KAYO MOTO

TS90

SERVICE MANUAL

www.kayomoto.com

PREFACE

Congratulations on your purchase of the 2021 TS90 Dirt Bike, and we believe that this choice won't let you down.

This manual will give you an understanding of the better use of our product,it has specialized the maintenance and adjustment procedures, disassembly and assembly points, inspection and repair

points, troubleshooting methods and maintenance technical data, in addition, there is a detailed graphic information to guide the operation.

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

For the sake of technical development, KAYO will reserve the right of modifying motorcycle structure, equipment, and spare parts without notice. Due to that different markets have different law's requirement, we've adjusted model accordingly, the model image in this manual maybe not match your actual vehicle. In addition, if there is any question concerning this manual, please visit our website www.kayomoto.com and consult our customer service.

The contents of this manual are subject to change without prior notice due to vehicle improvement. The actual state of the motorcycle shall prevail during maintenance.

ZHEJIANG KAYO MOTOR CO., LTD.
ENGINEERING OFFICE
AUGUST. 2021

CONTENT

MEANINGS OF REPRESENTATION

SYMBOLS USED

The meaning of specific symbols is described below

* All work marked with this symbol requires specialist knowledge and technical understanding. If you do not have the confidence to perform that, you can go to an authorized KAYO workshop or KAYO after-sale service point. There, your motorcycle will be optimally cared for by specially trained experts using the specialist tools required.
→ Indicates a page reference (more information is provided on the specified page).

DEGREES OF RISK AND SYMBOLS

Your safety, and the safety of others, is very important. Operating this motorcycle safety is an important responsibility. Please read this manual carefully.

Safety Messages preceded by a safety alert symbol and one of three signal words:

DANGER: Indicates a danger that will immediately and invariably lead to fatal or permanent injury if the appropriate measures are not taken.

WARNING: Indicates a danger that is likely to lead to fatal or serious injury if the appropriate measures are not taken.

CAUTION: Indicates a danger that may lead to minor injuries if the appropriate measures are not

taken.

Other important information:

Please note that it is not practical or possible to warn you about all hazards associated with operating or maintaining a motorcycle.

Therefore, you must have basic mechanical safety knowledge and use your own good judgement.
If you cannot complete the process of operating or maintaining, please consult a more experienced senior technician before operation.

ADVICE

Most of off-road motorcycle fatalities are caused by head injuries. Without helmets, the chances of serious injury or death caused by head injuries are much higher. So always wear an approved motorcycle helmet and protective apparel such as goggles, gloves and boots while riding, which will save your life at the critical moment.

Initially, this series of vehicles were designed for off-road racing, without considering the problem of carrying passengers, and what's more, there is no backseat, handlebar and pedal for carrying people. So please be sure not to use this motorcycle to carry any other people except the driver, which may easily lead to a safety accident.

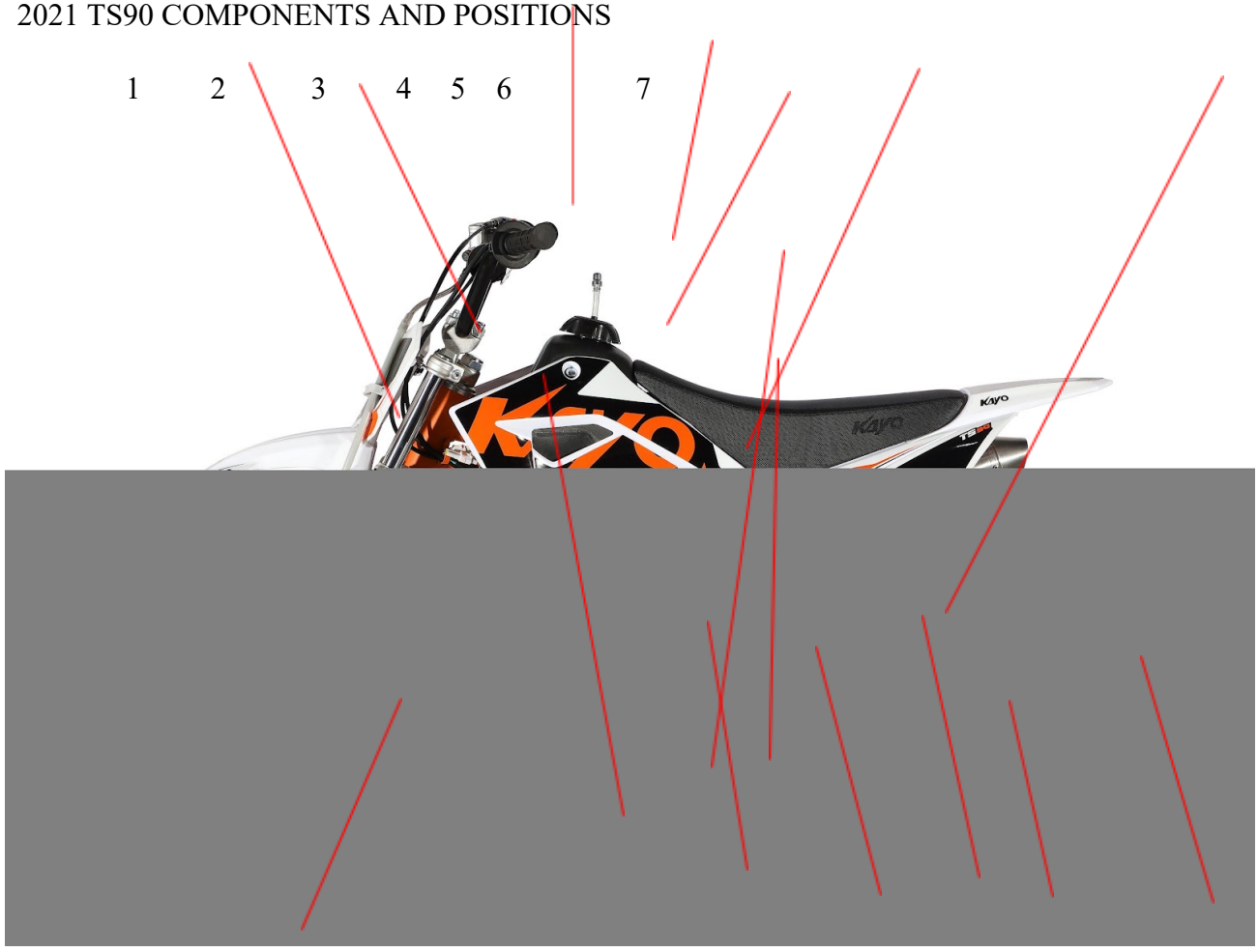
Do not use non-original parts to modify the car, and do not arbitrarily remove the original components from the vehicle. If you need to replace any parts, please use spare parts and accessory products that are approved and/or recommended by KAYO and have them installed by an authorized KAYO workshop. KAYO accepts no liability for any personal modification, other products and any resulting damage or loss.

Please check your motorcycle carefully before riding and do the maintenance accordingly after use. When the motorcycle fell, check the main parts first. It would lead to a accident easily and endanger your own safety when riding a faulty vehicle.

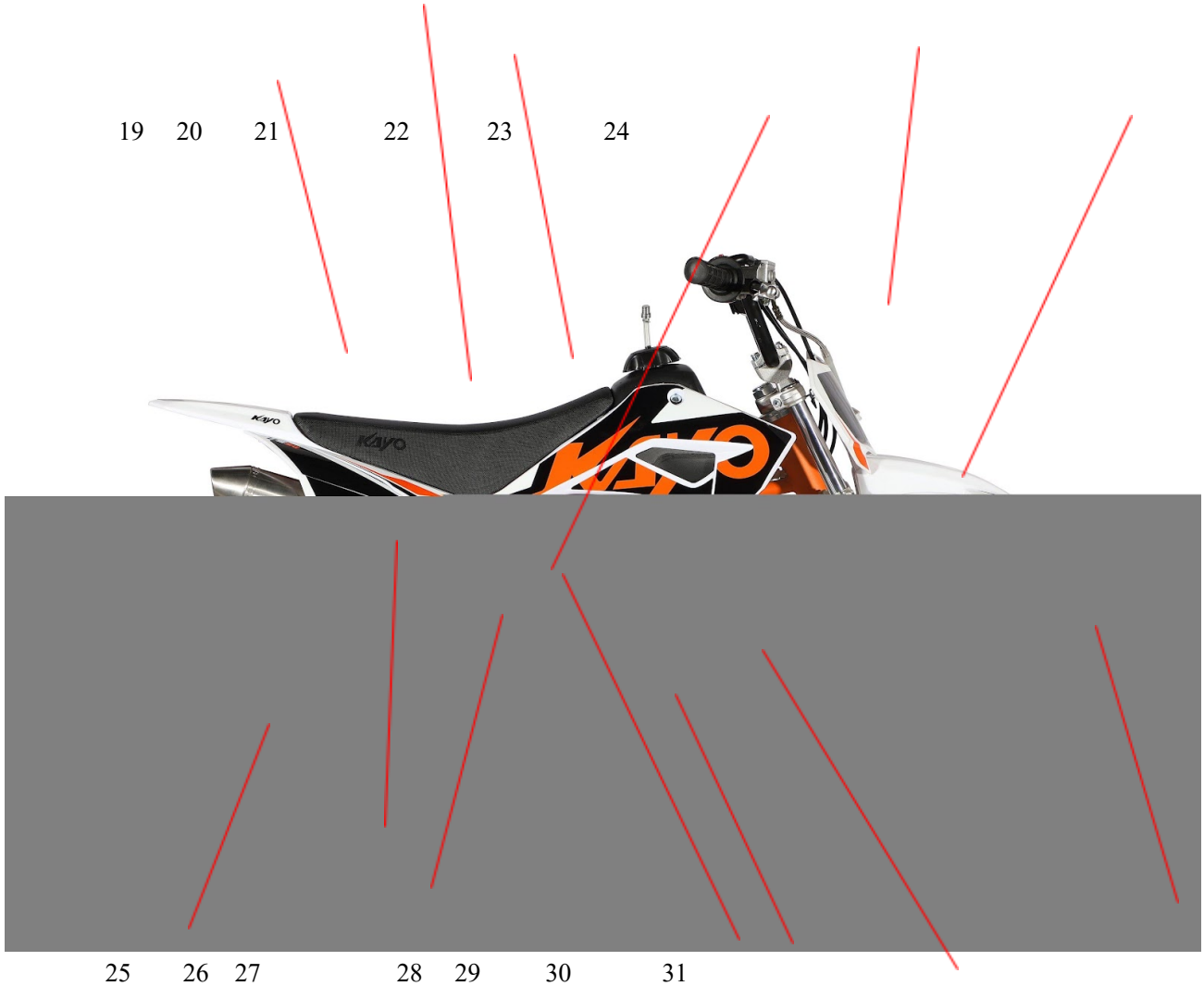
When using this motorcycle, the temperature of the engine and exhaust pipe is very high, so it needs to a period to cool down after parking. During this period, do not touch or move the engine or exhaust pipe to avoid scald.
Do not wear shorts while riding, otherwise leg injuries may happen.

APPEARANCE

2021 TS90 COMPONENTS AND POSITIONS

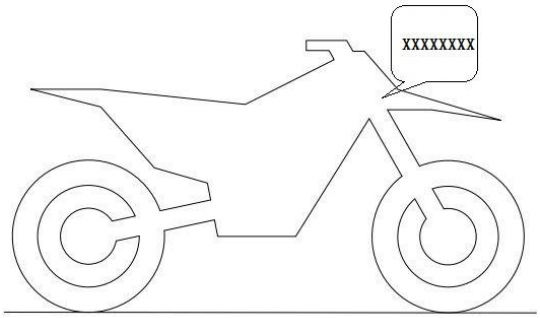


No.	Name	No.	Name
1	Front fender	9	Front shock
2	Front panel	10	Fuel tank
3	Handlebar	11	Carburetor
4	Vent pipe	12	Gear shift lever
5	Fuel tank cap	13	Pedal
6	Fuel tank petcock	14	Chain
7	Chain guide cover	15	Chain guide
8	Front brake caliper	16	Rear sprocket



No.	Name	No.	Name
19	Rear fender	26	Rear brake caliper
20	Exhaust pipe muffler	27	Swing arm
21	Seat	28	Rear brake oil cup
22	Rear shock	29	Brake pedal
23	Upper clamp	30	Exhaust pipe
24	Lower clamp	31	Front disc brake
25	Rear disc brake		

VIN CODE



Vin code of 2021 TS90 are located on the head pipe.

ENGINE NUMBER

The engine number of the 21 TS90 is located on the engine box inside the shift lever.

PARAMETER

DIMENSIONS AND QUALITY PARAMETER – 2021 TS90	
L*W*H（mm）	1445×670×885
Wheelbase（mm）	1025
Net weight（kg）	60
Tire size	F:2.50-12；R:3.00-10
Seat height（mm）	625
Min ground clearance（mm）	180
Tank volume（L）	3.5
Engine Parameters	
Engine type	Single cylinder、four stroke、air coooling、automatic clutch
Displacement	86cc
Max. Power（kw/r/min）	4.1/8000
Max. Torque（NM/r/min）	5.8/5000
Compression Ratio	8.8:1
Shift type	Usually engage four speed transmission
Starting	Electric/kick
Ignition type	CDI
Battery	12V 4Ah
Chain	#420；14T/39T
Frame/Shock/Brake/Wheel system Parameters	
Frame type	Steel tube suspension frame
Front shock	Upright front shock，L=540mm，non-adjustable
Rear shock	Common rear shock，L=270mm，non-adjustable
Swing arm	Steel swing arm
Handlebar	Steel handlebar
F/R rims	F:1.40×12，R:1.85×10；Steel rims
F brake system	hydraulic brake system，brake disc:Φ190mm
R brake system	hydraulic brake system，brake disc:Φ190mm，Downward brake pedal
Others	
Air filter type	Sponge filter core filter type

CONTROL

FRONT DISC BRAKE

hand brake lever

The front disc brake is controlled by the hand brake lever, which is fitted on the right side of the handlebar and functioned by the pinching the lever with your right hand.

front brake calipers

The front wheel adopts the floating-caliper disc brake, which is installed under the left front shock and fixed by two bolts.

THROTTLE LEVER

throttle lever

Turn the handle counterclockwise to increasing the engine. It will back to normal smoothly once you release the handle.

STARTING

start button

The start button is a round yellow one and fitted on the right side of the handlebars, near the throttle grip.
It needs long press on the button when starting.

Attention：When starting, you should pinch the brake with your left hand to prevent sudden starting when the transmission is I gear.

Attention：There should have fuel in the fuel tank before starting the engine, and the fuel tank switch should be in the open position.

