FOREWARD

Dear user

Sincerely thank you for choosing the BD700-2 two wheeled riding motorcycle designed and produced by our company! This car is independently developed and produced by our company, combining advanced technology and avant-garde design concepts at home and abroad. We hope that it can bring you a safe driving process and comfortable driving experience!

Before driving your motorcycle, please fully read the regulations and requirements outlined in this user manual!

This user manual provides an overview of the repair and maintenance of this motorcycle. Please operate according to the various procedures in this user manual!

Our company has specialized technical maintenance personnel and maintenance departments, which can provide you with good technical maintenance service support!

The company has always adhered to the service tenet of "making consumers more satisfied" and will continuously optimize and improve its products. Any changes in appearance and structure that may arise from this may result in inconsistencies with this user manual. We apologize for any inconvenience caused. The pictures in this user manual are for reference only, and the details are subject to the actual product.

Thanks again for your attention and trust!!!

BENDA MOTORCYCLE

Important precautions

Please operate and drive according to this user manual, strictly abide by national and local traffic laws and regulations, and always pay attention to safety!

This user manual is one of the essential accessories of this vehicle. When the vehicle is resold to others, please attach it with the vehicle.

The preparation of this user manual complies with the provisions of GB/T9969-2008 and GB/T19678-2005 standards.

Danger/Warning/Caution

Please read the content of this manual and remember the key points inside.

Warning:
The items indicated by this word indicate precautions for operation to avoid damage to the motorcycle.

Attention:
The item indicated by this word is a specialized explanation designed to facilitate maintenance or make important instructions more clear.

CONTENTS

I. User Notice

1.1 Safety instructions for motorcycle drivers

For your personal and vehicle safety, please comply with the following six regulations:

① Properly wear various protective equipment

The protective equipment for cycling includes safety helmets, goggles, knee protectors, elbow protectors, and gloves. Wearing protective equipment can greatly reduce the harm to the body when accidentally falling a car, and can maximize the protection of your personal safety.

② Familiar with vehicle construction

The driver's driving skills and understanding of the vehicle are the foundation of safe driving. Before officially riding a bicycle on the road, it is necessary to practice in an open area without other vehicles and be fully familiar with the vehicle and its handling methods.

③ Understand the limits of one's safe speed

The driving speed depends on the ground conditions, your own skills, and the weather. Drive at a safe speed and within your skill range at all times. Understanding this limit will prevent accidents from occurring.

④ Wear appropriate clothing

Loose and bizarre clothing can make driving uncomfortable and unsafe. Wearing suitable clothing on the saddle will allow you to move your hands, feet, and body freely. Therefore, try to choose high-quality tight fitting clothing.

⑤ Inspection before driving

Please carefully read the instructions in the "Pre driving Inspection" section of this manual, and driving according to the rules can ensure the safety of you and passengers.

⑥ Double attention to safety when driving on cloudy and rainy days

Pay special attention in rainy days. Remember that the Braking distance is twice as long as in sunny days. When driving, keep away from the hole cover, marking paint and greasy road surface to avoid skidding.

1.2. Number position (Figure 1)

① Vehicle frame number (VIN): Front end of the right frame (right side of the front pipe);

② Nameplate: Front end of left frame (left side of front pipe);

③ Engine number: directly above the right side of the engine box;

Please fill in the frame and engine code below for future **reference:**

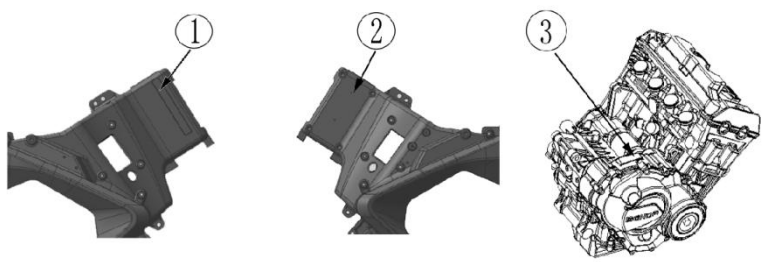


Fig1 Location map of nameplate, frame number, VIN code, and engine number

VIN:	
Engine No.:	

II. Introduction to Motorcycles

The motorcycle has a compact structure, unique style, novel appearance, good driving stability, and comfortable riding. Adopting an electronic fuel injection system, it is more environmentally friendly and efficient, meeting national emission requirements.

The Benda BD700-2 (Liao) two wheeled motorcycle will bring you an unprecedented driving experience!

2.1. Range of application of Benda two wheeled motorcycles

BD700-2 is a self-developed two wheeled motorcycle, which is suitable for both urban roads and rural roads.

2.2 Characteristics of Benda Two wheeled Motorcycle

1. Strong power and heavy load.
2. High torque, strong climbing ability.
3. Electronic fuel injection system.
4. Advanced and professional water-cooled engines in China.
5. Full DC power supply system.

2.3 Carrying regulations

Number of passengers: 2 (including driver).

Maximum allowable load capacity: 150kg.

2.4 Fuel

Fuel grade: 95 # or above unleaded gasoline.

Due to the highly flammable nature of gasoline, if the fuel tank, fuel filter, fuel pipe, throttle valve body and other components of this vehicle leak due to damage or aging, they must be repaired in a timely manner before use.

Unleaded gasoline can extend the service life of spark plugs and mufflers.

2.5 Electrical Appliances

You are not allowed to install or change the wiring of this vehicle on your own, nor can you modify electrical equipment on your own. Otherwise, it will overload the electrical system, causing the circuit to overheat, causing fuses to melt or the circuit to short-circuit, and even generating sparks, causing danger such as burning the car.

Danger:

Our company shall not be responsible for any consequences caused by the installation or modification of our vehicle's wiring or electrical equipment.

2.6 Inspection

You should strictly follow the requirements in the "Maintenance Schedule" to maintain your vehicle.

III.Safe driving of motorcycles

This motorcycle is a two wheeled motor vehicle that can bring convenience and speed to the rider. In order to ensure the best performance of your motorcycle, you must perform proper maintenance and upkeep on the motorcycle. When using

a motorcycle, it must be safe and normal; When driving or riding this motorcycle, your body must be healthy so that you can drive the vehicle at your best condition.

Danger:
Driving a motorcycle must comply with traffic regulations; Before driving, the vehicle must be carefully inspected.

3.1 Safe driving rules

1. Before starting the motorcycle, it is necessary to carefully inspect the vehicle to confirm that it is safe and normal. This can avoid accidents and damage to components.

2. Motorcycle drivers must pass the traffic management department exam and obtain a "motorcycle driving license"; Do not lend motorcycles to people without a "motorcycle driver's license" for use.

3. To avoid harm, you should:

Wear eye-catching clothing.

Do not drive too close to other motor vehicles, and use signals such as turn signals, horns, and brake lights correctly.

Please do not drive in the blind spot of other drivers.

4. Strictly comply with traffic regulations.

Speeding is the main factor leading to motorcycle accidents. If encountering rainy and snowy weather, gravel roads, intersections and other road conditions, it is necessary to drive at low speed or slow down carefully.

When turning and changing lanes, signal devices such as turn signals must be turned on to attract the attention of other drivers.

5.The driver should hold the steering handle tightly with both hands and step on the front pedals with both feet; Passengers should tightly grasp the armrest or hold the driver's waist with both hands, and step on the rear pedals with both feet.

3.2. Safety protection equipment

1. Most of the injuries in motorcycle traffic accidents are head injuries. Therefore, drivers and passengers must wear helmets that meet safety and quality standards, as well as protective equipment such as dust proof glasses and gloves.

2. When driving, the temperature of the exhaust muffler is high. To avoid contact with burns, both drivers and passengers should wear boots and other equipment.

3. Do not wear loose clothing to prevent accidents from catching the steering handle, clutch handle, pedals, or nearby vehicles.

3.3 Refitting

Danger:
We are not responsible for any dangerous consequences such as short circuits in wires, blown fuses, electrical appliances exceeding rated power, or sparks that may cause the vehicle to burn due to your own modification of cables and electrical appliances.

Warning:

1. It is illegal to arbitrarily modify a motorcycle or replace the original device of the motorcycle, which cannot guarantee the safe driving of the motorcycle. You must comply with the traffic management department's regulations on the use of vehicles.

2. To ensure that the exhaust emissions meet national emission requirements, you cannot modify or remove the following components without authorization.

1) Unable to adjust idle speed arbitrarily;

2) Due to the installation of optimized catalysts in the exhaust muffler, if the exhaust muffler is damaged, please go to the designated maintenance unit for repair or replacement.

3. If there are good modification suggestions, you can inform our company by letter, and after confirmation, our company will be responsible for implementing them. Our company is not responsible for any adverse consequences caused by unauthorized modification.

Attention:

Improper or overweight loading of motorcycle cargo will affect the performance of the vehicle, reduce its driving stability, and easily cause safety accidents.

The modification or removal of original parts from motorcycles may result in reduced safety or illegal driving of the vehicle. Please follow all regulations in your region.

When loading goods:

1. The goods should be loaded at the center and lower, close to the center of the vehicle.

2. All goods must be firmly fixed to the vehicle, which is conducive to vehicle handling and stability.

3. Do not attach large or heavy objects to the steering handle, front shock absorber, or front mudguard, as this may cause unstable driving or poor steering.

4. It is strictly prohibited to exceed the maximum loading weight of 150kg (including drivers, passengers, and loaded goods)

3.4 Warning on installation accessories:

The original accessories of this car have been tested by the company. Our company is not responsible for any adverse consequences caused by the installation of non original accessories.

After installing non original accessories, you must carefully inspect: visual obstruction, ground clearance, side tilt angle, steering flexibility of the control mechanism, ease of operation, and performance of the accessories. If the above issues exist, the attachment should be canceled before using this vehicle.

IV. operation instruction

4.1 Parts position

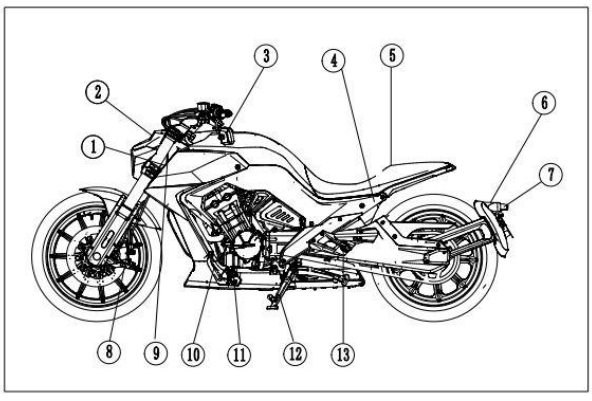


FIG 1.

