapter mainly introduces general operating items, tools used, basic techniques and maintenance parameters.

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

The third chapter introduces the regular inspection and adjustment of the whole vehicle

The fourth chapter introduces the dismantling of the assembly parts around the engine

The fifth chapter introduces the disassembly, inspection, maintenance and assembly methods and precautions of various parts of the engine

The sixth chapter introduces the relevant information of the vehicle chassis

The seventh chapter introduces the inspection and maintenance information of the vehicle signal and lighting system

Appendix: Electrical schematic diagram

If the content involved in this manual is changed due to vehicle improvement and other reasons, no prior notice will be given. Performing maintenance should be based on the actual condition of the vehicle.

Zhejiang Kayo Motor Co., Ltd.
Research and development department
March 2023

Contents

The unit conversion table in this book

Item	Unit conversion
Pressure	1kgf/cm^2=98.0665kPa；1kPa=1000Pa
	1mmHg=133.322Pa=0.133322kPa
Torque	1kgf·m=9.80665N·m
Volume	1mL=1cm^3=1cc
	1L=1000cm^3
Force	1kgf=9.80665N
Length	1in=25.4mm

Danger/Warning/Caution

Please read the following explanations carefully, which emphasizes the special meanings of the words "Danger", "Warning" and "Caution", and special attention should be paid to their prominent meanings when repairing the engine.

Danger: means to be vigilant to high danger
Warning: means to be vigilant to moderate danger
Caution: means to pay attention to minor danger

However, Attention please the "Danger" and "Warning" contained in this maintenance manual cannot cover all potential dangers during engine use and maintenance. Therefore, in addition to the relevant provisions of "Danger" and "Warning", maintenance personnel must also have basic knowledge of mechanical safety. If you are not sure about completing the entire maintenance operation process, please consult a more experienced senior technician.

1 Maintenance information

1.1 Precautions for operation

Safety precautions

1. Work clothes (one-piece work clothes, etc.), hats, safety boots suitable for the operation must be worn, and if necessary, dust-proof glasses, dust-proof mask, gloves and other safety protection articles should be worn to protect your body.
2. Due to the harmful components contained in the exhaust gas, it is forbidden to run the engine for a long time in a closed place or a place with poor ventilation.
3. When the engine is just stopped, the temperature of the engine and muffler is still very high. Do not touch it before cooling to avoid burns.
4. Battery solution (dilute sulfuric acid) is a strong corrosive agent that poses a risk of burns and blindness when it comes into contact with the skin and eyes. If clothes or skin accidentally come into contact with battery solution, please wash it with plenty of water immediately and go to the hospital for treatment. Batteries and battery solutions should be strictly stored and must be kept in a safe place out of reach of children. When charging a battery, flammable and explosive hydrogen gas is generated, and there is a risk of explosion once there is an ignition source or electric spark approaching. Therefore, please charge in a well ventilated area.
5. Due to the fact that gasoline is a flammable substance, fireworks are strictly prohibited in the workplace. Pay attention not only to open flames, but also to electric sparks. In addition, the evaporated gasoline poses a risk of explosion. Please choose a well-ventilated site for operations.
6. During maintenance, be careful not to let the rear wheel, clutch, other rotating parts and movable parts clamp your hands and clothes.
7. When two or more people are working, they must constantly greet each other to confirm safety.

Warning!
Always fill up with gasoline in a well-ventilated area. Do not refuel near any open flames or fuel tanks with the engine running. Do not smoke when filling the fuel tank.

8. Since gasoline will expand with the increase of temperature, the fuel tank can only be filled to its specified capacity. The expansion chamber must remain in the tank, especially if the tank is filled with cold gasoline and then moved to a warmer area.

!Warning
Do not overflow gasoline when filling with gasoline. There may be a fire hazard. Always allow the engine to cool before filling with gasoline.

9. After filling gasoline, the fuel tank cap needs to be tightened.

Precautions for disassembly and assembly

1. Parts, lubricating oil and grease must use products recommended by Kayo brand.
2. The parts of each system should be sorted and kept separately, so that each part can be reinstalled in their original position.
3. Please clean the soil and dust on the vehicle before maintenance.
4. Gaskets, O-rings, piston pin retaining rings, cotter pins, etc. must be replaced with new ones after disassembly.
5. If the opening of the elastic retaining ring is too large during disassembly, it will be deformed, and it will easily fall off after reassembly. Please do not use the elastic retaining ring that has loosened its strength and lost its elasticity.
6. After the parts are disassembled and inspected, they should be cleaned before measurement and the cleaning agent should be blown off with compressed air. Lubricating oil should be applied to the moving surface before assembly.
7. When disassembling, necessary places should be inspected and relevant data should be measured so that it can be restored to the state before disassembly during assembly.
8. Fasteners such as bolts, nuts, and screws should be pre-tightened first, and then tightened according to the specified tightening torque on the diagonal according to the principle of from large to small, from inside to outside.
9. When the rubber parts are disassembled, check whether they are aging, and replace them in advance if necessary. In addition, as rubber parts are not resistant to corrosion from gasoline, kerosene, etc., try not to let volatile oils and greases attach to them.
10. According to the requirements of the maintenance manual, apply or inject the recommended grease on the designated parts.
11. Correct special tools should be used for disassembly and assembly operations.
12. Ball bearings can be rotated with fingers to confirm whether the rotation is flexible and smooth. If force is applied to the ball during disassembly, the disassembled bearing should not be used again:

- If the axial and radial clearance of the bearing is too large, replace it.
- Bearings that feel stuck when rotating should be cleaned, and those that still feel stuck after cleaning should be replaced, and those that cannot be cleaned should be replaced directly.

- It was originally a tight fit with the body or the shaft diameter, but if the fit is not tight after disassembly, the bearing should be replaced.

13. Bearings should be coated with engine oil or grease before assembly. Pay attention to the installation direction when assembling single-sided dust-proof bearings. When assembling open-type or double-sided dust-proof bearings, install the side engraved with the manufacturer's logo and size facing outward during assembly.

14. When installing the rectangular retaining ring, the chamfered side should face the direction of the force. Do not use the retaining ring that has been loosened and lost its elasticity. After assembly, turn the rectangular retaining ring to confirm that it has been firmly installed in the groove.

15. After assembly, it is necessary to check whether all fastening parts are tightened and whether the work is normal.

16. Brake fluid and coolant can damage the coating surface, plastic parts, rubber parts, etc. Do not let them adhere to these parts. In box of adhesion, rinse them with water immediately.

17. The oil seal should be installed with the side marked by the manufacturer facing outward (in the direction without oil)：

- When assembling, pay attention not to curl the lip of the oil seal or scratch the lip of the oil seal with burrs.
- Apply lubricating grease to the oil seal lip before assembly.

18. When installing rubber hose parts, insert the rubber hose to the root of the joint. If there is a pipe clip, install the pipe clip in the dent of the pipe. Replace the rubber hose that is not tight during installation.

19. Do not get dust, mud, etc. into the interior of the engine or the hydraulic system of the brake.

20. The gasket materials attached to the joint surfaces of the engine boxes must be cleaned before assembly, and the scratches on the contact surfaces must be evenly polished and removed with an oil stone.

21. Do not twist or bend the cables excessively. A deformed or damaged cable may cause poor movement or damage.

22. When assembling protective cap parts, if there is a groove, the protective cap must be inserted into the groove.

Running-in of the engine

The engine has many parts that do relative motion, such as pistons, piston rings, cylinder blocks, and transmission gears that mesh with each other, etc. Therefore, in the early stage of its use, it is necessary to carry out standardized running-in. Running-in can make the moving parts adapt to each other, correct the working gap, and form a good smooth friction surface that can withstand heavy loads. An engine that has been run-in according to specifications can have excellent performance and reliability.

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

0 to 10 hours: avoid continuous operation with more than 1/2 throttle, and change the speed frequently. It is not recommended to run for a long time at a fixed throttle position; after every 1 hour

of work, cool down the engine for 5 to 10 minutes; Avoid rapid acceleration, the throttle should be changed slowly, not suddenly large and small, and do not drag the cargo during the running-in period.

Attention：

During the running-in period, maintenance should be carried out according to daily maintenance regulations, and any faults found should be promptly eliminated;

After the running-in period is over, the whole machine can be maintained after the running-in period before it can enter the normal driving stage.

Sealed vehicle storage

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

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

1. Clean the seat cushion with a damp cloth and let it dry.
2. Thoroughly clean the vehicle by washing dirt, oil, grass and other foreign objects from the entire vehicle, let the vehicle dry thoroughly, and do not allow water to enter any part of the engine or air intake.
3. Drain the gasoline in the fuel tank.
4. Replace the engine oil.
5. Block the holes 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 the calibrated fasteners must be tightened according to the torque.
8. Disconnect the battery cable (disconnect the negative cable first); then take out the battery, clean the battery and cable, and store it in a clean and dry place.
9. Attention：Please ensure that the battery is fully charged during storage
10. 9.Store the vehicle in a horizontal position indoors.

Attention
Avoid storing in direct sunlight and avoid using plastic covers as moisture can collect on the vehicle and cause rust.

Unseal the vehicle

Take out the vehicle from the warehouse. In order to ensure trouble-free operation in the next few hours, the following methods are recommended:

Thoroughly clean the vehicle.

Clean the engine, remove the cloth from the engine.

Inspect all control wires and cables for wear or signs of wear and replace them if necessary.

Replace the engine gearbox oil and filter.
Charge the battery and install it. (Make sure to connect the positive cable first when connecting the battery)

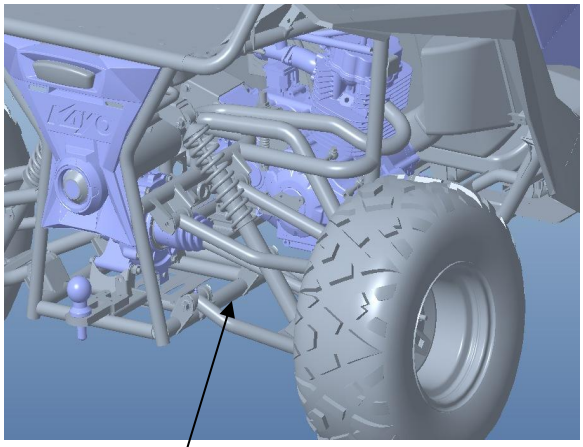
Attention
Before installing the battery, make sure the ignition switch is in the OFF position.

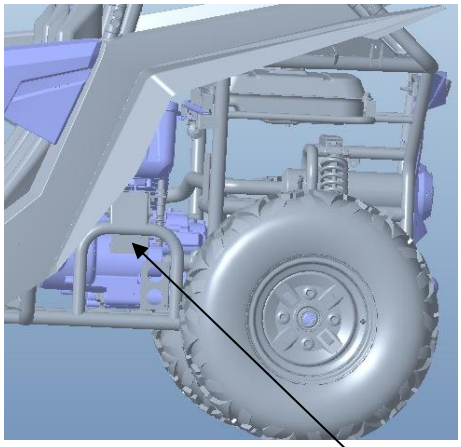
1. Check the entire braking system (fluid level, brake pads, etc.), all controls, headlights, taillights, brake lights and turn signal lights; adjust or replace if necessary.
2. Check the tire pressure and inflate to the recommended pressure if necessary.
3. Tighten all fasteners. It is recommended to tighten the calibrated fasteners according to the torque.
4. Make sure that the steering device can move freely without restriction.
5. Check the spark plug and clean or replace it if necessary.
6. Check the gasoline filter and air filter housing, and clean or replace them if necessary.

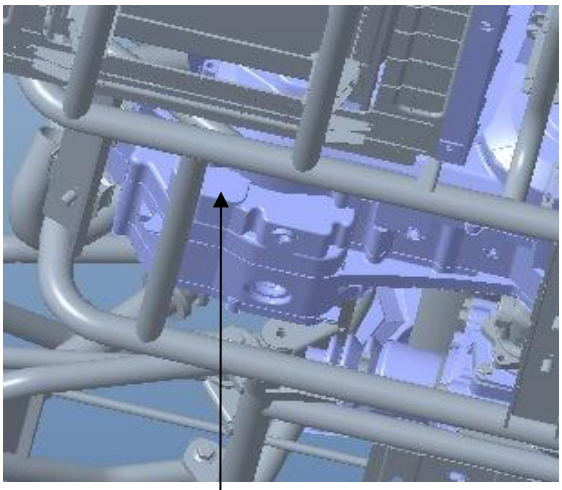
1.2 Vehicle identification number

①Frame number
②Vehicle nameplate
③Engine number

Vehicle model	S200
Frame number	L6JUCMZA~
Engine number	163FML ~







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1.3 Main parameter table

Items		Parameters
Vehicle model		S200
Length (mm)		2517
Width (mm)		1487
Height (mm)		1446
Wheelbase (mm)		1900
Engine model		CVT200
Total displacement (ml)		196.2
Fuel type		92 and above gasoline
Curb weight of the whole vehicle (kg)		320
Number of passengers		2 people (including the driver)
Rated loading mass		2 people= 160kg
Tire specifications	Front wheel	AT22*7.0-10
	Rear wheel	AT22*10-10
Minimum ground clearance		230mm
Turning circle radius (minimum turning radius at the closest point)		4800mm
Engine	Starting method	Electric starter
	Engine type	Single cylinder, vertical, four stroke, oil cooled
	Gas distribution method	Shaft drive
	Cylinder diameter × stroke (mm)	63.5×62
	Compression ratio	9.3：1
	Maximum power	10/7000
	Maximum torque	15/5500
	Lubrication method	Wet type
	Oil pump type	Rotor type
	Lubricating oil filter type	Full flow filtration rotary type
	Oil grade	SF 10W/40
	Cooling method	Oil cooled

Items		Parameters	
Air filter type		Sponge filter element filtration type	
Throttle body	Type	Plunger throttle	
	Mixture valve diameter	30mm	
Fuel tank capacity		15L	
Transmission system	Clutch type	Dry automatic clutch	
	Variable speed mode	Automatic continuously variable transmission (CVT)	
	Gearshift	One forward gear, one neutral gear, one reverse gear	
	Transmission mode/sequence	Manual operation/D—N—R	
	(CVT) continuously variable ratio	0.703~2.413	
	Output type	Rear axle output	
	Engine output rotation direction	When in forward gear, it is clockwise when viewed from the rear of the vehicle	
Steering device	Steering angle	Inner	45°
		Outer	36°
Brake device type		Front	Hydraulic pressure disc type
		Rear	Hydraulic pressure disc type
Buffering method	Suspension method	Independent suspension of front and rear wheels with double rocker arms	
Frame type		Steel pipe and steel plate welding type	

1.4 Maintenance parameter table

•Lubrication device

Items		Standards	Usage
Engine oil capacity	Change oil	900ml（without changing the oil filter	—
	Change oil	1000ml（in the same time change the oil filter element）	
	Full capacity	1100ml	—
Recommended engine oil		Only SF 10W/40 engine oil can be used, and do not replace or mix different grades of engine oil as this can cause engine damage and	
Oil pump rotor	Radial clearance between inner and outer rotors	—	0.12mm
	Radial clearance between outer rotor and pump body	—	0.12mm
	Axial clearance between rotor surface and pump body	0.05~0.1	0.2mm

•Air intake system (see 05 Engine section for details)

•Wheels (same front and rear wheels)

Items		Standards	Usage limit
Rim runout	Longitudinal	0.8mm	2.0mm
	Lateral	0.8mm	2.0mm
Tire	Residual groove	—	3mm
	Air pressure	35kPa（0.35kgf/cm^2）	—

•Braking System

Items		Standards	Usage limit
Front brake	Brake disc thickness	3.5mm	3.0mm
Rear brake	Brake pedal travel	2 ~ 6mm	—
	Brake disc thickness	4.0mm	3.0mm

• Battery/charging device/trigger coil

Items			Standards
Magneto	Type		Permanent magnet AC generator
	Output		Three phase full wave
	Magneto trigger coil resistance		120Ω±20Ω
	Magneto no-load voltage (engine in cold		None
	Maximum output power of magneto		217W（5000r/min）
	Stabilized voltage		14.5V±0.5V
	Trigger coil peak voltage		Vp≥1.5V（300r/min）, Vp≥5V（1500r/min）
Rectifier type			Full wave rectification
Battery	Capacity		12V14AH
	Voltage between terminals	Fully charged	14.4V
		Insufficient charge	Less than 11.8V

• Ignition device

Items		Standards
Ignition type		Capacitive discharge DC-CDI direct-current
Spark plug	Type	Resistance type spark plug
	Standard	D8RTC
	Spark plug gap	0.6~0.7mm
	Spark characteristics	Blue and white light
Ignition coil resistance	Primary	0.3 Ω
	Secondary	3.8 kΩ
Peak voltage	Ignition coil primary	300~450V
	Pulse generator	20kV~30kV
Starting relay coil resistance		3.5 Ω

•Lights / Meters / Switches

Items		Standards
Fuse		15A
Lights, light bulbs	Headlamps (high beam)	12V—12W
	Headlamp (low beam)	12V—6W
	Daytime running lights	12V-4W
	Tail lights/brake lights	12V—2W

Valve mechanism + cylinder head (see 05-engine part for details)

Cylinder + piston + piston ring + crank connecting rod (see 05-engine part for details)

Clutch + transmission mechanism (see 05-engine part for details)

1.5 Tightening torque

Attention：

Before installing the thread, apply anti-rust grease on the threaded part and joint surface

Tightening torques at designated parts - whole vehicle parts

Serial numbe	Items	Fastener code	Quantity	Tightening torque (N · m)
1	Front disc brake main pump mounting bolts and nuts	GB6187-86 M8	2	25-30
2	Brake pedal fixing bolts and nuts	GB6187-86 M10*1.25	1	55-66
3	Accelerator pedal fixing bolts and nuts	GB6187-86 M8	1	25-30
4	Carburetor fixing bolts and nuts	M8（Included in the engine）	2	25-30
5	Mounting screws for gear shift bracket assembly	M6（Included in the engine）	3	10-12
6	Front wheel hub and disc brake disc fixing screws	GB70.3 M6*16 10.9 grade	12	14-17
7	Rear wheel hub and disc brake disc fixing bolts	M8（Step bolts, included in disc brake rotors）	8	25-30
8	Fixing screw for steering wheel	GB70-85 M6*16	6	10-12
9	Fixing screw for upper air suction cover	GB5787 M6*12	2	10-12
10	Tail light fixing nuts	GB6187-86 M6	2	10-12
12	Door lock fixing screws	GB5787 M6*16	4	10-12
13	Disc brake oil cup fixing bolts	GB5787 M6*20	2	10-12
14	Foot pedal fixing plate fixing bolts and nuts	GB6187-86 M8	4	25-30
15	Carburetor fixing bolts and nuts	M8（Included in the engine）	2	25-30
16	Engine installation fixing bolts and nuts	GB6187-86 M10*1.25	2	55-66
17	Engine shock absorber fixing nuts	GB6187-86 M10*1.25	4	55-66
18	Engine hanging plate fixing bolts and nuts	GB6187-86 M10*1.25	1	55-66
19	Engine hanging plate fixing bolts and nuts	GB6187-86 M8	2	25-30
20	Differential fixing bolts and nuts	GB6187-86 M10*1.25	2	55-66
21	Front upper and lower rocker arm fixing bolts and nuts	GB6187-86 M10*1.25	8	55-66

22	Rocker arm ball head fixing slotted nut	GB6187-86 M10*1.25	4	33~45
23	Steering rod fixing slotted nuts	GB6187-86 M10*1.25	2	33~45
24	Front and rear shock absorbing fixing bolts and nuts	GB6187-86 M10*1.25	8	55-66
25	Front wheel hub fixing slotted nuts	GB9457-1988 M14*1.5*H18	2	72~89
26	Front and rear disc brake left and right pump fixing bolts	GB5789 M8*25	8	25-30
27	Steering gear fixing bolts and nuts	GB6187-86 M8	4	25-30
28	Rear sheep horn fixing bolts and nuts	GB6187-86 M12*1.25	4	94-114
29	Rear wheel hub fixed slotted nuts	M20（Included in the rear axle shaft）	2	72-89
30	Lower suction pipe fixing bolts and nuts	GB6187-86 M6	2	10-12
31	Handbrake fixing bolts and nuts	GB6187-86 M8	2	25-30
32	Fuel tank fixing bolts	GB5789 M8*25	4	25-30
33	Cross pan head self-tapping screws	GB845-85 ST2.9*14	8	—
34	Cross large flat head machine tooth screws	TM6*20	8	—
35	Cross large flat head machine tooth screws	TM6*16	—	—
36	Cross flat head self tapping screws	GB845-85 ST4.2*12	—	—
37	Rim mounting nuts	M10*1.25 60°	16	45~59
38	Door rocker seat fixing bolts	GB6187-86 M8	2	25-30
39	Rear shelf fixing bolts	GB5789 M8*16	7	25-30
40	Front protective fixing bolts	GB5789 M8*16	4	25-30
41	Trailer ball fixing plate bolts and nuts	GB6187-86 M10×1.5	4	76-90
42	Left and right ceiling frame fixing bolts	GB70-85 M10*20*1.5	12	45-59
43	Backrest crossbeam fixing bolts and nuts	GB6187-86 M8	2	25-30
44	Upper suction pipe fixing bolts and nuts	GB6187-86 M10×1.5	2	76-90
45	Ceiling beam fixing bolts	GB70-85 M8*16	8	25-30

Tightening torque of designated parts - engine parts (see 05-engine part for details)
Tightening torque of fasteners at unspecified parts

Category	Torque N·m	Category	Torque N·m
5mm bolts and nuts	4.5~6	5mm screws	3.5~5
6mm bolts and nuts	8~12	6mm screws	7~11
8mm bolts and nuts	18~25	6mm raised bolts	10~14
10mm bolts and nuts	30~40	8mm raised bolts, nuts	20~30
12mm bolts and nuts	35~50	10mm raised bolts, nuts	30~40

Engine maintenance tools (see 05 Engine part for details)

Special tools for engines (see 05 Engine part for details)

1.6 Lubricants, sealants

Coating site	Points for attention	Oils and fats
Steering bearing		Lightweight lithium soap based lubricating grease
Throttle cable connection		
Rocker arm movable parts		
Inner peripheral surface of directional column		
Movable parts of seat cushion lock		
Shift mechanism movable parts		

Lubrication of control cables, bearings and rotating parts

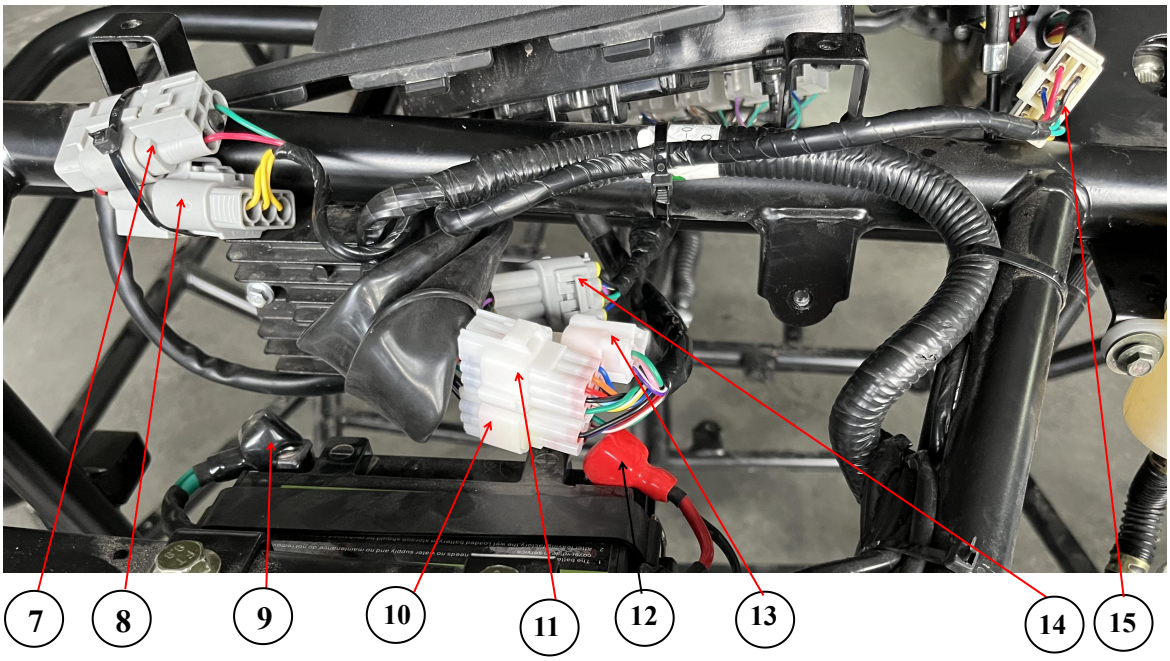
Parts	Content	Oils
Steering shaft spherical sleeve	Lubrication	General lithium based lubricating grease for automobiles GB/T5671
Rear wheel axle mount		
Front and rear shock absorber joints		
Throttle pedal shaft and cable joint		
At the brake pedal shaft		
Parking cable connection		

Engine operating materials and installation accessories (see 05-engine part for details)
Engine operating materials include lubricating oil (engine oil), lubricating grease (butter), and coolant, etc; Installation accessories include flat sealant and thread locking adhesive

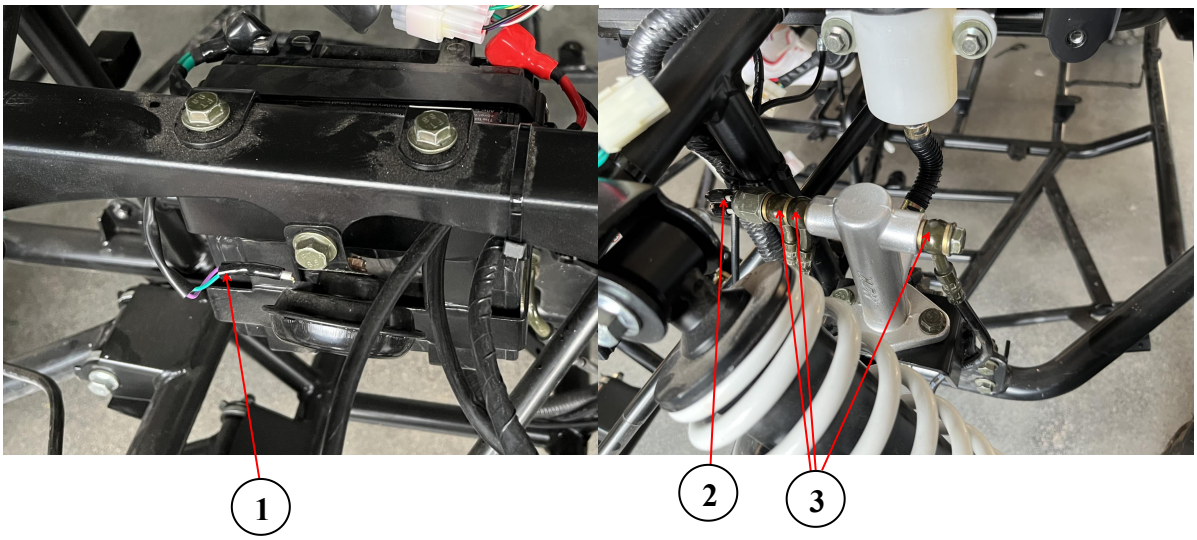
1.7 Wiring diagrams for cables, hoses, and cables

1. Igniter positive and negative plug-in 2. Flasher plug-in 3. Igniter 4. Relay 5. Fuse box 6. Relay plug-in.

Attention: The front cover must be dismantled before inspection and maintenance of the above components. For details, see the second chapter - Covering parts of the body of the vehicle

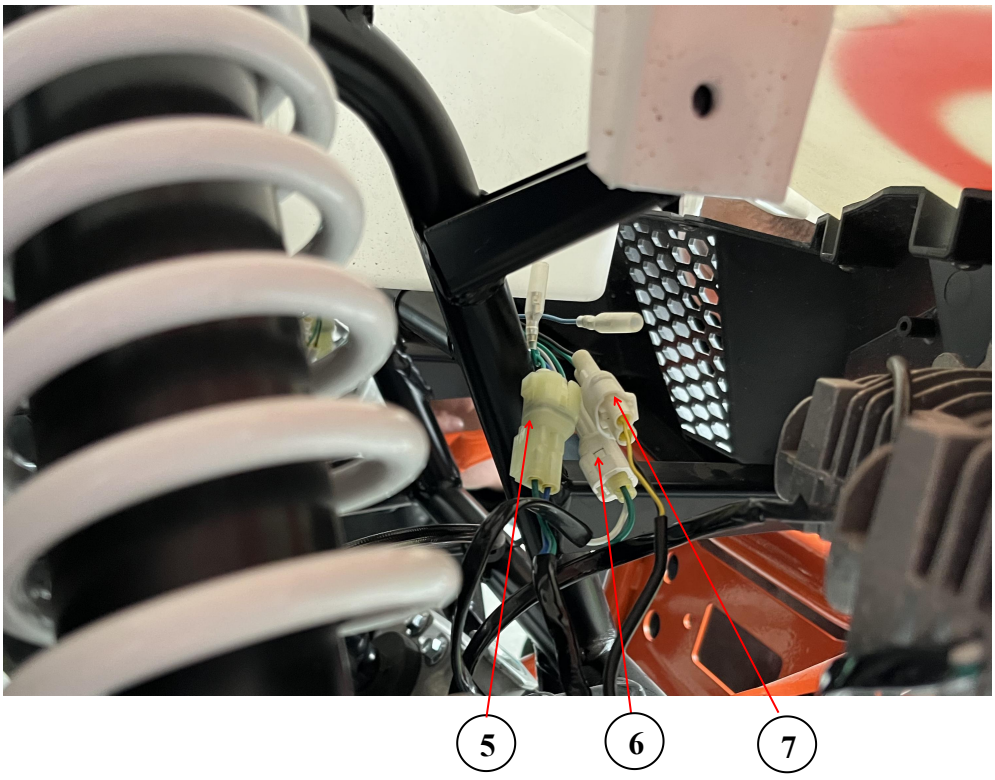


7. Rectifier and voltage regulator plug-in 8. Rectifier and voltage regulator plug-in 9. Battery negative plug-in 10. Instrument plug-in 11. Instrument plug-in 12. Battery positive plug-in 13. Instrument speed plug-in 14. Panel switch plug-in 15. Electric door lock plug-in

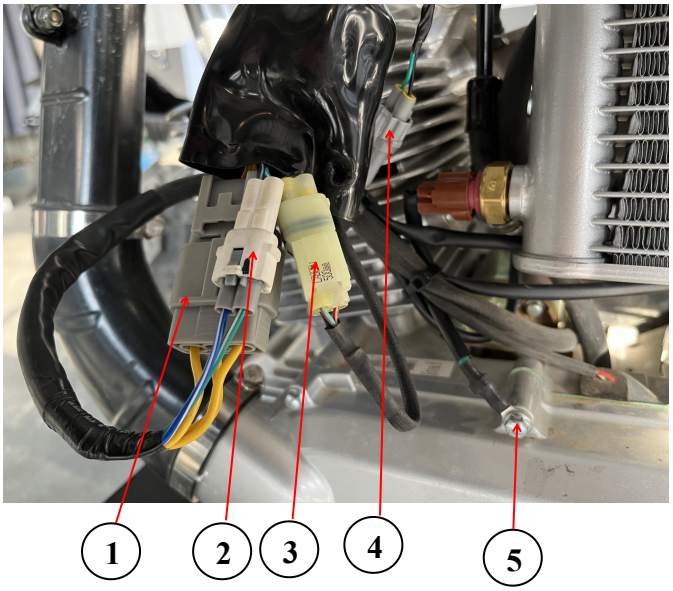


1. Horn plug-in 2. Foot brake switch plug-in 3. Brake oil pipe

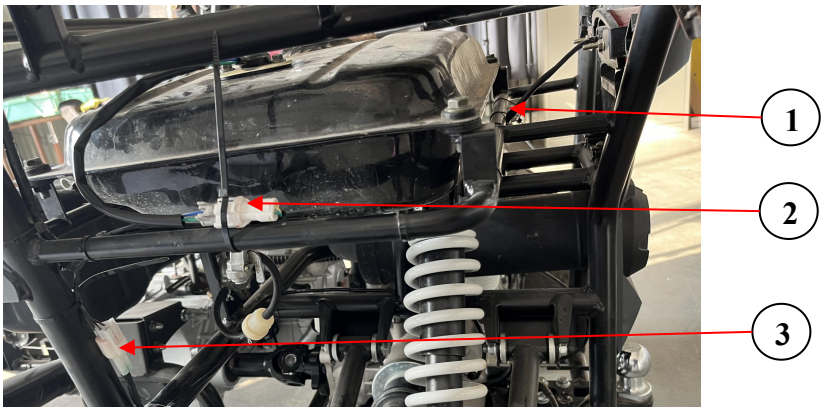
Attention： The plastic parts of the front body assembly must be removed before inspection and maintenance of the above components. For detailed disassembly, see the second chapter - Covering parts of the body of the vehicle



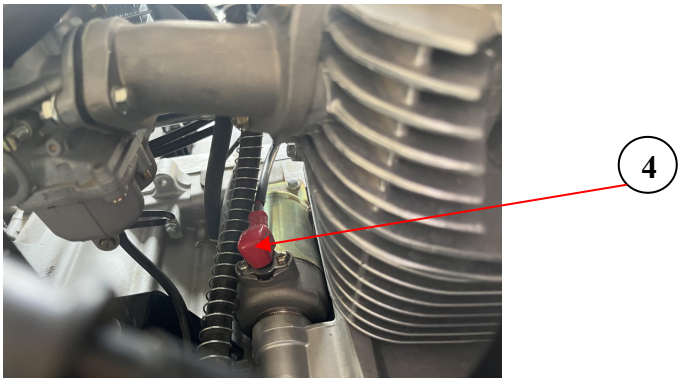
5. High beam lamp plug-in 6. Low beam lamp plug-in 7. Daytime running lamp plug-in



1. Generator coil plug-in 2. Pulse coil plug-in 3. Gear display plug-in 4. Heat dissipation system plug-in 5. Grounding wire

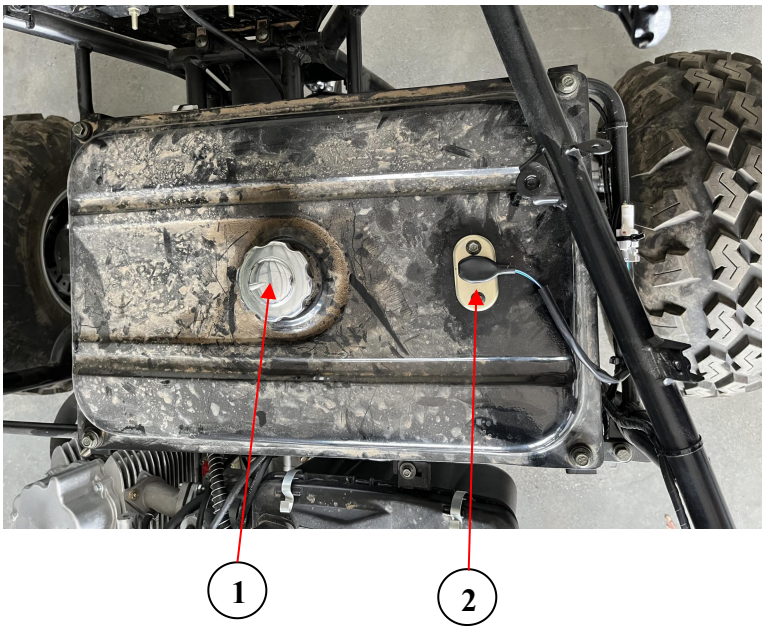


1. Rear tail light plug-in 2. Fuel level sensor plug-in 3. Speed sensor plug-in



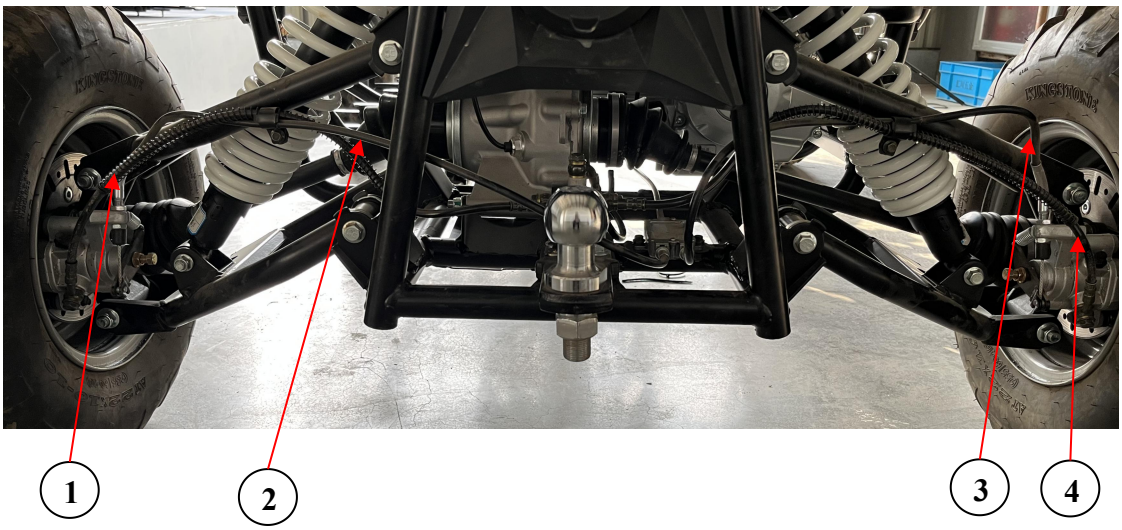
4. Starting motor wires

Attention：Before inspecting and repairing the above components, the right rear fender must be removed. For specific disassembly, see the second chapter - Covering parts of the body of the vehicle



1. Fuel tank cap 2. Oil level sensor

Attention： When checking and maintaining the above components, the rear shelf tarpaulin and rear shelf must be removed. For specific disassembly, see the second chapter - Covering parts of the body of the vehicle



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

2 Covering parts of the body of the vehicle

2.1 Maintenance information

Precautions for operation

When replacing the covering parts with regulatory warning labels affixed or riveted on the vehicle, the corresponding labels must be correctly and completely supplemented as they are.

This chapter describes the disassembly and assembly sequence of vehicle body covers. When repairing internal components of the vehicle that require disassembly of relevant covers, it can be referred to in this chapter.

This chapter describes the disassembly and assembly operations of shelves, seat cushions and exterior parts.

Please pass the pipes and cables through the correct position according to the wiring diagram of cables, pipes and cables.

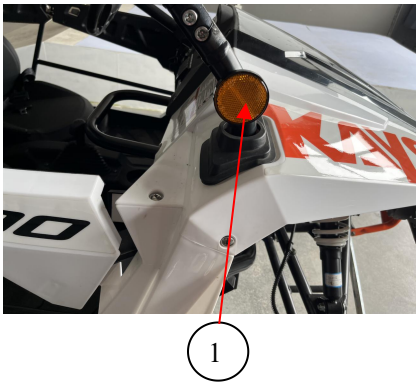
2.2 Installation torque

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

2.3 Disassembly and assembly of front reflectors and ceiling frames

2.3.1 Front left and right reflectors

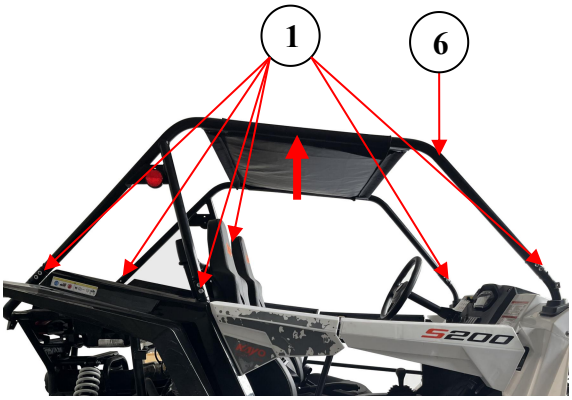
Disassembly
Turn the reflective sheet 1 counterclockwise (one on each side)
Remove the reflective sheet 1

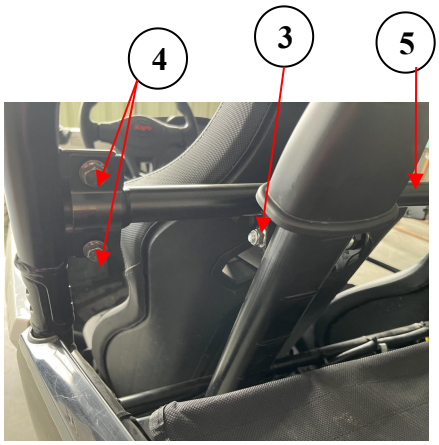


Installation
Installation is carried out in reverse order of disassembly

2.3.2 Ceiling frames and backrest crossbeam

Disassembly
Remove the top shelf fixing bolt 1 (total 12)
Remove the upper suction pipe fixing bolt 3 (1 on each side)
Remove the fixing bolts 4 from the backrest crossbeam (2 on each side)
Remove the backrest crossbeam 5
Remove the roof frame 6 in the upward direction





Installation
Installation is carried out in reverse order of disassembly

2.4 Disassembly and assembly of door inner support panel, door side panel, door frame, inner support and support of hand panel

2.4.1 Left inner support panel

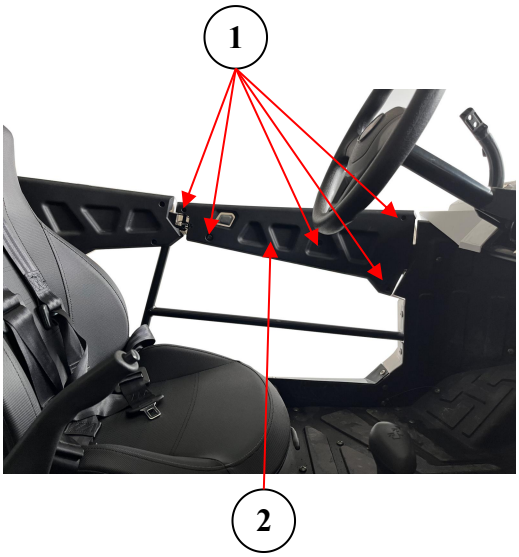
Disassembly

Remove the mounting screws 1 of the left inner support panel(5 pieces in total)

Remove the left inner support panel 2

Installation

Installation is carried out in reverse order of disassembly



2.4.2 Left door side panel

Disassembly

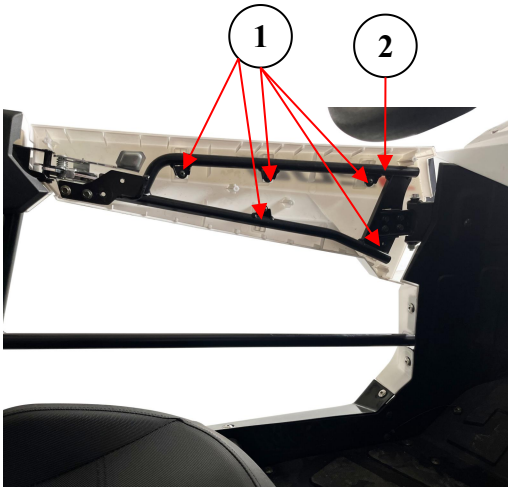
Remove the left door inner support panel (→ 2.4.1)

Remove the left door side panel mounting screws 1 (5 in total)

Remove the left door side panel 2

Installation

Installation is carried out in reverse order of disassembly



2.4.3 Left door frame

Disassembly

Remove the left door inner support panel (→ 2.4.1)

Remove the left door side panel (→ 2.4.2)

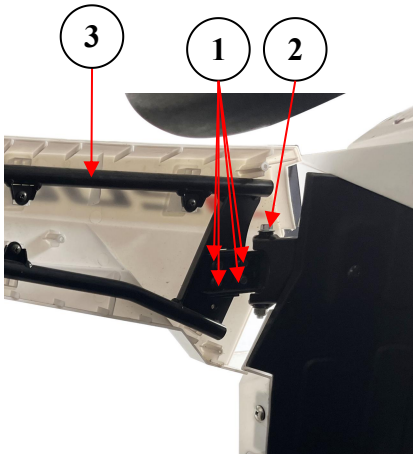
Remove the left door frame fixing component bolt 1

Remove the fixing bolt 2 from the left door rocker arm seat

Remove the left door frame 3

Installation

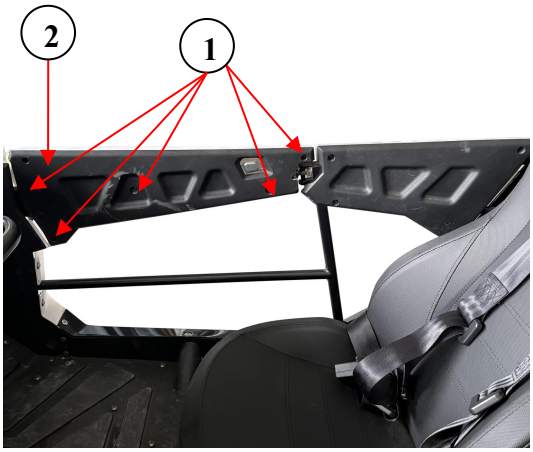
Installation is carried out in reverse order of disassembly



2.4.4 Right door inner panel

Disassembly

Remove the right inner support panel mounting screws 1 (5 pieces in total)
Remove the right inner support panel 2



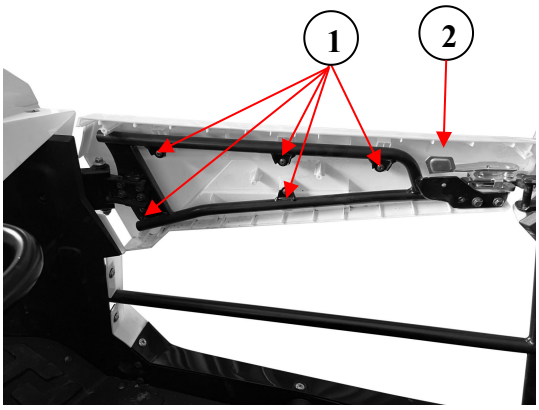
Installation

Installation is carried out in reverse order of disassembly

2.4.5 Right door side panel

Disassembly

Remove the right door inner support plate (→ 2.4.4)
Remove the right door side panel mounting screws 1 (5 pieces in total)
Remove the right door side panel 2



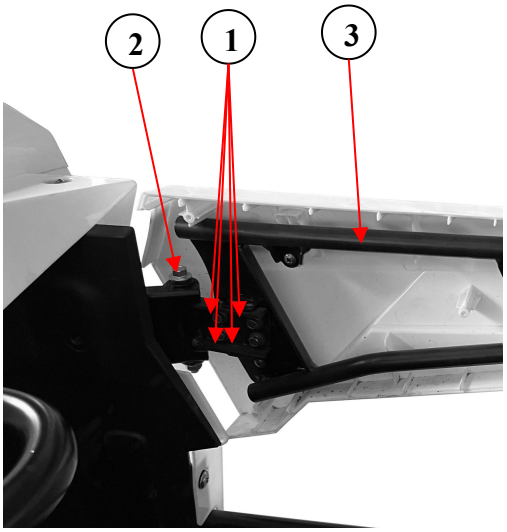
Installation

Installation is carried out in reverse order of disassembly

2.4.6 Right door frame

Disassembly

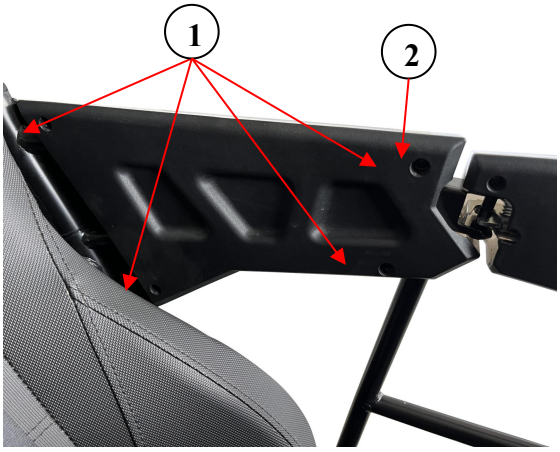
Remove the inner support panel of the right door (→ 2.4.4)
Remove the side panel of the right door (→ 2.4.5)
Remove the bolt 1 of the fixing component of the right door frame
Remove the fixing bolt 2 of the rocker arm seat of the right door
Remove the right door frame 3