STOPPING

stopping button

The stopping button is round red one and fitted on the left side of the handlebar near the grip.
It needs long press on the button when stopping.

FUEL TANK SWITCH

fuel tank switch

The fuel tank switch is located on the bottom left side of the fuel tank. By turning the switch, you can control the entrance of the fuel into the carburetor, so as to achieve the control purpose.

The meaning of symbols on the oil tank switch is shown as the left picture.
“OFF”: indicates that the switch is closed, and the oil discharge is stopped.

SHIFTING

gearshift

The gearshift is located on the left side of the engine, which is functioned by stepping on and hooking on the shift lever.
2021 TS90 has engage four speed transmission.

REAR DISC BRAKE

foot brake pedal

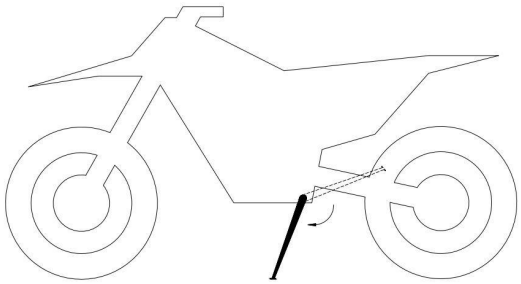
The foot brake pedal is located on the right side of the engine and is functioned by stepping.

Note：In actual use, the brake operation should be mainly through foot brake, use hand brake as a supplement.

rear brake caliper

The rear brake adopts a floating clamp disc brake, which one is located on the right side of the rear wheel and fixed by a disc brake bracket.

PARKING SUPPORT



2021 TS90 use a single side stand for parking. It locate on the left side of the motorcycle. when using, straighten the vehicle, kick the single stand to expend it, and lean the motocycle to the left until its weight rest on the side stand.

PREPARING FOR USE

ADVICE ON FIRST USE

1. Before your first trip, read the entire operating instructions carefully, especially the section of "Controls" and "Riding Instructions".
2. When driving, please carry out a standardized run-in first.
3. If any parts problems are found during using, you can repair that according to this manual or contact KAYO Dealers for professional aid.
4. After each use, clean the vehicle with running water.
5. Do not drive in inclement weather (e.g. rainstorm, blizzard, etc.) unless necessary.
6. KAYO is not responsible for any vehicle problems caused by malicious acts.

RUN-IN PROCESS

Motorcycle engines have a lot of relative moving parts, such as pistons, piston rings, cylinder blocks, meshing transmission gears, etc. Therefore, in the initial stage of use, the engine must be standardized. The 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 larger loads. Only after standard running-in can the engine have excellent performance and reliability.

The recommended running-in steps are as follows:

1. 0-2.5h stage: Using under the throttle level of 50% ~ 75%, the speed should be changed frequently to avoid the motorcycle working at the same condition for a long time,
   Let the engine rest and cool down for 5 ~ 10 minutes after each 1-hour work.
   Do not accelerate suddenly to protect your throttle.
2. 2.5-4h stage: Using under the throttle level of 50% ~ 75% throttle and work for a long time at the same condition.
   In actual working, the throttle can be up to full level, but not more than 5 ~ 10 seconds;
3. 4-5h stage: Using under the throttle level of 75% ~ 100%
4. More than 5h: increase the speed to 50 ~ 60km/h, until the engine performance can be fully played.

DANGER: When riding a motorcycle, please do not speed up regardless of the consequences, this behavior is easy to cause engine damage and causing safety accidents therewith.

So, please ride the vehicle properly.

RIDING INSTRUCTIONS

PREPARATION BEFORE RIDING

1. Check fuel level in fuel tank and replenish if necessary.
2. Check fluid level in hand brake fluid reservoir and replenish if necessary.
3. Check fluid level in foot brake fluid reservoir and replenish if necessary.
4. Check brake pad wear condition at the hand brake clamp system.

5. Check brake pad wear condition at the foot brake clamp system.
6. Check braking system operate condition.
7. Check the chain.
8. Inspect rear sprocket, engine sprocket and chain guide structure.
9. Check the chain adjuster.
10. Check the outer surface of the tire.
11. Check tire pressure.
12. Check battery level.
13. Check the thickness of the front disc brake.
14. Check the thickness of the rear disc brake.
15. Check the torque of each fastener.
16. Check the engine gear.
17. Check cover parts.
18. Check the fuel tank switch.
19. Check protective apparels are all-ready worn.

PRECAUTIONS FOR STARTING

The steps of electric ignition are as follows:

1. Turn the oil tank switch to the "ON" position;
2. Open the electric lock;
3. Pinch the brake lever with the right hand;
4. Long Push the ignition switch with the fingers of the left hand;
5. Release the ignition switch after the engine works properly

That's all for starting.

The steps of kick ignition are as follows:

1. Turn the oil tank switch to the "ON" position;
2. Pinch the brake lever with the right hand;
3. Tramp the foot starting rod vigorously with the right foot;
4. The engine works properly.

That is all for starting.

PRECAUTIONS FOR STOPPING

1. Check the condition of the vehicle and the rider's Equipment before starting off.
2. Speed up slowly when just starting off.
3. Start in gear "1" for ensure safety.

PRECAUTIONS FOR TURNING

1. Take care to slow down in advance when turning.
2. Lower your center of gravity to reduce the risk of side rolling when turning.
3. Do not shift gears when turning.

PRECAUTIONS FOR ACCELERATION

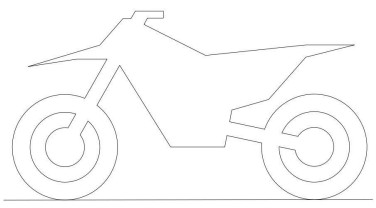
1.Do not accelerate in the corner
2.Remember to shift gears after acceleration

PRECAUTIONS FOR SHIFTING
1.Do not accelerate when shifting gear
2.Do not shift gears in the corner

PRECAUTIONS FOR BRAKING
1. Use foot brake as your first brake operation, if necessary, use hand brake as a supplement.
2. Check fluid lever in the brake fluid reservoir frequently
3. Replenish the brake fluid reservoir if necessary according to the procedure in the manual

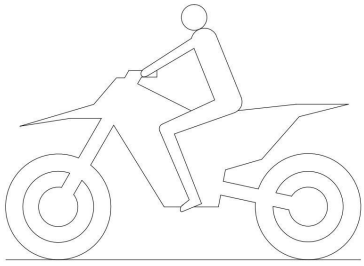
PRECAUTIONS FOR STOPPING & PARKING
1. Slow down gradually to 0 and then stop, do not make an emergency brake
2. Slowly lean the motorcycle to the left until its weight rests on the side stand.
3. Shift the gear to “N” before stopping.
4.
5.

SUGGESTED INSPECTION TIME FOR ALL PARTS OF THE VEHICLE

every 30 hours	every 20 hours	every 10 hours/after every race	1 hour after each ride
●●Check the front disc brake plate●●●Check the rear disc brake plate●●●Check the front and rear disc brake discs●●●Inspect brake tubing for damage or leakage●●●Check the rear disc brake fluid level●●●Check the free-play of the brake pedal●●●Check the frame●●●Check the top of the shock absorber●●●Check the shock absorber connecting●●●Check tire surface condition○●●●Check and charge the battery			
 Check tire pressure○●●●Check hub bearings for	To ensure the best driving characteristics of the vehicle and avoid damage to swingarm, shock absorbers, linkage and frame, the basic setting of the suspension components must match the driver's weight. The total standard rider mass of the 2021 TS90 off-road		

loose●●●Check the wheel hub●●●Check for rim edge pulsation○●●●Check the spoke tension○●●●Check chain, rear sprocket, engine sprocket, guide sleeve and chain guide→p.46●●●Check chain tension○●●●Lubricate all moving parts (chain, handlebars, etc.) and check for smooth●●●Check the front disc brake fluid level●●●Check the free play of brake handlebar●●●Check whether the steering head bearing for loose○●●●Check valve clearance○●Check clutch●Change the gear oil○●●●Insepect all hoses(e.g.fuel, exhaust) and casing for cracks, leaks and incorrect wiring○●●●Check the cable for damage and sharp bend●●●Clean air filter and air filter tank●●●Check whether screws and nuts are tightened○●●●Replace the fuel filter●Check carburetor idle○●●●Final inspection: check whether the vehicle is running safely and conduct a test○●●●○

One-off interval ●



● Periodic interval

ATTENTION: This table is for reference only. Please adjust the maintenance cycle of the motorcycle according to the specific model and use situation.

WARNING: For the inspection, adjustment and replacement of the engine, please consult Kayo Service Center to avoid damage.

SUSPENSION SYSTEM

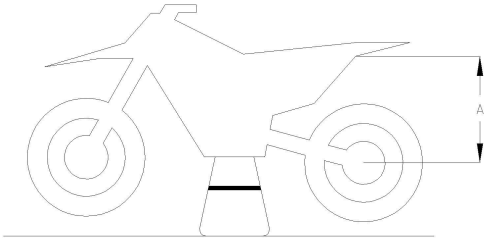
CHECK THE COMPRESSION AND motorcycle is shown in the table below.

TS90	20～40kg

If the rider's weight is above or below the standard range, the basic setting must be adjusted accordingly.

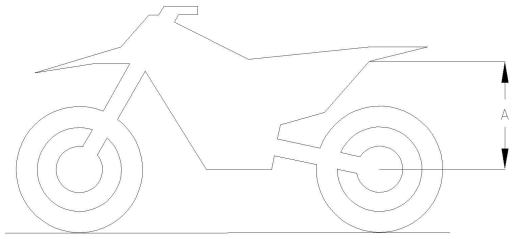
REBOUND OF THE VEHICLE INCLUDING THE DRIVER

MEASURE THE DISTANCE BETWEEN THE CENTER OF THE REAR WHEEL AND THE REAR FENDER IN SUSPENSION



The measurement procedure is as below:
1. Place your motorcycle on its center stand stably.
2. Select a fixed point on the side of the rear fender and mark it as "point 1".
3. Measure the distance from "Point 1" to the center of the rear axle and record it as "A1".
4. Remove the motorcycle from the rack

MEASURE DISTANCE BETWEEN CENTER OF REAR WHEEL AND REAR FENDER UNDER NO LOAD

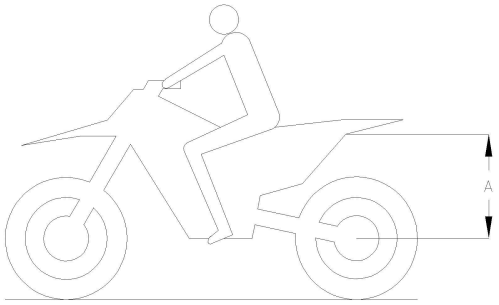


The measurement procedure is as follows:
1. The motorcycle is up right so that the center surface of the tire is perpendicular to the ground
2. Measure the distance from the center of the rear wheel axle of the motorcycle to "point 1" and record it as "A2".
3. Use a single stand to support the vehicle
4. Calculate the difference between "A1" and "A2" and denote it as "D1".

The value of "D1" when 2021 TS90 motorcycle leaves factory is shown below

	D1
TS90	10 ~ 34mm

MEASURE DISTANCE BETWEEN REAR WHEEL CENTER AND REAR FENDER IN DRIVING CONDITION



The measurement procedure is as follows:
1. The driver rides the motorcycle (the engine does not start)
2. Up right the motorcycle so that the center surface of the tire is perpendicular to the ground
3. Measure the distance from the center of the rear wheel axle of the motorcycle to "point 1" and record it as "A3".
4. The driver uses a single stand to support the vehicle and leave the seat

Calculate the difference between "A1" and "A2" and denote it as "D2".

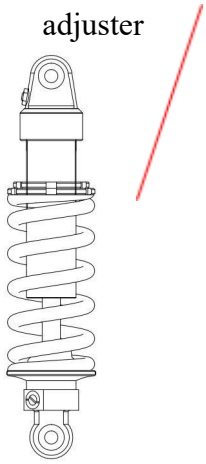
The factory default value of "D2":

	D2
TS90	40 ~ 100mm

If "D2" measured by the customer is lower than the

factory value, you should decrease the spring preload appropriately; Conversely, increase the spring preload.
If "D2" is far less than the factory value, replace the spring with a softer one; Conversely, replace the spring preload with a harder one.

ADJUSTING THE SPRING PRELOAD OF REAR SHOCK ABSORBER



You can adjust the spring preload by adjuster.
Turn clockwise to increase spring preload,
Turn counterclockwise to decrease spring preload.

CHECK FOR THE SETTING OF FRONT SHOCK ABSORBER

The inspection procedure is as follows:

1. Place the whole motorcycle on the ground
2. Up right the vehicle
3. Hold the handlebars with both hands and press down on the front shock absorber
4. Observe the effect of pressure and rebound of front shock absorber

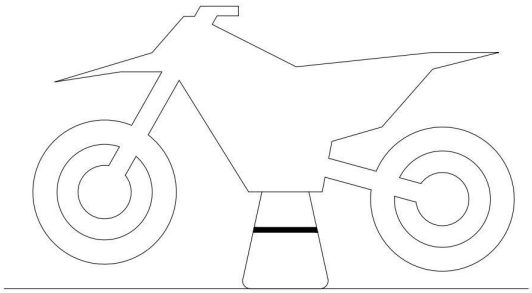
ADJUSTING THE HANDLEBAR

The handlebars of the vehicle can be adjusted according to the customer's driving habits. The specific steps are as follows:

1. Remove the sheath and sheath on the handlebar.
2. Unscrew the pressure block bolt so that the handlebar can be turned.
3. Sit on the whole vehicle and hold the handlebar to the position where both hands are placed naturally.
4. Screw back the pressure block bolt.
5. Observe the position of the handlebar, if not satisfied, repeat the above process.

VEHICLE MAINTENANCE

PLACEMENT



Raise you motorcycle on its center stand always when carrying out the related maintenance.
It is helpful to remove or install various parts.

REMOVING OR INSTALLING THE FRONT DISC BRAKE

oil pipe clamp

Install the bolts

Removing Steps are as follow:

1. Remove the mounting bolt of disc brake clamp.
2. Remove the front brake oil pipe clamp.
3. Remove the front brake handle.
4. Remove the front cable panel.
5. Remove the front disc brake.

Installing Steps:
The installment should be carried out in the reverse order of removal.

REMOVING OR INSTALLING THE FRONT SHOCK ABSORBER

Removing Steps as follows:
1. remove the front disc brake.
2. Remove the front wheel.
3. Loosen the mounting bolt on the linkage.
4. Remove the front shock absorber.

