

Service and Maintenance

Regular Service and Maintenance	1
Precautions for the run-in period of a new motorcycle	2
Contents of Level 1 Service and Maintenance	2
Contents of Level 2 Service and Maintenance	3
Contents of Level 3 Service and Maintenance	3
Service and Maintenance for the Carburetor.....	4
Check and Replacement of Lubricant	5
Service and Maintenance of the Spark Plug	6
Service and Maintenance for the Air Filter	7
Adjustment of the accelerator handgrip	8
Service and Maintenance for the Front Brake	9
Service and Maintenance for the Rear Brake	10
Adjustment of the rear braking light	11
Service and Maintenance for Front and Rear Tires	12
Service and Maintenance for Environmental Protection Device.....	13
Service and Maintenance for the Accumulator Cell	14
Service and Maintenance for Fuse	15
Service and Maintenance for the Horn	15
Storage of the Motorcycle	16
Service and Maintenance Interval Table.....	17
Service and Maintenance Interval Table for Lubricated Parts	18
Common Faults and Troubleshooting.....	19-22
Schematic Wiring Diagram	23
Function and troubleshooting of components of ECS.....	24-34

Regular Service and Maintenance

During the operation of the motorcycle, different levels of loosening and mechanical wear will occur to each part. Without regular service and maintenance, the dynamic property, economy, reliability and security of the motorcycle will be reduced, and the service life of the motorcycle will also be shortened. Therefore, motorcycle drivers must conduct proper regular service and maintenance for the motorcycle, so as to ensure best performance of the motorcycle. Proper regular service and maintenance can remove faults in time, prolong the service life of the motorcycle, reduce the maintenance costs and realize the goal of safe driving of the motorcycle.

Requirements on Service and Maintenance

There are following requirements on the service and maintenance of the Motorcycle:

1. Keep the engine clean, and make sure there is no gas/oil leakage and the engine is easy to start up and has good acceleration property and dynamic property and has no abnormal noise.
2. Ensure that the automatic clutch separates thoroughly and meshes smoothly, and shows no slipping or abnormal noise, and the accelerator handgrip operates flexibly.
3. Ensure handy and flexible operation of the braking handgrip, and ensure that the braking results meet relevant requirements. After the brake is released, the brake should be able to be reset automatically, and show no friction sound. Ensure good lubricating performance of the motorcycle.

4. The front and rear shock absorbers should work properly and reliably. The air pressure of the tire should be normal, and the electrical components at each part should be able to work properly.
5. There is no loose connection on the overall motorcycle. The appearance of the overall motorcycle should be clean and tidy.
6. It is well lubricated and there is no oil leakage at each lubricated part.
7. The connection of the accumulator cell should not be loose. It should be secure and reliable.
8. Tools delivered together with the motorcycle, as well as spare parts should be complete, free from wear or corrosion.

Service and Maintenance in the Run-in Period

The run-in of a new Motorcycle directly affects the service life of the motorcycle. Within the first 1000km of a new Motorcycle (the driving speed should not exceed 40km/h, subject to the speedometer), overspeed should be avoided. Run-in must be carefully performed, and service and maintenance should be conducted after the run-in, with a view of compensating the initial light wear. In this way, we can prolong the service life of the engine, and ensure best conditions and good performance of the motorcycle.

Precautions for the run-in period of a new Motorcycle

1. Within the run-in period, replace the oil every 500km, and clean the oil filter screen.
2. Regularly check whether each connection is loose, and tighten it timely if any loosening is found.
3. Regularly check whether the engine, drive system and braking system is overheated, and whether there is enough lubricating oil on each lubricated part. If any overheat occurs, the cause should be found in time and be removed timely.
4. Regularly check the tightness of the belt, and the free travel of the front and rear brakes, accelerator handgrip and each maneuvering position. Adjust them if necessary.
5. Within the run-in period, run the motorcycle after the engine is well pre-heated. First run it at low speed for 1km~2km, and then run it at high speed.
6. In order to reduce vibration and impact loads, the motorcycle should run on a level road with good road conditions whenever possible.
7. Within the run-in period, overload run should be strictly forbidden. Otherwise, the drive system will wear more faster. Heavy load should be avoided.
8. Avoid emergent and long-time braking.
9. Strictly control the running speed of the motorcycle.
10. Within the run-in period, the load should not exceed 80% of the payload.

Contents of Level 1 Service and Maintenance

Level 1 Service and Maintenance should be performed every time after the motorcycle runs 1000km~2000km. Its main contents are as follows:

1. Adjust the travel of the front braking handgrip to 10mm~20mm, and adjust the rear brake pedal to 20mm~30mm.
2. Adjust the travel of the accelerator cable to 2mm~6mm, and lubricate the accelerator handgrip and the accelerator cable.
3. Clean the carburetor, fuel tank, oil filter screen and air filter.
4. Adjust the idle speed of the carburetor and put the motorcycle in best conditions.
5. Remove the carbon deposit of the spark plug, and adjust the electrode gap of the spark plug to 0.6mm~0.7mm.
6. Remove the accumulator cell and charge it.
7. Check and tighten all bolts and nuts of all exposed parts.
8. Check the tightness of all connections of the electric system, and tighten them timely.
9. Adjust the engine valve lash: intake valve 0.03-0.05mm; exhaust valve 0.05-0.07mm.

Contents of Level 2 Service and Maintenance

Level 2 Service and Maintenance should be performed every time after the motorcycle runs 3000km~6000km. Its main contents are as follows:

1. Remove the carbon deposit on the parts such as cylinder, piston, piston ring, cylinder head and silencer, and clean them.
2. Check the wear of the cylinder, piston and piston wear. Check whether the compression ratio of the cylinder falls within the range of standard values.
3. Check the wear of the clutch friction lining and brake shoes. Replace them in time if any serious wear is found.
4. Clean the carburetor, air filter, fuel tank, fuel filter, etc.
5. Clean the upper and lower steel balls of the steering column, and fill lubricating oil or grease.
6. Check whether the axial and radial runout of the front and rear wheel meet applicable requirements, and adjust it if necessary.
7. Clean, lubricate, service and maintain the controller cables of the whole motorcycle. Check the wear of controller cables, and replace them if necessary.
8. Clean the rear transmission box and replace the lubricant in it if necessary. Check the wear of the front clutch friction lining, rear clutch friction lining and drive belt. Replace them if necessary.
9. Wipe off dust on the rearview mirror with lint, and check whether the rearview mirror is properly located.
10. Check whether the electrical components of the whole motorcycle can work normally.

Contents of Level 3 Service and Maintenance

Level 3 Service and Maintenance should be performed every time after the motorcycle runs 6000km~10000km. Its main contents are as follows:

1. Ensure normal oil supply for the lubricating system.
2. Ensure normal work of the air distribution mechanism.
3. Ensure normal work of the electric startup system.
4. Ensure normal operation, of front and rear automatic clutches and the drive system.
5. Check whether there is any crack, erosion, spalling or serious stepped wear on each gear tooth of the rear transmission box.
6. In disassembling the engine, the carbon deposit on the cylinder head, piston top, piston ring and exhaust port should be removed. Check the fit clearance between the piston and the cylinder wall, and the smaller head of the crank connecting rod and the piston pin.
7. Ensure normal work of front and rear shock absorbers, the frame and accessory mechanisms.
8. Ensure normal fuel supply for the fuel system.
9. Ensure normal work of instruments and the electric system.
10. In disassembling the whole motorcycle, check whether there is any damaged part for the steering column, front and rear wheels, the carburetor, the air filter, front and rear brakes, the maneuvering system, and the drive system. Clean each part and fill in lubricating grease and lubricating oil. Adjust the fit clearance after reassembly.