(1)FL turn light (8)Front brake calliper

(2)Headlight (9)Vehicle nameplate

(3)L mirror (10)Gear lever

(4)Battery(under seat)

(5)Seat (11)Front left footrest

(6)RL turn light (12)Side support

(7)Rear license light (13)RL footrest

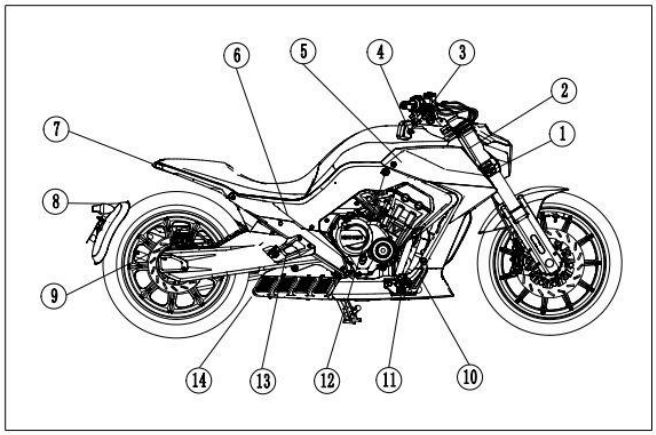


FIG 2

FIG.2

(1)FR turn light (8)RR turn light

(2)VIN (9)Rear brake calliper

(3)Tank cover (10)Brake pad

(4)R mirror (11)FR footrest

(5)Air cleaner(under tank) (12)Ignition switch

(6)Rear suspension (13)RR footrest

(7)Tail light (14)muffler

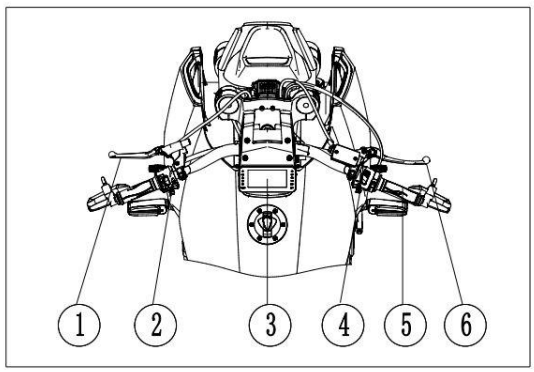


FIG 3

3、Front Body （Fig 3）

① Clutch handle

② Left switch combination

③ Instrument

④ Right switch combination

⑤ Throttle handle sleeve

⑥ Front brake handle

4.2 instrument

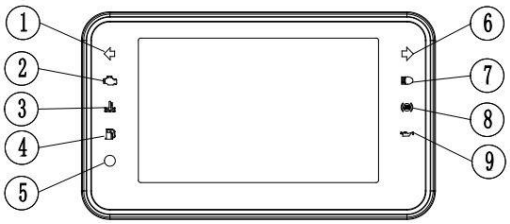


FIG 4

Code No.	Description	Function
1	Left turn indicator	The front and rear left turn signals flash and illuminate in green
2	Electronic injection malfunction indicator light	After the engine is running, the light goes out. If there is a fault, the yellow light will flash
3	Water temperature alarm indication	Illuminate and display in red: coolant overheating, cooling system malfunction
4	Fuel quantity indication	Display whether the current fuel level is sufficient.
5	Photosensitive switch	Change the instrument background color based on the external ambient light conditions
6	Right turn indicator	The front and rear right turn signal lights flash and illuminate in green
7	High beam indication	The high beam light is on, and it will display blue when illuminated
8	ABS indication	Display ABS status
9	oil warning light	Display the current oil level. The red display shows insufficient oil.
10	Vehicle speed indication	The instantaneous speed at which the vehicle is traveling
11	Gear position indication	Display the gear position of the engine
12	Navigation instructions	Indicate the direction of travel at the next intersection
13	Bluetooth indication	Indicates the current Bluetooth connection status
14	Navigation distance indication	Indicate the distance to the intersection and the total mileage remaining.
15	Instrument oil level indication	Display the percentage of fuel remaining in the fuel tank
16	Voltage display	Display the current vehicle battery voltage
17	Mileage indication	The total mileage traveled by the vehicle
18	Time indication	Display current Beijing time
19	Water temperature alarm indication	Illuminate and display in red: coolant overheating, cooling system malfunction

Table 1

4.3. Instrument Settings

There is no operation button on the instrument panel of BD700-2 vehicle, and its operation button is located on the left switch combination of the vehicle. Please refer to Figure 8, page 9 for details. There are four buttons in total, namely the up button, down button, return button, and confirm button. The operation method is shown in the table below:

Menu interface:	Press the confirm button to enter the menu interface, press the up and down buttons to select the desired function, and then press the confirm button to enter.
Setting interface:	Press the up and down movement keys to enter the clock setting and mileage setting. After selecting, press the confirm key to enter.
Clock settings:	After entering the clock setting, first press the up and down keys to switch to the 12 hour or 24 hour system. After selecting it, press the confirm key to enter the clock adjustment position. First, press the down key to decrease the number in the hour position, and press the up key to increase the number. After setting the hour, press the confirm key to move to the minute setting, as described above. Then, press the confirm key to enter AM/PM selection. After setting up, press the return button to return to the previous menu level.
Metric and English switching:	After entering the metric and English system switching interface, press the up and down keys to select the metric and English system status. After selecting, return to.
Total subtotal switching:	In the Home screen status, briefly press the up and down keys to switch between metric and English systems, and in the subtotal status, long press the return key to clear the subtotal.
Virtual projection:	The mobile phone downloads "MOTOFUN" in the application market. After installation, click "Connect Bluetooth" on the Home screen, and then the mobile phone automatically searches for Bluetooth. After the search, double click to connect Bluetooth. After the connection is successful, click to return to the Home screen, click the navigation on the Home screen to enter the navigation function, enter the address in the navigation interface and search, and the instrument will display the navigation function in the upper right corner.

Table 2

4.4. Ignition switch lock

The ignition switch lock (Figure 5) is set on the front right side of the vehicle, and the ignition switch must be turned on before starting the motorcycle. The key positions and functions are shown in Table 3.

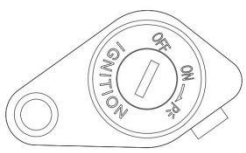


Fig 5

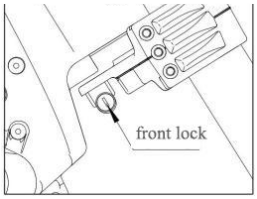
Key position	function	Key status
"**OFF**"	Circuit disconnected, engine unable to start	Can be pulled out
"**ON**"	The circuit is closed and the engine can start	Cannot be pulled out
Key LOCK"**P**"	The circuit is closed and the engine can start	Can be pulled out
Attention: **1. When not using the vehicle, turn the key to the "OFF" direction and remove the key.** **2. When the key is turned to the "P" direction, the vehicle can be started and the key can be removed.**		

Table 3

4.5 Front lock

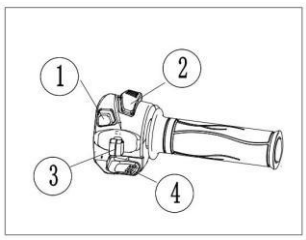
The front lock (Figure 6) is installed at the lower connecting plate of the vehicle. Lock the steering mechanism when parking and not in use.

Fig 6 Front Lock



Note: Before locking the steering mechanism, the vehicle needs to be parked properly. After locking, the motorcycle cannot be pushed, making it difficult to balance and prone to rollover.

4.6 Right switch combination



① Double flashing warning switch
② Flameout preset switch
③ Headlamp, position light switch
④ Electric start button

Fig 7 Right switch combination

1.Flameout preset switch

The flameout switch is located on the right side of the steering handle, and the flameout preset switch has two positions：“”和“”。

OFF“”	Off switch - At this position, the ignition circuit is disconnected, the running engine is turned off, and the engine cannot be started.
ON“”	The ignition switch is turned on - it needs to be switched to this position during operation, and the ignition circuit has been closed.

2.Headlamp and position light switch

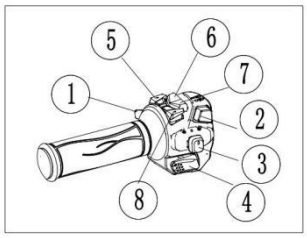
The headlight and position light switches have three states：“” “” “●”

Headlamps“ ”	When the switch is turned to this position, the headlights, position lights, and tail lights come on.
Position Lamp“”	When the switch is turned to this position, the position lights and tail lights come on.
OFF“ ● ”	When the switch is turned to this position, the headlights, position lights, and tail lights are turned off.

3. Electric start button

The operation method is: after completing the preparation work for starting (see page 16), press the electric start button "", and if necessary, rotate the throttle handle to add oil appropriately to start the engine.

4.7 Left switch combination



① Overtaking light switch ⑤ Instrument function up key

② Headlamp dimmer switch ⑥ Instrument function return key

③ Turn signal switch ⑦ Instrument function confirmation key

④ Horn button ⑧ Instrument function down key

Fig.8 Left switch combination

1. Overtaking light switch

When the "overtaking light button" is pressed, the overtaking light will light up;

Attention:

When the headlights are in high beam mode, the overtaking lights do not work.

2. Headlamp Dimming Switch

The headlight switch has two operating states: when the ignition lock is turned on and the "Headlamp, Position Lamp Switch" is turned to the position

Low-beam" "	Turn the 'Headlamp Dimming Switch' to the ' ' position to indicate low beam status
High-beam" "	Turn the 'Headlamp Dimming Switch' to the ' ' position to activate the high beam mode.

Warning:

Please change the status of the far and Low beam lights according to the road conditions. If there are oncoming cars, please turn the light to the Low beam light status to avoid direct light affecting the driving status of oncoming drivers and causing traffic accidents.

3. Turn signal switch

When turning left, turn the "turn signal switch" to the " " position; The front and rear turn signals on the left side, and the left turn indicator light in the instrument cluster is on.

When turning right, turn the "turn signal switch" to the " " position; The front and rear turn signals on the right side, and the right turn indicator light in the instrument cluster is on.

Turn the 'turn signal switch' to the 'middle' position; The left and right turn signals and indicator lights do not turn on.

Warning:

When turning or changing lanes, the turn signal switch must be turned on until the turn or lane change is completed before turning off the turn signal switch.

4.8 Headlamp pitch angle adjustment (Figure 9)

Due to differences in user height and observation habits, there are different requirements for lighting during nighttime driving. In order to provide users with a better nighttime driving experience, the front headlights of Liao are specially designed in the form of adjustable pitch angle. Users can make adjustments according to their own needs. The adjustment method is as follows:

Step 1: Use 5 # Hex key to loosen the upper and lower fixing screws for fixing the headlight.

Step 2: After loosening the screws, gently rotate the headlight up and down using the following fixing

screws as the axis, adjust to the appropriate position, and tighten the screws.

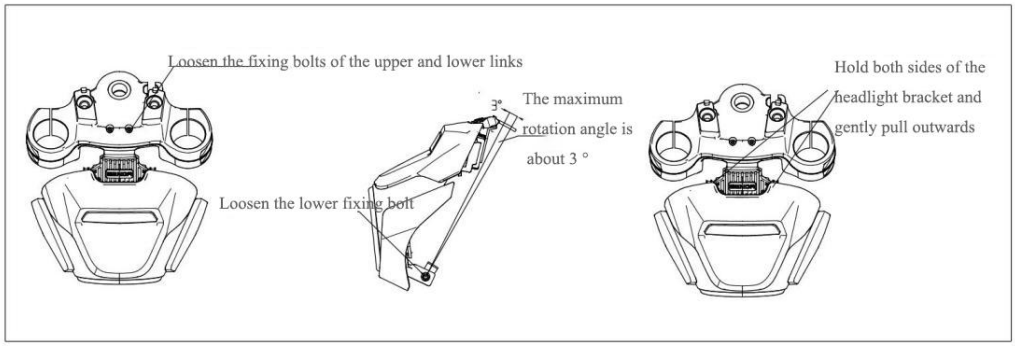
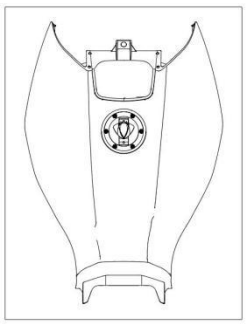


Fig 9

4.9. Opening method of fuel tank cover (Figure 10)



Open the small cover that covers the keyhole, insert the key into the fuel tank lock hole, and rotate clockwise to open the fuel tank lock; When closing, remove the key, gently close the fuel tank cap, and press firmly until you hear a "click" sound. Finally, cover the small cover that covers the keyhole.

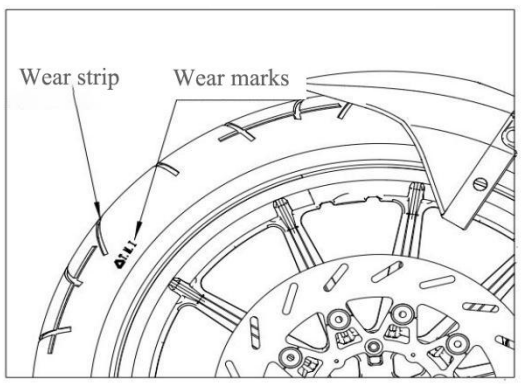
(Figure 10)

4.10 Tires

The correct tire pressure will ensure stable driving, comfortable driving, and durable tires. The tire pressure should be checked during 'cold tire'.

Refer to Table 4 for tire specifications and tire pressure:

Table 4



Determine the condition of the tires. Incorrect tire specifications can affect the handling performance of the motorcycle. Damaged or scratched tires can cause tire failure and cause the vehicle to lose control. Excessive wear and tear on tires can cause them to puncture and cause the vehicle to lose control. Tire wear also affects tire appearance and handling performance.

