PREFACE

Dear user:

Sincerely thank you for choosing the BD250-30 two wheeled motorcycle designed and produced by our company! This model is independently developed and produced by our company based on advanced technology and avant-garde design concepts at home and abroad. We hope it can bring you a safe driving process and a comfortable driving experience!

Before driving a motorcycle, please read the regulations and requirements outlined in this manual thoroughly!

This manual provides an overview of the repair and maintenance of this motorcycle. Please follow the various procedures outlined in this manual for operation!

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

The company has always adhered to the service tenet of "making consumers more satisfied" and continuously improves product quality and performance. Any changes in appearance, color, and structure that may result from this may be inconsistent with this manual. We apologize for any inconvenience caused. The pictures in this manual are for reference only, and the actual product shall prevail.

Thank you again for your attention and trust in our company!

Hangzhou Saturn Power Technology Co., Ltd

Important precautions

Please follow the instructions in this user manual when operating and driving the vehicle, strictly comply with national and local traffic laws and regulations, and always pay attention to personal safety!

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

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

Danger/Warning/Caution

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

Danger
The matter indicated by this word involves the personal safety of drivers, and ignoring this may result in injury.

Warning:
The item indicated by this word refers to operational precautions to avoid damaging the motorcycle.

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

Catalogue

I. User Notice

1.1 Safety Notice for Driver

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

① Wear various protective equipment correctly

Cycling protective equipment includes safety helmets, goggles, knee pads, elbow pads, and gloves. Wearing protective equipment can greatly reduce the harm to the body in case of accidental falls, and can maximize the protection of your personal safety.

② Familiar with vehicle structure

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

③ Understand the limits of one's own 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 peculiar clothing can make you uncomfortable and unsafe while driving. Wearing well fitted 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 Pre driving inspection

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

⑥ Pay extra attention to safety when driving on rainy days

Pay extra attention on rainy days and remember that the braking distance is twice as long as on sunny days. When driving, flash off the covers, paint, and oil stains on the road surface to avoid slipping.

1.2. Number Position (Figure 1)

① VIN: On the right side of the frame main tube;

② Nameplate: On the right side of the frame main tube;

③ Engine number: Above the left box.

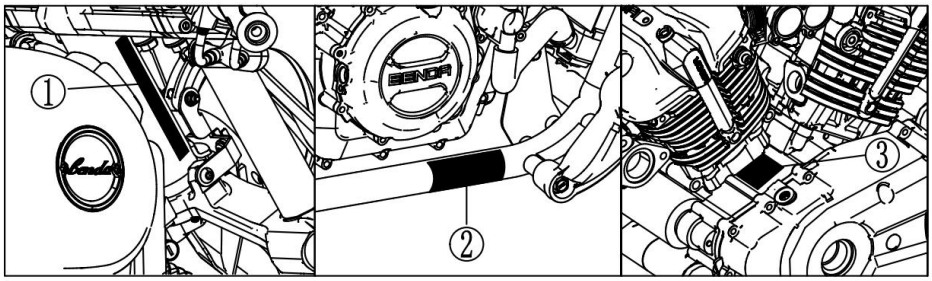


Figure 1 Location of nameplate, VIN code, and engine number

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

Frame number code	
Engine code	

II. Introduction to BENDA Two-Wheel Motorcycle

The BENDA two wheel motorcycle has a compact structure and a unique and innovative appearance. Comfortable riding, good driving stability, using electronic fuel injection system, more environmentally friendly, low fuel consumption and emissions, meeting national emission requirements.

The BENDA two wheeled motorcycle will bring you an unprecedented driving experience!

2.1 Scope of application of BENDA two wheeled motorcycles

BD250-30 is a two wheeled motorcycle independently developed by BENDA, which is suitable for both urban and rural roads.

2.2 Characteristics of BENDA Two Wheel Motorcycle

1. **Strong power and high load.**
2. **High torque and strong climbing ability.**
3. **Adopting electronic fuel injection system.**
4. **We have adopted domestically advanced and professional water-cooled engines.**
5. **We have adopted a 'full DC power supply system'.**

2.3 Load limitation

Number of passengers: 1 person.

Maximum allowable load capacity: 75kg.

2.4 Fuel

Fuel grade: 95 #/ E5 and above unleaded gasoline.

Due to the high flammability of gasoline, if the fuel tank, fuel filter, fuel delivery pipe, throttle valve body and other parts of the vehicle leak oil 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, mufflers, and other components.

2.5 Electrical appliances

You are not allowed to install or change the wiring of this vehicle on your own, nor can you increase or add electrical equipment on your own. Otherwise, it will overload the electrical system, causing overheating of the circuit, melting fuses or short circuiting the circuit, and even generating sparks that can cause danger such as burning the car.

danger

If any consequences arise from the installation or modification of the vehicle's wiring, or the increase or addition of electrical equipment, our company shall not be held responsible.

2.6 Inspection

You should strictly follow the requirements in the "maintenance cycle table" to maintain the listed components.

III. Safe Driving Rules

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 functioning properly; When driving or riding this motorcycle, your body must be healthy in order to control the vehicle at its best condition.

Danger

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

3.1 Safety Driving Rules

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

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

3. To avoid causing harm, you should do the following:

- 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 blind spots of other drivers' sight.

4. Strictly abide by traffic regulations.

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

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

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

3.2 Safety protective equipment

1. Most of the injured 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 goggles and gloves.

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

3. Do not wear loose clothing to prevent hooking onto steering handles, clutch levers, pedals, or nearby vehicles, which may cause accidents.

3.3 Vehicle modification

Warning:

1. It is illegal to modify motorcycles or replace the original equipment without ensuring the safety of motorcycle operation. You must comply with the traffic management department's regulations on the use of vehicles.

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

1) Cannot adjust idle speed arbitrarily;

2) Due to the installation of optimization catalyst on the exhaust muffler, if the exhaust muffler is damaged, please go to the designated repair unit for repair or replacement.

3. If you have any good modification suggestions, please inform our company by letter. After confirmation, our company will be responsible for implementing them. Our company is not responsible for any adverse consequences caused by unauthorized modifications.

Danger

We are not responsible for any dangerous consequences such as short circuits in wires, blown fuses, electrical appliances exceeding their rated power, or sparks causing the car to burn due to self modification of cables and appliances.

Be careful:

Improper or overweight loading of motorcycle cargo can damage the performance of the vehicle and affect its driving stability.

When loading goods:

1. The center of gravity of the goods should be located at a lower point and close to the center of the vehicle.

2. Adjust tire pressure based on the load capacity and driving conditions.

3. All goods must be securely fixed to the vehicle to ensure stable handling.

4. Do not attach large or heavy objects to the steering handle, front shock absorber, or front fender, otherwise it may cause unstable driving or poor steering.

5. It is strictly prohibited to exceed the maximum load requirement of the vehicle (75kg).

3.4 Accessories

The original accessories of this vehicle have been tested by the company. Therefore, our company is not responsible for any adverse consequences caused by installing 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 accessory usage. If the above problems exist, the accessories should be canceled before using this vehicle.

IV. Instructions

4.1. Position of Parts

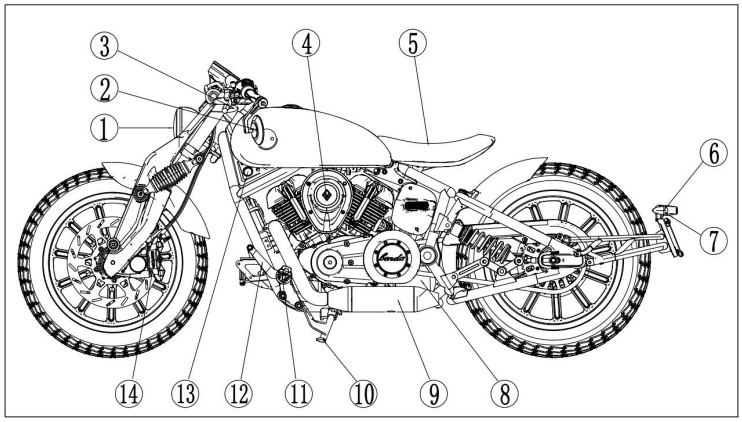


Figure 2

1. Left vehicle body (Figure 2)

(1) Headlight (8) Battery (inside cover)
(2) Left rear view mirror (9) left exhaust muffler
(3) Left front turning light (10) Side brace
(4) Air filter (11) Front left footrest
(5)Seat cushion (12) Gear shift lever
(6) Left rear turning light (13) Electric door lock
(7) Rear license plate light (14) Front brake caliper

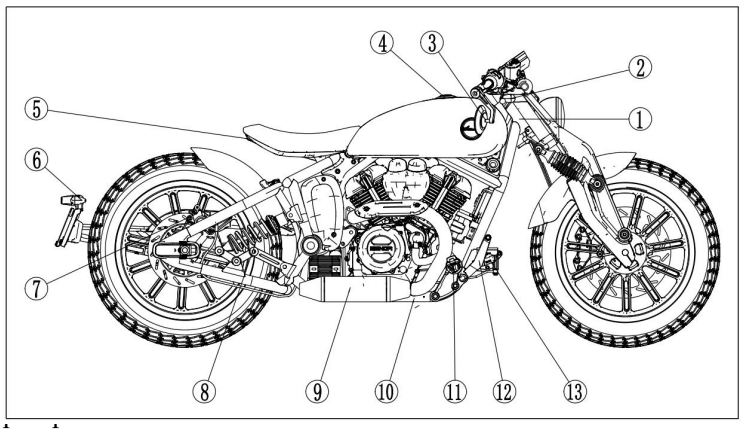


Figure 3

2. Right vehicle body (Figure 3)

(1) Vehicle VIN code (8) Rear shock absorber
(2) Right front turning light (9) Right exhaust muffler
(3) Right rear view mirror (10) Vehicle nameplate
(4) Fuel tank cap (11) Right front footrest
(5) Rear taillight (12) Brake pedal
(6) Right rear turning light (13) Rear brake master
(7) Rear brake caliper

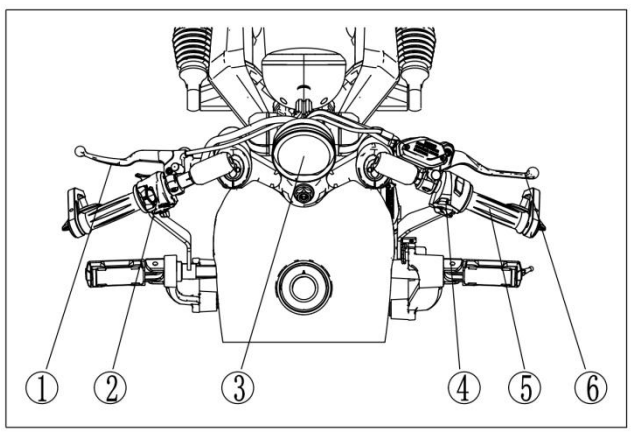


Figure 4

3. Front body (Figure 4)

(1) Clutch handle (4) Right switch combination
(2) Left switch combination (5) Throttle lever cover
(3) Instrument panel (6) Front brake lever

4.2 Speedometer

Please refer to Table 1 for the names and functions of indicator light symbols.