Installing Steps:
The installment should be carried out in the reverse order of removal.

REMOVING OR INSTALLING THE LINKAGE

Removing Steps are as follows:
1. Remove the front shock absorber
2. Remove the lock nut of the steering column
3. Remove the upper link board
4. Remove the adjusting nut of the steering column
5. Take out the lower link board
6. Remove the steering column
7. The installation is carried out in the reverse order of removal.

CHECK THE FRONT STEERING

Check the front steering steps are as follows:
1. Aerial the whole vehicle

2. By turning the handlebar left to right to control the motorcycle head, if it turns smoothly and there is no obstruction, the motorcycle head turning is normal
3. If you find that the steering of the front of the car is obstructive, remove the link plate to check whether the steering bearing is normal.

LUBRICATION AND INSTALLATION OF STEERING HEAD BEARING

bearing

When installing the steering bearing on the head, apply a layer of lithium-based grease on the surface of the roller.

Refer to the figure on the left for specific installation.

REMOVING OR INSTALLING THE FRONT FENDER

Removing Steps are as follows:

1. Remove the fix screw.
2. Pull out the Front Fender.

Installing Steps:

The installment should be carried out in the reverse order of removal.

REMOVING OR INSTALLING THE REAR SHOCK ABSORBER

Check the rear shock absorber whether the spring is cracked or not,etc. If necessary, replace the rear shock absorber.

Please follow the steps below to removing the rear shock absorber:

1.Remove the mounting bolts of the rear shock absorber and the frame

2..Remove the mounting bolts of the rear shock absorber and the swingarm.

3.After confirming that there is no interference, take out the rear shock absorber from the side;

Perform the Installation in the reverse order of removal.

REMOVING OR INSTALLING THE SEAT CUSHION

Removing Steps are as follows:

1. Remove the fixing bolt on both sides of the rear seat.
2. Remove the fixing bolt of the seat and fuel tank.
3. Take out the seat backwards.
4. Remove the fixing bolt of the seat and plastic parts.

Installing Steps:

The installment should be carried out in the reverse order of removal.

REMOVING OR INSTALLING THE AIR FILTER

d 

Removing Steps are as follows:

1. Loosen the fixed explosive hoop of air filter.
2. Remove the air filter.

Installing Steps:

The installment should be carried out in the reverse order of removal.

CLEANING AND MAINTENANCE OF AIR FILTER

Before performing maintenance on the air filter parts, it is necessary to check first, the contents of which are as follows:

1. Check whether there are cracks on the surface of the air filter box.

2. Check whether the air filter sponge is damaged.
3. Check whether the fire net is damaged
4. Check whether the air filter block is degummed with the sponge surface

If the air filter is damaged, replace the corresponding parts; if no parts are damaged, perform maintenance as follows:

1. Clean the air filter hose with water and let it air dry.
2. Clean the dust attached to the air filter sponge and soak the surface with air filter oil. If the dust on the sponge is difficult to resolve, you can also replace a new air filter sponge.
3. Clean the fire net with gasoline and let it air dry naturally.
4. Clean the air filter block with water and let it air dry.

REMOVING OR INSTALLING THE EXHAUST PIPE

Removing steps as below:

1. Remove the cover.
2. Remove the muffler tube
3. Remove the fixing nut at the connection of the engine exhaust pipe
4. Remove the exhaust pipe
5. Remove the gasket.

Installing Steps:

The installment should be carried out in the reverse order of removal.

NOTE:install the exhaust pipe with a new gasket.

REMOVING OR INSTALLING THE MUFFLER TUBE

The exhaust pipe and the muffler tube can guide the gas emission and reduce the noise.

f the exhaust pipe is rusty or ruptured or damaged by impact, please replace it with a new one immediately. If the noise is too high or the engine performance is degraded, replace the muffler tube.

For the cleaning of the exhaust system, please consult with KAYO dealers before operating.

If you need to replace the muffler tube, please follow the steps below

Unscrew the mounting bolts of the muffler tube

Loosen the buckle at the connection between the muffler tube and the exhaust pipe

Pull out the muffler tube backwards

Replace the muffler tube and install the fasteners

Installing Steps:

The installment should be carried out in the reverse order of removal.

REMOVING OR INSTALLING THE FUEL TANK

Removing steps as below:

1. Remove the seat cushion.
2. Unscrew the rear fixing screw of the fuel tank
3. Unscrew the fuel tank front installation screws.

4. Remove the fuel tank from the frame

Installing Steps:

The installment should be carried out in the reverse order of removal.

CHECK AND CLEAN THE CHAIN

Checking Steps are as follows:

1. Observe the chain from the rear of the vehicle to check whether the chain is skewed as a whole
2. Rotate the rear wheel by hand and observe whether the rotation of the rear wheel is smooth
3. Carefully check the gap between the chains to see if there is any sediment attached

Clean the Chain:

Use a special cleaning detergent to wash the surface,slit and gap of the chain; wait until the chain is naturally air-dried, and then apply a layer of anti-rust oil on the surface of the chain.

REMOVING OR INSTALLING THE CHAIN

Removing the Chain:

1. Remove the chain protect cover.
2. Remove the spring leaf on the chain.
3. Remove the movable section of the chain.
4. Pull out the chain from the sprocket.

Installing Steps:

The installment should be carried out in the reverse order of removal.

CHECK AND ADJUST THE CHAIN TENSION

The chain can transfer the output-power from the engine to the wheels, so that the motorcycle can move normally. It is an important part of the motorcycle. Therefore, the chain needs frequent inspection and maintenance to ensure its normal use.

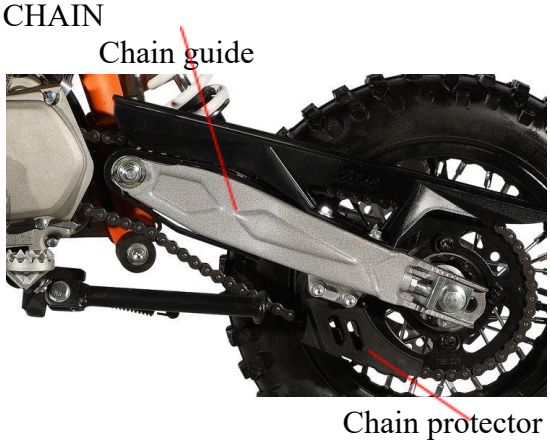
The chain tension can be adjusted according to requirements, the steps are as follows:

1. Stand the motorcycle with rear wheel suspended.
2. Measure the distance between the rear fork and the chain. The normal distance should be 20-30mm, which is about the length of two fingers. It is not necessary to strictly demand it, within the normal distance is ok.
3. Loosen the rear axle nut;
4. Find the specific position with the greatest tension on the chain when the distance is within the normal range.
5. By using the notches on the tensioner and the lugs on the adjuster, through the nut on the tensioner, adjust the fork properly.
6. Tighten the tensioner nut.
7. Check the point of maximum tension and re-adjust the tension if necessary.

When checking the chain tension, you should also check the chain guide and sprocket through visual inspection not limited to chain.

When checking the chain tension, you should also check the chain guide and sprocket through visual inspection not limited to chain.
When the chain is over-used, or the stretch exceeds 2%, the chain should be replaced, and change the relevant guide rail and sprocket at the same time. If only replace the chain without replacing other accessories, the new chain will be easy worn out due to the worn accessories and shorten the service life, meanwhile these accessories will quickly reach the limit of use and must be replaced.
Therefore, even from an economic point of view, it is worthwhile to replace the entire chain drive system at the same time.
At any time, you should use the original parts from KAYO factory or the ones authorized by KAYO.
The chain needs to be lubricated regularly, see the lubrication section for details.
NOTE: The alternating wet and dry working environment will greatly shorten the service life of the chain and its surrounding accessories. Therefore, please follow the correct lubrication method and select a suitable lubricant for lubrication.
NOTE: If the chain needs to be tightened frequently, or if you find any signs of wear on the front sprocket, rear sprocket and the chain, please contact KAYO dealer for a thorough inspection to avoid safety problems

CHECK THE STRUCTURE OF THE REAR SPROCKET, ENGINE SPROCKET AND GUIDE CHAIN



Check the worn condition of the chain guide and the chain protector on the rear fork. Under normal circumstances, these two parts play a role in guiding the movement of the chain, the over-worn will affect the transmission function and thereby be harmful to normal movement of the chain.
Therefore, you must change the over-worn chain guide and chain protector in order to ensure that the motorcycle works normally.

CHECK THE FRAME

Checking Steps are as follows:

1、 Check whether the paint layer on the surface of the frame is damaged or not.
2、 Check whether the fixed points of the frame are deformed or not, especially the installation points of the engine, flat fork and rear shock absorber.
3、 Check whether there are cracks on the surface of the frame, especially at the welded point.

CHECK THE FORK

1. Checking Steps are as follows
2. Check whether there are cracks on the surface of the flat fork
3. Check whether there is any deformation at the mounting point of the cradle on the flat fork
4. Check whether the surface paint of the flat fork is damaged or not.

CHECK THE THROTTLE CABLE

Throttle cable

Checking Steps are as follows:

1. Turn the throttle knob to observe whether the throttle rebounds properly.
2. Start the engine, observe the engine power changing when turn the head from side to side, if there is any difference, it indicates that the throttle line is too short.

CHECK THE STEERING HANDLE

You could sit on the vehicle, rest your hands on the handlebars naturally, and feel whether the position of the clutch grip and brake grip are comfortable or not.

If you feel difficult to steering, adjust the positions of the clutch and brake levers.

CHECK AND MAINTENANCE THE BRAKE SYSTEM

CHECK THE FREE-PLAY OF FRONT BRAKE LEVER

Checking steps as below:

1. Rest your right hand on the right hand grip naturally
2. Use the index finger and middle finger of your right hand to check the free play. At this time, two fingers are required to be able to hook and pull the handle.
3. Pinch and release the handle and feel the resistance. If it feels soft, it seems that the air may be mixed into the oil pump or oil pipe. You should check the entire brake system and take measures accordingly.

CHECK THE DISC BRAKE

碟刹盘

Checking Steps are as follows:

1. Check whether there are cracks, dents and other damages on the surface
2. Measure the thickness of the disc brake and

compare it with the limit thickness required.

3. If the thickness of disc brake is less than or equal to the limit thickness of the disc brake, it must be replaced immediately.

The limit thickness table of disc brake is as follows:

	Limit thickness of Front Brake Disc	Limit thickness of Rear Brake Disc
TS90	3.0mm	3.0mm

CHECK THE FRONT BRAKE LIQUID LEVEL

2021 TS90 uses hydraulic disc brakes, and you can check the liquid level through the observation hole.

If the liquid level is lower than the bottom edge of the observation hole, you should immediately refuel the fluid to the upper edge.

REFUEL THE FRONT BRAKE LIQUID LEVEL

You should check/refuel the liquid level regularly.
If the brake fluid is mixed with water, soil or other particles, the brake fluid should also be replaced.
It is recommended to use DOT4 brake fluid.
Danger: Do not mix different types of brake fluid and pour it into the brake system for use. The use of brake fluid must meet the braking requirements. Please do not use the brake fluid in an unsealed container. The brake fluid may deteriorate when exposed to the air, which will affect the braking effect. Do not use used brake fluid.

NOTE: You should change the brake fluid once a year, even it has not used for a long time.

CHECK THE FRONT BRAKE PADS

Front brake pads

Check the thickness of the pads of brake caliper.
You must change the pads if the thickness is less than the minimum thickness of the brake pads.
The minimum thickness of the brake pad is 1mm.

NOTE: The brake pads should be replaced as a complete set. If you are not sure to complete the

replacement work, please go to the KAYO dealer and have a professional to complete the replacement.

CHECK THE FREE-PLAY OF FOOT BRAKE

Rear foot brake pedal：
In normal use,the free-play of the brake pedal is shown in the table below.
Check the brake lever and pay attention to whether the stroke is correct.

Model	Free-Play
TS90	20～45mm

CHECK AND REFUEL THE REAR BRAKE DISK LIQUID LEVEL

Check the Liquid level through the Observing Hole.
The liquid level should be more than half of the observation hole, that is, the liquid level should be higher than "lower".
You should refuel it if it is insufficient.

NOTE: Do not splash the brake fluid on the paint surface, which may cause corrosion.
DANGER: Please pay attention to check whether the brake fluid is leaking and whether the brake fluid pipe is damaged.
If so, please contact KAYO dealer.

Refueling Steps are as follows:
1. Remove the screw.
2. Remove the cap.
3. Refuel brake fluid to a proper level.
4. Re-load the cap.

It is recommended to use DOT4 brake fluid.

CHECK THE REAR BRAKE PADS

rear brake pads

After checking the thickness of the brake pads of the brake caliper, the thickness should not be less than 1 mm. If the thickness of the brake pads is lower than the minimum thickness, the entire set of brake pads should be replaced immediately.

WARNING

DANGER: If it is found that the brake system is too worn, the corresponding parts should be replaced immediately to avoid safety accidents.

The specific work should be carried out after consulting the KAYO dealer.

TIRE INSPECTION AND MAINTENANCE OF THE WHEEL

REMOVING OR INSTALLING THE FRONT WHEEL

Removing Steps are as follows:

Lift the motorcycle off the ground and Stabilize it by using a motorcycle stand.
Remove front disc brake cover if have,
Loosen the front wheel axle pinch bolts
Holding the front wheel with one hand, withdraw the front wheel axle gradually with another hand
Remove the front wheel

Installing Steps:
The installment should be carried out in the reverse order of removal.

REMOVING OR INSTALLING THE REAR WHEEL

Removing Steps are as follows:

Remove the chain.
Loosen the rear wheel axle bolts
Holding the rear wheel with one hand, withdraw

the rear wheel axle gradually with another hand
Remove the rear wheel

Installing Steps:
The installment should be carried out in the reverse order of removal.

TIRE INSPECTION

Checking Steps are as follows:

1. Check the tires if there are crosswise lines, holes, or foreign bodies
2. Check the tire thread worn, if the height of tire plies lower than minimum require, replace the tire right away.

The minimum height requires: 3mm

CHECK TIRE PRESSURE

Check the tire pressure by using a pressure gage.
If it happens frequently with lower pressure problem, find out if there is a deflation or not and contact the Kayo Dealer for help.
Pressure advice

	Front Tire	Rear Tire
TS90	250kPa	250kPa

NOTE: Do the checking work only on cold tires.

CHECK SPOKE

spoke

Use your fingers to move the adjacent spokes to check whether the tire spokes lack tension. If you find that the spokes are loose and weak, you must check all the spokes and both wheels.

If there is any further problem, please contact the KAYO or KAYO dealer.