Installation

Installation is carried out in reverse order of disassembly

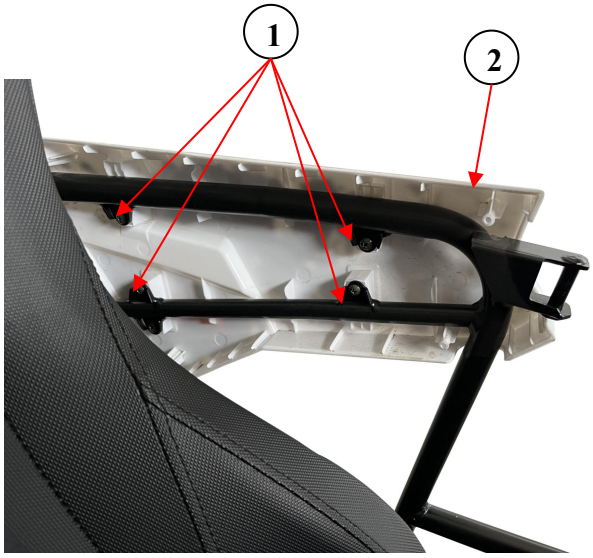
2.4.7 Inner support of left handrest panel



Disassembly
Remove the fastening screw 1 from the left handrest
Remove the inner support of the left handrest 2

Installation
Follow the reverse order of disassembly

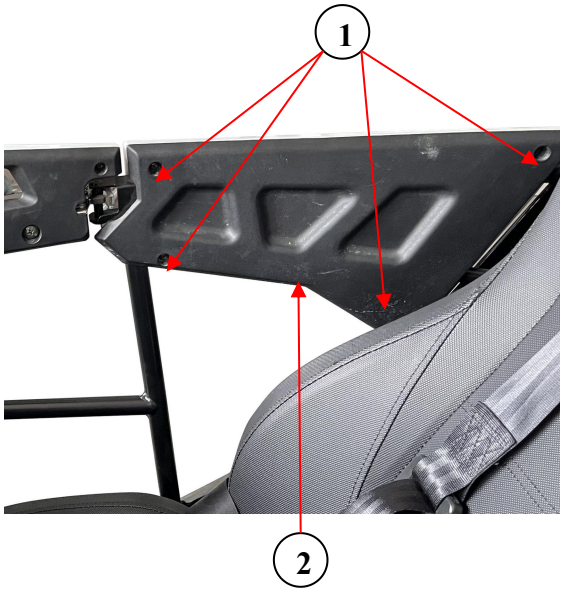
2.4.8 Left handrest panel



Disassembly
Remove the inner support of the left handrest (→ 2.4.7)
Remove the fastening screw 1 of the left handrest
Remove the left handrest 2

Installation
Follow the reverse order of disassembly

2.4.9 Inner support of right hand panel

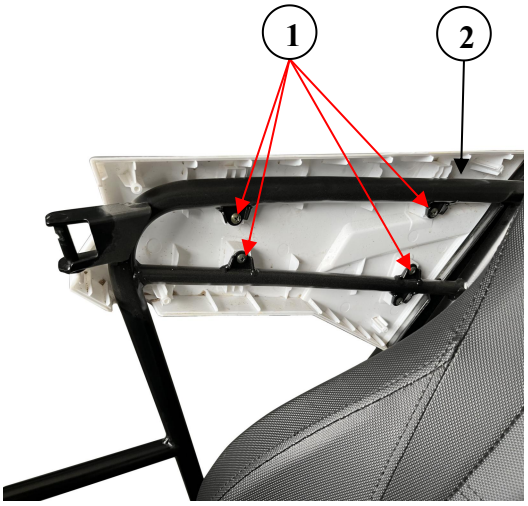


Disassembly
Remove the fastening screw 1 of the right handrest
Remove the inner support 2 of the right handrest

Installation
Follow the reverse order of disassembly

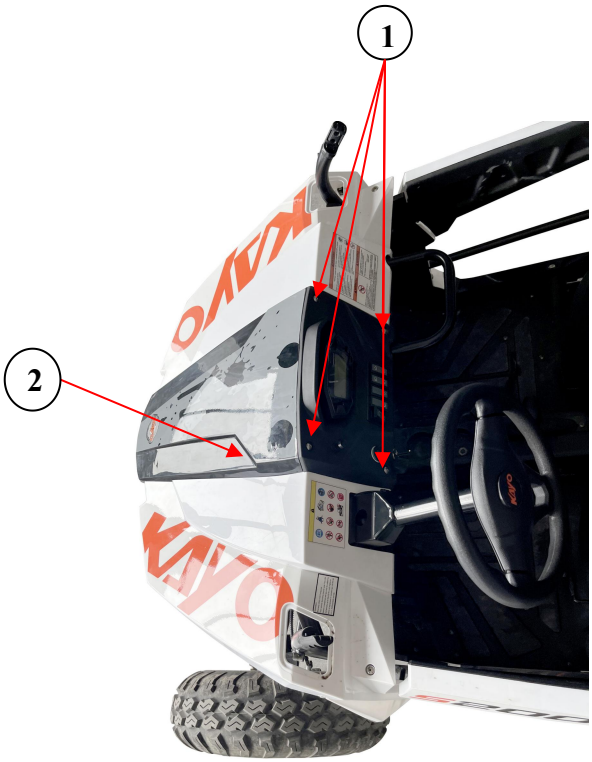
2.4.10 Right handrest panel

Disassembly
Remove the right handrest (→ 2.4.9)
Remove the fixing screw 1 of the right handrest
Remove the right handrest 2



Installation
Follow the reverse order of disassembly

2.5 Front cover panel, front body assembly, left and right fenders, left and right pedal outer guards, rear fender and air guide



2.5.1 Front cover panel

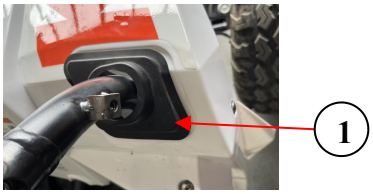
Disassembly
Remove the front instrument panel fixing bolt 1
Remove the front bumper 2

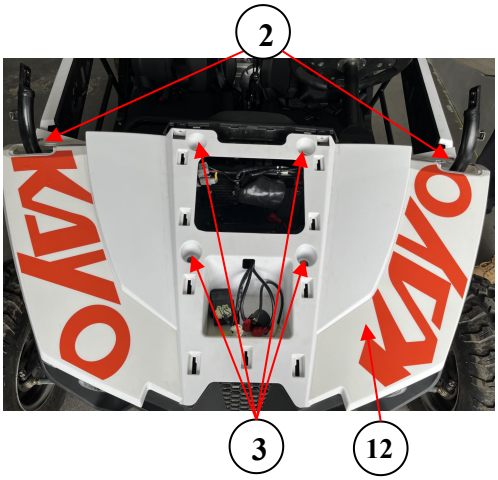
Installation
Follow the reverse order of disassembly (Note that the clip nut on the front cover is easy to slip off, check whether it is still there before installation)

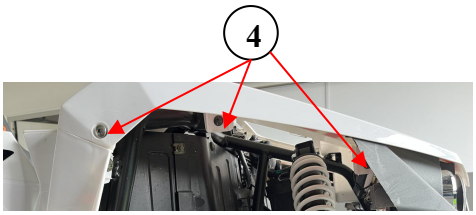
2.5.2 Front body assembly

Disassembly

Remove the front cover panel (→ 2.5.1)
Remove the body decoration cover 1 (left and right)
Remove the fixing screw 2
Remove the fixing screw 3
Remove fixing screws 4 (6 on each side)
Remove the fixing point bolt 5 of the lampshade
Remove the left and right high beam cable plugin 6
Remove the left and right low beam cable plug-in 7
Remove the left and right daytime running light cable plug-in 8
Remove the flasher plug-in 9
Remove the igniter plug-in 10
Remove the relay plug-in 11
Pull out the cables
Remove the front body assembly 12

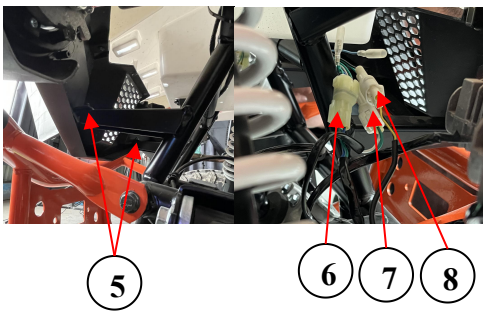






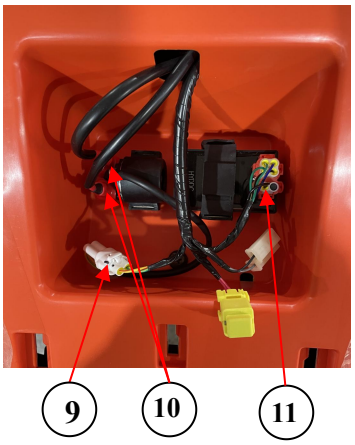
Installation

Follow the reverse order of disassembly

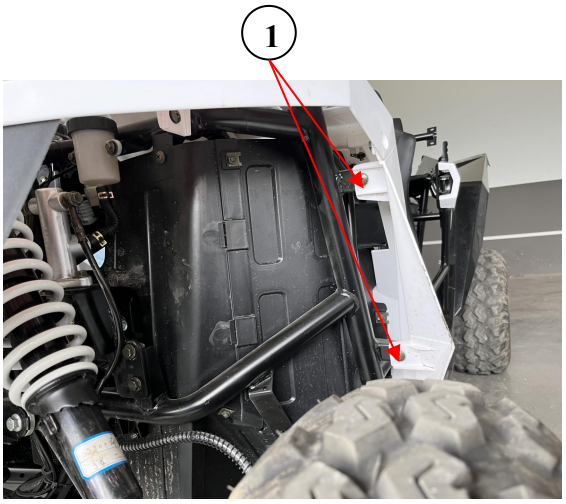


Attention

Before disassembly, the cables on the front vehicle body and the front left and right headlight connectors should be removed, and after installation, the cables and connectors should be checked to prevent misconnection

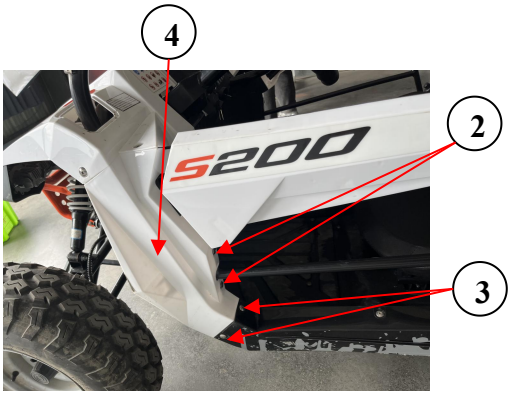


2.5.3 Left fenders



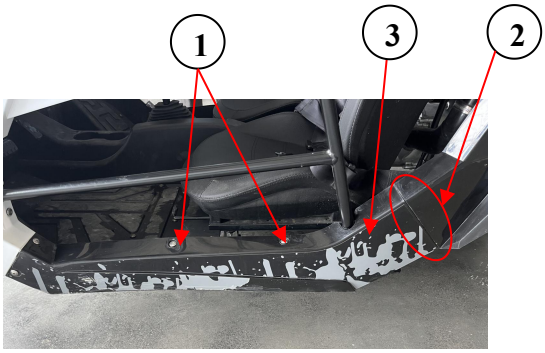
Disassembly

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

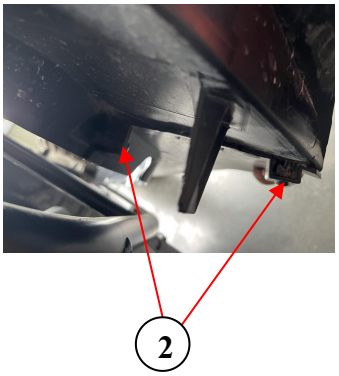


Installation
Follow the reverse order of disassembly

2.5.4 Left pedal outer guard

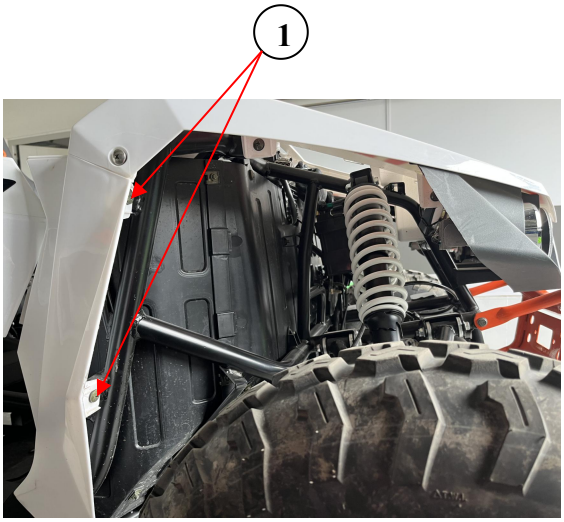


Disassembly
Remove the front cover panel (→ 2.5.1)
Remove the front body assembly (→ 2.5.2)
Remove the left fender (→ 2.5.3)
Remove the fixing screw 1
Remove the fixing screw 2 from the rear left fender (note that when removing this screw, the plastic part needs to be pulled back slightly to remove the fixing screw. Alternatively, after removing the rear left fender, remove the outer cover of the left foot pedal)
Remove the left pedal outer cover 3



Installation
Follow the reverse order of disassembly

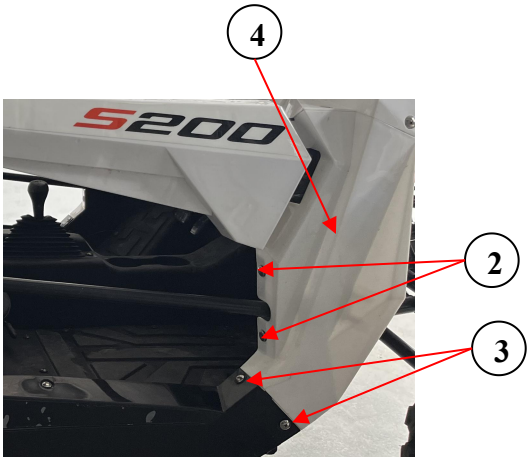
2.5.5 Right fenders



Disassembly

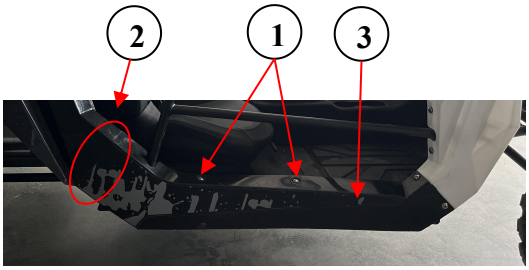
Remove the front cover panel (→ 2.5.1)
Remove the front body assembly (→ 2.5.2)
Remove the fixing screw 1
Remove the fixing screw 2
Remove the fixing screw 3
Remove the right fender 4

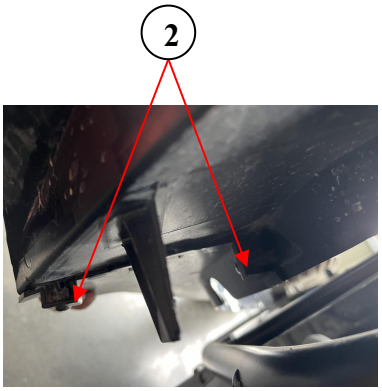
Installation
Follow the reverse order of disassembly



2.5.6 Right pedal outer guard

Disassembly
Remove the front cover panel (→ 2.5.1)
Remove the front body assembly (→ 2.5.2)
Remove the right fender (→ 2.5.5)
Remove the fixing screw 1
Remove the fixing screw 2 from the rear left fender (note that when removing this screw, the plastic part needs to be pulled back slightly to remove the fixing screw. Alternatively, after removing the rear right fender, remove the outer cover of the left foot pedal)
Remove the right pedal outer cover 3



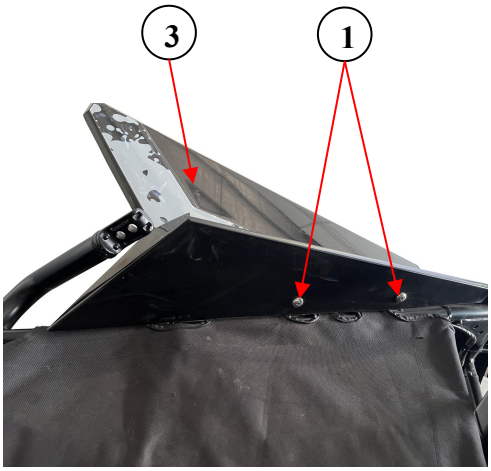


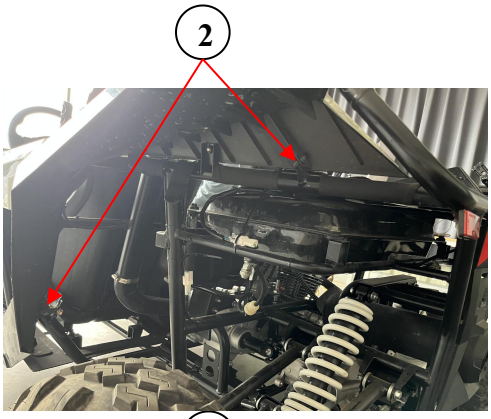
Installation
Follow the reverse order of disassembly

2.5.7 Left rear fender

Disassembly

Remove the front cover panel (→ 2.5.1)
Remove the front body assembly (→ 2.5.2)
Remove the left fender (→ 2.5.3)
Remove the left pedal outer cover (→ 2.5.4)
Remove the fixing screw 1
Remove the fixing bolt 2
Remove the left rear fender 3

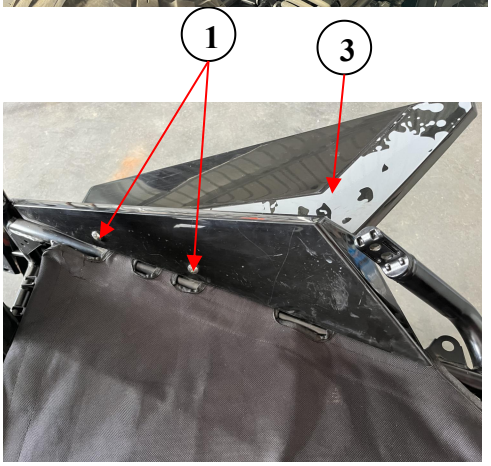


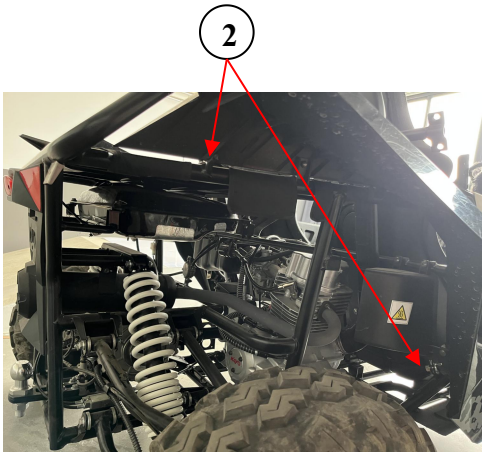


Installation
Follow the reverse order of disassembly

2.5.8 Right rear fender

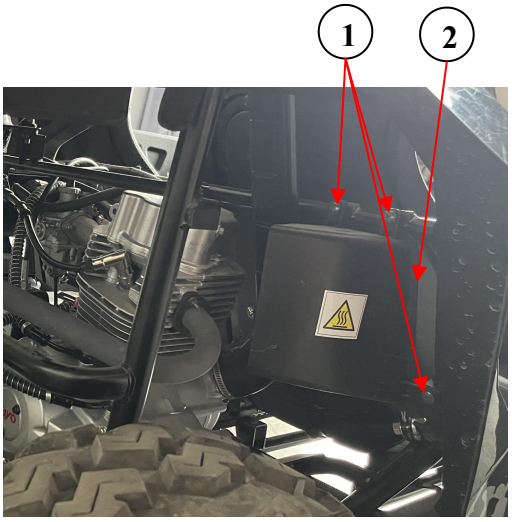
Disassembly
Remove the front cover panel (→ 2.5.1)
Remove the front body assembly (→ 2.5.2)
Remove the right fender (→ 2.5.5)
Remove the outer cover of the right pedal (→ 2.5.6)
Remove the fixing screw 1
Remove the fixing bolt 2
Remove the right rear fender 3





Installation
Follow the reverse order of disassembly

2.5.9 Air guide

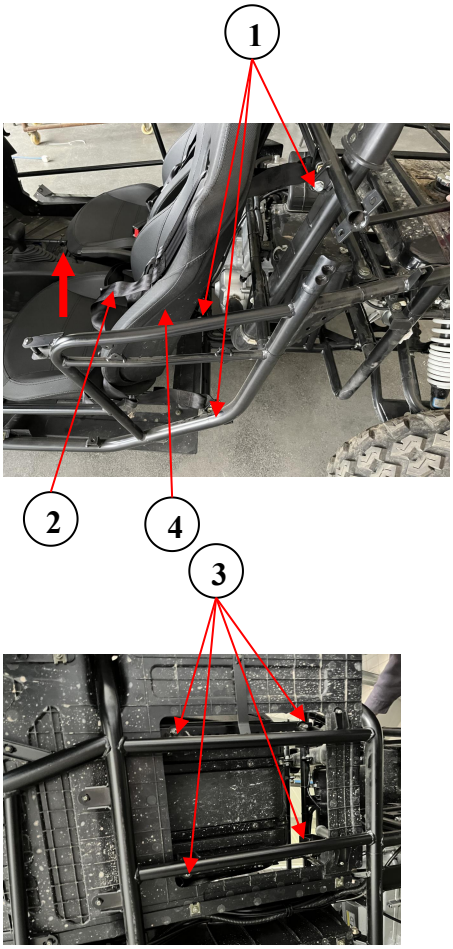


Disassembly
Remove the fixing screw 1
Remove air guide 2

Installation
Follow the reverse order of disassembly

2.6 Disassembly and assembly of safety belts, seat cushions, inner guards of left and right foot pedals, left and right foot pedals, central control components, and interior front bumper components

2.6.1 Seat belts and seat cushions (left and right)



Disassembly
Remove the seat belt fixing screw 1
Remove the seat belt 2
Remove the seat cushion fixing bolt 3
Lift the seat cushion 4 upwards

Installation
Follow the reverse order of disassembly

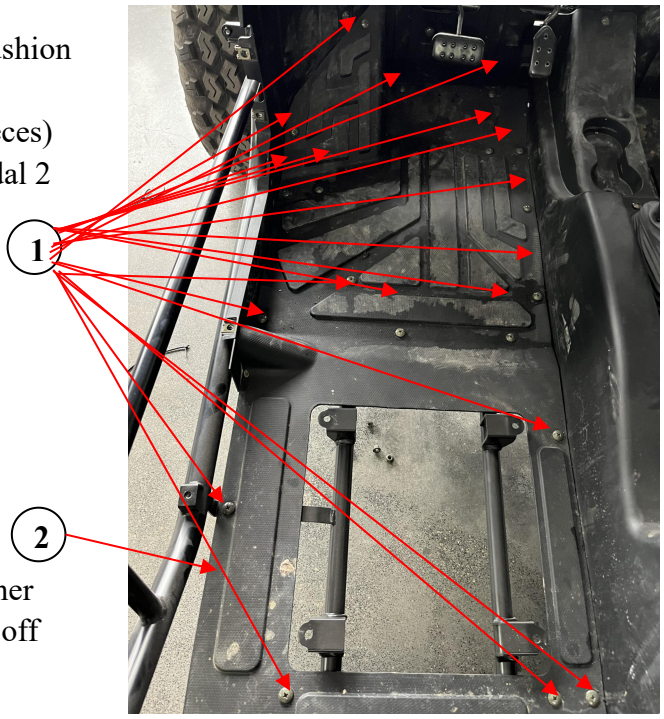
2.6.2 Left foot pedal

Disassembly

Remove the seat belt and seat cushion (→ 2.6.1)

Remove the fixing screws 1 (19 pieces)

Lift up and remove the left foot pedal 2



Installation

Follow the reverse order of disassembly (Pay attention to whether the clip nut on the plastic part slips off before installation)

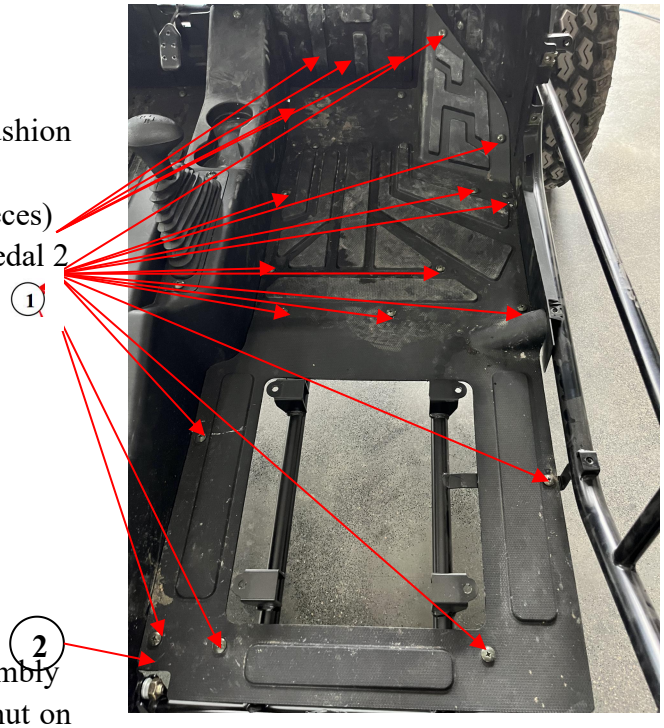
2.6.3 Right foot pedal

Disassembly

Remove the seat belt and seat cushion (→ 2.6.1)

Remove the fixing screws 1 (19 pieces)

Lift up and remove the right foot pedal 2



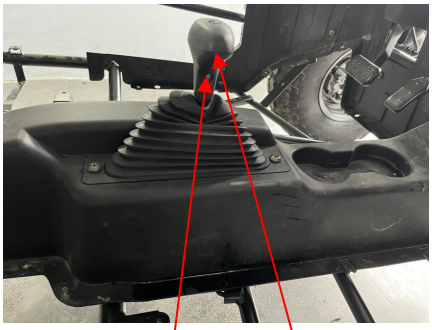
Installation

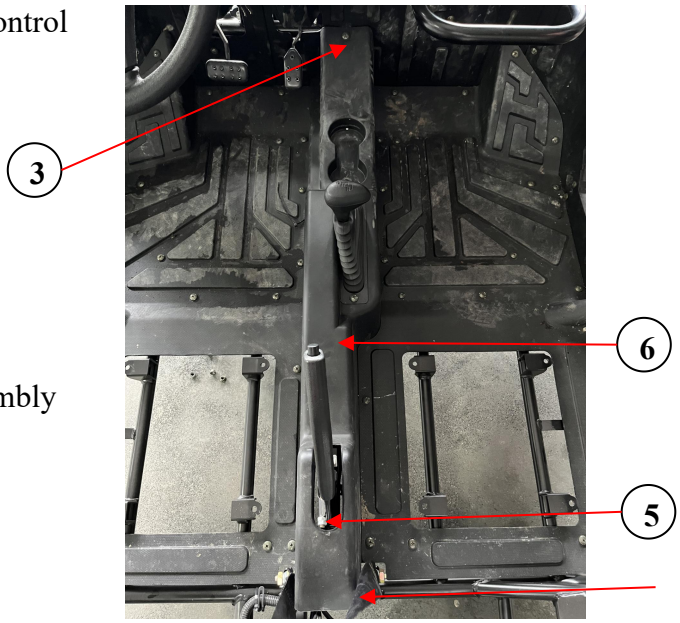
Follow the reverse order of disassembly (Pay attention to whether the clip nut on the plastic part slides off before installation)

2.6.4Central control components

Disassembly

Remove the fixing screw 1
Remove the shift handle 2
Remove the brake cable fixing screw 4
Remove the brake cable fixing nut 5
(Pull the handbrake lever to the highest position)
Lift up and remove central control component 6



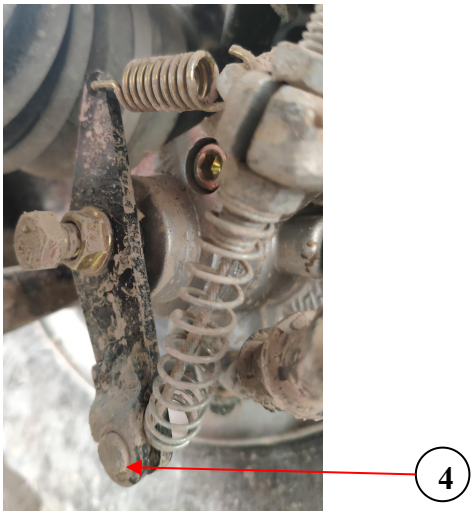


Installation

Follow the reverse order of disassembly

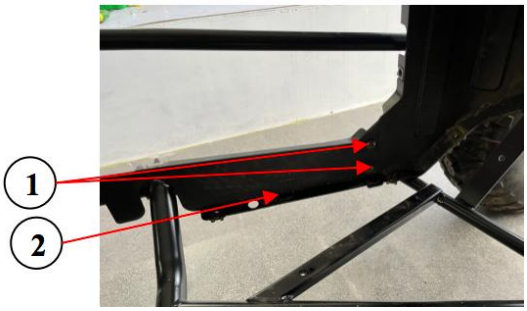
Attention

After loosening the brake cable fixing nut, it is necessary to pull out the brake cable bolt slightly backwards and pull the handbrake lever to the highest position.



2.6.5 Inner cover of left foot pedal

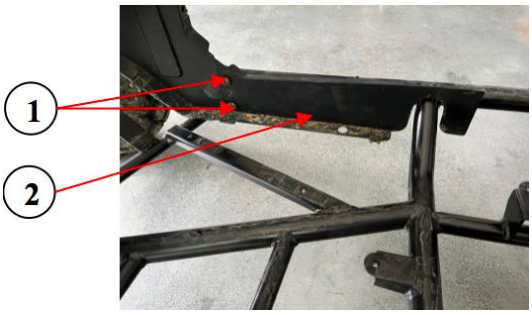
Disassembly
Remove the seat belt and seat cushion (→ 2.6.1)
Remove the left foot pedal (→ 2.6.2)
Remove the fixing screw 1
Remove the inner cover 2
of the left pedal



Installation
Follow the reverse order of disassembly

2.6.6 Inner cover of right foot pedal

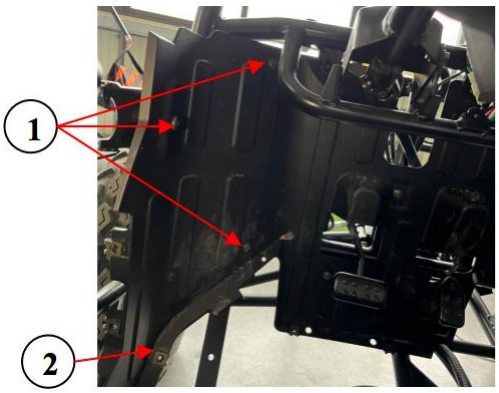
Disassembly
Remove the seat belt and seat cushion (→ 2.6.1)
Remove the right foot pedal (→ 2.6.3)
Remove the fixing screw 1
Remove the inner shield 2 of the right pedal



Installation
Follow the reverse order of disassembly

2.6.7 Interior front left fender

Disassembly
Remove the left foot pedal (→ 2.6.2)
Remove the inner shield of the left foot pedal (→ 2.6.5)
Remove the fixing screw 1
Remove the interior front left fender 2

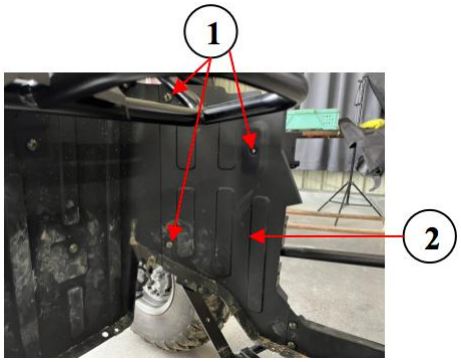


Installation
Follow the reverse order of disassembly

2.6.8 Interior front right fender

Disassembly

Remove the right foot pedal (→ 2.6.3)
Remove the innercover of the right foot pedal (→ 2.6.5)
Remove the fixing screw 1
Remove the front right fender 2 of the interior



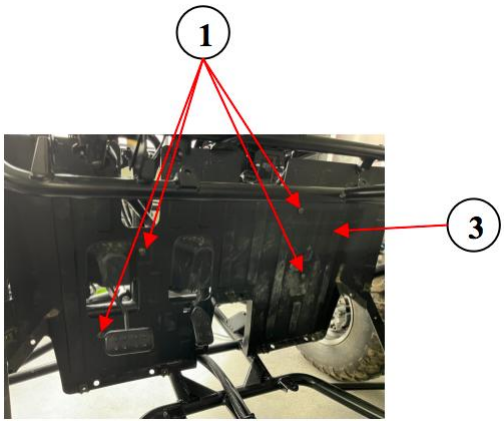
Installation

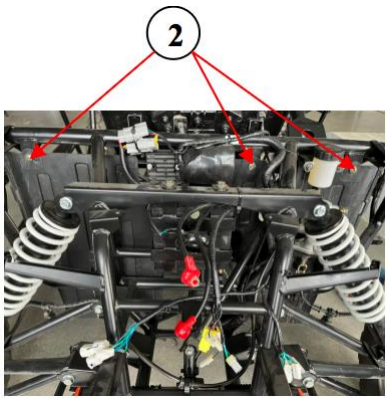
Follow the reverse order of disassembly

2.6.9 Interior front fender

Disassembly

Remove the front left fender of the interior (→ 2.6.5)
Remove the front right fender of the interior (→ 2.6.6)
Remove the fixing screw 1
Remove the fixing screw 2
Remove the interior front bezel 3





Installation

Follow the reverse order of disassembly

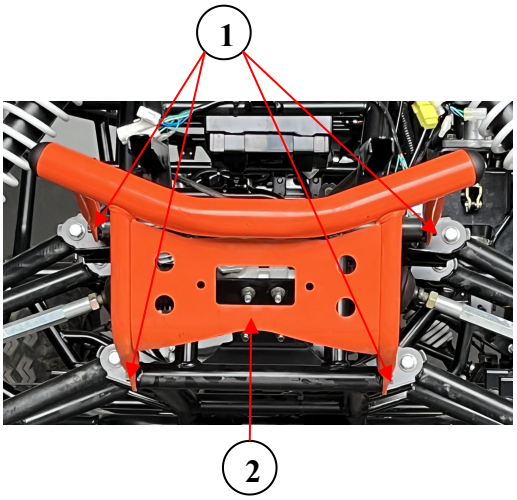
2.7 Disassembly and assembly of front guard, rear shelf, rear taillight frame, and instrument cover

2.7.1Front guard

Disassembly

Remove the front protective fixing bolt 1

Remove the front guard 2



Installation

Follow the reverse order of disassembly

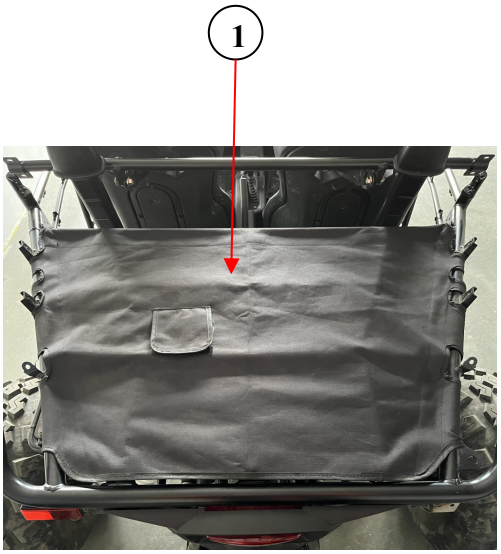
2.7.2 Rear shelf

Disassembly

Remove the rear shelf tarpaulin 1

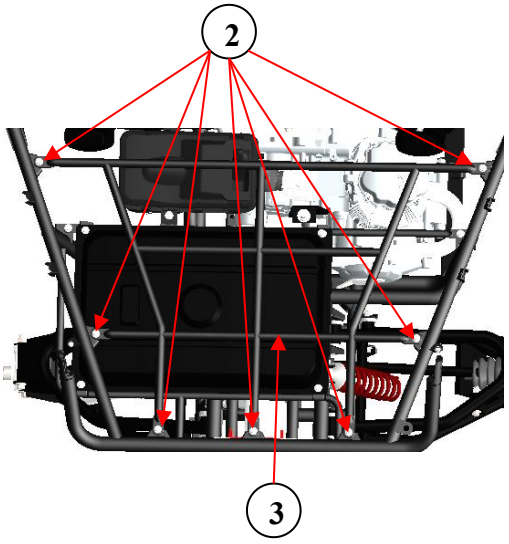
Remove the rear shelf fixing bolt 2

Remove rear shelf 3



Installation

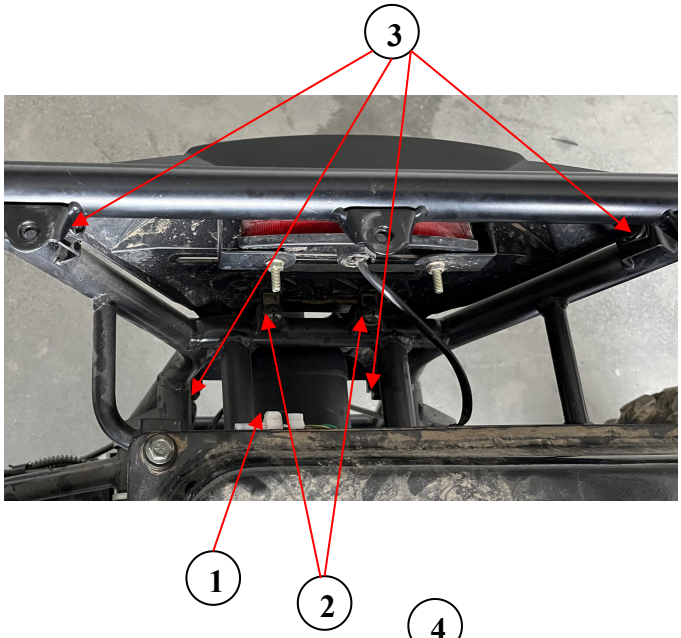
Follow the reverse order of disassembly

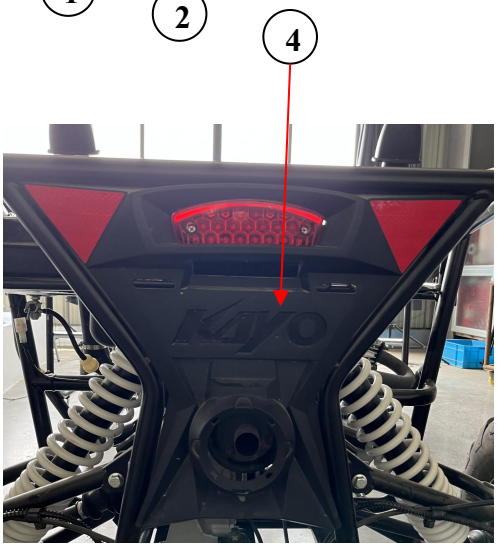


2.7.3 Rear taillight frame

Disassembly

Unplug the rear taillight plug-in 1
Remove the fixing screw 2
Remove the plastic fixing buckle 3
Remove the rear taillight frame 4





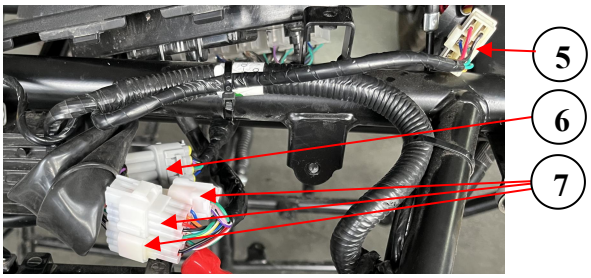
Installation

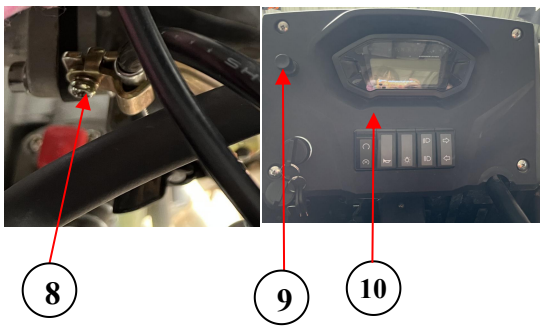
Follow the reverse order of disassembly

2.7.4 Instrument cover

Disassembly

Front body assembly (→ 2.5.2)
Loosen the electric door switch lock plug-in 5
Loosen the panel switch plug-in 6
Loosen the instrument plug-in 7
Loosen the damper cable 8
Remove the damper wire switch 9
Remove the instrument cover





Installation

Follow the reverse order of disassembly

3 Regular inspection and adjustment

Maintenance information

Operation precautions

Attention

- Because the exhaust gas contains carbon monoxide (CO) and other toxic components, please do not operate the engine for a long time in closed or a place with poor ventilation.
- When the engine just stops, the temperature of the muffler and the engine is still very high. If it touches the skin, it will cause burns. If it is necessary to carry out maintenance when the engine just stops, you must wear long-sleeved overalls and gloves for the operation.
- Gasoline is very easy to catch fire, and fireworks are strictly prohibited in the workplace. Not only should we pay attention to open flames, but also pay special attention to electrical sparks. In addition, because evaporated gasoline has the risk of explosion, the operations should be carried out in a well ventilated area.

Attention

Keep hands and clothing away from rotating parts such as the drive system

Attention

The vehicle must be placed on a flat and stable surface

3.1 Determination of maintenance cycle

The maintenance of the engine is a regular and periodic task, and it is very important to maintain the engine at a certain time interval. Standardized maintenance and upkeep can ensure excellent engine performance, reliable operation, and economic durability. The following is the maintenance and upkeep schedule for the LXCVT200 engine:

Attention： The following table is designed according to normal operating conditions. Under severe conditions, the maintenance cycle of the engine should be correspondingly shortened

Maintenance item	Items	Odometer km				
	Cycle	1000km	4000km	8000km	12000km	Notes
Fuel system passage			I	I	I	
Fuel filter		C	C	C	C	
Carburetor choke valve						
Air filter element	Note ①					
Spark plug		I	I	I	I	
Valve clearance		I	I	I	I	
Engine lubricating oil	Every year	R	R	R	R	
Lubricating oil filter screen	Every year R			C		
Clutch		I	I	I	I	
Carburetor idle speed		I	I	I	I	

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

C: Cleaning
R: Replacement
A: Adjustment
L: Lubricating
I: Inspection

Note ①: Driving in dusty areas should be cleaned regularly

3.2 Inspection and maintenance methods

Inspection and maintenance items			Maintenance period			Judgment criteria
Inspection parts		Inspection items	Daily inspection	Semi-annual inspection	Annual inspection	
Steering device	Steering wheel	Operational flexibility	○			
	Steering system	Damage	○			
		Installation status of the steering system	○			
		Wag of the ball pin	○			
Braking device	Brake pedals	Pedal stroke	○	○		
		Braking effect	○	○		
	Connecting rods and oil pipes	Slack, looseness and damage	○		○	
	Hydraulic braking and brake discs	Front and rear brake fluid volume	○	○		The brake fluid should be above the lower limit
		Wear and damage of brake discs	○	○		When the thickness of the working disc of the front brake disc is less than 3mm and the thickness of the working disc of the rear brake disc is less than 3mm, they should be replaced in time.
	Brake pads	Wear and damage of brake pads	○	○		Minimum brake pad (friction pad) Thickness ≥ 1mm; please replace it if it is less than 1mm
Running gear	Wheels	Tire pressure	○	○		Front wheel： 35kPa（0.35kgf/ cm2）(5PSI) Rear wheel： 35kPa（0.35kgf/ cm2）(5PSI)
		Tire cracking and damage	○		○	
		Tire groove depth and abnormal wear	○		○	If there is no indication of wear on the tire surface, the depth of the residual groove should not be less than 3mm
		Looseness of wheel nuts and	○	○		

		wheel axles				
		Shake of front wheel bearings	○		○	
		Shake of rear wheel bearings	○		○	
Buffer device	Suspension arm	Shake of the connecting part and damage to the rocker arm	○		○	
	Shock absorber	Oil leakage and damage	○		○	
		Function			○	
Transmission device	Front Axle	Transmission, lubrication	○		○	
	Rear axle	Transmission, lubrication	○		○	
	Gearbox	Oil leakage and oil volume	○		○	Loosen the filler bolt port, and the amount of oil should reach the port

Inspection and maintenance items			Maintenance period			Judgment criteria
Inspection parts		Inspection items	Daily inspection	Semi-annual inspection	Annual inspection	
Transmission device	Output shaft (transmission shaft)	Looseness of the connection part	○	○		
		The shaking of the spline part			○	
Electrical device	Ignition device	Status of spark plugs		○		Spark plug gap：0.6mm~0.7mm
		Ignition period		○		
	Battery	Connection state of the terminal part			○	
	Electrical wiring	Looseness and damage of the connection part			○	
Fuel leakage		Fuel leakage		○		
		The status of the throttle			○	Gap of throttle pedal：2～6mm
Lighting device and direction indicator		Function	○	○		
Alarm and lock device		Function			○	
Instrument		Function			○	
Exhaust pipe and muffler		Whether the installation is loose or damaged			○	
		The function of the muffler			○	
Vehicle frame		Looseness and damage			○	
Other		Lubricating grease status of various parts of the frame			○	
Parts that can confirm anomalies during operation		Confirm if there are any abnormalities in the relevant parts	○			

Tighten all nuts, bolts, and nuts. It must be noted that all calibrated nuts, bolts, and lock nuts should be tightened to the specified torque.

It is recommended to regularly lubricate certain components to ensure their free movement. Use the following list as a reference to use lubricating oil on components.

A. Throttle pedal shaft

B. Brake pedal shaft and handbrake lever

C. Shift lever

3.3 Steering wheel, brake system

Put the vehicle in a horizontal position, and slowly turn the steering wheel left and right to confirm whether it has the same full left and full right turning ability. If the left and right steering angles are different, check whether the marking lines of the steering device are on the same line (the position indicated by the red arrow). If they are confirmed to be on the same line, check the splines of the steering wheel and adjust the steering wheel. Turn the steering wheel left and right. If you feel that some positions are blocked, add lubricating oil to steering wheel 1.

Attention: It must be confirmed that the steering is flexible, otherwise the steering wheel will be unable to control the direction and cause an accident

1.Direction machine

Gap of the brake pedal:
Operate the brake pedal (the brake pedal is on the left), check the braking effect and the movement of the pedal.
Check the gap at the brake pedal.