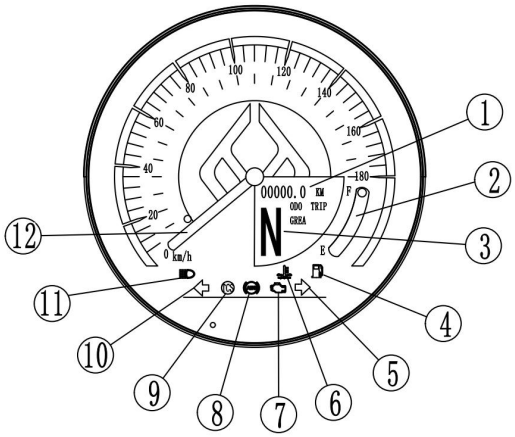


Figure 5

Serial No.	Name	Function
1	Mileage indicator	The total mileage traveled by the vehicle
2	Fuel capacity indicator	Display the remaining fuel level in the fuel tank
3	Gear indicator	Display the gear position of the engine
4	Fuel capacity alarm indicator	Insufficient gasoline in the fuel tank, indicating the need to refuel
5	Right turn indicator	The front and rear right turn signals flash, and when lit, they display green
6	Water temperature alarm indicator	Illuminate and display red: coolant overheating, cooling system malfunction
7	EFI malfunction indicator	After the engine is running, the light will turn off. If there is a fault, it will display yellow light and flash
8	ABS indicator	Display ABS status
9	TCS indicator	Display TCS status
10	Left turn indicator	The front and rear left turn signals flash, and when lit, they display green
11	High beam indicator	The high beam lights up and displays blue when illuminated
12	Speed indicator	Instantaneous speed of vehicle travel

Table 1

4.3. Ignition switch lock

The ignition switch lock (Figure 6) is set in front of the handlebar, and the ignition switch must be turned on before starting the motorcycle. The key position and function are shown in Table 2.

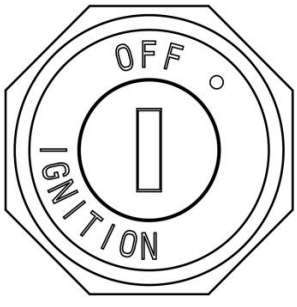


Figure 6

Key position	Function	Key status
Turn off "OFF"	Circuit disconnected, engine cannot start	Can be pulled out
Open it “ ○ ”	Circuit closed, engine can start	Cannot be pulled out
⚠**Be careful:** **When the vehicle is not in use, turn the key to the "OFF" position and remove the key.**		

Table 2

The front lock (Figure 7) is installed at the lower connecting plate of the vehicle. Lock the steering mechanism when not in use for parking.

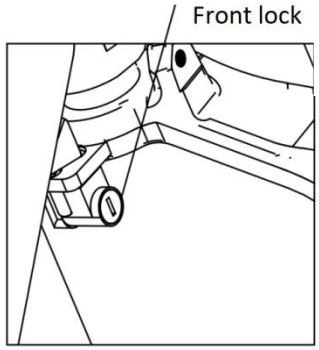


Figure 7

> ⚠**Be careful:**
> **Before locking the steering mechanism, the vehicle must be parked properly. After locking, the motorcycle cannot be pushed, because it will difficult to maintain balance and prone to rollover.**

4.4 Right switch combination (Figure 8)

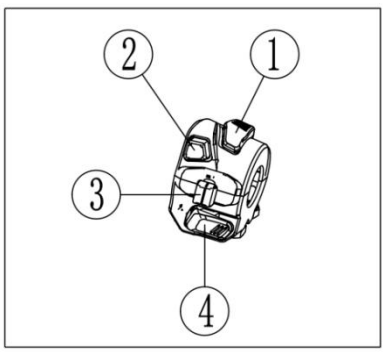


Figure 8

① Shutdown preset switch
② Warning switch
③ Headlight and position light switch
④ Electric start button

1. Shutdown preset switch

The shutdown switch is located on the right side of the steering wheel, and the shutdown preset switch has two positions: "" and "".

Close ""	Turn off the ignition switch - At this position, the ignition circuit is disconnected, the running engine is turned off, and the engine cannot be started.
Open ""	The shutdown switch is turned on - it needs to be switched to this position when running, and the ignition circuit is closed.

2. Headlight and position light switch

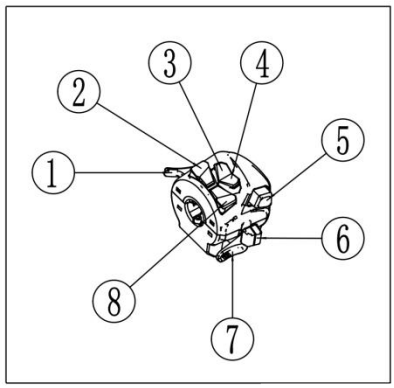
The headlight and position light switches have three states: "" "" "●"

Headlights ""	When the switch is turned to this position, the headlights, position lights, and taillights light up.
Position light ""	When the switch is turned to this position, the position light and tail light are on.
Close '●'	When the switch is turned to this position, the headlights, position lights, and taillights turn off.

3. Electric start button

The operation method is as follows: After completing the preparation work for starting (see page 12), press the electric start button "", and if necessary, turn the throttle handle to add oil appropriately to start the engine.

4.5. Left switch combination **(Figure 9)**



① Passing light button

② SET button

③ ABS switch

④ TCS switch

⑤ High/Low beam switch

⑥ Turning light switch

⑦ Horn button

⑧ MODE button

Figure 9

1. Passing light switch

When the 'passing light button' is pressed, the override light will turn on;

When the 'passing light button' is released, the override light does not turn on.

> ⚠**Be careful:**
> When the headlights are in high beam mode, the passing lights do not work.

2.ABS switch

When the vehicle is stationary, press and hold the switch for three seconds before releasing it to take effect.

At this time, the fault light will flash at a frequency of 1HZ, indicating that the ABS function has been turned off.

If the switch is continuously pressed for more than ten seconds, the ABS function will remain on; After the vehicle is powered on again, the ABS function will also be restored.

After the function is turned off, press the switch again, and the ABS will return to on.

① When ABS is not initialized or malfunctions, the ABS indicator light remains on.

② When the ABS function is turned off: the ABS indicator light flashes.

③ When the ABS function is turned on: the ABS indicator light goes out.

Initialization condition: The vehicle speed is over 5Km/h after starting.

3. TCS switch

After vehicle is powered on, the TCS function is turned on by default.

When the switch is long pressed for more than two seconds, the TCS indicator light will flash at a frequency of 2HZ, indicating that it can be released.

Release the switch at this time, the TCS will turn on normally and the TCS function will be turned off.

Press the switch again, and the TCS function will resume activation.

① Before initialization is complete: The TCS indicator light remains on.

② After initialization, the TCS indicator light will turn off.

③ When TCS is working: The TCS indicator light will flash at a frequency of 2HZ.

The initialization conditions are: engine start, vehicle speed greater than 1km/h, and no current faults.

> ⚠**Warning:**
> **TCS means "traction control system" that its purpose is to prevent the driving wheel from slipping during starting and accelerating, in order to maintain the stability of the vehicle's driving direction. When TCS turn off, the vehicle may slip or roll over, please operate with caution!**

4. Front headlight beam switch

The headlight switch has two operating states: when the ignition switch lock is turned on and the headlight, position light switch is turned to the "☼" position

Low beam	Turn the headlight beam switch to the "" position for low beam mode
High beam	Turn the headlight beam switch to the "" position for high beam mode.

Warning:

Please properly change the status of the high and low beam lights according to the road conditions. If there are oncoming vehicles, please turn the light to the low beam light status to avoid dazzling lights affecting the driving status of oncoming drivers and causing traffic accidents.

5. Turning light switch

When turning left, turn the turning light switch" to the "⇦" position; The left front and rear turning lights on the left, as well as the left turn indicator light in the speedometer are on.

When turning right, turn the turning light switch" to the "⇨" position; The front and rear turning lights on the right side, as well as the right turn indicator light on the speedometer are on.

Turn the "turning light switch" to the "center" position; The left and right turning lights and indicator lights will not light up.

Warning:

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

4.6. Opening method of fuel tank cap (Figure 10)

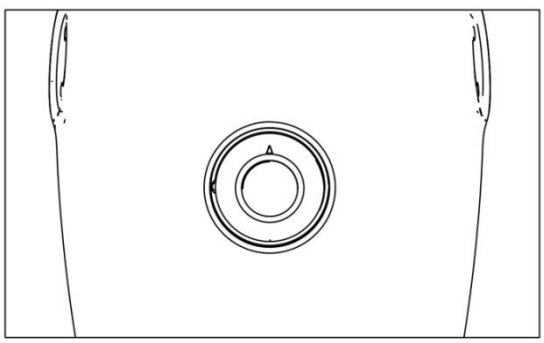


Figure 10

Rotate and open the small cover that covers the keyhole, insert the key into the fuel tank lock hole, and turn clockwise to open the fuel tank lock; When closing, turn the key clockwise to insert the lock into the fuel port, release the key, and press firmly with the "△" facing straight ahead until you hear a "click" sound. Finally, cover the keyhole with a small lid.

4.7 Tires

The correct tire pressure will ensure stable driving, comfortable driving, and durable tires. The tire pressure should be checked when the tire is cold.

Tire specifications and tire pressure refer to Table 3:

Tire pressure in cold state	Single person riding		
	kPa	kgf/cm2	psi
front wheel	225	2.25	33
rear wheel	225	2.25	33

Table 3

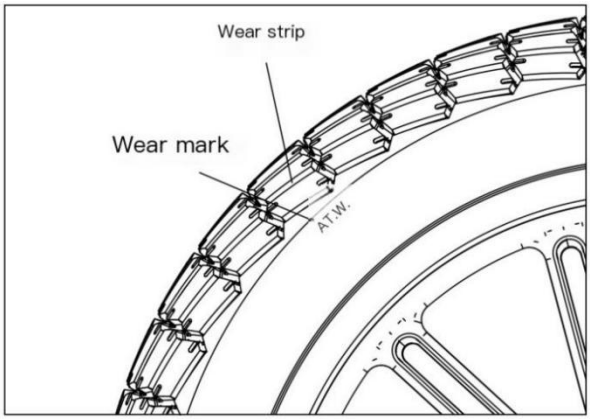


Figure 11

Check the condition of the tires, incorrect tire specifications can affect the operation performance of the motorcycle. Damaged and scratched tires can cause tire failure and cause the vehicle to lose control. Overly worn tires can cause tire punctures and cause the vehicle to lose control. Tire wear also affects tire shape and handling performance.