Check the condition and pressure of the tires before use every day. If there are many obvious damages

Warning:

1. The triangular mark indicates the position of the wear strip. If the wear strip comes into contact with the ground, it indicates that the tire has reached its limit of wear. The tire must be replaced.

aced.

Attention:

1. When the tire pressure drops, it should be checked and repaired in a timely manner.

2. Incorrect tire pressure can cause abnormal tread wear, leading to safety accidents.

3. Insufficient tire pressure can cause tire damage or detachment from the rim.

Danger:

1. This car is equipped with vacuum tires, and the rims and tire lips are sealed in contact. To avoid air leakage, special tools are required to protect the rim and tire lip parts when disassembling and installing tubeless tires, using a dedicated tire disassembly and assembly machine.

2. To repair small holes in tubeless tires, it is necessary to remove the tire and apply a patch on the inside of the tire. Do not use external repair methods, as the centrifugal force of the tire during cornering can loosen the repaired area. After repairing the tire, the vehicle speed should not exceed 80 kilometers per hour within 24 hours, and in the future, the vehicle speed should not exceed 130 kilometers per hour. If you exceed the speed limit, the heat generation of the tire will increase sharply, which will make the repair ineffective and cause the tire to leak air. If the side of the tire is damaged, or if the area where the tire is damaged is greater than 6mm, the tire cannot be repaired or used.

VI.Operating instructions

5.1. New vehicle running-in

The running-in period refers to a treatment method carried out by a new car during its initial use to ensure that the joint surface between parts becomes the optimal bonding state. Correct running in operation can maximize the lifespan of the vehicle.

New vehicle running in mileage: 3000km.

1. During the running-in period, it is necessary to avoid full throttle operation, and the maximum engine speed should not exceed 6500 rpm (according to the instrument panel). Control the vehicle speed within the following range:

Running in from 0 to 300km:

Avoid opening the throttle handle beyond 1/2 of the maximum opening; The vehicle speed is within 50km/h.

300-600km running in:

Avoid opening the throttle handle beyond 2/3 of the maximum opening; The vehicle speed is within 60km/h.

600~1500km running in:

The opening of the throttle knob should avoid exceeding 3/4 of the maximum opening; The vehicle speed is within 70km/h.

2. Avoid sustained low speed: When the engine is running at a certain low speed (light load), it may cause smooth grinding of components and poor running-in.

3. Reasonably use each gear: Do not drive continuously at a fixed engine speed. You can adjust the vehicle speed appropriately to allow all engine components to "carry" pressure, which can make the engine run in better.

4. Before driving, circulate the oil: After starting a hot or cold engine and before running it without applying load, allow

the engine to have sufficient idle time. This can lubricate all important components of the engine, reduce wear, extend service life, and also pre heat the engine well.

5. Running-in of new tires: The tires also need to be worn in. Before the new tires are worn in, gradually increase your turning angle within 160 kilometers, but avoid sudden braking, acceleration, and turns.

> **Danger:**
> **Poor tire running-in can lead to tire sideslip or loss of control. Special care is required when using new tires, and the tires should be worn in within the first 160 kilometers (100 miles).**

6. Break-in period maintenance: Please conduct vehicle maintenance after driving the new car for 1000 kilometers. During the running-in period, other parts have already engaged, and at this time, each component should be adjusted and the oil should be replaced.

> **Attention:**
> **Under complex road conditions and harsh weather conditions, vehicles should undergo early break-in maintenance**

5.2 Pre driving inspection

To ensure driving safety, please carefully inspect your motorcycle before each use; If there are any abnormal phenomena during the inspection, they must be repaired and resolved before use.

The following procedures can be followed for inspection:

1. Check the engine oil inside (see page 17) and ensure there are no leaks;
2. Check if the fuel is sufficient;
3. Check if the coolant in the cooling system is sufficient and ensure that there are no leaks;
4. Check the front and rear brakes: free travel (front 5-10mm, rear 10-15mm), smooth operation;
5. Check the front and rear tires for air pressure, wear depth of tire tread, and cracks (see page 11);
6. Check the transmission chain: the chain should be tightened, with a swinging arc of 5-10mm; No defects or damage;
7. Check the throttle handle: free clearance (2-6 mm), and whether refueling or refueling is easy to operate;
8. Check the lighting and signal lights: ensure that the headlights, tail lights, brake lights, turn signals, indicator lights, and horns are in good condition;
9. Check if the battery voltage is greater than 12.8V;
10. Check the steering device: it should be stable, rotate flexibly, and have no looseness or axial movement;
11. Check the clutch handle: free clearance (5-10mm), smooth operation;
12. Tightening bolts and nuts: front and rear shock absorbers, flat fork shafts, front and rear wheel axles, engine suspension, steering system, steering handle, front and rear brakes, clutch, rear suspension system, electrical components, etc.

> **Warning:**
> **Failure to inspect and maintain the motorcycle before cycling can leave safety hazards, and conducting maintenance on the motorcycle before cycling can eliminate safety hazards.**

5.3 Starting of Motorcycles

1. Turn on the ignition lock and turn the ignition preset switch to the "" position. (Note: The ignition switch lock is located on the right side of the frame.)

2. Shift to low or neutral gear. When starting in low gear, it is necessary to firmly grip the clutch handle.

3. Press the electric start button and, if necessary, turn the throttle handle to refuel appropriately to start the engine.

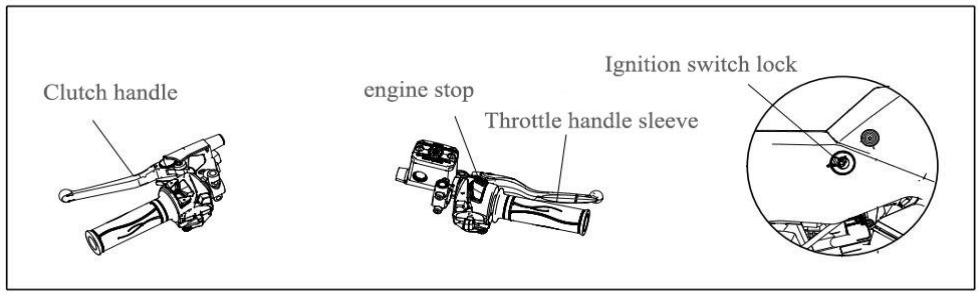


Figure 12 Starting Preparation

Danger:

1. Starting a vehicle in gear is prone to the risk of a forward collision, which can lead to accidents.

2. When not driving, the engine speed should not be too high and the idle time should not be too long, otherwise it may cause the engine to overheat and damage internal components.

Danger:

1. If you are driving this type of vehicle for the first time, we suggest that you practice on a non-public road until you are familiar with the control and handling methods of this vehicle.

2. One handed driving is the most dangerous, and one should firmly hold the steering wheel with both hands and drive with both feet on the pedals. Regardless of the situation, do not drive with both hands off the handlebars.

3. Reduce the speed to a safe speed before turning.

4. The road surface is damp and smooth, with low tire friction, resulting in a natural decrease in braking and turning capabilities, so it is necessary to slow down in advance.

5. Cross winds are usually most likely to occur at tunnel exits, valleys, or when large vehicles overtake from behind. If encountering crosswind, you must be careful to calm down and slow down.

6. Obey the traffic rules and control the speed.

Attention:

1. After starting, it should be preheated for 2-3 minutes before driving on the road. An engine with insufficient preheating temperature will intensify the wear of components such as cylinders, piston rings, and rocker arms during driving.

2. When using the electric start button, it should be immediately released within 3-5 seconds after each operation;

5.4 Motorcycle Driving

5.4.1 Shift operation (Figure 13, Figure 14)

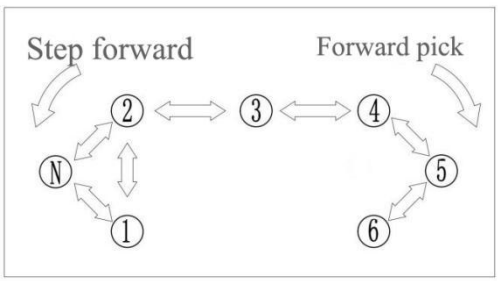


Figure 13 Shift Position Map

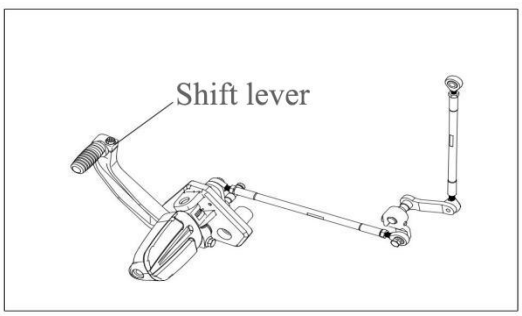


Figure 14 Shift lever

This car has a six speed constant engagement; ①, ② The gears are low speed, ③ and ④ are medium speed, and ⑤ and ⑥ are high speed. Gear shifting can refer to the following operations:

1) Neutral shift: Return the throttle with the right hand, quickly grip the clutch handle with the left hand, and press the shift lever down with the left foot once to shift the transmission into the ① gear. Gradually release the clutch handle with the left hand, and gradually fill the fuel door with the right hand. Coordinate the movements to ensure smooth operation of the motorcycle in the first gear.

2) ① Shift to ②: Return the throttle with the right hand, quickly grip the clutch handle with the left hand, hook the shift lever with the left foot upward once, and move the transmission into ② gear. Gradually release the clutch handle with the left hand, and gradually fill the fuel door with the right hand. Coordinate the movements to ensure smooth operation of the motorcycle in the second gear.

3) The method of shifting gears ③, ④, ⑤, and ⑥ is the same as that of shifting gears ① to ②.

4) The method of downshifting is the same as shifting from neutral to first gear.

Warning:

1. It is strictly prohibited to shift gears without returning the throttle or gripping the clutch handle, otherwise it may cause damage to the engine and transmission system and cause safety accidents.

2. When shifting gears, please confirm that the gear lever is pressed in place before releasing the clutch handle.

3. During the period of gripping the clutch handle during gear shifting, the clutch disengages and the motorcycle relies on inertia for driving. Therefore, it is necessary to minimize the shifting time as much as possible.

4. When driving at high speed and suddenly lowering the gear or sharply returning the throttle, the engine speed is lower than the rear wheel speed. When the clutch handle is released, the clutch plate friction engages and decelerates, causing the rear wheel to brake, which may lose control and cause accidents. Therefore, when shifting from high speed to low speed, it is necessary to use the brakes to slow down and then lower the gear.

5. Using low gear for high speed driving and high gear for low speed driving can easily cause engine damage. It is necessary to adjust the gear according to the vehicle speed in a timely manner to ensure that the engine operates within the normal speed range.

Attention:

1. Reduce the vehicle speed or increase the engine speed before downshifting. Before shifting into high gear, increase the vehicle speed or decrease the engine speed. This can prevent unnecessary wear of transmission system components and rear tires.

2. When the gear is in neutral and the neutral indicator light is on, it is still necessary to slowly release the clutch handle to confirm whether it truly enters the neutral position.

5.4.2 Climbing or turning driving (Figure 15)

1) When driving uphill, the gear may be too high and there may be a deceleration phenomenon of insufficient power. Therefore, it is necessary to quickly lower the gear before driving uphill.

2) When driving down long slopes, it is necessary to lower the gear and intermittently use the front and rear brakes. If the front and rear brakes are used continuously for a long time, it can cause the brakes to overheat and reduce the braking effect, posing a danger.

3) When going downhill, it is not allowed to turn off the engine and slide, otherwise it will reduce the lifespan of the catalyst inside the exhaust muffler.

4) When turning, it is necessary to downshift in advance. Otherwise, it is possible to rush out of the curve due to excessive speed during the turn, or to brake sharply during the turn, resulting in a dangerous accident.

