KAYO MOTO

www.kayomoto.ro

S70

Service Manual

www.kayomoto.com

Version Code：20230330
Version Name：S70 Service Manual

WWW.KAYO.COM.CN

Zhejiang Kayo Motor Co., Ltd.

March 2023

Preparation instructions

This Service 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 S70 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

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, please note that the "Danger" and "Warning" contained in this Service 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. 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.
5. During maintenance, be careful not to let the rear wheel, clutch, other rotating parts and movable parts clamp your hands and clothes.
6. When two or more people are working, they must constantly greet each other to confirm safety.

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 Service 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 case 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.

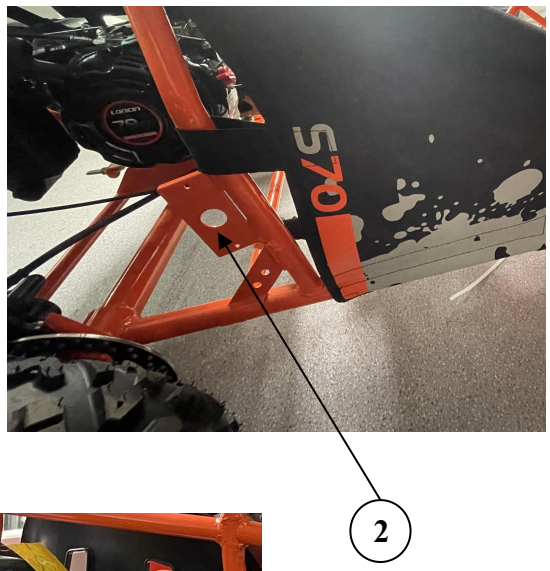
Attention：

- 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.

1.2 Vehicle identification number

①Frame number
②Vehicle nameplate
③Engine number

Vehicle model	S70
Frame number	L6JUCDLA~
Engine number	T01200~



1.3 Main parameter table

Items		Parameters
Vehicle model		S70
Length (mm)		1415
Width (mm)		796
Height (mm)		919
Wheelbase (mm)		950
Engine model		LC152F-1
Total displacement (ml)		79
Fuel type		92 and above gasoline
Curb weight of the whole vehicle (kg)		63
Number of passengers		1 person (driver)
Rated loading mass		1 person = 40kg
Tire specifications	Front wheel	AT13×5-6
	Rear wheel	AT13×5-6
Minimum ground clearance		75mm
Turning circle radius (minimum turning radius at the closest point)		3500mm
Engine	Starting method	Hand pull start
	Engine type	Single cylinder, vertical, four stroke, air cooled
	Gas distribution method	Chain drive
	Cylinder diameter × stroke (mm)	52 × 37
	Compression ratio	8.5:1
	Lubrication method	Splash lubrication
	Oil pump type	/
	Lubricating oil filter type	Air filter, single filter element
	Oil grade	SAE10W-30
	Cooling method	Forced air cooling

Items		Parameters	
Air filter type		Sponge filter element filtration type	
Throttle body	Type	/	
	Mixture valve diameter	11mm	
Fuel tank capacity		1.6L	
Transmission system	Clutch type	/	
	Variable speed mode	/	
	Gearshift	Forward	
	Output type	Crankshaft output	
	Engine output rotation direction	Looking counterclockwise from the output end	
Steering device	Steering angle	Left	＜25°
		Right	＜25°
Brake device type		Front	/
		Rear	Disc brake
Buffering method	Suspension method	Non independent suspension	
Frame type		Steel pipe and steel plate welding type	

1.4 Maintenance parameter table

Lubrication device

Items		Standards	Usage limit
Engine oil capacity	Change oil	330ml（without changing the oil filter element）	—
	Change oil	340ml （ in the same time change the oil filter	
	Full capacity	350ml	—
Recommended engine oil		Only four stroke gasoline engine oil/API classification SE, SF, or higher grade SAE10W-30	

•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	7kPa（0.07kgf/cm2）	—

•Braking System

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

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	Small sprocket fixing bolts	GB70.2 M6	4	10~12
2	Chain wheel fixing bolts	GB5789 M8	1	25~30
3	Clutch fixing bolts	GB5789 M6	1	10~12
4	Steel rear sprocket fixing bolts	GB70-85 M6	6	10~12
5	Rear disc brake disc fixing bolts	GB70-85 M6	6	10~12
6	Engine mounting fixing bolts	GB5789 M8	4	25~30
7	Steering column fixing bolts	GB5787 M8	2	25~30
8	Steering rod fixing bolt	GB70-85 M8	4	25~30
9	Left and right steering knuckle fixing bolts	GB5789 M10	2	15~20
9	Seat slide rail mounting fixing bolts	GB5789 M8	4	25~30
12	Front and rear left and right tire fixing nuts	GB9457-1988 M14	4	49~59
13	Seat belt fixing bolts	Seat belt with bolts and nuts	2	55~66
14				

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
Rear wheel axle bearing		Lightweight lithium soap based lubricating grease
Front wheel hub		
Inner peripheral surface of directional column		

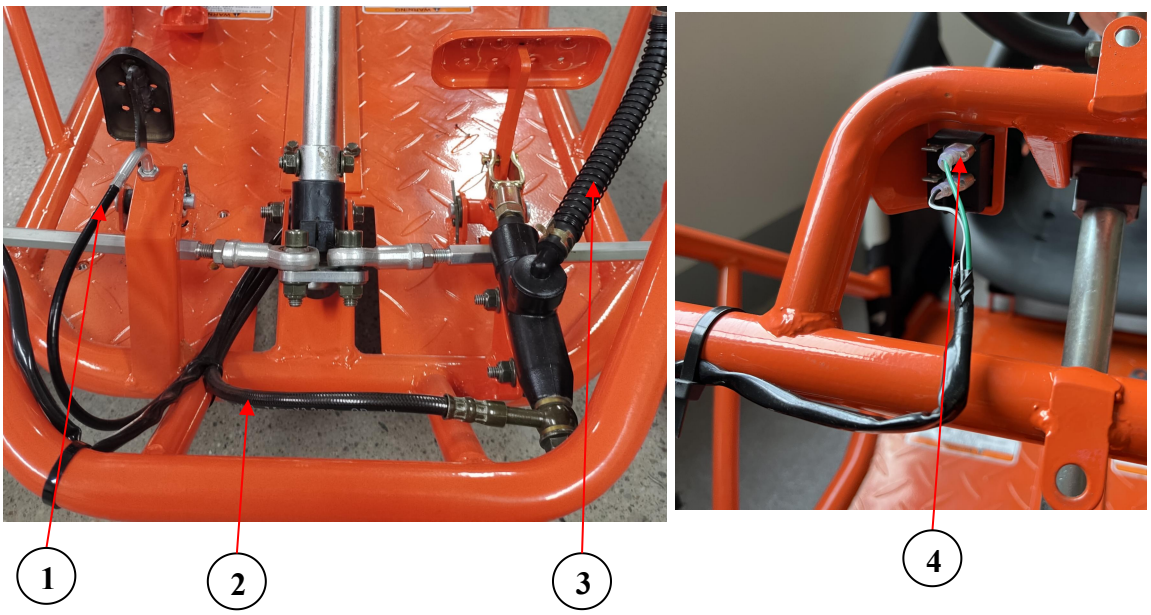
Lubrication of control cables, bearings and rotating parts

Parts	Content	Oils
Rear wheel axle mount	Lubrication	General lithium based lubricating grease for automobiles GB/T5671
Throttle pedal and cable connector		
At the brake pedal		

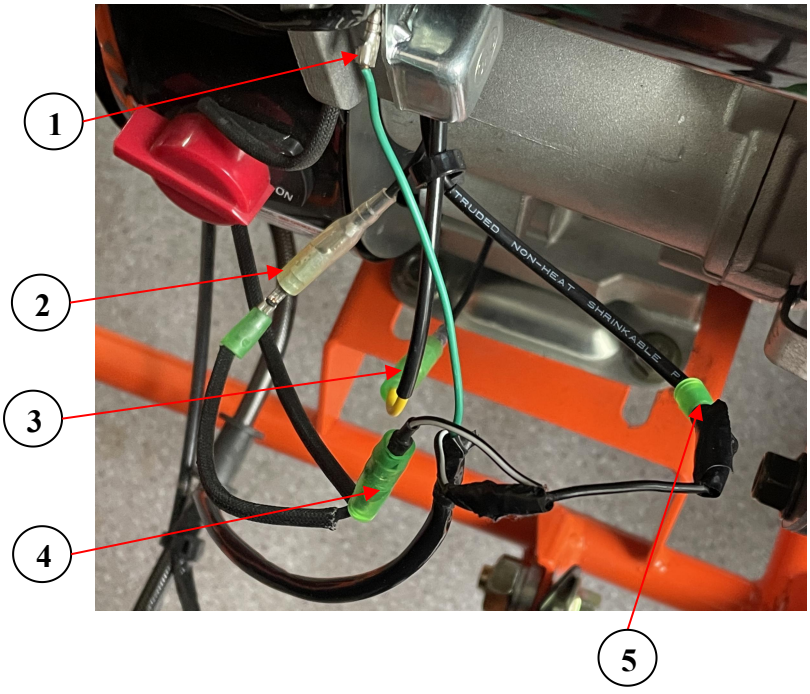
Engine operating materials and installation accessories (see 05-engine part for details)

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. Throttle cable 2. Brake oil pipe 3. Brake oil cup oil pipe 4. Flameout switch plug-in



1. Ground wire 2. High voltage envelope wire 3. Engine pulse wire 4. Engine flameout knob wire 5. Flameout switch wire

1. High pressure package 2. Throttle cable 3. Starting cable 4. Brake hose

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

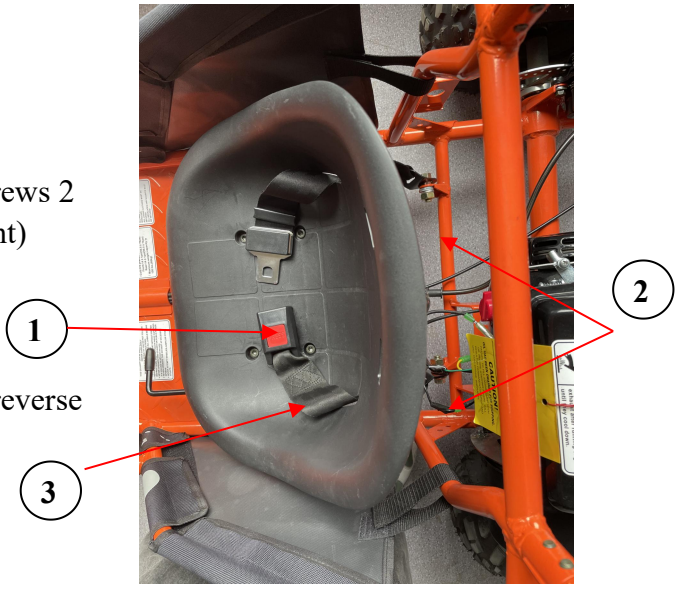
M8 bolts	21（2.1）	torque N·m(kgf·m)
M6 bolts	10（1.0）	torque N·m(kgf·m)

2.3 Disassembly and assembly of seat cushion and safety belt

2.3.1 Safety belt

Disassembly
Untie the seat belt 1
Remove the seat belt mounting screws 2 (one on the left and one on the right)
Take off the seat belt 3

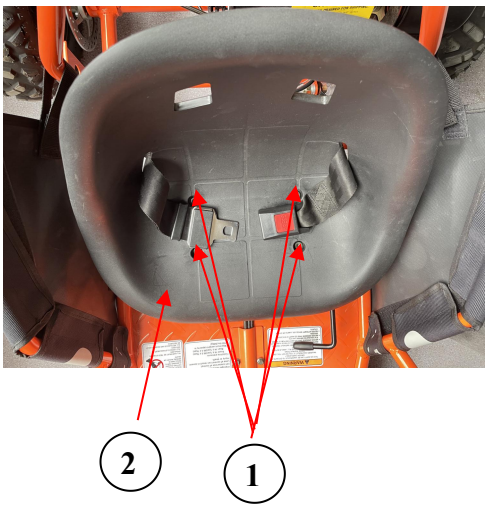
Installation
Installation is carried out in reverse order of disassembly



2.3.2 Seat cushion

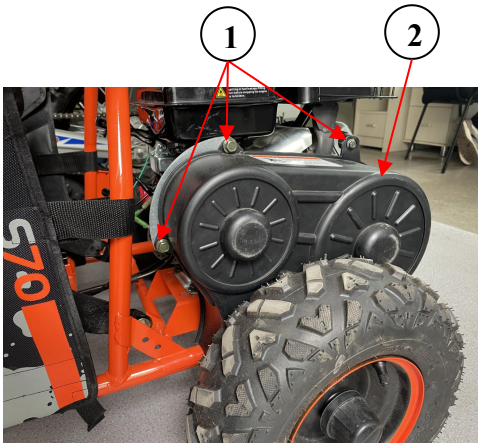
Disassembly
Remove the seat belt (→ 2.3.1)
Unscrew the 4 screws 1
Remove seat 2

Installation
After installation in the reverse order and direction of disassembly, then check whether the seat cushion is installed in place and firm, etc.