INSTALLING THE ENGINE
The installation steps are as follows:

1. The engine is suspended on the frame (pay attention to protect the appearance of the engine).
2. Install the carburetor on the intake elbow and fasten it with nuts and bolts.

Install the throttle cable and air filter, the interface should be sealed.

3. Install the transmission chain.
4. Install the left rear cover or sprocket guard and fasten it with bolts. Pay attention to the outgoing wire of the magneto.
5. Install exhaust muffler. The M8 nut and the exhaust pipe sealing ring should be installed firmly with a tightening torque of 25 ~ 30N•m, and the exhaust port should not leak air during installation.

ENGINE MAINTENANCE AND ADJUSTMENT

Inspection of installation bolts and nuts of cylinder head and cylinder block

The inspection is carried out at the first 1000km and every 5000km. When the engine is cold, use a torque wrench to tighten the bolts and nuts to the specified torque.

TORQUE	M8	28 ~ 32N.m
	M6	10 ~ 15N.m

CHECK THE VALVE CLEARANCE

The inspection is carried out at the first 1000km and every 5000km. Excessive valve clearance will cause valve noise, and too small valve clearance will cause engine power drop and valve damage. The valve clearance should be checked according to the above prescribed mileage, and the valve clearance should be adjusted according to the following procedures:

Remove the valve cover.

Unscrew the magneto plug and timing screw plug on the left front cover, and use a 14mm socket wrench to turn the magneto rotor until the piston reaches the top dead center of the compression stroke (turn the magneto rotor until the engraved line on the rotor matches the left front cover Until the timing holes on the top are aligned).

Insert a standard feeler gauge between the end of the valve rod and the adjusting screw on the rocker arm. The clearance between the intake and exhaust valves is 0.03 ~ 0.05mm.

If the valve clearance is not within the above range, use a special tool to adjust it within the specified range.

Reinstall the valve cover, magneto plug and timing plug.

NOTE: The valve clearance should be checked and adjusted when the engine is cold.

COMPRESSION PRESSURE CHECK

The inspection is carried out for the first 1000km and every 5000km.

The inspection steps are as follows:

1. Let the engine run at idle speed and warm it up.
2. Unscrew the spark plug.
3. Install the pressure gauge and connector into the spark plug mounting hole and make sure that the connection is firm.
4. Turn the throttle handle to the fully open position.
5. Start the engine several times with the starter motor and read the pressure gauge to show the

highest-pressure value of the engine cylinder.

Standard	1200~1250Pa
Minimum	1100Pa

Low pressure indicates the following faults:

Excessive wear of the cylinder wall.

The piston or piston ring is worn.

The piston ring is stuck in the ring groove. The valve is not properly engaged with the valve seat.

The cylinder head gasket is damaged. When the engine compression pressure is lower than the above limit value, the engine should be reinstalled, inspected and repaired according to the specific conditions.

NOTE: Before testing the compression pressure of the engine, make sure that the cylinder head nuts and bolts are tightened according to the specified torque and the valve clearance is adjusted correctly.

THE ENGINE ADJUSTMENT

IDLE SPEED ADJUSTMENT OF CARBURETOR

The idle speed of the carburetor can be adjusted through the throttle screw and air screw.

Proceed as follows:

1. Rotate the air screw clockwise until it reaches the top of its stroke, and then reverse one and a quarter of a turn;
2. Adjust the throttle screw to ensure that the engine can run at a certain speed when the throttle lever is completely loosened;
3. Adjust the throttle screw to reduce the engine speed as much as possible;
4. Adjust the air screw to increase the engine speed as much as possible;
5. Repeat the above steps until a satisfactory speed is obtained;
6. Check whether the throttle cable is working properly.

DANGER: Driving a motorcycle with a damaged throttle cable is undoubtedly a very dangerous behavior. The normal throttle cable should have a free stroke of at least 10mm. Start the engine and turn the handlebar left and right. If the engine stalls or accelerates due to the movement of the handlebar, the throttle cable may be improperly adjusted or damaged. Make sure that the throttle cable is normal before driving the motorcycle.

CLEAN THE CARBURETOR

The carburetor will leave a portion of fuel after every

TS90 carburetor oil drain bolt

ride. Therefore, the carburetor should be cleaned after each ride to avoid the generation of grease stains and affect the use of the carburetor.

The cleaning steps as follows:

1. Place a container under the carburetor for receiving fuel
2. Turn off the fuel tank switch
3. Unscrew the drain bolt of the carburetor and wait for the fuel to flow out
4. After the fuel is drained, screw the drain bolt back

CHECK THE SHIFT LEVER POSITION

Shift head

The inspection steps are as follows:

1. Raise the whole vehicle so that the center plane of the tire is perpendicular to the ground
2. The line of sight is level with the tread surface, and observe the position of the shift head
3. The shift head should be level with the tread surface or slightly lower than the tread surface

If the shift head is higher than the tread surface, the shift head should be adjusted downwards; if the shift head is excessively lower than the tread surface, the shift head should be adjusted upwards.

ADJUST THE SHIFT LEVER POSITION

Shift lever fixing bolt

Adjusting Steps are as follows:

1. Loosen the fixing bolts of the shift lever.
2. Remove the shift lever.
3. Turn the shift lever to a suitable position and install the spline.
4. Tighten the shift lever fixing bolt.

INSPECTION OR REPLACEMENT OF SPARK PLUGS

The engine spark plug torque is 25 ~ 30N•m.

The spark plug must be disassembled regularly to check the distance between the electrodes (0.5 ~ 0.8mm). If the spark plug contains oil or cinder, wipe it off with a wire brush or similar. Use a measuring

instrument to measure the distance between the electrodes and adjust them to prevent abnormal bending of the external electrodes. If the spark plug electrode is rusty, damaged, or the insulator is broken, the spark plug must be replaced.

NOTE: The spark plug should be checked every 10 hours accumulated and replaced every 20 hours accumulated.

NOTE: If the engine performance drops, replace the spark plug to restore normal performance.

ENGINE LUBRICANT SYSTEM

LUBRICANT SELECTION

Lubricating oil is an important factor affecting the performance and life of the engine. It must be selected according to regulations. It is forbidden to replace it with ordinary engine oil, gear oil, vegetable oil, etc.

When the car leaves the factory, 15W/40-SF grade gasoline is filled in the transmission box. If you change to other lubricating oil, its quality level should reach SG level or above, and the viscosity should be selected according to the attached drawings according to different regions and temperature changes. When replacing the lubricating oil, please drain the original lubricating oil in the crankcase and clean it with washing kerosene before adding new lubricating oil according to the regulations.

LUBRICANT INSPECTION

Dipstick

If the engine is running, turn off the engine and wait a few minutes for the oil to reach the bottom of the crankcase. Place the engine vertically on the ground and observe through the oil observation window. The oil level should be between the upper and lower scales of the observation window.

If the oil level is higher than the upper graduation line, the excess oil should be discharged.

If the oil level is lower than the lower mark, you should add lubricating oil.

LUBRICANT REPLACEMENT

When replacing the lubricating oil, it should be done before the engine is warm and has not yet cooled, so as to ensure that the lubricating oil in the crankcase can be discharged quickly and completely. The replacement steps are as follows.

1. When replacing, place an oil pan under the engine and unscrew the oil bolt A to release the lubricating oil.
2. Check the plug gasket for damage, and replace it with a new one if it is damaged.
3. When the lubricating oil is completely discharged, install and tighten the oil drain bolt and

gasket. The tightening torque is: 15 ~ 20N·m.

4. Refill with new lubricating oil and check the oil position.

ENGINE INSPECTION

Cylinder head and valve

NOTICE

◆ The camshaft journal is lubricated by the oil passage on the cylinder head. No foreign matter can enter the oil passage. The camshaft bearing rotates flexibly without jamming. The pressure reducing valve flapper rotates flexibly and can return normally. Otherwise, it is easy to cause engine damage.

◆ Before installing the cylinder head, the cylinder head positioning pin must be equipped.

◆ When assembling, the camshaft hole of the cylinder head must be smeared with proper amount of lubricating oil.

Main parameters and maintenance standard of cylinder head parts

NO.	ITEM		STANDARD（mm）	Repair Limit Value（mm）	NOTE
1	Free length of valve spring		Inner 32.75 Outer 35.55	Inner 32.03 Outer 34.8	
2	Valve clearance	Intake valve	0.01~0.03	< 0.01 or > 0.03	
		Exhaust valve	0.01~0.03	< 0.01 or > 0.03	
3	Camshaft base circle runout		0.02	0.04	
4	Valve guide aperture		φ5~φ5.012	φ5.035	
5	Valve stem diameter	Intake valve	Φ4.97~φ4.985	Φ4.96	
		Exhaust valve	Φ4.955~φ4.97	Φ4.94	
6	Clearance between valve stem and valve guide	Intake valve	0.013~0.04	0.07	
		Exhaust valve	0.025~0.052	0.08	
7	Width of valve seal belt		1.5	/	
8	Flatness of cylinder head		0.04	0.05	
9	Working surface width of cylinder head valve seat		0.8	/	

TROUBLE OCCURENCE AND CAUSE ANALYSIS

NO	TROUBLE OCCURENCE	Analysis	Note
1	Low air pressure in the cylinder	Too small valve clearance	
		Air leakage on valves	
		Wrong valve timing	
		Broken valve spring	
		Air leakage at the spark plug and cylinder head installation part	
		Not tight on cylinder head gasket combination	
		Cracks or blisters in the cylinder head	
		Too large or broken on piston ring clearance	
		Cracked or excessively worn on piston	
		Excessive cylinder bore or trachoma	
2	Black smoke in exhaust	Valve guide wear	

		Leaking or damaged oil baffle	
		Too large piston ring clearance	
		Leakage on cylinder head gasket combination	
3	Excessive noise or abnormal noise	Too big valve clearance	
		The valve is stuck or the valve spring is broken	
		Excessive wear of the rocker arm	
		Inaccurate valve timing	
		Camshaft wear	

Removal of the left cover of the cylinder head

Small view hole cover

Cylinder head left cover Large view hole cover

1. Remove the bolts of the left cover of the cylinder head.
2. Remove the left cover of the engine cylinder head and the left cover gasket.

Remove the tightened size view hole cover.TIMING CHECK Driven sprocket timing mark

Cylinder head timing mark
Magneto rotor positive time line

1. Engine left front cover timing markUsing a special tool to rotate the C100 six-stage magneto lock nut, and observe whether the timing line on the magneto rotor is aligned with the timing mark on the left front cover through the small view hole on the left front cover.

Observing from the left cover of the engine cylinder head whether the timing mark of the driven sprocket is aligned with the timing mark of the cylinder head.Removal of the valve cover Valve cover

1. Remove the valve covers on the intake and exhaust sides of the cylinder head.

After the valve cover is disassembled, check whether the thread is damaged and the sealing ring is damaged. If damaged, use new parts when reassembling.Check the valve clearance

1. Check whether the timing scale of the magnet rotor is aligned with the timing mark on the left front cover, and the timing sprocket O is aligned with the timing mark on the cylinder head.
2. The valve should have slight clearance in the axial direction and no clearance between the upper and lower sides.

The valve clearance should be in the range of 0.01-0.03mm.Removal of the cylinder head

Cap nut Cylinder head cover

Cylinder head and cylinder block connecting boltThe disassemble steps of the cylinder head are as follows:

1. Remove the 4 pieces cap nuts of GB/T 923/M6 which uses to fasten the cylinder head cover.
2. Remove 3 Φ6.2×Φ13×2 iron washers and 1 Φ6.5×Φ13×2 copper washer.
3. Remove the cylinder head cover and cylinder head cover gasket.

4. Remove the left cover of the cylinder head.

5. Remove the 3 GB/T 5783/M5×12 hexagon head bolts that fasten the timing driven sprocket and remove the timing driven sprocket from the camshaft.

6. Remove one M6×20 bolt connecting the cylinder head and the cylinder body.

7. Remove the cylinder head.

8. Remove the positioning pins on the A and B bolts, the flange bushing and the rectangular ring 11.5×16×2.5, and remove the cylinder head gasket.

Disassemble the cylinder head The disassemble steps of the cylinder head are as follows:

1. Remove the valve cover.
2. Remove 2 bolts GB/T 5787/M6×20 which use to fasten the right cover of the cylinder head
3. Remove the right cover and the gasket of the cylinder head .
4. Take out the inlet and exhaust rocker arm shafts, inlet and exhaust rocker arms, limit plates and camshaft components.
5. Depress the valve spring with a valve remover and remove the valve lock clip.
6. Loosen the valve remover and remove the valve spring seat, valve spring and valve.

Note:

1. In order to prevent permanent deformation of the valve spring, only the valve lock clip can be removed, and the valve spring cannot be compressed excessively.
2. All removed parts should be marked to ensure that they reach the original assembly position during assembly.
3. When disassembling the gasket, ensure that the gasket is in good condition. If it is damaged, replace it with a new gasket during assembly to avoid engine oil leakage. 。

Inspection of valves and valve springs The inspection steps for valves and valve springs are as follows:

1. Check whether the valve is bent or the valve stem is abnormally worn, and measure the outer diameter of the valve stem.
   Repair limit value:
   Intake：φ4.96mm
   Exhaust：φ4.94mm
2. Maintenance limit value of the width of the contact surface：1.5mm
3. Check the valve spring for abnormal wear and measure the free length of the spring:

Standard value：Outer valve spring 35.55mm
Inner valve spring 32.78 mm
Repair limit value：Outer valve spring 34.80mm
Inner valve spring 32.03mm

Note: If the contact surface of the valve is rough, abraded unevenly or the contact with the valve seat is abnormal, the sealing performance cannot be guaranteed, and the valve should be replaced.。

Inspection of rocker arm and rocker shaft The inspection steps of the rocker arm and rocker shaft are as follows:

1. It is necessary to check whether the arc surface of the rocker arm is damaged, whether the valve adjusting screw and nut rotate flexibly. If the phenomenon of wear or damage is serious, a new rocker arm needs to be replaced.

Check whether the rocker arm shaft is worn out, if the wear is serious, you need to replace it with a new rocker arm shaft.Inspection of camshaft parts

The camshaft convex hull has no obvious unevenness when touched by handThe inspection steps of camshaft parts are as follows:

1. Check whether the camshaft peach tip and base circle are worn out, and whether the camshaft bearing rotates flexibly. If the camshaft is worn out or the bearing is spinning, it should be replaced with a new camshaft component.

Check whether there are cracks in the pressure reducing valve slinger combination, the spring does not rebound, and whether the pressure reducing valve centrifugal slinger and the mandrel are loose. If so, the pressure reducing valve slinger combination needs to be replaced.