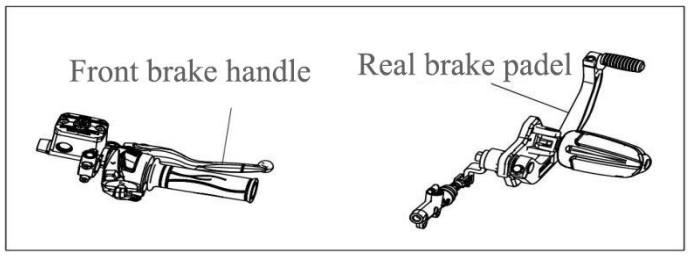


Figure 15 Brake position diagram

5.4.3 Using the brakes

1) When slowing down, both the front and rear brakes must be used simultaneously (slowly grip the front brake handle with your right hand and step on the rear brake pedal with your right foot to avoid using the front and rear brakes separately).

2) In emergency situations, directly turn off the ignition switch and use both the front and rear brakes to stop the vehicle.

3) Try to avoid sudden braking as it may cause sudden stops in the front and rear wheels, making it difficult to control the vehicle.

4) Avoid sudden acceleration, sudden braking, and sharp turns on slippery or soft roads. Prevent vehicle side slip that is difficult to control.

5.4.4 Parking

1) Gradually return the throttle until it fully returns.

2) At the same time, slowly grip the front brake handle with your right hand and step on the rear brake pedal with your right foot to avoid using the front and rear brakes separately.

3) Wait for the vehicle speed to decrease while lowering the gear.

4) Grasp the clutch handle, shift into neutral, and then completely stop. After shifting into neutral, the neutral indicator light on the instrument panel lights up.

5) If you want to park on a gentle slope with a single support, you should shift to a low gear and keep the front of the car uphill to avoid overturning. (Always shift to neutral position when starting again)

6) Turn off the ignition lock; In emergency situations, the ignition switch can be directly turned off to turn off the engine.

7) Lock the steering mechanism and remove the key to prevent theft.

⚠Danger:

1. The higher the vehicle speed, the longer the braking distance. Therefore, the distance between Safety car must be kept to prevent rear end collision.

2. Using only the front or rear brakes can cause slipping and loss of control; Be cautious when using the braking system on slippery roads and when changing lanes; Emergency braking on uneven or smooth roads can cause the motorcycle to lose control.

VII.Maintenance and upkeep

6.1 Maintenance Interval Table

Maintenance times Maintenance item	Maintenance period	Odometer km (remark ②)				
		1000 km	4000km	8000km	12000km	remark
★tank,tubing		Damage and aging should be repaired or replaced in time				Before use

★throttle		I	I	I	I	Before use	
★Coolant		Replace every 2 years					Inspection before use
Air filter element	Remarks①	Every 40 hours or 1000km/I; every 80 hours or 2000km/C; every 8000km/R					
Spark plug		Every 2000km or 80 hours/I; every 8000km/R					
Engine lubricating oil	Replace once when a new motorcycle is 1000km, and then every 4000km or so.						
Lubricating oil filter	Replace once when a new motorcycle is 1000km, and then every 4000km or so.						
Chain\sprocket	Remarks ① I and L are carried out every 500km	Remarks ① I and L are carried out every 500km					
★Brake friction plate	I and R if necessary every 1000km	I and R if necessary every 1000km					
★★Brake oil		Replace every 2 years					
★★Front and rear brake system	Remark ③	I	I	I	I		before use
★Switch		I	I	I	I		before use
★Lights, speakers		I	I	I	I		before use
★Battery	per month	I	I	I	I		
fuse		I	I	I	I		
Connection line		I	I	I	I		
★★Valve clearance	Remark ③	Initially: 1000km/I for a new motorcycle; 4000km/I for every driving thereafter					
★Clutch		Every 4000km or 80 hours/I					before use
★Suspension system		I	I	I	I		
★ Fastening of nuts and bolts		I	I	I	I		before use
★wheel		I	I	I	I		before use
★★Steering handle bearing (steering column thrust bearing)	Remark ③	I	I	I	I		
★★Engine maintenance	Remark ③	I	I	I	I		

Motorcycles should be regularly maintained according to the time and mileage specified in the above table, and the vehicle must be cleaned before maintenance.

The symbol in the above table is: "I" for timely inspection, cleaning, adjustment, lubrication or replacement; "C" cleaning; Replace with 'R'; L lubrication.

No ★ items are subject to your own maintenance, or you can go to a Benda store for maintenance.

A ★ project is maintained by personnel from a Benda specialty store; If you have specialized tools, repair parts, or repair

capabilities, you can also repair and maintain them yourself.

For the sake of driving safety, maintenance and upkeep of the two ★★ projects can only be carried out by personnel from the Benda specialty store.

Note ① indicates that when driving in dusty areas, the cleaning cycle should be shortened.

Note ② means that when the reading of the Odometer exceeds the highest number in the table, the maintenance cycle is still repeated according to the mileage specified in the table.

Note ③ indicates that maintenance and adjustment can only be carried out by personnel from Benda specialty stores.

6.2. Inspection, Selection, and Replacement of Engine Oil

The effect of oil on the engine: reducing friction, increasing sealing, cooling parts, cleaning parts, and preventing rust.

If the quality of the engine oil is poor, the usage time is too long, or the oil quantity is insufficient, it will accelerate the wear of engine parts and reduce the service life of the engine; Even causing engine temperature to be too high, clutch to wear or burn out, power loss, abnormal noise, oil burning, etc.

[Inspection] (Figure 16)

Before each use, the oil level must be checked and the highest position of the oil on the dipstick must be used to determine whether the oil is sufficient. Start the engine and run for 3 minutes, wait for the engine to stop for 3 minutes. Park the motorcycle on a flat surface with the entire vehicle perpendicular to the ground. At this point, the oil level should be between the upper and lower marks on the oil dipstick. If the oil is insufficient, unscrew the dipstick and add an appropriate amount of oil. After installing the oil dipstick, check for any leaks.

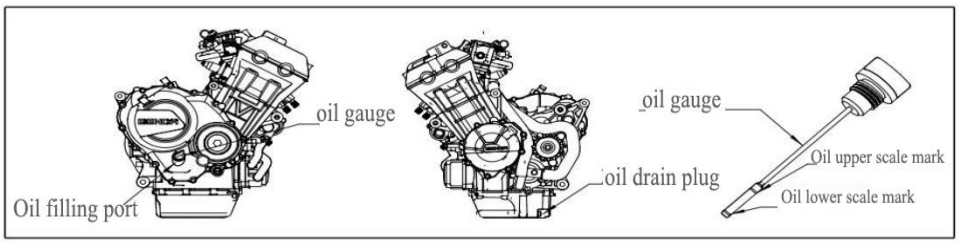
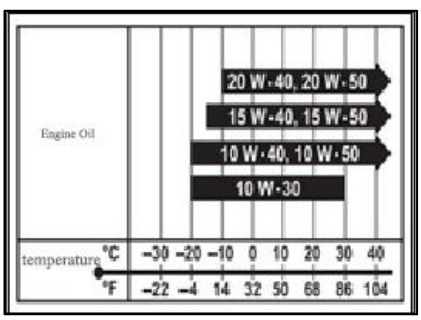


Fig 16 oil inspection



[Optional] (Figure 17)

Engine oil grade: SAE 15W-40

Oil quality requirements: SAE grade or above

SAE	SAE15W-40
API	SG or higher
JASO	MA

Using high-quality four stroke engine oil can extend engine life. Its viscosity is SAE 15W-40, and engine oil should choose SJ grade or higher in the API classification method. It is recommended to use synthetic oil, and you need to choose according to Figure 16 and local temperature conditions as appropriate:

(Figure 17) selecting the oil

When the local temperature rises, oil with high viscosity should be replaced, such as SAE15W-40;

When the local temperature drops, oil with low viscosity should be replaced, such as SAE10W-30.

Warning:

1. The use of inferior engine oil can seriously affect the performance and lifespan of the engine.

2. Long term failure to change the oil can cause deterioration, and deteriorated oil can cause excessive wear and tear on the engine and components.

3. If the oil is insufficient, it will seriously damage the engine.

[Replacement]

Thoroughly replace the engine oil within 1000km of the new car's break-in period; Replace the vehicle after driving for the second time at 2000km, and replace it every 3000km thereafter.

1. After running the engine for 3 minutes, turn off the engine and place an oil container under the engine oil drain bolt.

2. Drain the engine oil after 3 minutes (be careful not to get burned by the engine or oil). Unscrew the oil bolts, loosen the nuts, and take out the filter cover, spring, filter element, etc.

3. After draining the oil, the drain bolts and filter cover must be cleaned thoroughly; Replace the filter element and check if the sealing ring is intact. If there is any damage, replace it with a new one; Then install the filter element, spring, sealing ring, and machine filter cover.

4. Inject approximately 2.6L of new engine oil from the fuel filler. If replacing the filter element with a new one, 2.9L of new engine oil is required. Check and confirm that there are no oil leaks, and then install the fuel filler plug.

5. Run the engine at different speeds for 3 minutes to check for leaks at the disassembled parts. After the engine is turned off for 3 minutes, observe. If the oil level is below the mark below the oil window, add an appropriate amount of engine oil, and then check again for any leaks.

Common causes of engine oil deterioration:

1. The engine oil temperature is too high and naturally deteriorates.

2. Oil with different grades mixed together deteriorates.

3. The metal shavings generated by friction of machine parts are increasing.

4. There are many dust and impurities in the oil barrel.

5. The gap between the piston and cylinder is too large to leak exhaust gas, and carbon residue is generated during fuel combustion.

Danger:

1. The engine oil and exhaust pipes of the muffler can burn people. Before draining the old engine oil, wait for the drain bolt and exhaust pipe to cool down.

2. Drinking engine oil by mistake can cause bodily injury. Reiterate: Long term exposure to engine oil can lead to skin cancer. Short term exposure to oil can irritate the skin. Keep children and pets away from oil. When changing the oil, in order to reduce skin irritation, please wear long sleeved clothes and protective gloves (such as gloves used when washing clothes). If the skin comes into contact with engine oil, wash thoroughly with soap and water.

Warning:

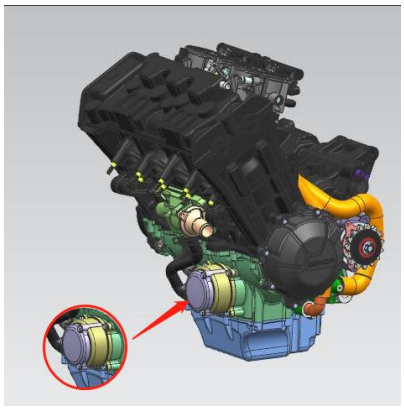
If the specified engine oil is not used, it may damage the engine.

Attention:

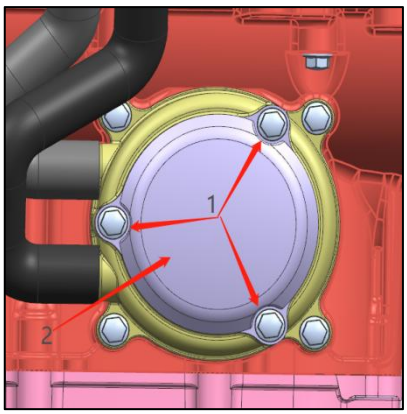
Please dispose of the waste engine oil properly, do not pour it into the trash can or directly pour it onto the ground. Put the waste oil into a sealed container and send it to the local recycling center to avoid polluting the environment.

6.3. Replacement of engine oil filter element

[Filter Element Replacement] (Group Figure 18)

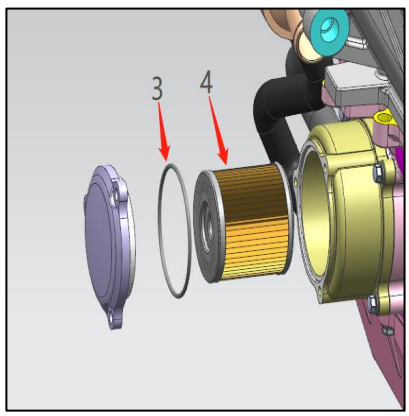


1. Find the position of the oil filter element.

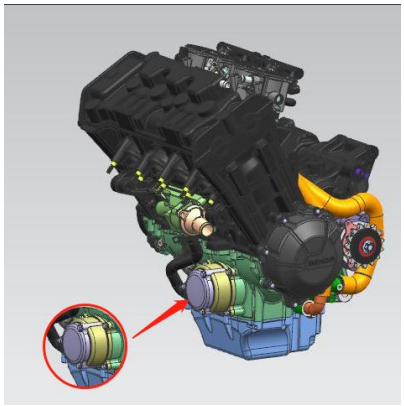


2. Remove the three fixing bolts ① that secure the machine filter cover ②.

Note: During the process of removing the oil filter element, residual oil may flow out.