2.4 Disassembly and assembly of chain guard and front panel

2.4.1 Chain guard

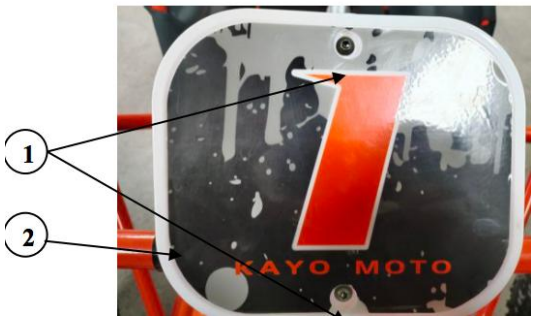


Disassembly
Remove 3 mounting screws 1
Remove the chain protection cover 2

Installation
Follow the reverse order and direction of disassembly

2.4.2 Front panel

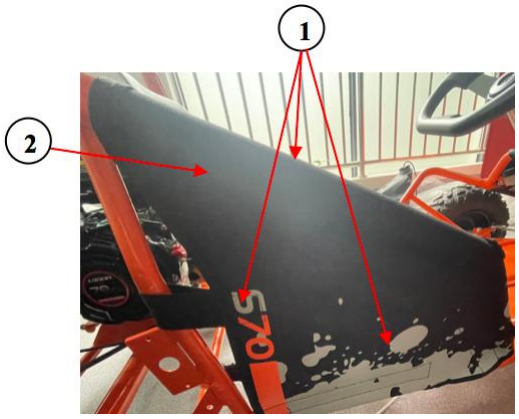
Disassembly
Remove the 2 mounting screws 1
Remove the front panel 2



Installation
Follow the reverse order and direction of disassembly

2.5 Disassembly and assembly of left and right tarpaulin

2.5.1 Right tarpaulin

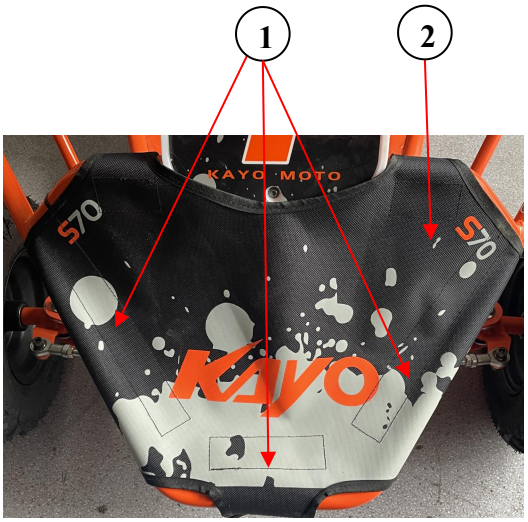


Disassembly
Tear open velcro 1
Remove the right tarpaulin 2

Installation
Follow the reverse order and direction of disassembly

The removal and installation method of the left tarpaulin is the same as that of the right tarpaulin

2.5.2 Front tarpaulin



Disassembly
Tear open velcro 1
Remove the front tarpaulin 2

Installation
Follow the reverse order and direction 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 LC152F-1 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 \ Maintenance times		Each time use	20 hours or within the first month of use	50 hours or every 3 months	100 hours or every 6 months	300 hours or per year
Engine oil	Check engine oil	☆				
	Replace		☆		☆	
Air filter	Inspect	☆				
	Clean			☆（1）		
	Replace					☆
Fuel settling cup	Clean				☆	
Battery electrolyte position	Inspect	☆				
Spark plug	Clean				☆	Replace
Valve clearance	Reset					☆（2）
The cylinder cover	Clean	Every 300 hours (2)				
Fuel tank and filter screen	Clean	Every 2 years (2)				

Tubing	Replace	Every 2 years (2)

(1): When driving in a dusty area, it should be cleaned frequently.
(2): It should be done by your after-sales service provider, unless you have suitable tools and professional skills.

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	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：7kPa（0 .07kgf/cm2） Rear wheel：7kPa（0 .07kgf/cm2）
		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	○		○	
	Rear axle	Transmission, lubrication	○		○	
Transmission device	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：0.7mm~0.8mm
		Ignition period		○		
Fuel device		Fuel leakage		○		
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	○			

3.3 Steering column and brake system

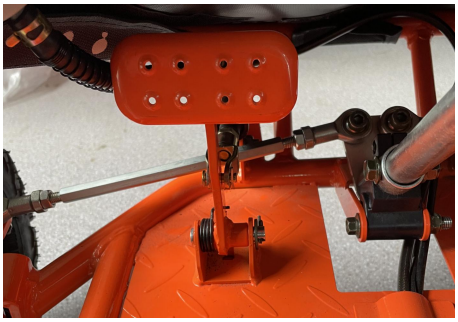
Put the vehicle on a level place, hold the steering wheel firmly and check whether there is shaking in the direction shown in the picture.

If you feel shaking, you should confirm whether it is the steering column shaking or other shaking, and carry out corresponding maintenance.

If the steering column shakes, increase the locking force of the steering column lock nut or disassemble the steering column for maintenance.

Put the vehicle in a horizontal position, slowly turn the steering wheel left and right, and check whether it can turn smoothly and flexibly. If you feel that some places are obstructed, check whether there is interference with the main cable assembly and the cable. If you do not observe the position of the end of the steering rod, confirm whether there is interference and whether the steering bearing is damaged.
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.

Brake pedal:
Operate the brake pedal, check the braking effect and the rebound of the torsion spring.



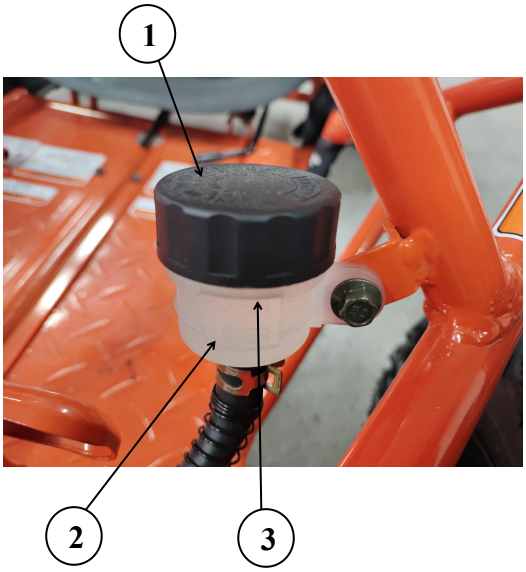
Brake fluid cup

〈 Liquid volume 〉

Check brake fluid level.

Check the brake fluid level by observing the brake oil cup. When the brake fluid level decreases to near the lower limit of 2 (LOWER), 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.

Inspection of these items is also required before each use of the vehicle.



Take off the oil cup cover 1

Replenish the brake fluid recommended by Kayo until the upper limit line 3 (UPPER) is reached.

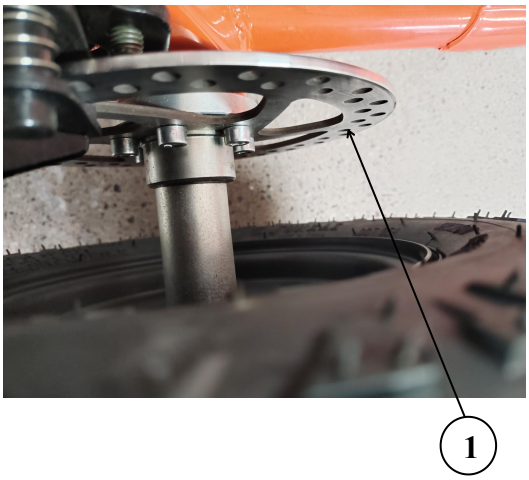
Attention

- 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 until the brake oil cup is level before removing the oil cup cover. Turn the steering handle slightly left and right, and take off the oil cup cover after the brake oil cup is in a horizontal state.

1. Oil cup cover
2. Lower limit line
3. Upper limit line

Wear of the rear disc brake disc

Check the wear of the disc brake disc.
If the wear has reached the wear limit, replace the brake pads.



Attention
The disc brake disc needs to be replaced as a complete set

Inspection and replacement of disc brake discs.
Check the sliding surface of disc brake disc 1 for wear or damage. If the current disc thickness is ≤ 3.0mm, replace the disc brake disc.

Limit thickness of disc brake disc: 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 whether the brake lining is damaged or cracked, if there is damage or crack, please replace the brake pads with new ones.

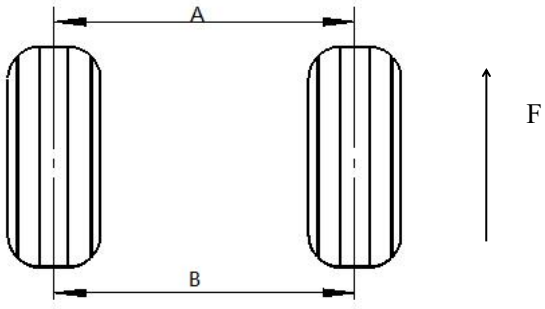
Attention: Please regularly check the brake fluid level in order to ensure it is in a safe position. Check the oil circuit and connection points for damage. If there is any damage, please replace it in time. Check the main pump/caliper for damage. If there is any damage, please replace it in time.
Attention：Do not open the brake fluid oil cup for a long time

Oil change (replacement of brake fluid)
Brake fluid is replaced once a year

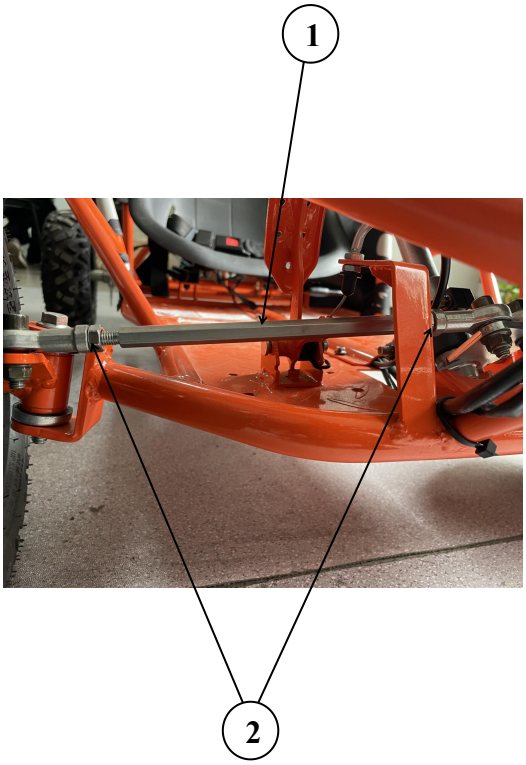
3.4 Wheels

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 and if there is any shaking.
If there is shaking, check and tighten the rocker arm, axle, rim bolts, and nuts.
If there is still shaking, check and replace the bearings, rocker arm buffer sleeves, and 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

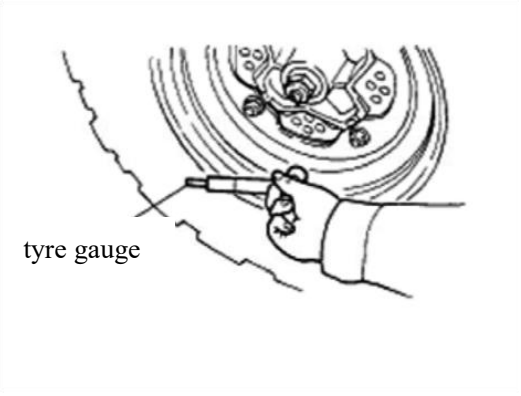


If not within this range, adjust the lock nut 2 of the steering rod 1.
Attention：After adjusting the toe in size, drive the entire vehicle slowly to ensure that the steering wheel can correctly regulate the direction of the vehicle body.



Tire pressure

Use a pressure gauge to check the tire pressure.



Attention

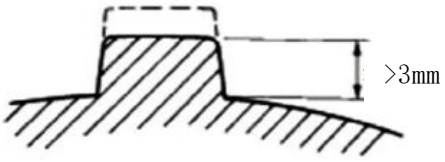
The inspection of tire pressure should be carried out while the tire is cool. If used in a state where the tire pressure is not appropriate, it will lead to poor operation and riding comfort, and cause adverse effects such as tire bias wear.

Designated air pressure/tire

	Front wheel	Rear wheel
Air pressure	7kPa（0.07kgf/cm2）	7kPa（0.07kgf/cm2）
Tire size	See the first chapter	See the first chapter

Tire pattern

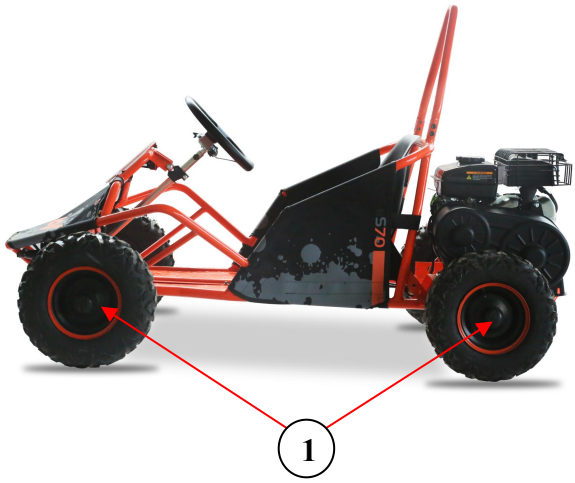
Check the tire pattern, and once the height of the pattern is less than 3mm, replace it with a new tire .