Service and Maintenance for the Carburetor

Only when the carburetor is well serviced and maintained can we ensure normal work of the motorcycle and can the need of the engine for inflammable gas mixture be met. Only in this way can we ensure good dynamic property and economy of the engine.

The carburetor should be serviced and maintained in the following aspects:

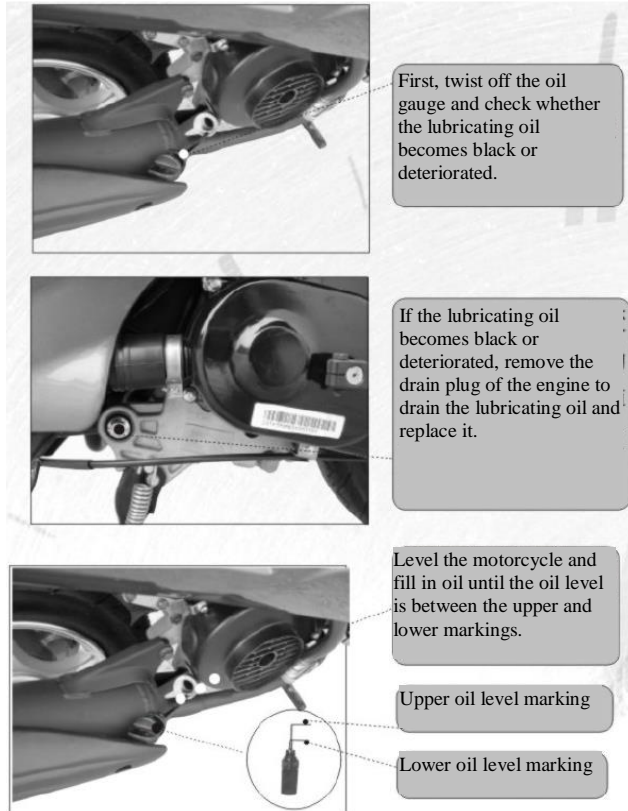
1. Regularly check the tightness of the carburetor, intake pipe, T-pipe, cylinder head, cylinder block and intake port of the crankcase to ensure good sealing. Otherwise, gas leakage may result in that the motorcycle has no idle speed, or its idle speed is not stable, sometimes high and sometimes low. Since the conditions of the carburetor directly affect the dynamic property and economy of the motorcycle, the carburetor should be regularly cleaned to maintain good performance.

2. In driving, some impurities and dirt may build up on the carburetor. Generally after every 2000 km, the carburetor should be removed for checking and cleaning to eliminate faults of the carburetor. Otherwise, the main measuring orifice, idle measuring orifice and gas mixture screw hole may be blocked, and the normal work of the carburetor may be affected.

3. Check whether there is any hardening, deformation or leakage occurring on the T-pipe and the rubber hose. If any, replace it immediately.

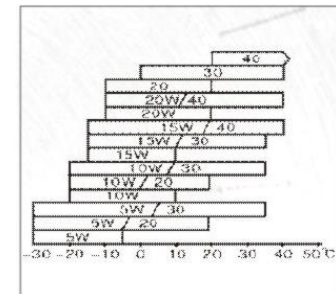
During the course of installation, special attention should be given to the tightness of the connection of the connecting pipe of the carburetor and the cylinder. No gas leakage is allowed. If there is any gas leakage, a film of sealant may be also applied to prevent such leakage.

Check and Replacement of Lubricating Oil



⚠ Caution

- * Replace the lubricating oil when the engine is in the hot state.
- * When the lubricating oil is basically drained off, turn the engine for several times to completely discharge residual lubricating oil.
- * Before filling in new lubricating oil, remove the residual dirt from the crankcase with 0.5L gasoline, and then drain the gasoline.
- * New lubricating oil must be filtered in the replacement of oil.
- * The specification and grade of lubricating oil may be selected from the figure below based on actual local temperature. SF15W/40 gasoline engine oil is recommended.
- * Check whether the filter screen, sealing gasket, spring, O-ring and oil drain plug are in good conditions. If not, replace them.
- * After replacing the lubricating oil, tighten the oil drain plug and oil fill plug, and check whether there is any oil leakage.
- * After replacing the lubricating oil, the idle speed of the engine must be re-adjusted to be within the range of standard values.



Service and Maintenance of the Spark Plug

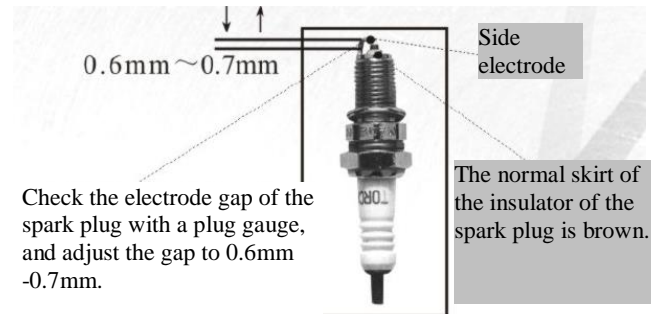
Type of spark plug: Connecting screw, flat seating, with nut

Service of the spark plug:

Take off the spark plug. When the color of the insulator skirt of the spark plug is offwhite, it indicates overheating of the engine. Generally, the engine overheating may be caused by the following reasons:

- * The heat value of the spark plug is too small, and it should be replaced with a spark plug with appropriate heat value.
- * The spark plug screws in so much that the insulator excessively extrudes into the combustion chamber. It is necessary to adjust the screwing thickness of the spark plug.
- * The overheating of the engine is caused by the friction of transmission parts of the engine.

Take off the spark plug. If it is found that the color of the insulator of the spark plug is dark black, or there is serious oil stain or dark black carbon deposit on the surface, the main reason for it is that the gaseous inflammable alkene mixture of the carburetor is overrich

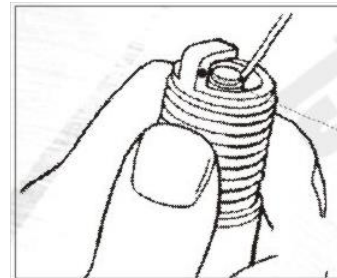


Take off the spark plug. If it is found that the color of the insulator skirt of the spark plug is brown, it indicates that the engine works properly, and there is nothing wrong with the spark plug.

Cleaning the Spark Plug

⚠ Caution

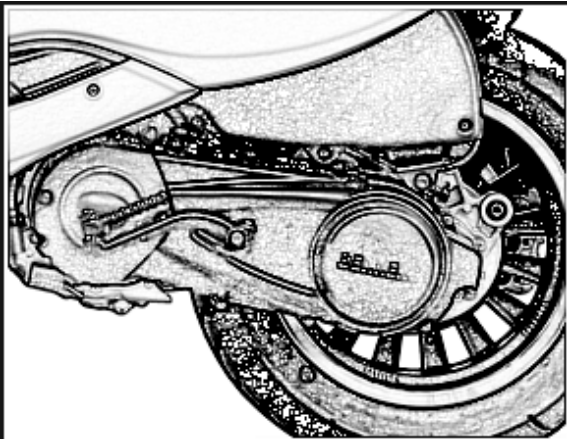
In cleaning the spark plug, make sure not to damage the insulator. It is forbidden to remove the carbon deposit or filth by burning with fire or scrubbing with metal wires.