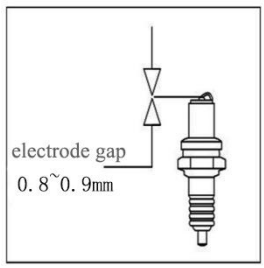


3. Remove the sealing O-ring ③, remove the filter element ④, and replace it with a new filter element.



4. Install the filter element in the opposite order.

6.4 Selection and replacement of spark plugs



[Optional] (Figure 19)

Spark plug model: CR9EH-9 (NGK),

Spark plug sleeve on opposite side: 16mm

[Inspection and replacement]

1. The replacement cycle for spark plugs is 6000 km per time.

2. Remove the spark plug cap, remove the surrounding dirt, use the spark plug socket wrench in the tool bag to remove the spark plug, and use a wire brush to remove the carbon and dirt from the spark plug.

3. Check whether the spark plug is damaged, whether the electrode gap is burned, and whether the sealing gasket is intact; If there is damage, it should be replaced.

4. Check the electrode gap with a high-precision feeler gauge, and the normal electrode gap is 0.8-0.9mm.

5. When installing spark plugs: first screw the spark plugs into the threads by hand, and then tighten them with a spark plug socket wrench.

Warning:

1. Dirt can enter the engine through the spark plug installation hole and damage the engine. After removing the spark plug, something must be used to cover the spark plug installation hole.

2. If the color of the spark plug electrode is different from the normal spark plug, a new spark plug of the same model must be replaced. Spark plugs of different models have different heating value ranges, which can cause serious engine damage. This loss cannot be claimed for.

3. Excessive torque or disordered threads when installing spark plugs can seriously damage the engine cylinder head. Therefore, it is necessary to carefully install the spark plugs manually.

6.5 Cleaning and disassembly air cleaner:

1. The filter element of the air filter must be regularly maintained: the filter element must be inspected, cleaned, and adjusted in a timely manner every 40 hours or 1000km of driving; The air filter must be cleaned every 80 hours or 2000km of driving; A new filter element must be replaced every 5000km.

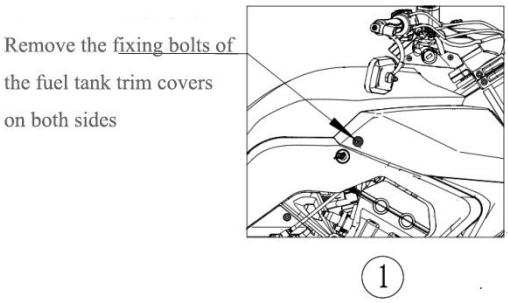
2. If the motorcycle is used in muddy, humid, or dusty environments, the cleaning or replacement cycle of the filter element should be shortened.

3. If the filter element is too dirty, water ingress or damaged, it must be replaced with a new one, otherwise it will increase the intake resistance, decrease the engine output power, and increase fuel consumption. Maintaining the cleanliness of the air filter can improve the efficiency of the engine and extend its service life.

4. This motorcycle is a sponge filter element. When cleaning, you can gently knock it on the ground to shake off most of the dust. If there is an air pump, you can blow it from the inside out to remove the dust. If the filter element is already dusty or the filter paper is wet with oil, water, etc., you must replace it with a new filter element.

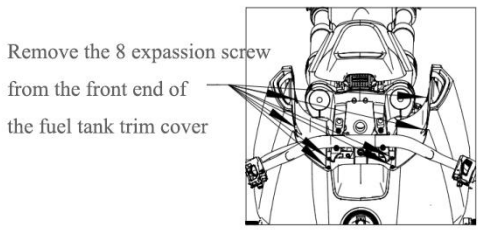
5. During regular maintenance, remove the oil accumulation pipe and drain the waste oil inside. The oil accumulation pipe is located below the air filter.

Disassembly and Assembly (Group Figure 20)



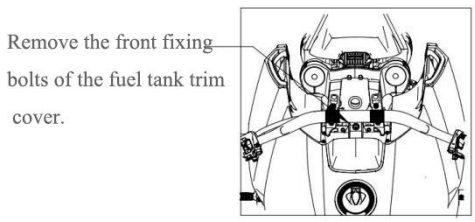
①

1.Remove the fixing bolts of the decorative covers on both sides of the fuel tank.



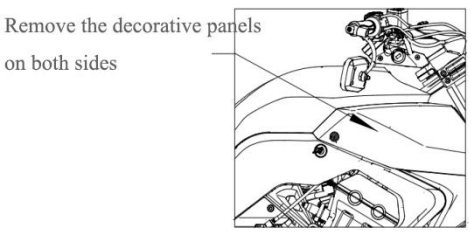
②

2. Remove the 8 expansion screw from the front end of the fuel tank trim cover



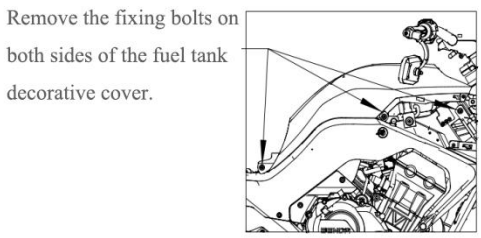
③

3. Remove the front fixing bolts of the fuel tank trim cover.



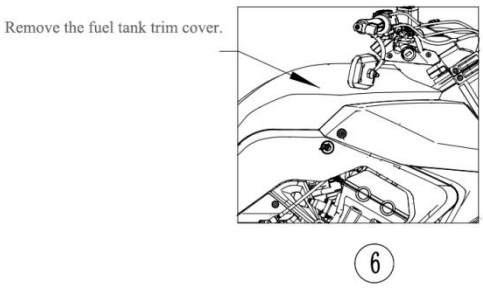
④ open the seat cushion lock, and remove the seat cushion

4. Remove the decorative panels on both sides, open the seat cushion lock, and remove the seat cushion.



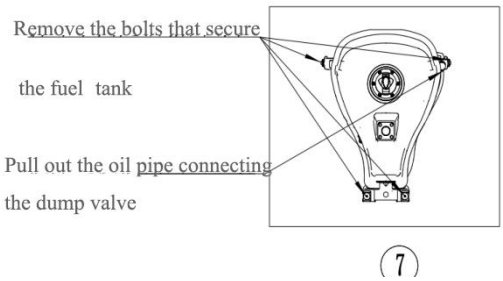
⑤

5. Remove the fixing bolts on both sides of the fuel tank decorative cover.



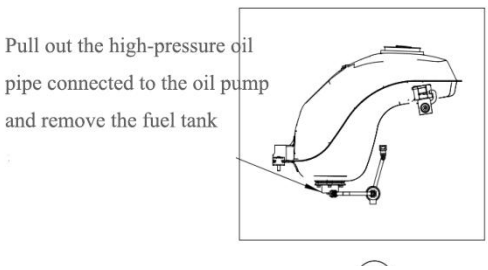
6

6. Remove the fuel tank trim cover.

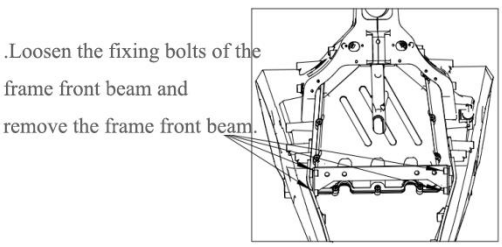


7

7.Remove the fixing bolts on the front and rear sides of the fuel tank.

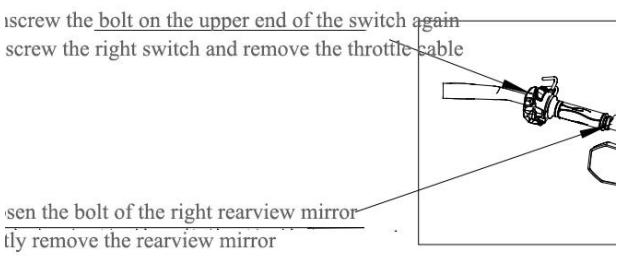


8. Pull out the high-pressure oil pipe under the fuel tank.



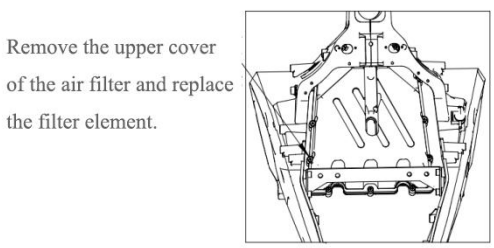
9

9.Loosen the fixing bolts of the frame front beam and remove the frame front beam.



10

10. Remove the right rear view mirror, disconnect the right switch, and remove the throttle cable.



11

11. Remove the upper cover of the air filter and replace the filter element.

Warning:

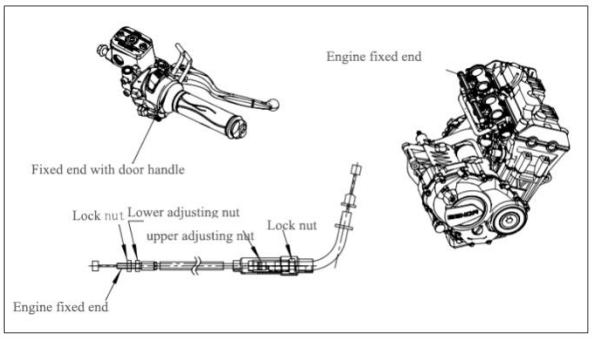
1. It is dangerous to start the engine without installing the filter element. Without the obstruction of the filter element, the engine flame will spray back from the engine to the air filter intake chamber, and dirt will also be sucked into the engine interior, causing serious wear and tear to the engine. Therefore, it is prohibited to start and run the engine without installing the filter element.

2. When washing the motorcycle, do not allow water to enter the interior of the air filter.

3. When cleaning the air filter, it is necessary to check whether the filter element is damaged. If the filter element is damaged, it must be replaced with a new one.

4. If the installation position of the filter element is incorrect, dust can bypass the filter element and enter the engine, damaging the engine. Confirm that the filter element is installed in the correct position and properly sealed.

6.6 Inspection and adjustment of throttle handle



[Inspection] (Figure 21)

1. Check whether it is normal to turn the head from the leftmost

2. Check whether the rotation of the throttle control handle is flexible from the fully open position to the fully closed position; Can it automatically return to its original position when releasing the handle.

3. Check if the throttle cable is flexible and in good condition.

[Adjustment]

1. The free stroke of the throttle handle is 2-6mm.

2. The upper adjustment screw can be adjusted for fine adjustment, while the lower adjustment screw (at the connection between the throttle valve and the throttle cable) can be adjusted for a certain stroke.

3. When fine-tuning, first loosen the lock nut on the upper adjustment screw tube, and then rotate the upper adjustment screw tube for adjustment.

4. When making larger adjustments, loosen the fastening nut and adjust the free stroke to 2-6mm.

5. The throttle cable should be regularly lubricated to reduce the wear of the wire rope; Do not bend the throttle cable.

Danger:

1. The throttle cable is not properly routed and should be reinstalled correctly.

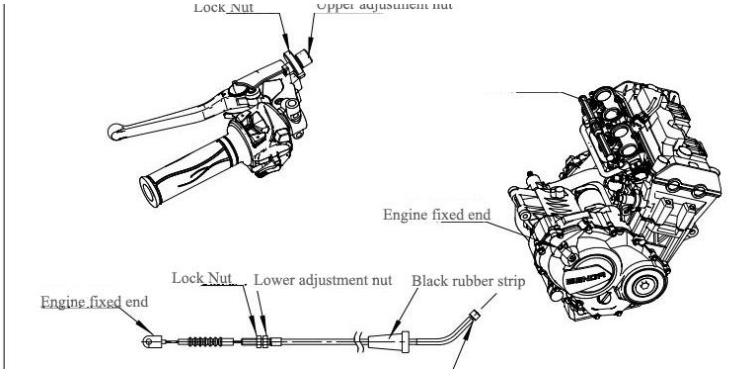
2. If the throttle cable is twisted, stuck, or unable to return, the throttle control cable should be replaced.