Attention

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

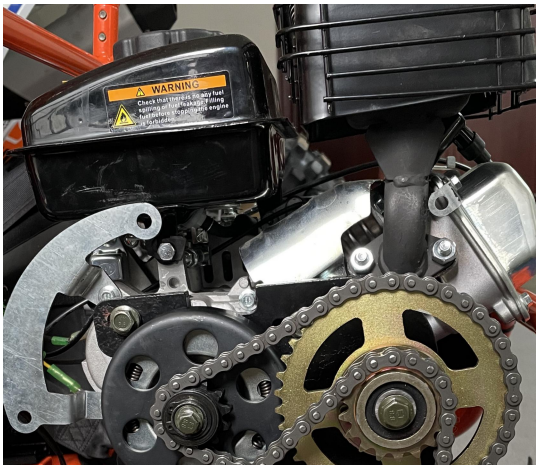
Wheel nuts and wheel axles
Check the looseness of the front wheel axle, rear wheel axle nut 1, and bolt
Tighten according to the specified torque when there is looseness
Torque:
Front wheel axle nut: 49N · m~59N · m
（5.0kgf·mm ～ 6.0kgf·mm）
Rear wheel axle nut: 49N · m~59N · m
（5.0kgf·mm ～ 6.0kgf·mm）



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 Fuel device

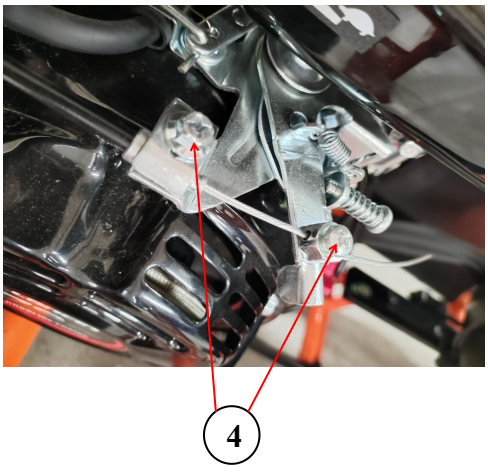


Fuel device
The status of the fuel system.
Remove the chain protective cover (→ 2 body cover).
Check the fuel pipes for aging or damage.
Replace the fuel pipe with a new one when it is aged or damaged.
Check if the fuel tank vent pipe or the adsorption pipe of the fuel evaporation system is cracked or bent. If there is any damage, replace it with a new one.

3.6 Throttle inspection

Throttle pedal
Operate the throttle pedal and check its acceleration effect and the rebound of the torsion spring.
If there is pedal shaking, check whether the torsion spring is installed in place.
If the pedal has no acceleration effect, check whether the nut on the throttle cable is locked tightly.

1. Throttle pedal
2. Foot torsion spring
3. Throttle cable
4. Nut



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.

4.1 Fuel system

Disassembly

Remove the fuel tank side panel (→ The second chapter vehicle body covering parts)

Remove the 3 mounting bolts 1

Remove the fuel delivery pipe 2

Remove fuel tank 3

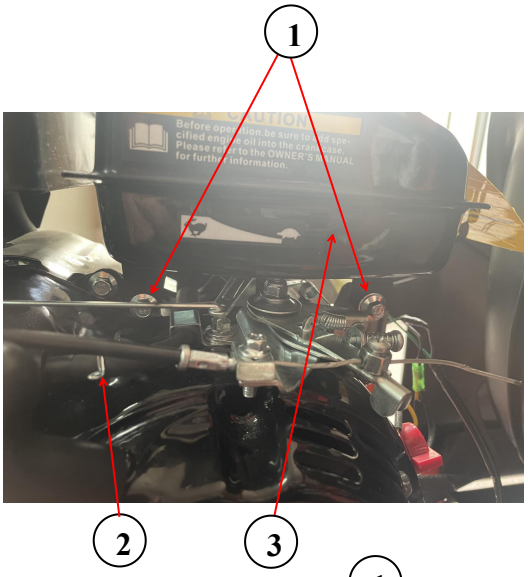
Attention

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.

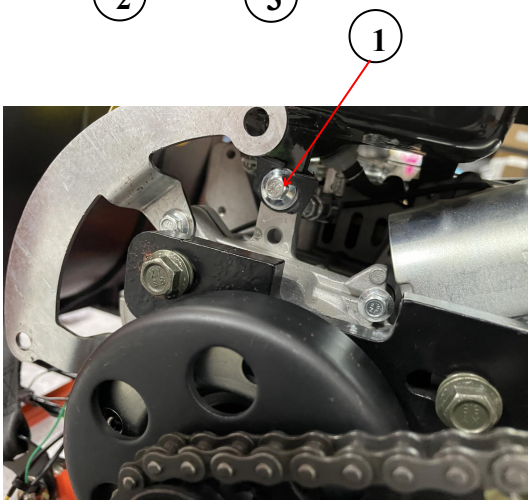
When disassembling the fuel tank, if there is still fuel in the tank, the fuel delivery pipe 2 should be tightened in advance to prevent fuel leakage, and then the fuel tank should be removed.



Installation

Installation is carried out in reverse order of disassembly.

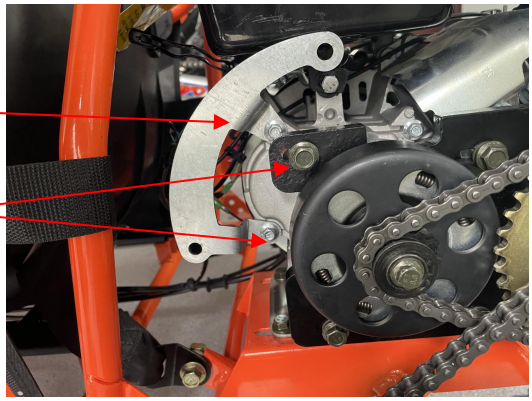
Check the integrity of each oil pipe during installation.



4.2 Engine removal and installation

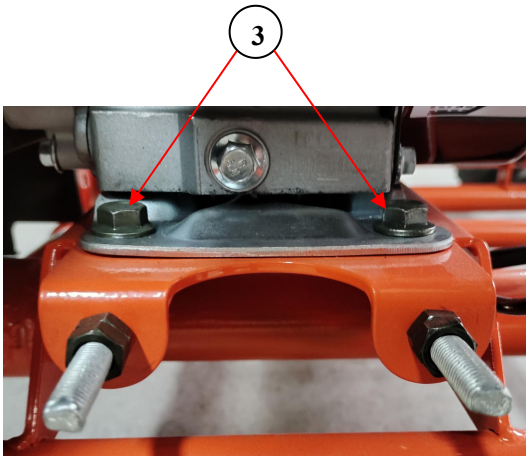
Disassembly

Remove the chain protective cover (→ The second chapter- Vehicle body cover)

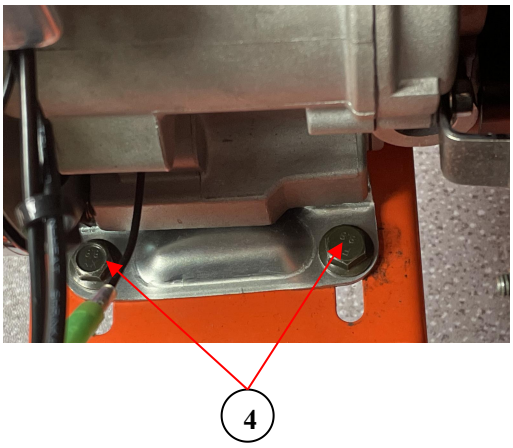


Remove 2 bolts 1

Remove the protective cover connecting piece 2

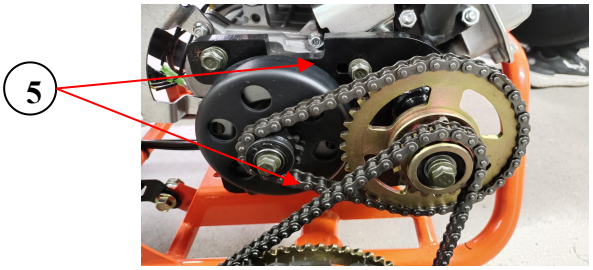


Remove 2 bolts 3



Remove 2 bolts 4

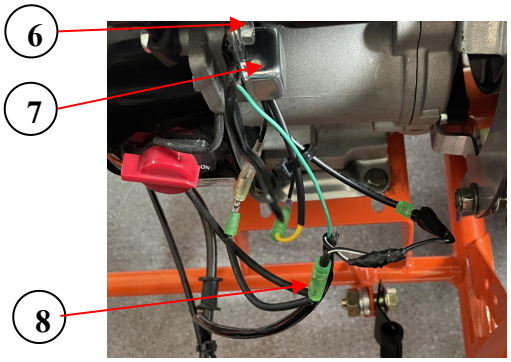
Remove 2 chains 5



Remove 1 nut 6
Remove the ground wire assembly 7
Remove the flameout assembly 8
Remove the engine

Installation

Installation is carried out in reverse order of disassembly



5 Engine

5.1 Safety instructions

Exhaust precautions

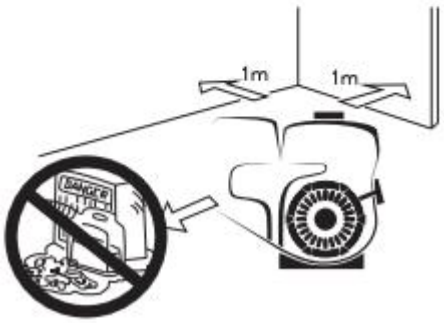
1.Do not inhale the exhaust gas emitted by the engine. The exhaust gas contains carbon monoxide. Carbon monoxide is a colorless, odorless, and extremely dangerous toxic gas that can cause loss of consciousness or death upon inhalation.
2. Do not use the engine indoors or in poorly ventilated areas such as tunnels and caves.
3. Please be extra careful when using the engine near people or animals.
4. There should be no foreign objects near the exhaust pipe.

Precautions for adding fuel

1. Gasoline is extremely flammable and can easily explode in the event of fire.
2. Do not add fuel in poorly ventilated areas indoors.
3. Before adding fuel, please confirm that the engine has stopped and prohibit adding fuel while running.
4. Do not open the fuel tank cover or add fuel when the engine is hot or running. Wait for the engine to cool down before adding fuel.
5. Do not overfuel.
6. If fuel spills, please wipe it clean and wait until it is completely dry before starting the engine.
7. After adding fuel, please confirm that the fuel tank cap has been tightened to prevent fuel splashing out.

Fire precautions

1. When smoking or approaching an open flame, it is prohibited to add fuel.
2. Do not use the engine when there are dry firewood, small branches, rags, or other flammable materials around.
3. The engine should be kept at least 1 meter away from buildings, obstacles, and other flammable materials.
4. Please place the engine away from flammable and other hazardous materials (garbage, rags, lubricants, explosives), and away from children.



Do not use in damp environments.

Other safety precautions

Please cover the rotating parts with protective covers

If the rotating parts are exposed, the danger is very high.
In order to prevent damage, please put on protective covers or shields.

Pay attention to heating parts

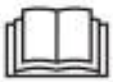
When the engine is running or has just stopped, the muffler and other engine parts become very hot. Please fit the engine in a safe place and keep children away when it is running.

Do not touch spark plugs and ignition wires when starting and rotating the engine.

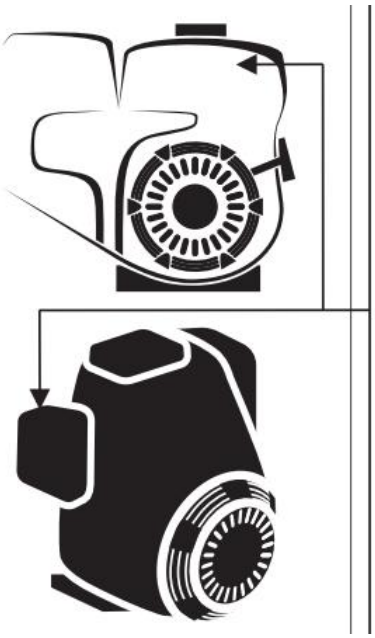
Do not adjust the pole connected to the engine without first removing the ignition wire from the spark plug. When adjusting or cleaning, turning the crankshaft by hand can start the engine and connected machines, causing serious injury to the operator.

Please use the engine in a flat and stable place.
If the engine tilts, fuel may leak out.

Although the engine has been removed from the device, please do not move it while it is still running.

	Engine oil
	Be careful of burns
	Fuel
	Slow speed
	Safety warning
	Be careful of fire
	Do not pour water
	There is danger of electricity
	Toxic gas
	Be careful of electric shock
	Read the instruction manual
	Quickly

If there is a warning label on the machine, it reminds you to pay attention to the safety rules.