Service and Maintenance

Service and Maintenance for the Air Filter

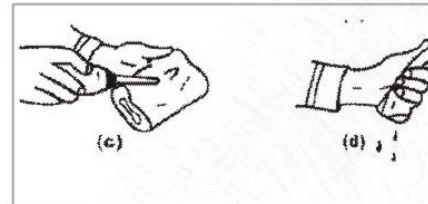
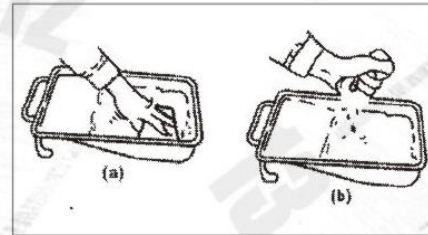
When the filter element of the air filter is blocked by dust, it may result in increased resistance of the air intake system, overrich gas mixture, reduced power and greater fuel consumption. Therefore, the filter element of the air filter should be cleaned on a regular basis.



Take off the fastening screws of the air filter cover, and remove the air filter cover. Check whether there is too much dust on the sponge foam of the filter element. Take off the sponge foam.

Wipe off the dust inside the air filter with clean and dry cloth.

Clean the foam filter element: Take off the foam filter element. First, soak the foam filter element of the air filter in the detergent, and then pinch and wash it. After the foam filter element is cleaned and dried, soak the foam filter element in SAE lubricating oil until it is saturated. Extrude excessive lubricating oil and mount it.



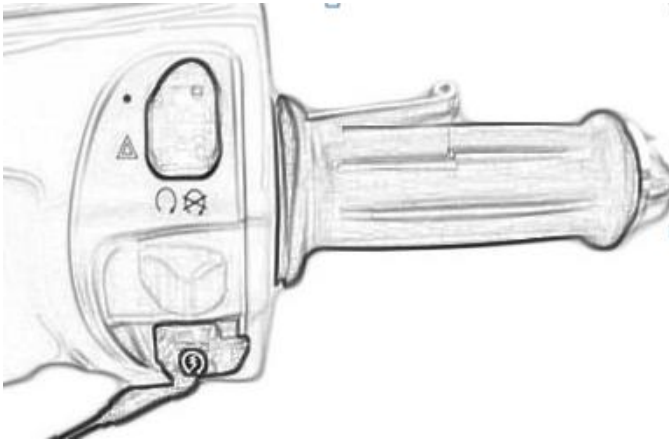
⚠ Caution

- * It is forbidden to use the following cleaning agents to clean paper filter elements, such as gasoline, low ignition-point solvent, acid, alkaline or organic volatile oil.

Adjustment of the accelerator handgrip

Check whether the free travel of the accelerator handgrip is within the specified range, and then adjust it. Please follow the following steps in adjusting the free travel of the accelerator handgrip:

1. First, loosen the locking nut.
2. Then adjust the regulating solenoid.
3. After adjustment, tighten the locking nut.

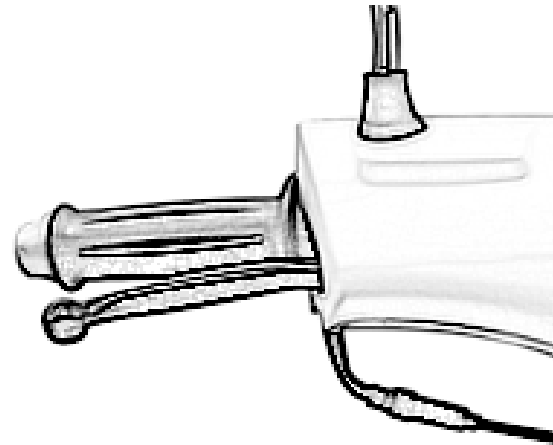


Service and Maintenance for the Front Brake

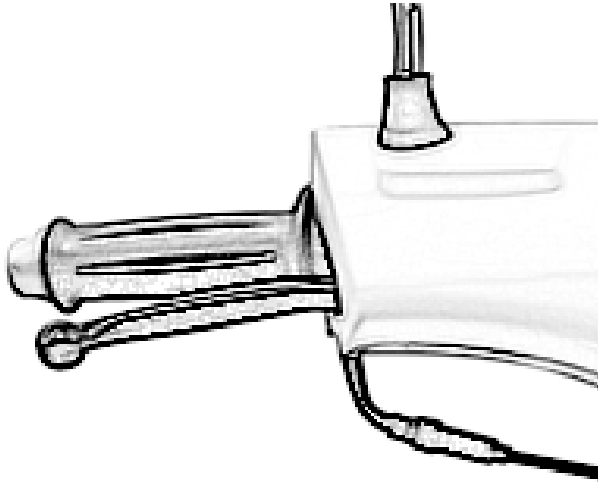
This model uses the front disc brake, which is featured by secure and reliable braking, labour-saving and good heat dissipation.

Adjustment of the front disc brake

1. First, use the main support to prop up the Motorcycle, and then it is possible to adjust the free travel of the front brake.
2. Adjust the regulating nut of the front brake to adjust the free travel of the front braking handgrip to 10mm~20mm.



Service and Maintenance



- * Check the wear of the front brake. If the travel of the front braking handgrip is too large, it indicates that the wear of the front brake shoe is already beyond the limit.



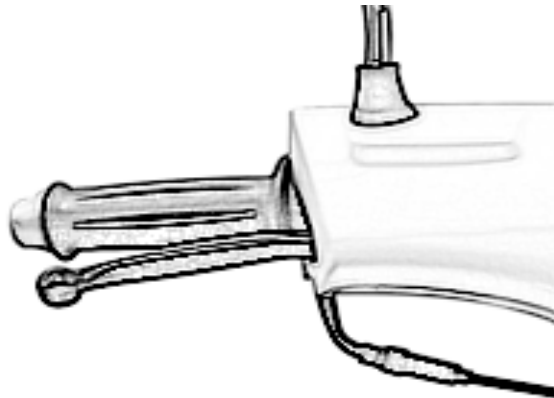
- * Check the wear of the front disc brake. If the surface of friction is abnormal or deformed, please replace it with a new disc brake.

Service and Maintenance for the Rear Brake

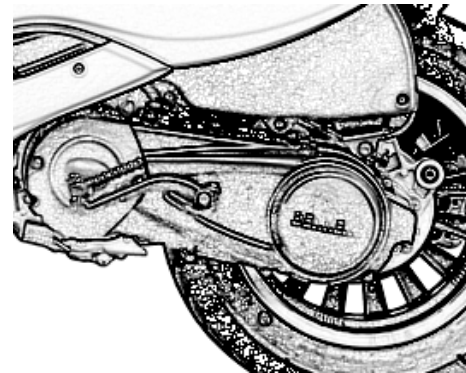
Adjustment of the rear disc brake

- * First, use the support to prop up the rear wheel of the motorcycle and then adjust the free travel of the rear brake.
- * Grip the rear braking handgrip for several times, and then loosen it. Rotate the rear wheel assembly to check whether the rear wheel rotates freely.

Use the support to prop up the motorcycle, and adjust the free travel of the rear braking handgrip to 10mm-20mm.