3. After the free stroke adjustment of the throttle cable is completed, it is necessary to ensure that the throttle control handle can automatically return and the idle speed will not increase. After simultaneous adjustment, there should be no increase in engine idle speed when turning the front of the vehicle.

[throttle body]

The throttle limit screw on the throttle body has been accurately set, and you cannot adjust it yourself. Check if the idle speed of the vehicle is stable (after the engine is fully warmed up, the idle speed of the engine should be between 1450 and 1750 RPM per minute). If the idle speed is unstable, please designate professional service personnel from our company's designated maintenance unit to inspect and handle it.

6.7 Adjustment of clutch



The free stroke of the clutch handle is 5-10mm.
The function of the clutch: (Figure 22)
1. Ensure a smooth and gentle combination of the engine crankshaft and variable transmission system to ensure a smooth start of the motorcycle.
2. Enable the engine crankshaft to quickly and completely separate from the variable transmission system to ensure that the motorcycle does not experience impact during gear shifting
3. It can prevent damage to components of the variable speed transmission system due to excessive load.

FIG 22 clutch

⚠**Attention:**

When using the clutch handle, you should fully grasp or release it; Try to avoid grabbing only half or releasing only half (using a half clutch), otherwise it may cause clutch wear or burning.

VII.Inspection and adjustment of chains

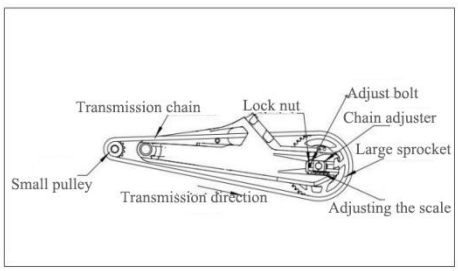


Fig.23 Chain belt

Chain model: 525-136

[Inspection] (Figure 23)

1. Park the vehicle on a flat surface, shift to neutral, and turn off the engine.
2. Swing the chain up and down, and the chain should be tightened with a swing amplitude of 5-10mm.
3. Check if the chain locking clip is loose and whether the large and small sprockets are on the same level.
4. Check the wear condition of the chain. If there is a chain link defect, excessive wear, or chain damage

If it is too long, the chain must be replaced.

5. Check the wear condition of the large and small sprockets. If the teeth are severely worn, missing, or broken, they must be replaced.

[Adjustment]

Adjust the tightness of the motorcycle chain in a timely manner, with a swing range of 5-10mm. Regularly check the buffer bearing and add lubricating grease on time.

When adjusting the chain, in addition to adjusting according to the scale of the frame chain, it is also necessary to visually observe whether the front and rear toothed discs are in the same line as the chain.

[Lubrication]

1. Clean the chain and sprocket, add an appropriate amount of engine oil or spray clean lubricating oil after cleaning.

2. The chain needs to be cleaned and lubricated every 500km.

3. After a general form of 3000km, the chain should be removed and cleaned once, and soaked in heated and melted graphite grease for 5-10 minutes.

4. After the vehicle is driving on a muddy road, it is necessary to clean the dust inside the chain link in a timely manner and add lubricating oil.

[Replacement]

1. Remove the left rear cover of the engine;

2. Carefully remove the chain locking clamp with Needle-nose pliers, disconnect the chain link and take down the chain;

3. Install the chain in the reverse order of disassembly and adjust the swing of the chain;

4. Regularly clean the chain and toothed discs, add lubricating grease in a timely manner, and strengthen the maintenance of the chain and toothed discs in rainy, snowy, and muddy roads.

Attention:

Before each ride, check whether the transmission system works properly. If you notice any defects or damages, you must immediately carefully inspect and repair them.

IX ABS anti-lock braking system

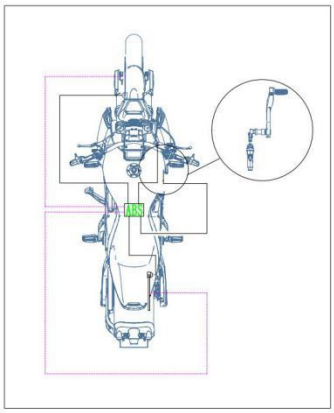


FIG 24 ABS system

ABS consists of a hydraulic unit, ABS control unit, and return pump, installed under the seat. There are two wheel speed sensors on the front and rear wheels.

ABS operates using two independent brake circuits (front and rear brakes). In normal operating mode, the function of the braking system is the same as that of a conventional braking system without ABS. Only when the ABS control unit recognizes that a wheel tends to lock up, will the ABS start working by adjusting the brake pressure. This adjustment process can be felt through slight jumps on the front brake handle or brake pedal.

After turning on the ignition, the ABS warning indicator light must light up and turn off when the starting speed exceeds 5km/h. If the ABS warning indicator light does not turn off after starting or lights up during driving, it indicates a malfunction in the ABS system. At this time, ABS cannot be activated again, and the wheels may lock up during braking.

Warning:

1. Only when the ABS is turned off can the rear wheels rotate when the front brakes are tightened.

2. If modifications are made, such as shortening or extending the shock absorption stroke, using other rim diameters, other tires, incorrect tire pressure, or other brake friction pads, it may prevent ABS from continuing to function. Only when using spare parts and tires recommended by Benda Motors on the braking system can the optimal function of ABS be guaranteed.

3. Please perform maintenance and repairs as required.

[Inspection] (Figure 25)

X:Inspection and adjustment of front brake

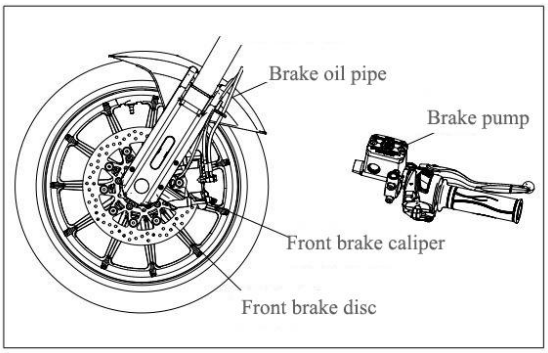


Fig 25,front brake disc inspection

Measure the free stroke of the front brake handle to be 5-10mm.

Measure the thickness of the front brake disc and brake friction plate.

Check the oil level in the oil cup; Check whether the brake caliper is normal; Check the brake oil pipe and

The brake oil cup has no oil leakage or cracks; Check the wear of the brake discs.

When operating the brake handle, if you feel insufficient pressure on the handle, it should be repaired in a timely manner; Otherwise, it will reduce braking performance or brake failure. This work should be completed at the "Benda Exclusive Store".

Warning:

1. Non petroleum based brake oil with brand number DOT3 or DOT4 should be added; Different brands cannot be mixed for use;

2. Brake oil has strong corrosiveness and should not splash onto the surface of painted or plastic parts; If consumed by mistake, it should be forcefully vomited; If it comes into contact with the eyes or skin, immediately rinse with plenty of water and seek medical attention;

3. The hydraulic disc brake works under high pressure. To ensure safety and reliability, the replacement time of brake friction plate and brake oil should not exceed the maintenance cycle;

4. When the hydraulic disc brake system needs to be repaired, it can only be repaired by professional technicians.

Attention:

The brake is an extremely important component to ensure the personal safety of the rider, and it should be checked and adjusted frequently.

Replace with a new brake disc or brake friction pad and do not drive immediately; You should first manipulate (grip) the front brake handle several times until the brake disc and caliper are well engaged.

9.1. Check the front brake disc

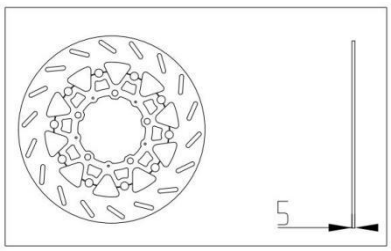


Fig 26 Inspection of front brake disc

The brake disc will gradually wear out during long-term use, so it is necessary to check the thickness dimensions of the brake disc at multiple positions. And inspect its appearance to confirm if the brake disc is damaged, cracked, or deformed.

If the thickness of the brake disc is lower than the specified value: please replace the brake disc.

If the brake disc is damaged, cracked, or deformed: please replace the brake disc

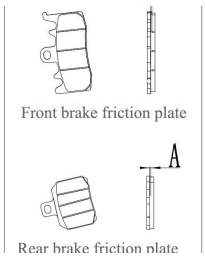
Brake disc thickness: not less than 4mm.

Warning:

The wear of the brake disc can reduce the thickness of the brake disc within the contact area of the brake friction plate, which can reduce the braking effect and pose a threat to your driving safety. Once damage, cracks, or deformation occur, please replace the brake disc immediately.

When the brake disc is worn to the limit thickness of 4mm, it must be replaced; Remove the front brake calipers and front wheels, and then replace the brake discs.

9.2. Check the brake friction plate of the front brake



Check the minimum thickness (A) of the brake friction plate.

The minimum thickness value of the brake friction plate: A=1.5mm.

If the thickness is lower than the minimum thickness: please replace the friction plate in a timely manner.

If damage or cracks are found on the friction plate: please replace the friction plate in a timely manner.

Fig 27 Inspection of front brake friction plate

Attention:

The friction plate will gradually wear out during the braking process of the vehicle. The braking effect will gradually decrease. To ensure the safety of you and the vehicle, please regularly inspect and replace them in a timely manner. If you are not familiar with the specifications of the friction plate or cannot replace it on your own, please go to the designated after-sales point of Benda for repair.

9.3. Check the brake fluid level of the front brake system

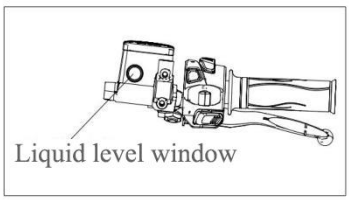


Figure 28 Front brake fluid level inspection

Adjust the vehicle's positioning position so that the brake fluid in the brake fluid tank is in a horizontal position, and check the brake fluid level through the fluid level window.

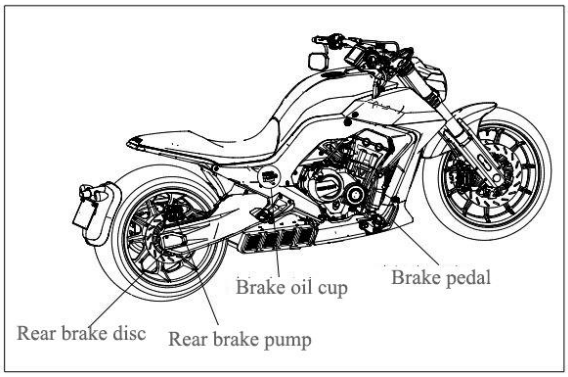
When the brake fluid level is below the scale line: Please replenish the brake fluid in a timely manner.

Warning:

If the brake fluid level is below the mark, it means that the brake system is not sealed or the brake friction plates have completely worn out. Check the brake system and do not continue driving. Please go to the designated after-sales point of Benda for repair.

Long use of brake fluid can reduce the braking effect. Please replace the brake fluid in a timely manner.

XI:Inspection and adjustment of rear brake



[Inspection] (Figure 29)

Measure the free stroke of the rear brake pedal to be 10-20mm.

Measure the thickness of the rear brake disc and brake friction plate.

Check the oil level in the oil cup; Check whether the brake caliper is normal; Check the brake oil pipe and brake oil cup for oil leakage or cracks; Check the wear of the brake discs.

nsufficient pedal pressure, there is air in the brake system; The brake system

should be completely drained of air before normal use; Otherwise, it will reduce braking performance or brake failure. Please have the professional technical personnel of the maintenance unit serve you for this repair.

10.1. Check the rear brake disc

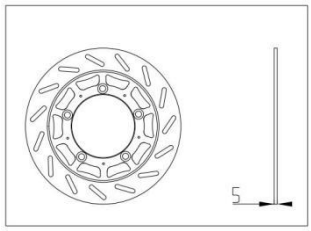


Figure 30 Rear brake disc inspection

The brake disc will gradually wear out during long-term use, so it is necessary to check the thickness dimensions of the brake disc at multiple positions. And inspect its appearance to confirm if the brake disc is damaged, cracked, or deformed.