Front brake disc, brake pad (brake pad wear)

Check the wear of the brake pad

If the wear has reached the wear limit, replace the brake pad

Attention

The brake pads need to be replaced as a complete set

Inspection and replacement of brake discs

Check 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 service limit thickness: 3.0mm

Check the minimum thickness of the brake friction pad 2

The minimum thickness of the friction pad is ≥ 1 mm

If it is less than the minimum thickness of the friction pad, please replace the new brake pad

Check if there is any damage or crack on the brake friction plate. If there is any damage or crack, please replace it with a new brake friction plate

Attention： Please regularly check the brake fluid level to ensure it is in a safe position. Check the oil circuit and connection points for damage. If there is any damage, please replace it in time. Check the main pump/caliper for damage. If there is any damage, please replace it in time

Attention：Do not open the brake fluid oil cup for a long time

Oil change (replacement of brake fluid)

Brake fluid is replaced once a year

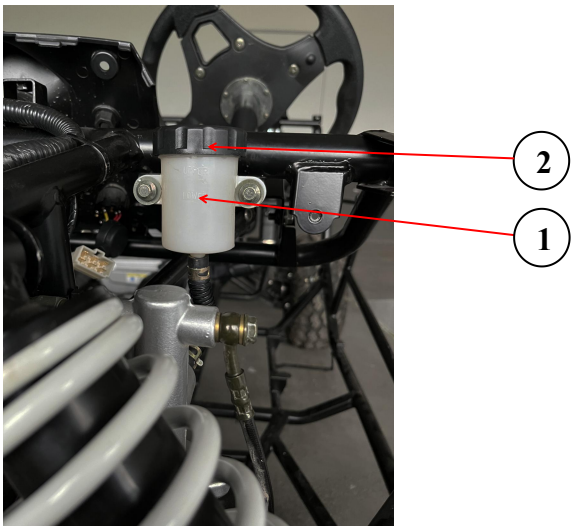
Front and rear brake pump combination

〈 Liquid volume〉

Check the amount of brake fluid. When the brake fluid level decreases to near the lower limit of 1 (LOWER), an alarm will be displayed on the instrument panel. At this time, the vehicle will no longer be able to use. It is necessary to check the leakage of the brake pump, brake pipe, and various connections. If the inspection is normal, it is necessary to check the wear of the brake disc and brake pad. If there is damage or wear below the limit of use, please replace it. It is also necessary to inspect these items before each use of the vehicle

Take off the oil cup cover 2

Replenish the brake fluid recommended by Kayo until it reaches the upper limit line



Attention

- When replenishing brake fluid, dust and water should not be mixed in.
- In order to prevent chemical changes, please use the specified brand of brake fluid.
- Because brake fluid can damage the plastic and rubber surfaces, please do not splash it onto these components.

Turn the steering lever slightly to the left and right, and take off the oil cup cover after the brake pump assembly is in a horizontal state.

Rear brake disc, brake pad (brake pad wear)

Check the wear of the brake pad

If the wear has reached the wear limit, replace the brake pad

Attention

The brake pads need to be replaced as a complete set

Inspection and replacement of brake discs.

Check 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 service limit thickness: 3.0mm

Check the minimum thickness of brake friction plate 2.

Minimum friction plate thickness ≥ 1 mm.

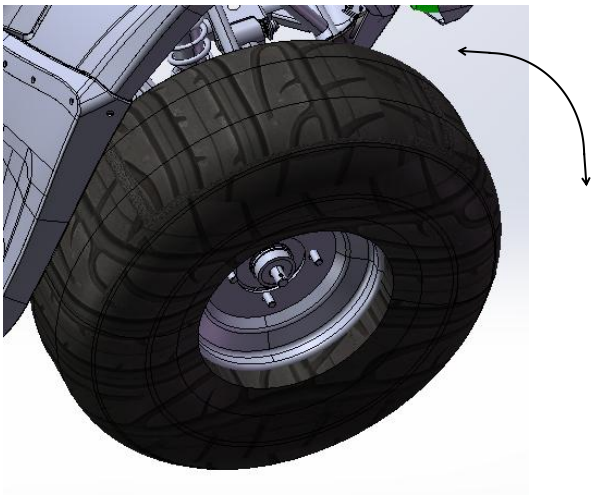
If it is less than the minimum friction plate thickness, please replace it with a new brake friction plate.

Check if there is any damage or crack on the brake friction plate. If there is any damage or crack, please replace it with a new brake friction plate.

Oil change (replacement of brake fluid)

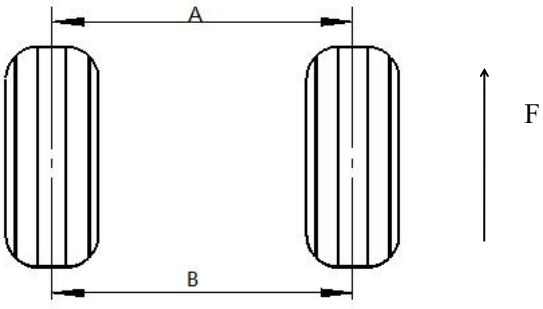
Brake fluid is replaced once a year

3.4 Wheels



Jack up the front wheel with a tool in a horizontal position to ensure that there is no force acting on the wheel. Shake the front wheel left and right to check if the connection of the front wheel is secure.
If there is any shaking, check and tighten the rocker arm, axle, rim bolts, and nuts.
If there is still shaking, check and replace: bearings, rocker arm buffer sleeves, ball pins.

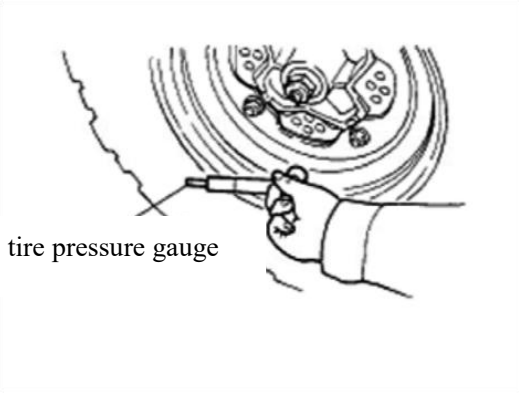
Front wheel size
Place the vehicle body in a horizontal position and measure the toe in dimensions of the wheels; The front wheel is relative to the direction of forward travel of the vehicle. The front wheel is A, and the rear wheel is B
Toe in size: A-B=1.5~2.5mm
F is the forward direction



If not within this range, adjust the lock nut 2 of the steering rod 1.
Attention：After adjusting the toe in size, drive the entire vehicle slowly to ensure that the handlebars can correctly constrain the direction of the vehicle body.

Tire pressure

Use a pressure gauge to check the tire pressure.



tire pressure gauge

Attention

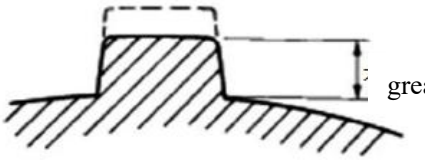
The inspection of tire pressure should be carried out while the tire is cool. If used in a state where the tire pressure is not appropriate, it will lead to poor operation and riding comfort, and cause adverse effects such as tire bias wear.

Designated air pressure/tire

	Front wheel	Rear wheel
Air pressure	35kPa（0 .35kgf/cm2）	35kPa（0.35kgf/cm2）
Tire size	See the first chapter	See the first chapter

Tire pattern

Check the tire pattern, and once the height of the pattern is less than 3mm, replace it with a new tire.

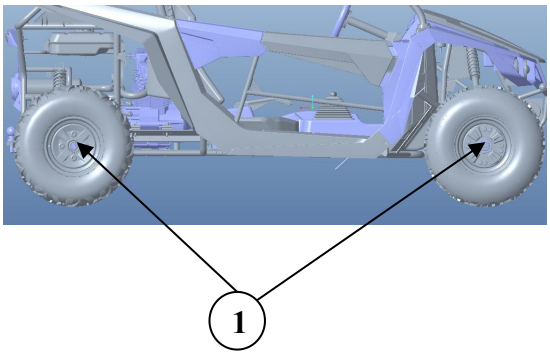


greater than 3mm

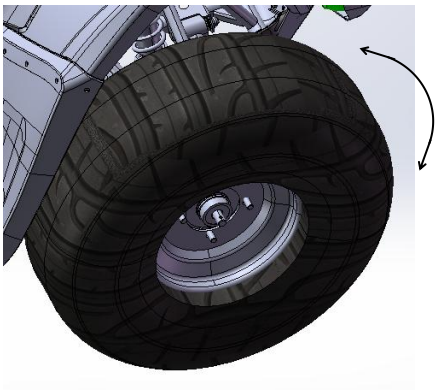
Attention

When the tire pattern is less than 3mm, it must be replaced immediately

Wheel nuts and wheel axles
Check the looseness of the front wheel axle, rear wheel axle nut 1, and bolt
Tighten according to the specified torque when there is looseness
Torque:
Front wheel axle nut: 72N · mm~89N · mm （7.3kgf·mm ～ 9.0kgf·mm）
Rear wheel axle nut: 72N · mm~89N · mm （7.3kgf·mm ～ 9.0kgf·mm）



The shaking of the wheel hub
Use a tool to lift the front wheels, and when there is no force on the front wheels, shake the wheels axially to check if there is any shaking.



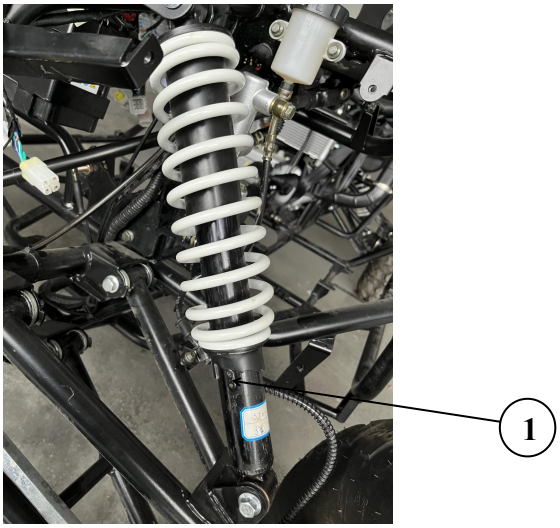
Remove the front wheel and inspect the wheel hub when there is shaking

3.5 Suspension system

Place the vehicle body in a horizontal position and compress it up and down several times according to the position shown in the diagram. If there is shaking or abnormal noise, check the shock absorber for oil leakage and all fastening parts for damage, looseness, etc.

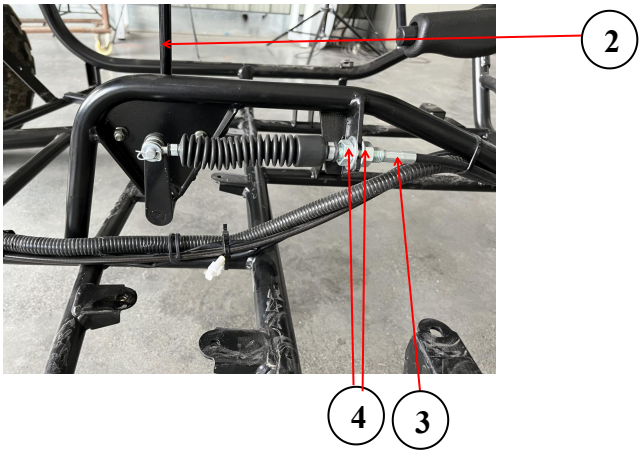
Adjustment of shock absorber

Use a special tool to adjust the adjusting cam 1 of the shock absorber according to the load.
Clockwise rotation is adjustable from high to low, and counterclockwise rotation is adjustable from low to high in both directions.



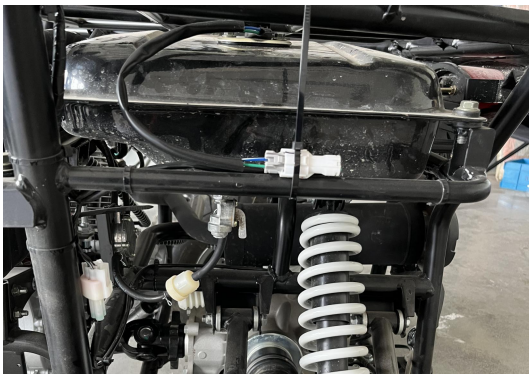
3.6 Shift mechanism

Shift mechanism
Change the gear, check if the shift mechanism 2 is flexible and if the gear is shifting in. If it is difficult to shift, adjust the length of the shift mechanism lever 3.
Loosen the lock nut 4 and adjust the length of the shift mechanism lever.



3.7 Fuel device

Fuel device
The status of the fuel system.
Remove the rear shelf (→ 2.4.2).
Check the fuel pipes for aging or damage.
Replace the fuel pipe with a new one when it is aged or damaged.
Check if the fuel tank vent pipe or the adsorption pipe of the fuel evaporation system is cracked or bent. If there is any damage, replace it with a new one.

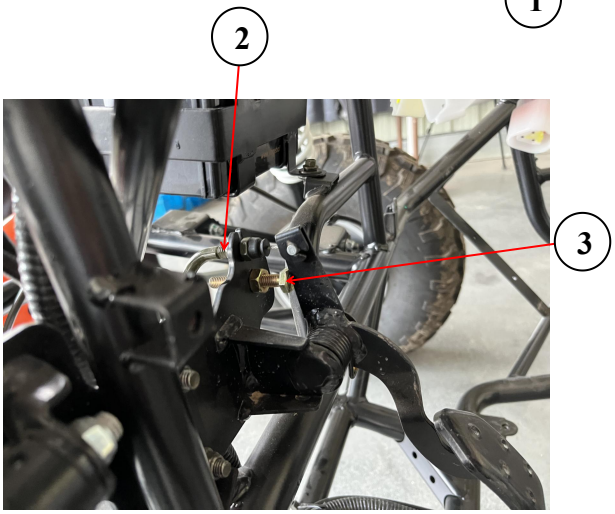


3.8 Throttle inspection

Check the free travel of throttle pedal 1
Gap: 2-5 mm

When the gap is not within the specified range, adjust the gap.
Loosen the throttle cable lock nut 2.
Rotate the adjuster to adjust the free travel of the accelerator pedal.
After adjustment, tighten the locking nut 2.
If the adjustment of the regulator still cannot reach the specified gap or if the action is still not flexible, then replace the throttle cable with a new one.

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



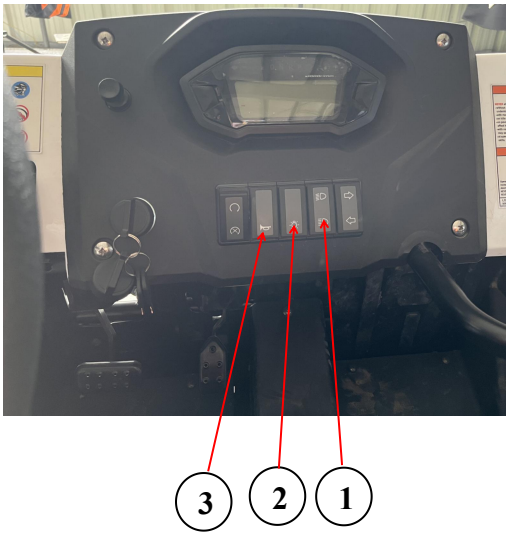
3.9 Instrumentation

Inspection instrument
When the entire vehicle system is first powered on (or after the first instrument replacement) and the engine is not working, the speed should be in the zero position. Start the engine and pay attention to whether there is a change in the speed value indication. If there is no change, it should be repaired in time.

3.10 Lighting device

Headlamp inspection

First press the headlamp switch button 1, then press the light conversion button 2. If both the high beam lamp and the low beam lamp are not on, please check whether the line is connected incorrectly. If the wiring is correct, please replace the headlamp in time.



Tail light inspection

Step on the brake pedal with your foot and observe the tail lights. If the tail lights do not light up, please check if the wiring is connected incorrectly. If the wiring is correct, please replace the tail lights in time.

Horn inspection

Press and hold the horn switch 3 to observe the horn. If the horn does not sound or the sound is too light, please check if the wiring is incorrect. If the wiring is correct, please replace the horn in time.

Attention： Before checking the lighting device, the vehicle system is required to be powered on.

4 Around the engine

Maintenance information

Precautions for operation

- During operation and maintenance, please ensure that the vehicle is turned off and left standing for no less than 1 hour. Confirm that the heating components have cooled before proceeding with maintenance to avoid injury to maintenance personnel.
- Be careful not to damage the frame, engine body, bolts, and cables during operation.
- When disassembling the engine, in order to protect the frame, the frame should be wrapped and protected.
- When the engine is removed, corresponding containers should be prepared to contain coolant, engine oil, and fuel to protect the environment. During installation, the coolant and engine oil should be replenished as required.

Tightening torque

Engine bracket mounting bolts GB5787 M10×1.25×160 55~66N·m

4.1 Fuel system

Disassembly

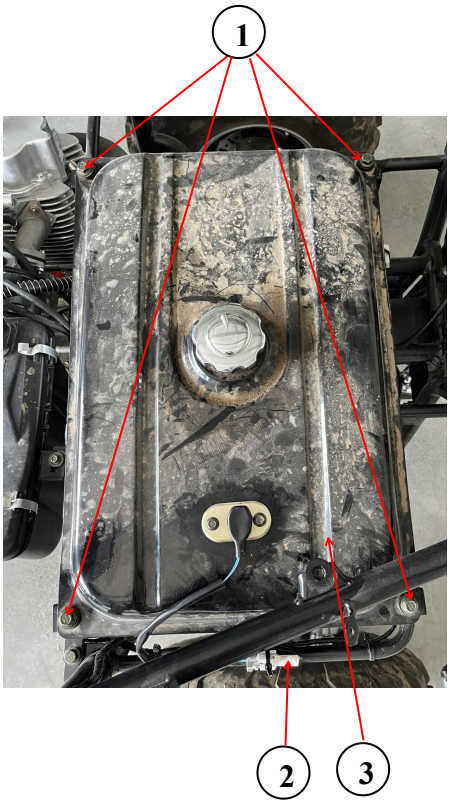
Remove the rear shelf tarpaulin and rear shelf (→ The second chapter vehicle body covering parts)

Remove the mounting bolt 1

Loosen the oil level sensor plug-in 2

Remove fuel pipe 4

Remove fuel tank 3



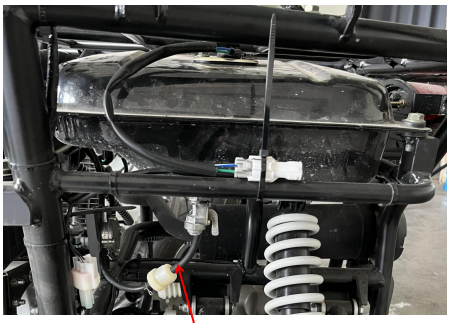
Attention

Gasoline is very easy to catch fire, so smoking and fire are strictly prohibited in the workplace.

Not only open flames, but also high attention should be paid to electric sparks.

In addition, due to the risk of explosion after gasoline evaporation (vaporization), operations should be carried out in a well ventilated area.

When disassembling the fuel tank, if there is still fuel inside, first turn off the fuel tank switch to prevent fuel leakage, and then remove the fuel tank.



Installation

Installation is carried out in reverse order of disassembly

The connector is required to be inserted in place and there is a noticeable "da" sound when installed in the place.

Check the integrity of each oil pipe during installation.

4.2 Intake system

Disassembly

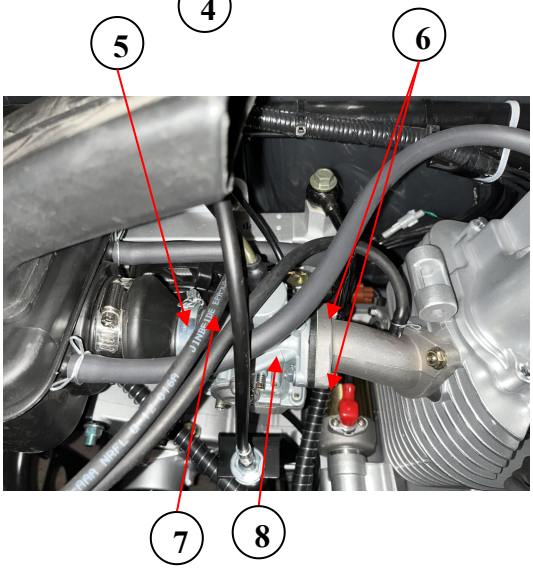
Remove the rear shelf tarpaulin and rear shelf (→ The second chapter vehicle body covering parts)

Loosen clamp 5

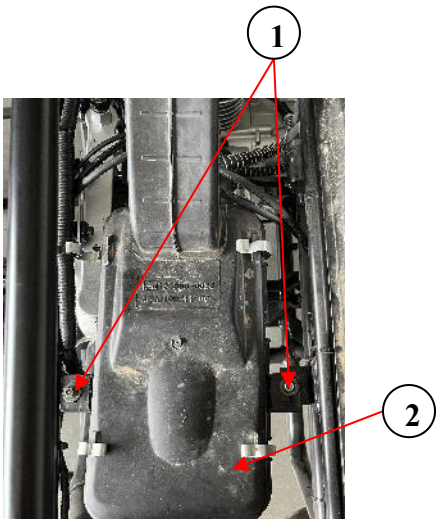
Remove the installation bolt 6

Pull off oil pipe 7

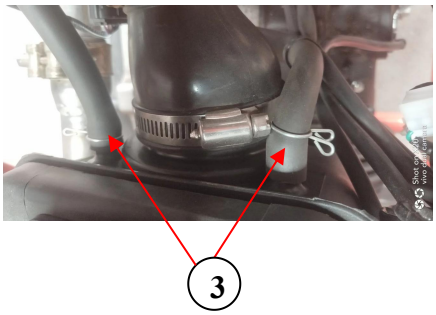
Remove carburetor 8



Remove the 2 mounting screws 1
Remove the engine exhaust pipe 3
Remove the air filter 2

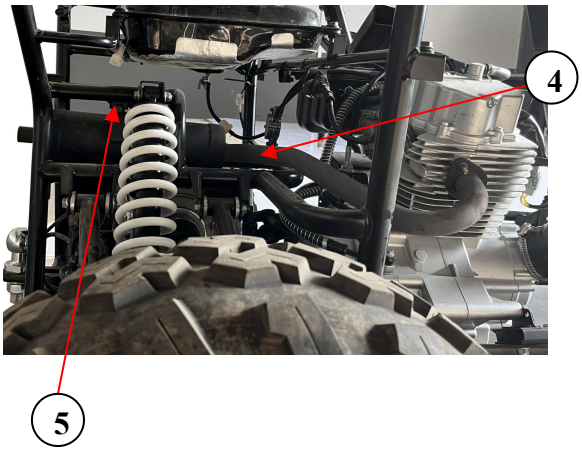


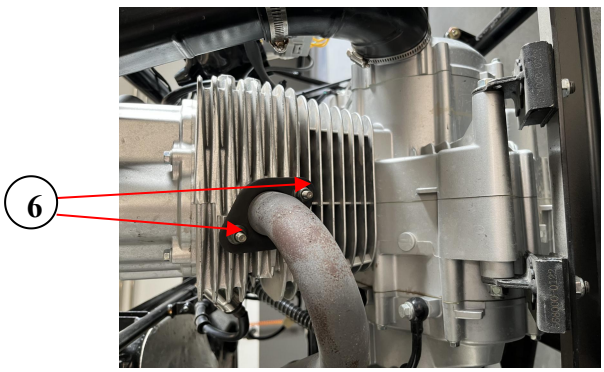
Installation
Installation is carried out in reverse order of disassembly



4.3 Exhaust system

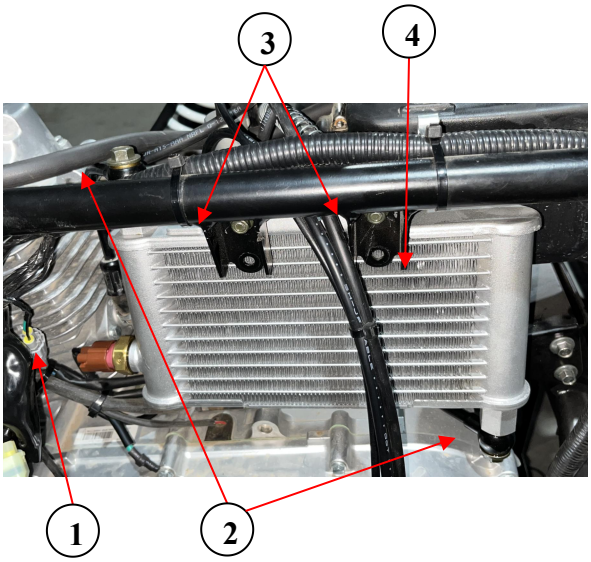
Disassembly
Remove the fixing bolt 5
Remove the mounting nut 6
Remove the muffler assembly 4





Installation
Installation is carried out in reverse order of disassembly

4.4 Engine removal and installation



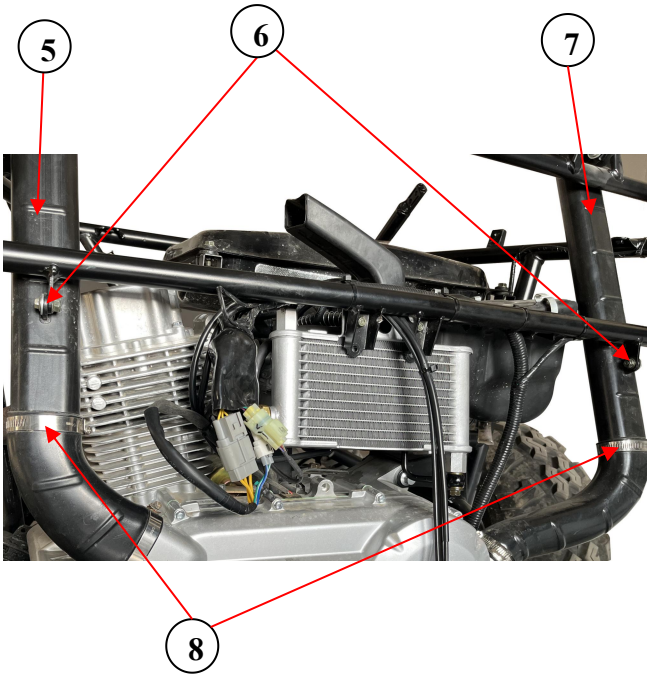
Disassembly

Remove the rear shelf tarpaulin and rear shelf (→ The second chapter- Vehicle body cover)

Remove the fuel tank (→ 4.1 Fuel system)

Remove the air filter and carburetor (→ 4.2 Intake system)

Remove the exhaust pipe assembly (→ 4.3 Exhaust system)



Loosen the heat dissipation system plug-in 1

Remove the oil cooling pipe 2

Remove the oil cooler fixing bolt 3

Remove the oil cooler 4

Remove the suction pipe fixing bolt 6

Loosen clamp 8

Remove the left suction pipe 5

Remove the right suction pipe 7

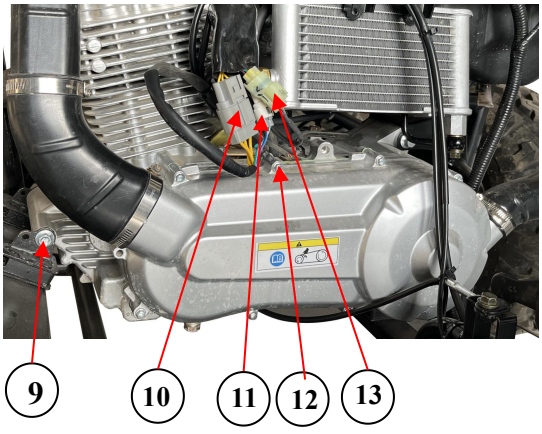
Remove the engine fixing bolts 9

Unplug the generator coil plug-in 10

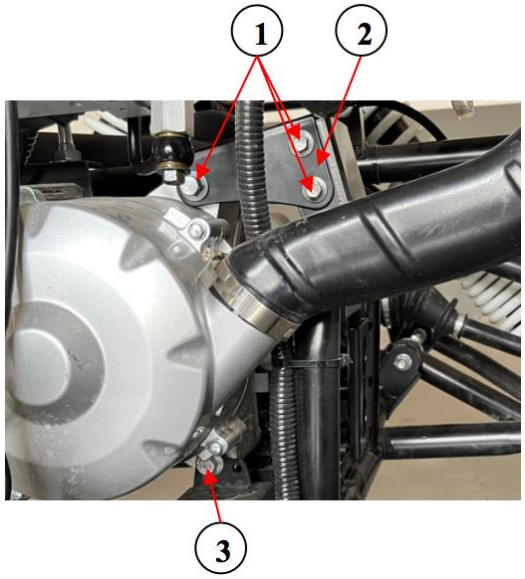
Unplug the pulse coil plug-in 11

Remove the ground wire 12

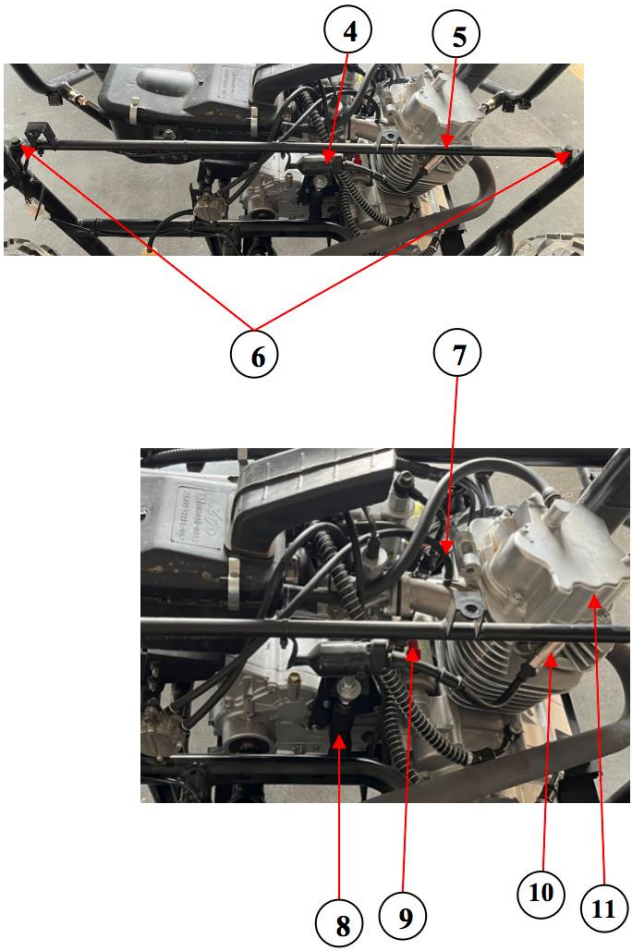
Unplug the gear display plug-in 13



Remove the engine fixing bolt - right 3
Remove the engine suspension plate - right 3 bolts 1
Remove the engine suspension plate 2
Remove the air filter fixing bracket mounting bolt 6
Remove the high-pressure package 4
Remove the air filter fixing bracket 5



Pull out the oil pipe 7
Remove the shift cable 8
Remove the starting power line 9
Remove the high voltage package 10
Remove the engine 11



Installation

Installation is carried out in reverse order of disassembly

5 Engine

5.1 Overview

5.1.1 Maintenance guidelines

1.Please use components, lubricants, or other auxiliary materials produced by Chongqing Longxin Power Co., Ltd. or recognized and recommended by Longxin General Power Co., Ltd. If the materials used do not meet the specifications or requirements of "Longxin", it may damage the entire vehicle;

2.When repairing the whole vehicle, please do not use tools with non-metric specifications. Bolts, nuts and screws of metric specifications cannot be interchanged with fasteners of imperial specifications;

3.When reassembling after disassembly, please replace with new gaskets, washers, O-rings, cotter pins and locking pieces;

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

5.Clean the disassembled parts with detergent. Lubricating oil should be applied to the sliding surfaces of parts before assembly.

6.After reassembly, it should be checked whether the parts are installed correctly and operated properly, and the rotation, movement and operation checks should be carried out.

5.1.2 Specifications

General specifications

	Items	Data
Engine	Model	LX163YML
	Displacement	196.2ml
	Cylinder arrangement and inclination angle	In line, inclined forward 15 °
	Cylinder diameter × stroke	(63.5 × 62)mm
	Combustion chamber volume	17.8ml
	Compression ratio	9.5：1
	Cylinder pressure	(1050±150)kPa
	Maximum power and corresponding speed	9.5（1±5%）kW/(7000±500)rpm
	Maximum torque and corresponding speed	14.5（1±5%）N·m/(5500±500)rpm
	Valve mechanism	Overhead cam
	lubrication system	Pressure splash lubrication
	Cooling system	Oil cooling
	Engine net mass	39.5kg (without lubricating oil), 40.7kg (with lubricating oil)
Transmission system	Clutch	Dry clutch
	Gearbox	Infinitely variable speed
	Forward gear ratio	Forward gear: i=43/14 * 40/17 ≈ 7.227
	Reverse gear ratio	Reverse gear: i=49/14 * 49/15 * 40/17 ≈ 26.9
	CVT gear ratio	CVT：i=0.703～2.413
	Shift mode	Forward/Neutral/Reverse (non cyclic shifting)
Electrical system	Ignition system	Capacitive discharge C.D.I (DC)
	Starting system	Electric start
	Lighting system	Battery
	Spark plug model	D8RTC
	Spark plug gap	(0.6～0.7)mm
	Voltage regulating rectifier	Three phase full wave rectification
lubricating system	Engine crankcase	1.1 liters (with oil cooler)
	Engine transmission box	0.4 liters
	Lubricating oil standard	Suggested use of engine lubricating oil: SJ 10W-40 API quality grade: SJ or higher (do not use circular API service labels labeled as energy-saving lubricants) JASO T903 standard: MA Viscosity: SAE10W-40

5.1.3 Maintenance specifications

Cylinder head-valve-piston-cylinder block specifications

Items			Standard value	Service limit
Electric starting cylinder pressure			1050±150 kPa	—
Valve clearance		Intake valve	(0.06±0.02)mm	—
		Exhaust valve	(0.06±0.02)mm	—
Rocker arm, rocker arm shaft	Rocker arm inner diameter	Intake/exhaust	(12.000～12.018)mm	—
	Rocker arm shaft outer diameter	Intake/exhaust	(11.972～11.987)mm	—
	Clearance between rocker arm and rocker arm shaft	Intake/exhaust	(0.013～0.046)mm	0.10mm
Camshaft	Cam protrusion height	Intake	(31.72～31.84)mm	31.66mm
		Exhaust	(31.47～31.59)mm	31.41mm
Valves, valve guides	Valve stem diameter	Intake	(5.45～5.465)mm	—
		Exhaust	(5.43～5.445)mm	—
	Valve guide inner diameter	Intake/exhaust	(5.475～5.485)mm	—
	Valve stem to valve guide clearance	Intake	(0.01～0.035)mm	0.06mm
		Exhaust	(0.03～0.055)mm	0.08mm
Free length of valve spring		Inner spring	39.2mm	38mm
		Outer spring	44.85mm	43.65mm
Flatness of cylinder head			0.03mm	0.05mm
Cylinder parts	Cylinder, piston	Cylinder inner diameter	(63.5～63.51)mm	63.57mm
		Piston outer diameter	(63.47～63.48)mm	63.4mm
	Side clearance of piston ring	First ring	(0.03～0.07)mm	0.1mm
		Second ring	(0.02～0.06)mm	0.09mm
	Piston pin, Piston pin hole, Connecting rod small end	Piston pin diameter	(14.994～15)mm	15.04mm
		Piston pin hole diameter	(15.002～15.008)mm	14.96mm
		Connecting rod small end hole diameter	(15.014～15.022)mm	15.047mm

Lubricating oil - oil pump specifications

Items		Standard value	Service limit
Engine lubricating oil, crankcase	Lubricating oil viscosity	SJ 10W/40	/
	Capacity	1.1L	/
	Oil level	Check the oil dipstick between the marking lines	/
Oil pump	Clearance between inner and outer rotors	(0.05～0.15)mm	0.2mm
	Clearance between the outer rotor and the lubricating oil pump body	(0.12～0.21)mm	0.26mm
	Clearance between rotor end face and lubricating oil pump body	(0.05～0.11)mm	0.16mm

Belt-main and driven pulley component specifications

Items		Standard value	Service limit
Belts	Belt width	(19.5～20.0)mm	19mm
Active pulley components	Driving disc assembly hole diameter	(27～27.05)mm	27.1mm
	Bush outer diameter	(26.98～26.959)mm	26.91mm
	Roller outer diameter	(20.9～21.1)mm	20.8mm
Driven pulley components	Driven sliding disc assembly hole diameter	(34～34.025)mm	34.06mm
	Driven fixed shaft diameter	(33.97～33.99)mm	33.95mm
	Free length of compression spring	(88～90)mm	86mm
	Clutch lining thickness	(1.8～2.2）mm	1.0mm
	Inner diameter of clutch outer disc	(141.8～141.95)mm	142.2mm

Starting disc gear specifications

Items		Standard value	Service limit
Starting disc gear	Outer diameter of shaft sleeve	(42.575～42.6)mm	42.55mm
	Inner diameter of shaft sleeve	(32.00～32.025)mm	32.05mm

Specifications of crank connecting rod components - crankshaft box kit

Items		Standard value	Service limit
Crank connecting rod components	Runout	0.03mm	0.1mm
	Connecting rod small end diameter	(17.013～17.025)mm	17.06 mm
	Connecting rod large end clearance crank width	(0.15 ～ 0.4) mm	0.6 mm
	Bearing axial direction	/	0.2 mm
	Bearing radial direction	/	0.05mm
Transmission box	Lubricating oil viscosity	SJ 10W/40	/
	Oil level	Check the oil level observation bolt of the transmission box	/
	Transmission box capacity	0.4L	/
Crankcase	Lubricating oil viscosity	SJ 10W/40	/
	Oil level (heat engine)	Check with dipstick between the marking lines	/
	Transmission box capacity	1.1L	/

5.1.4 Torque value

Engine torque value

Items	Quantity	Thread diameter mm	Torque value N · m	Remarks
Cylinder head cover fastening bolts	4	6	8～12	
Valve adjustment bolts and nuts	4	6	12～18	
Cylinder head fastening nuts	4	8	24～32	
Cylinder head spark plugs	1	12	20～25	
Magneto rotor fastening nuts	1	14	54～60	
Disk gear fastening round nut	1	22	54～60	
Balance shaft fastening round nuts	1	16	35～45	
Secondary shaft locking nuts	1	18	40～50	
Locking nuts of the main and driven pulleys	1	12	54～60	
Crankcase oil drain bolts	1	12	32～40	
Transmission box oil drain bolts	1	8	20～25	
Transmission box refueling bolts	1	10	24～32	
Shifting and shifting bolts	1	14	25～35	
Lubricating oil filter cover	1	30	20～25	

Standard torque values of other fasteners

Fastener type	Torque value N · m	Fastener type	Torque value N · m
5mm bolts and nuts	5	5mm screws	4
6mm bolts and nuts	10	6mm screws	9
8mm bolts and nuts	22	6mm flange bolts (8mm head, small flange)	10
10mm bolts and nuts	34	6mm flange bolts (8mm head, large flange)	12
12mm bolts and nuts	54	6mm flange bolts (10mm head) and nuts	12
		8mm flange bolts and nuts	27
		10mm flange bolts and nuts	39

5.1.5 Lubrication and sealing positions

Engine

Material		Location	Remarks
Sealant	Silicone flat sealant	Magneto rubber wire card	
	1512 gray flat adhesive	Assembly position of the left and right box cylinder blocks	Before cylinder block assembly
	1271 thread sealant	Main shaft bearing pressure plate bolt	
Engine lubricating oil		The entire surface of the inner and outer rotors of the lubricating oil pump The entire surface of the rocker shaft The inner surface and roller surface of the rocker arm The sliding surface and rod end of the valve stem The entire surface of the timing chain The rolling surface of the camshaft The inner surface of the cylinder borePiston outer surface, piston pin hole and piston ring groove Outer surface of piston pin Whole surface of piston ring Shift shaft lever part Starting the entire surface of the overrunning clutch The entire surface of the shift fork shaft Side clearance of needle bearing at the large end of crankshaft connecting rod Inner hole at the small end of the crankshaft connecting rod Gear teeth (primary transmission, crankcase, starting deceleration) Sliding surface of disc teeth Each bearing raceway and cage Surface of each O-ring seal	
Degreaser		Crankshaft and magneto cone	

5.2 Maintainance

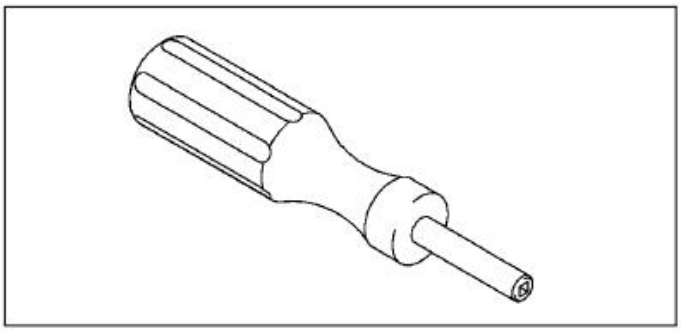
5.2.1 Maintenance information

Overview

·Before all operations, please place the entire vehicle on a horizontal plane.

Tool

·Valve adjustment screw fixing tool



5.2.2Maintenance specifications

Please check according to the maintenance interval in the maintenance table of the "Instruction manual".

I: Inspect, clean, adjust, lubricate or replace if necessary; C: Clean; R: Replace; L: Lubricate.

The following maintenance items require some mechanical knowledge, and some items (especially those marked with * and ** symbols) may require more technical information and tools.

Maintenance times / Maintenance items		Items	Odometer (×1000km) Note①			
		Cycle	1.0	4.0	8.0	12.0
*	Fuel oil pipe			I	I	I
	Fuel filter		C	C	C	C
	Exhaust nozzle	Note②	C	C	C	C
**	Spark plug	Note③	I	I	I	I

**	Valve clearance		I	I	I	I
	Engine lubricating oil	Every year	Initial R=500km or one month; R=every 1500km			
	Lubricating oil filter screen	Every year			C	
	Idle speed		I	I	I	I
**	Clutch		I	I	I	I
**	CVT belt		I	I	I	I

*Repairs should be carried out by Longxin dealers, unless the owner has the required tools and a certain mechanical knowledge foundation to conduct self maintenance, they should also refer to this manual.

**From a safety perspective, we recommend that these items be repaired by Longxin dealers.

Note:

① If the odometer reading is high, repair and maintenance should be carried out according to the specified cycle above.

② When driving in particularly humid or dusty areas, maintenance work should be carried out more frequently.

③ When driving in the rain or at full speed, the maintenance frequency should increase.

5.2.3 Check the level of lubricating oil

·Park the motorcycle on a flat surface and use a dipstick to check the oil level.

·If the oil level is below the lower mark, the recommended lubricating oil should be replenished to fill it up to the middle and upper mark.

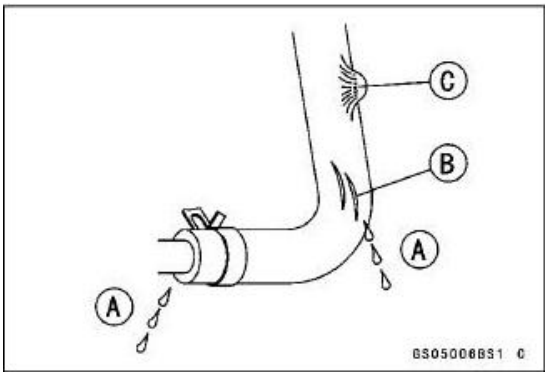
Lubrication method		Pressure splash lubrication
Lubricating oil grade		SJ10W/40
Lubricating oil tank capacity		1.1L (crankcase)/0.4L (transmission box)
Cooling water capacity		/
Transmission mode		Belt drive
CVT transmission ratio		0.703～2.413
Clutch type		Dry clutch
Transmission type		Continuously variable transmission
Transmission ratio	Front gear	7.227
	Low gear	/
	Reverse gear	26.9

5.2.4 Check the oil pipe

If the oil pipe is not properly maintained, the high pressure inside the oil pipe may cause lubricating oil leakage A or oil pipe rupture. Visually inspect the oil pipes for signs of damage. Squeeze the oil pipe, and the oil pipe should not be hard or brittle, nor should it be soft or swollen.

★If any wear, cracks B or protrusions C are found, please replace the oil pipe.

·Check if the oil pipe connection is secure and tightened correctly.



5.2.5 Valve clearance

Check valve clearance

Attention
The valve clearance can only be checked when the engine has cooled to room temperature.

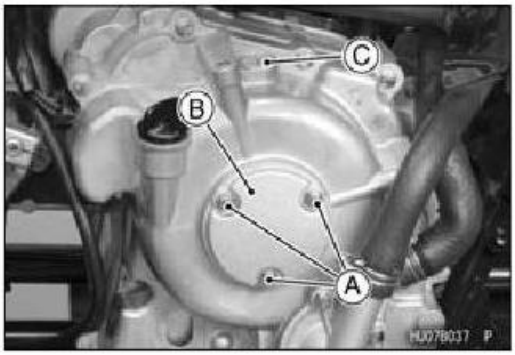
·Disassemble：

Cylinder head cover

Right decorative cover bolt A

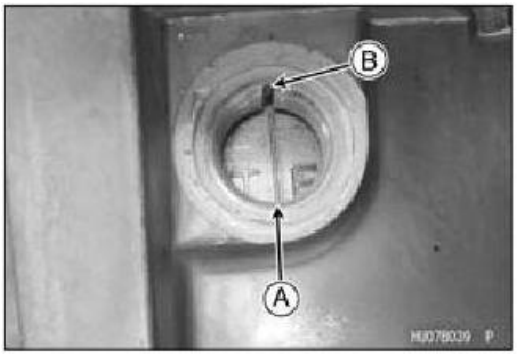
Right decorative cover B

Timing observation hole cover C



·Disassemble

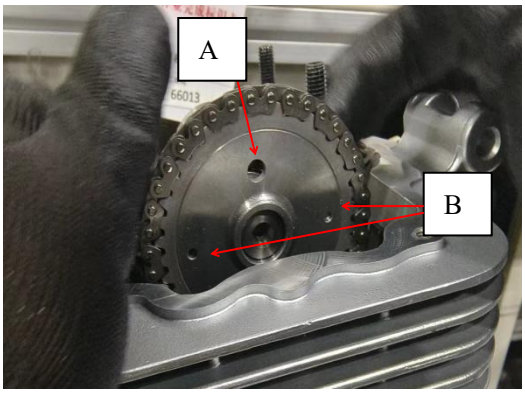
Oil passage pipe and pressure spring A



·Place the T-shaped sleeve on the bolt of the magneto rotor and rotate the crankshaft clockwise until the "T" marking line A on the magneto rotor aligns with the notch B on the right crankcase cover, as shown in the figure: it is the top dead center of cylinder compression.

★Attention：Unable to rotate the crankshaft counterclockwise

·Confirm that the large circular hole A of the driven wheel for cylinder head timing is above the engine cylinder head surface, and the two small holes B are flush with the cylinder head plane



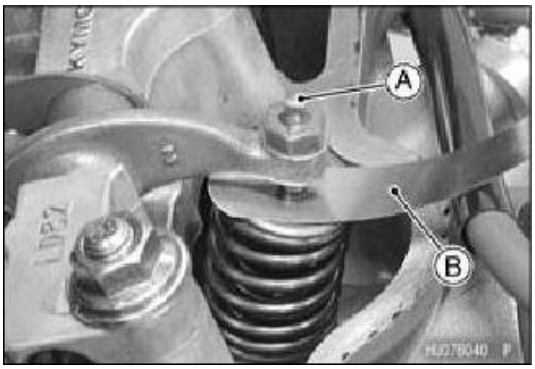
·Measure the valve clearance using a feeler gauge B, and measure the clearance between the end of the valve stem and the adjusting screw A.

·Valve clearance (when cold)

Exhaust valve: (0.04-0.08) mm

Intake valve: (0.04-0.08) mm

★If the valve clearance is not correct, please adjust the valve clearance.



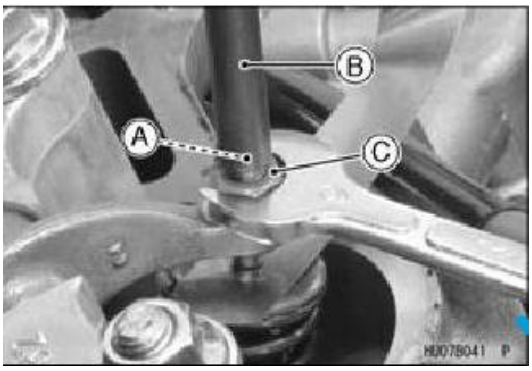
Adjusting valve clearance

·Loosen the locking nut and rotate the adjusting screw until the gap is correct;

·Secure the adjusting screw A with fixture B and tighten the locking nut C;

Tightening torque of the locking nut: (12-18) N · m.

Special tool - adjusting screw tool.



·Recheck the valve clearance.

★If the clearance is not correct, readjust it.

★If the clearance is correct, adjust the clearance of the other valve.