Check the condition and air pressure of the tires before use every day. If there are many obvious damages on the tire, such as breakage, scratches, or tire wear to the extreme position, the tire must be replaced.

⚠Be careful:

1. When feeling a decrease in tire pressure, check for nails, small holes, and damage to the side of the wheel rim. When tubeless tires have small holes, they will gradually deflate.

2. Incorrect tire pressure can cause abnormal tread wear and even lead to safety accidents.

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

⚠Warning:

1. The triangle 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.

2. When replacing tires, the size and model of the replacement tire should comply with the content of the "Main Technical Parameters Table" on page 36. If tires of different sizes or models are replaced, it will affect the handling performance of the motorcycle and may cause the motorcycle to lose control.

3. After repairing or replacing tires, balance the wheels. Correctly balancing the wheels is very important to avoid uneven contact between the tires and the road surface, as well as uneven wear of the tires.

⚠Danger

1. Tubeless tires are sealed at the contact area between the wheel rim and the tire lip. To avoid air leakage, special tools are required to protect the wheel rim and lip of tubeless tires during disassembly and installation, using a specialized tire disassembly machine.

2. To repair the 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 turning can loosen the repaired area. Within 24 hours after repairing the tire, the vehicle speed should not exceed 80 kilometers per hour, and thereafter, the vehicle speed should not exceed 130 Km/h. If speeding occurs, the heat generation of the tires will increase sharply, which will cause repair failure and lead to tire leakage. If the tire is damaged on the side or if the damaged area is greater than 6 mm, the tire cannot be repaired and used.

4.8. Headlamp pitch angle adjustment (Figure 12)

Due to differences in user height and observation habits, there are different lighting requirements for nighttime driving. Users can adjust according to their own needs. The adjustment method is as follows:

Step 1: Use a 10 # open-end wrench and a 5 # hex wrench to loosen the upper and lower fixing screws that secure the headlight.

Step 2: After loosening the screws, gently rotate the headlight up and down with the following fixing screws as the axis, adjust to the appropriate position, and tighten the screws.

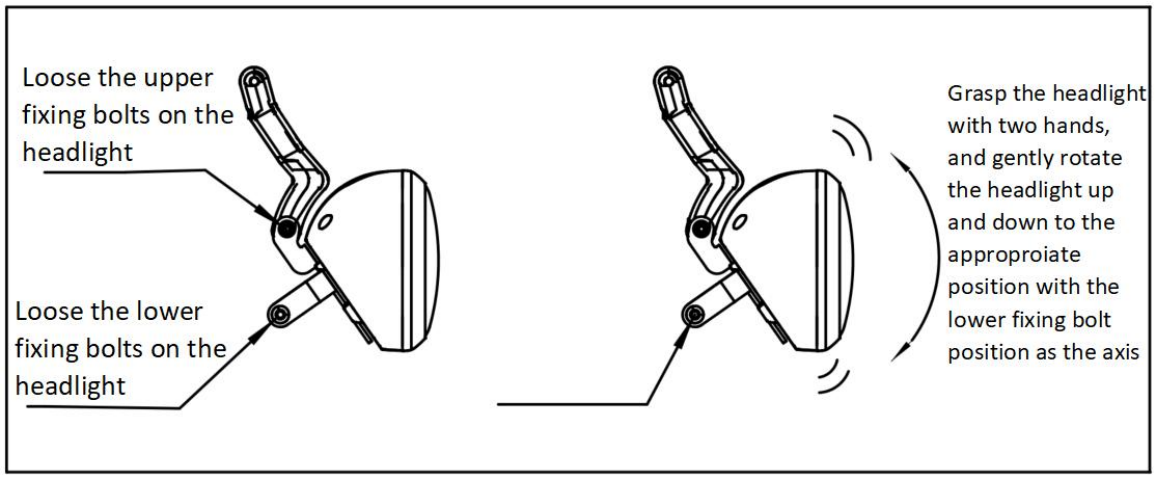


Figure 12

⚠**Be careful:**

The maximum rotation angle of the headlight is about 5 degrees.

V. Operation guidance

5.1. New vehicle running in

The running in period refers to a treatment method carried out during the initial use of a new vehicle to ensure that the joint surface between parts is in the best joint state. The correct running in operation can maximize the lifespan of the vehicle.

New vehicle running in mileage: 1500km.

1. During the running in period, it is necessary to avoid fully opening the throttle and ensure that the maximum engine speed does not exceed 6500 rpm(as indicated by speedometer). Control the vehicle speed within the following range:

0-300km break in:

Avoid opening the throttle handle beyond half of the maximum opening; Vehicle speed within 50km/h.

300-600km break in:

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

600-1500km break in:

The throttle lever should not be opened beyond 3/4 of the maximum opening; Vehicle speed within 70km/h.

2. Avoid continuous low speed: When the engine runs at a certain low speed (light load), it will cause the parts to grind smoothly and break in poorly.

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 "bear" pressure, which can improve the engine running in.

4. Before driving, circulate the engine oil: After starting the hot or cold engine and before running it under load, allow the engine to idle for sufficient time. This can lubricate all important components of the engine, reduce wear, extend service life, and also preheat the engine well.

5. Running in of new tires: Tires also need to be run in. Before running in of new tires, gradually increase your turning tilt angle within 160 km, but avoid sudden braking, acceleration, and turning.

> **Danger**
>
> **Poor tire running in can lead to tire skidding or loss of control. Special care should be taken when using new tires, and the tires should be run in within the first 160 KM (100 miles).**

6. Break in period maintenance: Please conduct vehicle maintenance after driving the new vehicle for 1000 km. During the break in period, other parts have already engaged. At this point, all components should be adjusted properly. Then change the engine oil.

> **Be careful:**
>
> **When the vehicle is in poor condition, it needs to be inspected before 1000 KM.**

5.2 Pre driving inspection

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

The inspection can follow the **following procedure:**

1. Check the lubricating oil inside the engine (see page 21) and ensure that there are no leaks;
2. Check if the fuel is sufficient;
3. Check if the coolant in the cooling system is sufficient and ensure there are no leaks;
4. Check the front and rear brakes: free travel (5-10mm front, 10-20mm rear), smooth operation;
5. Check the front and rear tires for air pressure, wear depth of tread patterns, and cracks (see page 13);
6. Check the transmission chain: suitable tightness, no defects or damage;
7. Check the throttle handle: free clearance (2-6 mm), whether refueling or refueling is easy to operate;
8. Check the lighting and signal lights: ensure that the headlights, taillights, brake lights, turn signals, indicator lights, and speakers are in good condition;
9. Check the steering device: it should be stable, rotate flexibly, without looseness or axial movement;
10. Check the clutch handle: free clearance (5-10mm), smooth operation;
11. Tighten bolts and nuts: front and rear shock absorbers, fork axles, front and rear wheel axles, engine suspension, steering system, steering handle, front and rear brakes, clutch, rear suspension system, electrical components, etc.

> **Warning:**
>
> **Not checking and properly repairing the motorcycle before riding can leave safety hazards. Checking and repairing the motorcycle before riding can eliminate safety hazards.**

5.3. Motorcycle Start **(Figure 13)**

1. Turn on the ignition switch lock and set the shutdown preset switch to the "" position.
2. Shift the gear to low or neutral.
3. Fully grip the clutch handle with your left hand (when not in neutral, disengage the clutch).
4. Press the electric start button, and if necessary, turn the throttle handle to add fuel appropriately to start the engine.

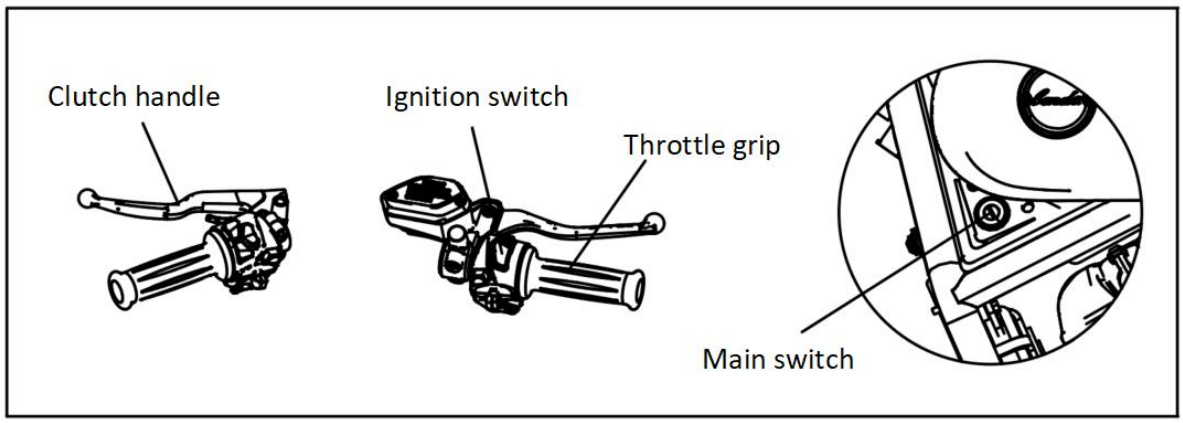


Figure 13

Danger

1. To avoid mistakes and potential danger when starting, shift to neutral and do not add fuel to the door.

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, and cause the exhaust pipe muffler to change color.

Danger

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

2. One handed driving is the most dangerous. You should firmly grasp the steering handle with both hands and drive with both feet on the pedals. Under no circumstances should you drive with your hands off the handle.

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

4. The road surface is wet and smooth, the tire friction is low, and the braking and turning abilities naturally decrease, so it is necessary to slow down in advance.

5. Crosswinds are usually most likely to occur at tunnel exits, valleys, or when large vehicles overtake from behind. You must be careful and calm, slow down while driving.

6. Comply with traffic rules and limit speed.

⚠**Be careful:**

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

2. When using the **electric start button**, it **should** be **released immediately within 3-5 seconds** of **each run. Otherwise, it is easy to cause the battery to discharge too quickly and affect the service life of the battery.**

3. After starting the **engine,** the **electric start button should** be **released immediately; During engine operation,** it is **not allowed** to **press** the **electric start button again, otherwise** it **may damage** the **engine.**

4. Ensure that the single support is fully retracted to avoid driving obstruction and control failure when turning left.

5. After starting or driving, it is necessary to smoothly refuel (turn the throttle handle).

6. Do not start the motorcycle in a small space to avoid the risk of poisoning caused by the exhaust gas being difficult to spread.

7. If the clutch switch fails, it should be replaced in a timely manner.

8. It is strictly prohibited to start the engine before disengaging the clutch, otherwise it may cause damage to components or safety accidents.