If the thickness of the brake disc is lower than the specified value: please replace the brake disc.

If the brake disc is damaged, cracked, or deformed: please replace the brake disc

Brake disc thickness: not less than 4mm.

Warning:

The wear of the brake disc can reduce the thickness of the brake disc within the contact area of the brake friction plate, which can reduce the braking effect and pose a threat to your driving safety. Once damage, cracks, or deformation occur, please replace the brake disc immediately.

When the brake disc is worn to the limit thickness of 4mm, it must be replaced; Remove the rear brake calipers and rear wheels before replacing the brake discs.

10.2. Check the brake lining of the rear brake

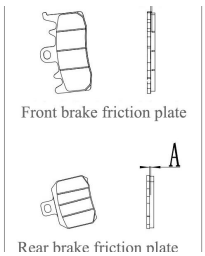


Figure 31 Inspection of Rear Brake Friction Plate

Check the minimum thickness (A) of the brake friction plate.

The minimum thickness value of the brake friction plate: A=1.5mm.

If the thickness is lower than the minimum thickness: please replace the friction plate in a timely manner.

If damage or cracks are found on the friction plate: please replace the friction plate in a timely manner

Attention:

The friction plate will gradually wear out during the braking process of the vehicle. The braking effect will gradually decrease. To ensure the safety of you and the vehicle, please regularly inspect and replace them in a timely manner. If you are not familiar with the specifications of the friction plate or cannot replace it on your own, please go to the designated after-sales point of Benda for repair.

10.3. Check the brake fluid level of the rear brake system

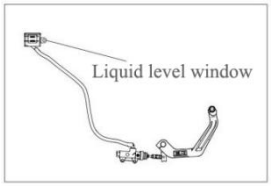


Figure 32 Rear brake fluid level inspection

Adjust the vehicle's positioning position so that the brake fluid in the brake fluid tank is in a horizontal position, and check the brake fluid level through the fluid level window.

When the brake fluid level is below the mark, please replenish the brake fluid in a timely manner.

Warning:

If the brake fluid level is below the mark, it means that the brake system is not sealed or the brake friction plates have completely worn out. Check the brake system and do not continue driving. Please go to the designated after-sales point of Benda for repair.

Long use of brake fluid can reduce the braking effect. Please replace the brake fluid in a timely manner.

XII Battery maintenance

[Battery model] (Figure 33)

Model: MG14L-BS-C

Capacity: 12V 14Ah

Standard charging: 1A~1.4A × 6-8 hours

[Disassembly and assembly of battery]

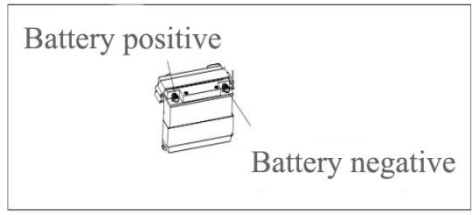


Fig 33 Battery

Dismantling:

1. Open the seat cushion lock and remove the seat cushion;
2. Remove the electrical box cover and battery pressure plate;
3. First remove the negative electrode wire (-);
4. Remove the positive wire (lift) afterwards;
5. Remove the battery.

Installation:

1. The installation sequence is opposite to the disassembly steps.
2. Install the positive lead wire (lift) first, and then the negative lead wire (-), ensuring positive and negative

The pole terminal is not loose, and the positive and negative terminals cannot be reversed. Reverse connection can damage electrical components. Figure 34 Battery Installation

Danger:

Install the positive and negative cable wires on the left and right sides of the battery (as shown in Figure 34) to avoid short circuits caused by overlapping with the battery pressure plate, causing battery damage, explosion, and even threatening personal safety.

[Battery charging]

1. Remove the vehicle seat cushion.
2. Remove the electrical box cover and battery pressure plate, remove the positive and negative wires, and take out the battery.
3. Connect the charger wire and ensure that the charging current is 1/10A of the battery capacity. For example, if a battery with a capacity of 10Ah is charged, its charging current is 1 ampere.

For detailed instructions on the charger, please contact your dealer.

[Inspection and maintenance of batteries]

When frequently used, the motorcycle charging system automatically charges the battery fully. If you occasionally use a motorcycle or use it for a short period of time, the battery may be low. The battery will generate self discharge, and the

self discharge rate varies with the type of battery and ambient temperature.

2. When the motorcycle is not used for a long time, the battery must be removed for charging and stored, and the battery must be charged regularly;

3. The positive (lift) and negative (-) terminals of the battery should be cleaned regularly.

When replacing batteries, use batteries of the same model and specification.

Danger:

1. Battery terminals, terminals, and related components contain lead or lead compounds. If lead or lead compounds enter the blood system, they can harm your health. After contact with pollution, they must be cleaned promptly.

2. The battery must be stored out of reach of children.

3. Batteries contain toxic substances such as sulfuric acid and lead. It can cause harm to people and pollute the environment. Used batteries must be disposed of or recycled in accordance with local legal regulations. It cannot be discarded like ordinary household waste.

Attention:

1. Overcharging or undercharging the battery can shorten its lifespan. Do not let the battery overcharge or undercharge.

2. If your vehicle is rarely driven, you must use a voltmeter to check the battery voltage every week. If the voltage of the battery is below 12.8V, a charger must be used to charge the battery.

3. If you do not use the vehicle for more than two weeks, you must use a charger to charge the battery. Do not use an automatic fast charger to charge the battery, as this can cause overload and damage to the battery.

[Replacement of fuses]

There are a total of 8 plug-in fuses in the circuit system. There are a total of 7 fuses in the six way fuse box, including 1 fuse for 1A, 2 fuses for 10A, and 4 fuses for 15A. Additionally, there are 1 spare fuse for 15A and 1 spare fuse for 1A in the fuse box. There is a separate 30A fuse 1PCS on the starter relay, and there is also a backup 30A fuse. If the fuse frequently burns out, there may be a short circuit or overload in the circuit system. Please have the professional technical personnel of the maintenance unit serve you.

When replacing a fuse, first unplug the old fuse and insert a spare fuse.

There is a separate 30A fuse 1PCS on the starter relay, and there is also a backup 30A fuse.

Warning:

Before checking or replacing fuses, the ignition switch and electrical switches must be turned off to prevent circuit shorts. Never use a fuse with a current rating that is different from the rated current, otherwise it may cause damage to the vehicle's electrical system or cause a fire. It may also pose a risk of lighting failure or engine failure at night or during driving.

XIII:Engine water cooling system maintenance instructions

[Cooling System] (Figure 35)

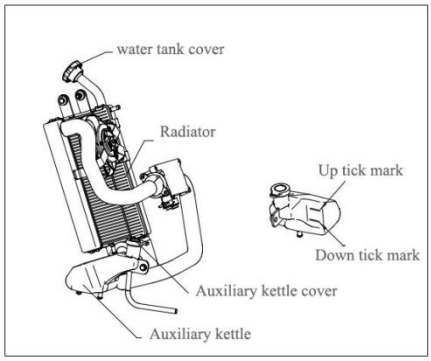


Figure 35 Cooling System

The cooling system can prevent engine overheating, and proper use and maintenance of the cooling system can extend the service life of the engine.

The radiator is located at the front of the engine, and according to the road conditions you are driving, the radiator should be regularly cleaned of dust and soil.

[Type of coolant]

The coolant has five characteristics: corrosion prevention, cavitation prevention, high boiling point, anti scaling, and anti freezing.

Cooling liquid is generally mixed with concentrated antifreeze and soft water (purified or distilled water) in an appropriate proportion. Please mix it into a fixed concentration that adapts to the local minimum temperature. Generally, when mixed into a concentration of 40% to 50%, the antifreeze function is the best.

The direct coolant specially used for aluminum alloy engine is used. This coolant has been prepared in the factory and contains Antifreeze, rust inhibitor, foam inhibitor and trace silicate. The ambient temperature for use is indicated on the container.

⚠**Attention:**

1. This coolant is a specialized coolant and cannot be replaced with tap water or other liquids, as it may cause engine damage.

2. Please go to the "Benda Exclusive Store" to purchase direct coolant for aluminum alloy engines.

3. If you need to replace the coolant or if there is a coolant leak, please go to the "Benda Exclusive Store" for replacement and repair.

[Check the coolant capacity]

The total amount of coolant in the cooling system is approximately 2300ml

1. Park the motorcycle on a flat surface with a single support.

2. Check the coolant level while the engine is cooling, and the coolant level should be between the upper and lower scale lines.

[Add a small amount of coolant]

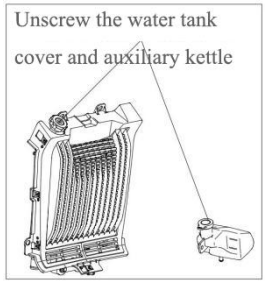


Fig 36 Adding coolant

If the coolant in the auxiliary water tank is at or below the lower mark position, please add special coolant in a timely manner to the upper mark position.

[Add Method]

1. Park the motorcycle on a flat surface with a single support and wait for the engine to cool down; Otherwise, heat may cause burns to the skin;

2. Unscrew the water tank cover and the auxiliary kettle cover,;Install the water tank

cover and auxiliary kettle cover.

3. Pour the coolant into the water tank and add it to the upper mark position;

4. Cover the water tank cover and the auxiliary kettle cover.

[Storage of coolant]

When the coolant is not in use, it should be stored in a dedicated sealed container.

2. It should be placed in a cool and dry place. The coolant is a toxic liquid and must be kept away from children.

3. Pay attention to the strict prevention of contamination of the coolant by petroleum products, and do not mix or store two different brands of coolant.

Danger:

1. Antifreeze is an organic solvent with toxicity and corrosive. During use, it is not allowed to splash onto the surface of rubber products or paint parts, nor should it come into contact with human skin. If it accidentally splashes onto rubber products, paint surfaces, or human bodies, it should be immediately rinsed with water.

2. When repairing the engine, if it is necessary to loosen the cylinder nut, please drain the coolant first to prevent it from entering the crankcase.

3. Due to the higher boiling point of antifreeze compared to pure water, the radiator cap must not be opened when the engine is running normally or the temperature has not dropped (60 ℃) after parking to avoid burning the body.

XIV Vehicle cleaning and storage

[Vehicle cleaning]

1. Motorcycles should be cleaned regularly to detect damage, wear, or oil leakage in a timely manner.

2. When cleaning, it is necessary to wait for the engine to cool down and rinse with clean water. After cleaning, dry the motorcycle and start the engine, allowing it to run for a few minutes; Use lubricating oil to lubricate the chain; Before driving on the road, check the brakes, and the front and rear brakes should be normal.

3. Parts that cannot be sprayed with high-pressure water: headlights, turn signals, ignition lock, electrical switches, instruments, electrical parts and circuits, batteries, air filters, wheel hubs, exhaust pipe outlets, under the fuel tank, and engine cylinder heads. These components are best wiped with a cloth.

4. The braking performance may decrease after cleaning, and it must be tested and adjusted before use.

[Vehicle storage]

After the motorcycle is used on the same day, it should be stored in a dry, small temperature difference, and well ventilated safe place. If stored for a long time (over 30 days), necessary repairs should be carried out before storing the motorcycle; Otherwise, problems that require repair may be forgotten when using after storage. Long term storage (over 30 days) should not only be repaired according to the above requirements, but also be maintained according to the following requirements:

1. Clean and dry the motorcycle, and apply wax to the painted surface of the entire vehicle.

2. Drain the fuel from the fuel tank and spray rust inhibitor into the tank.

3. Completely drain the oil and refill the crankcase with new oil.

4. Remove the spark plug and inject a small amount (15-20 milliliters) of lubricating oil into the cylinder; Then reinstall the

spark plug, open the ignition switch lock, press the start button for 2-3 seconds, and evenly distribute the oil on the cylinder wall.

5. Remove the battery, remove rust from the terminals and wiring connectors, and store in a well ventilated, dry, cool, and away from direct sunlight.

6. Inflate the tires to the specified pressure and place the motorcycle above the cushion blocks, so that the front and rear wheels are off the ground. If the tire pressure is too low, it will cause premature aging and cracking of the tires.

7. Cover the intake port of the air filter and the exhaust port of the exhaust muffler with a cloth containing new engine oil to prevent moisture from entering.