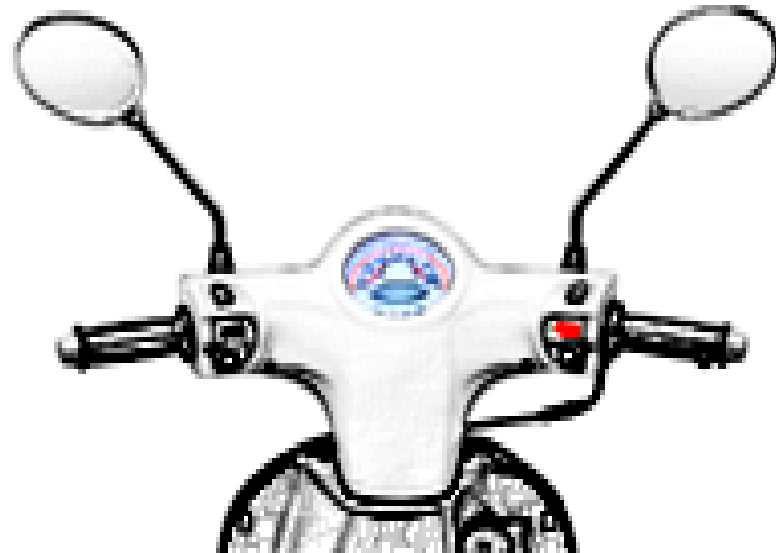
First check the wear of the rear brake shoes. If the travel of the rear braking pedal is too large to be adjusted, it indicates that the wear of the rear brake shoe is already beyond the limit.



Adjustment of the rear braking light

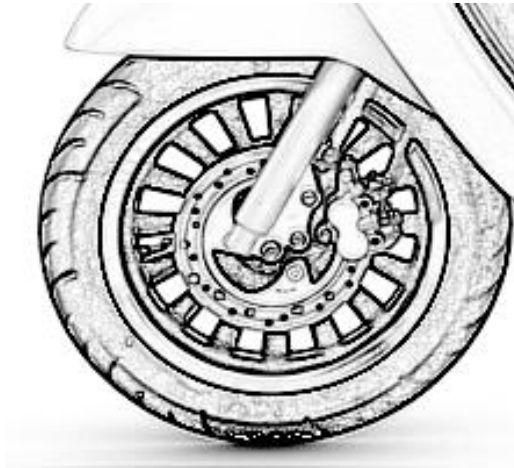
- * Since the braking light of the Motorcycle directly relates to the driving safety of the motorcycle, the conditions of the braking light should be checked from time to time.
- * The switch of the braking light is set on the front and rear braking handgrips. When the braking light can not work properly, the braking light switch and the braking light bulb should be checked and replaced.

In checking the front and rear braking lights, the turn signal light housing must be removed before checking and replacing the front and rear braking light switches.



Service and Maintenance for Front and Rear Tires

Only when the proper air pressure is used for the tire can we ensure the comfort and stability of the driving of the motorcycle and prolong the service life of the tires and tire casings of the motorcycle.



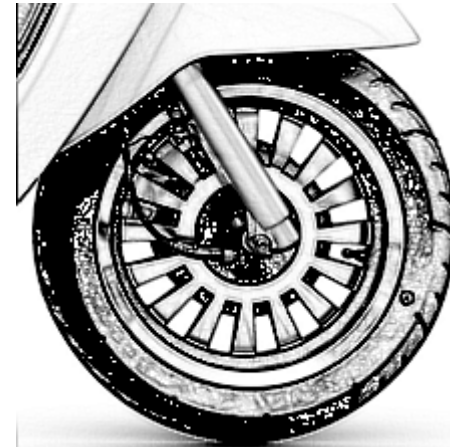
Check the air pressure of the tire and check whether the rim deforms. If any abnormality is found, it should be handled properly.

Removal and Replacement of Front Wheel

- * Use the main support to prop up the motorcycle.
- * Remove the nut of the front wheel shaft, and take off the front wheel shaft. Take off the front wheel.

Caution:

- * After taking off the front wheel, make sure not to grip the front braking handgrip.
- * In remounting, the tightening torque of the nut of the wheel shaft: 50N.m~70N.m.
- * Adjust the front brake, and make several braking tests. After loosening it, check whether the front wheel rotate flexibly.



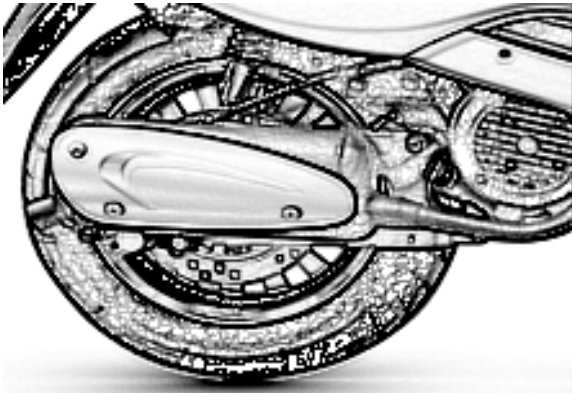
Service and Maintenance

Removal and Replacement of the Rear Wheel

- * Turn off the ignition lock switch.
- * Use the main support to prop up the motorcycle, and take off the silencer.
- * Take off the nut of the rear wheel shaft, and remove the rear wheel.

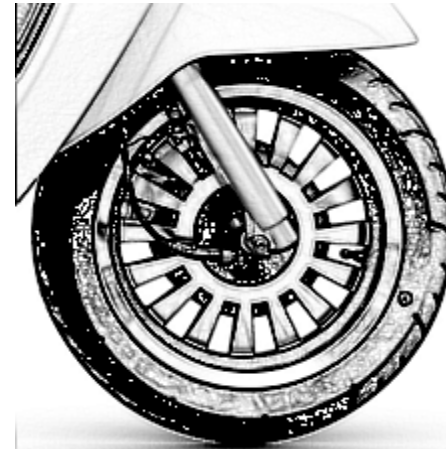
Assembly Precautions

- * In reassembly, the torque of the rear wheel shaft nut: 70N.m~90N.m.
- * Re-adjust the free travel of the rear braking handgrip to 10mm~20mm.



If the tread wear depth in the middle of the tire casing of the motorcycle reaches the following limit, the tire case should be replaced immediately.

Minimum limit of tread depth	Front wheel	2.0mm
	Rear wheel	2.0mm



Check the tread wear depth of the tire casing and whether there is any crack. If any abnormality is founded, the tire casing should be replaced immediately.

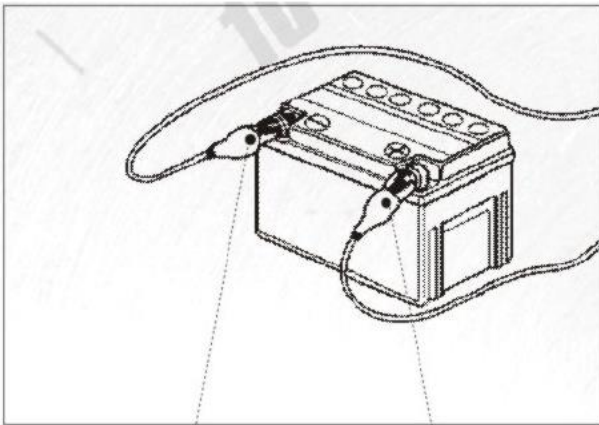
⚠ Caution

- * Too low tire pressure will increase the rolling resistance of the tire of the motorcycle and increase fuel consumption. In worse cases, it may cause local delaminating of the tire body and cause tire burst.
- * Too high tire pressure will reduce the comfort of riding and fasten the wear of each part.