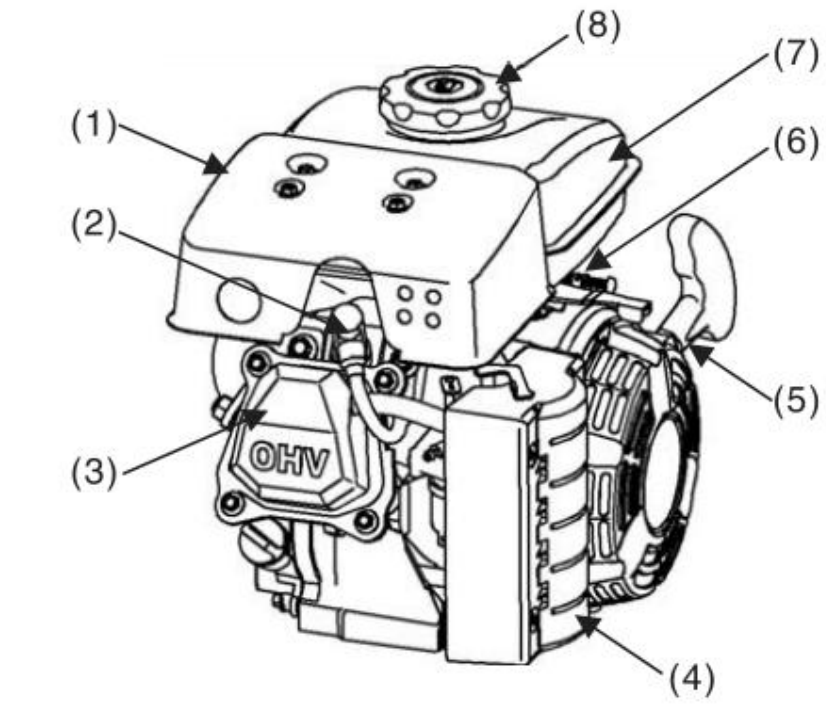


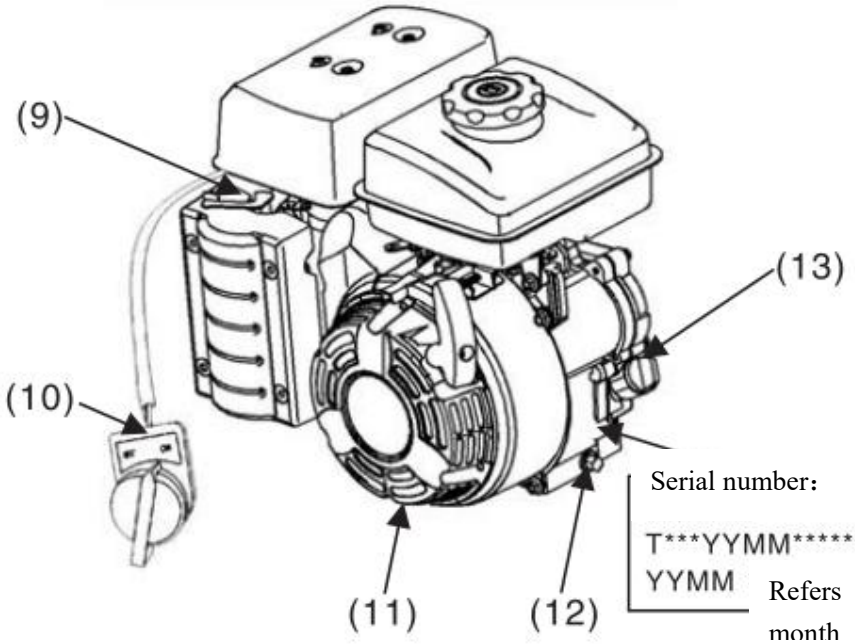
Read the instruction manual before using the engine.

Only refuel the engine in a well ventilated area, and keep away from open flames, sparks, and cigarettes. Spilt fuel should be immediately wiped dry.It is prohibited to add fuel during operation. The engine switch should be turned off until it cools down before adding fuel to the generator. Undercertain conditions, fuel is easily ignited and may explode.

The emissions generated during use are toxic, such as carbon monoxide (colorless and odorless gas), which may cause suffocation. Only use the engine in well ventilated areas.

5.2 Component name





(1) Silencer

(2) Spark plug

(3) Cylinder head cover

(4) Air filter

(5) Starting handle

(6) Throttle control combination

(7) Fuel tank

(8) Fuel tank cap

(9) Choke handle

(10) Engine switch

(11) Manual puller

(12) Oil drain bolt

(13) Oil dipstick

Serial number：

T***YYMM*******

YYMM Refers to year and month

5.3 Pre operation inspection

1. Please carefully inspect the fuel pipes and joints for looseness and oil leakage, as well as the potential hazards of fuel leakage.

2. Please check if the bolts and nuts are loose. If the bolts and nuts are loose, there is a possibility of serious engine failure.

3. Please check the engine oil and add it if necessary.

4. Please check the fuel and add it if necessary. Be careful not to spill or exceed the specified capacity.

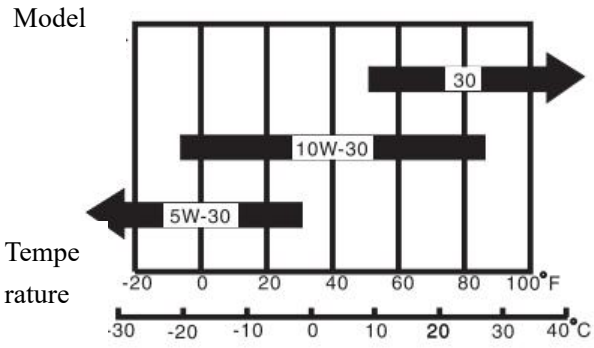
5. Please ensure that the cylinder heat sink and recoil starter do not accumulate dust, grass shavings, or other debris.

6. When using the engine, please wear close fitting work clothes. Loose aprons, towels, belts, long hair, etc. may be caught up in the engine or power device, leading to dangerous accidents.

Check the engine oil

Engine oil recommendation

It is recommended to use engine oil approved by Longxin warranty to achieve the best usage effect. Longxin's special engine oil can be purchased from authorized dealers or other high-quality cleaning oils can be used, without using special additives. The outdoor ambient temperature determines which engine oil viscosity users should choose and use. Please choose the best engine oil viscosity suitable for outdoor temperature according to the following chart.

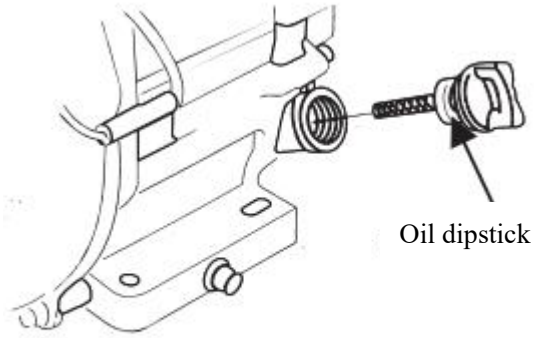


Engine oil specification table

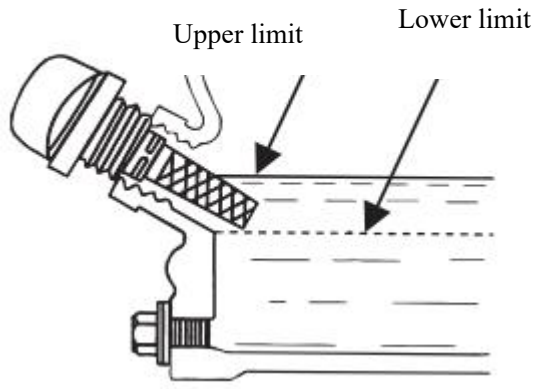
Attention

Before checking or adding engine oil, please ensure that the engine is placed on a stable level surface and has been stopped.

1. Remove the engine oil dipstick and wipe it clean.
2. Insert the engine oil dipstick and remove it to check the oil level without tightening it.
3. If the engine oil level is close to or below the lower limit, add the recommended engine oil to the level near the upper limit, and do not overflow.
4.Replace the engine oil dipstick and tighten it.



For engines equipped with oil bath air filters, it is also necessary to add engine oil to the designated oil level of the oil bath.



Attention

For engines with an oil protection system, when the oil level falls below the safety threshold, the oil protection system will automatically shut down. To avoid the trouble of unexpected shutdowns, the oil level should be checked before each start.

Check the fuel

Gasoline recommendation

The fuel must meet the following requirements:

1. Clean, fresh, lead-free gasoline

2. Unleaded gasoline with an octane number greater than 92 is used for civil engineering. Unleaded gasoline can reduce carbon deposition and extend the lifespan of the exhaust system. If used at high altitudes, please refer to the relevant content on the next page.

3. Fuel with an alcohol content of less than 10% (E10) or a methanol content of less than 5% can be used.

Attention

Do not use unauthorized gasoline, such as E85. Do not mix engine oil with gasoline or modify the engine to use alternative fuels. This will damage the engine components and will void the engine warranty, which will no longer be covered by the warranty.

Engine operation at high altitude

If the engine is operated above an altitude of 1500 meters, in order to maintain emissions standards, it is necessary to adjust at high altitudes, otherwise it may reduce engine performance, increase fuel consumption, and increase emissions. Please go to an authorized dealer of Longxin to learn more about engine high-altitude regulation.

Carburetor changes for high altitude work

In high-altitude areas, if the standard carburetor has a rich air fuel mixture, engine performance will decrease and fuel consumption will increase. The carbon deposits formed after the combustion of an excessively rich mixture can block the spark plug, making it difficult for the engine to start. Operating the engine outside the permitted altitude can increase emissions if operated for a long time.

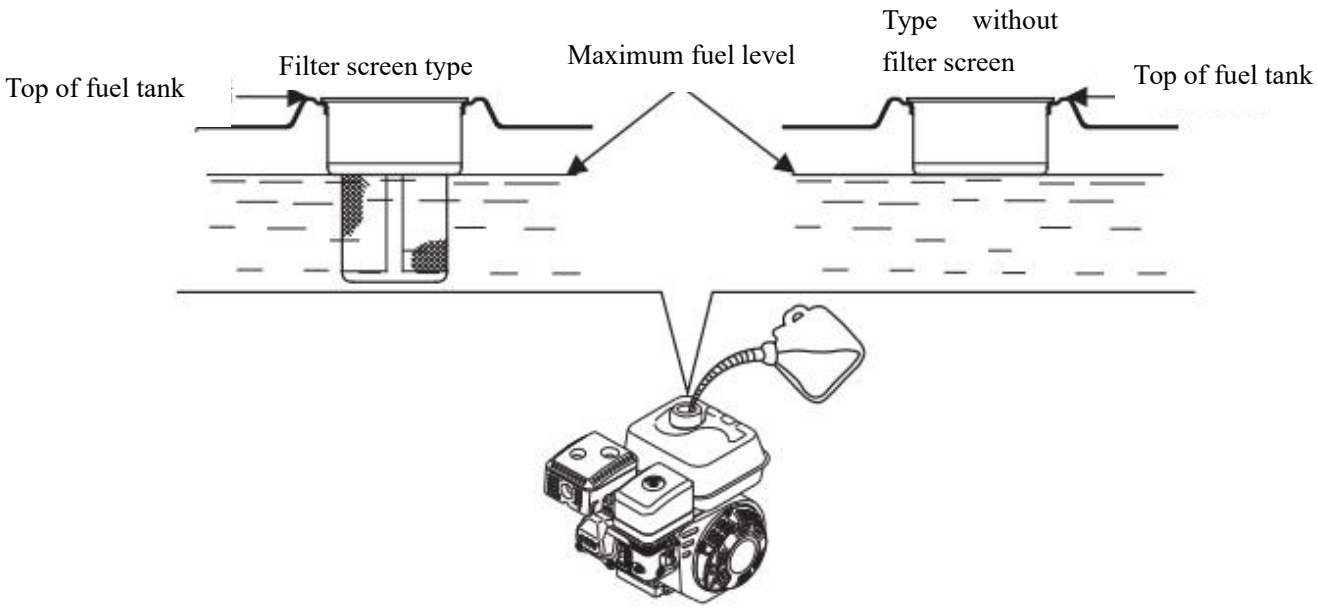
By adjusting the carburetor, the high altitude performance of the engine can be improved. If you are using the engine in an environment that consistently maintains an altitude of 5000 feet (1524 meters) or above, please contact your after-sales service dealer to modify this carburetor. Engines that use modified carburetors have emissions that meet standard requirements within their allowable lifespan.

Refueling

Gasoline and its volatile substances are highly flammable and explosive. The fire or explosion caused by it may cause serious burns or death.

Pay attention to the following points when refueling:

1. Before removing the fuel tank cap, first turn off the engine and let it cool for at least 2 minutes.
2. Refuel outdoors or in a well ventilated area.
3. Do not overfill, add fuel to a distance of 25mm from the top of the fuel tank to provide fuel expansion space.
4. Keep gasoline away from sparks, open flames, lights, heat sources, and other ignition sources.
5. Regularly inspect the oil pipes, fuel tanks, fuel tank covers, and accessories for cracks or penetration, and replace them if necessary.
6. If fuel splashes out, please wipe it dry immediately before starting the engine.