9. Do not start the motorcycle when there is a lack of fuel or oil.

5.4 Motorcycle Driving

5.4.1 Shifting operation (Figure 14, Figure 15)

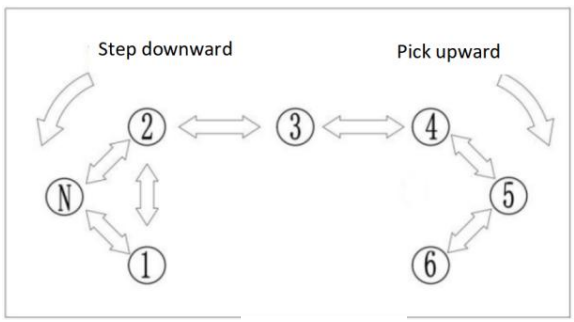


Figure 14

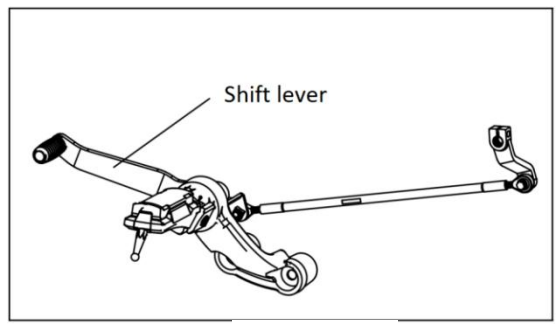


Figure 15

This vehicle is in sixth gear with constant engagement. The ①②gears are low speed, ③④gears are medium speed,⑤⑥ gears are high speed. Shifting gears can refer to the following operations:

1) Neutral shift to ①gear: Use your right hand to return the accelerator, quickly grip the clutch lever with your left hand, step down on the gear lever with your left foot once to shift the transmission into ①gear, gradually release the clutch lever with your left hand, and gradually turn the throttle with your right hand. Actions coordinate well to ensure smooth operation of the motorcycle in ①gear.

2) ①Gear shift to ②gear: Use your right hand to return the accelerator, quickly grip the clutch lever with your left hand, pick upward the gear lever with your left foot once to shift the transmission into ②gear, gradually release the clutch lever with your left hand, and gradually turn the throttle with your right hand. Actions coordinate well to ensure smooth operation of the motorcycle in ②gear.

3) The method of shifting to ③④⑤⑥gears are same as the method of shift to ②gear from ①gear.

4) The method of downshifting is same as the method of shift to ①gear from Neutral.

Warning:

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

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

3. During the period of gripping the clutch handle tightly when shifting gears, the clutch disengages and the motorcycle relies on inertia to travel. Therefore, it is necessary to shorten the shifting time as much as possible.

4. When driving at high speed, suddenly reducing the gear or rapidly returning the throttle will result in a lower engine speed and a higher rear wheel speed. When the clutch lever is released, the friction and engagement of the clutch plates will slow down, causing the rear wheels to brake and lose control, leading to accidents. Therefore, when changing from high-speed to low-speed driving, it is necessary to use the brake to slow down and then lower the gear.

5. It is strictly prohibited to drive at low speeds in low gears and at low speeds in high gears, otherwise it may cause engine damage.

6. Before accelerating, the gear must be raised to ensure that the engine operates within the normal speed range. No gear should cause the engine speed to be too high.

Be careful:

1. Reduce the vehicle speed or increase the engine speed before shifting to a lower gear. 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 best to slowly release the clutch lever to confirm whether it has truly entered the neutral position.

5.4.2 Climbing or Turning Driving (Figure 16)

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

2) When driving on a long slope, 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 braking effectiveness, posing a danger.

3) It is not allowed to turn off the ignition switch or turn off the engine shutdown switch while sliding downhill, otherwise it will reduce the life of the catalyst in the exhaust muffler.

4) Before turning, you must first use the brake to reduce the vehicle speed and then lower the gear. Otherwise, if the vehicle speed is too fast during turning and rushes out of the curve, or if the brake is used during turning, it may cause dangerous accidents.

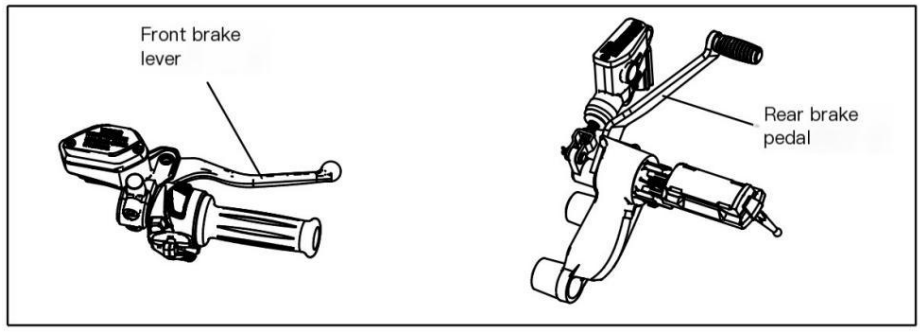


Figure 16

5.4.3. Use of brakes

1) When deceleration is required, both front and rear brakes must be used simultaneously. (Slowly grip the front brake lever with your right hand and step on the rear brake pedal with your right foot, avoiding using the front and rear brakes separately). Avoid slowing down too quickly, which may cause the clutch to slip.

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

3) Try to avoid sudden braking as much as possible. Because sudden braking can cause the front and rear wheels to suddenly stop, making it difficult to control the vehicle.

4) On wet or soft roads, avoid sudden acceleration, sudden braking, and sharp turns. Prevent the vehicle from skidding and making it difficult to control.

5.4.4 Parking

1) Gradually return the throttle to its original position.

2) At the same time, slowly grip the front brake lever 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) When the vehicle speed decreases, shift down the gear.

4) Grasp the clutch handle tightly, shift into neutral, and then come to a complete stop. After shifting to 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 into low gear and keep the front of the car uphill to avoid overturning. (Be sure to put it in neutral position when starting again)

6) Turn off the ignition switch lock; In emergency situations, the engine shutdown switch can be directly turned off to shut down 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 will be. Therefore, it is necessary to maintain a safe distance between vehicles to prevent rear end collisions. (Frequently using only the rear brake will accelerate the wear of the braking system, and the braking distance will become longer and longer.)

2. Using only the front or rear brakes can cause slipping and loss of control; Caution must be exercised when using the braking system on wet and slippery roads, as well as when making turns; Emergency braking on uneven or smooth roads can cause the motorcycle to lose control.

VI. Maintenance

6.1 Maintenance Schedule

Maintenance frequency / Maintenance item	Maintenance interval	Mileage KM (Note 2)				
		1000km	4000km	8000km	12000km	Remarks
★ Fuel tank and oil pipe		Damage and aging should be repaired or replaced in a timely manner				Before use
★ Throttle		I	I	I	I	Before use
★ Coolant		Replace every 2 years				Inspection before use
Air cleaner element	Note ①	Every 40 hours of driving or 1000KM (I); Every 80 hours of driving or 2000KM (C); Every 20000 KM (R)				
Spark plug		Every 2000KM or 80 hours (I); Every 6000km (R)				
Engine lubricating oil	Replace after the first 1000KM, the second 2000KM, and the third 3000KM. After that, replace every 4000KM					
Lubricating oil filter element	Replace after the first 1000KM, the second 2000KM, and the third 3000KM. After that, replace every 4000KM					
★★ Chain/sprocket	Note ①	Perform I and L every 500KM				
★ Brake friction pads		Perform I and R if necessary every 1000KM				
★★ Brake oil		Replace every 2 years				
★★ Front and rear braking systems	Note ③	I	I	I	I	Before use
★ Switch		I	I	I	I	Before use
★ Lighting and speakers		I	I	I	I	Before use
★ Battery	Monthly	I	I	I	I	
Fuse		I	I	I	I	
Connecting lines		I	I	I	I	
★★ Valve clearance	Note ③	Initially: 20 hours or 200KM (I); Every 2000KM or 80 hours (I)				
★ Clutch		Every 2000KM or 80 hours (I)				Before use
★ Suspension system		I	I	I	I	
★ Tightening of nuts and bolts		I	I	I	I	Before use
★ Wheel		I	I	I	I	Before use
★★ Steering handle bearing (steering column thrust bearing)	Note ③	I	I	I	I	
★★Engine maintenance	Note ③	I	I	I	I	

Table 4

Motorcycles should be regularly maintained according to the time and mileage specified in Table 4, and the vehicle must be cleaned before maintenance.

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

No ★ items can be maintained by yourself or at a BENDA store.

A ★ project is maintained by personnel from a BENDA specialty store; If you have specialized tools, spare parts, or repair capabilities, you can also perform maintenance and repair on your own.

Two ★★ projects can only be maintained and serviced by personnel from BENDA specialty stores for the sake of driving safety.

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

Note 2 indicates that when the odometer reading exceeds the highest number in the table, the maintenance cycle will still be repeated according to the mileage specified in the table.

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

6.2 Inspection, selection, and replacement of engine lubricating oil

The role of lubricating oil in the engine includes reducing friction, increasing sealing, cooling parts, cleaning parts, and rust prevention.

If the quality of lubricating oil is poor, the usage time is too long, or the amount of lubricating oil is insufficient, it will accelerate the wear of engine parts and reduce the service life of the engine; Even causing high engine temperature, clutch wear or burnout, decreased power, abnormal noise, and burning of lubricating oil.

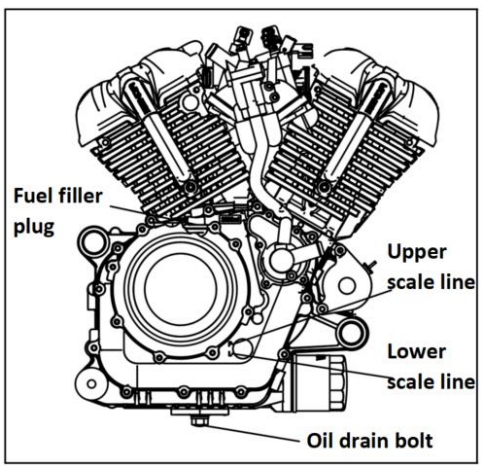


Figure 17

[Inspection] (Figure 17)

Before each use, the lubricating oil level must be checked, and an oil window is installed on the right crankcase cover.

Start the engine and run it for 3 minutes, then turn off the engine and wait 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 markings on the oil window.

If the lubricating oil is insufficient, simply open the oil filler plug and add an appropriate amount of lubricating oil. After installing the fuel filler plug, check for any leaks.

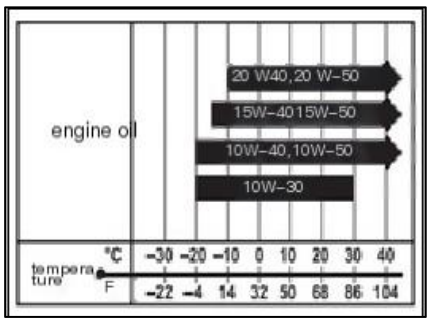


Figure 18

[Selection] (Figure 18)

Lubricating oil grade: SAE 10W-40

Quality requirements for lubricating oil: SG grade or above

Using high-quality four stroke engine lubricating oil can extend engine life. You need to compare the local temperature situation according to Figure 18 and choose accordingly:

Warning:

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

2. Long term failure to replace lubricating oil can cause deterioration, and deteriorated lubricating oil can lead to excessive wear of the engine and components.