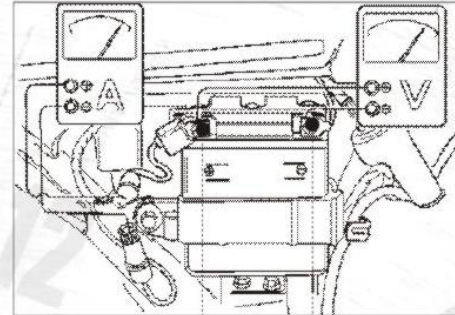
Service and Maintenance for the Accumulator Cell

In this model, the accumulator cell is mounted below the seat cushion. DC power supply is used for the electric system of the model. For the first 1000km~3000km of the motorcycle, the accumulator cell should be serviced and maintained as follows:

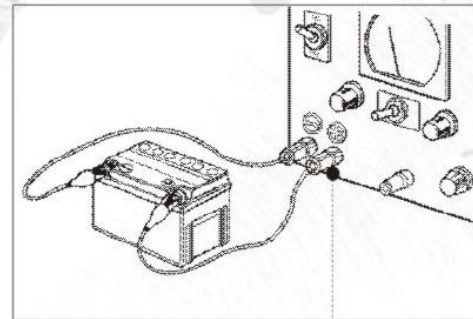
1. Check whether the accumulator cell can work properly.
2. Check whether the positive and negative electrode connection is loose.
3. When the accumulator cell is not used for a long time, the accumulator cell must be charged once a month.
4. Check whether the electrolyte level of the accumulator cell is between the upper and lower markings. When the level is below the lower marking, add some distilled water.



Check whether the connection of the accumulator cell is loose. If it is loose, tighten it.



Check whether the voltage of the accumulator cell is within the range of "12V". When the voltage of the accumulator cell is not enough, charge the accumulator cell.



When the accumulator cell of the motorcycle is not used for a long time, it will self-discharge, and the accumulator cell must be charged once a month.

Service and Maintenance for the Fuse

The fuse is connected in series in the charging and discharging of the accumulator cell. When the charging current or the discharging current exceeds the specified value, the fuse will automatically break to protect the accumulator cell and electrical components. For this model, the fusing current of the fuse is 15A.



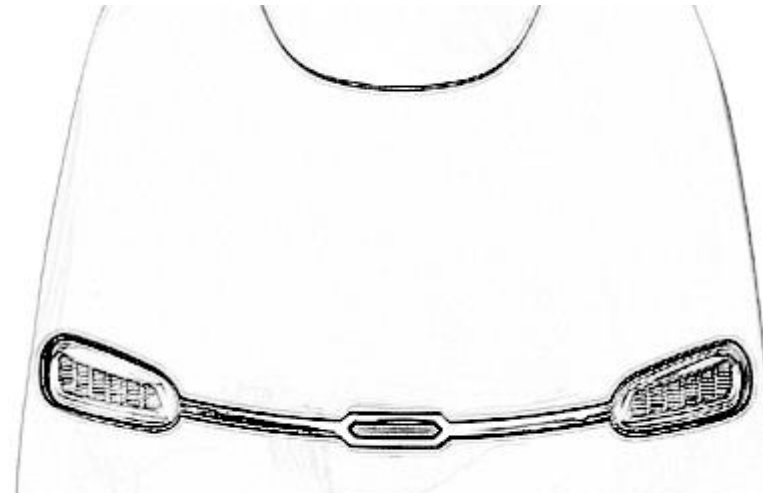
When the electric system of the motorcycle outputs no current, first we should check whether the fuse is broken. If yes, replace the fuse.

Caution

- * After the fuse burns out, we should first find out the reason causing too large current, and at the same time, replace it with a fuse with appropriate specification.

Service and Maintenance for the Horn

After the motorcycle has run for a certain period of time, the fixing of the horn may be loose, and its housing may collide with other parts, thus affecting the sound of the horn. In this case, the sound volume of the horn should be re-adjusted.



If the horn gives a weaker or no sound, remove the front panel. Use a multi-meter to measure the output voltage of the horn circuit. If the input voltage is normal, use the horn regulating screw to adjust the sound volume of the horn to the normal level.

Storage of the Motorcycle

Long-time storage:

If the motorcycle needs to be parked for a long-time (more than one month), it should be done in the following steps:

- * Drain off all the residual fuel in the fuel tank and in the carburetor. Spray the fuel tank with spray-type antirust oil. Mount the fuel tank cover.
- * Take off the spark plug. Pour 5mL clean lubricating oil into the cylinder. Tread the starting arm for several times to enable the poured-in lubricating oil to be evenly distributed in the combustion chamber. Install the spark plug.
- * Take off the accumulator cell, and store it in a dry, dark and indoor environment. Perform slow charging for the accumulator cell once a month.
- * Wash the motorcycle clean, and wipe if dry with soft cloth. Wax the painted surfaces, and apply a film of anti-rust oil to the chromium-plated surface.
- * Increase the tire pressure to the specified standard value. Place tie plugs below the tires of the motorcycle to lift the wheels above the ground.
- * Well cover the Motorcycle, and park it in a well-ventilated, dry, clean, rainproof and sunproof place, far away from any hazardous substance such as inflammable material or chemical corrosive.

Re-use after Storage

- * Clean the Motorcycle. Replace the engine oil if the motorcycle has been stored for more than 4 months.
- * Check the accumulator cell. If necessary, use it after it is charged.
- * Clean up the antirust oil in the fuel tank, and fill in new fuel /
- * Perform overall checkup necessary to be done before driving.

Service and Maintenance

Service and Maintenance Interval Table

Regular Service and Maintenance is generally based on the reading of the odometer. When the motorcycle is working under bad conditions or under load operation for a long time, the service and maintenance interval should be appropriately shortened.

Times of service and maintenance Items of service and maintenance		Item Interval	Odometer				Remarks
			1000km	2000km	4000km	8500km	
	Fuel system		C	C	C	C	Item ※※ can only be serviced and maintained by designated after-sales service personnel. When driving in an extremely moisture or highly dusty place, the service and maintenance interval should be appropriately shortened.
	Fuel filter		C	C	C	C	
	Controller cable		A	A/C	A/C	A/C	
※※	Carburetor		C	C	C	C	
	Air filter element		C	C	C	C	
	Spark plug gap		A/C	A/C	A/C	A/C	
※※	valve lash		A	A	A	A	
	Lubricating oil of engine		R	R	R	R	
	Lubricating oil filtering screen		C	C	C	C	
※※	Timing chain		I	A	A	A	
	Carburetor idling		A	A	A	A	
※※	Drive belt		-	A	R	R	
	Accumulator cell		B	B	B	B	
	Brake shoe		I	A	A	R	
※※	Braking system		A	A	A	R	
	Braking light switch		A	A	A	A	
	Lighting system		I	I	I	I	
※※	Clutch		I	I	I	I	
※※	Shock absorber		I	I	A	A	
	Nuts and bolts		G	G	G	G	
	Tire casings for front and rear wheels		I	I	I	I	
	Steering handgrip bearings		I	A	A	R	

A-Adjustment C-Cleaning I-Inspection R-Replacement G-Tightening B-Battery Charging