CYLINDER HEAD INSPECTION The inspection steps of the cylinder head are as follows:

1. Check whether the sealing of the cylinder head is good. If the sealing of the cylinder head is poor, replace the cylinder head or valve with a new one.
2. Check the spark plug hole and valve seat for cracks.
3. Check whether the cylinder head is deformed, and use a knife-edge ruler and feeler gauge to check the flatness of the cylinder head.

Check whether the oil baffle is damaged.INSPECTION AND GRINDING OF THE VALVE SEAT Check and grind steps of the valve seat are as follows:

Remove the carbon deposits in the combustion chamber completely, apply a thin layer of red ink evenly on the valve seat, place the valve on the valve seat and knock the valve lightly without rotating it, and then pull out the valve if it touches the working surface of the valve. If the trace is discontinuous, the valve seat should be polished and repaired.

When grinding, first remove the carbon deposits on the intake and exhaust valve seats, and then apply abrasives and then use a rubber-head grinding tool to suck up the valves and grind the valve seats.CHECK THE VALVE GUIDE Use a dial indicator to measure the inner diameter of each valve catheter and make a record.

Repair limit value：φ5.035 mm

Note: Before measuring the inner diameter of the valve guide, the carbon deposits in the guide should be completely removed.

If the valve guide needs to be replaced, the valve seat should be polished again, and each valve should be inserted into the guide, observe its movement, and finally calculate the gap between the valve stem and the valve guide.

Valve clearance maintenance limit value：

1. Intake valve：0.07 mm；Exhaust valve：0.08mm.REPLACEMENT OF THE VALVE GUIDEPut the cylinder head in a thermostat and heat it to 100～150 degrees Celsius, take out and support the cylinder head (be careful not to burn), and remove it with a valve. Install the tool to drive the valve guide toward the side of the rocker chamber
2. Press-fit the new valve guide and ream the newly installed valve guide after the cylinder head cools down.
1. Clean the cylinder head with cleaning agent, and use compressed air to remove the metal chips on the cylinder head.

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

Note: When reaming, the reamer must be coated with cutting oil, and the reamer should be rotated when loading or unloading.MEASURE THE VALVE SEAT-AREA

1. WIDTHMeasure the width of the valve seat contact surface. Repair limit value: 1.5 mm
2. If the valve seat is too wide, too narrow or has dents, you should grind the valve seat to achieve the correct degree of sealing.
3. When grinding the valve, use an electric holster to cover the rubber tube (with a tight fit), then cover the valve stem on the rubber tube, apply a little graphite paste for grinding to the valve sealing tape, and then fit it on the valve seat sealing line , start the stun gun, rotate the valve, and grind the valve and the seat ring.

After grinding, check whether the sealing line between the valve and the seat ring has been ground out, otherwise it should be re-ground. If the grinding is not in place, replace the valve or cylinder head.Assembly the cylinder head

1. Install the oil baffle cover on the valve guide.

2. After coating the intake and exhaust valve rods with lubricating oil, install the valve guides, install the inner and outer springs of the valve, the valve spring seat and the valve lock clip.
3. Depress the valve spring with a valve puller, and then install the valve lock clip into the valve spring seat.

Note: In order to prevent permanent deformation of the valve spring, do not over-compress the spring so that it can be installed in the valve lock clip.

4. Check whether the valve lock clamp assembly is in place.
5. Check the air tightness of the assembled cylinder head. If the cylinder head assembly does not leak, proceed to the next step.
6. Insert the camshaft into the camshaft hole of the cylinder head and assemble it in place, and then turn the camshaft to a downward direction. The arc surface of the rocker arm is placed on the base circle of the camshaft to install the rocker arm, and the threaded end of the rocker shaft passes outwards through the cylinder head The rocker arm shaft hole is smoothly inserted into the limit plate and the rocker arm shaft hole. Check that the rocker arm shaft is installed in place and cannot interfere with the AB bolt hole. Align the gasket, the right cover of the cylinder head and the mounting screw hole and install it in place, and then tighten the bolts.
7. Inject 3ml-5ml clean engine oil into the rocker arm oil hole, the junction of the two rocker arm R faces and the camshaft.

Note：

1. The threaded end of the rocker arm shaft is outward When installing the rocker arm shaft.
2. After installing the cylinder head, rotate the cam, and the cam rocker arm should rotate flexibly without jamming.
3. Cylinder head right cover bolt tightening torque： 10 ~ 14N·m，

The large hole should be the same as the oil passage hole of the right cover of the cylinder head when assemblingINSTALLING THE CYLINDER HEAD

The installation steps of the cylinder head are as follows:

1. Remove the old cylinder head gasket, install the new cylinder head gasket, and then install the positioning pin, flange bushing and rectangular ring.
2. Pull the piston to the top dead center, and then install the timing driven sprocket onto the timing chain. The timing sprocket O is engraved upward.
3. Install the cylinder head on the A and B bolts, then install the cylinder head gasket, and then install the cylinder head cover. Put the iron and copper washers on the A and B bolts, and then fasten the 4 cylinder head covers. The shape nut is installed on the A and B bolts and tightened.

Note：

1. Do not allow dust and scum to enter the cylinder;
2. Tightening torque of A and B bolt nuts: 13 ~ 16N.m;
3. The copper washer is assembled on the B bolt at the oil passage.
4. Install the connecting bolts into the connecting holes of the cylinder head and cylinder body and tighten them. Tightening torque: 8 ~ 14N•m.
5. Adjust the timing sprocket with an iron stick so that the O marking of the timing sprocket is aligned with the timing mark notch of the cylinder head, and the magneto rotor timing line is aligned with the timing mark on the left front cover, and the timing sprocket hole is aligned with the camshaft Align the threaded holes, install the timing bolt GB/T5783 M5×12, and then tighten.

Timing adjustment method:

（1）Remove the size and view hole cover on the left front cover.

（2）Rotate the magneto rotor so that the “one” line of the rotor timing is aligned with the timing mark on the left front cover.

（3）After the above timing mark is aligned, pay attention to observe that the o mark of the timing driven sprocket is aligned with the timing mark on the cylinder head.

The engine is in the correct timing position only when (2) and (3) are satisfied at the same time.

Note：

1. When assembling the timing bolts, do not drop the bolts into the cylinder.
2. Timing sprocket bolt torque: 7 ~ 11N•m.
6. Adjust the clearance between the intake and exhaust valves, and turn the crankshaft counterclockwise for two turns to align the O marking on the timing sprocket with the timing mark on the cylinder head.

1. There is a slight gap in the axial direction, and there is no gap between the top and bottom.

2. Check the valve clearance with a feeler gauge, and the value should be in the range of 0.01-0.03mm;

3. Tightening torque of adjusting nut: 8 ~ 12N•m.

7. Combine the Φ6×Φ13×2 aluminum washer with the hexagonal pan-head bolt GB5787 M6×110, insert the cylinder head right cover hole into the cylinder head left cover (seal) threaded hole and tighten the bolts, tightening torque: 8 ~ 12N•m.
8. Put the o-ring into the groove of the valve cover, and then install the valve cover on the cylinder head and tighten it. Tightening torque: 8 ~ 12N•m.

Install the spark plug into the spark plug thread of the cylinder head and tighten it. Tightening torque: 10 ~ 12N•m.**CYLINDER BLOCK AND PISTON**Notice:

◆Cylinder head lubricating oil is sent to the cylinder head through the oil hole next to the AB plug on the left body of the engine. Before installing the cylinder block, make sure that the oil hole next to the AB plug on the left body is unblocked, otherwise it is easy to cause engine damage.

◆ Do not allow dust or dust to penetrate into the crankcase.MAIN PARAMETERS AND MAINTENANCE STANDARD OF CYLINDER BLOCK

MAIN PARAMETERS AND MAINTENANCE STANDARD OF PISTONNo

Item	Standard (mm)	Repair Limit Value (mm)	NOTES
1 CYLINDER BLOCK			
Cylinder hole diameter	Φ47~φ47.01	Φ47.018	
Cylindricity	0.005	0.01	
Flatness of cylinder surface	0.04	0.06	
2 PISTON			
Skirt diameter，H=7	Φ46.975~φ46.985		

Φ46.96

Piston pin hole diameter

φ13.002~φ13.008
φ13.017

Piston pin hole and piston pin clearance

0.001~0.012
0.025

3
PISTON RING

Closed clearance
First ring

0.1~0.25
0.4

Second ring

0.1~0.25
0.4

Oil ring

0.2~0.8
1.4

Side clearance
First ring

0.03~0.06
0.08

Second ring

0.02~0.06
0.08

4
CYLINDER AND PISTON CLEARANCE
0.025~0.035
0.07

5
PISTON PIN OUTER DIAMETER
φ12.994~φ13
φ12.985

6
INNER DIAMETER OF SMALL END OF CONNECTING ROD
φ13.012~φ13.022
Φ13.035

7
CLEARANCE BETWEEN SMALL END OF CONNECTING ROD AND PISTON PIN
0.016~0.033
0.05

TROUBLE OCCURENCE AND CAUSE ANALYSISNo
TROUBLE OCCURENCE
Analysis
Remarks

1
Low pressure in cylinder
Abnormal wear of cylinder block or piston ring

2
Black smoke in exhaust
Abnormal wear of cylinder, piston or piston ring

Incorrect installation of piston ring

Scratches on the piston or cylinder wall

3

Engine overheated

Excessive carbon deposits in the piston

4

Knocking or abnormal noise

Pistons or cylinders are worn

Excessive carbon deposits in the piston

REMOVAL OF CYLINDER BLOCK The cylinder block removal steps are as follows:

1. Remove the cylinder head.
2. Remove the fastened chain guide roller pin and aluminum pad Φ8.
3. Take out the chain guide roller, and remove the M6×23 cross-slot bolt connecting the cylinder block and the crankcase body.
4. Remove the cylinder block, cylinder block gasket, and O-ring seal.

Note：

1. If the cylinder block gasket is damaged, scrape the remaining gaskets on the cylinder surface and the crankcase joint surface with a scraper. Then replace with a new gasket to prevent engine oil leakage after reassembly.
2. If the paper pad is immersed in gasoline, it is easy to disassemble. When doing this work, avoid damaging the cylinder contact surface.

The removed parts must be properly placed to avoid damage and loss.CYLINDER BLOCK INSPECTION

The inspection steps of the cylinder are as follows:

1. Check whether the cylinder is worn or damaged.
2. Measure the inner diameter of the cylinder, take three positions, namely the top, middle and bottom of the piston stroke, and measure the two directions at right angles to each other during the measurement.

Repair limit value：φ47.018mm。

REMOVAL OF PISTON AND PISTON RING The steps for removing the piston and piston ring are as follows:

1. Use needle-nose pliers to remove the piston pin retaining ring.
2. Remove the piston pin.
3. Remove the piston.
4. Remove the piston ring.

NOTE: Do not drop the retaining ring into the crankcase.

PISTON AND PISTON RING INSPECTION

The inspection steps for pistons and piston rings are as follows:

1. Measure the outer diameter at a height of 7 mm from the piston skirt.
   Repair limit value: φ46.96mm;
2. Calculate the cylinder clearance.
   Repair limit value:0.1mm;
3. Measure the inner diameter of the piston pin hole. Repair limit value:φ13.017 mm
4. Check whether the piston has abnormal wear or cracks, and whether the piston ring groove has abnormal wear.
   Repair limit value: The first ring: 0.08mm
   The second ring: 0.08 mm
   The Oil ring: 0.08mm
5. Check the carbon deposit on the piston, and clean it in time if there is too much carbon deposit.
6. Put the piston ring into the cylinder, and then measure the closed clearance.
   Repair limit value: The first ring: 0.4mm
   The second ring: 0.4mm
   The Oil ring: 1.4mm
7. Measure the outer diameter of the piston pin.
   Repair limit value: φ12.985 mm
8. Calculate the clearance between the piston pin hole and the piston pin.
   Repair limit value: 0.025 mm

INSTALLING THE PISTON RING

The installation steps of the piston ring are as follows:

1. Thoroughly clean the piston ring groove.
2. Install the piston ring.

Note:

(1) During installation, the piston and piston ring should be prevented from being damaged.

(2) When installing the piston ring, the first and second rings are literally facing the top of the piston, and the openings are staggered by 180°, and the opening direction is toward the piston skirt; the openings of the two oil rings must be staggered by 120°～180° and cannot be aligned with the piston pin holes. The rings of the piston should rotate flexibly.

The gap between the rings in the oil ring should match the gap of the spacer ring; when installing the oil ring, the spacer ring should be installed first, and then the side rails should be installed.

INSTALLING THE PISTON

"IN" towards the intake side of the engine

The installation steps of the piston are as follows:

1. Install the piston, piston pin and new piston retaining ring.
2. Apply proper amount of engine oil to the surface of the piston pin.
3. Then insert the piston into the small end of the connecting rod with the air intake direction upwards, apply a proper amount of oil to the surface of the piston pin, and then penetrate into the piston pin hole and the small end hole of the connecting rod.
4. Install another piston pin retaining ring.

Note:

1. When installing the piston, the air intake (IN) direction is upward;

2. There is no deformation after assembly, the retaining ring completely falls into the groove, and the opening is misaligned by more than 3mm;

3. If the piston pin retaining ring is severely deformed, it must be replaced with a new one;

4. Do not allow the piston pin retaining ring to fall into the crankcase;

5. After the piston pin is assembled in place, there is a slight gap in the axial direction.

INSTALLING THE CYLINDERBLOCK

The installation steps of the cylinder block are as follows:

1. Install cylinder block positioning pins, rectangular rings, and new cylinder block gaskets.
2. Apply a layer of engine oil evenly on the surface of the cylinder block, piston and piston ring.

3. After staggering the openings between the piston rings by 120°, gently assemble the cylinder block in place.
4. Assemble the chain guide roller pin and the aluminum washer in place. Then install the chain guide roller into the cylinder block, the guide roller pin passes through the cylinder block and the chain guide roller, tighten the guide wheel pin pin shaft. Tightening torque：10-14N·m；
5. Tighten the bolts connecting the cylinder block and the crankcase.

Note:

1. When installing the cylinder block, avoid damaging the piston ring.

2. The chain guide roller should be located in the middle of the chain after it is installed in the cylinder block.

CLUTCH、DRIVING GEAR、DRIVEN GEAR、SHIFT MECHANISMNOTICES

◆After the right cover is removed, the clutch, oil pump and gear shift mechanism can be removed, installed and repaired without removing the engine.

◆If the operation of the clutch fails, it can usually be better corrected by adjusting the free stroke of the clutch handle.