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

[Replacement]

Replace after the first 1000km, the second 2000km, the third 3000km, and every 4000km thereafter.

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

2、Drain the engine's lubricating oil after 3 minutes (be careful not to get burned by the engine or lubricating oil). Unscrew the oil bolt, loosen the bolt, and remove the machine filter cover, filter element, etc.

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

4、Inject approximately 1.9L of new lubricating oil from the fuel inlet. If a new filter element is replaced, 2.1L of new lubricating oil is required. If the engine is undergoing major repairs, 2.2L of new lubricating oil is needed; Check and confirm that there is no oil leakage, then install the fuel filler plug.

5. Run the engine at different speeds for 3 minutes. During operation, check for leaks at the disassembled parts. Wait for the engine to shut down for 3 minutes. At idle speed, if the oil level is still below the lower mark of the oil window, an appropriate amount of lubricating oil should be added. It is necessary to check again for leaks.

Common causes of lubricant deterioration:

1、The lubricating oil temperature is too high and naturally deteriorates.

2、Lubricating oil with different labels mixed together deteriorates.

3、The amount of metal shavings generated by mechanical friction is increasing.

4、There are many dust and impurities in the lubricating oil drum.

5、The clearance between the piston and cylinder is too large, resulting in exhaust gas leakage and the generation of carbon residue during fuel combustion.

Danger

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

2. If children and pets accidentally drink lubricating oil, it can cause physical injury. Reiterate: Long term exposure to lubricants can lead to skin cancer. Short term exposure to lubricating oil can irritate the skin. Keep children and pets away from lubricants. When changing lubricating 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 lubricating oil, wash thoroughly with soap and water. Clean clothes and cloths that have come into contact with lubricating oil.

Warning:

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

⚠Be careful:

Please dispose of the waste engine lubricating oil properly and do not pour it into the garbage bin or directly onto the ground to avoid polluting the environment. We suggest that you pack the waste oil into a sealed container and send it to the local recycling center.

6.3 Selection and replacement of spark plugs

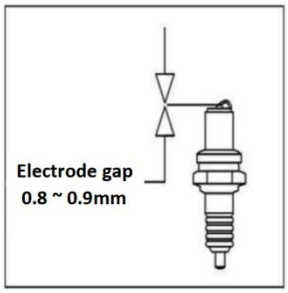


Figure 19

[Selection] (Figure 19)

Spark plug model: B8RC

Opposite edge of spark plug socket: 16mm

[Inspection and Replacement]

1. The replacement cycle for spark plugs is approximately once every 6000 Km.

2. Remove the spark plug cap, clean 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 deposits and dirt from the spark plug.

3. Check whether the spark plug is damaged, whether the electrode gap is eroded, 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 plug into the thread by hand, and then tighten it with a spark plug socket wrench.

⚠Warning:

1. Dirt can enter the engine through the spark plug mounting hole and damage the engine. After removing the spark plug, it is necessary to cover the spark plug installation hole with something.

2. If the color of the spark plug electrode is different from that of a normal spark plug, a new spark plug of the same model must be replaced. Different types of spark plugs have different heat value ranges, which can cause serious damage to the engine. This loss cannot be claimed.

3. Excessive torque or loose threads during the installation of spark plugs can seriously damage the engine cylinder head. Therefore, it is necessary to carefully manually install the spark plug.

6.4 Cleaning and Disassembly of Air Filters

[Cleaning or replacement]

1. The filter element of the air filter must be regularly maintained: the filter element must be checked, 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 20000Km of driving.

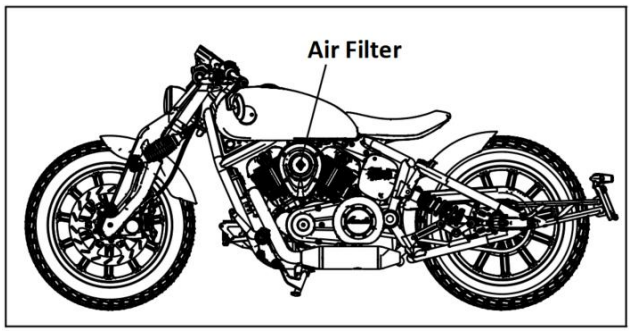
2. If the motorcycle is used in muddy, damp, or dusty environments, the cleaning or replacement cycle of the filter element should be shortened.

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

4. This motorcycle is equipped with a sponge filter element. When cleaning, it can be washed in clean water and then soaked in clean engine oil. If the sponge has aged or fallen off, a new filter element must be replaced.

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

[Disassembly and Assembly]



1. Remove the 4 screws on the side cover of the air filter and remove the fixing screws of the filter element. Remove the filter element.

2. Assembly: Follow the reverse order of the disassembly steps mentioned above.

Figure 20 Position of Air Filter

Warning:

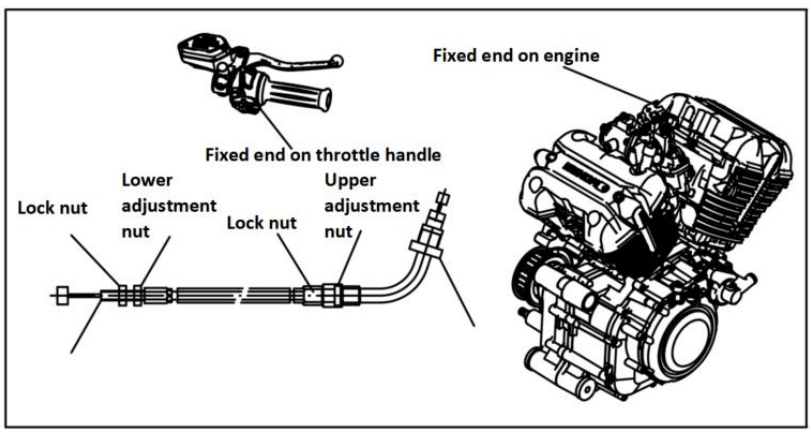
1. It is dangerous to start the engine without installing the filter element. Without the obstruction of the filter element, the engine flame will be sprayed back into the intake chamber of the air filter, and dirt will also be sucked into the engine, causing serious wear and tear to the engine. Therefore,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

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

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

4. If the installation position of the filter element is incorrect, dust will 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.

6.5 Inspection and adjustment of throttle handle



[Inspection] (Figure 21)

Figure 21

1. Check if the front of the car rotates from the far left to the far right normally and if the limit is reliable.

2. Check if the rotation of the throttle control lever is flexible from the fully open position to the fully closed position; Check if the handle automatically return to its original position when released.

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 fine tuned, and the lower adjustment screw (at the connection between the throttle valve and throttle cable) can be adjusted to a certain stroke.

3. When making minor adjustments, first loosen the locking nut on the upper adjustment screw, and then turn the upper adjustment screw to make adjustments.

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

5. The throttle cable should be regularly lubricated to reduce the wear of the steel 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 adjusting the free stroke of the throttle cable, it is necessary to ensure that the throttle control lever can automatically return to its original position and the idle speed will not increase. At the same time, after adjustment, there should be no situation where the engine idle increases when the front of the car is turned.

[Throttle body]

The throttle limit screw on the throttle body has been precisely set and cannot be adjusted by 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 1450-1750 RPM). If the idle speed is unstable, please have a professional service personnel from our designated maintenance unit conduct the inspection and handling.

6.6 Adjustment of clutch

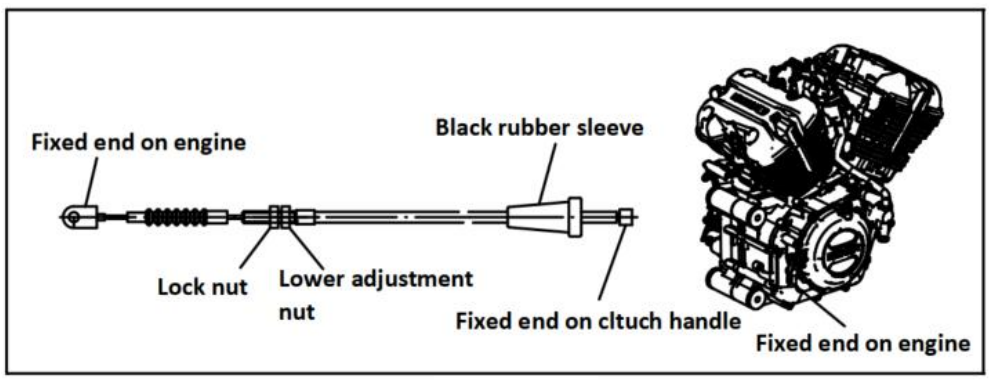


Figure 22

The free travel of the clutch handle is 5-10mm.

Function of clutch: **(Figure 22)**

1. To ensure a smooth and gentle combination of the engine crankshaft and the transmission system, in order to guarantee a smooth start of the motorcycle.

2. Enable the quick and thorough separation of the engine crankshaft from the transmission system to ensure that the motorcycle does not experience impact during gear shifting

3. It can prevent the components of the variable speed transmission system from being damaged due to excessive load.

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

VII. Inspection and adjustment of chains

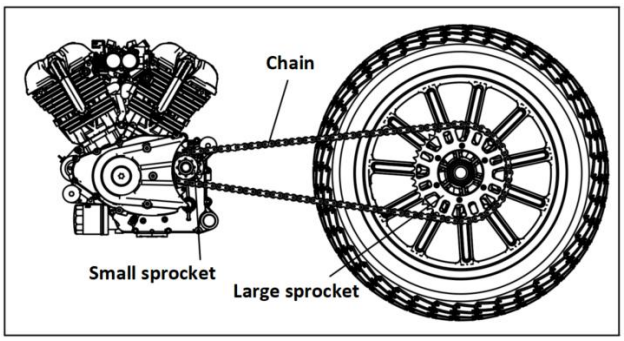


Figure 23 Chain

Chain model: 520-110

[Inspection] (Figure 23)

1. **Park the vehicle on a flat ground, shift to neutral, and turn off the engine.**
2. **Swing the chain up and down, the chain should be tightened, and the swing amplitude should be 20-25mm.**
3. **Check if the chain locking clip is loose and if the large and small chain wheels are on the same horizontal plane.**

4. Check the wear condition of the chain. If there are chain link defects, 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 20-25mm. Regularly check the buffer bearings and add lubricating grease on time.

When adjusting the chain, in addition to adjusting the scale according to the frame chain, it is also necessary to visually observe whether the front and rear gear plates are on the same straight line as the chain.

Chain installation must be safe and reliable.

[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 driving for 3000km, the chain should be removed and cleaned once, and soaked in melted graphite grease for 5-10 minutes.
4. After driving on muddy roads, it is necessary to promptly clean the dust inside the chain joints and add lubricating oil.