5.2.6 Belt

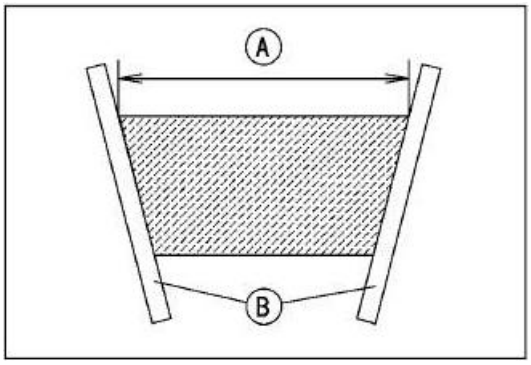
Check for belt wear

Warning
Any improper operation or clutch stalling or slipping may cause severe wear or damage to the transmission and wheels due to belt jamming. This may cause the operator to lose control and lead to accidents, resulting in injury or death. Maintain according to the maintenance schedule.

Attention
When replacing the belt, check the active pulley components and the driven pulley components.

·Remove the left crankcase cover.

·As shown in the figure, use a pair of suitable straight edge holders to measure the width A of the belt at several positions.



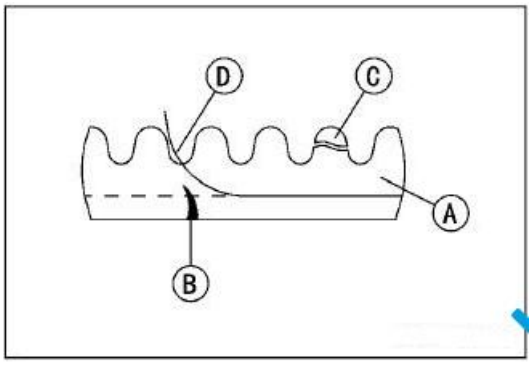
★If the measured value is less than the usage limit, please replace the belt.

·Belt width

Standard: (19.5-20) mm

Service limit: 19mm

·Check the belt for cracks, fractures, or peeling.



·If necessary, please replace the belt.

Belt A

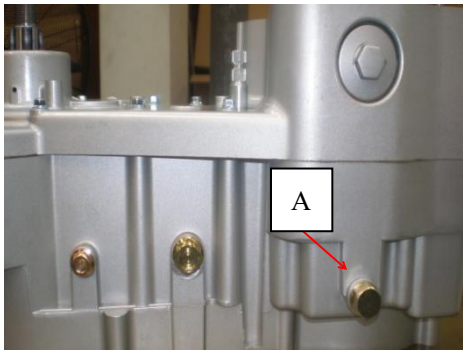
Crack B

Fracture C

Peeling D

5.2.7 Crankcase lubricating oil

Replace lubricating oil



·After preheating the engine, keep it in a horizontal position on both the front, rear, left, and right sides.

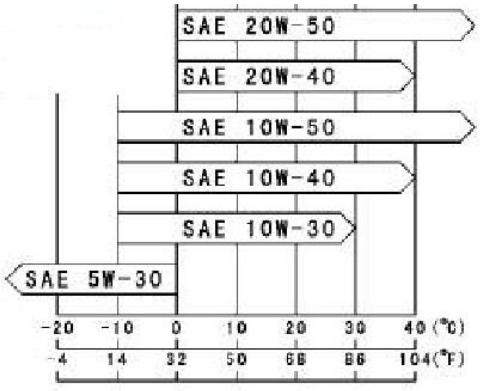
·Remove the oil drain plug A and drain the lubricating oil.

·Replace with a new oil drain plug flat washer.

Tightening torque of the oil drain plug:

(32-40) N · m.

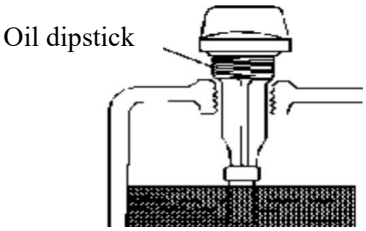
·Add the specified type and quantity of lubricating oil or select the recommended viscosity based on the actual usage environment, with a quality grade of SJ or above.



Viscosity: SJ 10W/40

Capacity: 1.1L (disassembling crankshaft case).

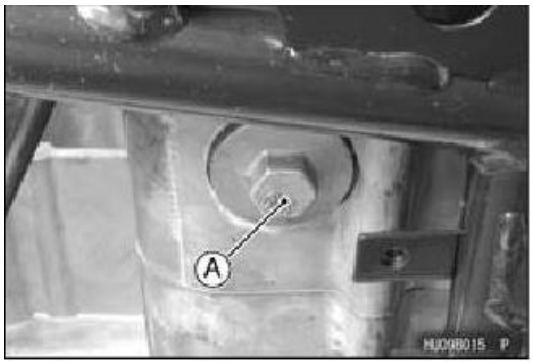
Attention
Please use the specified lubricating oil and do not add other chemical additives to the lubricating oil.



·Check the engine lubrication oil level.

·When checking the lubricating oil level regularly, place the entire vehicle horizontally, start the engine, let it idle for one minute, turn off the engine, wait for about one minute, and check the oil level through the lubricating oil dipstick. At this point, the oil level should be within the marking line. If it is below the lower marking line, add it to the middle position of the marking line.

Clean the lubricating oil filter screen

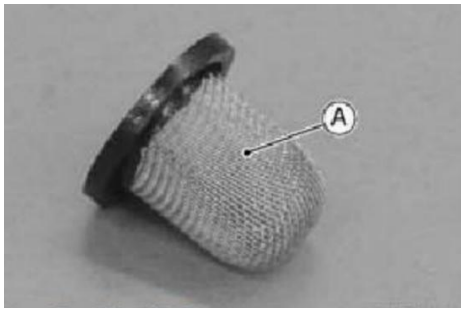


·Drain the lubricating oil.

·Remove the lubricating oil filter cover A and the pressure spring.

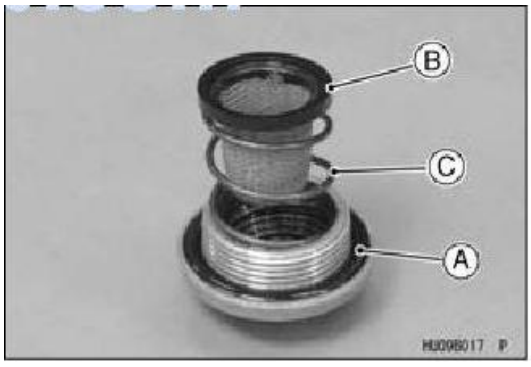
·Clean the lubricating oil filter screen with a high ignition point solvent to remove particles sticking to the lubricating oil filter screen.

Warning
Do not use gasoline or low ignition point solvents to clean the lubricating oil filter. Gasoline and low ignition point solvents may be flammable and/or explosive, which can cause serious burns. Clean the lubricating oil filter screen in a well ventilated area and ensure that there are no sparks or flames near the work area, including any indicator lights.



·Carefully check whether the lubricating oil filter A is damaged and whether the filter pad falls off.

★If the lubricating oil filter screen is damaged, please replace it.



·Replace with a new O-ring A.

·Assemble lubricating oil filter screen B and pressure spring C.

·The smaller side of the spring diameter faces downwards.

Tightening torque of lubricating oil filter cover:

(20～25)N·m

5.2.8 Transmission lubricating oil

Check the transmission oil level

·Park the vehicle so that it is level in front, back, left, and right.

·Disassemble：

Transmission oil level inspection bolt A

Attention
Do not allow any dirt or foreign objects to enter the transmission box.

★If the oil level is insufficient, first check if there is any oil leakage in the transmission box, and if necessary, replenish it by opening the inspection bolts. Use the same type and brand of oil as the transmission box.

·Replace with a new flat washer and tighten the inspection bolt.

Check the tightening torque of the bolts: (24-32) N · m.

Replace the transmission oil

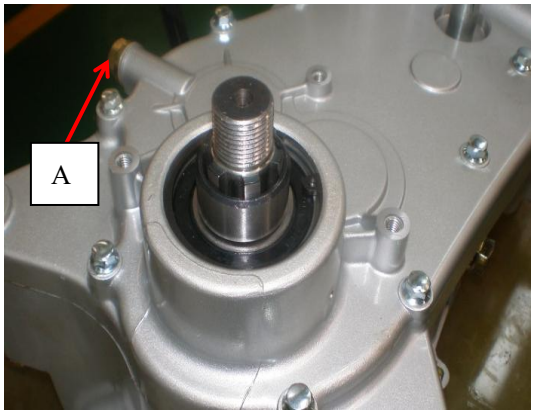
·By running the vehicle to preheat the lubricating oil, it will adsorb some sediment and be easy to discharge; Then stop the car.

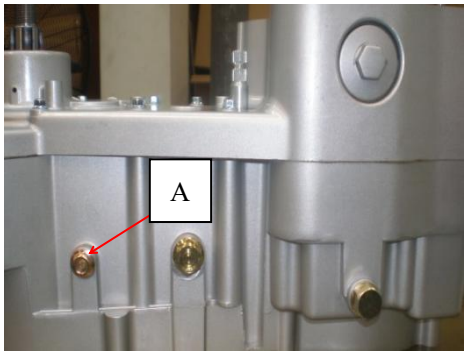
·Remove the transmission oil drain bolt A. Allow the oil to completely drain.

·Replace with a new gasket

·After the oil is completely drained, assemble the drain bolt and flat washer.

Tightening torque of the oil drain bolt: (20-25) N · m.





·Fill the transmission box with high-quality oil.

Transmission oil type:

Viscosity: SJ 10W/40

Capacity: 0.4L

5.2.9 Spark Plug

Clean/inspect spark plugs

Clean the spark plug, preferably in a sandblasting device, and then clean the abrasive particles. It can also be cleaned with a wire brush or other suitable tools.

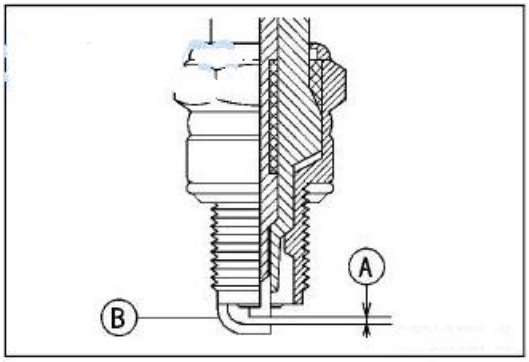
If the spark plug electrode is corroded or damaged, or the insulation material is broken, please replace the spark plug. Use standard spark plugs or equivalent spark plugs.

Inspection of the spark plug gap

Measure the gap A using a wire thickness gauge.

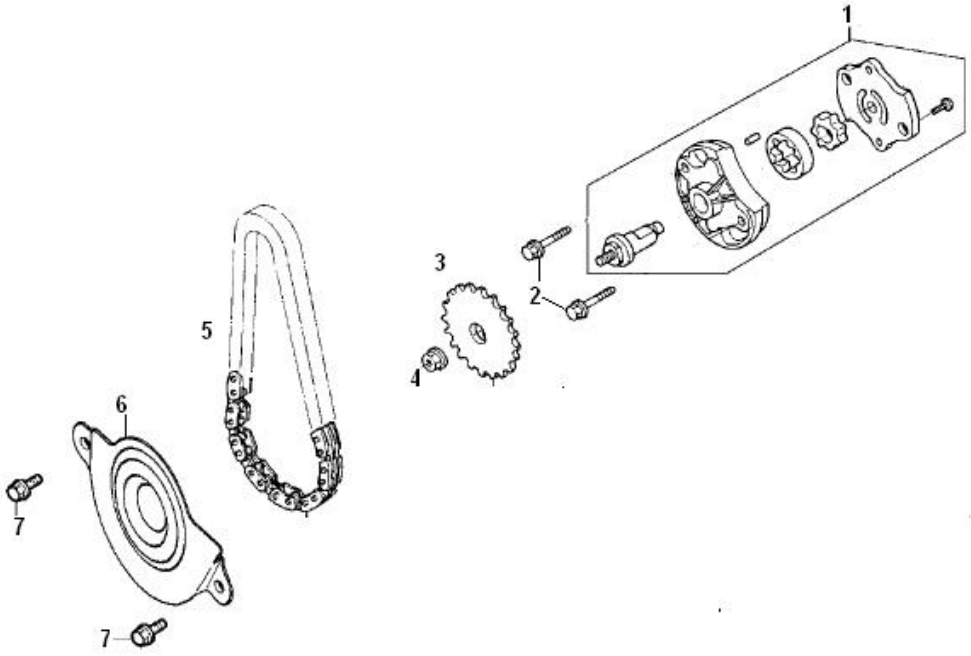
If the gap is not correct. Carefully bend the side electrode B with a suitable tool to obtain the correct gap.

Spark plug gap: (0.6~0.7) mm.



5.3 Lubrication system

5.3.1 System explosion view



5.3.2 Service information

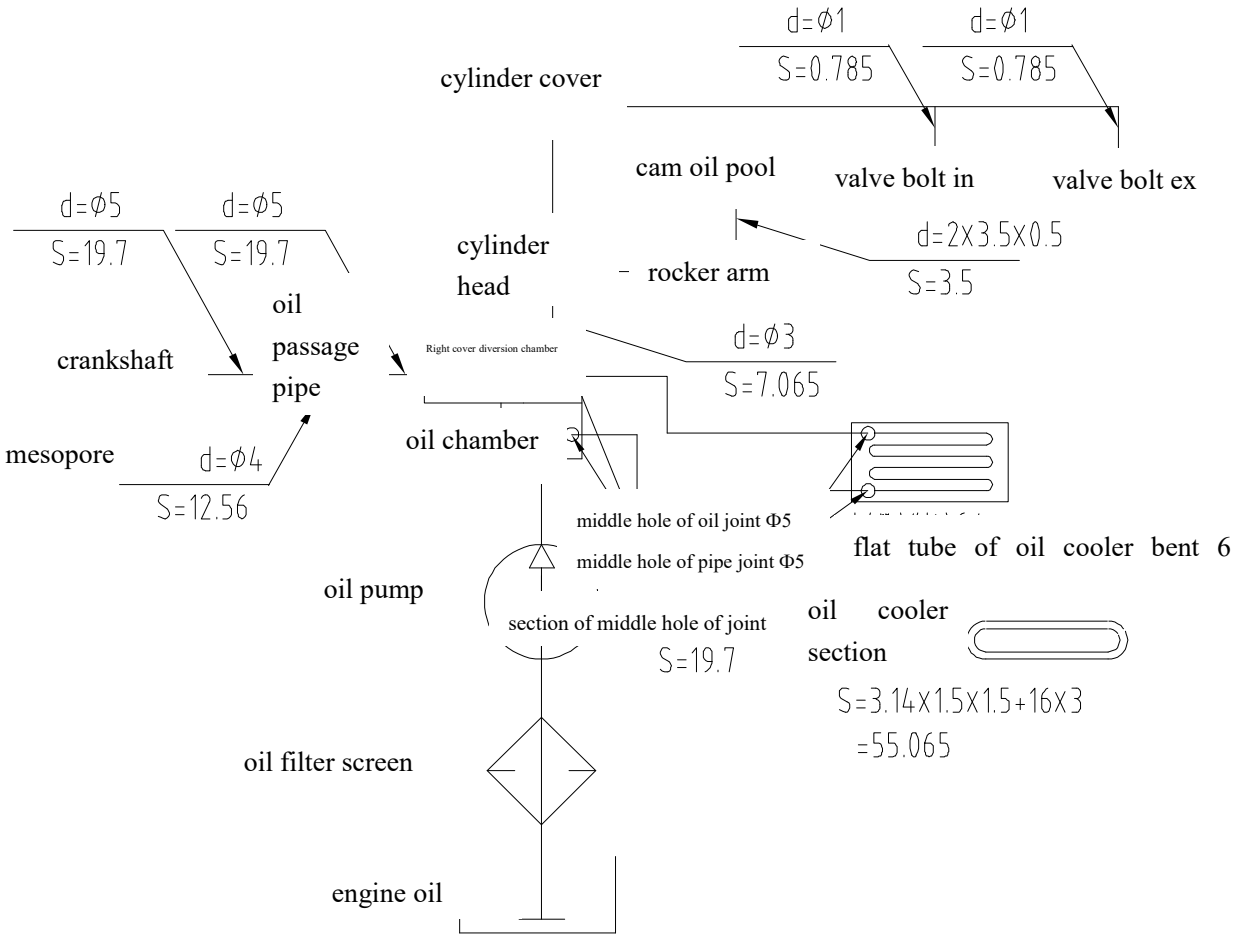
Overview

- This chapter covers the disassembly and inspection of oil pump components.
- When disassembling, the disassembled parts should be marked and placed properly to ensure correct positioning during reassembly.
- Before inspection, all dismantled components should be cleaned with cleaning agent and blown dry with compressed air.

5.3.3 Specifications

Items		Standard value	Service limit
Engine lubricating oil Crankcase	Lubricant viscosity	SJ 10W/40	/
	Capacity	1.1L	/
	The oil level	Check with dipstick between the marking lines	/
Oil pump	Clearance between inner and outer rotors	(0.05～0.15)mm	0.2mm
	Clearance between the outer rotor and the lubricating oil pump body	(0.12～0.21)mm	0.26mm
	Clearance between rotor end face and lubricating oil pump body	(0.05～0.11)mm	0.16mm

5.3.4 Lubrication system diagram



5.3.5 Lubricating oil and filter

Warning
Running a vehicle under inappropriate conditions, harsh conditions, or contaminated engine lubricating oil can accelerate wear and tear, and may also lead to engine shutdown, accidents, and injuries. Check the oil level before each use and replace the lubricating oil and filter according to the maintenance interval table.

Check the oil level

·Park the vehicle so that it is level in front, back, left, and right.

·Check the lubricating oil level at the centerline of the lubricating oil dipstick marking.

Attention
If the lubricating oil has just been changed, start the engine, idle for one minute, turn off the engine, and then wait for one minute until the lubricating oil settles. Accelerating the engine before the lubricating oil reaches each level will cause the engine to stop running.

★If the oil level is too high. Use a syringe or other suitable tool to suck excess oil out of the refueling hole.

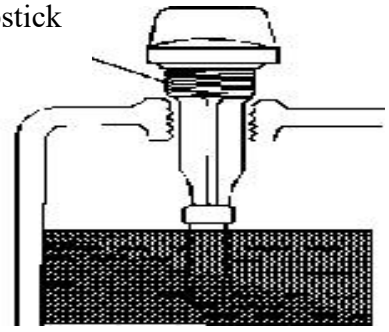
★If the oil level is too low, oil can be added through the oil filling hole. Use lubricating oil of the same type and composition.

Attention
If the type and composition of engine lubricating oil are unknown, priority should be given to topping up the oil level with any designated brand of lubricating oil, so that the engine can run at low oil levels. Then find the appropriate lubricating oil as soon as possible and replace it all.

Replace lubricating oil

· Please refer to the lubrication oil replacement section in the maintenance section.

Oil dipstick



Remove the lubricating oil filter screen

·Drain the lubricating oil.

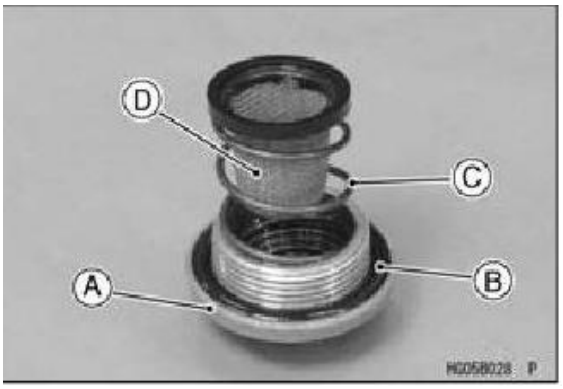
·Disassemble：

Lubricating oil filter cover A and O-ring B

Pressure spring C

Lubricating oil filter screen D

Assembly of lubricating oil filter screen



·Assembly and disassembly are exactly the opposite.

·Note that a new O-ring needs to be replaced.

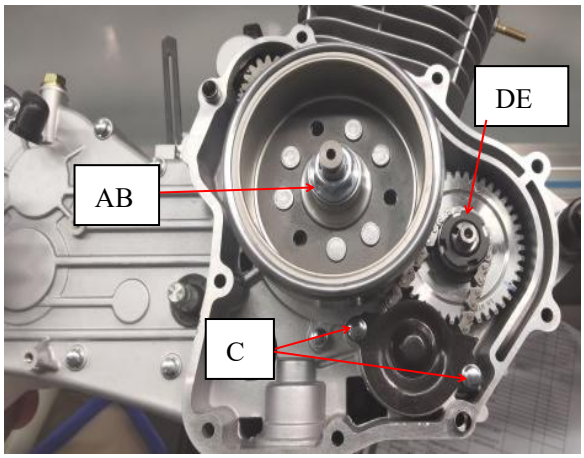
Tightening torque of lubricating oil filter cover:(20～25)N·m

Clean the lubricating oil filter screen

·Please refer to the cleaning section of the lubrication oil filter screen in the maintenance section.

5.3.6 Oil pump

Remove the oil pump

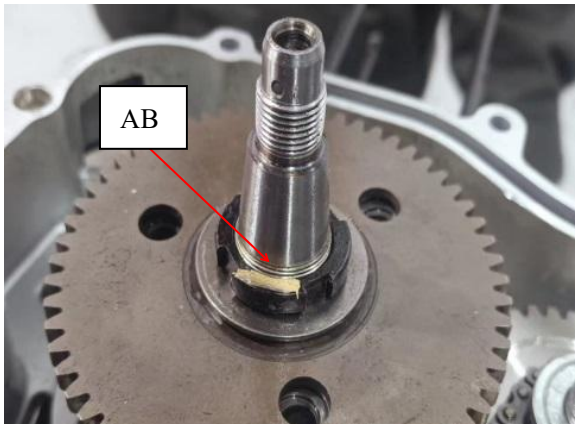


·Disassemble：

Magneto rotor flat washer A, nut B

Chain wheel cover bolt C

Oil pump driving gear flat washer D, round nut E



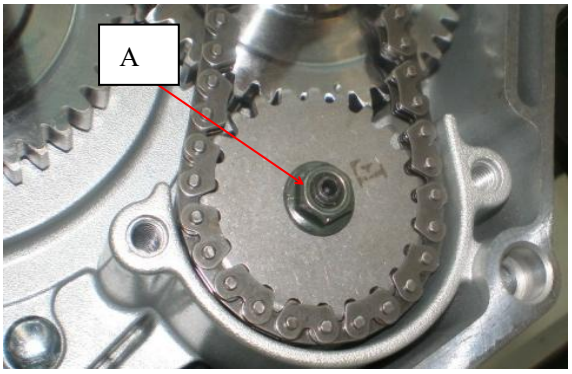
·Disassemble：

Magneto rotor

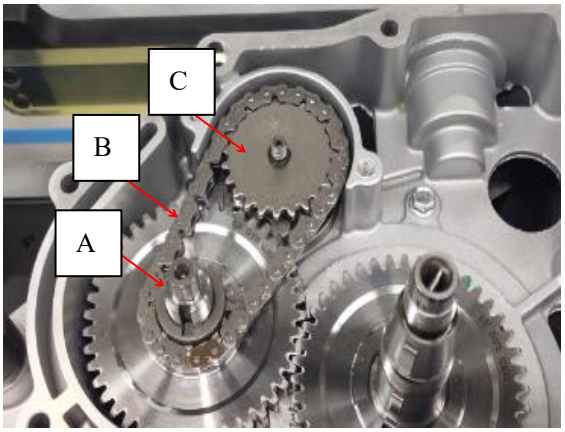
Starting clutch round nut A, flat washer B

Starting clutch combination

Flat washer



Oil pump driven nut A



·Disassemble：

Oil pump driving wheel A

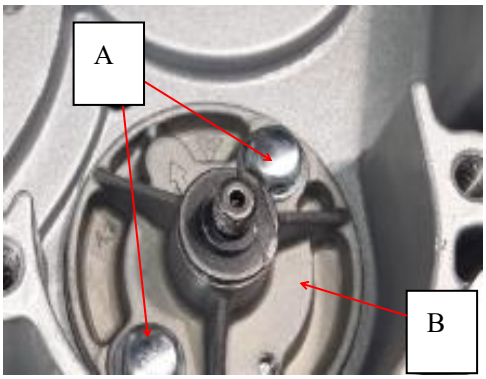
Oil pump chain B

Oil pump driving wheel C

·Disassemble：

Oil pump cover bolt A

Oil pump B



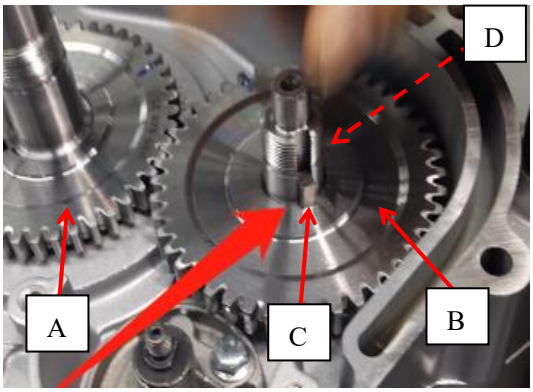
Disassemble：

Balance shaft driving gear A

Balance shaft driven gear B

Square key C

Balance shaft driven gear washer D

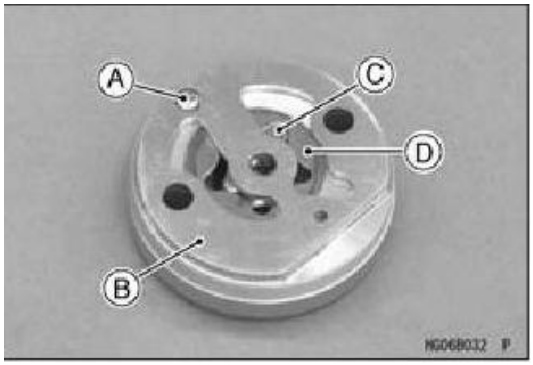


Assemble the oil pump

·Apply lubricating oil to the following parts:

Oil pump transmission shaft

Inner rotor A and outer rotor B



·Assembly:

Inner rotor

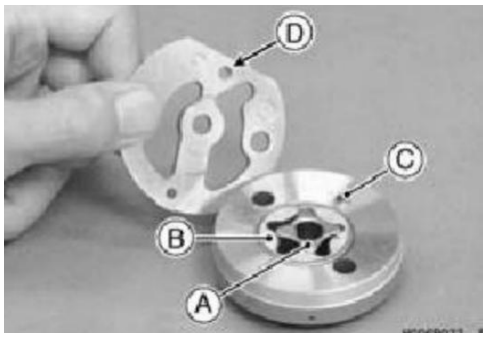
Outer rotor

·Check if the positioning pin is properly assembled.

·Align the locating pin with hole D on the oil pump cover to assemble the oil pump cover

·Hand tighten the oil pump cover bolts.

·Assemble the oil pump transmission shaft.



·Inject lubricating oil into the lubricating oil pump.

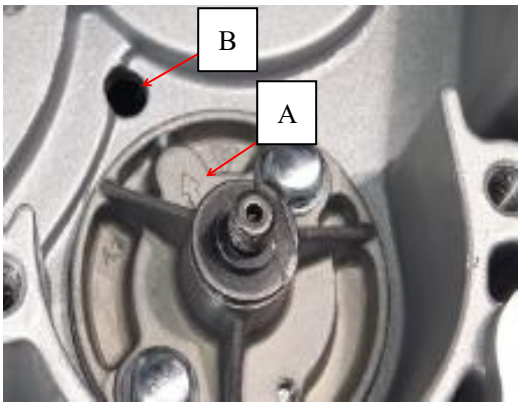
·Check if the oil pump transmission shaft rotates freely.

·Assemble the oil pump assembly so that the arrow mark A is aligned with the small hole B.

·Tighten the lubricating oil pump assembly bolts.

Tightening torque of lubricating oil pump bolts:

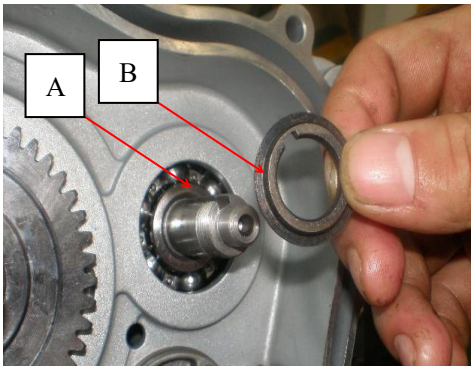
(8～12)N·m



·Assembly:

Install square key A

Place the driven gear washer B of the balance shaft with one end facing upwards and align the keyway with the square keyway of the balance shaft

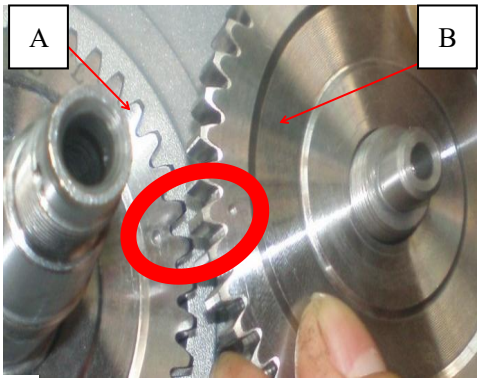


Balance shaft driving gear A

Balance shaft driven gear B

Attention：

Align the concave points "●" of the main and driven teeth of the balance shaft



Other reverse assembly

Oil pump driving wheel - oil pump chain - oil pump driving wheel - oil pump driven nut - oil pump driving flat washer, round nut sprocket cover - bolt washer - starting clutch combination - washer - round nut

Attention: Degreasing treatment of crankshaft cone surface

Rotor washer nut

Torque control:

Tightening torque of oil pump driven nut: (10～15)N·m

Tightening torque of the oil pump driving round nut:(35～40)N•m

Tightening torque of the round nut of the starting clutch:(54～60)N•m

Tightening torque of rotor nut: (54~60) N · m

Chain wheel cover bolt tightening torque: (8-12) N · m

Check the oil pump

·Remove the oil pump.

·Visually inspect the oil pump driven wheel, inner and outer rotors, and oil pump cover.

★If there is damage or uneven wear, please replace it. Use a feeler gauge to check the gap A between the inner and outer rotors. Measure the gap between the highest point of the inner rotor and the highest point of the outer rotor.

★If the measured value exceeds the usage limit, please replace the inner and outer rotors.

·Clearance between inner and outer rotors

Standard: (0.05-0.15) mm

Service limit：0.2mm

·Use a feeler gauge to check the gap A between the outer rotor and the oil pump body.

★If the measured value exceeds the service limit, please replace the lubricating oil pump and the inner and outer rotors.

·Clearance between outer rotor and oil pump body

Standard: (0.12-0.21) mm.

Service limit：0.26mm

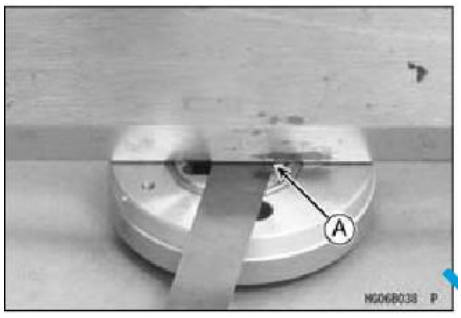
·Use a feeler gauge to check the gap A between the outer rotor end face and the lubricating oil pump body.

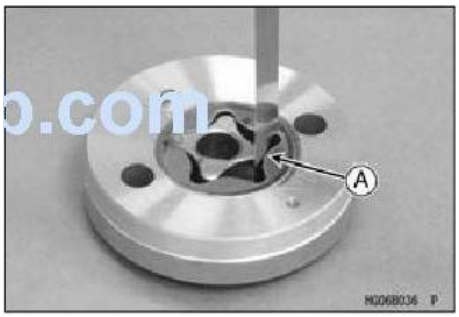
★If the measured value exceeds the service limit, please replace the lubricating oil pump and the inner and outer rotors.

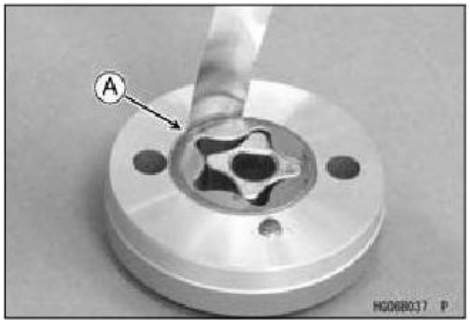
·Clearance between outer rotor end face and lubricating oil pump body

Standard: (0.05-0.11) mm.

Service limit：0.16mm

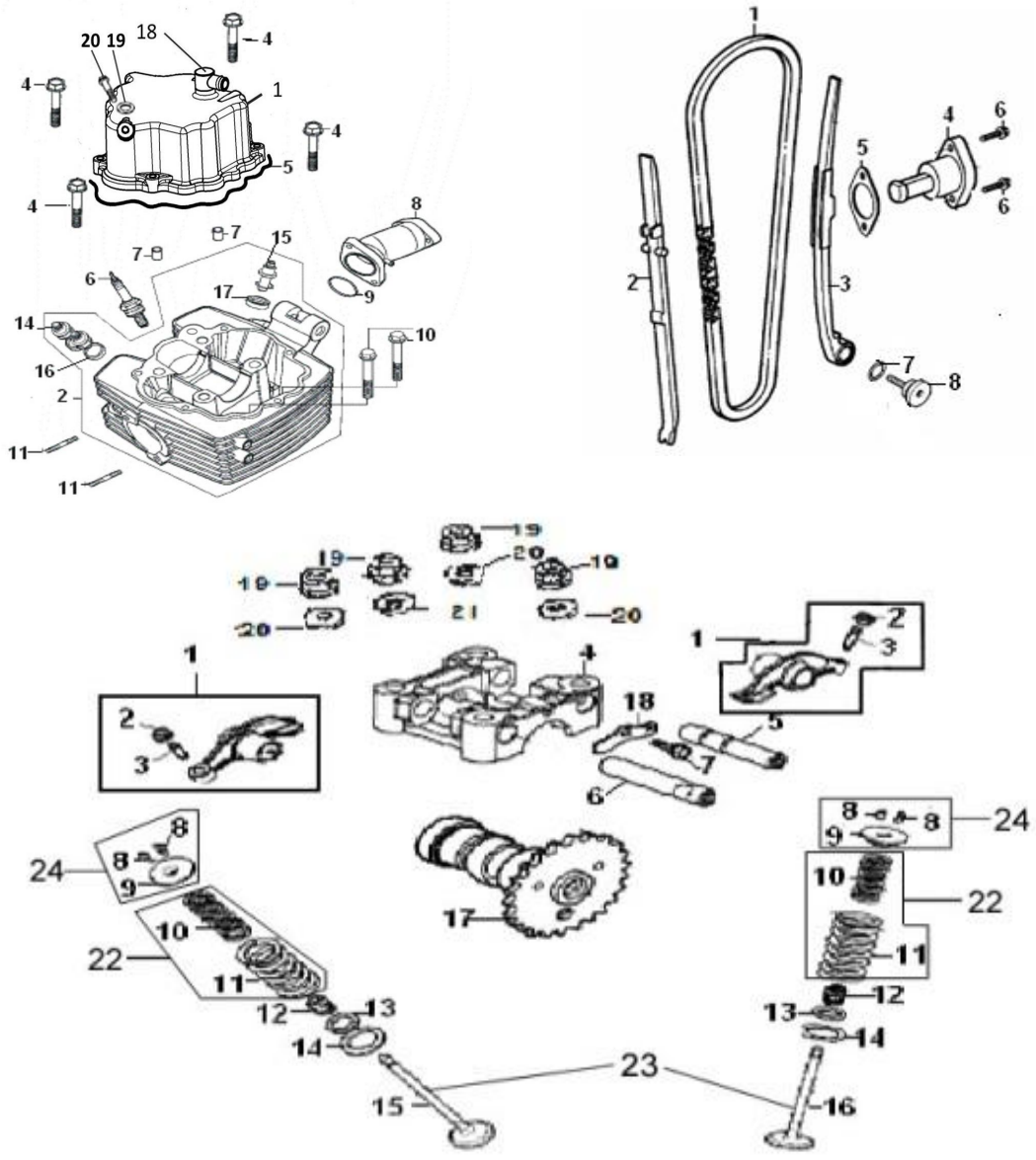






5.4 Cylinder head and valves

5.4.1 System explosion view

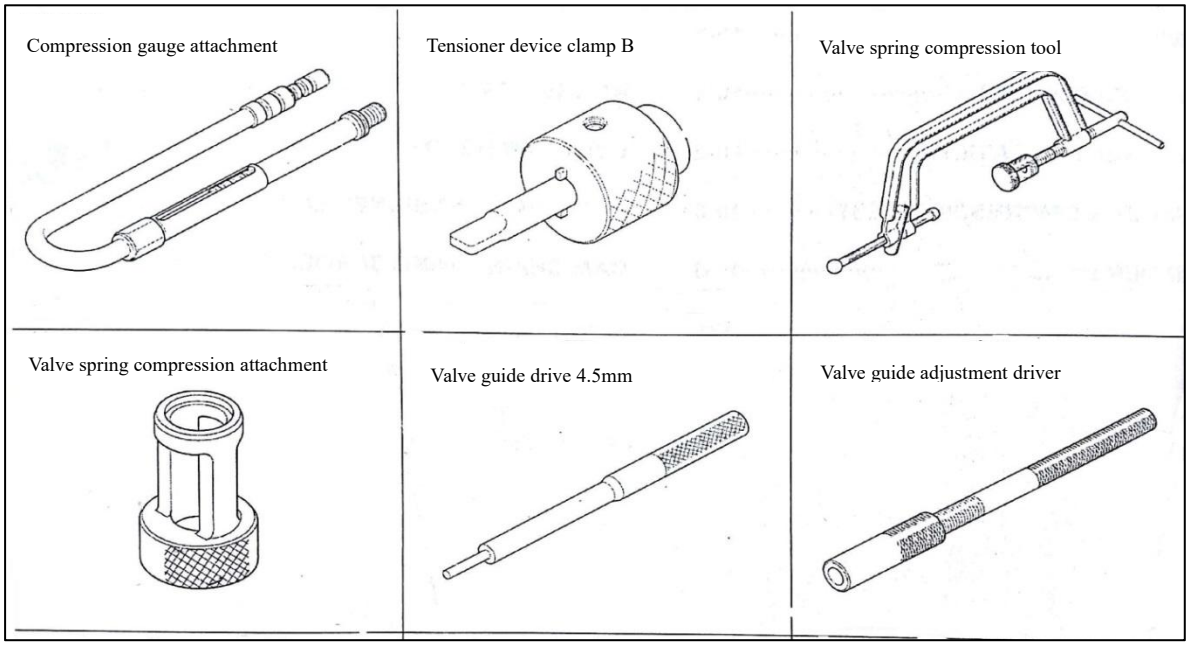


5.4.2 Service information

Overview

- This chapter covers the maintenance and inspection of cylinder heads, valves, camshafts, and rocker arms.
- When repairing the camshaft, rocker arm, and tensioner adjustment screw, there is no need to remove the engine from the frame; When repairing cylinder heads and valves, the engine must be removed from the frame.
- When disassembling, the disassembled parts should be marked and placed properly to ensure correct positioning during reassembly.
- Before inspection, all dismantled components should be cleaned with cleaning agent and blown dry with compressed air.
- The camshaft lubricating oil is injected through the oil pipes inside the cylinder head and cylinder head cover. Therefore, before assembling the cylinder head and cylinder head cover, the oil pipes should be cleaned.
- When disassembling the cylinder head and cylinder head cover, attention should not damage the joint surface.

Tools

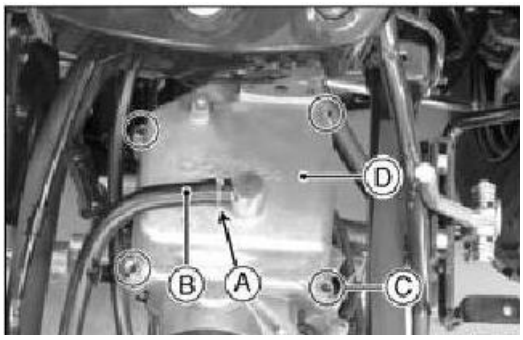


5.4.3 Specifications

Items		Standard value	Service limit
Valve rocker arm	Clearance between valve rocker arm and valve rocker arm shaft	(0.013～0.046)mm	0.05mm
Cam height of camshaft	Exhaust	(31.47～31.59)mm	31.41mm
	Inlet	(31.72～31.84)mm	31.66mm
Cylinder head	Cylinder pressure	Available range:(900～1200)kpa	/
	Flatness	0.03mm	0.05mm
Valve clearance	Exhaust valve	(0.04～0.08)mm	/
	Intake valve	(0.04～0.08)mm	/
Clearance between valve and valve guide	Exhaust valve	(0.03～0.055)mm	0.08mm
	Intake valve	(0.01～0.035)mm	0.06mm
Free length of valve spring	Valve outer spring	44.85mm	43.65mm
	Inner valve spring	39.2mm	38.0mm

5.4.4 Cylinder head cover

Remoe cylinder head cover



·Disassemble：

Fuel tank (refer to the fuel system chapter)

·Remove pipe clamp A and vent pipe B.

·Remove the cylinder head cover assembly bolts C and cylinder head cover D.

Assemble the cylinder head cover

·Replace the cylinder head cover gasket A with a new one.

·Assemble the cylinder head cover.

Bolt torque: (8-12) N · m.

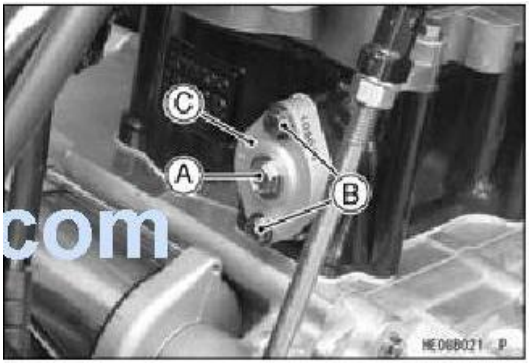
·Assemble the vent pipe.

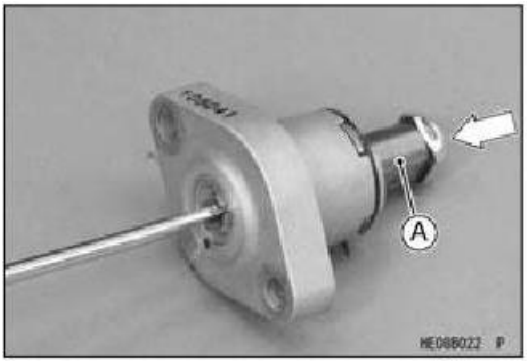
5.4.5 Tensioner

Remove the tensioner

Attention
This is not an automatic return tensioner. When the push rod is pushed out to compensate for the slack in the timing chain, the push rod will not return to its original position. The following principles should be followed: When disassembling the tensioner, do not only remove the assembly bolts on one side, as this can easily damage the tensioner and timing chain. Once the bolts are loosened, the tensioner must be disassembled and reset according to the instructions for assembling the tensioner. Do not rotate the crankshaft when removing the tensioner, as it may disrupt the timing and damage the valves.

Attention
Do not rotate the push rod counterclockwise before assembling the tensioner, as it may detach and prevent reassembly of the tensioner.





·Disassemble：

Tensioner bolt A and sealing ring

Tensioner assembly bolt B

Tensioner C

Assemble the tensioner

·Remove the tensioner bolt and sealing ring.

·Press the push rod A and use a suitable screwdriver to rotate clockwise until the push rod is in place.

·Replace the tensioner gasket with a new one. Fix the push rod in place with a suitable push rod support plate A, and then assemble the tensioner on the cylinder block.

· Tightening torque of tensioner assembly bolt A:

(8～12)N·m

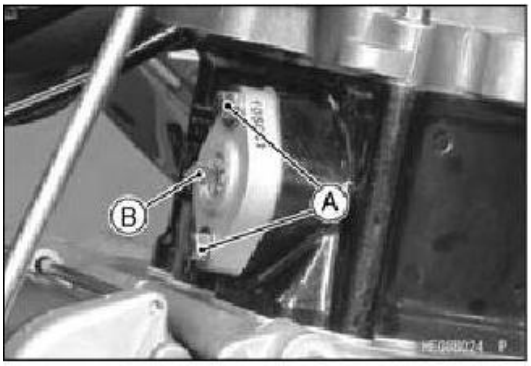
·Remove support plate B.

·Replace with a new sealing ring.

·Apply lubricating oil to the new sealing ring.

·Assemble a new sealing ring and tighten the tensioner bolt by hand.

·Assemble the disassembled parts.



5.4.6 Valve rocker arm and shaft

Remove valve rocker arm

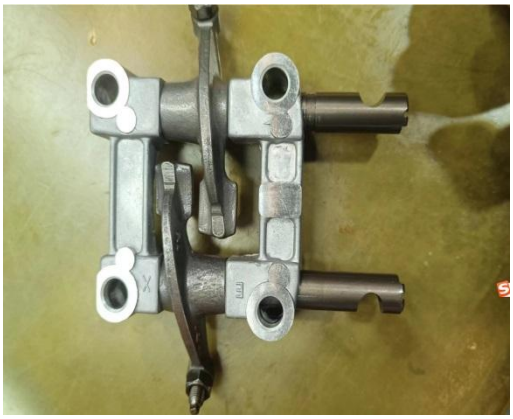
·Disassemble：

Rocker arm support seat (refer to the camshaft chapter)

Baffle bolt A, baffle B

Rocker arm shaft C

Valve rocker arm assembly



Assemble valve rocker arm

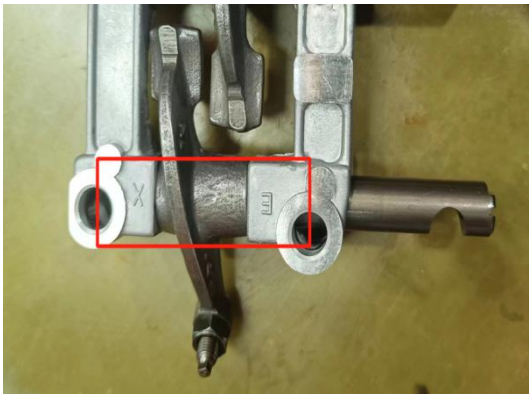
· Apply lubricating oil to the following parts:

Valve rocker arm shaft

Valve rocker arm assembly hole

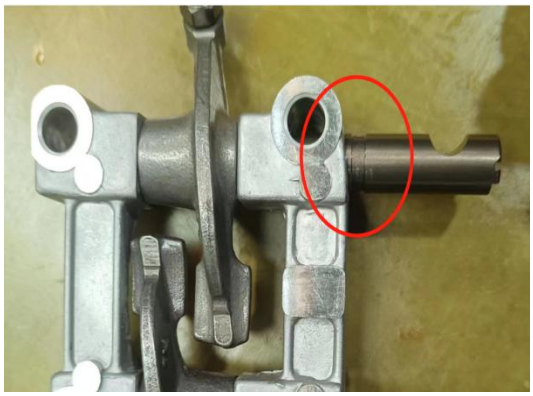
·Assemble the following parts as shown in the diagram:

Install the two rocker arm foot plates inward into the bracket



Exhaust rocker arm shaft (smooth rod without oil passage), installed into bracket "EX" end

Intake rocker arm shaft (with oil passage ring groove), installed into the bracket without word end

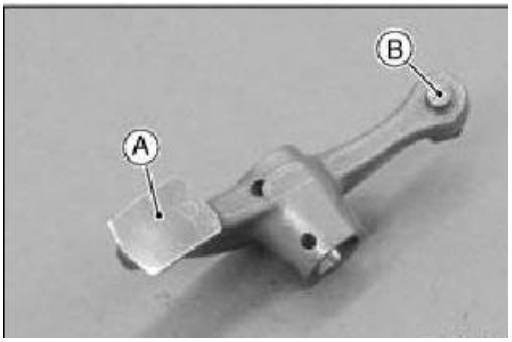


Rotate the rocker arm shaft so that the notched end of the rocker arm shaft faces inward. Align the notch and threaded hole of the rocker arm shaft with the plane of the pressure plate facing upwards

Install bolts

Bolt tightening torque: (8-12) N · m.

Check the valve rocker arm and valve rocker arm shaft



·Check area A on the rocker arm where it rubs against the cam.

★If the rocker arm is scratched, discolored, or otherwise damaged, replace it, and check the camshaft tip at the same time.

· Check the position where the end of valve adjustment bolt B contacts the valve.

★If there is mushroom shaped or other damage to the end of the valve adjustment bolt, or the bolt cannot rotate smoothly, please replace it and check the end of the valve.