Main parameters and maintenance standardsNO
ITEM
STANDARD（mm）
REPAIR LIMIT VALUE（mm）
REMARKS

1
CLUTCH

Free length of spring
20.5
/

Free length of damping spring
21
/

Active film free thickness
2.85 ~ 2.95
2.5

Clearance between outer cover and friction plate
0.1 ~ 0.3
0.5

2
Oil pump

Radial clearance of inner and outer rotor
≤0.15
/

End surface clearance between rotor and cover

0.04 ~ 0.1

/

TROUBLE OCCURENCE AND CAUSE ANALYSISNo

TROUBLE OCCURENCE

Analysis

Remarks

1

Clutch slips when accelerating

Not enough free travel

Bent clutch plate

Clutch disc wear

2

Excessive handle pressure

The clutch cable is sticky, damaged or dirty

The clutch cam release mechanism is damaged

3

Oil pressure is too low

The oil pump is faulty

Broken oil pump drive gear

4

Clutch operation is difficult

The chute of the clutch cover has burrs

6
Difficult shifting
Shift arm bent

Incorrect adjustment of clutch cable position

The spring of the shift drum positioning plate is broken or the elasticity is not enough

REMOVAL OF THE RIGHT COVER

The removal steps of the right decorative cover are as follows:
1. Remove the cross recessed countersunk head screw GB/T820-M6×22 of the right decorative cover;
2. Remove the right decorative cover.

ADJUST THE CLUTCH STROKE

Loosen the adjusting nut first, turn the adjusting bolt clockwise,
To increase the free rotation stroke of the small end of the clutch camshaft, rotate the adjusting bolt counterclockwise, and at the same time, the small end of the clutch camshaft is automatically rotated.
From the rotation stroke ≥ 5mm, (adjustable according to the actual motorcycle), tighten the adjustment nut.

CHECK THE RIGHT CRANKSHAFT COVER

The removal steps of the right crankcase cover are as follows:
Drain the oil first (remove the oil drain plug M12×1.5 on the right, and wait for the oil in the box to run out).
Remove the 2 pieces of GB/T5787-M6×80 that fasten the right cover, 1 piece of GB/T 5787-M6×65, 5 pieces of GB/T 5787-M6×40 bolts, remove the right crankcase cover, right crankcase cover gasket and 2 pieces of positioning pins Φ8×12;
Remove the cross countersunk head screw M6×12 that fastens the shift plate assembly, and remove the clutch adjusting nut and clutch adjusting bolt on the shift plate. (Manual clutch has this step)
Remove the clutch camshaft and return spring, and take out the clutch push rod.
Note:
1. There is an O-ring 17×1.5 on the clutch camshaft, please do not lose it.
2. Do not drop the positioning pin into the crankcase.
3. If the right crankcase cover gasket is damaged, scrape the remaining gaskets on the right crankcase cover and the right crankcase body with a scraper. Then replace with a new gasket to prevent engine oil leakage after reassembly.

REMOVAL OF THE CLUTCH

The removal steps of the clutch are as follows:
Remove the oil pipe and pass the oil pipe spring.
Remove the M5×10 4 cross countersunk screws that fasten the end cover of the clutch.
Remove the clutch cover and gasket.
Pry the locked clutch anti-return washer, remove the big round nut that fastens the clutch, and remove the butterfly-shaped washer and clutch anti-return washer.
Take out the clutch.
Remove the clutch driving gear cover.
Remove the elastic retaining ring under the clutch, and take out the clutch upper plate, friction plate, clutch lower plate, friction plate, clutch drive plate, outer cover, damping spring, and spring in sequence. (This step is not recommended to disassemble, because the reassembly requires special equipment to cooperate and press-fit) If the clutch is damaged, you can replace it with a new one.

REMOVAL OF THE DRIVING GEAR AND DRIVEN GEAR

The removal steps of the driving and driven gears are as follows:
Remove the driving gear (18 teeth), driving gear bushing and driving gear ring (8mm).
Remove the driven gear retaining ring and take out the driven gear (67 teeth).
Note: When removing the driven gear retaining ring, prevent the driven gear retaining ring from falling into the crankcase.

REMOVAL OF THE OIL PUMB

The removal steps of the oil pump are as follows:
Remove one cross recessed countersunk head screw GB/T819-M6×22 and two GB/T 819-M6×16 screws that fasten the oil pump.
Remove the 3 pieces of M5x10 cross recessed countersunk screws that fasten the oil pump, and remove the oil pump cover, oil pump body, oil pump inner and outer rotors, and oil pump shaft.

Note: There is an oil pump pin φ4×7 inside and outside the oil pump. The removed spring washers, washers and oil pump pins should be kept properly to avoid losing them.

REMOVAL OF THE SHIFT MECHANISM

The removal steps of the shifting mechanism are as follows:
Remove the shift arm components.
Remove the five-star board fastening screws GB/T70.1 M6×35, and take off the five-star board.
Remove the positioning plate combination fastening screw, and remove the positioning plate spring and positioning plate combination.

REMOVAL OF THE RIGHT CRANKSHAFT COVER

The inspection steps of the right crankcase cover are as follows:
1、Check whether the right crankcase cover starter shaft oil seal and clutch push rod oil seal are damaged. If the oil seal is found to be broken, it needs to be replaced with a new one.
Note when replacing the oil seal:
Confirm whether the state of the oil seal is correct, starting shaft oil seal 13.7×24×5, clutch push rod oil seal 12×21×4;
When assembling, the marked side should face outward
Check whether the clutch adjusting nut and the clutch adjusting bolt rotate flexibly, and whether the return spring is intact.
Whether the right crankcase cover is broken and whether the oil passage is unobstructed. If damaged, replace the right crankcase cover with a new one

CLUTCH INSPECTION

The inspect procedures of the clutch are as follows:
Measure the free length of the clutch spring
Repair limit value：20.5mm
Damping spring repair limit value：21mm
Measure the thickness of the friction lining of each clutch. If the friction lining of the clutch is scratched or faded, it should be replaced.
Repair limit value：2.5mm
Check whether there is any distortion on the surface of the clutch driven plate.
Repair limit value：0.14 mm
Check the clearance between the clutch cover and the friction plate.
Repair limit value：0.6 mm
Check whether the tooth groove on the outer cover drum is notched or scarred due to the friction of the clutch disc. If it is serious, replace the outer cover.

Note: If the friction plate of the clutch is burnt, the friction plate needs to be replaced, if it is serious, the clutch needs to be replaced.

DRIVING GEAR AND DRIVEN GEAR INSPECTION

Check whether the driving and driven gear is worn or damaged. If the abrasion and damage are serious, you need to replace the new driving and driven gear.

OIL PUMP INSPECTION

The inspection steps of the oil pump are as follows:
Check whether the internal and external rotors of the oil pump are worn and damaged. If the signs of wear and damage are serious, replace the new oil pump rotor assembly.
Check whether the gear of the oil pump is broken, if there is, it needs to be replaced with a new gear of the oil pump.
3、Check whether the right oil pump cover is worn or damaged. If so, replace it with a new right oil pump cover.

SHIFT MECHANISM INSPECTION

The inspection steps of the shift mechanism are as follows:
Check whether the rotation of the positioning plate roller of the variable speed drum is flexible, whether the positioning plate is bent and whether the spring is deformed.
Check whether the boom and forearm of the shift arm are deformed, the spring is deformed and the shaft is bent.

ASSEMBLE THE SHIFT MECHANISM

Shift arm positioning shaft

The assembly steps of the shift mechanism are as follows:
Smoothly fit the shift arm into the left and right crankcase holes, and press down the shift arm assembly so that the forearm is locked into the shifting drum division plate.
Hook the positioning plate spring into the hole of the positioning plate hanging groove and combine it in place.
Set the big end roller of the positioning plate to the positioning pin of the shift drum and then tighten it in place.
There is a slight gap when the shift arm plate is moved left and right by hand, and the gap is uniform and there is no unilateral phenomenon.
Note:
After the gear shift arm is assembled, first check whether the gear shift is correct, and then continue to install the machine .
Confirm that the spring is assembled in place and that the positioning plate is flexible;
The spindle rotates flexibly without jamming.
Move the spindle up and down to check the axial clearance of the spindle, and it should be within the range of 0.3mm-0.5mm.

ASSEMBLE THE OIL PUMB

The assembly steps of the oil pump are as follows:
First install the inner and outer rotors of the oil pump into the oil pump body, then install the oil pump shaft, and finally install the oil pump cover, and install 3 M5×10 bolts to tighten.
Assemble the oil pump gasket and the oil pump, align the screw holes of the oil pump with the threaded holes of the box body, and install them into the corresponding positions of the box body, and turn the oil pump wheel to make the oil pump shaft slip into the oil pump slot, and set the cross pan head Install two M6×16 screws and one M6×22 screw into the corresponding threaded holes and tighten them. Tightening torque: 8-12N·m

ASSEMBLE THE DRIVING DEAR AND DRIVN GEAR

The assembly steps of the driving and driven gear are as follows:
Install the driving gear ring, driving gear bushing and driving gear (18 teeth) on the right crank.
Install the driven gear (67 teeth) on the main shaft, and then fasten the driven gear retaining ring.

ASSEMBLE THE CLUTCH

The assembly steps of the clutch are as follows:
Install the 4 springs of the clutch into the clutch cover, install the clutch drive disc, and then install the friction plate, the lower clutch plate, the friction plate, and the upper clutch plate in sequence. Use special equipment to press down the clutch drive disc and install it into the clutch elastic retaining ring, and then install 4 damping springs.
Install the clutch driving gear casing.
Note: The two friction lining teeth need to be aligned after the clutch is assembled.

INSTALLING THE CLUTH

The installation steps of the clutch are as follows:
Install the clutch on the driving tooth on the right crank
Align the anti-return part of the clutch non-return washer with the clutch spline groove and install it. The convex surface of the butterfly-shaped washer is installed into the non-return washer, and the big round nut is installed in the non-return washer and tightened.
Lock the lock piece of the non-return washer into the spline groove of the big round nut.
Assemble the clutch cover gasket and the clutch cover, align the threaded holes with the threaded holes on the clutch and install them into the clutch. Take 4 pieces of cross countersunk head screws M5×10 to lock the cover. When the screws are tightened, pre-tighten first and then tighten them diagonally. Secure and fasten it in place. Put the end cover bearing identification face up and vertically into the clutch end cover hole. After the assembly is in

place, the inner ring of the rotating bearing should rotate flexibly without jamming.
Install the oil-passing pipe and the oil-passing pipe spring on the clutch end cover
Note:
1. Tightening torque of big round nut: 40 ~ 50N·m;
2. Tightening torque of end cover screws: 5 ~ 8N·m.

INSTALLING THE RIGHT CRANKSHAFT COVER

The assembly steps of the right crankcase cover are as follows:
Fit the clutch push rod smoothly into the corresponding hole of the right case cover.
After the clutch adjusting nut is screwed into the bolt which is slotted upward more than 3 teeth into the corresponding threaded hole of the cam plate and pre-tightened.
The cam plate is snapped into the flanging of the limit plate and assembled in place.
The adjusting bolt is placed on the upper part of the push rod, the screw hole of the limit plate is aligned with the screw hole of the right cover, and the cross countersunk head screw M6×12 is tightened.
Combine the clutch camshaft with the return spring and pass through the mounting hole of the right cover. The plane of the semicircular rod is attached to the cam plate. The end of the spring is completely hooked on the clutch camshaft and cannot fall off. Pass the positioning pin through the right cover pin. The hole snaps into the groove of the clutch camshaft.

Note: The clutch camshaft is flexible to reset, and the push rod does not fall off.

ASSEMBLE THE RIGHT CRANKSHAFT COVER

The assembly steps of the right crankcase cover are as follows:
Install 2 positioning pins.
Remove the old right crankcase gasket and install the new gasket
Assemble the right crankcase cover in place and fasten it with 2 GB/T 5787-M6×80, 1 GB/T 5787*M6×65, and 5 GB/T 5787-M6×40 bolts. Tightening torque: 10 ~ 14N·m.

ASSEMBLE THE RIGHT DECORATIVE COVER

The installation steps of the right decorative cover are as follows:
Install the right decorative cover.
Fasten 2 cross recessed countersunk head screws GB/T 820-M6×22.

Magneto, timing chain

NOTICE:
◆The removal and installation of the magneto, left cover and double gear described in this section can be completed by removing the left crankcase cover without removing the engine.
◆Regarding the inspection of the magneto, please refer to the method of the battery charging system chapter.

REMOVAL OF THE REAR LEFT COVER

The removal steps of the left rear cover are as follows:
Remove the fastening bolts of the left rear cover.
Remove the left rear cover.

REMOVAL OF THE FRONT LEFT COVER

The removal steps of the left front cover are as follows:
Remove the 3 GB/T 5787/M6×32 and 1 GB/T 5787/M6×50 fastening bolts of the left front cover.
Remove the left front cover.
Remove the left front cover gasket and 2 pieces of 8×12 positioning pins.

REMOVAL OF THE MAGNETO STATOR

The removal steps of the magneto stator are as follows:
Turn the left front cover over and place it on a flat surface.
Remove the 2 GB/T 5787-M6×20 bolts that fasten the stator of the magneto, the 2 GB/T 5783-M5×12 bolts that fasten the trigger, and the 1 cross-recessed pan-head screw GB that fastens the small crimping plate /T 818-M5×61 , 1 bolt GB/T 5787-M6×14 for fastening the wire harness pressing plate.
Remove the magneto stator.

Note: If the magneto stator is accidentally impacted during the disassemble and assemble process, such as the magneto stator is knocked by foreign objects, you should replace the magneto stator with a new one.

REMOVAL OF THE MAGNETO STATOR

The removal steps of the magneto rotor are as follows:
Remove the lock nut of the magneto rotor.
Remove the magneto rotor with special tools.

Note:
1. When disassembling the magneto rotor, only special tools can be used to remove it, and it is not allowed to knock the magneto rotor;
2. If the magneto rotor is accidentally impacted during the disassemble and assemble process, such as the magneto rotor falling to the ground or being knocked by foreign objects, the magneto rotor should be replaced with a new one.

REMOVAL OF THE STARTER MOTOR AND STARTER SPROCKET

The removal steps of the starter motor and starter sprocket are as follows:
Remove two GB/T 5787/M6×25 bolts that fasten the starter motor;
Remove the starter motor.
Remove one hexagon head bolt GB/T 5783-M6×10 that fastens the starting sprocket pressure plate.
Remove the chain tensioning plate, chain guide plate, starting sprocket, and starting chain.