8. Cover the motorcycle with highly breathable materials and store it in a dry, safe place with low temperature difference and good ventilation.

[Use after vehicle storage]

1. Remove the motorcycle cover and clean the motorcycle.

2. Check the voltage of the battery. If the voltage is below 12.8V, it must be charged at low speed before installing the battery.

3. Remove the rust inhibitor from the fuel tank and add new fuel.

4. Test drive the motorcycle in a safe place to check whether its performance is normal.

XV Service life and vehicle handling of vehicles

[Vehicle Service Life]

The service life of the vehicle shall be in accordance with the regulations of the traffic management department or the local vehicle.

[Vehicle Handling]

1. Disposal of waste engine oil: The waste engine oil replaced by motorcycles should be placed in plastic barrels and handed over to the recycling company for disposal. You cannot discharge waste engine oil arbitrarily, otherwise it will cause damage to the site, soil, water sources, and other environments.

2. Disposal of waste batteries, light bulbs, appearance parts, filter cartridges, tires, iron parts, aluminum parts, and other parts: These waste parts should be classified and recycled for disposal. You cannot discard it at will, let alone pour out the dilute sulfuric acid in the battery to cause harm to people or pollution to the environment.

3. After the vehicle is scrapped, please handle it according to the vehicle scrapping regulations of the traffic management department or the local vehicle Kwalliso.

4. Adjustment data related to motorcycles

The free stroke of the front (hand) brake is 5-10mm, and the free clearance of the throttle handle is 2-6mm

Rear (foot) brake free stroke 10-15mm Clutch free stroke 5-10mm

Spark plug gap: 0.8-0.9mm Inlet valve gap: 0.14-0.18mm

Exhaust valve clearance: 0.24~0.28 mm

Rear shock absorber fastening bolt torque value: 30-40 N · m

Handle fastening bolt torque value: 22-30N · m Flat fork shaft fastening nut torque value: 70-90 N · m

Front wheel axle fastening nut torque value: 70-90N · m Steering system fastening nut torque value: 50-70 N · m

Rear wheel axle fastening nut torque value: 140-180 N · m

Front shock absorber and upper connecting plate fastening bolt torque value: 10-14N · m

Front shock absorber and steering column fastening bolt torque value: 20-25 N · m

Engine suspension fastening nut torque value: M8:18-25 N · m, M10:30-40 N · m

XIV Table of Main Technical Parameters

Model Name		**BD700-2**
Vehicle parameters	Manufacturer Name	HANGZHOU SATURN POWER TECHNOLOGY CO.,LTD
	Vehicle model (Trade name)	BD700-2
	Vehicle brand	BENDA
	Vehicle type	Ordinary two wheeled motorcycle
	Vehicle identification number	H84PDWLB xxxxxxx
	Authorized Manning	2 people (one driver and one passenger)
	Turning form	Directional handle
	Gear format	Sixth gear constant engagement
	Braking form	Front wheel: disc type Rear wheel: disc type
	Braking operation mode	Front wheel: hand brake Rear wheel: foot brake
	Clutch form	Sliding clutch/wet multi plate type
	Starting method	Electric start
	Length * width * height	2430*880*1110
	Wheelbase	1720
	Minimum ground clearance	160
	Vehicle curb weight	235
Vehicle model (project)		BD700-2
Vehicle parameters	Maximum load mass	150
	Fuel tank capacity	17L
	Number of tires	2
	Front wheel specifications	130/70-19
	rear tire	310/35-18
Electrical installations	Ignition method	ECU
	Spark plug model	CR9EH-9 (NGK)
	Headlamp specifications	12V 7W/19W
	Turn signal specifications	12V LED
	Taillight/brake light specifications	12V LED
	fuse value	Main cables: 1A (1), 10A (2), 15A (4), 15A (1 backup), 1A (1 backup). Starting relay: 30A (1), 30A (1 spare)
	Battery specifications	12V 14Ah
Engine	Engine form	L style Four Cylinder
	Engine model	BD467MU
	Compression ratio	11.6：1
	Actual displacement	676
	Maximum net power	69kw/11000rpm
	Maximum torque	63N.m/8500rpm
	Cylinder diameter * stroke	67*48

	idling	1600±150
	engine oil	SAE
	No.	15W-40 and Above
	Oil capacity	3.5L
	Fuel grade	95# and Above
	Spark plug gap	0.8~0.9 mm
Ratio	Primary speed ratio	1.690
	First gear ratio	3.071
	Second gear ratio	2.235
	Third gear ratio	1.777
	Fourth gear ratio	1.520
	Fifth gear ratio	1.333
	Six speed ratio	1.214
	Final speed ratio	3.888
performance	Maximum speed	195
	Fuel consumption	5.5

XVII:Motorcycle related adjustment data

Problem	**Parts**	**Fault cause**	**disposal method**
Cannot start	fuel system ignition system	There is no fuel in the fuel tank	come on
		Blocked or damaged oil pump, poor fuel quality	Clean or replace
	fuel system	Spark plug fault: Excessive carbon accumulation and prolonged use	Check or replace
		Spark plug cap malfunction: poor contact or burnt out	Check or replace
		Ignition coil fault: poor contact or burnt out	Check or replace
		CDI malfunction: poor contact or burning	Check or replace
		Trigger coil fault: poor contact or burning	Check or replace
		Stator fault: poor contact or burning	Check or replace
	Cylinder pressure system	Starting mechanism malfunction: worn or damaged	Check or adjust
		Malfunction of intake and exhaust valves and valve seats: fuel contains too much gum or has been used for too long	Check or replace
		Cylinder, piston, and piston ring failure: fuel containing gum or worn	Check or replace
		Air leakage in intake pipe: used for too long	Check or replace
		Valve timing fault	Check or replace
Insufficient power	Valve piston	Excessive carbon accumulation in intake and exhaust valves and pistons: poor fuel quality, poor oil quality	Check or replace
	clutch	Clutch slipping: poor oil quality, prolonged use, overload	Repair or replace
	Cylinder block and ring	Wear of cylinder block and piston ring: poor oil quality and long service life	Adjust or replace
	Brakes	Incomplete brake release: brake too tight	Oil Change
	chain	Chain too tight: improper adjustment	adjustment

	Engine	Engine overheating: The mixture is too rich or too lean, and the quality of the engine oil and fuel is poor,	adjustment
	Spark plug	There are obstructions, etc	Adjust or replace
	Intake duct	Air leakage in the intake pipe: adjusted or replaced after prolonged use	Adjust or replace
	Cylinder head	Cylinder head or valve leakage	Check or replace
	Electrical system	Electrical system malfunction	Inspection or repair
	Air filter	Air filter clogged	Cleaning or adjustment
Headlamps and tail lights do not light up	cable	Poor wiring connection	adjustment
	Left and right switches	Poor or damaged switch contact	Adjust or replace
	Headlamps	Bulb and socket inspection	Adjust or replace
	Pressure regulator	Inspection for Pressure regulator: poor contact or burned	Check or replace
	Magneto	Magneto coil inspection: poor contact or burning	Check or replace
The horn does not sound	Battery	The battery is dead	Adjust or replace
	Left switch	Horn button inspection	Adjust or replace
	cable	Poor circuit contact	Adjust or replace
	horn	Damaged horn	Adjust or replace

The above are common faults of motorcycles. If your motorcycle malfunctions, please promptly go to the designated maintenance unit for inspection and repair

FE08 inline four cylinder national four fault code table

Code No	Fault Code	Fault Description
1	P 0118	Cylinder temperature sensor circuit high voltage/open circuit fault
2	P 0117	Low voltage fault of cylinder temperature sensor circuit
3	P 0336	Crankshaft position sensor circuit signal interference fault
4	P 0335	No signal fault in the crankshaft position sensor circuit
5	P 2300	Short circuit to low voltage/open circuit fault of ignition coil "A" (physical cylinder 2)
6	P 2303	Short circuit to low voltage/open circuit fault of ignition coil "B" (physical cylinder 4)
7	P 2306	Short circuit to low voltage/open circuit fault of ignition coil "C" (physical cylinder 3)
8	P 2309	Short circuit to low voltage/open circuit fault of ignition coil "D" (physical cylinder 1)
9	P 0123	Short circuit to high voltage fault of throttle position sensor
10	P 0122	Short circuit to low voltage/open circuit fault of throttle position sensor
11	P 0459	Carbon canister solenoid valve circuit short circuit to high voltage fault
12	P 0458	Carbon canister solenoid valve circuit short circuit to low voltage/open circuit fault
13	P 0232	Oil pump relay short circuit to high voltage fault
14	P 0231	Oil pump relay short circuit to low voltage/open circuit fault
15	P 0601	ECM Read Only Memory Verification Error
16	P 0262	Fuel injector "A" short circuit to high voltage fault (physical cylinder 2)

17	P 0261	Fuel injector "A" short circuit to low voltage/open circuit fault (physical cylinder 2)
18	P 0265	Fuel injector "B" short circuit to high voltage fault (physical cylinder 4)
19	P 0264	Fuel injector "B" short circuit to low voltage/open circuit fault (physical cylinder 4)
20	P 0268	Fuel injector "C" short circuit to high voltage fault (physical cylinder 3)
21	P 0267	Fuel injector "C" short circuit to low voltage/open circuit fault (physical cylinder 3)
22	P 0271	Fuel injector "D" short circuit to high voltage fault (physical cylinder 1)
23	P 0270	Fuel injector "D" short circuit to low voltage/open circuit fault (physical cylinder 1)
24	P 0108	Intake sensor circuit high voltage/open circuit fault
25	P 0107	Low voltage fault in the intake sensor circuit
26	P 0113	Intake air temperature sensor circuit high voltage/open circuit fault
27	P 0112	Intake air temperature sensor circuit low voltage fault
28	P 0132	Oxygen sensor signal "A" short circuit to high voltage/open circuit fault (physical cylinder 2)
29	P 0131	Oxygen sensor signal "A" short circuit to ground fault (physical cylinder 2)
30	P 0138	Oxygen sensor signal "B" short circuit to high voltage/open circuit fault (physical cylinder 4)
31	P 0137	Short circuit to ground fault of oxygen sensor signal "B" (physical cylinder 4)
32	P 0152	Oxygen sensor signal "C" short circuit to high voltage/open circuit fault (physical cylinder 3)
33	P 0151	Short circuit to ground fault of oxygen sensor signal "C" (physical cylinder 3)
34	P 0158	Oxygen sensor signal "D" short circuit to high voltage/open circuit fault (physical cylinder 1)
35	P 0157	Short circuit to ground fault of oxygen sensor signal "D" (physical cylinder 1)
36	P 0031	Oxygen sensor heater "A" short circuit to low voltage/open circuit fault (physical cylinder 2)
37	P 0032	Oxygen sensor heater "A" short circuit to high voltage fault (physical cylinder 2)
38	P 0037	Oxygen sensor heater "B" short circuit to low voltage/open circuit fault (physical cylinder 4)
39	P 0038	Oxygen sensor heater "B" short circuit to high voltage fault (physical cylinder 4)
40	P 0051	Oxygen sensor heater "C" short circuit to low voltage/open circuit fault (physical cylinder 3)
41	P 0052	Oxygen sensor heater "C" short circuit to high voltage fault (physical cylinder 3)
42	P 0057	Oxygen sensor heater "D" short circuit to low voltage/open circuit fault (physical cylinder 1)
43	P 0058	Oxygen sensor heater "D" short circuit to high voltage fault (physical cylinder 1)
44	P 0563	System voltage high fault
45	P 0562	System voltage low fault
46	P 0500	Vehicle speed sensor malfunction
47	P 0850	Neutral/clutch switch circuit input fault
48	P 0650	Engine malfunction indicator light malfunction

49	P 1693	Engine speed output low voltage fault
50	P 1694	Engine speed output high voltage fault
51	P 0505	Idle speed control malfunction

The above are common fault codes for motorcycles. If your motorcycle malfunctions, please promptly go to the designated maintenance unit for inspection and repair.

Remember: You cannot handle motorcycle malfunctions on your own, otherwise it may cause safety hazards or accidents. If you handle motorcycle malfunctions on your own, you will be responsible for any safety accidents caused.

XIX Electrical schematic diagram