· Insert the valve rocker arm shaft into the valve rocker arm and measure the clearance.

★If the gap exceeds the limit of use, please replace it at the same time.

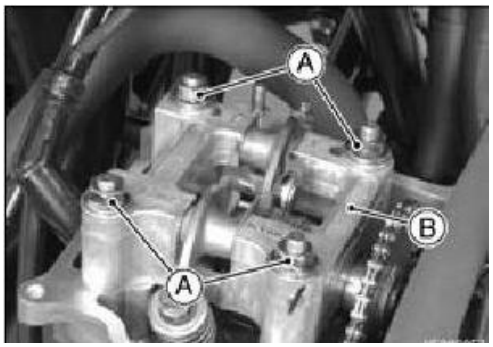
Valve rocker arm/valve rocker arm shaft clearance

Standard: (0.013~0.046) mm

Service limit: 0.10mm

5.4.7 Camshaft

Remove the camshaft



·The piston turns to the top dead center.

·Disassembly:

Cylinder head cover

Tensioner

Rocker arm support seat assembly nut A

Rocker arm support seat B

·Remove camshaft A.

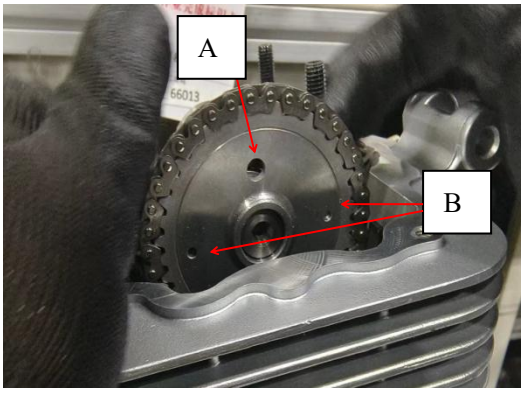
·Support the timing chain with a suitable tool.

Assemble camshafts

·Apply lubricating oil to all cam components.

·Assemble locating pin A.

·Engage the timing chain and timing driven wheel.



·Confirm that the large circular hole A of the driven wheel for cylinder head timing is above the engine cylinder head surface, and the two small holes B are flush with the cylinder head plane

· Assemble the rocker arm support seat with the EX mark D facing the exhaust side.

· Apply lubricating oil to the threads of the rocker arm support seat assembly nut.

·Assemble the flat washer and nut.

· Nut tightening torque: First, apply the (10-15) N · m cross tightening, finally tighten to (24-32) N · m.

·Assemble the tensioner.

· Rotate the crankshaft clockwise by 2 turns to open the tensioner and recheck the timing.

·Assemble the removed components.

Check the cam wear

·Remove the camshaft.

·Measure the height A of the cam with a micrometer.

★ If the measured value exceeds the cam wear limit, replace the camshaft.

Cam height

Standard: Exhaust (31.47~31.59) mm

Intake (31.72~31.84) mm

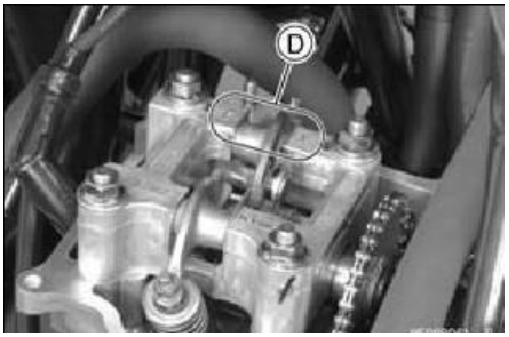
Service limit: Exhaust 31.41mm

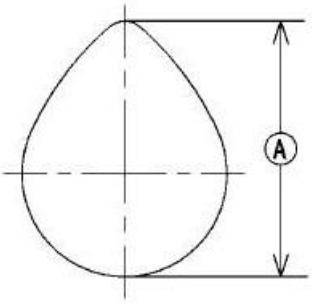
Intake 31.66mm

Check the camshaft bearings

·Check each bearing A pressed onto the camshaft.

· Due to the very small manufacturing tolerance of bearings, the wear of bearings must be based on hand feeling rather than measurement. Clean the bearings with a high ignition point solvent, dry them (do not rotate the bearings when dry), and lubricate them with lubricating oil.





·Quickly rotate the bearing by hand to check its condition.

★If there is abnormal noise, unsmooth rotation, or any violent stop in the bearing, replace the camshaft.

·Visually inspect the rubber on the guide plate and tensioning plate.

★If the rubber is damaged, cut or peeled off, replace the guide plate and tensioning plate.

5.4.8 Timing chain

Remove timing chain

·Disassemble：

Cylinder head

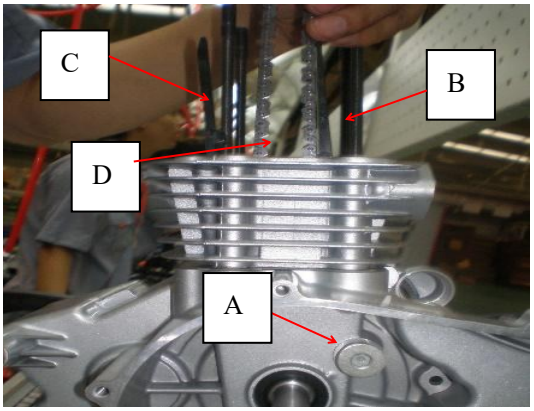
Disc gear

Tensioning plate bolt A

Chain tensioning plate B

Chain guide plate C

·Remove timing chain D from the timing driven wheel.



Assemble the timing chain

Reverse assembly

· Hang the timing chain on the timing driven wheel.

·Assembly:

Chain guide plate

Chain tensioning plate

Tensioning plate bolts

Tightening torque of tensioning plate bolts: (8-12) N · m.

Check the wear of the chain guide plate and tensioning plate

5.4.9 Cylinder head

Measure cylinder pressure

Attention
Use a fully charged battery.

·Warm up the engine then stop.

·Remove the spark plug.

· Connect cylinder pressure gauge A and adapter B firmly into the spark plug hole.

Tool - cylinder pressure gauge 20kg/cm2

Adapter M12×1.25

·Start the engine and fully open the throttle until the cylinder pressure gauge reading no longer rises. At this time, the cylinder pressure gauge reading is the highest cylinder pressure.

The available range of cylinder pressure is (900~1200) kPa.

If the cylinder pressure gauge reading is not within the available range, please refer to the following table:

Problem	Diagnosis	Remedial measures
Cylinder pressure above available range	Piston carbon deposits, cylinder head, combustion chamber may be due to damage to the oil shield and/or damage to the piston oil ring (emitting white smoke)	If necessary, remove carbon deposits and replace damaged parts
	Incorrect thickness of cylinder head gasket	Replace with a standard specification sealing gasket
Cylinder pressure below available range	There is gas leakage around the cylinder head	Replace the damaged sealing gasket and check for deformation of the gun head
	Abnormal valve spring seat	Replace if necessary
	Incorrect valve clearance	Adjust valve clearance
	Incorrect piston/cylinder clearance	Replace the piston and/or cylinder
	Piston cylinder	Check the cylinder and replace/repair the cylinder and/or piston as necessary
	Abnormal piston ring and/or piston ring groove	Replace the piston and/or piston ring

Remove cylinder head

·Disassemble：

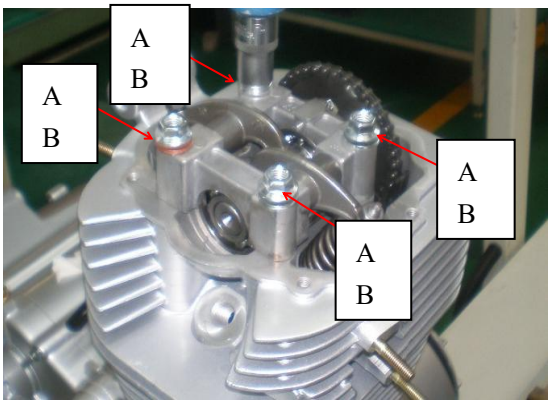
Carburetor (refer to the fuel system chapter)

Exhaust pipe

Spark plug cap

Cylinder head cover

Cylinder head nut A and flat washer B



Assemble the cylinder head

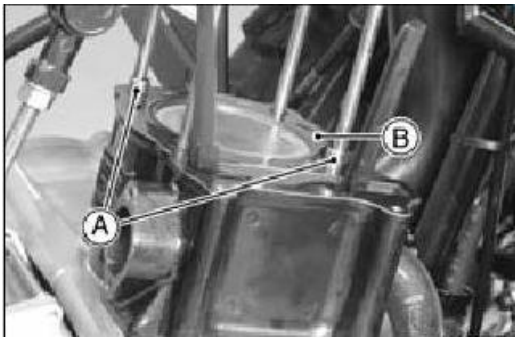
·Replace with a new cylinder head gasket.

·Assembly:

Positioning pin A, new cylinder head gasket B

Cylinder head, camshaft

Tighten the cylinder head bolts.



Tightening requirements:

The exposed height of the bolt is (190.5~192.5) mm.

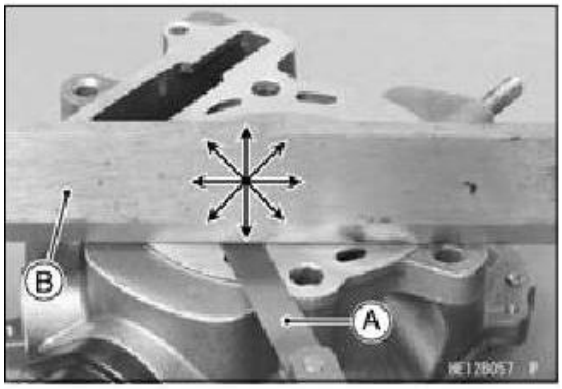
Clean the cylinder head

·Remove the cylinder head;

·Use suitable tools to scrape off carbon deposits from the combustion chamber and exhaust port;

·Clean the cylinder head with a high ignition point solvent.

Check the deformation of the cylinder head



·Check the deformation of the cylinder head

·Clean the cylinder head;

·Place a straight edge on the lower surface of the cylinder head;

·Measure the gap between the straight edge B and several positions on the lower plane of the cylinder head using a feeler gauge A.

Cylinder head deformation

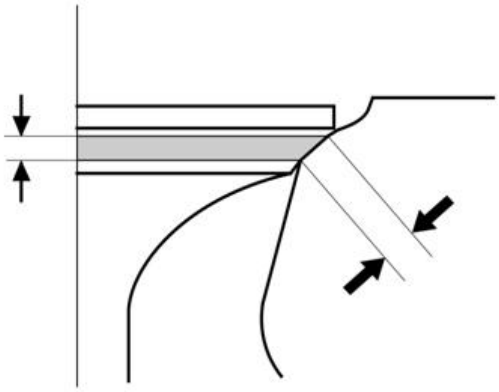
Standard: 0.03mm

Service limit: 0.05mm

★If the deformation of the cylinder head exceeds the service limit, please replace it.

★If the deformation of the cylinder head is lower than the limit of use, grind the lower plane with fine sandpaper.

Check the width of each valve seat surface of the cylinder head



The width of the contact surface of the valve seat should be within the specified range, and the surrounding area of the valve seat should be flat.

Standard value: (1.1-1.3) mm

Maintenance limit value: 1.8 mm

If the valve seat width does not meet the specifications, please repair the valve seat or replace the cylinder head.

If the valve contact surface is burned or severely worn, or if the contact surface between the valve and the seat surface is uneven, please replace the valve.

5.4.10 Valve

Check valve clearance

Attention
The valve clearance can only be checked when the engine has cooled to room temperature.

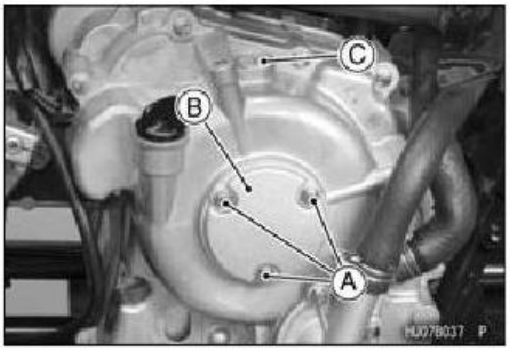
·Disassemble：

Cylinder head cover

Right decorative cover bolt A

Right decorative cover B

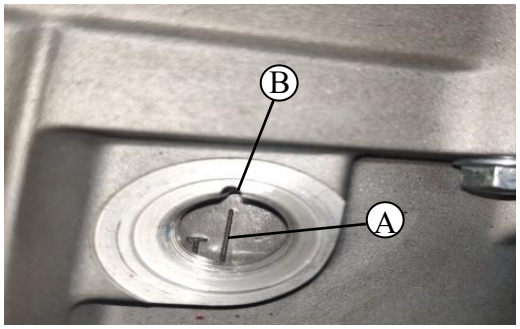
Timing observation hole cover C



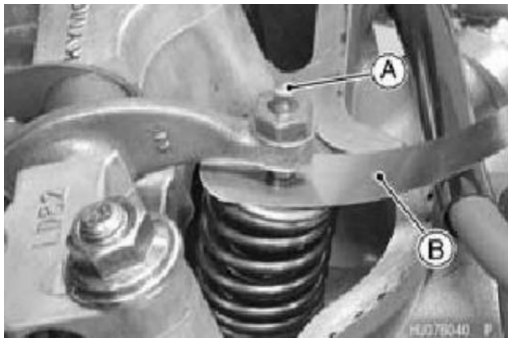
·Disassemble

Pressure spring, oil passage pipe A

· Place the wrench on the bolt of the magneto rotor and rotate the crankshaft clockwise until the "T" mark A on the magneto rotor aligns with the notch B on the right crankcase cover, as shown in the figure, at the end of the cylinder compression stroke.



· Measure the valve clearance using a feeler gauge B, and measure the clearance between the end of the valve stem and the adjusting screw A.



·Valve clearance (when cold)

Exhaust valve: (0.04-0.08) mm

Intake valve: (0.04-0.08) mm

★ If the valve clearance is not correct, please adjust the valve clearance.

Adjust valve clearance

· Loosen the locking nut and rotate the adjusting screw until the gap is correct;

· Secure the adjusting screw B with fixture A and tighten the locking nut C;

Tightening torque of the locking nut: (12-18) N · m.

Tool - Adjusting screw fixture.

·Recheck the valve clearance.

★If the gap is not correct, readjust it.

★If the clearance is correct, adjust the clearance of the other valve.

Remove valve

·Remove the cylinder head;

·Mark the valve position so that it can be assembled back to its original position;

· Remove the valve using valve spring compression device A and adapter B.

Tool - valve spring compression device; -Adapter.

Assemble the valve

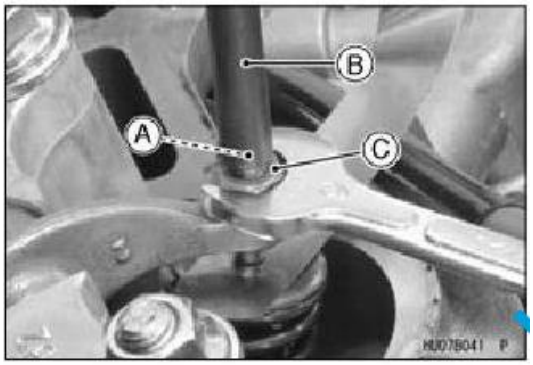
·Replace the oil shield.

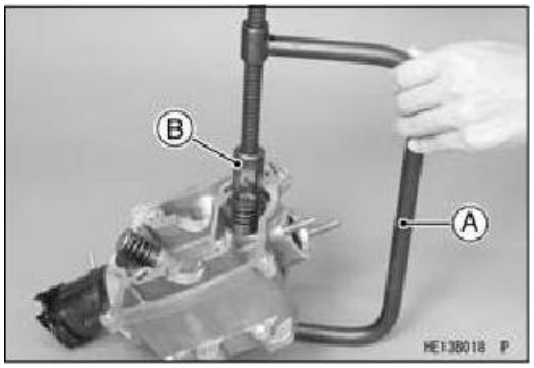
·If a new valve is to be used, check the clearance between the valve and the valve guide.

· If the gap is too large or too small, replace the cylinder head.

·Apply lubricating oil to the valve stem and assemble the valve and spring lower seat.

· Assemble the spring with the sparse coil facing upwards and the dense coil facing downwards.





Valve A

Oil shield B

Valve spring outer race C

Valve spring inner seat ring H

Valve inner and outer springs D

Valve spring upper seat E

Locking clip F, sealing ring end G

Measure the clearance between the valve and valve guide

· Measure the outer diameter of each valve stem and the inner diameter of each valve guide.

·Subtract the outer diameter of the valve stem from the corresponding inner diameter of the valve guide to obtain the clearance between them.

★If the gap exceeds the service limit, replace the cylinder head.

Valve and valve guide clearance

Standard: Exhaust valve (0.03-0.055) mm

Intake valve (0.01-0.035) mm

Service limit: exhaust valve 0.08mm

Inlet valve 0.06mm

★ If the height of the valve spring exceeds the service limit, replace the valve spring kit.

Valve Spring Kit Spring Standard:

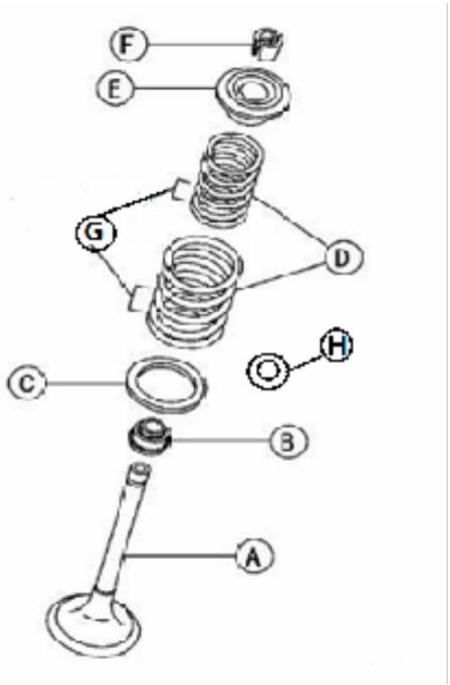
Valve inner spring height: 39.2

Valve outer spring height: 44.85

Service limit:

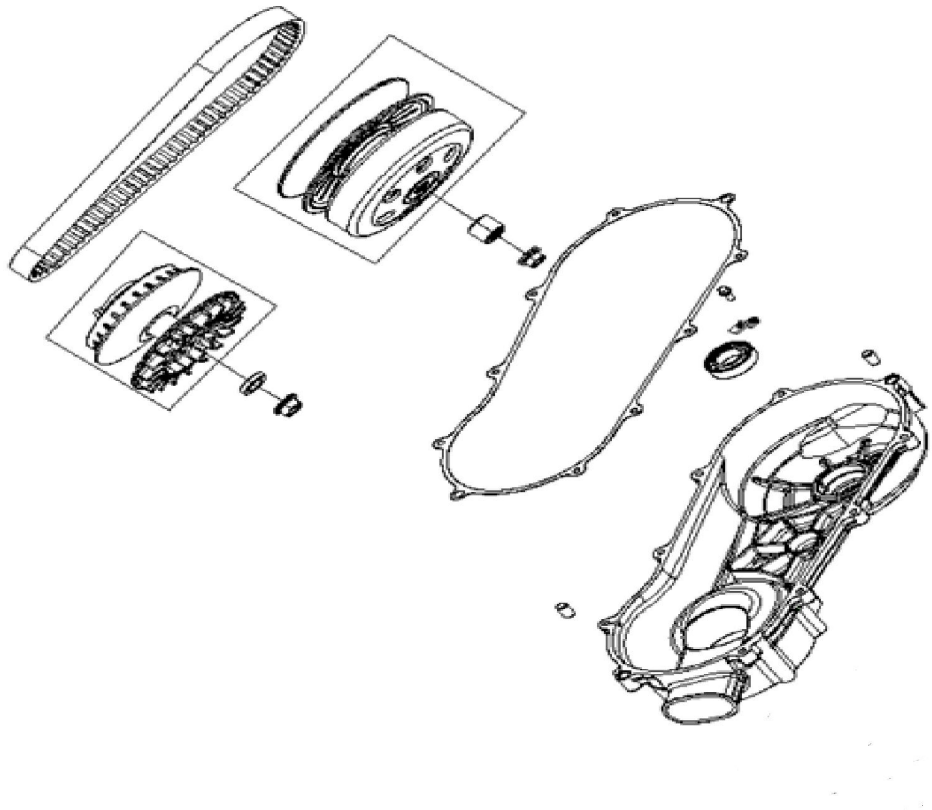
Valve inner spring height: 38

Valve outer spring height: 43.65



5.5 Belt transmission system

5.5.1 System explosion view



5.5.2 Service information

Overview

- This chapter includes the disassembly and inspection of the left crankcase cover and CVT components.
- There is no need to remove the engine from the frame, and it can be directly disassembled and tested on the entire vehicle.
- When disassembling, the disassembled parts should be marked and placed properly to ensure correct positioning during reassembly.
- Before inspection, all dismantled components should be cleaned with cleaning agent and blown dry with compressed air.

5.5.3 Specifications

Items		Standard value	Service limit
Belt	Belt width	(19.5～20.0)mm	19mm
Active pulley components	Bore diameter of drive plate assembly hole	(27～27.05)mm	27.1mm
	Outer diameter of bushing	(26.98～26.959)mm	26.91mm
	Outer diameter of roller	(20.9～21.1)mm	20.8mm
Driven pulley components	Driven sliding plate assembly hole diameter	(34～34.025)mm	34.06mm
	Driven fixed shaft diameter	(33.97～33.99)mm	33.95mm
	Free length of compression spring	(88～90)mm	86mm
	Clutch lining thickness	(1.8～2.2）mm	1.0mm
	Inner diameter of clutch outer plate	(141.8～141.95)mm	142.2mm

Tools

	
Special tools for stopping	Special tools for stopping

5.5.4 Left crankcase cover

Remove left crankcase cover

·Disassemble：

10×M6 bolts

Left crankcase cover

Assemble left crankcase cover

·Replace with a new left crankcase cover gasket.

·Assembly:

Positioning pin A

New sealing gasket B

Left crankcase cover

·Tighten the left crankcase cover bolts.

Tightening torque of the left crankcase cover assembly bolt: (8-12) N · m.

·Assemble the intake and exhaust pipes.

·Fit the protruding part A of the intake and exhaust pipes with the notch.

·Tighten the clamp bolts.

·Assemble the removed parts.

Remove left crankcase cover bearing

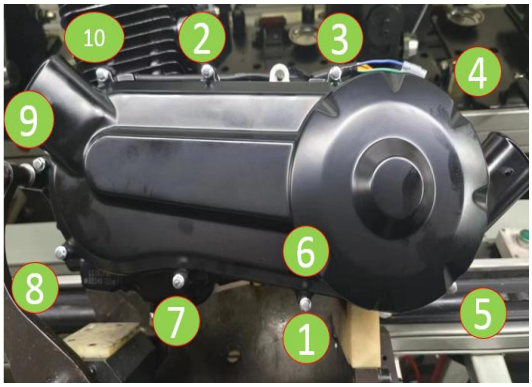
·Disassemble：

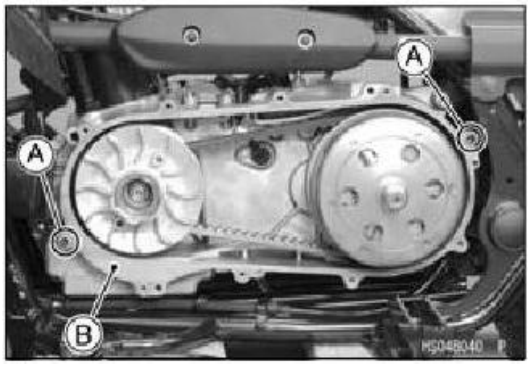
Left crankcase cover

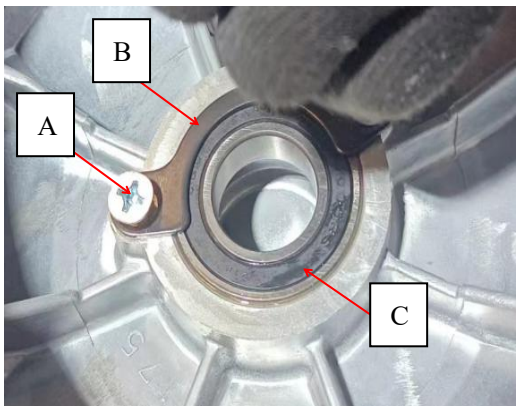
Pressing plate bolt A

Bearing pressure plate B

·Use a suitable tool to remove bearing C







Assemble left crankcase cover bearing

·Use a pressure head to press the shaft into the assembly hole.

·Assemble the bearing pressure plate.

·Assemble the pressure plate bolts and apply thread locking agent to the bolt threads.

Tightening torque of pressure plate bolts: (8-12) N · m.

Check bearings

Attention
Do not remove the bearings for inspection. If the bearing is removed, it needs to be replaced with a new one.

· When checking whether there is clearance and whether the rotation is flexible, turn the bearing A back and forth

★ If gaps, roughness, or adhesion are found in the bearings, they should be replaced.

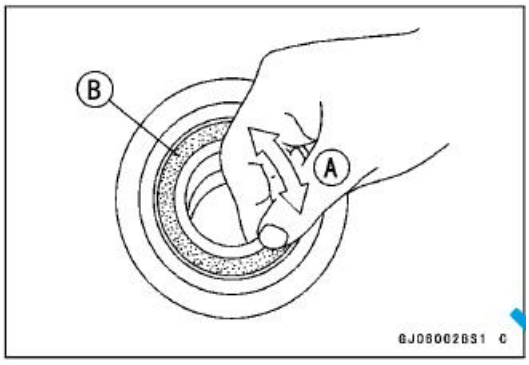
·Check the bearing sealing surface B for cracks or leaks.

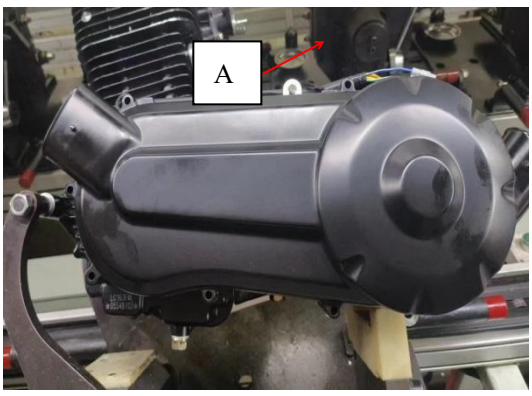
★ If there are cracks or leaks on the sealing surface, replace the bearing.

CVT chamber drain bolt

Note that the CVT chamber cannot be filled with water. If there is water, please remove the drain bolt A and tighten the bolt after draining the water

Tightening torque: (8-12) N · m.





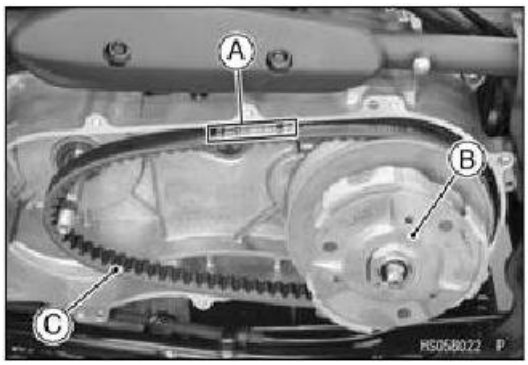
5.5.5 Belt

Remove the belt

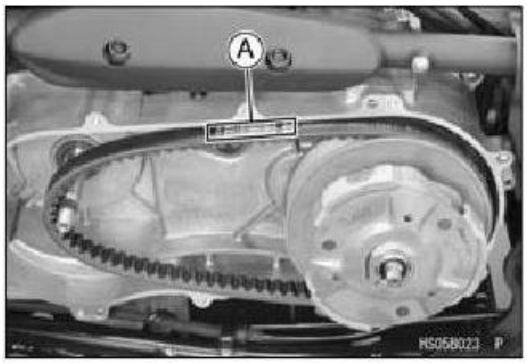
·Remove the active pulley components.

·Remove the clutch outer plate.

Attention
Before disassembly, observe the orientation of information A (such as the manufacturer's name) engraved on the belt so that the belt can be reassembled on the pulley and rotate in the same direction as the original assembly.



· Remove driven pulley component B and belt C.



Assembly belt

Attention
Ensure that the engraved information faces in the same direction, so that the belt can be assembled back in the original direction of rotation. When assembling a new belt, the engraved information A can be read from the side of the vehicle.

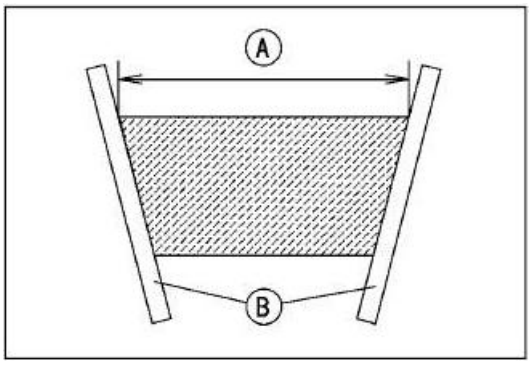
· The assembly steps are the reverse of the disassembly steps.

Check for belt wear

Warning
Any improper operation or clutch stalling or slipping may cause severe wear or damage to the transmission and wheels due to belt jamming. This may cause the operator to lose control and lead to accidents, resulting in injury or death. Maintain according to the maintenance schedule.

·Remove the left crankcase cover.

· As shown in the figure, use a pair of suitable straight edge holders to measure the width A of the belt at several positions.



★ If the measured value exceeds the usage limit, please replace the belt.

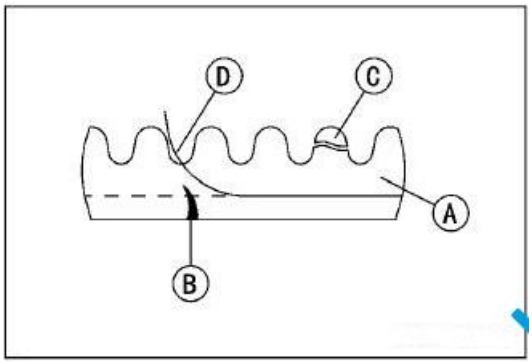
·Belt width

Standard: (19.5-20) mm

Service limit: 19mm

·Check the belt for cracks, fractures, or peeling.

·If necessary, please replace the belt.



Belt A

Crack B

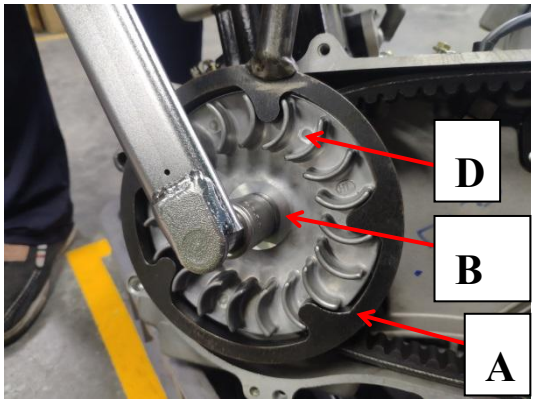
Fracture C

Peeling D

Attention
When replacing the belt, check the active pulley components and the driven pulley components.

5.5.6 Active pulley components

Remove the active pulley components

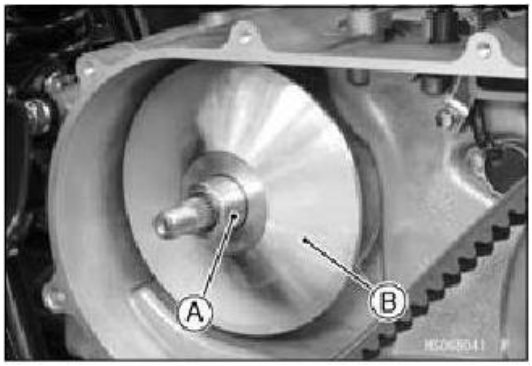


·Remove the left crankcase cover.

·Install the stop fixture A and remove the drive pulley nut B and bushing C.

·Remove the sliding drive disc D.

Tools - stop rotation tooling.



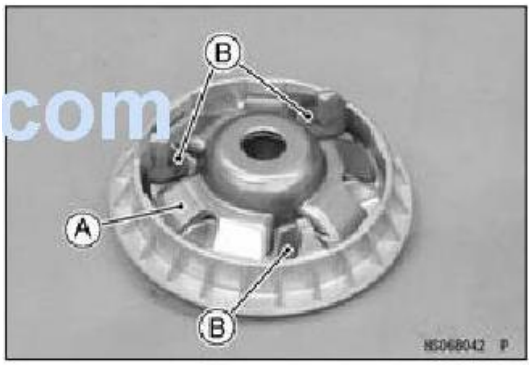
·Disassemble：

Bushing A

Drive disk combination

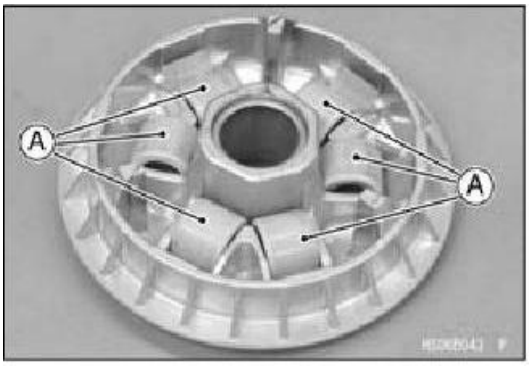
·Disassemble：

Slope plate A and conical sleeve B



·Disassemble：

Roller A



Check the active pulley components

★If the surface A of the driving pulley is damaged, the sliding drive plate and/or drive plate should be replaced.

★If the assembly hole of the drive disc is damaged or worn, please replace it.

·Drive disc assembly hole aperture A

Standard：(27～27.05)mm

Service limit：27.10mm

★ If the bushing is damaged or worn, please replace it.

·Outer diameter A of bushing

Standard：(26.98～26.959)mm

Service limit：26.91mm

★ If the roller is damaged or worn, please replace it.

·Roller outer diameter A

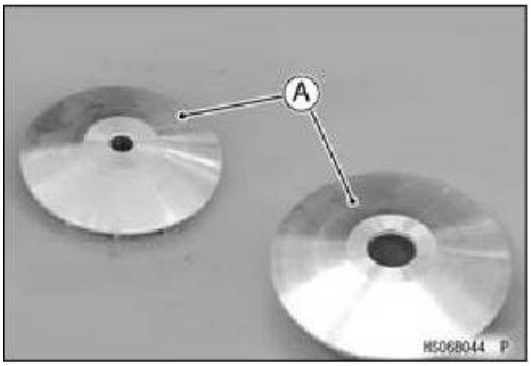
Standard：(20.9～21.1)mm

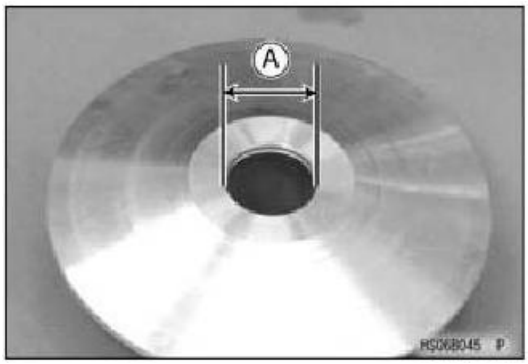
Service limit：20.8mm

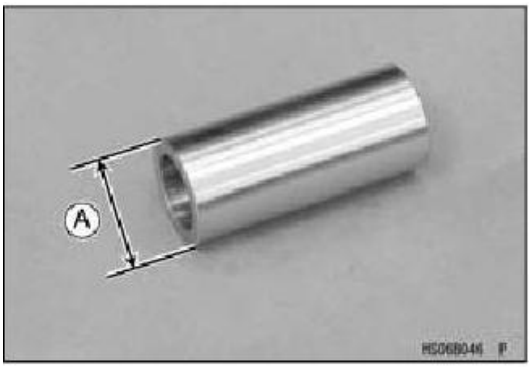
Assemble the active pulley components

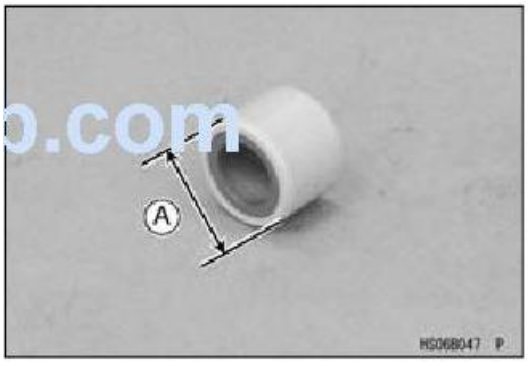
· Assembly and disassembly are exactly the opposite. Note the following:

Clean the following parts with degreasing detergent, and then dry the drive disc cone, crankshaft, and belt with a clean cloth.



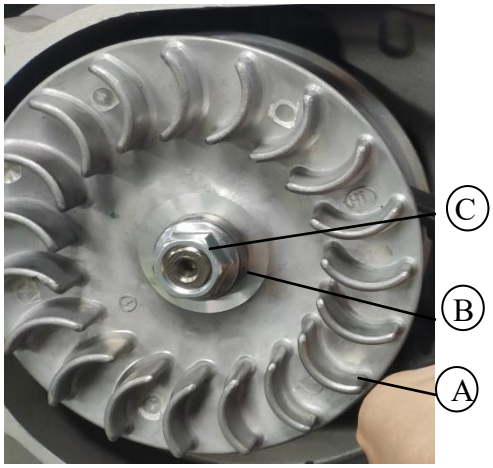






Warning
These cleaning agents are usually highly flammable and harmful if breathed for a long time. Be sure to pay attention to the manufacturer's warning.

· When assembling sliding drive plate A, press the sliding drive plate tightly to move the belt outward to the lowest position, then install bushing B, and apply a small amount of lubricating oil to the threads of nut C before assembly.



· Install the stop fixture and tighten the pulley nut.

Tightening torque of the driving pulley nut:

(54～60) N·m.

Tools - Stop rotation tooling.

5.5.7 Driven pulley components

Remove the driven pulley components

·Disassemble：

Left crankcase cover

Active pulley components

· Install the stop rotation fixture A, remove the driven pulley assembly nut B.

Tools - Stop rotation tooling.

· Remove bushing C and clutch outer plate D.

·Disassemble:

Driven pulley component A

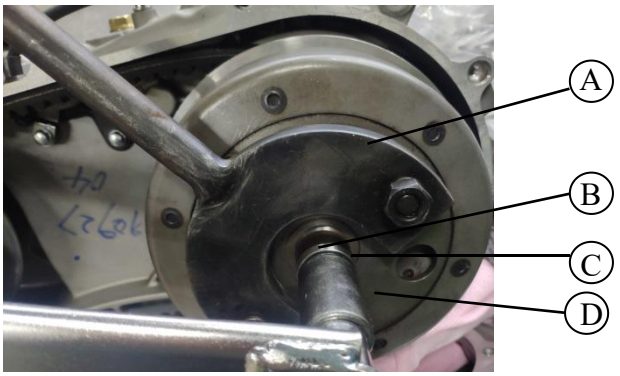
Disassemble the driven pulley component assembly

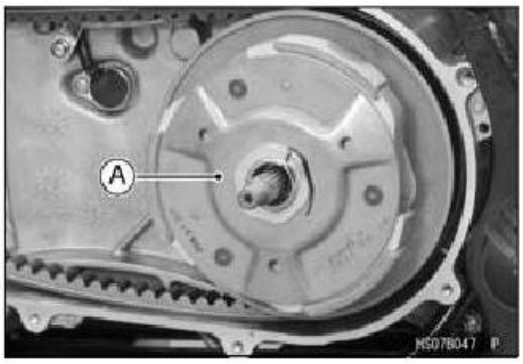
Attention
Be sure to use a clutch spring compressor to avoid damage to the compression spring.

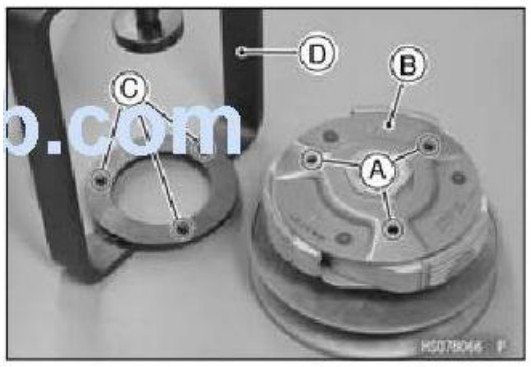
· Fix the hole A on the driven pulley component assembly B onto the pin C of the clutch spring compression device D

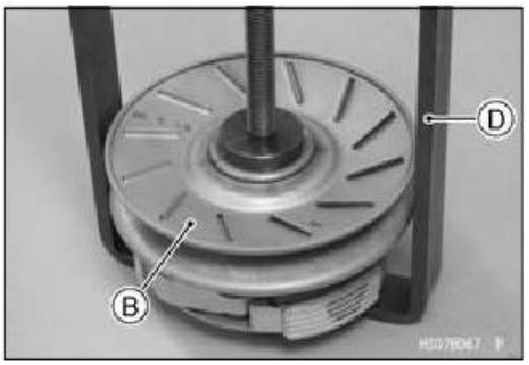
· Fix the driven pulley component assembly and clutch spring compression device.

Tool - Clutch spring compression device.





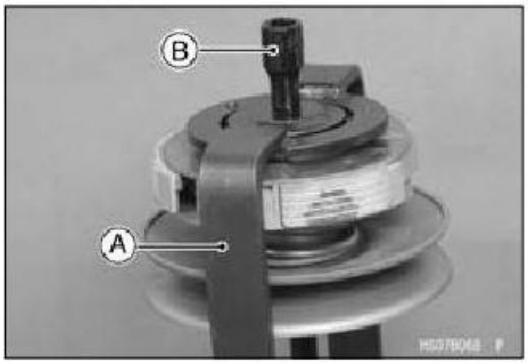




· Clamp the clutch spring compression device A onto a vice.

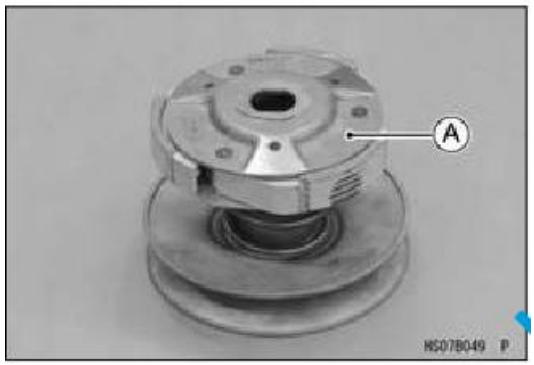
· Using a 39 mm hex nut B wrench, remove the clutch driven plate nut.

Tool - Clutch spring compression device.



· Release the clutch spring compression device and remove the driven pulley component assembly.

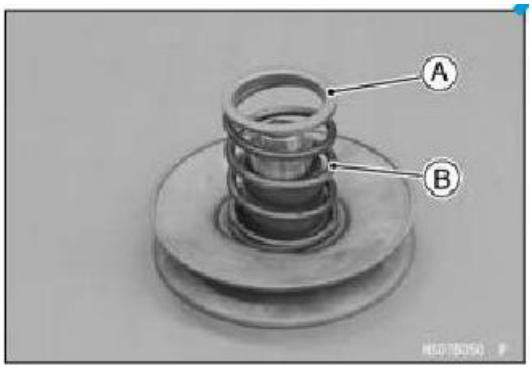
·Remove clutch A.



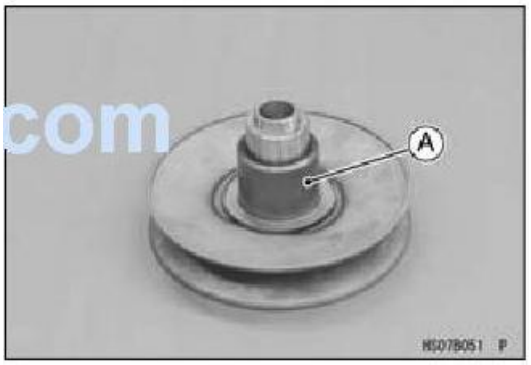
·Disassemble：

Spring seat A

Pressure spring B



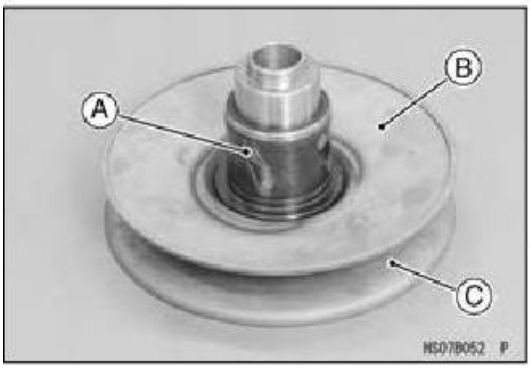
·Remove bushing A



·Wipe off the grease.

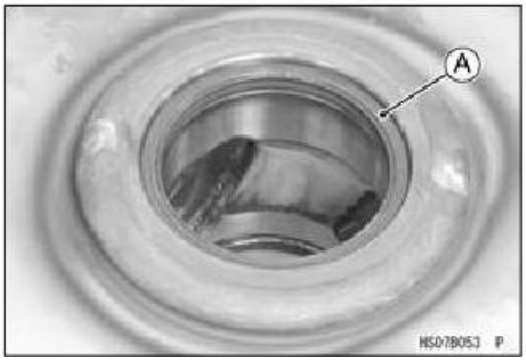
·Remove the pin shaft and locating pin A.

· Remove the driven sliding plate C from the driven fixed plate B.



·Disassemble：

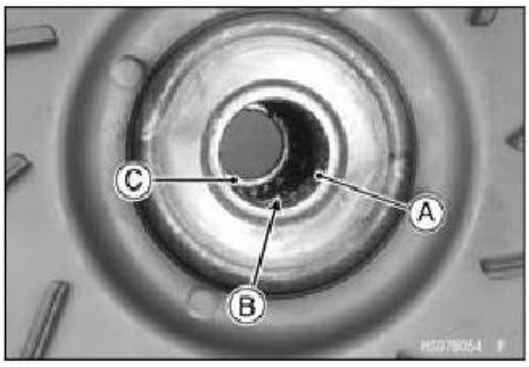
Oil seal A



·Remove needle bearing A.

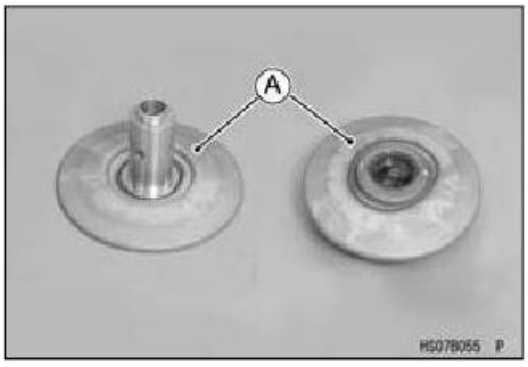
·Remove the circlip B and outer bearing C.

Tool - Circlip pliers with inner snap.



Check the driven pulley components

★ If surface A of the drive disc is damaged, please replace the driven sliding disc and/or the driven fixed disc.



★If the driven sliding disc is damaged or worn, please replace it.

· Driven sliding plate assembly hole aperture A

Standard：(34～34.025)mm

Service limit：34.06mm

★If the driven fixed plate assembly is damaged or worn, please replace it.

·Driven fixed shaft diameter A

Standard：(33.97～33.99）mm

Service limit：33.95mm

★If the pressure spring is damaged or worn, please replace it.

·Free length A of pressure spring

Standard：(88～90)mm

Service limit：86mm

★If the spring coil is twisted, please replace it.

Assembly of driven pulley components

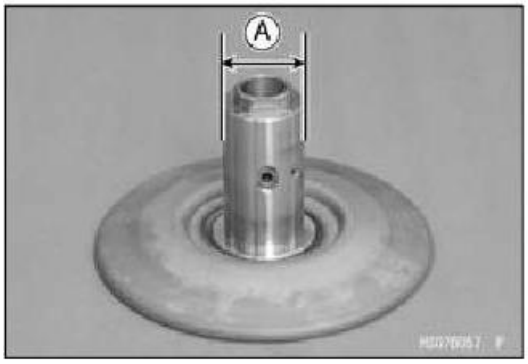
·Apply lubricating oil to outer bearing A.