[Replacement]

1. Remove the left sprocket cover and sprocket cover bracket of the engine;
2. Carefully remove the chain locking clip with pointed nose pliers, dismantle the chain links, and remove 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 gear, add lubricating grease in a timely manner, and strengthen the maintenance of the chain and gear on rainy, snowy, and muddy roads.

⚠Be careful:

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

VIII. ABS/Anti lock Braking System

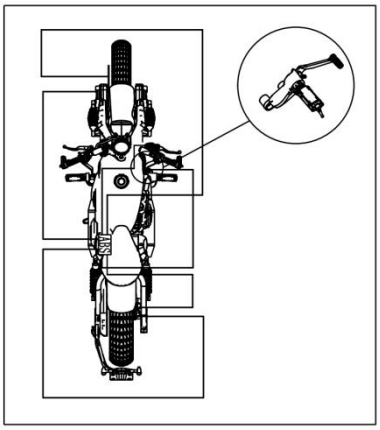


Figure 24

ABS consists of a hydraulic unit, ABS control unit, and return pump, installed on the left side (behind the engine). There are wheel speed sensors on the front and rear wheels respectively.

ABS works with two independent brake circuits (front brake and rear brake). 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 is approaching lock up, will the ABS start working by adjusting the brake pressure. This adjustment process can be felt through a slight jump on the front brake lever or brake pedal.

After turning on the ignition switch, the ABS warning indicator must light up and turn off after starting. If the ABS warning indicator does not turn off after starting or lights up during driving, it indicates a fault in the ABS system. At this time, ABS cannot be activated again. The wheels may lock up when braking. The braking system itself is still functioning, only the ABS adjustment system is malfunctioning.

⚠Warning:

1. Only when the ABS is in the off state, can the rear wheels rotate when braking before tightening.

2. If modifications are made, such as shortening or extending the shock absorption stroke, using other wheel diameters, other tires, incorrect tire pressures, other brake friction pads, etc., it may prevent ABS from continuing to function. Only when using the recommended spare parts and tires from Honda Motor on the braking system can the optimal function of ABS be ensured.

3. Please perform maintenance and repairs as required.

IX. Inspection and adjustment of front brake

[Inspection] (Figure 25)

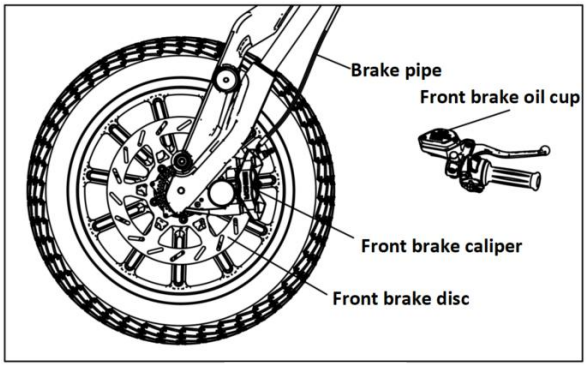


Figure 25

- Measure the free travel of the front brake handle to be 5-10mm.
- Measure the thickness of the front brake disc and brake friction pad.
- Check the oil level in the oil cup; Check if the brake caliper is functioning properly; Check the brake oil pipe and the brake oil cup has no oil leakage or cracks; Check the wear of the brake disc.
- When operating the brake lever, if the pressure on the lever is insufficient, then there is air in the brake system; The air in the braking system should be completely expelled before it can be used normally. Otherwise, it will reduce braking performance or brake failure. This task should be completed at the BENDA Authorized Service Center.

Warning:

1. Should add: non-petroleum based brake oil with the brand DOT3 or DOT4; Different grades cannot be mixed for use;

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

3. Hydraulic disc brakes operate under high pressure. To ensure safety and reliability, the replacement time of brake friction pads and brake oil should not exceed the maintenance cycle;

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

Be careful:

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

Replace with a new brake disc or brake friction pad, do not drive immediately; You should first operate (hold) the front brake lever several times until the brake disc engages well with the brake caliper.

9.1. Check the front brake disc

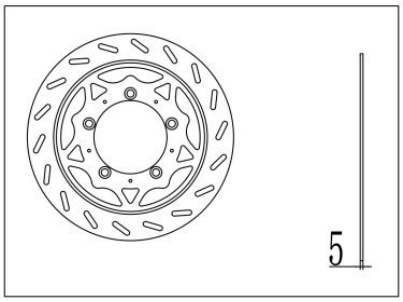


Figure 26

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 whether 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 wear limit	
Front	4.5mm

Warning:

Due to wear and tear, the thickness of the brake disc within the contact area of the brake friction pad will be reduced, which will decrease 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 wears to the maximum thickness of 4.5mm, it must be replaced; Remove the front brake caliper and front wheel, and then replace the brake disc.

9.2. Check the brake friction pads of the front brake

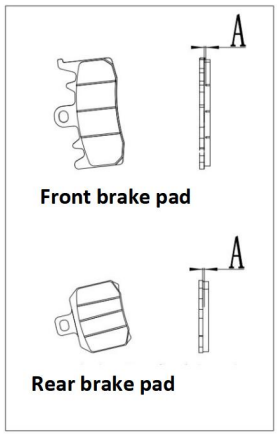


Figure 27

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

Minimum thickness value of brake friction pad: 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.

Be careful:

Friction pads will gradually wear out during vehicle braking. The braking effect will gradually decrease. To ensure the safety of both you and the vehicle, please check regularly and replace it promptly. If you are not familiar with the specifications of the friction plate or cannot replace it yourself, please go to the designated after-sales point of BENDA for repair.

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

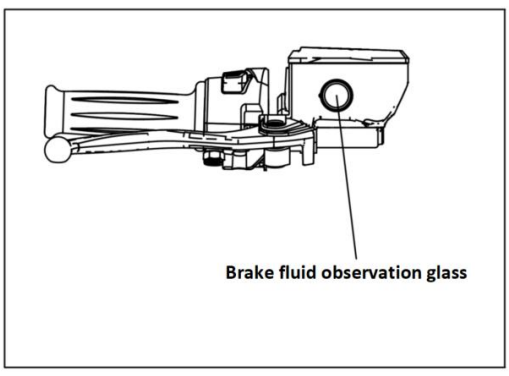


Figure 28

Adjust the vehicle's placement posture so that the brake fluid in the brake fluid filling is level.

Check the brake fluid level through the liquid level window. (Figure 28)

When the brake fluid level is below the scale line: please add the brake fluid in a timely manner.

Warning:

If the brake fluid level is below the scale line, it means that the brake system is not sealed or the brake friction pads have been completely worn. Check the braking system and do not continue driving. Please go to the designated after-sales point of BENDA for maintenance.

Prolonged use of brake fluid can reduce braking effectiveness, please replace the brake fluid in a timely manner.

X. Inspection and adjustment of rear brake

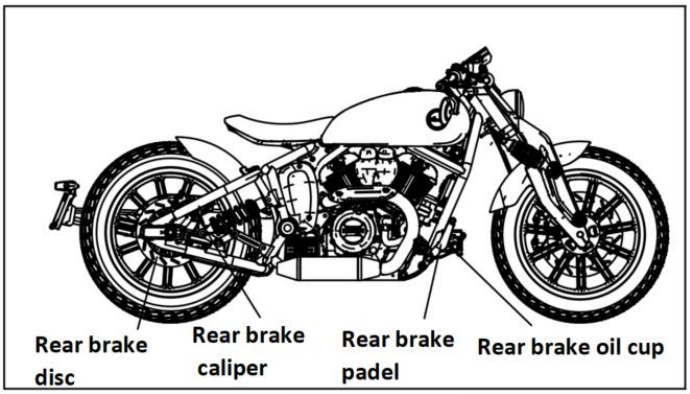


Figure 29

[Inspection] (Figure 29)

- The free travel of the brake pedal after measurement is 10-20mm.
- Measure the thickness of the rear brake disc and brake friction pad.
- Check the oil level in the oil cup; Check if the brake caliper is functioning properly; Check for oil leakage or cracks in the brake oil pipe and brake oil cup; Check the wear of the brake disc.
- When operating the brake pedal and feeling insufficient pedal pressure, there may be air in the braking system; The air in the braking system should be completely expelled before it can be used normally; Otherwise, it will reduce braking performance or brake failure. Please have the professional technicians from the maintenance unit serve you for this repair.

10.1. Check the rear brake disc

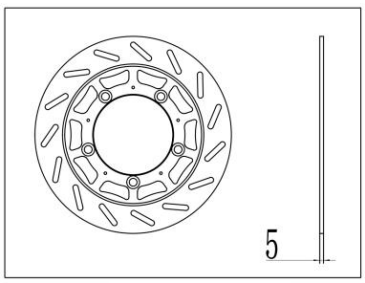


Figure 30

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 whether 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

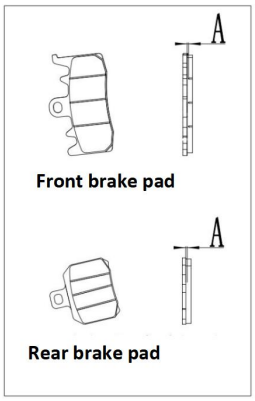
Brake disc wear limit	
back	4.5mm

Warning:

Due to wear and tear, the thickness of the brake disc within the contact area of the brake friction pad will be reduced, which will decrease 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 wears to the maximum thickness of 4.5mm, it must be replaced; Remove the rear **brake caliper and rear wheel,** and **then replace** the **brake disc.**

10.2. Check the brake friction pads of the rear brake



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

Minimum thickness value of brake friction pad: 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

Figure 31

⚠Be careful:

Friction pads will gradually wear out during vehicle braking. The braking effect will gradually decrease. To ensure the safety of both you and the vehicle, please check regularly and replace it promptly. If you are not familiar with the specifications of the friction plate or cannot replace it yourself, please go to the designated after-sales point of BENDA for repair.

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

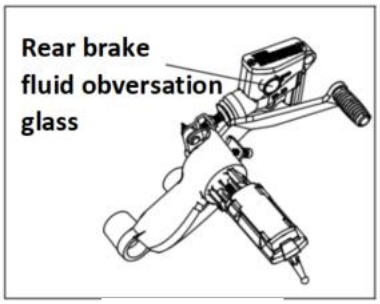


Figure 32

Adjust the vehicle's placement posture so that the brake fluid in the brake fluid tank is level, and check the brake fluid level through the level window.

When the brake fluid level is below the scale line: please add the brake fluid in a timely manner.

⚠Warning:

If the brake fluid level is below the scale line, it means that the brake system is not sealed or the brake friction pads have been completely worn. Check the braking system and do not continue driving. Please go to the designated after-sales point of BENDA for maintenance.

Prolonged use of brake fluid can reduce braking effectiveness, please replace the brake fluid in a timely manner.