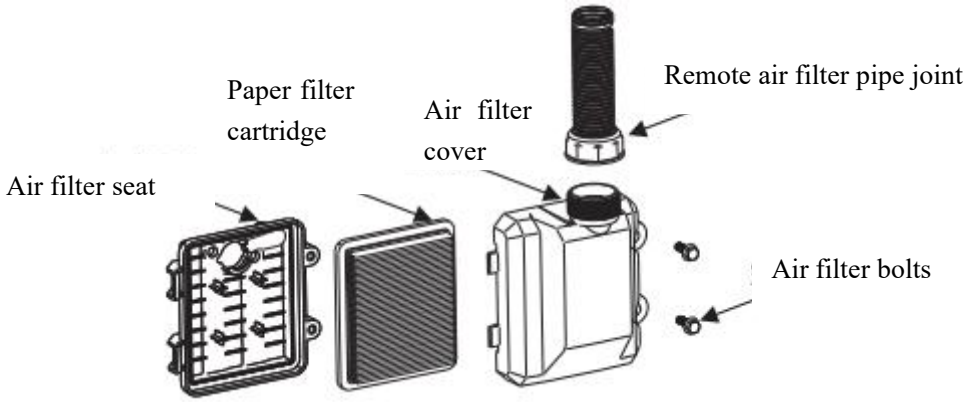
1. Place the engine on a level surface. After stopping, clean the dirt and debris around the fuel tank cap and remove the fuel tank cap. If the oil level is low, add fuel.
2. Add fuel to the upper limit of the fuel filler, do not spill, dry the spilled fuel before starting, and tighten the fuel tank cap.

Attention

1. Keep fuel away from work lights, barbecue stoves, electrical appliances, power tools, and other places.
2. The spilled gasoline should be immediately wiped clean, as it not only poses a fire hazard but also pollutes the environment.

Check the air filter

Remove the outer cover of the air filter and inspect the filter element. Clean the filter element if it is dirty, and replace it with a new one if it is damaged.



5.4 Start the engine

When starting the engine, pay attention to the following points:

1. Ensure that the spark plug, muffler, fuel tank cover, and air filter are in place.

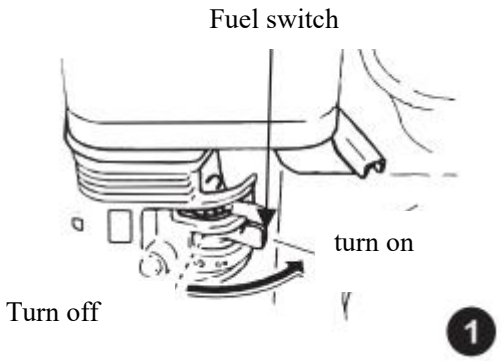
2. Do not attempt to start the engine with the spark plug removed.

3. If the engine has not cooled down yet, adjust the choke to the (open/run) position, set the throttle to the (fast) position, and then pull up the starting cable until the engine starts.

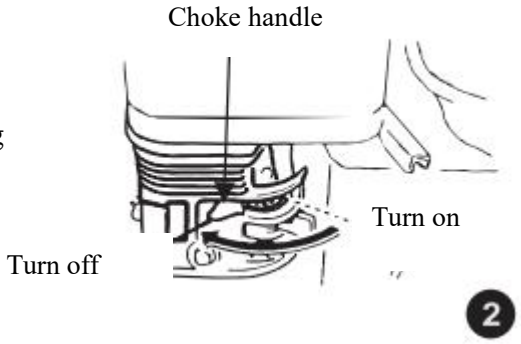
Warning

The engine emits colorless, odorless, and toxic carbon monoxide gas. Inhaling carbon monoxide gas may cause nausea, fainting, and even death.

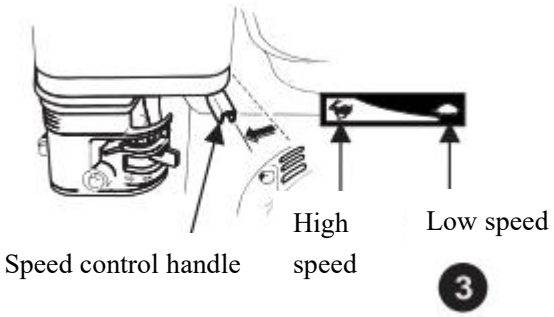
Turn the fuel switch to the "on" position.



When cooling and starting, place the choke handle in the "closed" position. When starting the hot engine, the choke handle should be placed in the "open" position.

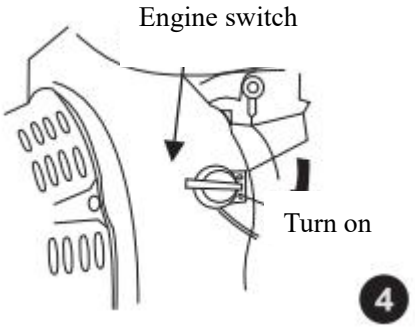


Move the speed control handle from "low speed" to "high speed", approximately 1/3 away from "high speed".



3

Place the engine switch in the "on" position.

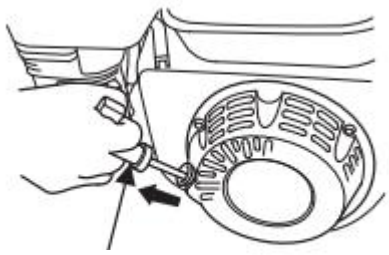


4

Gently pull up the starting handle until resistance is felt, then suddenly pull it out.

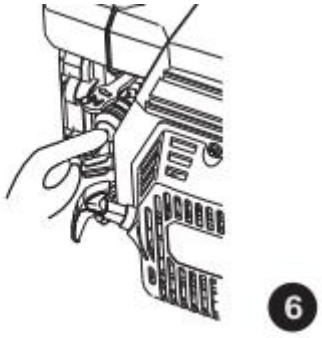
Attention

Do not suddenly release the starting handle after starting to avoid it bouncing back and hitting the engine. Slowly release it in the direction of the rebound force of the starter rope.



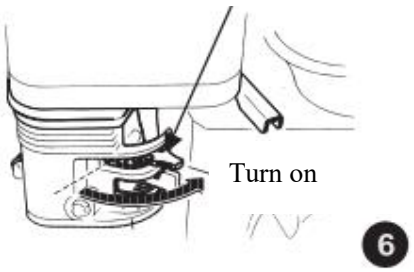
5

The starting enrichment system is specifically designed to prevent engine starting difficulties due to low temperature environments. When the engine is started in a low-temperature environment, the starting enrichment system will make it easy for the engine to start.
The thickening pump should not be squeezed more than three times.



6

If the engine is started by placing the choke handle in the "off" position, after the engine warms up, the choke handle should be slowly moved to the "on" position. If it is a hot engine start, place the choke handle in the "on" position.



6

Attention

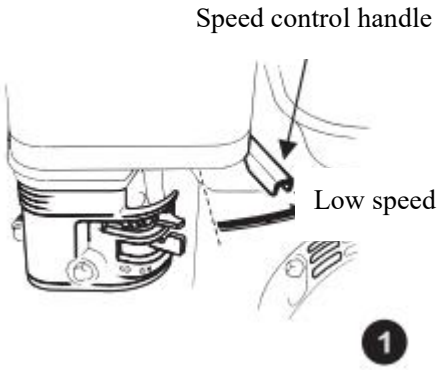
Due to the engine starting at low temperatures, if there is any sign of engine stalling during the process of slowly opening the choke, please close the choke a little more and slowly open it again, allowing the engine enough time to warm up and finally fully open the choke.

5.5 Stop the engine

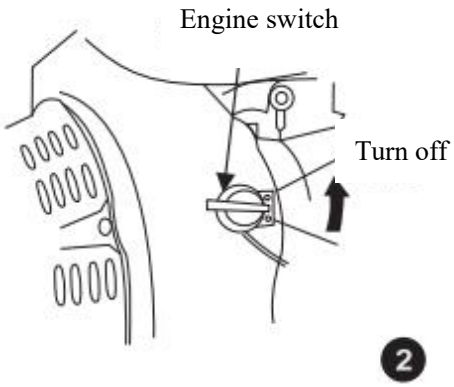
In an emergency, the simple way to stop is: put the engine switch in the "OFF" position.

Under normal circumstances, the shutdown steps are as follows:

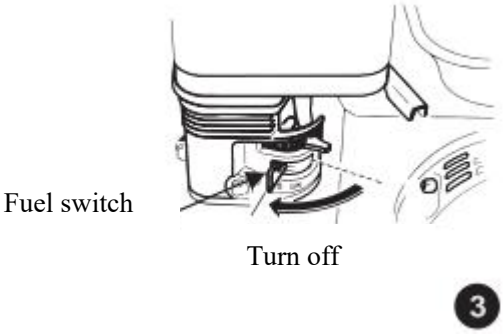
Move the speed control handle to the "low speed" position.



Turn off the engine switch.



Turn off the fuel switch.



5.6 Maintenance

The importance of maintenance

Good maintenance is crucial for safety, economy, and normal operation, as well as for reducing pollution.

Warning

Improper maintenance or operation without troubleshooting the engine may result in serious personal injury or death.

Daily inspection

Before using the engine, please check the following items.

1. Check if the bolts and nuts are loose or cracked.

2. Clean the air cleaner components.

3. Clean and sufficient engine oil.

4. Check for leaks in gasoline and engine oil.

5. Fuel quantity.

6. Surrounding safety.

7. Abnormal vibration and abnormal sound.

Adjusting the carburetor

Never adjust the carburetor. The carburetor has been set up in the factory and can operate effectively under the vast majority of conditions. But if the carburetor needs to be adjusted, please go to an authorized dealer of Longxin for adjustment.

Regular inspection

Regular inspections are beneficial for the safe and good operation of the engine.
If the engine is operating under extremely dusty or heavy load conditions, the maintenance interval must be shortened based on the dirt in the engine oil, the accumulation of filter elements, and the wear of components.
Please refer to the maintenance schedule on the next page for regular maintenance items.

Maintenance schedule

Warning

Please turn off the engine before maintenance

Only genuine components specified by Longxin can be replaced. Please contact the authorized dealer of Longxin for specific precautions.

Maintenance items \ Maintenance times		Every use	20 hours or within the first month of use	50 hours or every 3 months	100 hours or every 6 months	300 hours or every year
Engine oil	Check oil	☆				
	Replace		☆		☆	
Air filter	Inspect	☆				
	Clean			☆（1）		
	Replace					☆
Fuel settling cup	Clean				☆	
Battery electrolyte position	Inspect	☆				
Spark plug	Clean				☆	Replace
Valve clearance	Readjustment					☆（2）
The cylinder cover	Clean	Every 300 hours (2)				
Fuel tank and filter screen	Clean	Every 2 years (2)				
Oil pipe	Replace	Every 2 years (2)				

(1) When driving in dusty areas, frequent cleaning should be carried out.
(2) It should be done by your after-sales service provider, unless you have the appropriate tools and professional skills.

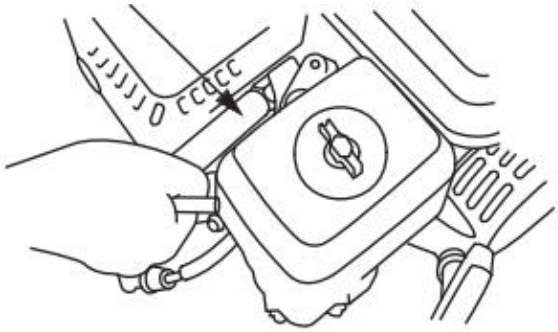
Spark plug inspection

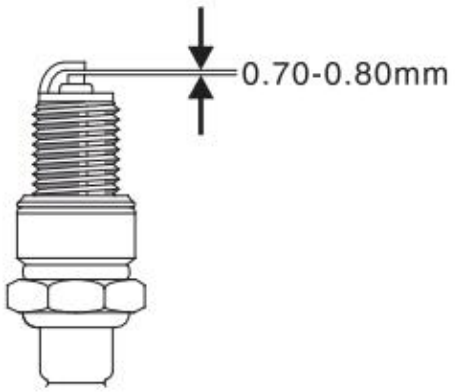
Recommended spark plug model: F7RTC or equivalent spark plug.

Attention

Improper spark plugs can cause engine damage.
The gap of the spark plug must be appropriate and free of carbon deposits in order to achieve its excellent performance.

Spark plug socket wrench





1. Remove the spark plug cap and remove any dirt around the spark plug.

2. Use a spark plug socket wrench to remove the spark plug.

3. Check the spark plug. If the electrode is damaged or the insulation is broken, replace the spark plug. The gap between the spark plug electrodes is 0.70-0.80mm. Adjust the side electrode if necessary.

4. Carefully screw on the spark plug by hand to avoid damaging the threads of the cylinder head.

5. After the spark plug is seated, use a spark plug socket wrench to tighten and compress the washer.
If reinstalling a used spark plug, after the spark plug is seated, tighten it by an additional 1/8-1/4 turn.
If installing a new spark plug, after the spark plug is seated, tighten it by an additional 1/2 turn.

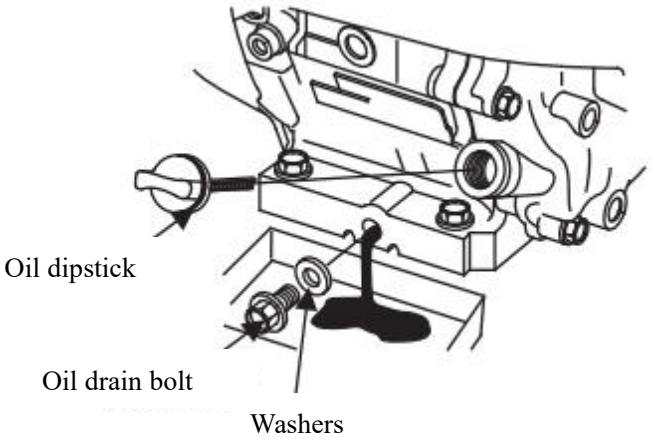
Attention

Failure to tighten the spark plug can cause the engine to overheat and even damage the engine.
Tightening too tightly can damage the spark plug hole threads in the cylinder head.