REMOVAL OF THE TRANSITION PLATE

The removal steps of the transition board are as follows:
Remove 1 GB/T 5787-M6×105 bolt, 1 GB/T 5787-M6×35 bolt, GB/T 5787-M6×25 bolt and 1 aluminum washer that fasten the transition plate.
Remove the transition plate.

REMOVAL OF THE TIMING CHAIN

The method and steps for disassembling the timing chain are as follows:
Method one:
Remove the left cover of the cylinder head.
Remove the 3 bolts that fasten the timing driven sprocket.
Remove the chain guide roller pin that fastens the chain guide roller on the cylinder block.
Remove the chain tension roller on the tension arm.
Remove the timing chain.
Method Two:
Remove the cylinder head and cylinder block.
Remove the timing chain.

REMOVAL OF THE TENSION ARMS , THE TENSION RODS THE TENSION ROLLER

The removal steps of the tension arm, tension rod and tension roller are as follows:
Remove the chain tension arm mandrel that fastens the tension arm. Take out the tension arm.
Remove the tightened sealing screw plug M14×1.5, take out the return spring of the tension rod, and the tension rod.
Remove the tension roller core shaft of the tightening tension roller II, and take out the tension roller.

FRONT LEFT COVER AND REAR LEFT COVER INSPECTION

The inspection steps of the left front cover and left rear cover are as follows:
Check whether the left front cover and left rear cover are damaged, whether the left front cover gasket is damaged, replace the new left front cover, left front cover gasket and left rear cover.
Check that the large and small sight hole covers are not damaged in appearance, and the O-rings are not damaged or deformed. If they are damaged, replace the large and small sight hole covers and O-rings with new ones.

TRANSITION PLATE , STARTER MOTOR INSPECTION AND STARTER CHAIN INSPECTION

The inspection steps of the transition board, starter motor, and starter sprocket are as follows:
Check whether the starting sprocket, transition plate, transition plate oil seal, and transition plate o-ring are damaged. If damaged, replace with new parts and test whether the starter motor gear is flexible.
Check whether the starting sprocket meshing with the starting chain is intact and without damage.
Note: The transition plate oil seal and transition plate o-ring must be intact. If it is slightly damaged, please replace it with the new ones to prevent oil leakage.

MAGNETO STATOR AND ROTOR INSPECTION

The inspection steps of magneto stator and rotor are as follows:
Check whether there are cracks or breakages in the magnetic tile of the magneto rotor. If so, replace the magneto rotor with a new one.
Check that there is no foreign matter on the inner wall of the rotor, whether the rollers of the rotor unidirectional device have fallen off or severely worn. If so, replace with a new one.
Check whether the magneto stator is worn or damaged. If so, replace it with a new magneto stator.

INSTALLATION OF THE TENSION ARMS AND THE TESION RODS INSTALLATION OF THE TENSION ROLLER

The small end of the tension rod spring is inserted inward

The installation steps of the tension arm, tension rod and tension roller are as follows:
Align the installation hole of the tension roller with the installation hole of the box body and put it into the box body, then take the tension roller mandrel through the tension roller and fasten it in place.
Put the tension arm into the box body and the installation hole is aligned with the box body installation hole, insert the tension arm mandrel through the tension arm bolt installation hole into the threaded hole of the box body, tighten it in place, and then turn to tension arm, confirm that the tension arm rotates flexibly.
Put the rubber head of the tension rod into the box body, and then put the small end of the spring of the tension rod into the tension hole of the box body, and then combine the chamfered surface of the gasket with the sealing screw plug and put it into the box body for tension in the hole and tighten it.

Note:
1. Tightening torque of tension roller mandrel: 10-14N·m;
2. Tightening torque of tension rod mandrel: 12 ~ 16N·m;
3. Tightening torque of sealing screw plug: 25-30N·m;

4. The tension arm and rod move flexibly without jamming.

INSTALLATION OF THE TRANSITION PLATE

The installation steps of the transition board are as follows.
Install 2 pieces of seal rings 6.8×1.9 on the left crankcase body.
Install the O-ring seal into the positioning pin, and then into the left body.
Install the transition plate on the left box body and tighten the bolts.

INSTALLATION OF THE STARTER MOTOR AND STARTER SPROCKET

The installation steps of the starter motor and starter sprocket are as follows:
After the starter sprocket and the starter chain are combined, the starter sprocket is installed upwards into the crankshaft and press-fitted in place, and the chain tension plate and chain guide plate are installed.
The bolt passes through the starter sprocket pressure plate, the protruding surface of the pressure plate is upward, the pressure plate is pressed to the right against the limit post of the oil seal pan, and then the bolt is tightened. Tightening torque: 10-14N·m.
After the starter motor teeth mesh with the starter chain, they are inserted into the starter motor mounting hole of the transition plate, and then tighten the bolts to install.

Note: The gap between the starting sprocket pressing plate and the end surface of the starting sprocket should be in the range of 1mm-2mm.

INSTALLATION OF THE MAGNETO STATOR

The installation steps of the magneto stator are as follows:
Install the magneto stator on the left front cover. After the stator is installed, align the screw holes with the threaded holes of the left front cover, insert the harness positioning rubber sleeve into the slot of the cover, and install the bolts to tighten. Tightening torque: 10-14N·m.
Align the mounting hole of the trigger positioning plate with the mounting hole of the left front cover and install the trigger into the left front cover, and then install the bolts to tighten. Tightening torque: 6 ~ 8N·m
Combine the bent surface of the small wire pressure plate with the wire pressure plate screw and install it into the left front cover, and then fasten the screw. Tightening torque: 6 ~ 8N·m
Align the mounting hole of the wire harness pressure plate with the left front cover mounting hole and fix the wire harness in place. Insert the bolts into the screw holes of the wire harness pressure plate and tighten them.
Check whether the gap between the trigger and the rotor convex hull is qualified. Tightening torque: 10-14N·m.
Combine the O-ring with the large and small sight hole covers, install them on the left front cover and tighten them.

Note: The trigger positioning plate cannot be pressed against the wiring harness.

INSTALLATION OF THE MAGNETO ROTOR

The rotor keyway is aligned with the crankshaft semicircle keys

The installation steps of the magneto rotor are as follows:
Install the magneto rotor on the left crank.
Install the nut GB/T6177 M10×1.25 on the left crank and tighten it.

Note:
1. Fastening torque of magneto rotor locking nut: 40 ~ 50N·m;
2. Rotor keyway is aligned with crankshaft semicircular keys.

INSTALLATION OF THE LEFT SIDE COVER

The installation steps of the left cover are as follows:
Remove the old gasket and install the new gasket.
Assemble the left crankcase cover in place and fasten it with 3 pieces of GB/T 5787-M6×32 bolts and 1 piece of GB/T 5787-M6×50 bolt. Tightening torque: 10 ~ 14 N·m.

CRANKCASE AND CRANKSHAFT
MAIN AND COUNTER SHAFT
VARIABLE SPEED DRUM

NOTICE
This section introduces the installation and inspection of the transmission and crankshaft. When performing the above work, the crankcase should be disassembled first, and the disassembly of other parts of the engine should be carried out before the crankcase is disassembled. Work before crankcase disassembly:
Removal of cylinder head, removal of cylinder, piston, clutch, oil pump, gear shift mechanism, balance gear, magneto and transition plate.

MAIN PARAMETERS AND MAINTENANCE STANDARDS

NO.
ITEM
STANDARD（mm）
Repair Limit Value（mm）
NOTES

1
Shift fork
Inner diameter of shift fork

Φ34~φ34.039
Φ34.041

Thickness of fork claw
4.85~4.95
4.5

2
Crankshaft connecting rod
Inner diameter of connecting rod small head
φ14.016~φ14.027
φ16.025

Axial backlash of connecting rod big end
0.1~0.3
0.4

Big end radial backlash of connecting rod
0.004~0.012
0.015

TROUBLE OCCURENCE AND CAUSE ANALYSIS

NO
TROUBLE OCCURENCE
Analysis
Note

1
Difficult shifting
Bending deformation of shift fork

Variable speed drum washers and bolts are loose and fall off

2
Skip gear
The gear pawl is worn out

Bent or worn gear shift fork

3
Crankshaft noise
The big end needle bearing of the connecting rod is worn out

Bending connecting rod

Crankshaft bearings are worn

4
Gear noise of main and counter shaft
The main and counter shaft gears are worn

The spline shaft is worn

DISASSEMBLE OF THE CRANKCASE

The removal steps of the crankcase are as follows:

Place the engine right crankcase up and remove the starting shaft retainer ring, return spring and spring seat.
Place the left crankcase of the engine upward, take out one GB/T 5787/M6×12 bolt and baffle at the hole of the transmission drum, the rubber plug, one GB/T 5787/M6×16 bolt and the transmission drum washer.
Remove 4 GB/T5787-M6×65 bolts, 2 GB/T5787-M6×6 bolts and 1 GB/T5787 /M6×50 bolts, turn the crankcase over to separate the left crankcase from the right crankcase, and remove 2 locating pins and crankcase gaskets.

REMOVAL OF THE CRANK SHAFT

REMOVAL OF THE MAIN AND COUNTER SHAFT

The removal steps of the crankshaft and the main and auxiliary shafts are as follows:
Take out the crankshaft assembly from the box.
Take out the shift fork shaft, shift fork, shift drum and main and counter shaft components from the box.

Note: When taking the main and counter shaft components, make sure that no parts are missing.

DISASSEMBLE OF THE VARIABLE SPEED DRUM

The decomposition steps of the gear shift drum are as follows:
Remove the spring clip.
Pull out the fork pin.
Remove the fork

CRANKSHAFT INSPECTION

The inspection steps of the crankshaft are as follows:
Place the crankshaft on the V-shaped iron, and measure the backlash of the big end of the connecting rod with a thickness gauge.
Repair limit value：0.4mm；

Use a dial indicator to measure the runout of the crankshaft shaft diameter and the actual runout of the crankshaft.
Repair limit value：0.1 mm

Measure the radial clearance between two points in the X and Y directions of the big end of the connecting rod.
Repair limit value: 0.015mm

LEFT AND RIGHT CRANKCASE BEARING INSPECTION

The inspection steps of the left and right crankcase bearings are as follows:
Check whether the rotation of all the bearings of the left and right boxes is flexible. If the rotation is not flexible or there is a phenomenon of card issuance, the bearings of the same model should be replaced.
Take down the crankshaft bearings of the left and right boxes to check their diameter and end jump. If there is noise or large diameter and end jump, the crankshaft bearings should be replaced with new ones.
Check whether the oil channels of the left and right tanks are unblocked.

SHIFT FORK AND SHIFT FORK SHAFT INSPECTION

The inspection steps of shift fork, shift fork shaft, and shift drum are as follows:
1、Check whether the gear shift forks are worn, bent or any other malfunctions, and measure the inner diameter of the gear shift forks.
Shift fork maintenance limit value：φ34.031 mm
2、Measure the thickness of the fork claw.
Repair limit value：4.5 mm
Check whether the surface and groove of the variable speed drum are worn or damaged.

MAIN AND COUNTER SHAFT COMBINATION INSPECTION

The inspections of main and counter shafts combination are as follows:
Check whether the gears of the main and counter shafts components have excessive or abnormal wear.
Check whether there is deformation and falling off of each ring between the gears.

STARTER SHAFT INSPECTION

The inspection steps of the starting shaft are as follows:
Check whether the starting ratchet, starting gear and starting shaft are excessive or abnormally worn
Check whether the clamp ring is deformed or fallen off.
Check whether the gasket is deformed or missing.

VARIABLE SPEED DRUM INSPECTION

The assembly steps of the variable speed drum are as follows:
Put the shift fork into the shift drum.
Install the shift fork pin.
Clip on a spring clamp.

INSTALLATION OF THE VARIABLE SPEED DRUM
INSTALLATION OF MAIN AND COUNTER SHAFT
INSTALLATION OF THE CRANK SHAFT AND THE STARTER SHAFT

The installation steps of the transmission drum, main and counter shafts, crankshaft and starting shaft are as follows:
Install the crankshaft and the starting shaft into the corresponding holes on the left body, and then install the gasket .
Insert the shifting drum fork into the main and counter shaft shifting fork groove after the main shaft and the

counter shaft are combined, and then install the main and counter shaft assembly and the shifting drum assembly into the corresponding hole on the left body.

Note:

1. Do not install the shifting drum fork into the position of the main and counter shafts by mistake.

2. Do not miss the installation of starting shaft and counter shaft gaskets.

INSTALLATION OF THE CRANKCASE

The installation steps of the crankcase are as follows:

Install the positioning pins into the corresponding holes of the left case, and then install the crankcase gasket on the left crankcase. After fitting the right case to the left case, turn the case over, and connect the bolts GB5783 M6×16 with the shim 6×17×2 is assembled and then inserted into the threaded hole of the transmission drum, and the bolt is tightened with a T-shaped sleeve. When tightening, rotate the counter shaft to make sure it rotates flexibly.

Bolt tightening torque：12-16N·m

Note: The main and counter shafts can rotate flexibly without jamming.

Pass 4 pieces of GB/T5787-M6×65 bolts, 2 pieces of GB/T5787-M6×6 bolts and 1 piece of GB/T 5787/M6×50 bolt through the corresponding bolt holes on the left body and tighten them.

Tightening torque: 10 ~ 14 N·m.

Install rubber stopper, baffle and 1 GB/T 5787/M6×12 bolt at the variable speed drum hole to tighten and turn over the engine.

Note: The bolts are not loose and the countershaft rotates flexibly without jamming.

Turn the main shaft clockwise. When the main shaft does not move, combine the return spring of the start shaft with the return spring seat. The spring hook hooks the limit block of the spring seat and installs the start shaft. Use a flat-head screwdriver to pull the return spring and install the spring hook on the right. Clip the crankcase and snap the spring seat into the positioning groove of the case.

Note:

1. After installing in place, check that the spindle rotates flexibly and without jamming.

2. The marked point on the return spring seat should be aligned with the marked point on the starting shaft.

ENGINE TROUBLESHOOTING

If the engine wants to be operated normally, it should meet the following four requirements:

Good fuel: There is a certain ratio of combustible mixture in the cylinder.

Good spark: The spark plug can emit a strong spark at the specified time.

Enough compression: There is enough compression pressure in the cylinder.

Valve timing: correct valve opening time.