XI. Maintenance of battery

[Battery Model]

Model: MG14ZS-C

Capacity: 12V 11.2Ah

Standard charging: 1A~1.5A × 6~8 hours

[Disassembly and assembly of battery] (Figure 33)

Disassemble:

1. Check the battery rack at the bottom of the vehicle;
2. Remove the battery pressure plate;
3. First, remove the negative wire (—);
4. Remove the positive wire (+) afterwards;
5. Remove the battery.

Installation:

1. Operation in reverse steps of installation;

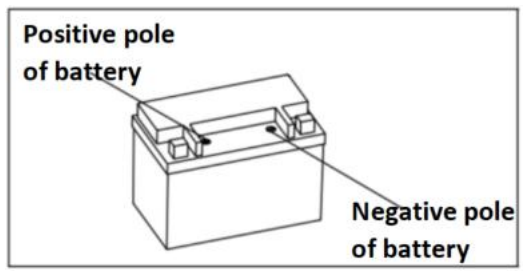


Figure 33

2. First install the positive wire (+), then install the negative wire (—), and ensure that the positive and negative wires are connected. The pole terminal is not loose, and the positive and negative poles cannot be reversed. Reverse connection can damage electrical components.

3. **Battery orientation: The positive and negative poles are installed facing forward (towards the front of the vehicle)**

[Battery Charging]

1. Remove the battery bracket;

2. Remove the 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, when charging a battery with a capacity of 10Ah, its charging current is 1 ampere.

4. For detailed instructions on the charger, please contact your distributor.

[Inspection and maintenance of battery]

1. When frequently used, the motorcycle charging system automatically fully charges the battery. If the motorcycle is occasionally used or used for a short period of time, there may be insufficient battery power. The battery will generate self discharge, and the self discharge speed 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, charged, and stored, and the battery should be charged regularly;

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

4. When replacing the battery, use a battery of the same model and specification.

Danger

1. The battery terminals, terminals, and related components contain lead or lead compounds, which can harm your health if they enter the bloodstream. Hands must be washed after handling any lead containing parts.

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

3. Batteries contain toxic substances such as sulfuric acid and lead. It will cause harm to people and pollute the environment. Used battery must be disposed of or recycled in accordance with local laws and regulations.

Be careful:

1. Overcharging or undercharging of a battery can shorten its lifespan, so do not overcharge or undercharge the battery.

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 it may cause overload and damage to the battery.

[Fuse] (Figures 34 and 35)

There are a total of 7 plug-in fuses in the circuit system (Figure 34), and one 15A fuse for lighting system, two 10A fuses for ignition system and ABS ECU, three 20A fuses for ABS motor, ECU system and fan motor, one 5A fuse for ABS starting system. Additionally, there are one 20A fuse and one 10A fuse as spare fuses in the fuse box. 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 repair unit serve you.

There is one 30A main fuse inserted into the starting relay (Figure 35).

When replacing the fuse, first unplug the old fuse and plug in the spare fuse.

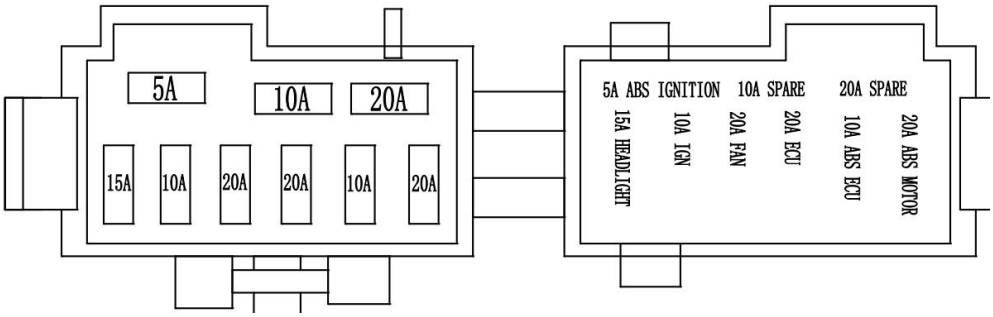


Figure 34

Figure 35

Warning:

Before checking or replacing the fuse, the ignition switch and electrical switch must be turned off to prevent a short circuit in the circuit. Never use fuses that are different from the rated current, otherwise it may damage the vehicle's electrical system or cause a fire, and there is also a risk of lights not turning on or engine failure during night or driving.

XII. Instructions for Use and Maintenance of Engine Water Cooling System

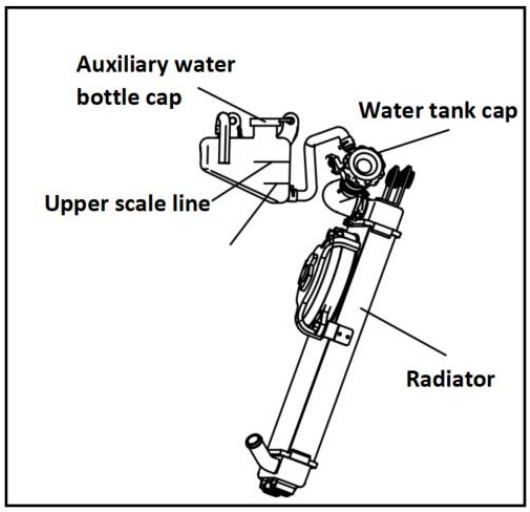


Figure 36

[Cooling System] (Figure 36)

The cooling system can prevent the engine from overheating. 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 it should be regularly cleaned of dust and dirt according to the road conditions you are driving on.

[Type of coolant]

Coolant has five characteristics: anti-corrosion, anti pitting, high boiling point, anti scaling, and anti freezing.

Coolant is generally made by mixing concentrated antifreeze and soft water (purified water or distilled water) in appropriate proportions. Please adjust the concentration to a fixed value that is suitable for the lowest local temperature. Generally, the antifreeze function is best when the concentration is adjusted to 40% to 50%.

It is recommended that you use the direct coolant special for aluminum alloy engines. 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.

⚠Be careful:

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

2. Please go to the "BENDA Specialty Store" to purchase 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 Specialty Store" for replacement and repair.

[Check coolant capacity]

The total amount of coolant in the cooling system is approximately 900ml

1. Park the motorcycle on a flat surface with side stand.

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

[Add a small amount of coolant]

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

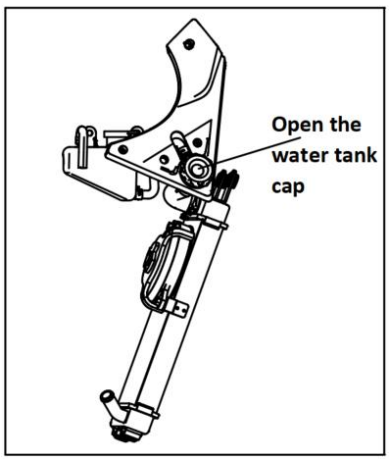


Figure 37

[Add Method]

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

2. Unscrew the water tank cover;

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

4. Cover the water tank cap.

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 avoided from children's contact.

3. Attention should be paid to prevent the coolant from being contaminated by petroleum products, and two different brands of coolant should not be mixed or stored.

⚠Danger

1. Ethylene glycol antifreeze is an organic solvent that is toxic and corrosive. Do not splash on the surface of rubber products or paint parts during use, and do not come into contact with human skin. If accidentally splashed on the surface of rubber products, painted parts or human body, rinse immediately 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, do not open the radiator cap when the temperature has not dropped (60 ℃) during normal engine operation or after parking to avoid burns to the body.

XIII. Vehicle cleaning and storage

[Vehicle Cleaning]

1. Motorcycles should be cleaned regularly to promptly detect any damage, wear, or oil leakage.

2. When cleaning, it is necessary to wait for the engine to cool down before rinsing with clean water. Clean and dry the motorcycle, then start the engine and let it run for a few minutes; Lubricate the chain with lubricating oil; Before driving on the road, check the brakes and ensure that the front and rear brakes are functioning properly.

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

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

[Vehicle Storage]

After using the motorcycle on the same day, it should be stored in a safe place that is dry, has a small temperature difference, and is well ventilated. If the motorcycle is stored for a long time (more than 30 days), necessary repairs should be carried out before storing it; Otherwise, issues that require repair may be forgotten during use after storage. Long term storage (over 30 days) should be maintained according to the following requirements in addition to the above repairs:

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

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

3. Thoroughly drain the engine 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, turn on the ignition lock, press the start button for 2-3 seconds to evenly distribute the engine 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 block 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 air inlet of the air filter and the exhaust outlet of the exhaust muffler with a cloth containing new engine oil to prevent moisture from entering.

8. Cover the motorcycle with breathable materials and store it in a safe place that is dry, has a small temperature difference, and has good ventilation.

[Use after storing the vehicle]

1. Remove the motorcycle cover and clean the motorcycle.

2. When the battery voltage is too low to start the vehicle, it is necessary to charge it in a timely manner.

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

4. Test ride the motorcycle in a safe place and check if its performance is normal.

XIV. Vehicle service life and vehicle handling

[Vehicle service life]

Please follow the regulations of the traffic management department or local vehicle management office regarding the usage period of the vehicle.

[Vehicle Handling]

1. Disposal of waste lubricating oil: Waste lubricating oil replaced from motorcycles should be placed in plastic drums and handed over to recycling companies for disposal. You cannot discharge waste lubricating oil at will, otherwise it will cause damage to the environment such as the site, soil, and water sources.

2. The disposal of waste batteries, light bulbs, exterior parts, filter elements, tires, iron parts, aluminum parts and other parts: These scrapped parts should be classified and recycled. You cannot dispose of it at will, let alone discard the dilute sulfuric acid in the battery, which may 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 local vehicle management office.