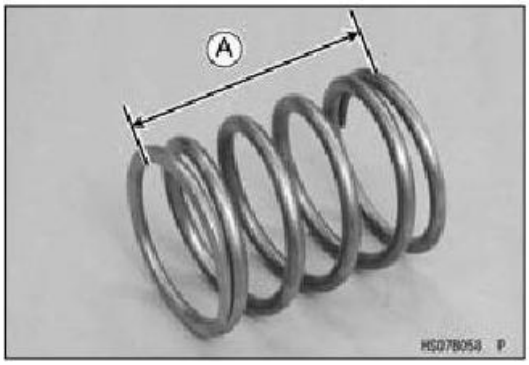
·Press the new outer shaft under pressure into the driven fixed plate, with the sealing face facing upwards.

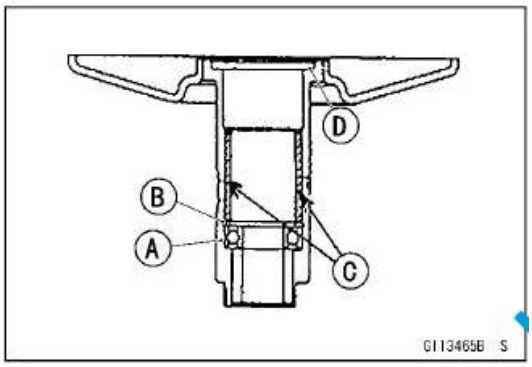
·Replace the original circlip with a new circlip B.

Tool - Circlip pliers with inner snap.

· Apply lubricating grease around the driven fixed shaft hole C.







Attention
Fill the bearing cavity with heat-resistant 230 ℃ lubricating grease.

· Press a new needle bearing into the driven fixed plate.

Tool - bearing pressure head.

· Clean the grease and dirt from the driven sliding plate and the driven fixed plate. Then dry with a clean cloth.

·Replace with a new O-ring A.

·Apply lubricating oil to the new O-ring and assemble it.

·Apply grease to the oil seal lip.

·Press oil seal B into the driven sliding plate, with the oil seal end face flush with the shaft end face C.

·Assemble the driven sliding plate onto the driven fixed plate.

·Apply lubricating grease to the pin shaft A and positioning pin B, and insert them into the hole C of the driven fixed plate.

·Assemble the sealing ring.

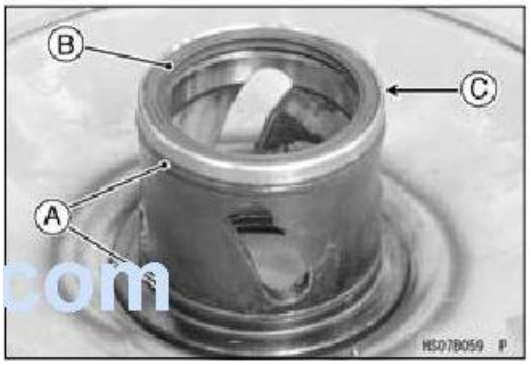
·Wipe off excess grease.

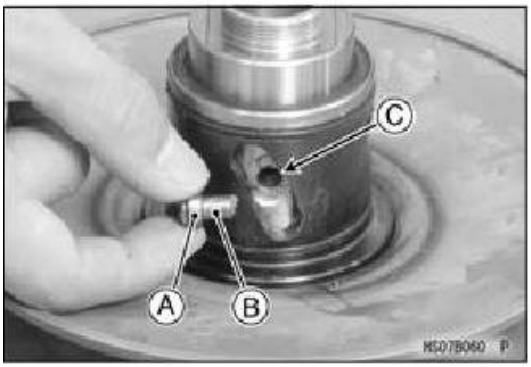
Attention
Be sure to clean the grease on the drive disc.

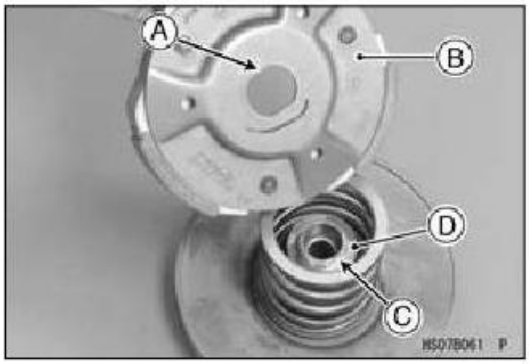
· Assemble the compression spring and spring seat.

· Align plane B of clutch drive plate A with plane D of driven fixed plate C.

Attention
Be sure to use a clutch spring compressor to avoid damage to the compression spring.







· Fit the hole A of the driven pulley

component onto the pin of the clutch spring compressor B.

· Fix the driven pulley component assembly and clutch spring compressor.

Tool - clutch spring compressor.

·Place the clutch spring compressor in a vice.

· Temporarily tighten the clutch driven plate nut C.

· Use a 39 mm hex nut A wrench to tighten the clutch driven plate nut to the specified torque.

Tool - clutch spring compressor.

· Release the clutch spring compressor and remove the driven pulley component assembly.

Disassemble the clutch assembly

·Remove the clutch.

·Remove the circlip A and fixed plate B, and disassemble the clutch.

Attention
Do not get oil on the clutch shoes.

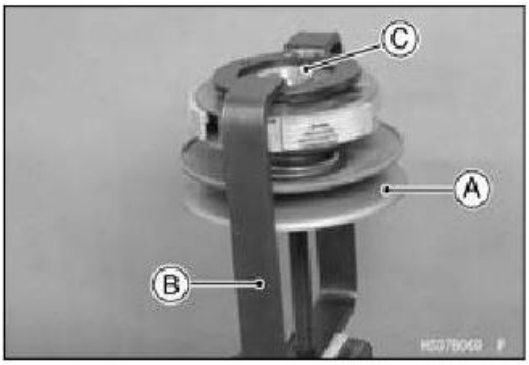
Assemble the clutch assembly

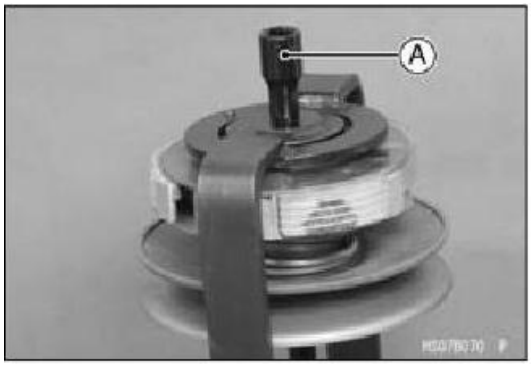
·Fit the damping rubber A on the drive plate pin shaft B.

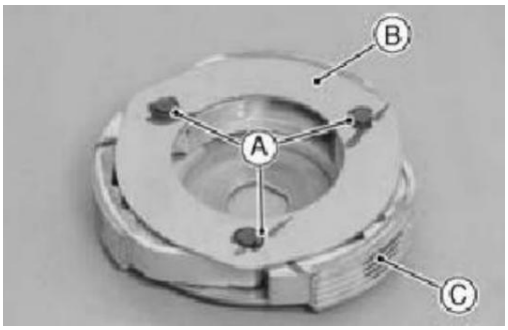
· Assemble clutch shoe C and pressure spring D.

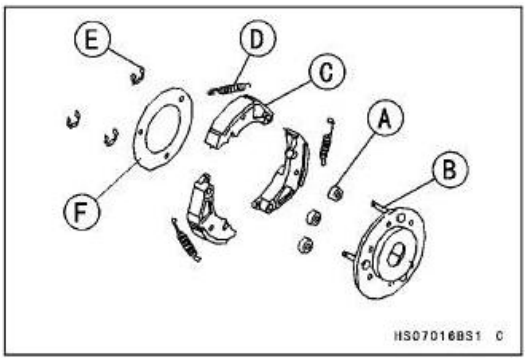
·Replace with a new circlip E.

· Assemble the fixed disc F and fit a new circlip in the groove of the drive disc pin shaft.

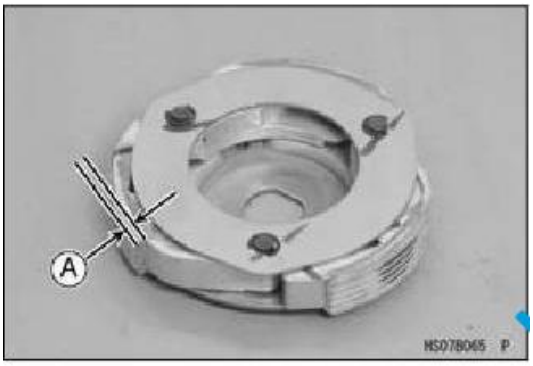








Check the clutch



·Check if the clutch shoes are damaged.

★If there is any damage, please replace it.

· Measure the thickness A of the clutch lining.

★If the lining thickness is worn beyond the service limit, please replace the clutch shoe.

·Clutch lining thickness

Standard：(1.8～2.2)mm

Service limit：1.0mm

· Check if the outer disc of the clutch is damaged.

★If there is any damage, please replace it.

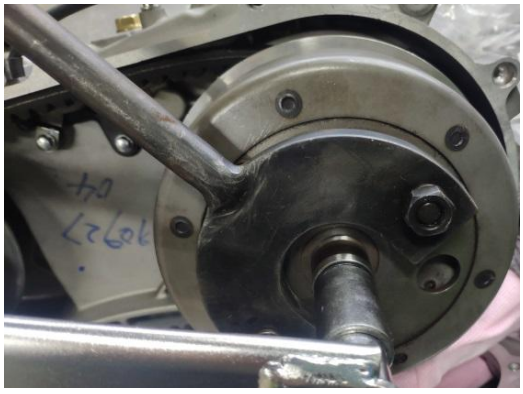
·Measure the inner diameter A of the clutch outer plate.

★If the wear of the clutch outer disc exceeds the service limit, please replace it.

·Inner diameter of clutch outer plate

Standard：(141.8～141.95)mm

Service limit：142.20mm



Assembly of driven pulley components

· Assemble the belt and driven pulley components.

·Assemble the clutch outer plate and bushing.

·Apply lubricating oil to the top of the driven shaft.

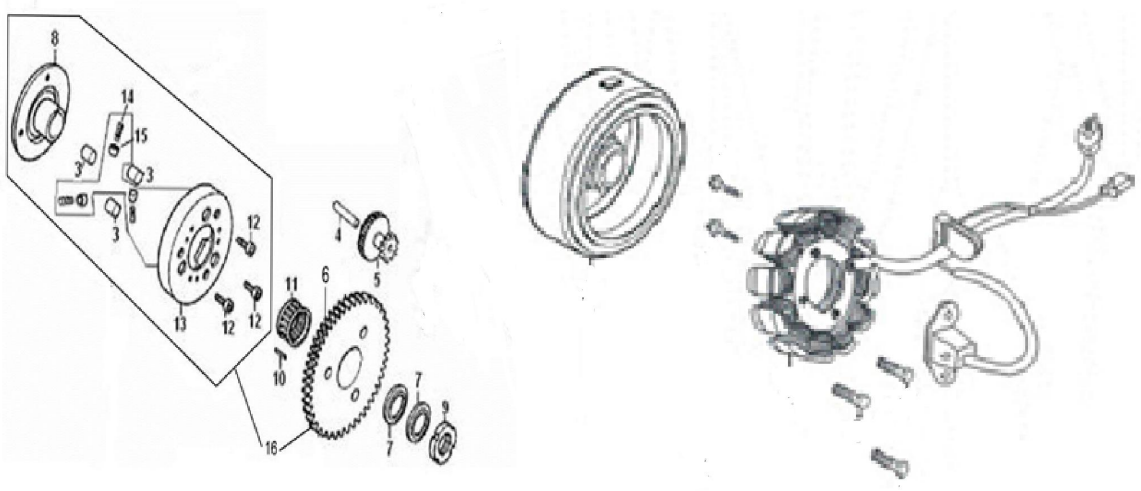
·Install the stop fixture and tighten the driven pulley assembly nut.

Tools - Stop rotation tooling.

Tightening torque of pulley assembly nut: (54～60) N·m

5.6 Magneto and starting clutch

5.6.1 System explosion view



5.6.2 Service information

Overview

- This chapter covers the maintenance of the stator and rotor of the magneto, and all operations do not require the engine to be removed from the frame.
- Inspection of the charging coil of the DC generator.
- Inspection of triggers.
- Maintenance of the starting clutch.

5.6.3 Specifications

Items		Standard value	Service limit
Starting disc gear	Outer diameter of shaft sleeve	(42.575～42.6)mm	42.55mm
	Inner diameter of shaft sleeve	(32.00～32.025)mm	32.05mm

Tools

5.6.4 Right crankcase cover

Disassemble/assemble

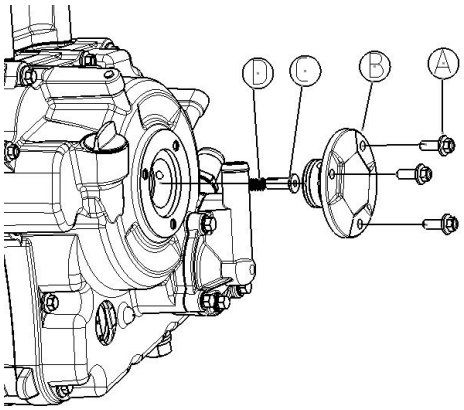
Attention：

·When disassembling the right crankcase cover, place a clean oil pan at the bottom of the engine to prevent lubricating oil from flowing out. After assembly, add the recommended lubricating oil to the specified amount.

Place the entire vehicle on a level surface and keep it level.

Remove the following components:

- Right side cover of the entire vehicle
- Magneto, trigger plug



Remove the right decorative cover bolt A, remove the right decorative cover B, take out the oil passage pipe C, and press the spring D

Attention：

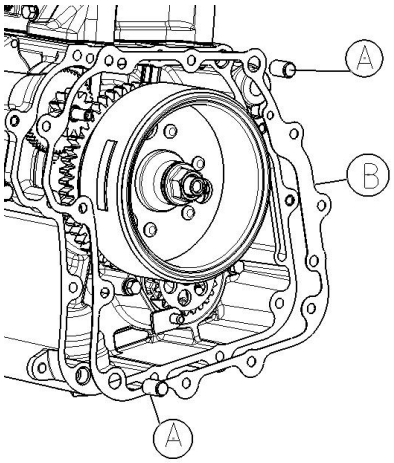
· The sealing ring on the right decorative cover should be replaced during reassembly.

Loosen the right crankcase cover bolts 10×M6 diagonally in several steps.

Attention：

·The right crankcase cover (spindle) bears the magnetic attraction of the rotor, so be careful during disassembly and assembly

Remove locating pin A and paper pad B. Remove all sealing gasket materials from the joint surface of the right crankcase and box cover. The assembly sequence is opposite to the disassembly sequence.



Torque:

Right crankcase cover bolt: (8-12) N · m

Attention：

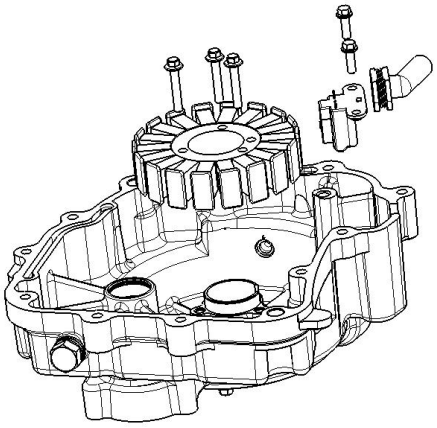
·Apply end face sealant to the joint area of the crankcase, as shown in the figure.

·Replace the right crankcase cover paper pad with a new one.

Check the lubricating oil level.

Ensure that there are no lubricating oil leaks.

6.6.5 Magneto spindle and trigger Disassemble/assemble



Remove the right crankcase cover.

Disassemble and assemble the spindle/trigger according to the following diagram.

·Apply thread sealant to the threads of the spindle and trigger bolts.

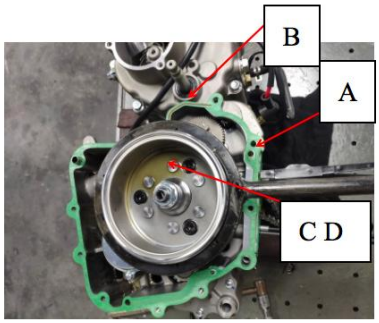
·Apply end face sealant to the sealing surface of the magneto/trigger wiring sleeve ring.

The assembly sequence is opposite to the disassembly sequence.

Torque: (5-9) N · m

6.6.6 Magneto rotor

Disassemble



Remove the right crankcase cover.

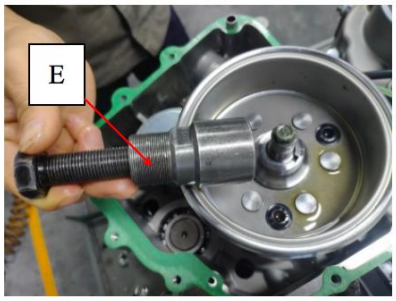
Use magneto retainer A to fix magneto rotor B, and remove nut C and flat washer D.

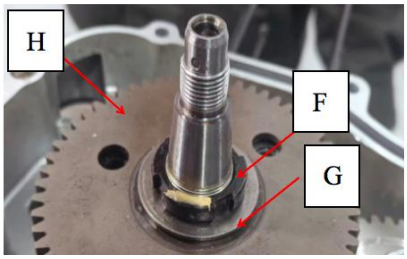
Attention:

Install the fixing block of the magneto rotor retainer to prevent the rotor from rotating.

Remove the rotor nut and washer.

Use Tool E to remove rotor B.

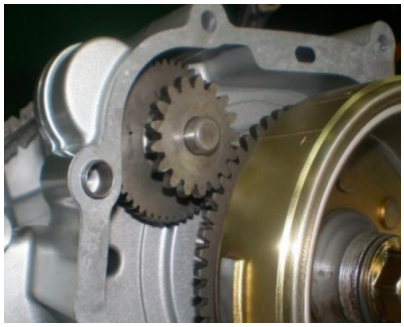




·Remove round nut F and flat washer G

· Remove the starting clutch combination H

Inspect

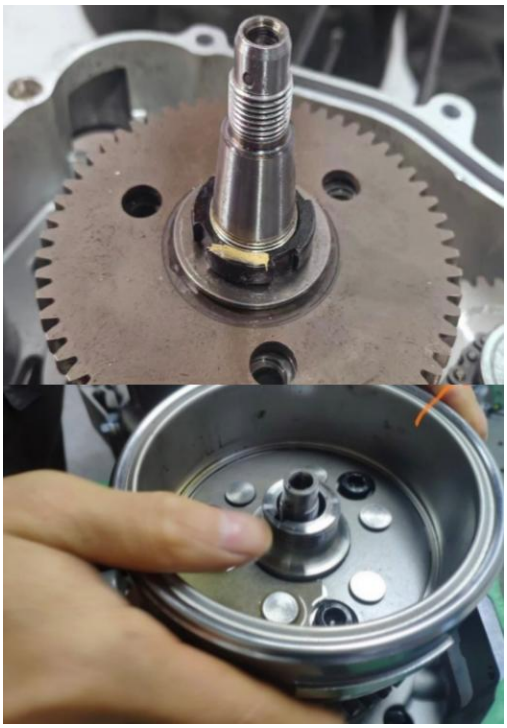


Inspect the following components for scratches, damage, abnormal wear, or deformation. If necessary, please replace it.

- Double gear shaft
- Double teeth
- Half circle key

Assemble

Attention：

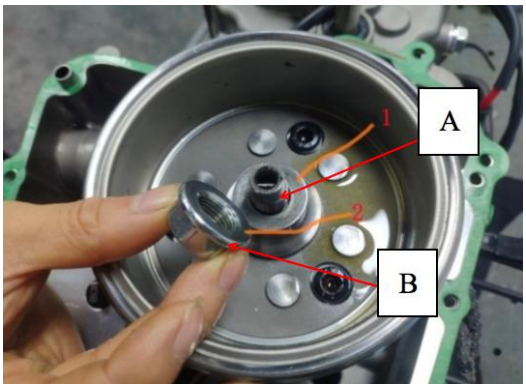


·Be careful not to damage the half round keyway and crankshaft.

Assemble the double gear and double gear shaft. Apply engine lubricating oil until the disc teeth come into contact with the crankshaft area and assemble the disc gear

Control torque: (54~60) N · m.

Thoroughly clean the lubricating oil from the crankshaft cone and the inner hole of the rotor. Assemble the rotor, paying attention to aligning the half round key on the crankshaft with the keyway on the rotor.



Apply clean engine lubricating oil to the threaded and assembly surfaces of the rotor bolts. Assemble gasket A and rotor nut B. Secure the magneto rotor with a magneto retainer and tighten the bolts to the specified torque.

Attention:

· Assemble the magneto rotor retainer fixing block to prevent rotor rotation.

Control torque: (54~60) N · m.

Assemble the right crankcase cover.

5.6.7 Start clutch

Start clutch operation check

Remove the rotor.

Check the operability of the starting clutch by rotating the disc teeth [1].

Check if the disc teeth rotate smoothly clockwise and ensure that there is no counterclockwise rotation.

Inspect

Inspect the following components for scratches, damage, abnormal wear, or deformation. If necessary, please replace it.

- Disc teeth
- Starting clutch

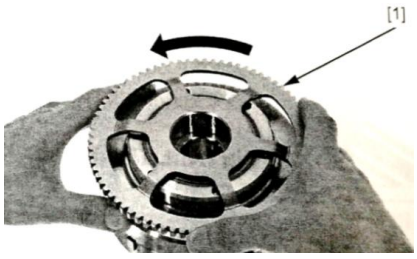
Ensure that all components meet the specifications of the magneto and starting clutch.

Replace the component if it exceeds the repair limit.

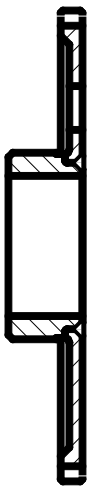
Assemble

Rotate the disc teeth counterclockwise [1] and fit them onto the outer cover of the starting clutch.

Check the operation of the starting clutch.

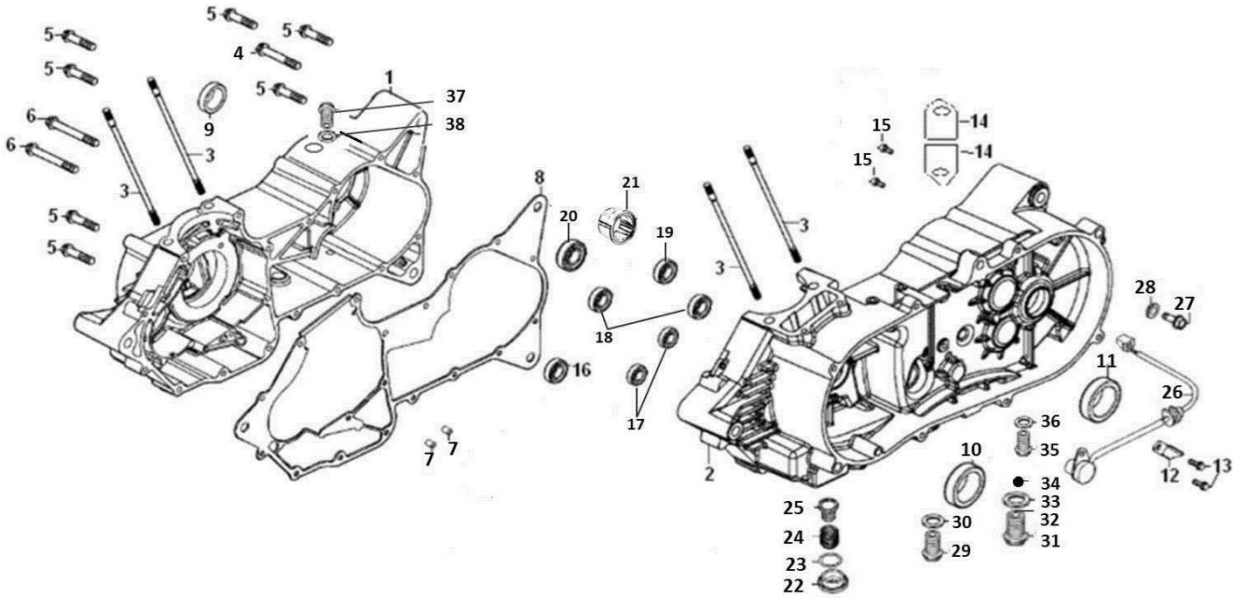


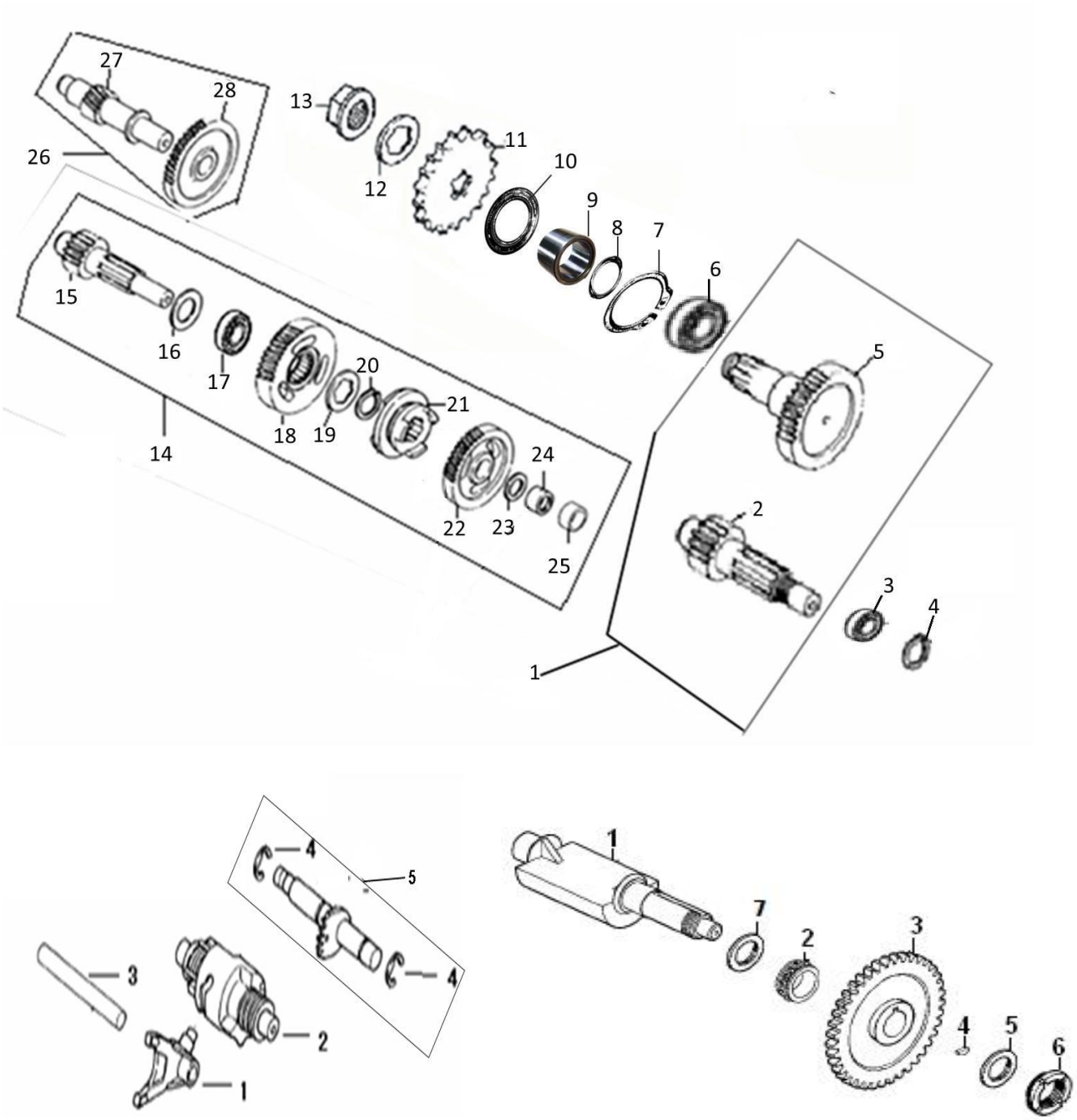
Outer diameter B of starting plate gear shaft sleeve
Standard：(42.575～42.6)mm
Service limit：42.55mm
Inner diameter A of the starting disc gear bushing
Standard：(32.00～32.025)mm
Service limit：32.05mm



5.7 Crankcase and transmission system

5.7.1 System explosion view





5.7.2 Service information

Overview

- This chapter includes the disassembly and inspection of the crankshaft case and the transmission system.
- When disassembling, the disassembled parts should be marked and placed properly to

ensure correct positioning during reassembly.

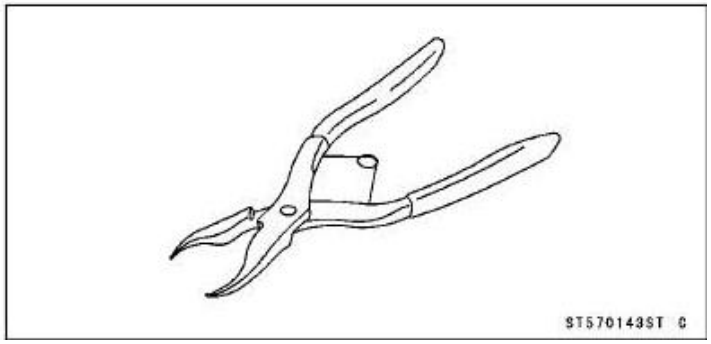
- Before inspection, all dismantled components should be cleaned with cleaning agent and blown dry with compressed air.

5.7.3 Specifications

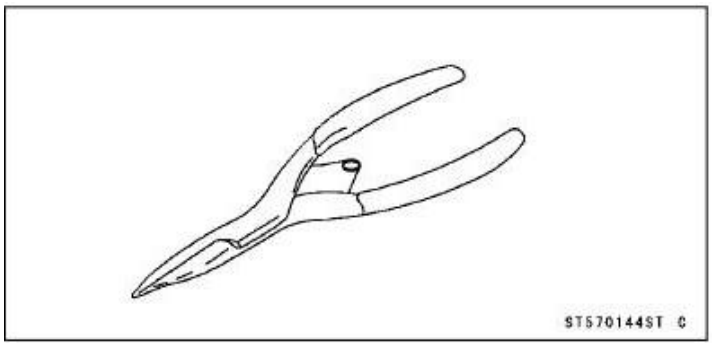
Items		Standard value	Service limit
Crank connecting rod components	Runout	0.03mm	0.1mm
	Connecting rod small end diameter	(17.013～17.025)mm	17.06 mm
	Connecting rod large end clearance crank width	(0.15～0.4)mm	0.6 mm
	Bearing axial direction	/	0.2 mm
	Bearing radial direction	/	0.05mm
Transmission box	Lubricant viscosity	SJ 10W/40	/
	Oil level	Transmission oil level observation bolt inspection	/
	Transmission box capacity	0.4L	/
Crankcase	Lubricating oil viscosity	SJ 10W/40	/
	Oil level	Check with dipstick between the marking lines	/
	Transmission box capacity	1.1L	/

Tools

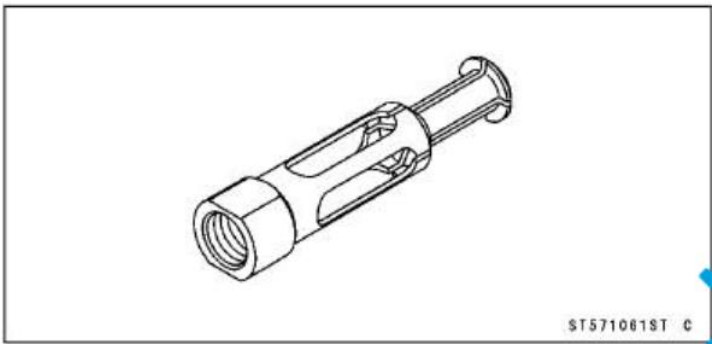
Internal circlip pliers



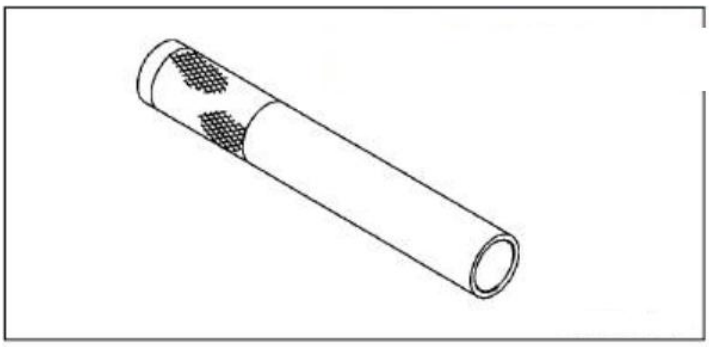
External circlip pliers



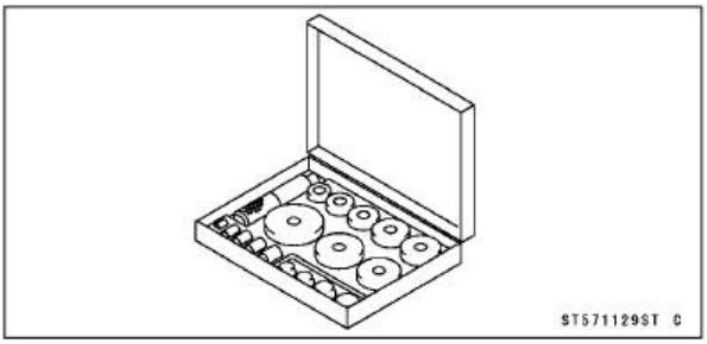
Oil seal and bearing remover, adapter A:



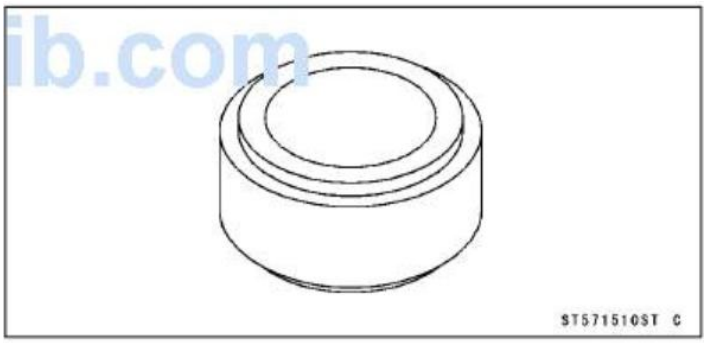
Bearing drive tool set



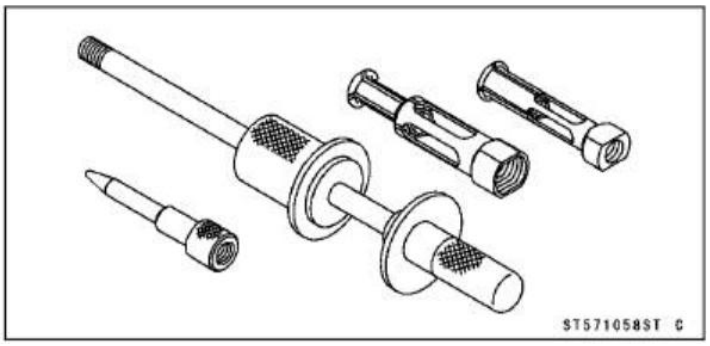
Bearing drive,32



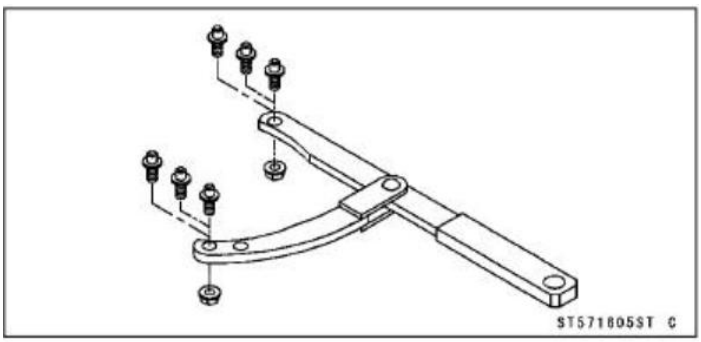
Bearing drive adapter,42



Oil seal and bearing remover



Flywheel rotor retainer

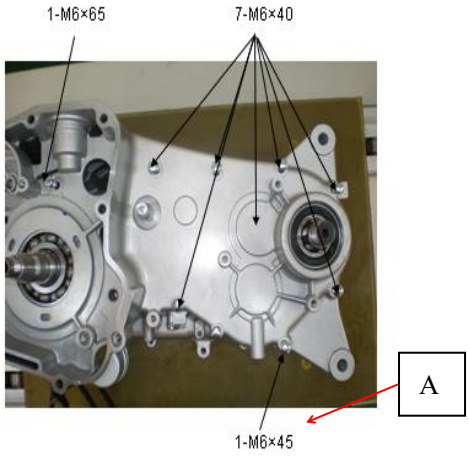


5.7.4 Disassembly and assembly of crankshaft case

- Disassemble

  Boxing bolt 9 × M6

  Remove the right body to separate the left and right bodies



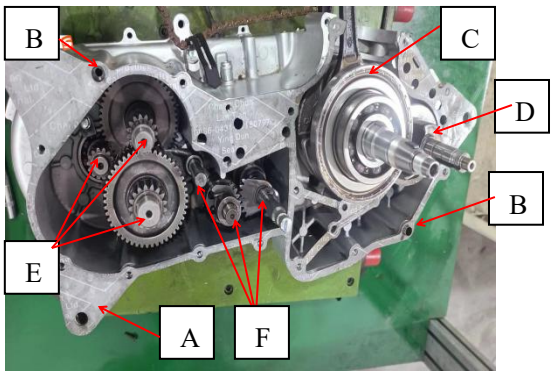
- Disassemble

Sealing gasket A, locating pin B

Crank connecting rod component C, balance shaft D

Transmission mechanism E

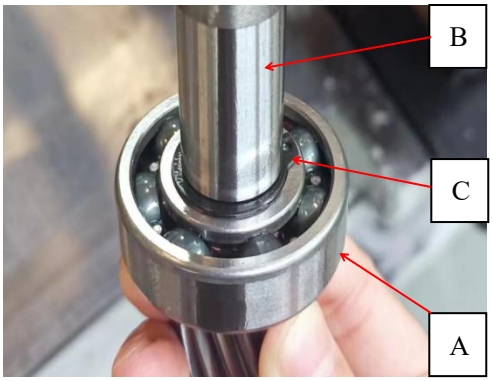
Shift mechanism F



- Assemble

  Bearing A faces towards the short end of spindle B,

  The retaining ring C plane passes upwards through the main shaft

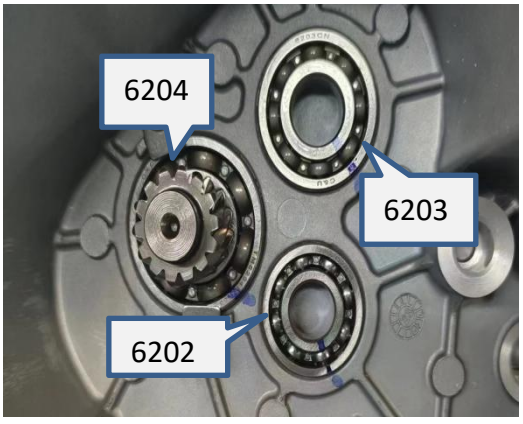


Press the bearing according to the position indicated in the diagram,

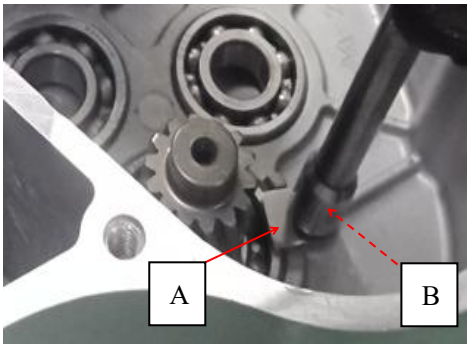
the bearing faces outward

Bearing depth control:

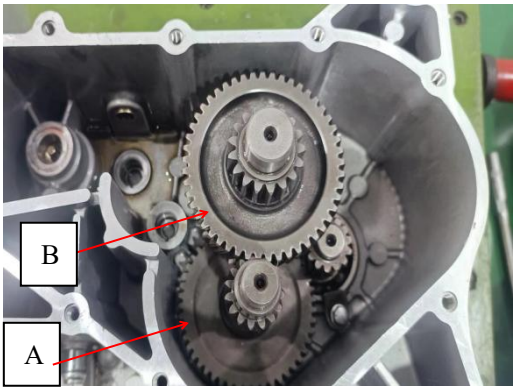
6202	(82.8～82.9)mm
6204	(82.9～83） mm
6203	(34.5～34.6） mm



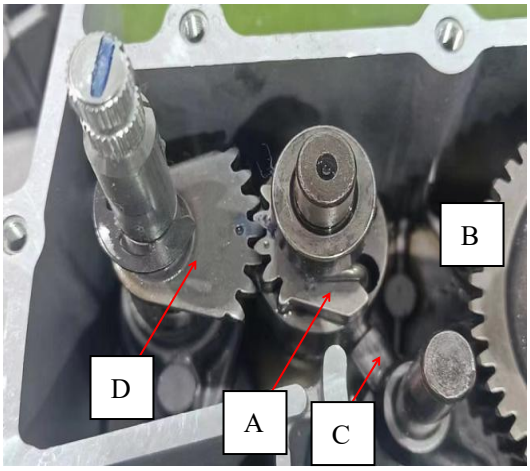
Install pressure plate A and bolt B



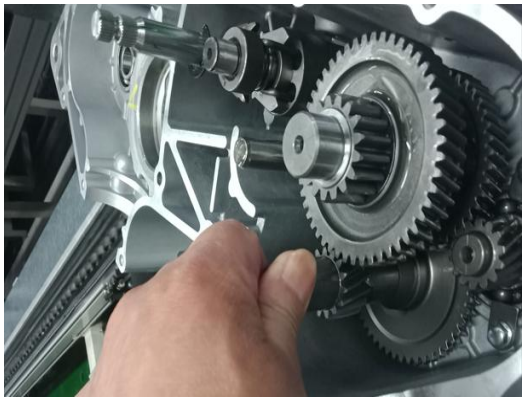
Install the reverse intermediate shaft A
Install the reverse transmission shaft component B



The gear shifting drum sector tooth end faces upwards A and faces the opposite side of the transmission tooth. The shift fork B is assembled into the middle ring groove of the transmission shaft C. One shift fork shaft is inserted into the end and dipped in oil, passing through the shift fork hole. The gear shifting arm D sector tooth "●" is aligned with the gear shifting drum sector tooth "●", and it is confirmed that there is no misalignment

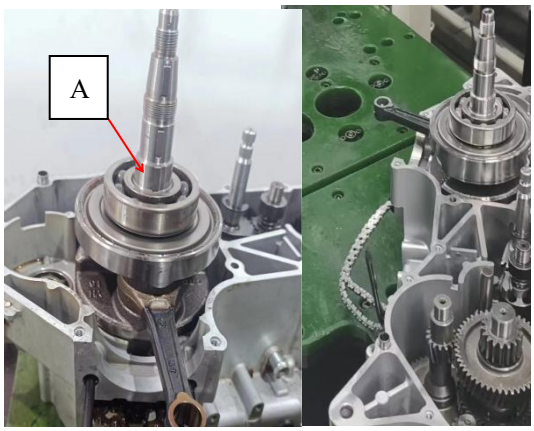


Rotate the transmission intermediate shaft clockwise to confirm flexible gear rotation

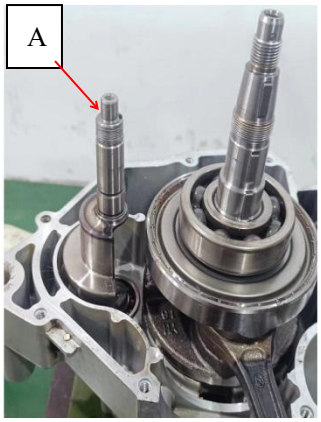


Place the timing chain in the left box chain cavity, completely avoiding the crankshaft hole

The splined end of the crankshaft faces the box and is assembled to the crankshaft hole. Press crankshaft A firmly to make the assembly in place, pull the chain to confirm that it is not stuck, and hang the chain on the clamp at the same time



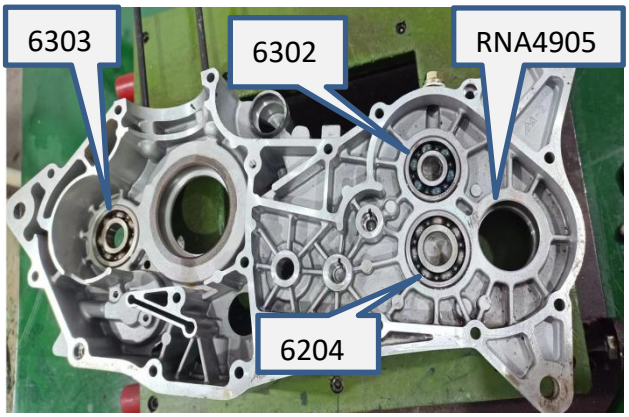
Assemble one end of the short shaft dian balance shaft A to the balance shaft hole



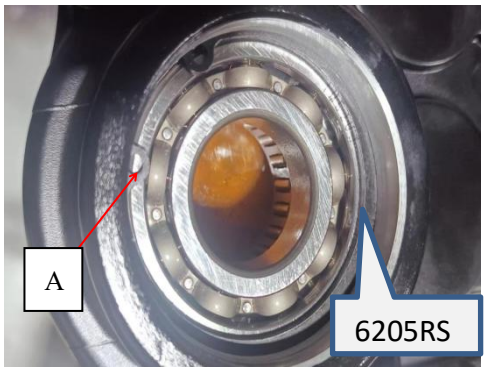
Press the bearing according to the position requirements shown in the diagram, with the bearing face up,

Bearing depth control:

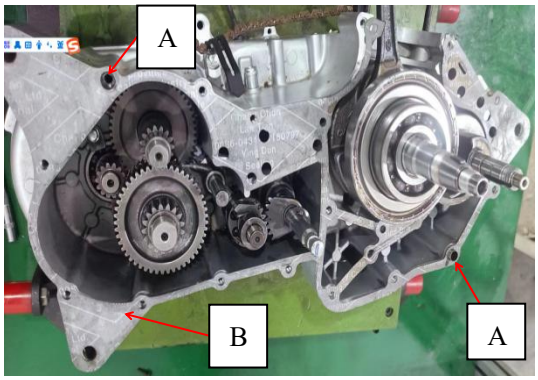
6303	(34.5～34.6)mm
6302	(8.5～8.6)mm
6204	(8.3～8.4)mm
6205RS	(52.9～53)mm
5801_RNA4905	(8.7～8.8)mm



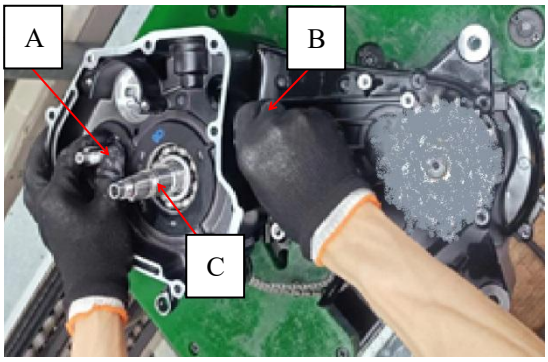
Install the circlip A with internal calipers



Install locating pin A and sealing gasket B

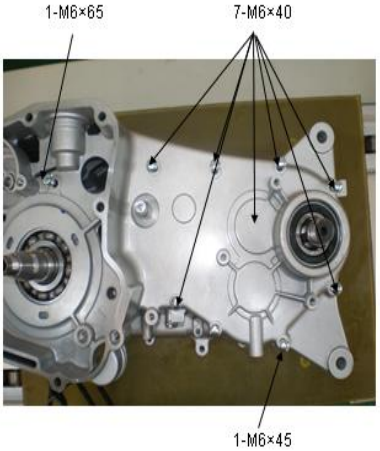


The spline end of the secondary shaft passes through the bearing hole of the secondary shaft, and the left and right hands respectively take one side of the secondary shaft A and the box body B, align the crankshaft C and the balance shaft, and close the box until it fits with the left box body

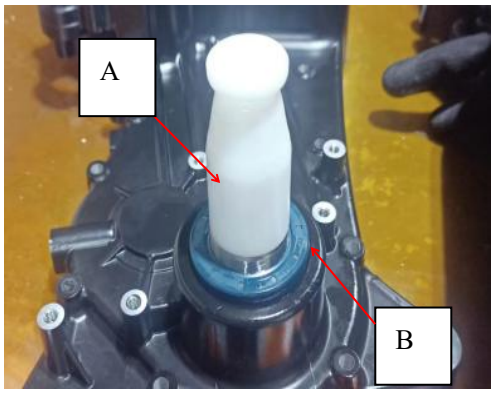


Assemble box bolt 9 × M6

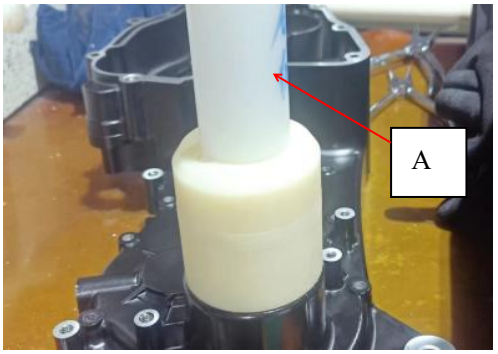
Control torque: (8-12) N · m.