After the engine malfunctions, you can focus on the above four aspects to start, check, analyze the cause of the malfunction, and eliminate it

FAULTS

Inspection Method

Results

Possible Cause

The engine cannot be started or difficult to start
Check whether the fuel flows into the carburetor
Fuel does not flow into the carburetor
No gasoline in the fuel tank

Blocked tubing from the fuel tank to the carburetor

Fuel flows into the carburetor
The float in the carburetor is stuck

The vent on the fuel tank cap is blocked

Remove the spark plug to test the spark
Weak sparks or no sparks at all
Spark plug failure

The spark plug is not clean

Electronic ignition is malfunctioning

The magneto is faulty

Good sparks
Bad wiring, broken

High-voltage cable is open or short-circuited

Ignition coil is open or short-circuited

The ignition switch is faulty

Test cylinder pressure
Low Pressure
The starting mechanism is slipping, and the engine cannot be turned

Normal pressure
Valve clearance is too small

Valve opening blocked

Cylinder or piston ring wear

Cylinder head gasket is broken

Improper valve timing

Re-start the engine
The engine ignites but does not start
The choke door is opened too much

Improper adjustment of the carburetor fine-tuning screw

Engine does not ignite
Air intake pipe leaks

Incorrect ignition timing

Remove the spark plug
Wet spark plug
The carburetor oil level is too high

The carburetor choke is closed too tightly

Spark plug dry
Excessive throttle

The engine performs poorly at low or idling speeds
Check valve timing and valve clearance
Incorrect
Improper valve clearance adjustment or poor quality of rocker arm adjustment screws

Correct
Improper adjustment of gas timing

Check the adjustment of the fine adjustment screw of the carburetor plunger
Incorrect
Improper adjustment

Correct
/

Check whether the carburetor gasket is leaking
Air leak
Deterioration of carburetor seal ring

Airtight
Loose carburetor

Damaged carburetor gasket

Remove the spark plug and perform a spark test
Weak sparks or intermittent sparks
The spark plug is faulty or carbon deposits

The electronic igniter is malfunctioning

The magneto is faulty

Good spark plug
The spark plug cap is faulty

The power circuit is faulty

The engine performs poorly at high speeds
Check the ignition timing and valve clearance
Incorrect
The ignition controller is faulty

Improper valve clearance adjustment

The magneto is faulty

Valve clearance and ignition timing are correct

/

Disassemble the connection of the fuel pipe of the carburetor and check if the fuel pipe is blocked
Insufficient fuel flow
The fuel tank has run out

Blocked fuel pipe

The fuel pipe has sufficient flow
Blocked fuel tank cap vent

Check if the filter and carburetor nozzle are blocked
Blockage
Blocked carburetor measuring hole

Unblocked
Float stuck

Filter blocked

Check gas timing
Incorrect
Adjust gas timing

Correct
/

Check valve spring pressure
Insufficient Pressure
Worn or broken valve spring

The engine has abnormal noise
Check whether there is abnormal noise in the valve
Abnormal noise in the valve
Valve clearance is too large

Valve wear

Check whether there is abnormal noise in the cylinder
Cylinder has abnormal noise
Piston and cylinder wear

The small end holes of the piston pin and connecting rod are worn

Crank pin and connecting rod large end wear

Check whether the timing chain produces abnormal noise
Abnormal noise in the chain
Camshaft wear

Timing driven sprocket wear

Timing chain stretched

The timing chain automatic tensioner fails, or the guide wheel is worn

Check whether the driving gear and the driven gear produce abnormal noise
Abnormal noise in the driving and driven gears
Gear machining accuracy is not enough

The gear teeth are worn

The matching clearance between the driving and driven gears is too small or too large

MOTORCYCLE CLEANING

The cleaning of the vehicle is also an important part of the daily use and maintenance of the motorcycle. Frequent cleaning of your motorcycle can keep your car in a good state of motion and prolong its service life. You can clean your motorcycle through the following steps:
Cover the exhaust system to prevent water from entering;
Seal the electric door lock and all connectors with tape;
Use a low-pressure water spray device to remove the mud and dirt on the surface;
Use a special motorcycle cleaner to clean particularly dirty places;
Flush with low-pressure water flow;
Let the motorcycle air dry naturally;

Drive the motorcycle for a short period of time until the engine reaches the working temperature;
Lubricate the chain and all other parts that need to be lubricated.

WARINING: Never use high-pressure water to clean the vehicle. Avoid direct contact with coils, pipe plugs, carburetor or any electrical components.

STORAGE

PREPARING FOR LONG STORAGE

If you want to garage the motorcycle for a longer period, take the following steps.
Block the exhaust port of the muffler tube;
Remove the battery
Clean the motorcycle
Wait for the motorcycle to dry naturally;
Empty the fuel tank (if not used for a long time, the gasoline will deteriorate);
Lubricate the chain;
Apply oil to all unpainted metal surfaces to avoid rust;
When storing the motorcycle, keep the motorcycle wheels suspended. If this condition cannot be achieved, you can use cardboard to pad under the motorcycle tires;
Cover the motorcycle to prevent dust and dirt.
Move the motorcycle into a dry room and place it.

NOTE: When applying anti-rust oil, please do not splash the oil on the brake and rubber parts, otherwise the rubber may be aged.

PREPARING FOR USE AFTER LONG STORAGE

After the motorcycle has been stored for a long time, please follow the steps below when it is put into use:
Take out the blockage in the exhaust port of the muffler tube;
Tighten the spark plug;
Fill the fuel tank with fuel;
Install the battery;
Check the items that need to be checked before daily driving;
Routine lubrication for motorcycles.

MAINTENANCE POINTS

In the following content, we will enumerate the problems that occurred during your use, find out the possible causes and give general solutions.
Problems
Reason
Solution

The crank of the engine cannot be turned
Crank stuck
Contact KAYO Service Center

Cylinder/piston/ connecting rod stuck
Contact KAYO Service Center

Gearbox stuck
Contact KAYO Service Center

The engine does not start when the electric starter is pressed
The starting relay fuse is blown
Remove the seat cushion and check the fuse, if the fuse is blown, replace the fuse

Low battery Volume
Remove the seat cushion and check the battery

Engine cannot be started
The motorcycle has been stored for a long time and the fuel has deteriorated
Drain the old fuel and add new fuel

Dirt or wet spark plug
Clean or dry the spark plug, if necessary, replace the spark plug

Engine water intake
First, drain the mixed fuel out the engine and remove the crankcase of the engine, clean it with a strong cleaning agent, then remove the spark plug, blow it dry with a fan (the machine that inflates the tires), and then wipe the air filter element. Finally, remove the exhaust pipe of the engine and blow it dry with a fan. After everything is done, the car owner should add new mixed fuel to the engine before the car can drive. Because the moisture in the crankcase is difficult to completely evaporate, the new fuel still contains a small amount of moisture. Therefore, after the engine has flooded and the car has run for 100 kilometers, the fuel should be changed again, and then again within 500 kilometers. After three times, the water in the carburetor is almost gone.
If water enters the cylinder, depress the start lever several times after the flame is turned off. Step on it for a few times, the water in the cylinder will be drained from the exhaust pipe, and then use a fan to blow on the mouth of the oil dipstick for a few minutes.

Warning: In safety sake, the spark plug should be wrapped with dry cloth to avoid spark jumping.

Incorrect mixing of air and fuel
Clean the fuel tank vent pipe, adjust the air filter duct

Open exhaust valve
Check and correct the exhaust valve

The engine can be started, but it will stop immediately
Incorrect air supply
Close the choke valve, clean the fuel tank vent pipe, and adjust the air filter duct

Lack of fuel
Add fuel

Engine overheated
Lack of antifreeze
Replenish antifreeze and check for leaks in the cooling system

Clogged water tank fins
Use low-pressure water to clean the fins of the water tank and replace them if necessary

Unbalanced engine operation
The spark plug is dirty, damaged or adjusted incorrectly
Remove the spark plug for cleaning, adjustment, and replacement if necessary

There is a problem with the spark plug cap
Check the condition of the spark plug cap, check whether the spark plug cap is in good contact with the cable itself, check the cable, and replace the damaged parts

Ignition rotor is damaged
Replace the rotor

Water mixed in the fuel
Empty the fuel, then inject new fuel

Insufficient engine power or poor acceleration
Problems with fuel supply
Clean fuel system and check

Dirt in the air filter
Clean the air filter and replace if necessary

Damaged or leaking exhaust system
Check whether the exhaust system is damaged, and replace related accessories if necessary

Dirt in the carburetor nozzle
Remove the carburetor and clean the nozzle

Damaged or worn crankshaft bearings
Contact KAYO Service Center

Engine sound is abnormal
Problem with ignition
Contact KAYO Service Center

overheat
See "Engine Overheating" section

Exhaust pipe backfire phenomenon
Carbon deposits in the combustion chamber
Contact KAYO Service Center

Poor gasoline
Change fuel

The spark plug is in poor condition or the specification is wrong
Replace with a new spark plug with the correct specification

Exhaust system gasket aging
Check whether the exhaust system is damaged, check whether the gasket is in good condition, if the gasket is aging, replace the gasket

White smoke from exhaust pipe
The fuel contains water
Change fuel

Black smoke from exhaust pipe
Air filter is clogged

Remove and clean the air filter

The combustible mixture is too rich
Adjust the carburetor valve

Gearbox gear does not mesh
Clutch abnormality
Contact KAYO Service Center

The fork is bent or stuck
Check and adjust the fork

Damaged gear lever
Replace the gear lever

Damaged gear shift drum
Replace the shift drum

Damaged ratchet device
Replace the ratchet device

Loose or broken spring at the selector position
Replace the selector position spring

Gear bounce
Fork wear
Replace the fork

Tooth wear
Check gears and replace if necessary

Gear damage
Change gear

Damaged displacement drum groove
Replace the shift drum

Worn fork shaft
Check the fork shaft and replace if necessary

The selector position spring is damaged
Replace the selector position spring

Clutch slip
Clutch disc wear
Replace the clutch disc

The clutch pressure plate spring is too soft or damaged
Replace the clutch spring

Clutch handle free stroke is too small
Adjust the free stroke of the clutch

The motorcycle is difficult to steer
The cable makes it difficult to turn the handlebars
Move the cable to reduce its interference

The steering shaft nut is too tight
Adjust the steering shaft nut

Worn or damaged steering bearings
Check the steering bearing and replace if necessary

Bent steering shaft
Contact KAYO Service Center

Damping is too hard
Fork oil level is too high
Lower the front fork oil level to a suitable position

Fork oil viscosity is too high
Replace the fork oil with the right viscosity

Fork bent
Contact KAYO Service Center

Tire pressure is too high
Check tire pressure and adjust to proper pressure

Damping adjustment error
Re-adjust damping

Damping is too soft
Insufficient front fork oil level
Add the right amount of fork oil
Note: It is required to add the same kind of oil

Fork oil viscosity is too low
Change to fork oil with suitable viscosity

Tire pressure is too low
Check whether the tires are leaking, if the tires are complete, pump them to the proper pressure

Damping adjustment error
Re-adjust damping

There is abnormal noise when the motorcycle is driving
Improper chain adjustment
Re-adjust the chain tension

Chain wear
Replace the chain and front and rear sprockets

Wear of rear sprocket teeth
Replace the sprocket

Insufficient chain lubrication
Follow the manual to lubricate the chain

Rear wheel off center
Check the spokes and adjust the spoke tension centrally if necessary

The fork spring is soft or broken

Replace the front fork spring

Disc brake disc wear
Check the disc brake disc, if its thickness is less than the limit thickness, replace it

Damaged cylinder head
Contact KAYO Service Center

Brackets, nuts, and bolts are not tightly fastened
Check and adjust the torque of the corresponding fasteners

The gasket is installed incorrectly, is worn, or is too smooth
Readjust the gasket and replace if necessary

Motorcycle front wheel shimmy
Tire wear
Change tires

Rim offset
Contact KAYO Service Center

Whether the front wheel bearing is worn
Check the bearing and replace if necessary

The vehicle is not aligned
Check the spokes and adjust the spoke tension if necessary

Steering shaft tolerance is too large
Check the steering shaft pressure bearing clearance

The steering shaft nut is loose, and the handlebar is not fixed
Check and re-tighten

The motorcycle skews to one side
Bent chassis
Contact KAYO Service Center

Improper steering adjustment
Check and readjust

Bent steering shaft
Contact KAYO Service Center

There is a problem with the fork
Contact KAYO Service Center

Vehicle is not aligned
Re-adjust the spoke tension and contact KAYO Service Center if necessary

Brake failure
Disc brake disc wear
Replace the disc brake

Insufficient brake fluid
Replenish brake fluid

Deteriorating brake fluid
Replace brake fluid

Piston damaged
Contact KAYO Service Center

Brake pad wear
Check the brake pads, if the thickness is less than the minimum friction thickness, replace the brake pads

TIGHTENING TORQUE TABLE FOR THE WHOLE VEHICLE
NOTE: Before installing the thread, apply anti-rust grease on the thread and the joint surface

No
ITEM
DESCRIPTION
QUANTITY
TORQUE（NM）

1
Front brake caliper mounting bolt
M8×40 full thread
2
20 ~ 32

2
Steering column cap
Chrome silver
1
/

3
Upper pressure block mounting screws
M8×25
4
20 ~ 32

4
Front disc brake rotor mounting bolt
M8×16
4
25 ~ 35

5
Front axle mounting nut
M14×1.5
1
124 ~ 165

6
Shift lever mounting bolt
M6×20
1
7 ~ 11

7
Engine mounting bolt
M8×110
2
20 ~ 32

8
Engine mounting nut
M8
2
20 ~ 32

9
Exhaust pipe mounting nut
M8
2

20 ~ 32

10
Guide chain sleeve mounting screws
M6×12
3
7 ~ 11

11
Flat fork shaft mounting nut
M10×1.25
1
40 ~ 70

12
Chain bolt
M8×40 S10
2
20 ~ 25

13
Adjusting chain nut
M8
2
20 ~ 25

14
Rear shock mounting bolt
M10×45×1.25
2
40 ~ 70

15
Rear shock mounting nut
M10×1.25
2
40 ~ 70

16
Rear brake disc mounting bolt
M8×16
4
25 ~ 35

17
Rear sprocket mounting screws
M8×25 10.9 level
6
27 ~ 35

18
Rear axle nut

M14×1.5
1
124 ~ 165

19
Rear brake disc guard mounting bolt
M6×12
2
7 ~ 11

20
Rear brake pump mounting bolt
M6×20 full thread
2
7 ~ 11

21
High voltage package mounting bolt
M6×20
1
7 ~ 11

22
Voltage stabilizer mounting bolt
M6×16 full thread
1
7 ~ 11

23
Front fender bolt
M6×16
3
7 ~ 11

24
Screws connecting the left and right guard plates to the fuel tank
M6×10 full thread
4
7 ~ 11

25
Left and right guard plate limit bolts
M6×16
2
7 ~ 11

26
Fuel tank mounting bolt
M8×25
2
25 ~ 30

27	Spark plug	/	1	25 ~ 30