XV. Adjustment data related to motorcycles

Free travel of front (handbrake) 5-10mm; Free clearance of throttle handle: 2-6mm;

Rear (foot) brake free travel 10-20mm; Clutch free travel 5-10mm;

Spark plug clearance: 0.8-0.9mm; Intake and exhaust valve clearance: 0.08-0.12 mm;

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

Tightening bolt torque value for handle: 4-6N.m; Tightening nut torque value for fork shaft: 70-90 N.m;

Front wheel axle fastening nut torque value: 70-90N.m;

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

Rear wheel axle fastening nut torque value: 70-90 N.m;

Torque value of the fastening bolt between the front shock absorber connecting rod and the upper connecting plate: 20-25N.m;

Torque value of front shock absorber connecting rod and front shock absorber fastening bolt: 20-25N.m;

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

XVI. Main Technical Parameters Table

Model		BD250-30
Whole vehicle specification	Manufacturer name	Hangzhou Saturn Power Technology Co., Ltd
	Vehicle model (commercial name)	BD250-30
	Vehicle brand	BENDA
	Vehicle type	Ordinary two wheeled motorcycle
	Vehicle Identification No.	H84PDNLBXRXXXXXXX
	Authorized manned capacity	1 person
	Turning form	Handlebar
	Gear form	Six 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
	Startup method	Electric start
	Length * Width * Height	2333mm*838mm*1038mm
	Wheelbase	1545mm
	Minimum ground clearance	120mm
	Vehicle curb weight	182kg
	Maximum Load Capacity Mass	75kg
	Fuel tank capacity	9.5 L
	Number of tires	two
	Front wheel	130/80-18
	Rear wheel	160/70-18
Electric implement	Ignition method	ECU
	Spark plug model	B8RC
	Headlight specifications	12V LED
	Turning light specifications	12V LED
	Taillight/brake light specifications	12V LED
	Fuse value	Main cables: 20A (3 units), 15A (1 units), 10A (2 units), 5A (1 units), Spare fuse: 20A (1 units), 10A (1 units)
	Battery specifications	12V 11.2Ah
Engine	Engine form	V-two cylinder
	Engine model	BD2V53MM
	Compression ratio	11.8：1
	Actual displacement	249ml
	Maximum net power	19Kw/9000Rpm
	Maximum torque	25Nm/5500Rpm
	Cylinder diameter * stroke	53.5*55.4

	Idle RPM	1600±150
	Engine lubricating oil	SAE
	Brand number	10W-40
	Lubricating oil capacity	2.2L
	Fuel grade	95 # / E5 and above gasoline
	Spark plug clearance	0.8~0.9 mm
Transmission	Primary speed ratio	3.238
	First gear ratio	2.42
	Second gear ratio	1.53
	Three speed ratio	1.18
	Four speed ratio	1.04
	Five speed ratio	0.91
	Six speed ratio	0.81
	Final speed ratio	3.714
Performance	Maximum speed	129km/h
	Fuel consumption	≤3.40

XVII. Common faults and causes of motorcycles

Malfunction	Component	Reason for malfunction	Methods
Vehicle can not start	Fuel system	There is no fuel in the fuel tank	Add gasoline
		Fuel pump blockage or damage, poor fuel quality	Clean or replace
	Fuse	The related fuse burned	Check or replace
	Ignition system	Spark plug malfunction: excessive carbon buildup and prolonged use	Check or replace
		Spark plug cap malfunction: poor contact or burnt out	Check or replace
		Ignition coil malfunction: poor contact or burnt out	Check or replace
		Trigger coil fault: poor contact or burnt out	Check or replace
		Fault in each connecting wire: poor contact	Check or adjust
	Cylinder pressure system	Starting mechanism malfunction: wear or damage	Check or replace
		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, piston ring malfunction: fuel contains gum or is worn	Check or replace
		Air leakage in intake pipe: prolonged use	Check or replace
		Valve timing malfunction	Check or replace
Insufficient power	Valve piston	Excessive carbon buildup in the intake and exhaust valves and pistons: poor fuel and oil quality	Repair or replace
	Clutch	Clutch slippage: poor oil quality, prolonged use, overload	Adjust or replace
	Cylinder body, ring	Wear of cylinder body and piston rings: poor oil quality, prolonged use	Oil Change

	Brake system	Incomplete brake separation: The brake is too tight	Adjust
	Chain	Chain too tight: Improper adjustment	Adjust
	Engine	Engine overheating: The mixture is too rich or too lean, and the quality of the engine oil and fuel is poor, There are obstructions, etc	Adjust or replace
	Spark plug	Improper spark plug clearance, normal 0.8-0.9 mm	Adjust or replace
	Intake pipe	Air leakage in intake pipe: adjust or replace after prolonged use	Adjust or replace
	Cylinder head	Leakage of cylinder head or valve	Check or replace
	ECU system	ECU system malfunction	Inspect or repair
	Air filter	Air filter blockage	Cleaning or adjust
The headlights and taillights do not work	Cable	Poor connection of the circuit	Adjust
	Fuse	The light insurance burnt	Adjust or replace
	Left and right switches	Poor or damaged switch contact	Adjust or replace
	Headlight	Inspection of light bulbs and lamp holders	Adjust or replace
	Rectifier	Voltage regulator inspection: poor contact or burnt out	Check or replace
	Magnetic motor	Magnetic motor coil inspection: poor contact or burnt out	Check or replace
The horn do not work	Battery	The battery is dead	Adjust or replace
	Left switch	Horn button inspection	Adjust or replace
	Harness	Poor contact of the circuit	Adjust or replace
	Horn	Horn damaged	Adjust or replace

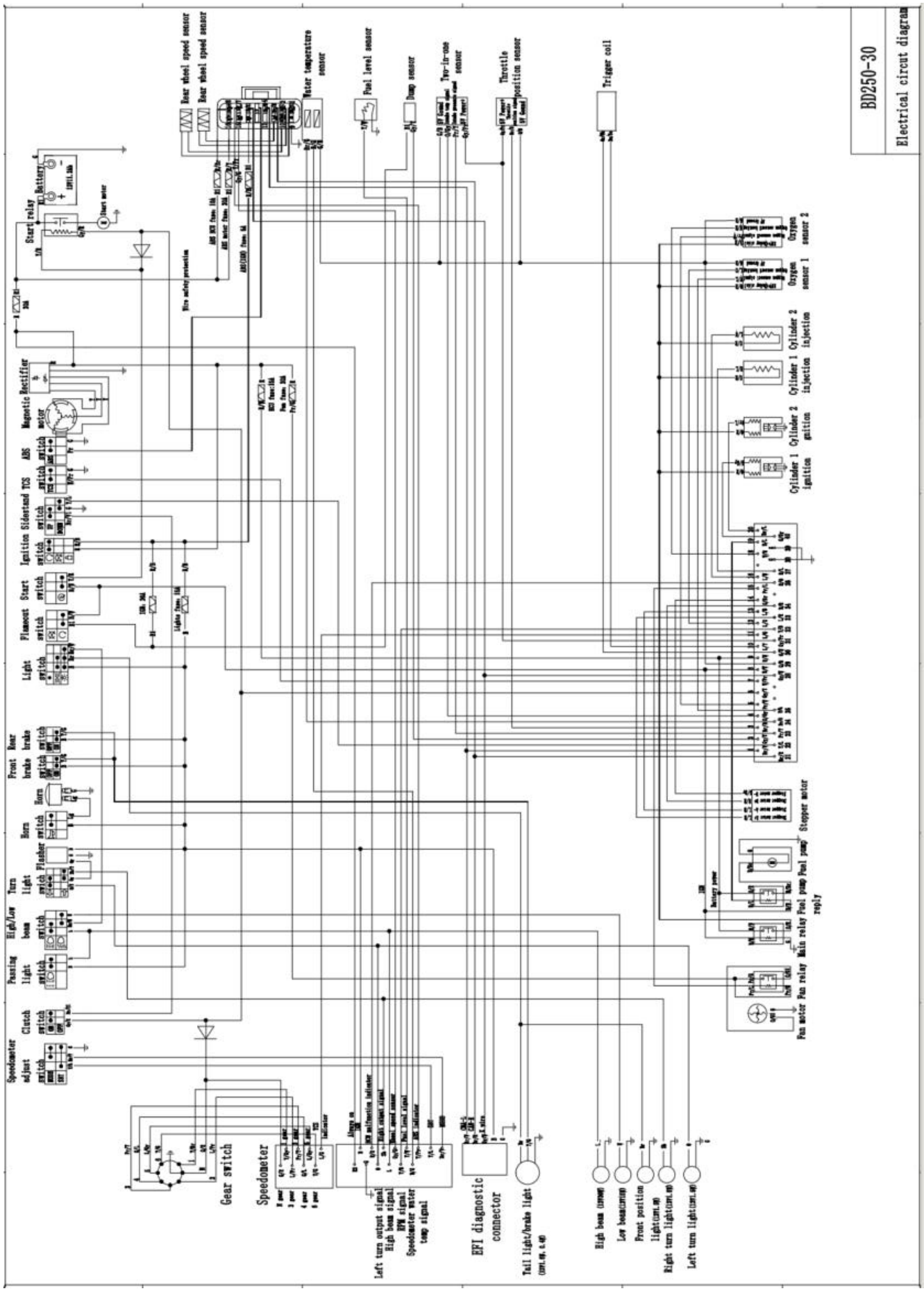
The above are common faults of motorcycles. If your motorcycle has malfunctions, please promptly go to the designated maintenance unit for inspection and repair.

Fault code table	
Fault code	describe
P 0118	Cylinder temperature sensor circuit high voltage/open circuit
P 0117	Low voltage in cylinder temperature sensor circuit
P 0336	Signal interference in crankshaft position sensor circuit
P 0335	The crankshaft position sensor circuit has no signal
P 2301	Ignition coil "A" short circuited to high voltage (cylinder 1)
P 2300	Ignition coil "A" short circuited to low voltage (cylinder 1)/open circuit
P 2304	Ignition coil "B" short circuited to high voltage (cylinder 2)
P 2303	Ignition coil 'B' short circuited to low voltage (cylinder 2)/open circuit
P 0123	The throttle position sensor is short circuited to high voltage
P 0122	The throttle position sensor is short circuited to low voltage/open circuit
P 0459	Carbon canister solenoid valve circuit short circuited to high voltage
P 0458	Carbon canister solenoid valve circuit short circuited to low voltage/open circuit
P 0232	The oil pump relay is short circuited to high voltage
P 0231	Oil pump relay short circuited to low voltage/open circuit
P 0601	ECM read-only memory verification error
P 0262	Cylinder 1 injector short circuited to high voltage
P 0261	Cylinder 1 injector short circuited to low voltage/open circuit
P 0265	The fuel injector of cylinder 2 is short circuited to high voltage
P 0264	The fuel injector of cylinder 2 is short circuited to low voltage/open circuit
P 0108	High voltage in the intake pressure sensor circuit
P 0107	Low voltage/open circuit in intake pressure sensor circuit
P 0113	High voltage/open circuit in intake temperature sensor circuit
P 0112	Low voltage in intake temperature sensor circuit
P 0650	Engine malfunction indicator light malfunction
P 0132	Cylinder 1 front oxygen sensor short circuited to high voltage/open circuit
P 0131	Cylinder 1 front oxygen sensor short circuited to ground
P 0031	Cylinder 1 front oxygen sensor heater short circuited to low voltage/open circuit
P 0032	Cylinder 1 front oxygen sensor heater short circuited to high voltage
P 0138	Front oxygen sensor of cylinder 2 short circuited to high voltage/open circuit
P 0137	Front oxygen sensor of cylinder 2 short circuited to ground
P 0037	2 cylinder front oxygen sensor heater short circuited to low voltage/open circuit
P 0038	2 cylinder front oxygen sensor heater short circuited to high voltage
P 0563	System voltage high
P 0562	Low system voltage
P 0500	Vehicle speed sensor malfunction
P 0505	Idle control malfunction

The above are common fault codes for motorcycles. If your motorcycle has 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 and cause a safety accident, you are responsible for it.

XVIII. BD250-30 Electrical Circuit Diagram



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