Service and Maintenance Interval Table for Lubricated Parts

Name	Model	Odometer reading							
		Kilometers	1000	2000	4000	8500	10500	15000	20000
lubricating oil of engine	SAE 15W 10SF	-	R	R	R	R	R	R	R
Braking pull-rod	OKS-400(Multipurpose lithium-based lubricating grease)	-	-	R	R	R	R	R	R
Disc brake braking liquid	DOT3 or DOT4	-				R	-		
Lubricating oil for front shock absorber	Lubricating grease for shock absorber	-	I	I	I	T	I	I	I
Tachometer gear	OKS-400(Multipurpose lithium-based lubricating grease)	-			I	R	I	R	I
Steering gear	OKS-400(Multipurpose lithium-based lubricating grease)	-				I	-	R	-
Bearings for front and rear wheels	OKS-400(Multipurpose lithium-based lubricating grease)	-			I	R	I	R	R
Rear braking swing arm	OKS-400(Multipurpose lithium-based lubricating grease)	-				I	-	I	-
I-Inspection R-Replacement T-Addition									

Table

Fault system	Fault	Causes	Troubleshooting
Fuel system	The engine is difficult or is unable to be started.	Fuel cannot enter the carburetor; The fuel negative pressure switch is blocked; The T-pipe leaks; The fuel pipe is blocked; The vacuum pipe is blocked.	Dredge each blocked place. Clean the fuel negative pressure switch Replace the T-pipe Dredge the fuel pipe. Dredge the vacuum pipe
	The motorcycle is difficult to be started or the fuel is excessively consumed.	The carburetor is blocked; The adjustment of the mixing ratio and concentration of the carburetor is incorrect; The carburetor leaks; The fuel filter is blocked; The throttle of the carburetor is worn; The fuel goes bad; The air vent of the fuel tank is blocked; The fuel in the fuel tank is not enough.	Clean or replace the carburetor Readjust the mixing ratio and concentration of the carburetor. Clean the carburetor or replace the carburetor floater Clean the fuel filter Replace the throttle Replace the fuel. Dredge the air vent of the fuel tank Add fuel to the fuel tank
Air intake/exhaust system	The motorcycle is difficult to be started or is short of power.	The Air filter element is blocked; The air filter leaks; The air filter has too much dust; The air filter housing leaks; Too much carbon is built up at the exhaust port; The exhaust port leaks; The silencer is blocked.	Clean the air filter element Replace the air filter Clean the air filter element. Repair or change the air filter housing. Clean the carbon buildup at the exhaust port. The exhaust port leaks. The silencer is blocked.

Continued

Fault system	Fault	Causes	Troubleshooting
Environmental protection device	Emitted pollutants exceed applicable standards	Too much carbon is built up at the secondary air intake port. The air pump is blocked or damaged. The air pump filter is blocked or damaged. The intake rubber hose is aged or leaks. The clamp is loose or damaged.	Clean the carbon buildup at the secondary air intake port. Replace the air pump. Replace the air pump filter. Replace the intake rubber hose. Replace the clamp.
Ignition system	Weak spark or no spark	There is carbon buildup or dirt on the spark plug. The spark plug gap is improper. The insulation part of the spark plug is damaged, resulting in Short-circuit of electrodes.	Clean the carbon buildup and dirt on the spark plug . Adjust the gap to 0.6mm~0.7mm Replace the spark plug
		Short-circuit of the ignition coil C.D.I igniter is faulty.	Replace the ignition coil Replace C.D.I igniter.
		The impulse generator is faulty. The connection of the ignition system is loose.	Replace the impulse generator. Check each connection.
Air distribution system	The engine is difficult to be started up or the idling is not stable	The sealing washer of the cylinder head leaks. The adjustment of the valve lash is incorrect . The air valve stem bends. Th elasticity of the air valve spring is reduced.	Replace the sealing washer or apply some sealant. Adjust the valve lash to 0.10mm~0.14mm Replace the air valve. Replace the air valve spring.

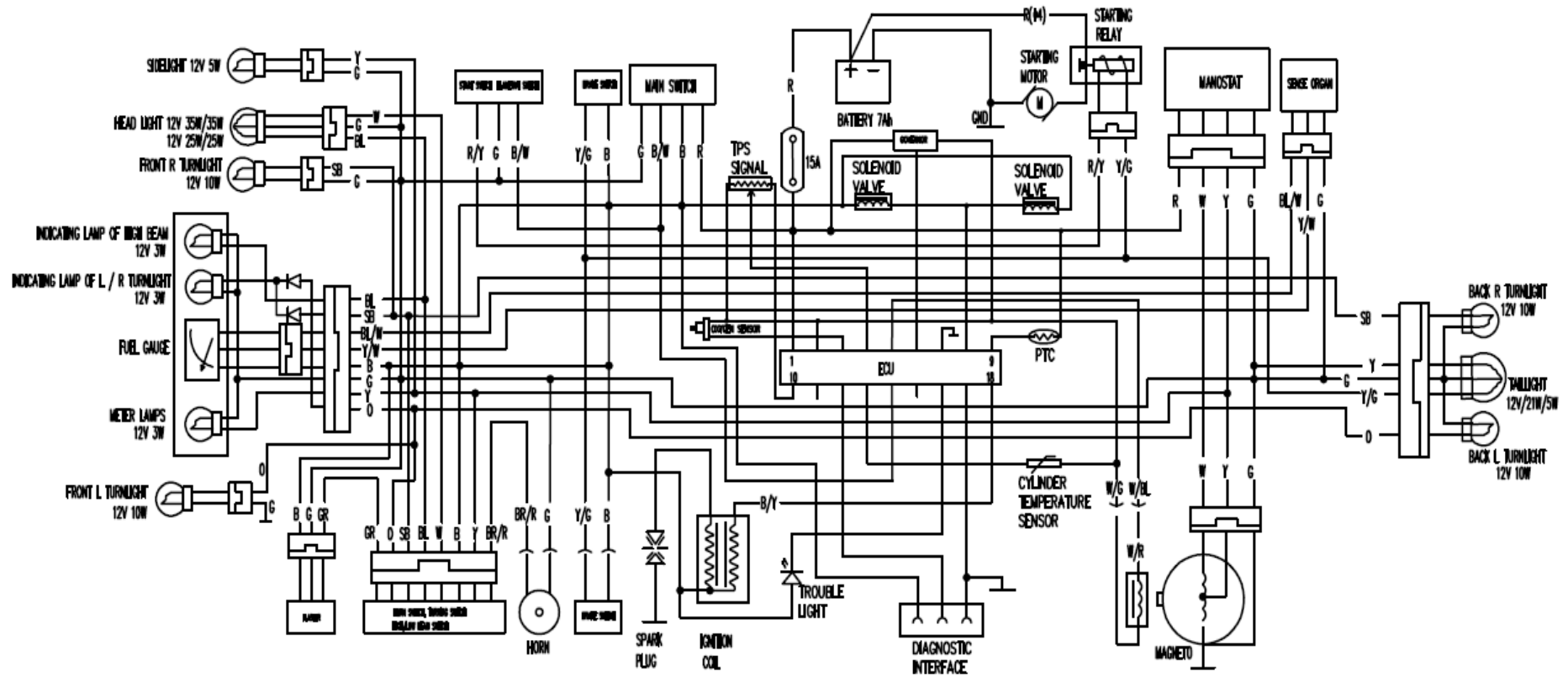
Continued

Fault system	Fault	Causes	Troubleshooting
Air distribution system	The cylinder pressure is too high.	There is too much carbon buildup in the combustion chamber and on the top of the piston.	Clean the carbon buildup in the combustion chamber and on the top of the piston.
	The engine shows big noise.	The adjustment of the valve lash is improper. The air valve spring breaks off. The cylinder and piston wear out.	Readjust the valve lash Replace the air valve spring. Replace the cylinder and piston.
	The cylinder pressure is too low.	The cylinder, piston and piston ring seriously wear out.	Replace the cylinder, piston and piston ring.
	The silencer gives blue smoke.	The piston ring wears out. The piston ring is improperly mounted. There is scratch or wear on the piston or cylinder wall.	Replace the piston ring. Remount the piston ring. Replace the piston or cylinder.
	The cylinder head leaks.	The air valve stem or air valve guide pipe wears out.	Replace the air valve stem and air valve guide pipe.
Travel system	The front wheel deviates.	The front shock absorber deforms. The front wheel shafts bends. The front wheel deforms. The front wheel is improperly mounted. The front wheel bearings are worn out or damaged.	Replace the front shock absorber Rectify the front wheel shaft. Rectify the front wheel and replace the front wheel Remount it Replace the front wheel bearings.
	The front wheel swings.	The front aluminum wheel deforms. The nut of the front wheel shaft is loose. The tire pressure is too low. The front wheel shaft is loose.	Replace the front aluminum wheel. Tighten the nut of the front wheel shaft. Increase the tire pressure. Tighten the nut of the front wheel shaft.