Change the oil

Initial replacement: after 20 hours of operation

After the second time: every 100 hours of operation



When changing the oil, please stop the engine, loosen the oil drain bolt, and drain the old oil while the engine is still hot.
Warm oil can be quickly and cleanly discharged.

Warning

Please pay attention to the heat of the oil to avoid burns.

Before refueling, tighten the drain bolt again. Please refer to (5.3 Pre operation Inspection) for oil capacity.
Please refer to (5.3 Pre operation Inspection) for recommended engine oil.

Attention

Please be sure to use premium, clean engine oil. Dirty oil, low-quality oil, and insufficient oil can all lead to engine damage and reduced service life.

Clean the settling cup

Danger

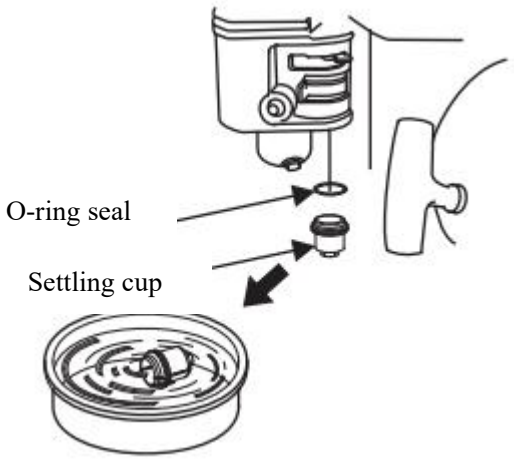
Gasoline is flammable and explosive, and can cause burns or severe burns when handling fuel.
Stop the machine and stay away from heat sources, sparks, or open flames.
It is prohibited to handle fuel indoors.
If there is fuel splashing, wipe it off promptly.

1. Turn off the fuel switch, remove the fuel settling cup, and remove the O-ring.

2. Clean the sedimentation cup and O-ring in a non flammable solvent and thoroughly dry them.

3. Replace the O-ring seal and settling cup, and tighten the settling cup.

4. Turn on the fuel switch. If there is leakage please replace the O-ring.



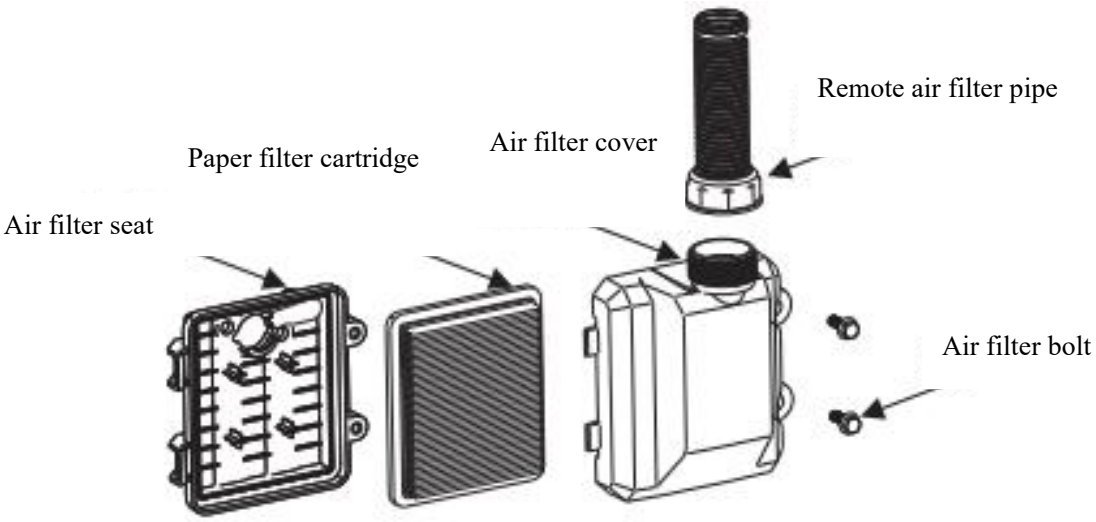
Maintain the air filter

Dirty air filter elements can affect intake air and reduce engine power. If there is a lot of dust in the operating area, maintenance should be carried out more frequently than the maintenance schedule.

Attention

Without a filter element or using a damaged filter element can cause dust to enter the engine, leading to rapid engine wear. This type of issue is not covered by the warranty.

Remote air filter



1. Unscrew the remote air filter pipe connector.

2. Use a socket or screwdriver to remove the bolts on the air filter housing cover and remove the air filter housing cover.

3. Remove the filter element.

4. Check the filter element and replace it if damaged. Usually, the filter element can be replaced at the interval of the maintenance schedule.

Clean the paper filter element:
Please gently tap the filter element several times and then blow compressed air with a pressure not exceeding 207KPa from inside to outside. Do not use a brush or other tools to brush the paper filter element, as this can actually clog its ventilation duct.

5. Clean the air filter seat, air filter housing cover, and air filter pipe joint. Dust should be prevented from entering the intake duct leading to the carburetor.

6. After cleaning, install the air filter seat, filter element, and air filter housing cover, lock the air filter housing cover with bolts, and then tighten the air filter pipe joint.

Check bolts, nuts, and screws

1.Tighten the loose bolts and nuts

2. Check for fuel and oil leaks.

3. Update damaged components.

5.7 Storage

Clean

After the engine is stopped, allow it to cool for at least half an hour before cleaning. Clean all external surfaces, repair damaged paint surfaces, and apply a thin layer of anti rust oil to other areas that may rust.

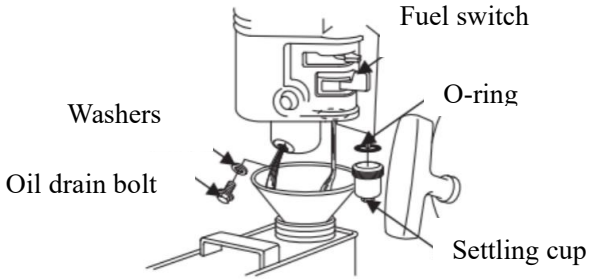
Attention

High pressure cleaning water can enter the air filter and muffler, and even enter the cylinder along the airway, causing corrosion damage.
Water splashing on a hot engine can have a destructive effect. Therefore, cleaning must be carried out after the engine has cooled down.

Remove fuel

If the engine is not used for more than a month, please drain the fuel to prevent fuel deterioration in the fuel system and carburetor components.

1. Place a suitable container for gasoline under the carburetor and use a funnel to prevent fuel splashing out. Turn off the fuel switch.
2. Remove the drain bolt and settling cup of the carburetor, and then turn on the fuel switch.
3. After all the fuel is drained, immediately replace the settling cup and drain bolt, and tighten them.
4. Change the engine oil.
5. Remove the spark plug.
6. Pour a tablespoon (5-10 milliliters) of clean engine oil into the cylinder head.
7. Pull the starter to rotate for several cycles, allowing the oil to spread and distribute within the cylinder head.
8. Replace the spark plug.
9. Slowly pull the starter until resistance is felt. At this point, both the intake and exhaust valves are closed, preventing moisture from entering the cylinder head. Then gently put back the starting handle.
10. Put a dustproof cover on the engine hood and place it in a ventilated and dry area.



Warning

The length of gasoline storage time in the fuel tank and carburetor depends on the composition of the gasoline added, the temperature of the storage environment, and whether the fuel tank is full. The oxygen in the incomplete fuel tank will accelerate the deterioration rate of the fuel, and gasoline stored in the tank for a long time will oxidize and deteriorate. Deteriorated gasoline is difficult to start the engine, and it will produce gum to block the fuel system. Therefore, if the engine is not used for more than a month, please drain the fuel to prevent fuel deterioration in the fuel system and carburetor components.

If fuel system or engine performance faults are caused by improper storage, they are not covered by the warranty.

Engine oil

Replace the engine oil with new oil.

Remove the spark plug, inject 5cc of engine oil into the cylinder, slowly pull the starting handle of the recoil starter several times, and then reinstall the spark plug.

Tips for using after storage

According to the "Pre operation Inspection" section, check the engine. If the fuel has been drained and stored, fresh gasoline should be added to the fuel tank. If gasoline comes from a container, it should be ensured that the gasoline is fresh, otherwise expired gasoline may have difficulty starting due to oxidation and deterioration.

If the cylinder is coated with oil during storage, smoke will appear during the starting phase, which is a normal phenomenon.

Transport

The engine that has just been used should be placed for at least 15 minutes, and then moved to the storage device on the transport vehicle after it cools down. A hot engine and exhaust system can burn or ignite surrounding materials.

During transportation, the engine should be kept level to reduce the possibility of fuel leakage, and the fuel switch should be placed in the off position.

5.8 Troubleshooting

Starting difficulty

Phenomena				Reasons	Exclusion method
Normal cylinder pressure	Spark plug spark is normal	Abnormal fuel system	The oil circuit is blocked	There is no oil in the fuel tank or the oil switch is not turned on	Fill in fuel and turn on the fuel switch
				Fuel tank cap vent clogged	Dredge
				Oil switch blocked	Clean
				Improper adjustment or blockage of the main measuring hole	Readjust, clean, blow through
				Needle valve or float stuck	Repair or replace
			Unobstructed oil circuit	Fuel too dirty or deteriorated	Replace fuel and clean carburetor
				Water in fuel	Replace fuel and clean carburetor
				Excessive fuel in the cylinder	Drain oil and dry spark plugs
				Incorrect fuel grade	Add fuel of specified grade
	The fuel system is normal	Spark normal	Poor spark plug	Carbon accumulation and electrode dirt	Remove carbon deposits and dirt
				Insulator damage	Replace spark plugs
				Severe electrode erosion	Replace spark plugs
				Incorrect spark plug gap	Adjusting the gap
		Spark plug is normal	No spark	High voltage line damage	Replace the high-voltage line
				Damaged ignition coil	Replace the high-voltage coil
				The magnetic field strength is incorrect	Magnetization or replacement
Abnormal cylinder pressure	The fuel system is normal	The ignition system is normal	Spark plug is normal	The piston ring is worn out of limit or broken	Replace
				Piston ring cementation	Remove carbon deposits
				Spark plug without washer or not tightened	Install washers or tighten them
				Air leakage at the joint surface of the cylinder block and cylinder head	Replace the cylinder gasket
				Valve sealing is not tight	Grinding or replacement

Insufficient power

Phenomena		Reasons	Exclusion method
When increasing the throttle, the speed increases slowly, and in severe cases, the speed decreases or stalls	Ignition system	Wrong ignition time	Replace the ignition coil
	Fuel system	Air mixed in the oil circuit	Discharge air
		Improper adjustment of the main measuring hole	Readjustment
		Needle valve hole and main measuring hole are blocked	Clean and blow
		Oil switch blocked	Clean or replace damaged parts
		Carbon deposition in the combustion chamber	Remove carbon deposits
	Air intake system	Air filter clogged	Clean or replace the filter element
		Air leakage in the intake system	Repair or replace
	Poor compression	Damaged piston, cylinder and piston ring	Replace
		Air leakage at the joint surface of the cylinder block and cylinder head	Replace the cylinder gasket
		Incorrect valve clearance	Readjustment
		Valve sealing is not tight	Grinding or replacement

Sudden flameout

Phenomena		Reasons	Exclusion method
Sudden shutdown during operation	Fuel system	Fuel depletion	Refueling and unblock it
		Carburetor blockage	Check the oil circuit and unblock it
		Carburetor float leaking oil	Repair float
		Needle valve stuck	Repair needle valve
	Ignition system	Spark plug breakdown, carbon deposition short circuit	Replace spark plugs
		Spark plug electrode detachment	Replace spark plugs
		High voltage line detachment	Repair or replace
		Ignition coil breakdown	Replace
	Other	Severe cylinder pulling or valve detachment	Repair or replace damaged parts

Engine overheating

Phenomena	Reasons	Exclusion method
Gasoline engine overheating	Wrong ignition time	Replace the ignition coil
	Insufficient oil	Add enough oil
	Exhaust pipe blocked	Clean the exhaust pipe
	Air leakage from the air guide cover	Repair the damaged area
	There are debris blocking the air duct	Clean the heat sink
	Damaged cooling fan	Reinstall
	Gas blow-by between cylinder and crankcase due to failure of piston ring	Replace worn parts
	High gasoline engine speed	Repair the speed control system or replace the speed control teeth
	Burnout of crankshaft bearings	Replace or repair

Abnormal sound

Phenomena	Reasons	Exclusion method
Tapping sound	Wear of piston and piston ring	Replace worn parts
	Wear of connecting rods, piston pins, and pin holes	Replace worn parts
	Wear of crankshaft bearings	Replace or repair
	Broken piston ring	Replace piston ring
Explosion with metallic sound	Excessive carbon accumulation in the combustion chamber	Remove carbon deposits
	Spark plug electrode gap too small	Adjust electrode gap
	Gasoline engine heavily rich	Check the carburetor
	Incorrect fuel grade	Replace fuel
	Gasoline engine overheating	Refer to the overheat fault column
Other abnormal sound	Incorrect adjustment of valve clearance	Readjust the valve clearance
	Loose connection between flywheel and crankshaft	Replace the connection key and reinstall it

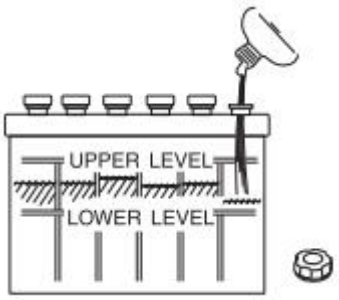
5.9 Technical information

Battery (optional)

Please use a battery with a voltage of 12 volts and a rated capacity of at least 18A · h

Attention
Do not connect the positive and negative poles of the battery in reverse, otherwise it will seriously damage the engine and battery.