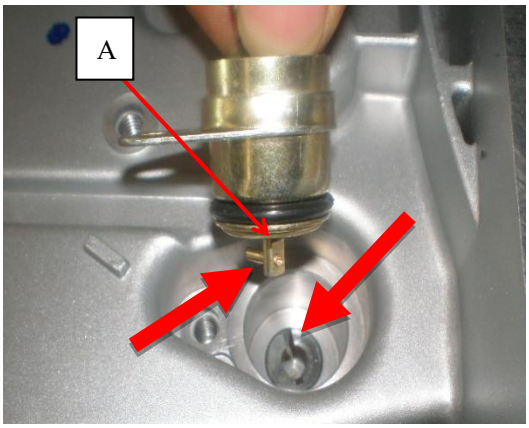
Install the auxiliary shaft oil seal B using tooling A, with the bushing with the hole section facing downwards, and install the auxiliary shaft. Using the oil seal guide sleeve, guide the secondary shaft oil seal into contact with the hole



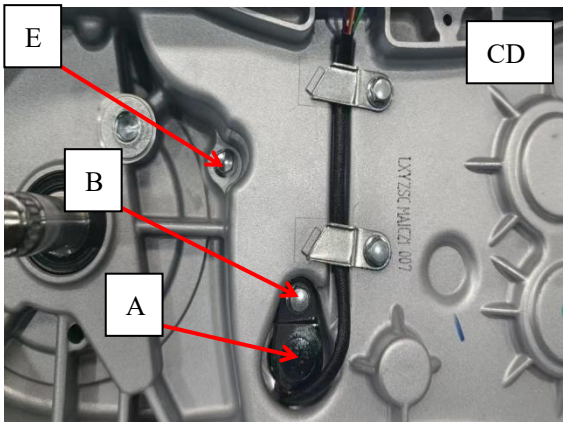
Use a nylon hammer to strike the oil seal until tooling A is combined with the box body



Install gear display contact A
Attention: The contact is inserted into the stuck groove

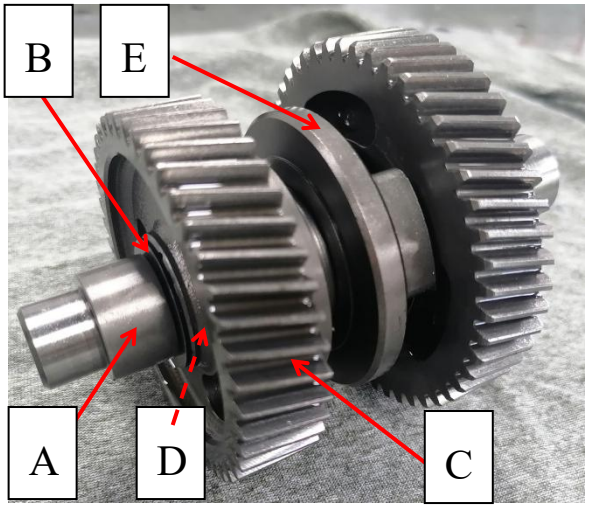


Install gear display A and bolt B, install gear display pressure plate C and bolt D, and install box bolt E



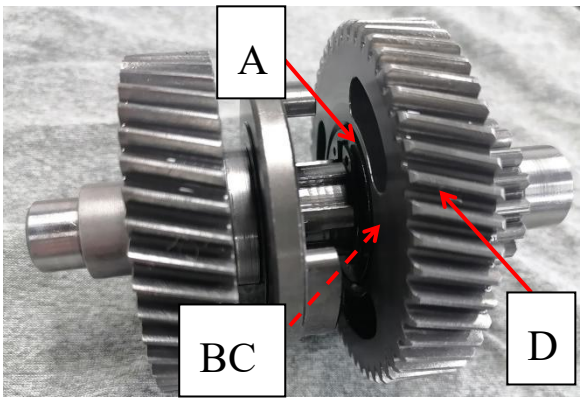
5.7.5 Remove the reverse intermediate shaft components

- Disassemble:
  Press out bushing A
  Flat washer B
  Forward driven wheel C
  Bushing D
  Shift ratchet
  Special tool - puller



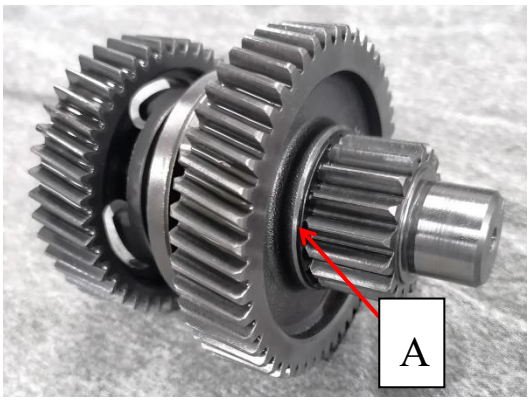
Elastic washer A
Spline washer B
Needle bearing C
Reverse driven wheel D

Special tool - external expanding circlip pliers



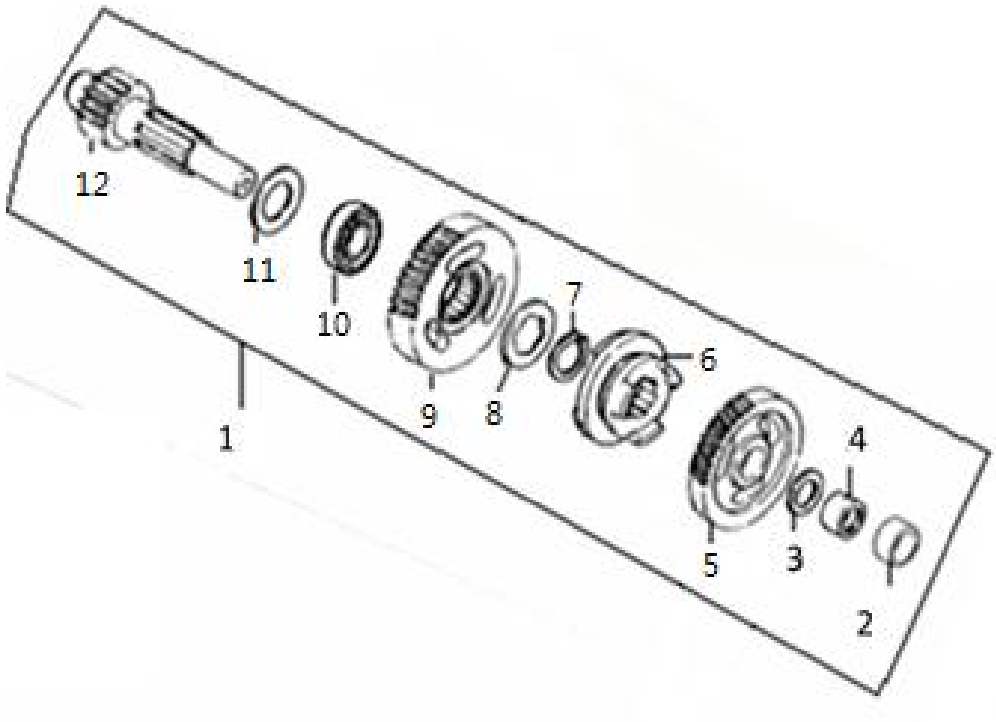
Flat washer A

Inspect the gears, journals, and sleeve bearings for wear or damage.
If necessary, please replace it.



5.7.6 Assembly of reverse intermediate shaft components

Assemble the reverse intermediate shaft components as shown in the figure



1. Reverse intermediate shaft components
2. Bushing (φ15×φ20×12)
3. Flat washer（ φ15×φ25×1)
4. Bushing（ φ15×φ17×10)
5. Forward driven wheel
6. Bushing (gear tooth combination sleeve)
7. Elastic washer (GB/T 894.1_d=22)
8. Spline washer（ φ 22 ×φ 35 × 3)
9. Reverse driven wheel
10. Needle roller bearing (RNA4903)
11. Flat washer（ φ 22 ×φ 36 × 1)
12. Reverse intermediate shaft

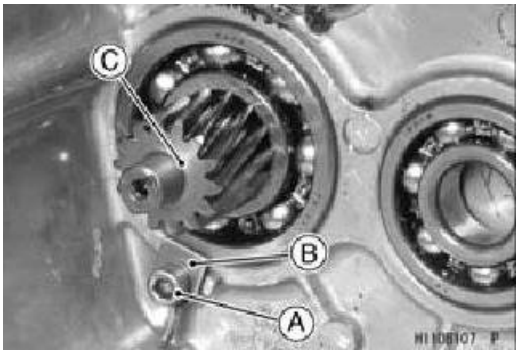
Special tools:

External expanding circlip pliers

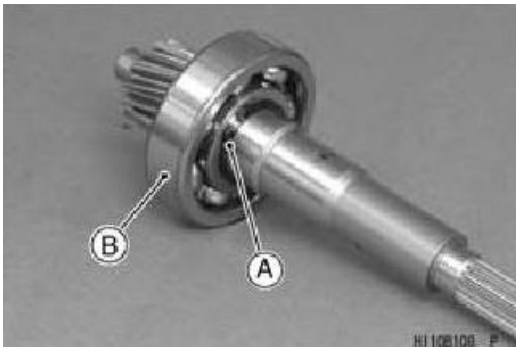
Hydraulic press - fitting fixture

5.7.7 Disassemble the spindle

- Disassemble:
  Bolt A.
  Spindle bearing pressure plate B.
  Spindle C.



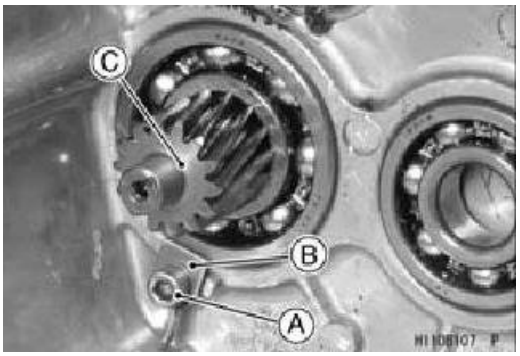
- Disassemble:
  Elastic retaining ring A.
  Use a suitable puller to remove rolling bearing B.
  Inspect the gears and journals for wear or damage.
  If necessary, please replace it.
  Special tool: external caliper bearing puller.



5.7.8 Assemble the spindle

Assemble:
Spindle bearing [A]
Special tool - bearing press fixture B.
Assemble a new circlip C.
Tools - Outer Ring Calipers

Assemble:
Spindle bearing pressure plate B
Use non permanent tightening adhesive on the fixed bolt A of the transmission bearing
Torque control of bearing fixing bolts:
(8-12) N · m

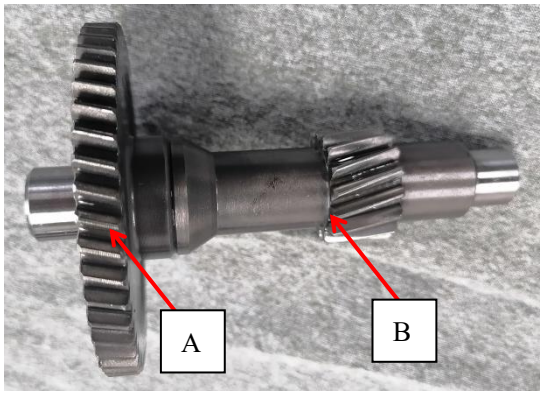


5.7.9 Secondary shaft

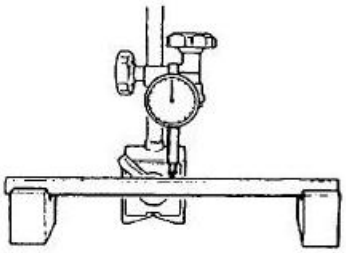
Inspect the gears and journals for wear or damage.
If necessary, please replace it.

5.7.10 Reverse transmission shaft components

Disassemble/assemble：
Reverse transmission wheel A
Reverse transmission shaft B
Inspect the gears and journals for wear or damage.
If necessary, please replace it.
Special tools:
Hydraulic press - fitting fixture



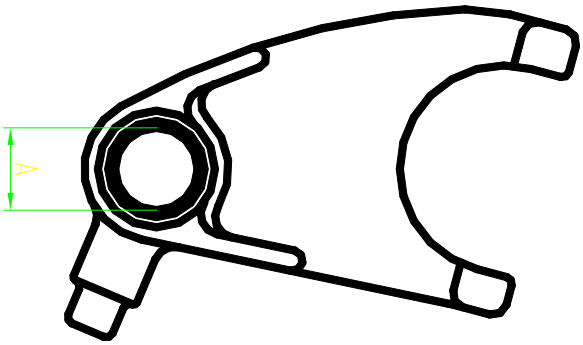
5.7.11 Check the runout of the shift fork shaft



·Measure the runout of the shift fork shaft
★ If the measurement exceeds the usage limit.
Replace the shift fork shaft with a new one.
Shift fork shaft swing limit: less than 0.03mm
Transmission shaft inspection.

5.7.12 Check the shift fork

Standard for inner hole A of shift fork：(12～12.018)mm
Service limit：12.04mm



- Visually inspect the condition of the shift shaft [A], clamp [B], and spring [C]

★If the shift shaft is excessively bent or damaged, a new shift shaft should be replaced.

★If the snap ring or spring is damaged or excessively worn, it should be replaced with a new snap ring or spring

- Visually inspect the shift fork shaft

★When the shift fork shaft is bent, replace it with a new one

5.7.13 Check the variable speed drum

Check whether the variable speed drum and journal are worn or damaged.

If necessary, please replace it.

Assemble:

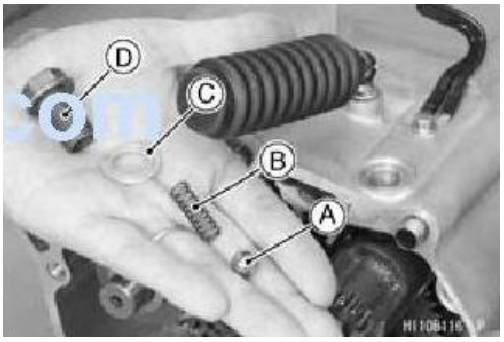
Steel ball A.

Spring B.

Flat washer C.

Variable speed drum plug [D] torque control: （25～35）N·m

Assembled with gearbox assembled



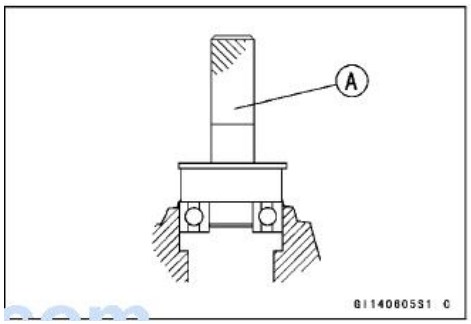
5.7.14 Disassemble and assemble the bearing

Attention please
Do not disassemble rolling or needle roller bearings unless necessary. Remove them may damage them

Use a press or puller to remove the rolling bearings and/or needle bearings.

Attention please

Without the aforementioned tools. Heating the casing to a maximum temperature of about 93 ℃ can achieve satisfactory results, and tapping the bearing may allow for removal



Attention please
Do not use a unipolar heat source to heat the casing. This will cause the box to twist. Immerse the box in oil and heat the oil.

- Use a press and bearing drive device [A], assemble a new rolling bearing until it stops at the bottom of the bearing seat. Three new needle roller bearings must be pressed into the crankcase so that the end face is flush with the end face of the hole.

Special tool - bearing assembly tool

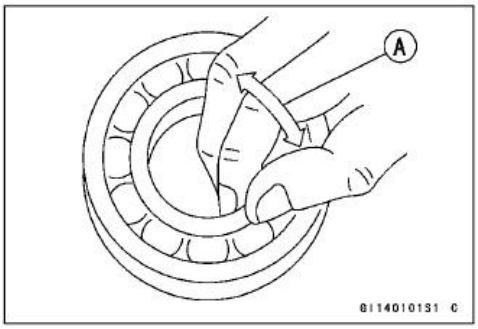
5.7.15 Check the bearing

Attention please
Do not remove the bearings for inspection. Remove them may damage them

- Check the ball bearing

  Due to the close tolerance of ball bearings, wear must be judged by sensation rather than measurement. Clean each bearing with a high flash point solvent. Dry (do not rotate when the bearing is dry), then oil it with lubricating oil.

  Rotate bearing A by hand to check its condition.



★If the bearing has noise, unstable rotation, or any rough spots, replace it

·Check the needle bearing

Most needle roller bearings have minimal roller wear and are difficult to measure. Check bearings for wear, color changes, or other damage, rather than measuring.

★If there is any doubt about the condition of the needle bearing, it should be replaced.

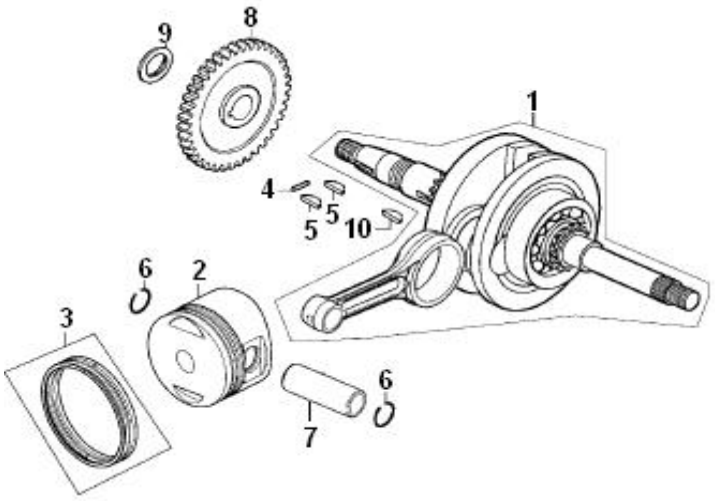
5.7.16 Check the oil seal

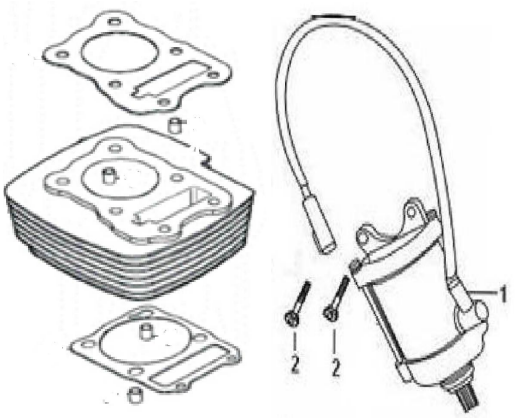
- Check the oil seal

★If the lip is deformed, discolored (indicating that the rubber has deteriorated), hardened or damaged, replace it.

5.8 Crank connecting rod components

5.8.1 System explosion view





5.8.2 Service information

Overview

- This chapter includes the disassembly and inspection of crank components, pistons, cylinder bodies, and starting motors.
- There is no need to remove the engine from the frame, and it can be directly disassembled and tested on the entire vehicle.
- When disassembling, the disassembled parts should be marked and placed properly to ensure correct positioning during reassembly.
- Before inspection, all dismantled components should be cleaned with cleaning agent and blown dry with compressed air.

5.8.3 Specifications

Items			Standard value	Service limit
Cylinder parts	Cylinder, piston	Cylinder inner diameter	(63.5～63.51)mm	63.57mm
		Outer diameter of piston	(63.47～63.48)mm	63.4mm
	Side clearance of piston ring	First ring	(0.03～0.07)mm	0.1mm
		Second ring	(0.02～0.06） mm	0.09mm
	Piston pin, Piston pin hole, Connecting rod small end	Piston pin diameter	(14.994～15)mm	15.04mm
		Diameter of piston pin hole	(15.002～15.008)mm	14.96mm
		Connecting rod small end hole diameter	(15.014～15.022)mm	15.047mm

5.8.4 Cylinder block disassembly

- Disassemble
  Tensioner A, bolt B
  Bolt C
  Starting motor assembly D
  Cylinder head gasket A
  Positioning pin B
  Cylinder block C

Chain tensioning plate D

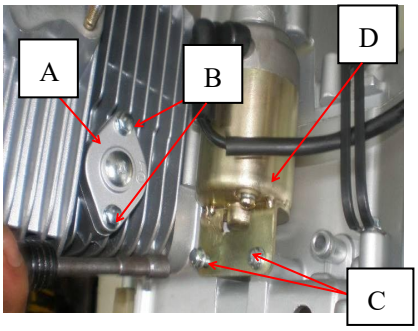
Attention：

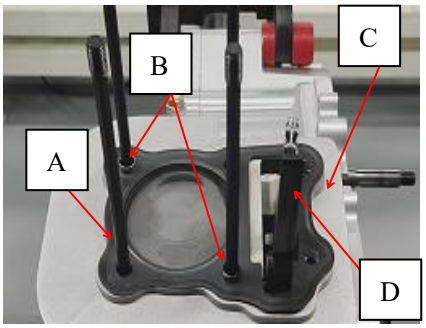
When disassembling the chain tensioning plate and cylinder, pull the timing chain upwards and keep it tight after disassembly. Without a chain tensioning plate, the timing chain will detach from the crankshaft sprocket

5.8.5 Piston disassembly

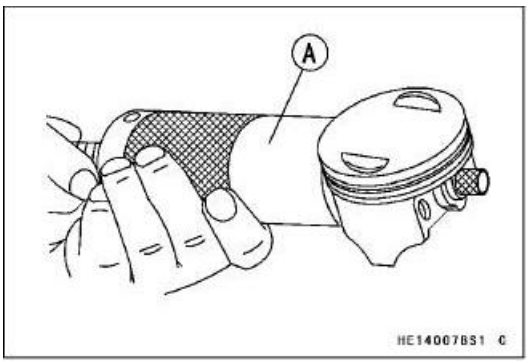
Remove the cylinder block.

Place a clean cloth under the piston and remove the piston pin wire retainer [A]





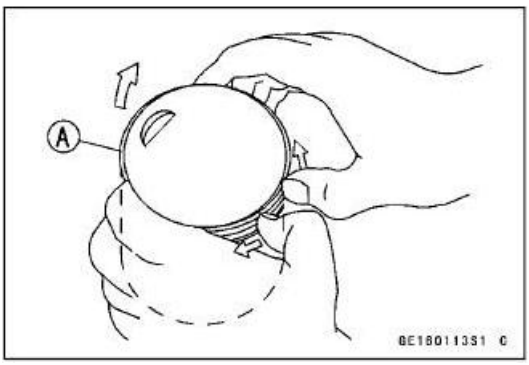
Attention please
Do not reuse the piston pin wire retainer. During disassembly, it may weaken and deform them, and they may fall off and scratch the cylinder wall



- Using the piston pin puller assembly A, remove the piston pin

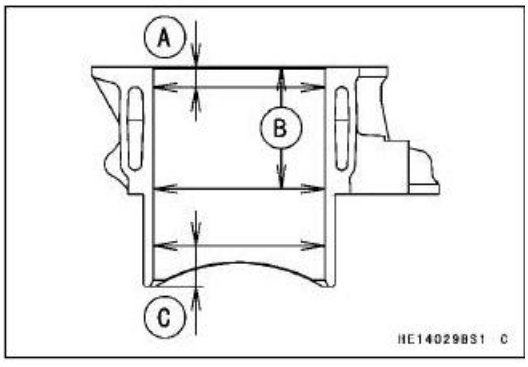
Special tool - piston pin puller assembly

- Dismantling the piston



- Carefully open one ring of piston ring with your thumb, then push the other side of piston ring up A, and take down one ring of piston ring.
- Use your thumb to remove the second ring and scraper ring in the same way.

5.8.6Cylinder block wear inspection



• Due to the different wear of the cylinder in different directions, please take measurements on the left, right, and front and back at the three positions shown in the figure (a total of six measurements).

If the inner diameter measurement of any part of the cylinder exceeds the Service limit, it should be replaced

10mm A

60mm B

20mm C

Cylinder body diameter standard: (63.5-63.51) mm

Service limit:63.57 mm

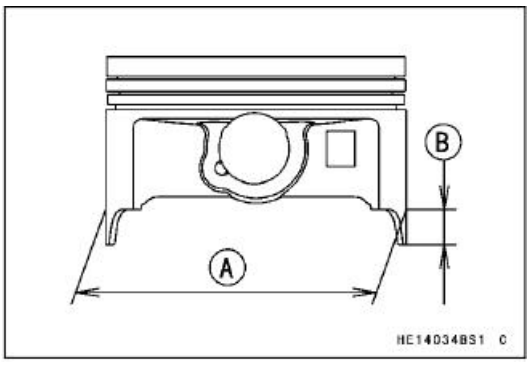
5.8.7 Piston wear inspection

• Measure the outer diameter of the piston [A] from the bottom of the piston up 12mm [B], perpendicular to the direction of the piston pin hole

★If the measured value exceeds the range of use, replace the piston with a new one

Piston diameter standard: (63.47～63.48)mm.

Service limit:63.40mm



5.8.8 Clearance inspection between piston and cylinder block

• Subtracting the piston diameter from the cylinder diameter to obtain the piston/cylinder gap

• Piston/cylinder clearance

Standard: (0.02～0.04)mm.

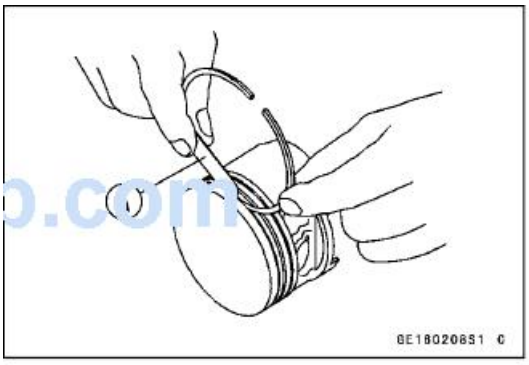
★If the gap exceeds the service limit, check the piston and cylinder.

5.8.9 Wear inspection for piston ring and piston ring groove

• Check the wear of piston ring bank and ring groove

★The piston ring should be completely parallel to the groove surface. If not, replace the piston and all piston ring

• When the piston ring is in the groove, use a feeler gauge to make several measurements to determine the piston ring/groove side clearance.



Side clearance of piston ring groove

Standard:

The first ring groove (0.03-0.07) mm.

Second ring groove (0.02-0.06) mm.

Service limit:

The first ring groove of 0.10mm.

The second ring groove is 0.09mm.

5.8.10 Piston ring end clearance inspection

- Put the piston ring A into the cylinder, and use the piston to position the piston ring to a proper position. Set it near the bottom of the cylinder, where there is less wear on the cylinder.
- Measure the clearance between the two ends of the ring with a thickness gauge [B] piston ring end clearance

Standard:

The first ring (0.15~0.35) mm.

The second ring (0.25-0.40) mm.

Oil ring (0.15~0.6) mm.

Service limit:

The first ring 0.55 mm.

The second ring is 0.60mm.

Oil ring 0.80mm.

★If the end gap of any ring exceeds the usage limit, replace all rings.

5.8.11 Wear inspection of piston, piston pin, and connecting rod hole

★Measure the inner diameter A of the piston pin holes at both ends.

·Inner diameter of piston pin hole

Standard:15.002～15.008mm.

Service limit:15.04mm.

★If the diameter of the piston pin hole exceeds the usage limit. Replace the piston.

- Measure the diameter B of the piston pin.

Standard:(14.994～15)mm.

Service limit:14.96mm.

★If the diameter of the piston pin is less than the usage limit at any time, replace the piston pin

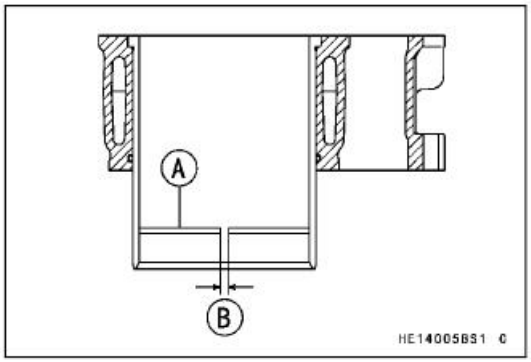
·Measure the inner diameter A of the small end of the connecting rod.

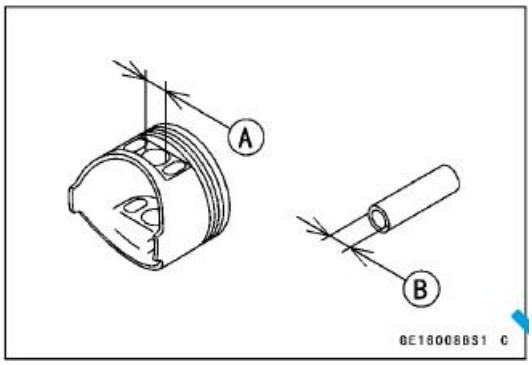
Inner diameter of connecting rod small end

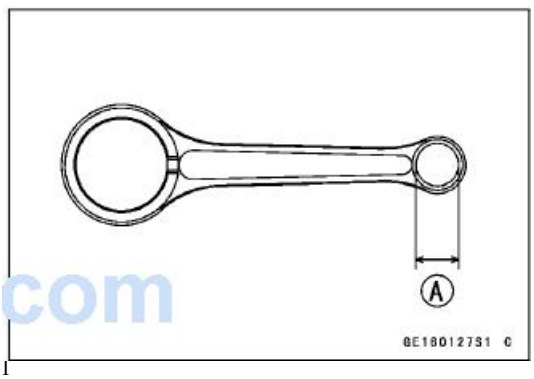
Standard:(15.014～15.022)mm.

Service limit15.047 mm.

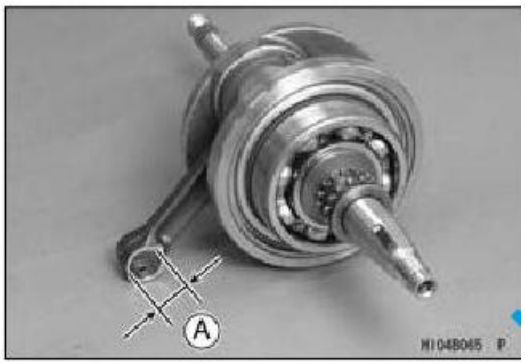
★If the diameter exceeds the usage limit, replace the crankshaft components.







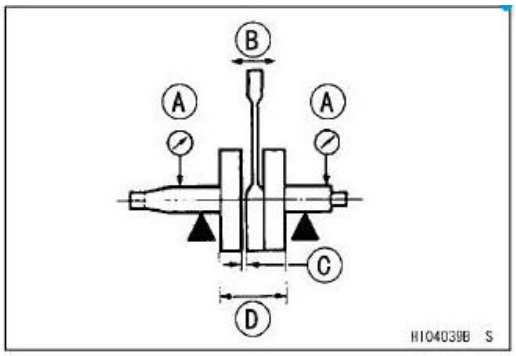
5.8.12 Inspection of crank and connecting rod components



- Disassemble the crankshaft connecting rod components (refer to the crankshaft case).
- Measure the small end diameter of the connecting rod [A].

★If the measured value exceeds the service limit, please replace the crankshaft with a new one.

Limit of use for connecting rod small end diameter A: 15.047 mm.



- Measure the runout A of the crank connecting rod components.

★If the measured value exceeds the service limit, please replace the crankshaft connecting rod component with a new one. The crankshaft connecting rod component has a runout of A

Service limit: Runout 0.05 mm.

- Measure the free swing B of the small end of the connecting rod.

★If the measurement exceeds the standard. Replace the crankshaft and connecting rod components with new ones. Free oscillation of the small end of the connecting rod [B]

Standard: (0.8-1.0) mm

- Measure the clearance C on the large end side of the connecting rod

★If the measurement exceeds the usage limit, replace the crankshaft and connecting rod components with new ones. Clearance C on the large end side of the connecting rod.

Standard:(0.1～0.35) mm.

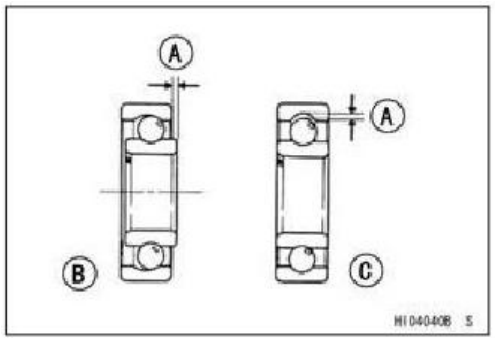
Service limit:0.6 mm.

- Measure the crank width [D].

★If the measured value exceeds the service limit, please replace the crankshaft connecting rod component with a new one.

Crank width D.

Standard:(60.4～60.5) mm.



• Assemble the crankshaft connecting rod components (refer to the crankshaft case).

Wear inspection for main bearing of crank connecting rod parts

- Rotate the crankshaft connecting rod component bearings and check for excessive wear.
- Measure the free clearance of the crankshaft

connecting rod component bearings [A].

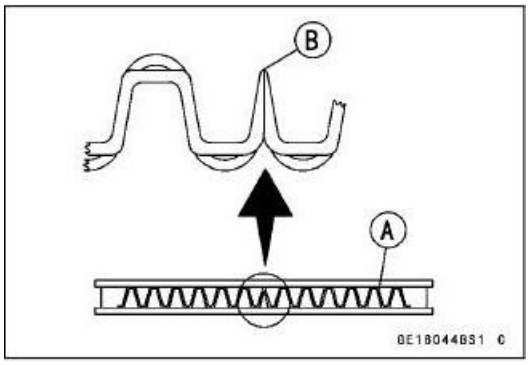
★If the measured value exceeds the service limit, please replace the crankshaft connecting rod component with a new one

Radial clearance of crankshaft connecting rod component bearings [A]

Usage limit: Axial B 0.2 mm.

Radial C 0.05 mm.

5.8.13 Piston assembly



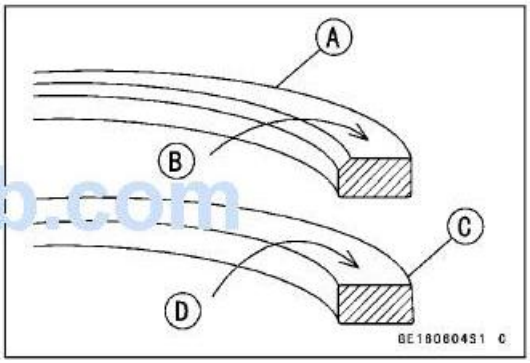
Attention

○ When using a new piston or cylinder, check the clearance between the piston and the cylinder (refer to Piston/Cylinder Clearance Inspection), and use a new piston ring

Attention

○The oil ring does not have a "top" or "bottom" and does not distinguish between the upper and lower directions.

- Apply lubricating oil to the oil ring machine and lining ring. Assemble the oil ring liner ring A in the bottom of the piston ring groove, so that both ends B butt joint.



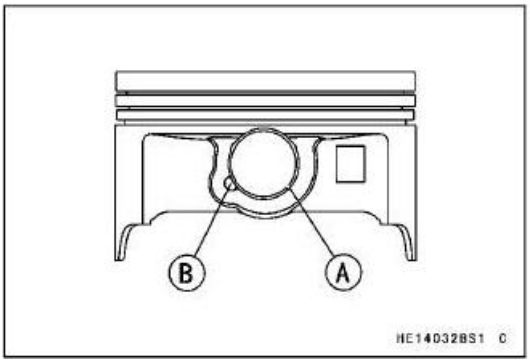
- Assemble the oil ring scraper ring. One piece is above the lining ring, and the other piece is below it.

○ Grasp the railing with your thumb. But it is only enough to put the handrail on the piston or insert the rail into the bottom piston ring groove.

○ Or press the rail into the bottom piston ring.

- Apply lubricating oil on piston ring
- Do not mix the first and second rings, assemble the first ring A with the "R" mark B facing upwards.
- Assemble the second ring C with the "RN" mark D facing upwards.
- Attention：the openings of two adjacent rings of the piston ring are staggered by 120 °, and the piston ring is staggered from the inlet side and the direction of the piston pin

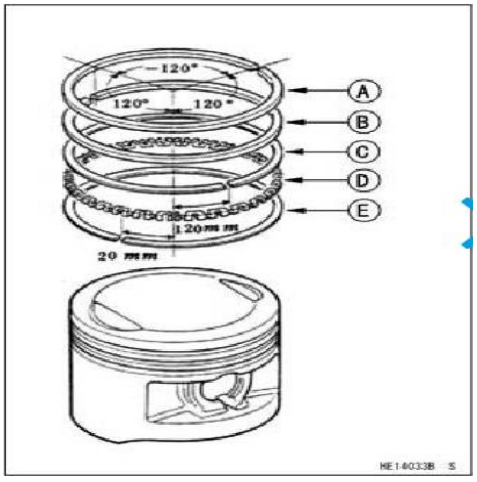
- Apply lubricating oil to the piston pin.
- Assemble the piston with the "IN" mark A facing the air inlet side.
- Assemble the piston pin



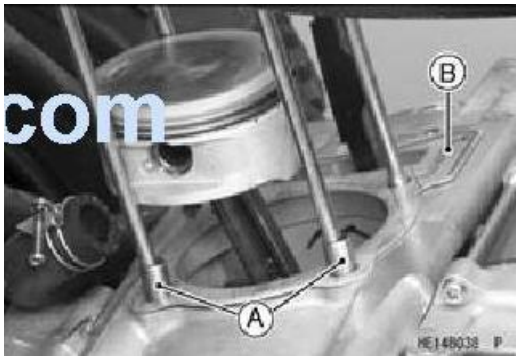
- Install a new piston pin wire retainer on one side of the piston, so that the opening A of the wire retainer does not coincide with the notch B of the piston pin hole
- When assembling the piston pin retainer ring, only compress it enough to fit the piston pin steel wire retainer ring, do not compress too much

- Apply lubricating oil to the inner diameter of the cylinder and the piston skirt.

- The position of piston ring opening must be as shown in the figure.
  The first ring A.
  The second Ring B.
  Oil ring scraper ring (upper) [C]
  Oil ring lining ring [D]
  Oil ring scraper ring (lower) [E]



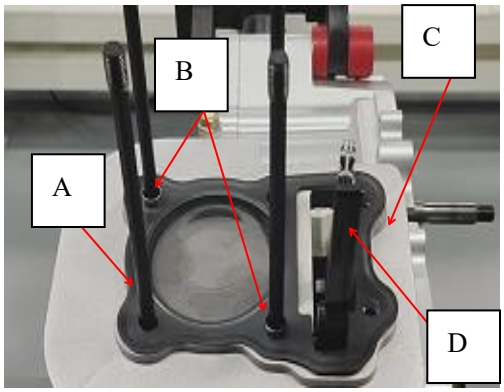
- Replace the cylinder block sealing gasket with a new one
- Assembly
  Positioning pin A.
  Cylinder block gasket B.



5.8.14 Cylinder block assembly

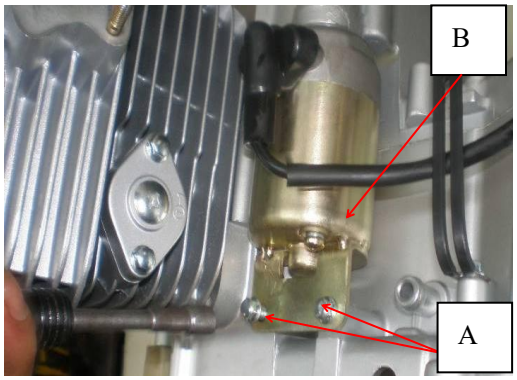
Cylinder block assembly

Refer to Timing Chain Assembly
Refer to Tensioner Assembly
Cylinder block C
Cylinder head gasket A
Positioning pin B



Chain tensioning plate D

Starter motor assembly
Starter motor assembly B
Bolt A
Control torque: (8-12) N · m.



6 Vehicle chassis

Maintenance information

Attention

•When conducting maintenance work on the front wheel and suspension system, the frame must be firmly supported before operation

•The maintenance and inspection of lighting, instruments, and switches should be carried out according to the corresponding chapters

•Do not exert excessive force on the wheels. Be careful not to damage the wheels

•When disassembling tires from the wheel rims, it is necessary to use specialized tires and wheel rim protectors to avoid damaging the wheels

Maintenance benchmark

Items		**Standard**	**Service limit**
Rims	Axial runout	0.8mm	2.0mm
	Radial runout	0.8mm	2.0mm
Tires	Residual groove	—	3mm
	Pressure	35kPa(0.35kgf/cm^2)	—
Front brakes	Brake handle clearance	0mm	—

Tightening torque

Name	Specifications	Torque
Steering wheel installation fixing screws	GB70-85 M6*16	10~12N·m
Front wheel hub and disc brake disc fixing screws	GB70.3 M6*16 10.9 grade	14~17N·m
Front and rear disc brake left and right pump fixing bolts	GB5789 M8*25	25~30N·m
Front wheel rim shaft slotted nut	GB9457-1988 M14*1.5*H18	72～89N·m
Rear wheel hub fixed slotted nut	M20	72～89N·m
Front and rear shock absorber fixing bolts and nuts	GB6187-86 M10*1.25	55～66N·m
Rim mounting nut	M10 × 1.25 60°	45~59N·m
Front upper and lower rocker arm fixing bolts and nuts	GB6187-86 M10*1.25	55~66N·m

Tools

Inner hexagonal 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 screwdriver	Needle nose pliers
Flat screwdriver	External circlip pliers
Hammer	

6.1 Troubleshooting

1. Steering wheel steering weight

1). Steering gear oil shortage

2). Excessive clearance in the front suspension system

3). Loose steering ball joint

4). Oil leakage or missing direction booster

5). Low tire pressure

6). Tire wear

2. Steering wheel shaking

1). Damaged and poorly tightened steering bearings

2). Left and right shock absorbers do not match

3). Tire skewness

4). Frame deformation

5). Tire wear and eccentric wear

6). Wheel bearing shaking

3. Front wheel runout

1). Wheel deformation

2). Poor wheel bearings

3). Poor tires

4). Improper wheel balance

5). Poor fastening around the wheel axle

4. Wheel rotation is not flexible

1). Poor wheel bearings

2). Improper installation of front wheels

3). Brake oil pipe and cable are stuck

5. Front suspension too soft

1). Reduced elasticity of the front shock absorber

2). Low tire pressure

6.Front suspension too hard

1). Damaged front shock absorber

2). Excessive tire pressure

7. Abnormal noise from the front shock absorber

1). Poor front shock absorber

2). Loose fastening parts of the shock absorber

8. Poor braking effect

1). Poor brake adjustment

2). The surface of the brake disc is dirty

3). Brake pad wear

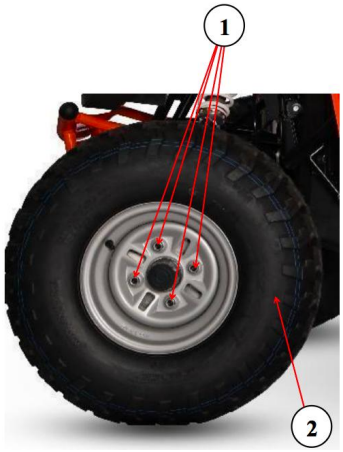
6.2 Front wheel

Disassembly

Use a tool to lift the front wheel and ensure that there is no force acting on the front wheel

Remove the 4 nuts 1 installed on the front wheel bracket

Remove front wheel 2



Inspection of wheel rims

Check if wheel rim1 is damaged, deformed, or scratched, and replace it if there are any abnormalities. Slowly rotate the wheel and measure the runout of rim 1 with a dial gauge

Usage limit: Axial: 2.0mm

Radial: 2.0mm

Installation of wheel rims

Press rim 2 into the tire on a dedicated machine

Remove the front wheel mounting bracket

Remove the front wheel

Remove the front brake caliper body 3

Remove the cotter pin 4

Remove the rim shaft mounting nut 5

Remove the brake disc and mounting bracket together

Remove the front wheel mounting bracket

Installation

Installation is carried out in reverse order of disassembly

Rim shaft mounting nut torque: 72N • m~89N • m

Brake disc installation bolt torque: 14N • m~17N • m (coated with thread fixing agent)

Note: The removal and installation of the rear wheel is similar to the front wheel, please refer to the front wheel

6.3 Braking system

Remove the front brake caliper

Remove the front wheel

Remove the 2 bolts 6 installed on the steering knuckle

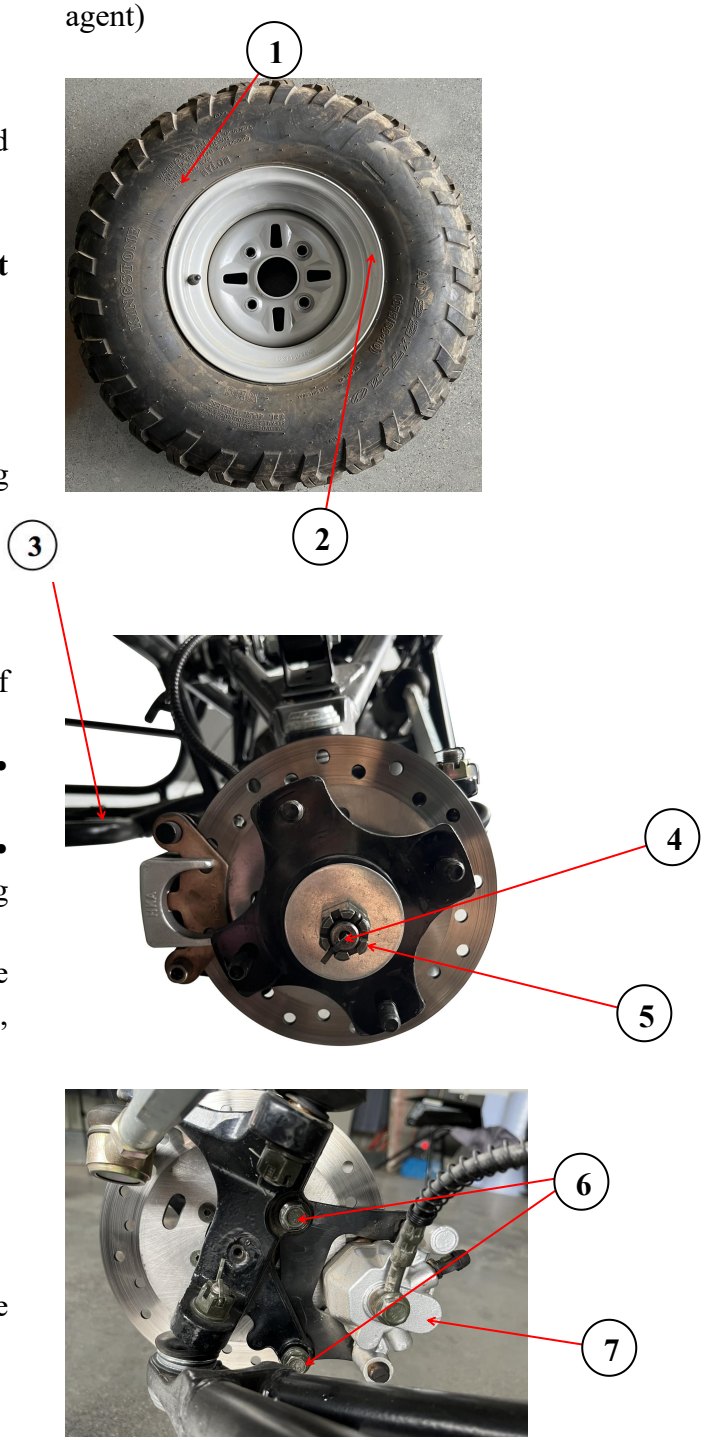
Remove the brake caliper 7

Check

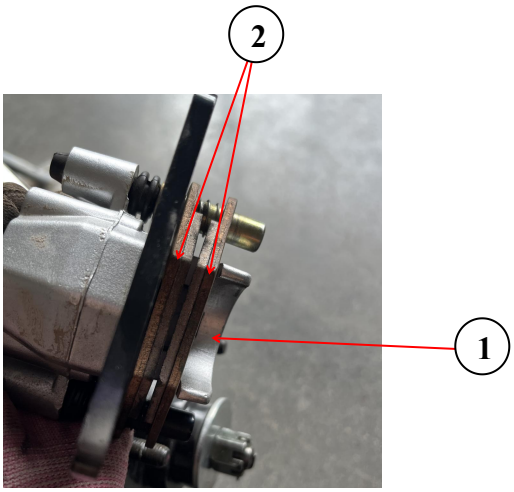
Observe if there are cracks in the brake caliper and if there is oil leakage at each fastening point, replace it if there is any

Installation

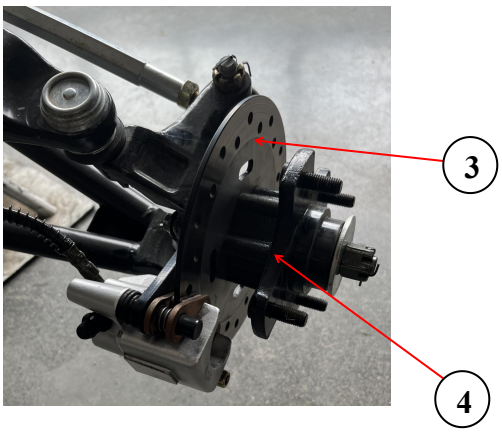
Brake caliper fixing bolt 6 torque: 25N • m~30N • m (coated with thread fixing agent)



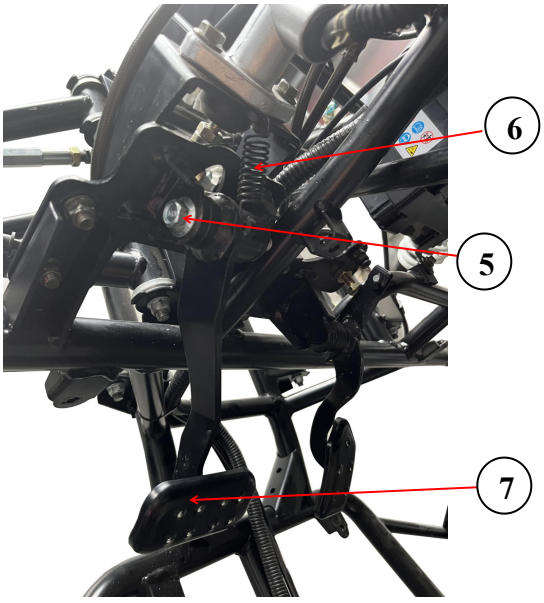
Removal of brake pads
Loosen one fastening bolt
Rotate brake caliper 1
Remove the brake pads 2
Check
Measure the thickness of brake pad friction layer 2. When the thickness of brake pad friction layer 2 is less than or equal to 1 mm, both brake pads should be replaced with new ones at the same time.
Installation
Installation is carried out in reverse order of disassembly



Remove the brake disc
Remove the front wheel
Remove the brake caliper
Remove the brake disc 3 and front wheel mount 4 together from the vehicle
Remove the brake disc 3
Check
Front brake disc thickness: If it is less than 3.0mm, replace it with a new brake disc
Installation
Install the brake disc
Brake disc fixing bolt torque: 14N • m~17N • m



Disassembly of brake pedal
Remove bolt 5
Remove spring 6
Remove brake pedal 7
Installation
Installation is carried out in reverse order of disassembly



Attention：
The direction of the oil pipe on the vehicle body must be arranged according to the cables and wires in the first chapter, and the smooth flow of the brake oil circuit must be ensured
When the brake system assembly is installed, the braking force must be checked.