Continued

Fault system	Fault	Causes	Troubleshooting
Travel system	The rear wheel swings.	The rear aluminum wheel deforms. The tire pressure is too low. The rear wheel shaft is loose.	Replace the rear aluminum wheel. Increase the tire pressure. Tighten the nut of the rear wheel shaft.
Suspension system	The shock absorber is too soft.	The spring of the shock absorber loses elasticity.	Replace the spring of the shock absorber
		The shock absorber is improperly adjusted.	Re-adjust the shock absorber
Braking system	The braking performance is poor.	The brake malfunctions. The brake shoe wears out. The brake disc wears out.	Adjust and repair the braking system Replace the brake shoe Replace the brake disc. Add brake oil.
Lighting system	The head Light is not on.	The head light bulb burns out . The housing assembly switch is faulty. The connecting plug is loose. The fuse burns out. The accumulator cell is faulty.	Replace the head light bulb. Repair the housing assembly switch. Tighten the connecting plug. Replace the fuse. Replace the accumulator cell
		The lighting coil of the magnetor is faulty.	Replace the lighting coil.

Service and Maintenance



START / PLAMOUNT SWITCH			
ON	•	•	•
OFF	•	•	•
•	•	•	•
B/W	G	R/Y	

MAIN SWITCH			
ON	•	•	•
OFF	•	•	•
•	•	•	•
R	B	B/W	G

TURNING SWITCH			
L	•	•	•
OFF	•	•	•
•	•	•	•
R	•	•	•
O	GR	SB	

HORN SWITCH			
ON	•	•	•
OFF	•	•	•
BR/R	B		

HIGH/LOW BEAM SWITCH			
ON	•	•	•
OFF	•	•	•
BL	DC	W	

BRAKE SWITCH			
ON	•	•	•
OFF	•	•	•
B	Y/G		

COLOR INDICATION:
 RED: R, BLUE: B, PALE GREEN: PG
 WHITE: W, YELLOW: Y, GREEN: G, PURPLE: P
 BROWN: BR, GREY: GR, SKAY BLUE: SB
 ORANGE: O, DARK GREEN: DG
 SHORT CIRCUIT:

Part Function Description and Maintenance of Electronic Carburettor System (ECS)

Function and troubleshooting of components of ECS

Electronic carburetor system, by acquiring engine speed signal and feedback signal of the oxygen sensor, engine cylinder head temperature signal, battery voltage signal, through the ECU control strategy, output PWM control signal and the ignition signal, realize real-time solenoid valve for air supply to the main fuel circuit and carburetor idle fuel circuit, precise control of the air-fuel ratio and digital ignition system. The feedback signal to realize the closed-loop control of the air-fuel ratio of the oxygen sensor, so that the air fuel ratio back to the theory of state. By controlling the air-fuel ratio and the ignition advance, we can use different control strategies to reduce emissions and improve driving performance.

In the ECS system, the special parts involved are electronic control unit (ECU), solenoid air supply valve and its air filter, carburetor, TPS, oxygen sensor and cylinder head temperature sensor. The following is an introduction to each component function and troubleshooting.

ECU

ECU function introduction

ECU is the electronic control unit. Its maximum operating voltage is 18V. The ECU, through a 16 bit chip, conduct the internal control logic of the speed signal, oxygen sensor signal and the cylinder head temperature sensor signal and the pick-up signal, to realize the control of the ignition coil, solenoid valve, malfunction lamp, etc..

ECU test procedure

- 1.To connect the computer installed with ECS diagnostic software to the diagnostic connector on the vehicle through a communication line;
- 2.Key-on, but do not start the engine. Verify that the ECU and diagnostics software can be connected
- 3.Diagnostic software will automatically show prompts after connecting successfully;
- 4.Verify that the version of ECU and the MAP program ID are correct;
- 5.Verify if there is a error code in the diagnostic software;
- 6.Check the ECS parts according to the error code to ensure the error code in the diagnosis software is eliminated
- 7.Start the engine and check the parameter values in the diagnostic software

ECU test determination

- 1.Diagnostic software can communicate with the vehicle.
- 2.The ECU version, the MAP program, the ID correct are correct
- 3.No error codes or error codes can be eliminated by maintainance of parts.

ECU abnormal phenomena and treatment methods

- 1.cannot online: firstly check whether the communication line connection is correct, the vehicle battery power supply is normal, and then check whether the ECU is abnormal, replace the new parts and confirm.
- 2.unable to start: to confirm if ignition coil ignition is normal, carburetor fuel supply is normal, the relevant parts or ECU is normal, after replacement of new parts, to confirm again.

3.the error codes appears:the corresponding parts or the ECU is abnormal, eliminate the errors according to error codes and to confirm again.

Solenoid air supply valve and its air filter

Introduction of function of solenoid air supply valve and its air filter

The solenoid valve is driven through ECU PWM duty cycle signal, providing air supply to different carburetor main and idle circuit through different PWM signal, so as to realize the stoichiometric air/fuel ratio of 14.7 of the carburetion.

The air filter is connected with the intake end of the solenoid valve to prevent dust in the air from entering the carburetor with the air and causing the blockage of the carburetor passage.

Solenoid air supply valve and its air filter inspection procedure

- 1.check the connection between the solenoid valve and the carburetor, whether the solenoid air supply valve and the main wiring connector are in good condition
- 2.Check the air filter for obstruction
- 3.Use "multimeter" to test the value of the resistance between the two lines of the solenoid valve

Solenoid valve and its air filter test determination

- 1.the connecting pipe between the solenoid air valve and the carburettor must be firmly connected, and the solenoid valve is connected with the main wiring connector in good condition
- 2.Its air filters cannot clog up
- 3.The value of the resistance between the two lines of the Solenoid valve is $70\ \Omega \sim 85\ \Omega$

Abnormal phenomena and treatment methods of solenoid valve and its air filter

- 1.The connection pipe between the solenoid valve and the carburetor is loosened → connect them again to ensure the connection is firm
- 2.The connection between the solenoid valve and the main wiring connector is wrong →
Re-connect the solenoid valve connector and the main wiring connector to ensure the good connection
- 3.Air filter clogging → maintenance or replacement of a new air filter to the blocked air filter, make air flow through it smoothly
- 4.There is no resistance between the two lines of the solenoid valve or the resistance is greater than $85\ \Omega$ → replace with a new solenoid valve
- 5.No idle, idle instability, bad acceleration → to ensure that connection between the solenoid valve and the carburetor is solid, the carburetor itself is not blocked, to check if the problem can be resolved by replacing with a new solenoid valve.