1. Check whether the electrolyte in each cell of the battery is located between the upper and lower markings on its shell.
2.If the electrolyte level is below the lower mark, unscrew its cover and add distilled water to raise the level to the upper mark The fluid levels in all cells should remain approximately equal.



Warning

If it is not handled properly, the battery may explode, and it is very likely to hurt people nearby. Keep away from fireworks or flammable and explosive items.

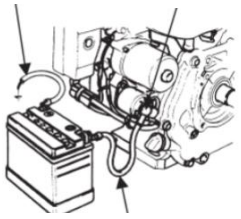
Batteries can release explosive gases, please stay away from fireworks. When charging or using a battery, maintain air circulation.

Connect the starter motor

Attention
Do not reverse the polarity of the battery, otherwise it may cause a short circuit. Usually, before connecting to the negative pole of the battery, connect to the positive pole of the battery first.
1. Connect one end of the positive wire of the battery to the terminal of the starting relay.
2. Connect one end of the negative wire of the battery to the bolt on the frame that fixes the engine.
3. Connect the other end of the positive wire of the battery to the positive terminal of the battery.
4. Connect the other end of the negative terminal of the battery to the negative terminal of the battery.

Battery negative (-) wire

Starting relay



Battery positive (+) wire

5.10 Technical parameter

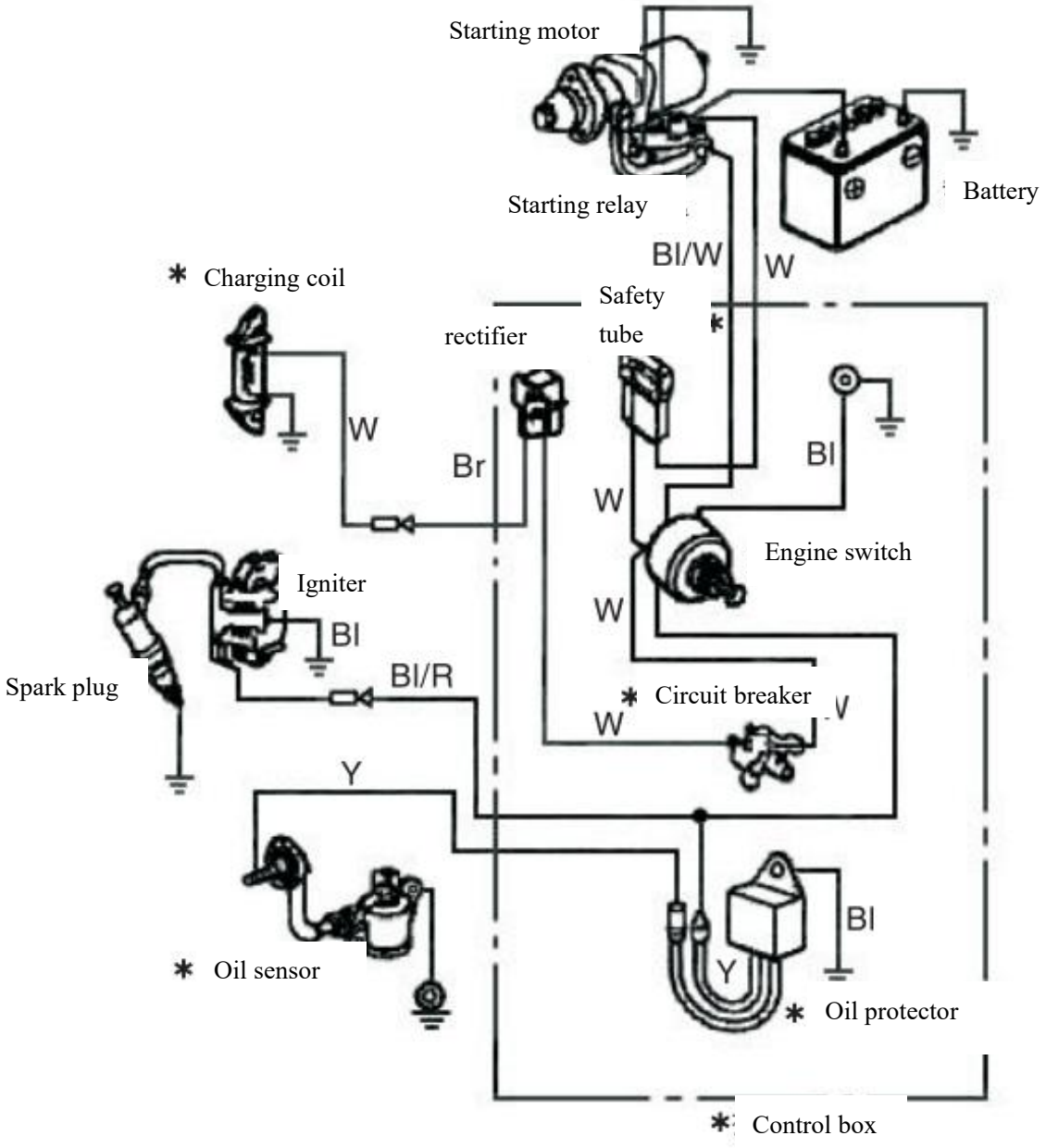
Items	Data
Model	LC152F-1
Type	Horizontal bar, four stroke, forced air cooling, overhead valve
Rated power (kW/3600rpm)	1.4
Maximum torque (N.m) Corresponding speed (rpm)	3.2/3600
Fuel consumption rate (g/kW • h)	≤450
Idle speed (rpm)	2000±150
Speed fluctuation rate	≤10%
Cylinder diameter × stroke	52×37
Displacement	79cc
Lubrication method	Splash lubrication
Start method	Manual start
Rotation direction	Viewed counterclockwise from the output shaft end
Valve clearance (mm)	Intake valve: 0.10~0.15 Exhaust valve: 0.15~0.20
Spark plug gap (mm)	0.7~0.8mm
Ignition method	Transistor contactless ignition
Oil capacity (L)	0.35
Fuel tank volume (L)	1.6
Net weight (for reference only)	10.5kg
Overall dimensions long × wide × Height (mm)	Length: 280 Width: 270 Height: 345

5.11 Circuit diagram

Electric starting engine

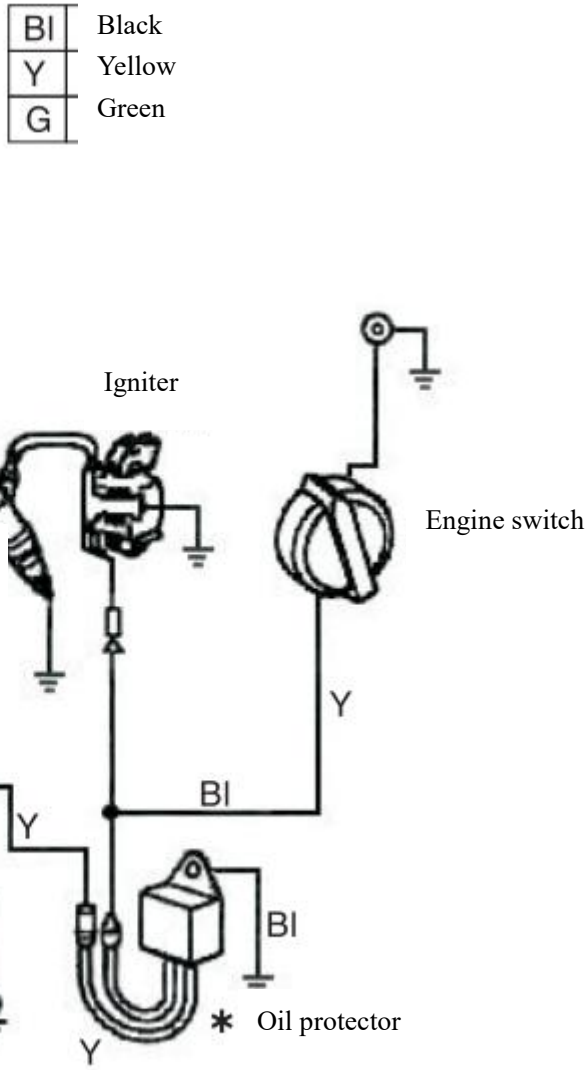
	IG	E	ST	BAT
OFF	○	○		
ON				
START			○	○

Bl	Black	Br	Brown
Y	Yellow	R	Red
W	White	G	Green



* Optional accessories

Non electric starting engine



* Optional accessories

5.12 Executive standards

Product execution standard: JB/T5135.1-2013

6 Vehicle chassis

6.1 Fault diagnosis

1. Steering weight

1).The upper bolts of the steering column are too tight

2).Damage and wear of steering bearings

3).The inner and outer race of the bearing is damaged, worn, and has steps

4). Direction column deformation

5). Low tire pressure

6). Tire wear

2. Steering wheel shaking

1). Damaged and poorly tightened steering bearings

2). Wheel bearing shaking

3). Tire skewness

4). Frame deformation

5). Tire wear, partial wear

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). Low tire pressure

6. Front suspension too hard

1). Excessive tire pressure

7. Poor braking effect

1). Poor brake adjustment

2). The surface of the brake disc is dirty

3). Brake pad wear

6.2 Tire

Disassembly

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

Pull out the latch and remove the slot installed on the front wheel bracket

Remove the hub cover 1 from the vehicle

Remove the nut, cotter pin, and gasket 2

Remove front wheel 3

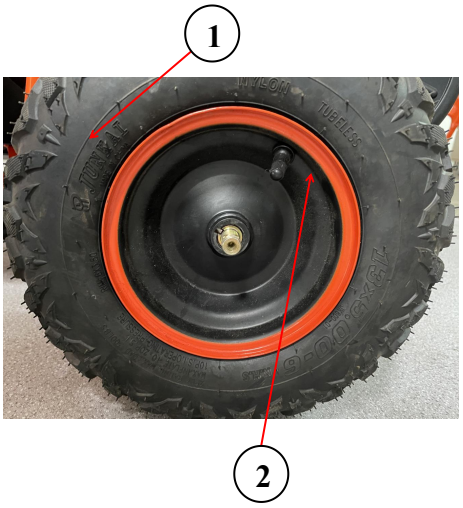
Inspection of wheel rims

Inspection of wheel rims

Check if wheel rim 1 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

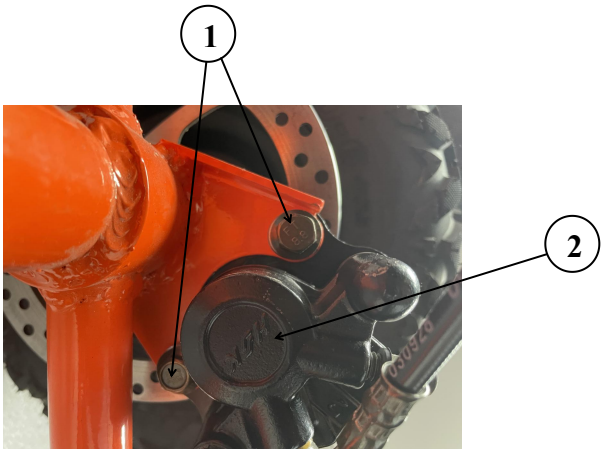
6.3 Braking system

Disassembly of the rear disc brake pump

Remove the rear wheel

Remove the 2 bolts 1 installed on the steering knuckle

Remove the rear disc brake pump 2



Inspection

Observe the disc brake pump for cracks, check for oil leakage at each fastening point, and replace if there are any

Installation

Disc brake pump fixing bolt 1 torque: 25N • m~30N • m

Disassembly of the disc brake assembly

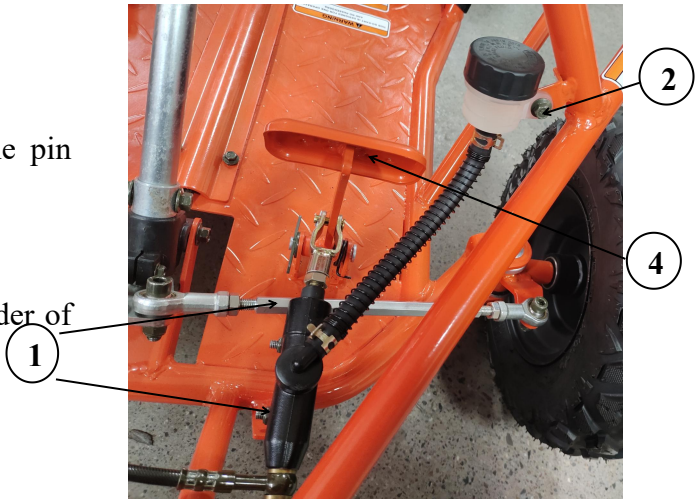
Remove 2 nuts 1

Remove the fixed brake oil cup nut 2

Remove 2 cotter pins 3

Take out the flat pad and pull out the pin shaft

Remove brake pedal 4



Installation

Installation is carried out in reverse order of disassembly

Dismantling of disc brake disc

Remove the right rear wheel 1

Remove the rear disc brake pump 2

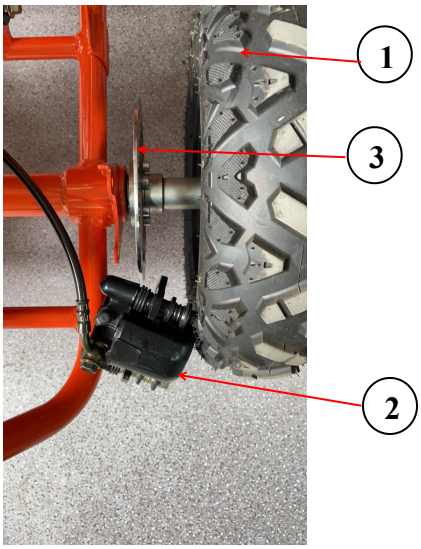
Remove the disc brake disc 3

Check

Measure the thickness of the brake pad friction layer. When the thickness of the brake pad friction layer is less than or equal to 1 mm, replace both brake pads with new ones at the same time. (→ The third chapter - Determination of maintenance cycle)