Disassembly of the brake main pump connector

Remove the oil cup bolt 1

Remove bolt 2

Pull out the cotter pin 3

Pull out the pin shaft 4

Unplug the foot brake switch plug-in 5

Separate the brake main pump connector 6 from the vehicle body

Installation

Installation is carried out in reverse order of disassembly

Attention： The direction of the oil pipe on the vehicle body must be ensured to be unobstructed according to the cable and wire wiring diagram in the first chapter. The braking system must be checked for braking force when the assembly is installed.

Remove the rear brake caliper body

Remove bolt 7 and parking brake cable 8

Remove the rear brake caliper body 9

Installation

Installation is carried out in reverse order of disassembly

Attention： The direction of the oil pipe on the vehicle body must be ensured to be smooth according to the cable and wire routing diagram in the first chapter. When the brake system assembly is installed, the brake force must be checked. If the front and rear cannot be linked to control the brake system, the joint must be checked to ensure that the brake fluid volume in the brake oil cup is between the upper and lower limit graduation lines. If necessary, the recommended brake fluid from Kayo should be added between the upper and lower limit graduation lines. Check whether the brake switch and brake light work normally.

Disassembly of the brake tee joint

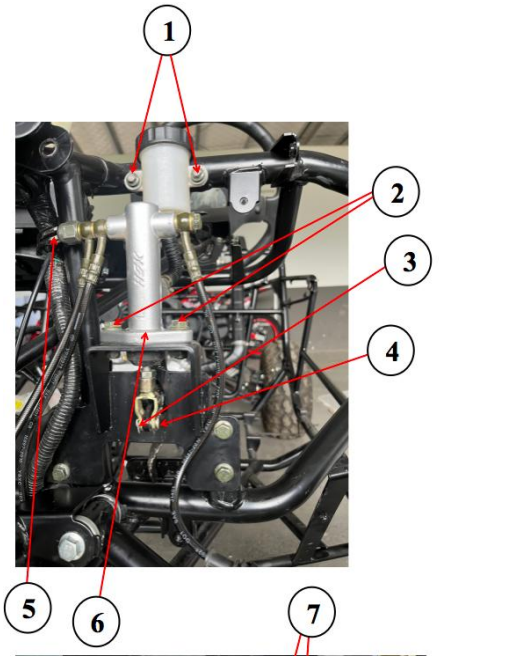
Remove bolt 10

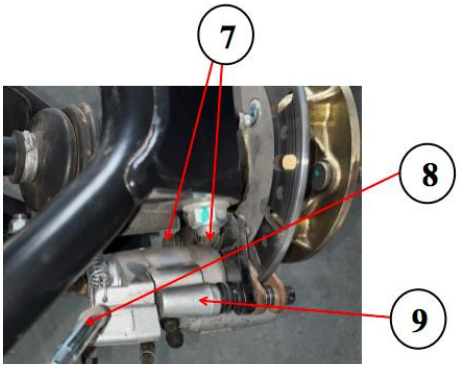
Separate the brake tee joint 11 from the vehicle body

Installation

Installation is carried out in reverse order of disassembly

Attention： The direction of the oil pipe on the vehicle body must be ensured to be unobstructed according to the cable and wire wiring diagram in the first chapter. The braking system must be checked for braking force when the assembly is installed





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 simultaneously, otherwise the vehicle body will collapse due to lack of support

Park the vehicle on a level surface and use a jack to support the front of the vehicle firmly

Remove the front body assembly

Remove the front wheel

Remove the brake caliper

Remove the front wheel hub bracket

Remove the bolt 1 that installs the right front shock absorber on the vehicle body and the right front lower rocker arm

Remove the front shock absorber 2

Remove the bolt and nut 3 fastening the right front upper rocker arm installed on the frame

Remove the cotter pin and nut 7 from the right front upper rocker arm ball pin

Remove the right front upper rocker arm 5

Remove the split pin and lock nut 9 from the steering rod ball pin

Remove the bolt and nut 4 installed on the frame of the right front lower rocker arm

Remove the cotter pin and nut 8 from the right front lower rocker arm ball pin

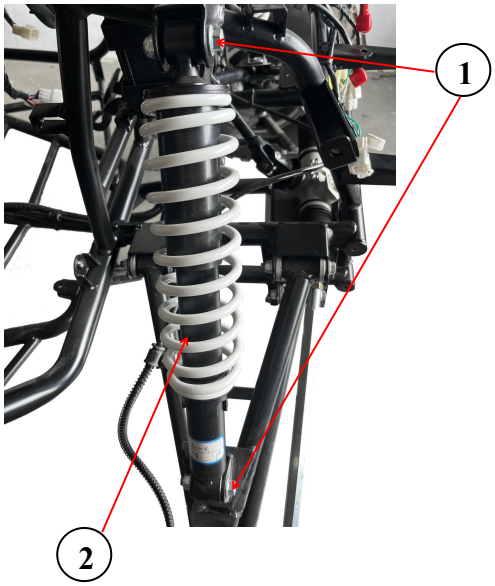
Remove the right front lower rocker arm 6

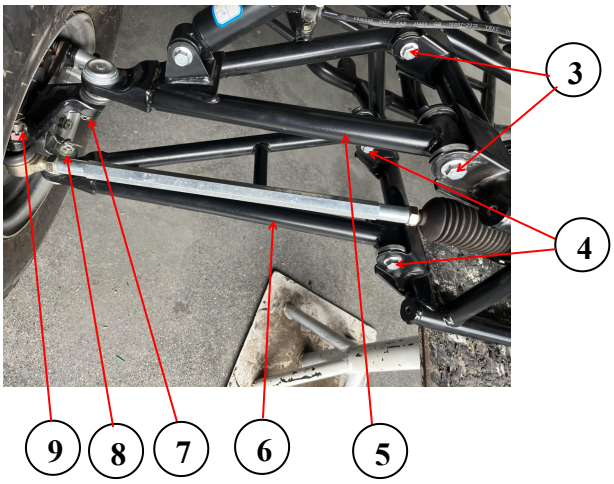
Pull the steering knuckle out of the drive shaft. The suspension system of this car has multiple configurations, suitable for different customer groups. The above mentioned suspension system is a basic configuration, and the maintenance methods for suspension systems in other configurations are similar. You can refer to the above methods for maintenance

Installation

Installation is carried out in reverse order of disassembly

The removal, installation and inspection methods of the left front suspension combination are the same as the right front suspension combination





Disassembly and assembly of the right front rocker arm assembly

Remove the right front shock absorber

Remove the bolt and nut 1 fastening the right front upper rocker arm installed on the frame

Remove the bolt and nut 2 fastening the right front lower rocker arm installed on the frame

Before removing the shock absorber, the wheels, brake calipers, and rim brackets must be removed first

Before removing each bolt, remove the steering linkage first

Before removing the right front rocker arm assembly, first pull the steering knuckle out of the front constant velocity drive shaft

Remove the right front rocker arm assembly

Check the upper and lower rocker arms

Remove the right front upper rocker arm welding combination 3

Check whether the lower ball pin combination 4 can rotate flexibly in all directions and the gap inside the upper ball pin, if it cannot rotate flexibly or the gap is too large; Check whether the grease inside the ball pin has deteriorated (grease model: No. 2 lithium based grease GB7324-87), and whether the dust boot on the ball pin is cracked or aged. If the above problems occur, replace the ball pin with a new one

Remove the welding combination of the right front lower rocker arm

Check whether the lower ball pin combination 5 can rotate flexibly in all directions and the gap inside the upper ball pin, if it cannot rotate flexibly or the gap is too large; Check whether the grease inside the ball pin has deteriorated (grease model: No. 2 lithium based grease GB7324-87), and whether the dust cover on the ball pin is cracked or aged. If the above problems occur, replace the ball pin with a new one.

Installation

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

Installation is carried out in reverse order of disassembly

Check the right steering knuckle

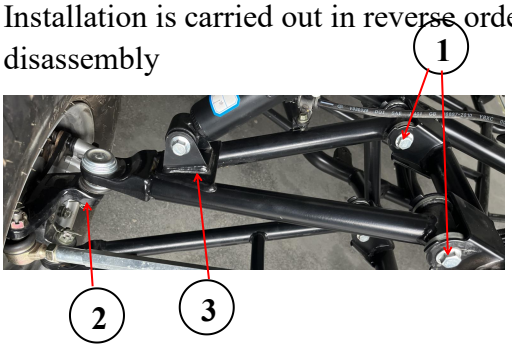
Remove the right steering knuckle

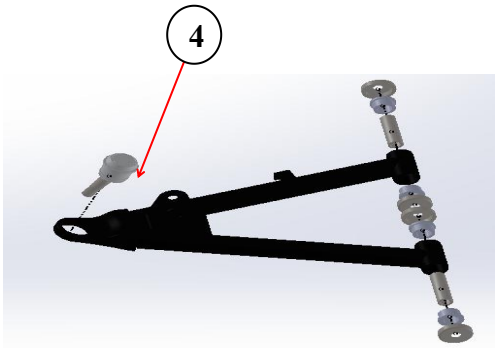
Remove the wheel hub bearing with a special tool

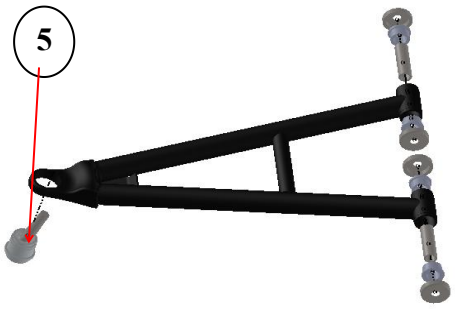
Check if the wheel hub bearing is damaged, rotates flexibly, and has excessive clearance. If defects occur, replace it with a new one

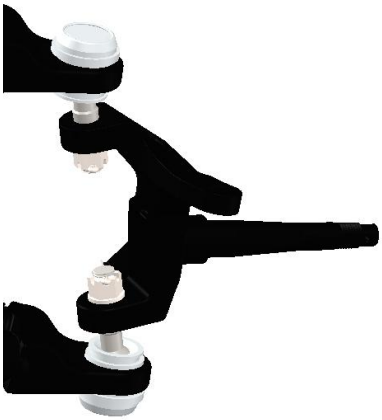
Installation

Installation is carried out in reverse order of disassembly









Installation

Installation is carried out in reverse order of disassembly

Attention： When installing the steering wheel assembly into the steering shaft opening, align the steering shaft marking line

6.5 Steering system

Disassembly and assembly of steering wheel

Remove the steering wheel trim cover 1 in an upward direction

Remove the fixing bolt 2

Remove steering wheel 3

Installation

Installation is carried out in reverse order of disassembly

Disassembly and assembly of steering wheel assembly

Remove the front cover plate

Remove the front body assembly

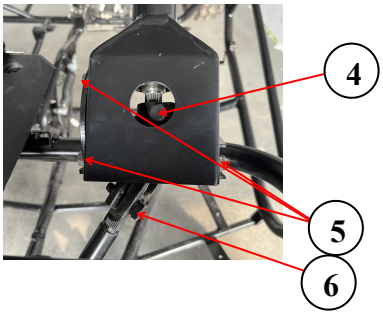
Remove bolt 4

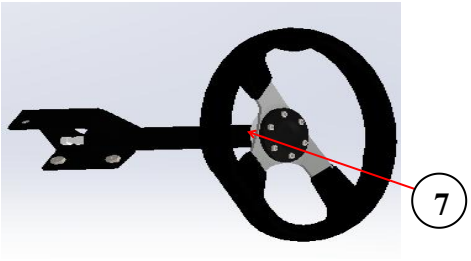
Remove the steering seat bolt 5

Loosen bolt 6

Remove the steering wheel assembly 7

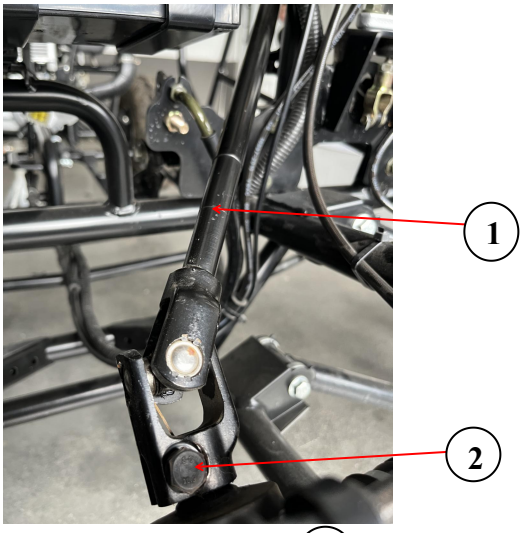
Attention：For the specific disassembly of the plastic part, refer to the second chapter -Vehicle body cover. When disassembling bolt 4, rotate the direction knob to align the bolt with the disassembly port.

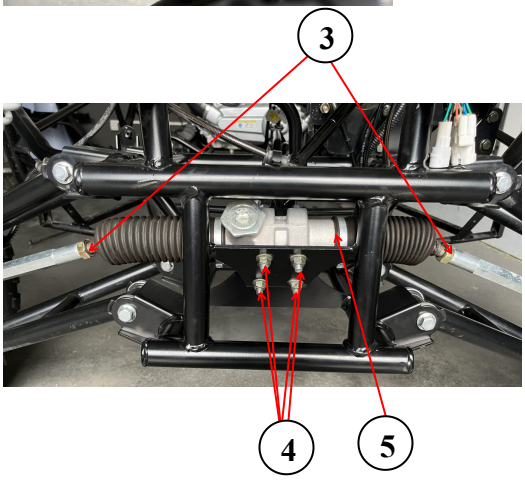




Disassembly and assembly of steering system

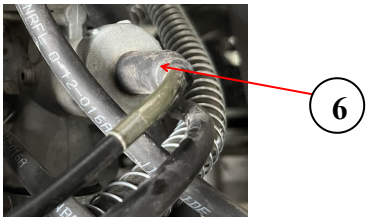
Disassembly and assembly of steering system
Remove the front cover plate
Remove the front body assembly
Front protection
Remove the steering wheel assembly
Remove bolt 2
Remove the steering lever 1
Remove the steering rod nut 3
Remove the fixing bolt 4
Remove steering gear 5





Installation

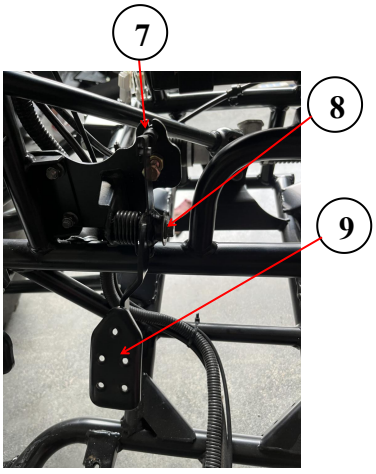
Installation is carried out in reverse order of disassembly



Throttle pedal

Disassembly

Remove the interior front panel
Remove the accelerator cable 6 from the carburetor
Remove the accelerator cable 7
Remove the fixing bolt 8
Remove the accelerator pedal



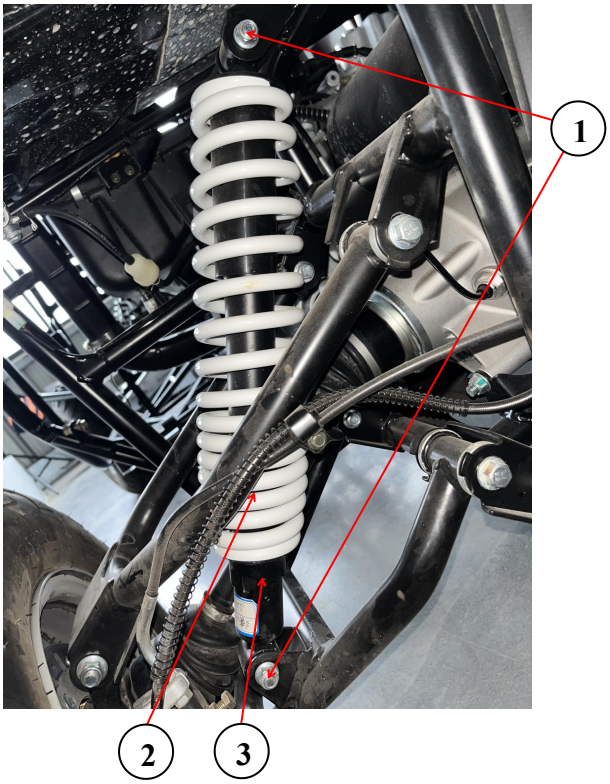
Installation

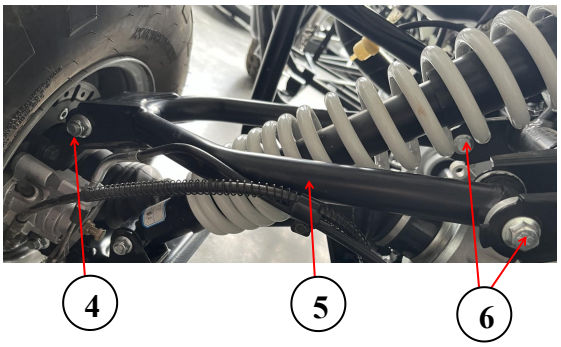
Installation is carried out in reverse order of disassembly

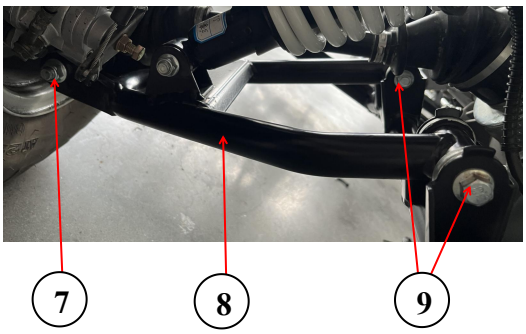
6.6 Rear suspension system

Disassembly and assembly of the left rear suspension assembly

When repairing the suspension system, the vehicle body should be suspended first and the suspension system should be removed, otherwise the vehicle body will fall down due to lack of support
Park the vehicle on a level surface and use a jack to firmly support the rear of the vehicle
Remove the rear fender
Remove the rear wheel
Remove the brake caliper
Remove the bolt 1 of the left rear shock absorber
Remove the rear shock absorber 2
Remove the rear upper rocker arm fixing bolt 4
Remove the fixing bolt 6
Remove the rear upper rocker arm
Remove the rear lower rocker arm fixing bolt 7
Remove the rear fixing bolt 9
Remove the rear rocker arm 8







Check

Check the removed shock absorber and adjust the adjustment cam 3 to the appropriate position

Installation

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

6.7 Disassembly and assembly of rear drive assembly

Disassembly

When repairing the suspension system, the vehicle body should be suspended first and the suspension system should be removed, otherwise the vehicle body will fall down due to lack of support

Park the vehicle on a level surface and use a jack to firmly support the rear of the vehicle

Remove the rear fender

Remove the rear wheel

Remove the brake caliper

Remove the left and right rear shock absorbers

Remove the left and right rear upper rocker arms

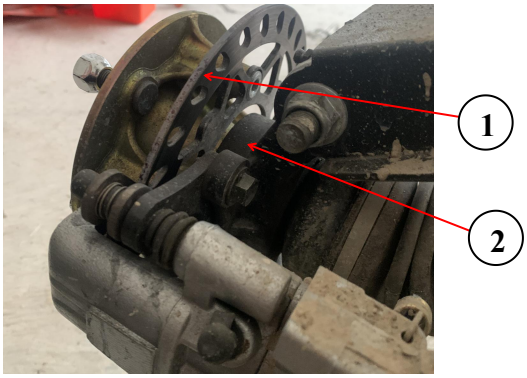
Remove the left and right rear lower rocker arms

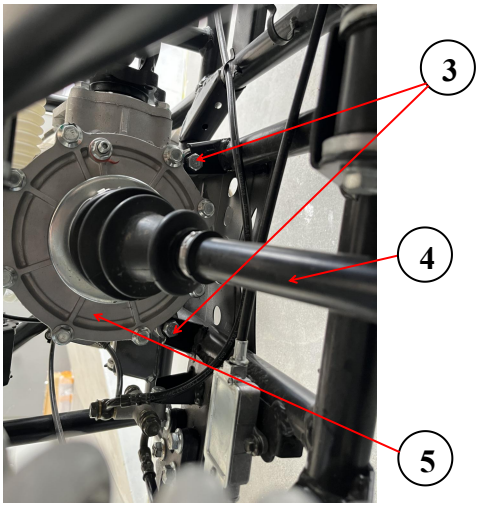
Remove the rear disc brake disc assembly 1

Remove the rear horn 2

Pull out the left and right half shafts of the rear axle 4

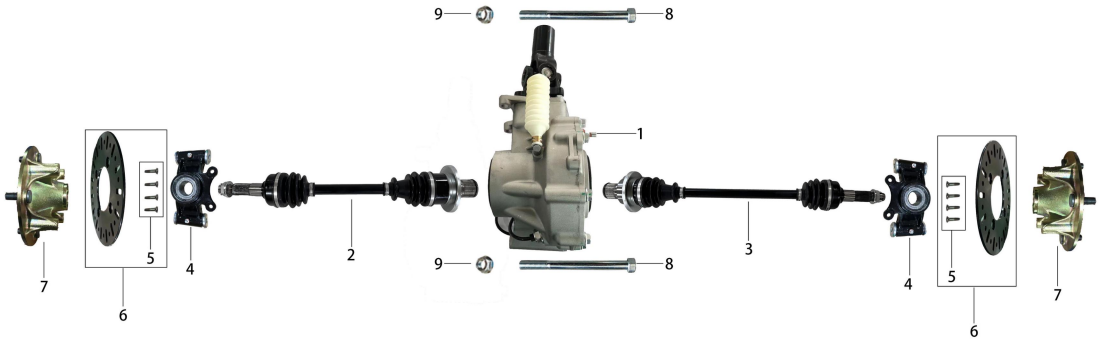
Remove the rear drive assembly 5





Check

The diagram of the total component of the rear transmission shaft of the vehicle is as follows



Rear drive assembly

No.	Name	Quantity	No.	Name	Quantity
1	Rear drive assembly	1	6	Rear disc brake disc	2
2	Rear axle half shaft left assembly	1	7	Rear hub assembly	2
3	Rear axle half shaft right assembly	1	8	Outer hexagonal opposite side bolt GB5785	2
4	Rear Sheep Horn Assembly	2	9	Hexagon flange self-locking nut GB6187-86	2
5	Hexagon socket rear disc bolt	8			

Inspection after disassembly of the rear transmission shaft

- Check if the rear wheel hub is damaged. If it is damaged, replace it with a new one
- Check the thickness of the disc brake disc. If the disc brake thickness is ≤ 3mm, a new disc brake disc should be replaced
- Check if the rear transmission shaft is bent or damaged, and if so, replace it with a new transmission shaft
- Check the rest of the parts for damage, if damaged, replace with new ones

Installation

Perform in reverse order when disassembling the rear drive shaft

7 Signal and lighting system

Maintenance instructions

When conducting inspection operations, the entire vehicle can be powered on; When carrying out disassembly and installation operations, the entire vehicle should be powered off first and both hands should be kept dry.

Specifications of each component

Name	Specifications	Quantity	Remarks
Daytime running lights	LED type 12V-4W lamp beads 20 pieces	1	Replace the entire piece
Left front high beam headlight	SJ-WZ8-L 12V 12W 3 pieces Osram lamp beads with built-in constant current drive	1	Replace the entire piece
Right front high beam headlight	SJ-WZ8-L 12V 12W 3 pieces Osram lamp beads with built-in constant current drive	1	Replace the entire piece
Left front low beam headlight	SJ-WZ8-H 12V 6W 2 pieces Osram lamp beads with built-in constant current drive	1	Replace the entire piece
Right front low beam headlight	SJ-WZ8-H 12V 6W 2 pieces Osram lamp beads with built-in constant current drive	1	Replace the entire piece
Rear lamp	LED waterproof	1	Replace the entire piece
Meter	2V negative display LCD instrument tachometer carburetor version	1	Replace the entire piece
Electric horn	12V-1.5A EEC II-E9-00.6287	1	Replace the entire piece

7.1 Troubleshooting

1.Daytime running lights do not light up
1). Bulb damage
2). Poor contact of connectors
3). Damaged dashboard switch

2.Left front high beam light does not come on
1). Bulb damage
2). Poor contact of connectors
3). Damaged dashboard switch

3.The front right high beam light does not come on
1). Bulb damage
2). Poor contact of connectors
3). Damaged dashboard switch

4. Left front low beam lamp does not work
1). Bulb damage
2). Poor contact of connectors
3). Damaged dashboard switch

5. Front right low beam lamp does not work
1). Bulb damage
2). Poor contact of connectors
3). Damaged dashboard switch

6. Rear taillights
1). Bulb damage
2). Poor contact of connectors
3). Brake sensing damage

7. The electric horn does not sound or is too light
1). Damaged horn
2). Poor contact of connectors
3). Damaged dashboard switch

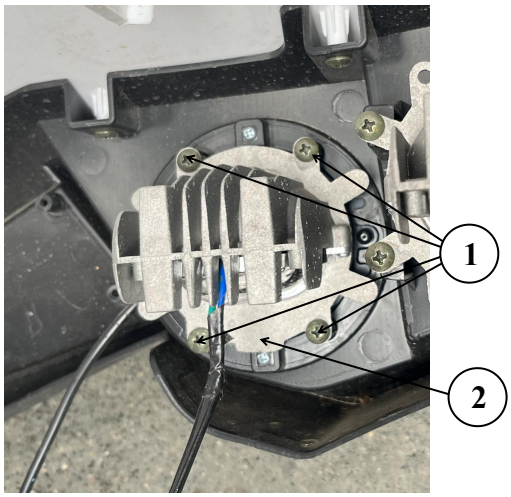
7.2 Headlamp inspection

Turn the lighting switch to the lighting position and check if the headlights are on
- Lighted: Normal
- Unlighted：
  - Main cable disconnection or short circuit
  - Fuse broken
  - Switch damage
  - Lamp damage

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

7.3 Replace the lamp category

Due to the inability to replace the light bulb separately, if there is any damage, the entire lamp category can only be replaced

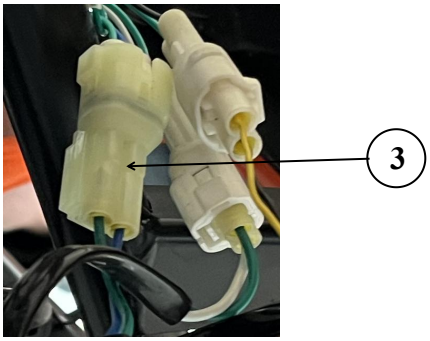


Replace the high beam headlightsDisassembly

Remove the high beam lamp fixing bolt 1

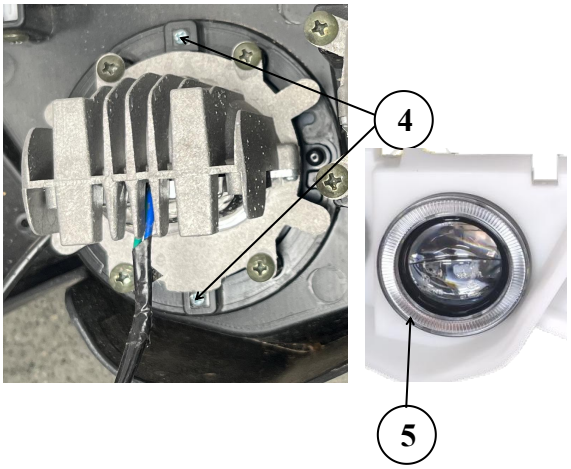
Remove high beam headlight 2

Disconnect the high beam connector 3



Installation

Follow the reverse order of disassembly



Replace daytime lights

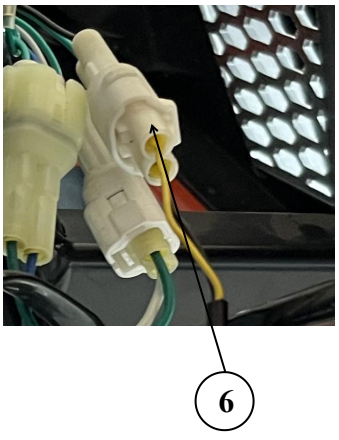
Disassembly

Removing high beam headlights

Remove the fixing bolt 4

Remove daytime running lights 5

Disconnect the daytime running light plug-in 6



Installation

Follow the reverse order of disassembly

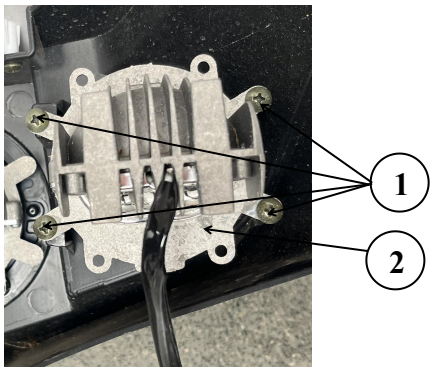
Replace the low beam lamp

Disassembly

Remove fixing bolt 1 of low beam lamp

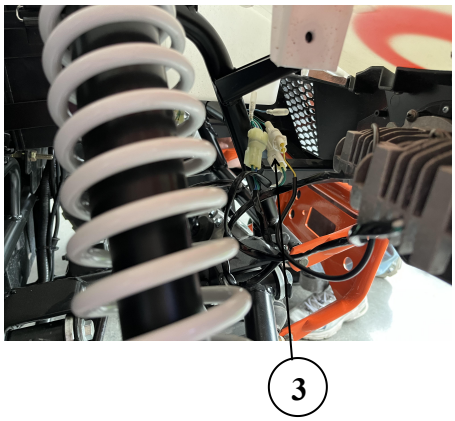
Remove low beam lamp 2

Disconnect the low beam lamp plug-in 3



Installation

Follow the reverse order of disassembly



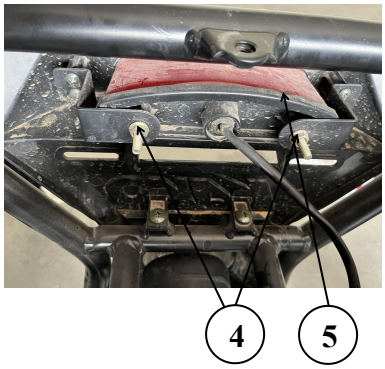
Replace rear tail lights

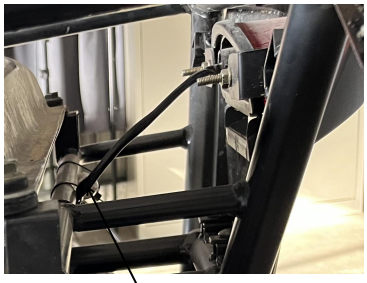
Disassembly

Remove the fixing bolt 4

Remove the rear tail light 5

Disconnect the rear tail lamp connector 6





Installation

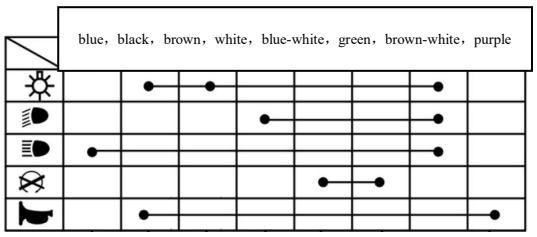
Follow the reverse order of disassembly

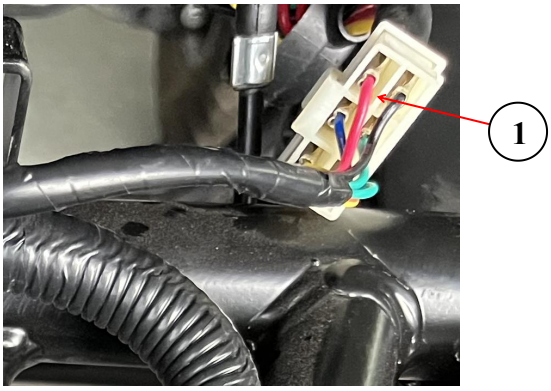
7.4 Ignition switch lock

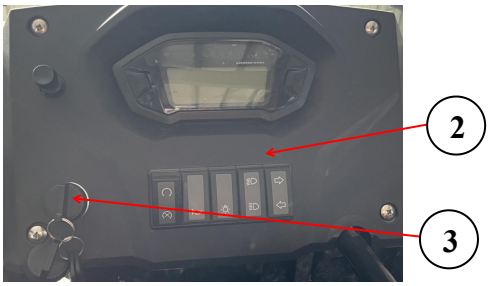
Disassembly

Remove the front cover plate
Remove the front body assembly
Remove the instrument cover 2
Release the ignition switch plug-in 1

Remove the ignition switch lock 3

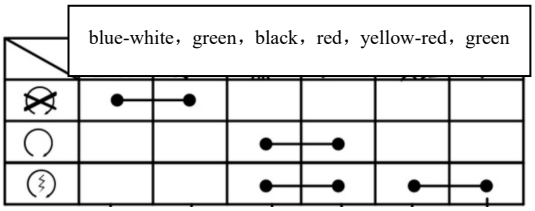






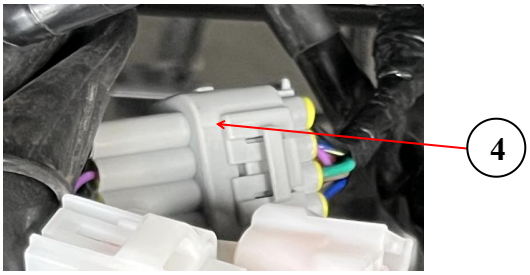
Check

Check the continuity between the terminals of the switch lock connector according to the table below.
The continuity between ● and ● is considered normal.
Ignition switch wiring diagram



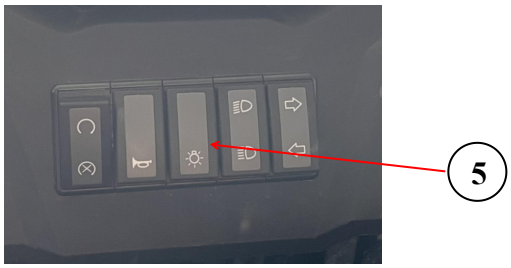
Installation

Follow the reverse order of disassembly



7.5 Panel switch

Remove the front cover plate
Remove the front body assembly
Remove the instrument cover 2
Release the panel switch plug-in 4
Remove panel switch 5
The continuity between ● and ● is considered normal.
Panel switch wiring diagram



7.6 Brake light switch

Check for continuity between terminals
Check if the brake sensor is connected properly. After confirming that the connection is in place, it is normal if the brake pedal is connected when pressed or not when released. If there are any abnormalities in the above inspection, replace the brake light switch

7.7 Electric horn

Disassembly
Remove the front cover plate
Remove the front body assembly
Remove the instrument cover
Remove the horn plug-in 1
Remove the horn fixing bolt 3
Remove the electric horn 2
Check
When connecting a fully charged 12V battery, confirm that the electric horn sounds.
If there are any abnormalities in the above inspection, replace the electric horn

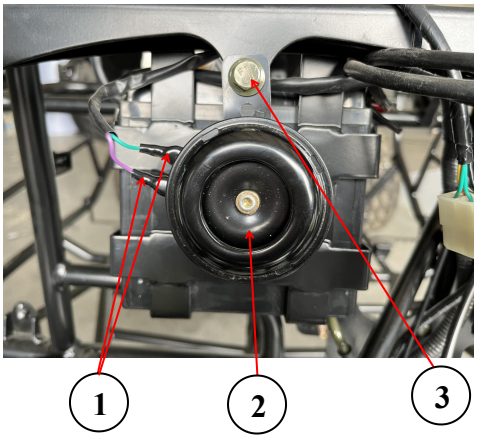
Installation
Follow the reverse order of disassembly

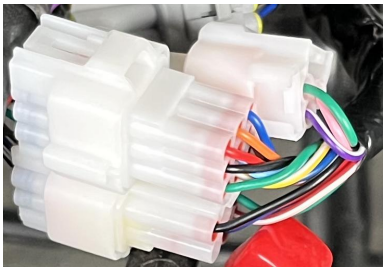
7.8 Meter

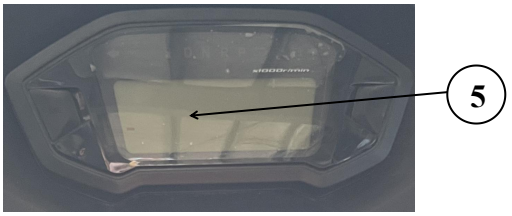
Start the vehicle body, drive slowly, and confirm that the instrument display is normal. If there are any abnormalities during the above inspection, replace the instrument.

Disassembly
Remove the front cover plate
Remove the front body assembly
Remove the instrument cover
Remove the instrument mounting bolt 4
Release the plugin
Remove instrument panel 5
Installation
Follow the reverse order of disassembly。

Attention
The main cables and cables should be correctly assembled according to the wiring diagram of cables, pipes, and cables







7.9 Fuel sensor

Disassembly

Remove the 2 fuel sensor fastening screws 1

Remove the sensor plug-in 3

Remove fuel sensor 2 from the fuel tank

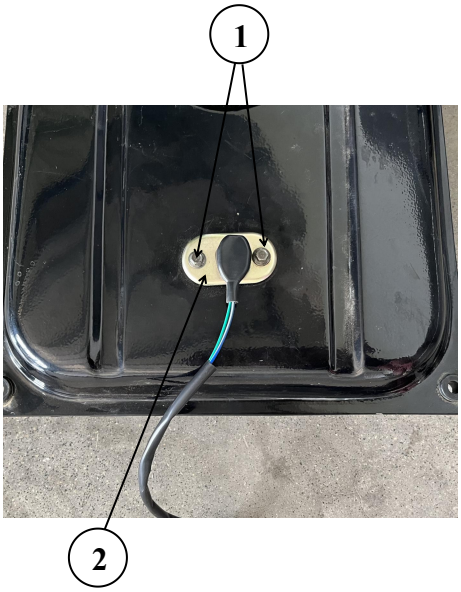
Check

Connect the fuel sensor connector

Turn the ignition switch to ON

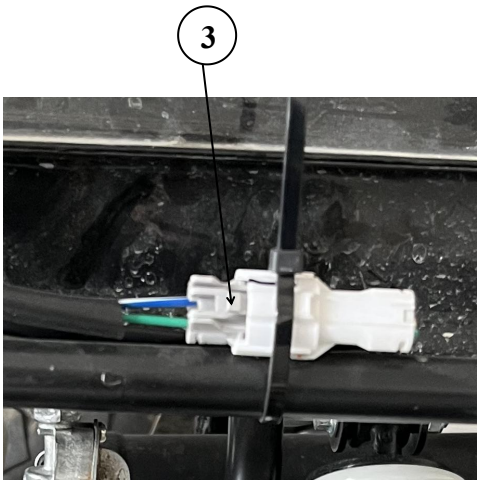
Shake the float of the fuel sensor by hand to confirm its position and whether the corresponding scale on the fuel gauge is consistent

If there are inconsistencies, check if the main cable is disconnected or short circuited. If there are no abnormalities, check the fuel sensor and fuel gauge themselves



Connect a multimeter between the terminals of the fuel sensor connector. Shake the fuel sensor float by hand and measure the resistance value at each position of the float.

If there are any abnormalities in the above inspection, replace the fuel sensor



Installation

Place the fuel sensor into the mounting hole of the fuel tank and ensure it is properly assembled without any oil leakage.

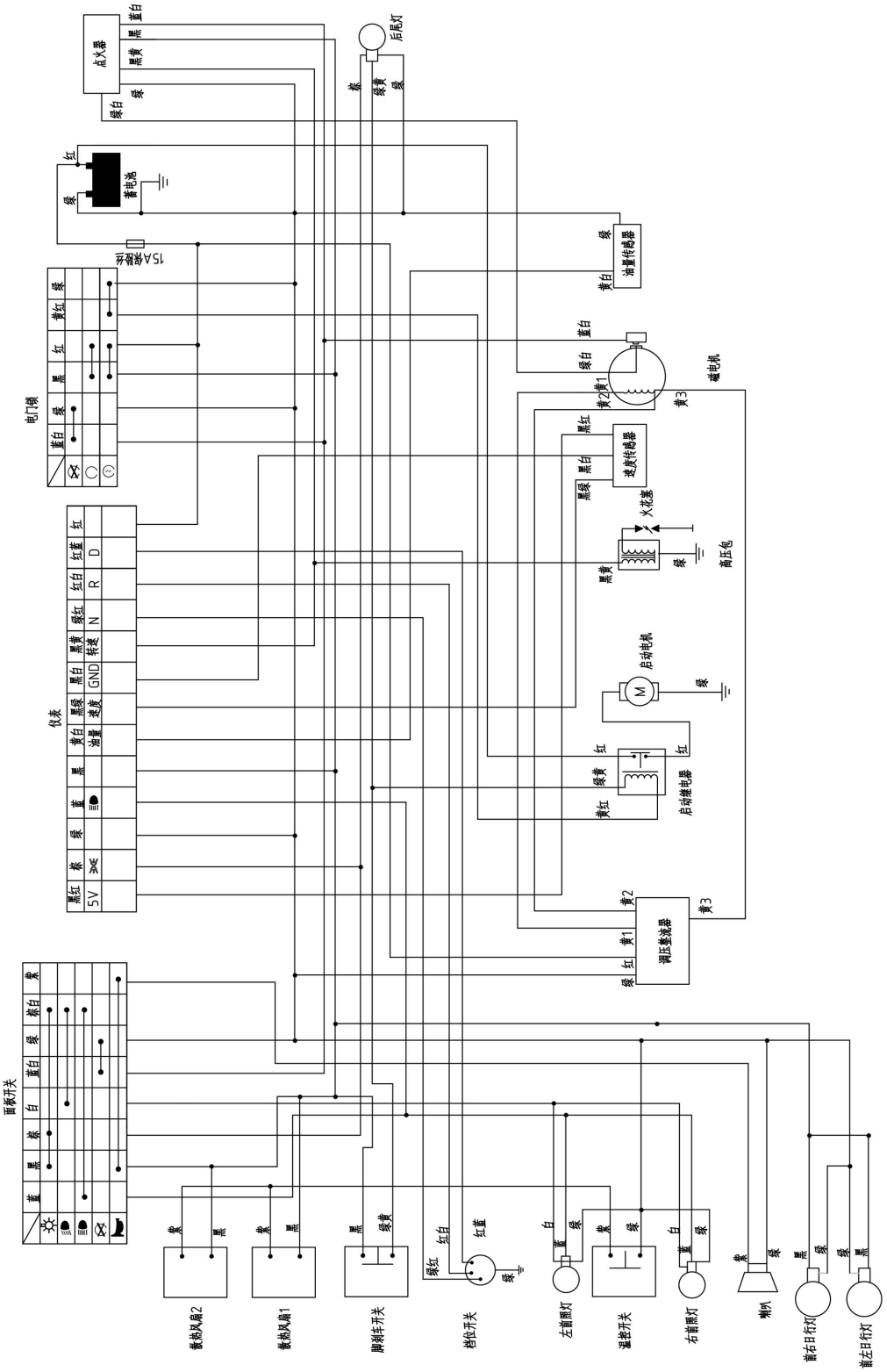
Connect the fuel sensor connector.

Check the fuel gauge

Turn on the power and check if the fuel gauge is working properly

After confirming that the fuel gauge indicates normal operation, install the body plastic parts and seat cushion in the reverse order of disassembly

Appendix


S200 series electrical schematic diagram
面板开关
仪表
电门锁
点火器
蓄电池
15A保险丝
后尾灯
油量传感器
磁电机
速度传感器
火花塞
高压包
启动电机
启动继电器
调压整流器
散热风扇2
散热风扇1
脚刹车开关
档位开关
左前照灯
温控开关
右前照灯
喇叭
前右日行灯
前左日行灯