Carburetor

Introduction to carburetor function

The carburetor is the fuel supply device of ECS. The rotating shaft is provided with a throttle position sensor. In the main fuel circuit and the idle fuel circuit are respectively added on a channel and the air supply pipe is connected with an solenoid valve. The ECU, through the acquisition of TPS, engine speed, oxygen sensor, cylinder temperature sensor, drive the solenoid valve with the output of a real-time PWM air signal, thus to realize the real-time correction for the carburetor air quantity, and to make the carburetor fuel ratio reach the ideal state

Carburetor inspection procedure

According to the routine procedure of carburetor checking, to confirm if the jets of the carburetor carburetor is blocked and if the plunger diaphragm is damaged, if the ASD (Auto start device) is normal, whether there is fuel leakage from float, whether the sealing ring is damaged. Especially to check the following state of a electronic controlled carburetor:

1. Whether the main and idle air supply pipes on the carburetor are firmly connected with the solenoid valve.
2. Is the TPS firmly installed on the carburetor?

Carburettor test determination

The main and idle air supply pipes on the carburetor are firmly connected with the solenoid valve.

The TPS is firmly mounted on the carburetor

Abnormal phenomena of carburetor and its treatment

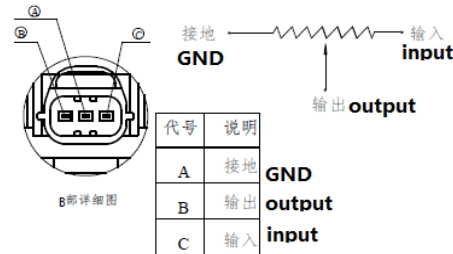
If the relevant component of all electronic carburetor system confirmed no adverse, and other traditional engine components are normal, while the engine performance still is not smooth, please confirm if the rubber pipe of the solenoid valve and the carburetor is off and if the air filter of the solenoid valve is blocked.

If there is above phenomenon, please re-connect the rubber pipe between the carburetor and solenoid valve, or replace with a new solenoid valve and its air filter

TPS

TPS function introduction

The throttle position sensor (TPS) is mainly made up of a variable resistance chip. It is installed on the throttle shaft of the carburetor, when the throttle shaft rotates, it generates different resistance, and then output the linear variation voltage signal to provide ECU with real-time judgment of the throttle position (opening), and the ECU will calculate the appropriate amount of air supply and ignition timing control according to the signals. The TPS consists of 3 pins, 1 for 5V power supply, 1 for voltage output pin, and 1 for GND pin



TPS Inspection procedure

- 1.The sensor joint is connected (using a probe tool), or it can be removed to measure the working voltage (direct measurement).
- 2.Turn on the main switch, but do not start the engine
- 3.Use the "multi meter" dc gear (DCV) to check the voltage value of the sensor
- 4.working voltage confirmation
 - The negative pole - of the meter is connected to the "ground" line
 - The positive pole + of meter is connected to the "input" line
- 5.throttle output signal confirmation (using probe tool)

The negative pole - of the meter is connected to the "ground" line

The positive pole + of meter is connected to the "output" line

Measure the output voltage of the positions of throttle fully closed and throttle fully open respectively

TPS test determination

- Operating voltage value: $5.0 \pm 0.1V$
- Fully closed throttle output voltage value: $0.2 \sim 1.0 V$
- Fully open throttle output voltage: $3.2 \sim 4.8V$

TPS abnormal phenomena and treatment methods

- The working voltage of TPS is not in the correct range, or the output voltage when throttle fully open or fully closed is not in the correct range → to check the main wiring or replacement of TPS. In the process of installation, ensure that the TPS voltage at fully closed throttle is $0.6 \sim 0.8V$, after installation, measure again the working voltage and TPS output voltage at fully closed and fully open throttle.

Oxygen sensor

Oxygen sensor Function introduction

The oxygen sensor is to measure the concentration of oxygen (O_2) in the exhaust gas from the cylinder, and to return the signal back to the ECU to change the air supply of the solenoid valve, and to adjust the air fuel mixture ratio of the carburetor. If the oxygen content is too low that the mixture too thick, it will increase the concentration of HC and CO in the exhaust gas; if the oxygen content is too high that the mixture too thin, it will increase combustion temperature and increase the

concentration of the exhaust gas NOx. The feedback signal of the oxygen sensor enable the ECU to conduct a closed loop control of the air fuel ration at 14.5~14.7 in order to to control the CO/HC/Nox in the exhaust gas with highest conversion efficiency and ultimately reduces the exhaust emissions.

Oxygen sensor inspection procedure

1. Start vehicle
- 2.Keep the throttle fully open for more than 3 minutes
- 3.Observe if the malfunction light is flashing

Detection and determination of oxygen sensor

If the frequency of the malfunction lamp is 4 times flashing, it is judged to be a malfunction

Abnormal phenomena of oxygen sensors and treatment methods

The connection is bad → Check whether the main wiring and connector is abnormal or not

The oxygen sensor is damaged → It is recommended to replance with a new oxygen sensor and measured again

Cylinder head temperature sensor

Introduction of cylinder head temperature sensor function

The cylinder head temperature sensor is composed of a thermistor with a negative temperature coefficient (temperature rising and resistance decreasing). The utility model has 2pin, 1 voltage output pin, and 1 grounding pin. The cylinder head temperature sensor device on the cylinder head, the resistance changes with the temperature sensed, and converted into a voltage signal which is sent to the ECU to calculate the cylinder head temperature in real time, the ECU according to the real-time temperature value conduct the correction of the solenoid valve air supply and ignition angle correction.

Test procedure for cylinder head temperature sensor

Remove the connector of the cylinder head temperature sensor。

Use "multi meter" om gear, check the resistance between the sensor two pins

Cylinder head temperature sensor inspection and determination

The relationship between the resistance and temperature is as follows

Temperature	Resistance Value
-20	955± 48.5
20	124.8 ± 6.375
40	53.4±2.745
80	12.5 ± 0.65

Abnormal phenomena and processing methods of cylinder head temperature sensor

- The connection is bad → Check whether the main wiring line is abnormal or not.
- The sensor is damaged → Change the temperature sensor and replace the new temperature sensor

Malfunction diagnosis method description

When an error signal has occurred in the vehicle ECS, it may cause the engine to operate abnormally or unable to start, the malfunction light on the instrument panel is lit, informing the driver of the need for maintenance testing.

When troubleshooting, you can diagnose errors by using the PC-based diagnostic software on the computer, or the malfunction lamp on the instrument panel shows

the fault codes for maintenance.

If the trouble has been removed or repaired, the malfunction light will go out

Error codes and parts fault check list

Code	Part name	MIL LED	Description	Note
170	TPS	1 blink	TPS 0.2V TPS signal lower than 0,2V	This part is not exited in some application
171			TPS 4.8V TPS signal higher than 4,8V	
120	Solenoid valve	2 blinks	Air valve in short circuit	
121			Air valve in open circuit	
104	Engine temperature sensor	3 blinks	Engine temperature sensor in short circuit	
105			Engine temperature sensor in open circuit	
190	Lambda sensor	4 blinks	Lambda sensor short circuit	
192			Lambda sensor fault	
130	ASD	5 blinks	Starter in short circuit	This part is not exited/controlled in some application
131			Starter in open circuit	
138	Speed sensor	6 blinks	Speed sensor in short circuit	This part is not exited in some application
139			Speed sensor in open circuit	