Installation

Installation is carried out in reverse order of disassembly



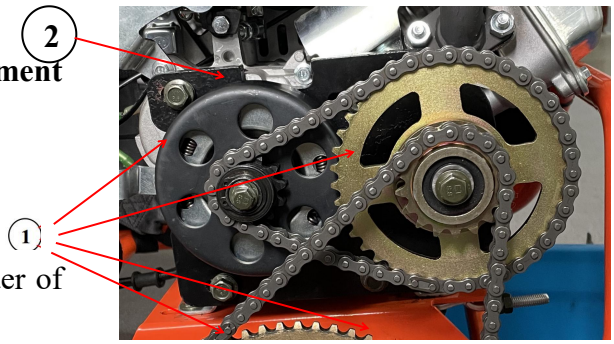
Disassembly of the sprocket adjustment plate

Remove the 4 bolts 1

Remove the chain adjustment plate 2

Installation

Installation is carried out in reverse order of disassembly



Remove the rear sprocket

Remove the left rear wheel

Remove the engine chain protection cover (2.4 chain protection cover)

Remove chain 1 from rear sprocket 2

Remove the rear sprocket 2 from the rear axle 3

Remove the rear sprocket 2

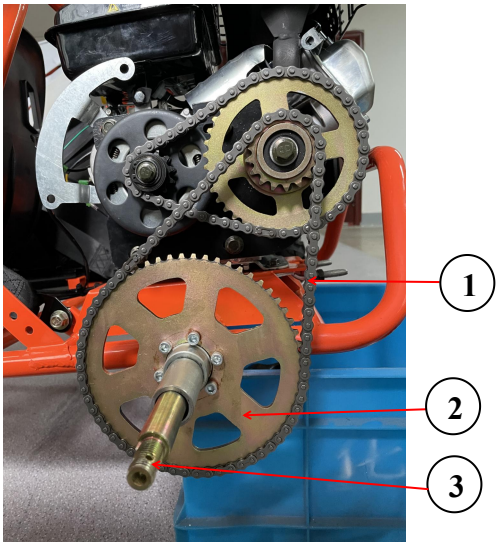
Check

Is there any collision or damage to the appearance

Installation

Install the rear sprocket

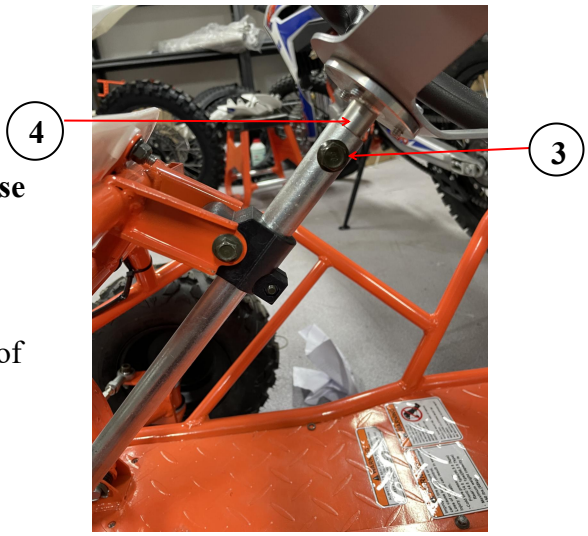
Rear sprocket fixing bolt torque: 25N • m~30N • m



6.4 Steering system

Steering wheel disassembly
Remove the steering wheel trim cover 1
Remove bolt 2
Remove steering wheel 3

Installation
Installation is carried out in reverse order of disassembly



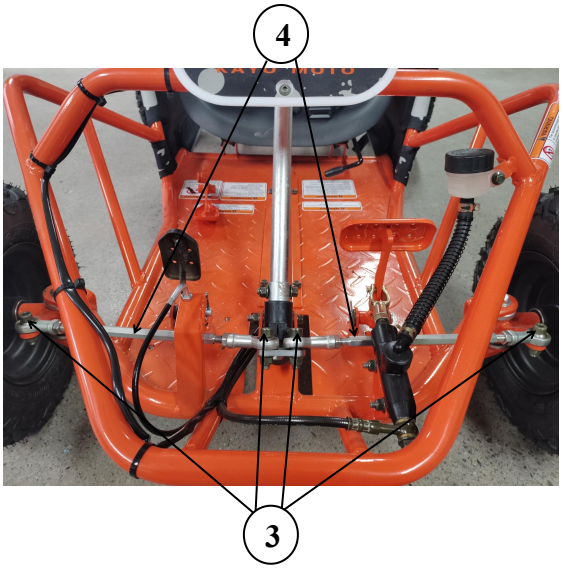
Removal of steering wheel mounting base
Remove nut 3
Remove the steering wheel mount 4
Installation
Installation is carried out in reverse order of disassembly

Disassembly of steering column and steering rod
Remove the nut 1 that secures the steering column
Remove the steering column 2
Installation
Installation is carried out in reverse order of disassembly

Remove the 4 bolts 3
Remove the steering linkage 4

Installation

Installation is carried out in reverse order of disassembly

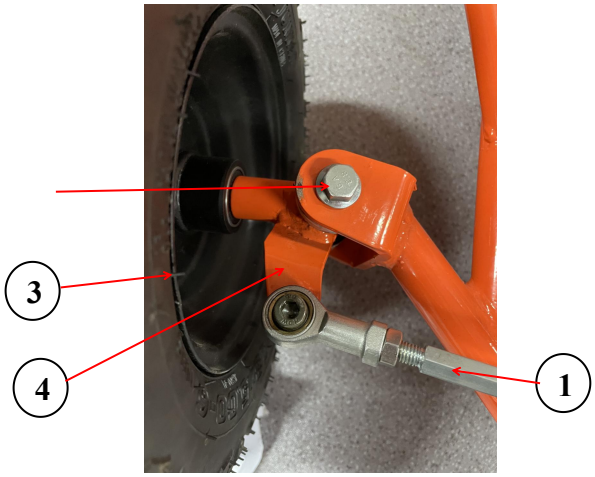


Steering knuckle disassembly

Remove the steering linkage 1
Remove bolt 2
Remove tire 3 (→ 6.2 Tire Removal)
Remove the steering knuckle 4

Installation

Installation is carried out in reverse order of disassembly



6.5 Frame system

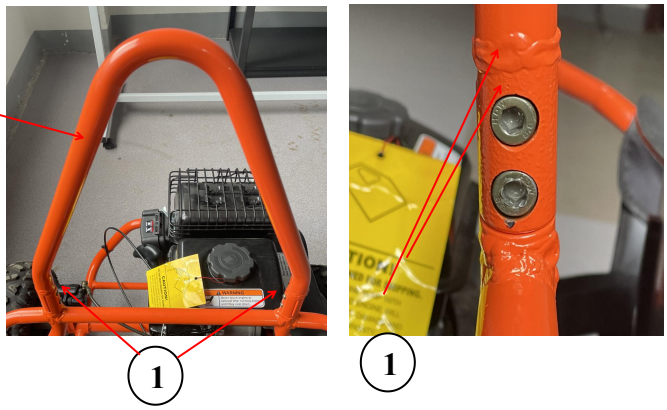
Rear guard frame disassembly

Remove 4 bolts (2 on the left and 2 on the right) 1

Remove the rear guard 2

Installation

Installation is carried out in reverse order of disassembly



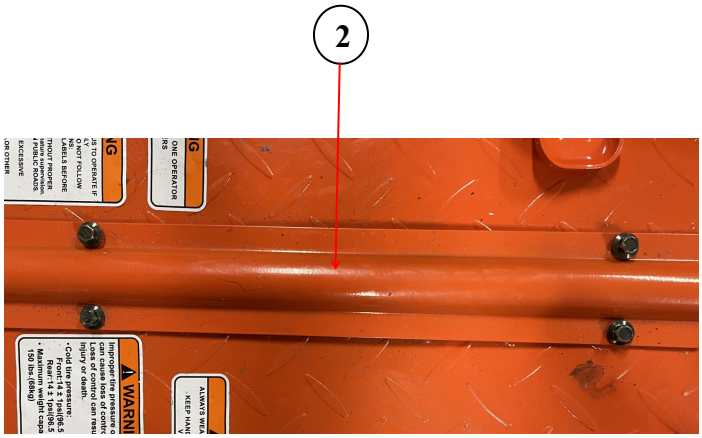
Disassembly of cover wire board

Insert 4 bolts 1

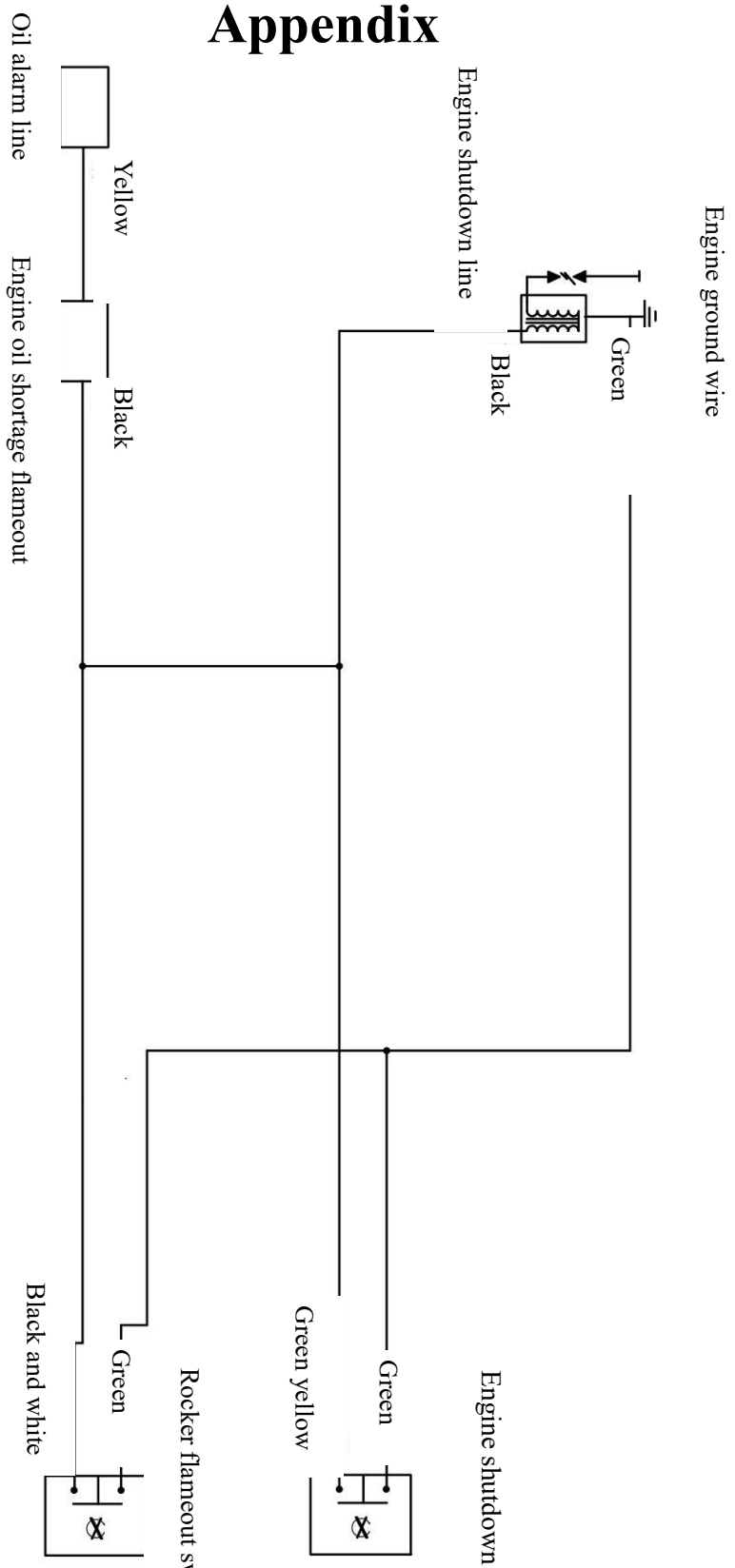
Remove the cover wire board 2

Installation

Installation is carried out in reverse order of disassembly



Appendix


Engine ground wire
Green
Engine shutdown line
Black
Oil alarm line
Yellow
Engine oil shortage flameout
Black
Engine shutdown switch
Green
Green yellow
Rocker flameout switch
Green
Black and white