



GP125S/200S Maintenance Manual



Dear users:

Thank you for choosing your Royal Alloy **GP125S/GP200S** scooter. In order to make you drive more safe and comfortable, please read carefully and fully understand the contents of this manual.

This manual explains the main information, such as the structure, characteristic, basic inspection and maintenance, and the structure and maintenance of EFI etc for your scooter, so that you can carry out regular maintenance operations on your vehicle. As it is not possible to include complete mechanical notions in this manual, users should have basic mechanical knowledge. Without this knowledge, repairing or checking the vehicle may be inefficient or even dangerous. So you should be extremely cautious so as not to damage components or injure individuals. If you can't complete the repair and maintenance independently, please contact the local dealer.

Company reserves the right to make any changes due to the renewal of the product. If there is any change, no notice will be made, please refer to the real scooters. The main technical modifications and changes in repair procedures are communicated to all Sales Outlets and its International Subsidiaries. These changes will be introduced in the subsequent editions of the manual.

The important information below will appear in this manual:



CAUTION Refers to specific procedures to carry out for preventing damages to the vehicle.



WARNING Refers to specific procedures to carry out to prevent injuries to the repairer.

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CHARACTERISTICS

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Maintenance rules

1. Use the spare parts and lubricants of our company or recommended by our company, the spare parts and lubricants that are not in conformity with the design specifications of our company may damage the motorcycle.

Recommended brand model: MOTOREX scooter semi synthetic 4 stroke SAE 10W/40.

2. Replace spring washers, washers, O-rings (OR), cotter pins and circlips with new parts when reassembling components.
3. When tightening nuts and screws, start either from the components with the largest diameter or from the innermost components, proceeding diagonally. Tighten nuts and screws in successive steps to the specified torque.
4. After decomposition, clean parts in clean solvents. Lubricate any smooth surface before assembly.
5. After reassembling, check all parts to install and operate correctly.
6. Dredge all cables and harnesses.
7. Please go to our authorized dealership for repair, unless the owner has special tools and maintenance data and is a qualified mechanist.

Vehicle identification

Chassis number is stamped on the frame right side frame rail.



Engine number is stamped on the rear of the crankcase assembly.





Specifications

Vehicle data		Engine data	
Model	GP125S GP200S	Engine model	1P58MI(125CC) 1P63ML-4(200CC)
Overall size (mm)	1845×670×1115	Engine idle speed	1900 ± 100rpm 1800 ±100 rpm
Wheel base (mm)	1390	Engine type	1 cylinder, S, horizontal, Liquid cooling, double overhead camshaft, 4 Valve

Saddle height (mm)	780	Bore × stroke (mm)	58*47(125CC) 63*58(200CC)
Minimum ground clearance (mm)	145	Total displacement (mL)	124.2(125CC) 181(200CC)
Net weight (kg)	142	Compression ration	12±0.5:1(125CC) 11.6±0.5:1(200CC)
Max loading weight (kg)	210	Max net power, rate (kW/r/min)	10/8000(125CC) 13/8250(200CC)
Fuel tank capacity (L)	10.5	Max net torque, rate (Nm/r/min)	12/7500(125CC) 16.4/7500(200CC)
Front tyre size/ Inflating pressure	110/70-12 /32 PSI	Start mode	Electric
Rear tyre size/ Inflating pressure	120/70-12 /34 PSI	Ignition mode	EFI (Magneti Marelli)
Front brake	Disc brake	Valve clearance(mm)	Intake: 0.10~0.15

			Exhaust:0.20~0.25
Rear brake	Disc brake	Lubrication type	Pressure/splash
Battery capacity	12V 9Ah	Spark plug	NGK PMR9B
Horn	90-100dB(A)	Clutch	Automatic centrifugal dry clutch
		Variator	Continuous, automatic

Transmission system description

Item	Standard
Transmission	CVT with V belt + final reduction unit
CVT ratio	2.9~0.89:1(125)
	2.4~0.86:1(200)
Gear ratio	$66/14 \times 58/23 = 11.89(125)$
	$66/14 \times 54/27 = 9.43(200)$
Engine wheel total ratio	10.6~34.5(125)
	8.1~22.5(200)

Lubrication system description

Item		Standard
Engine oil 1000ml	Change Engine oil	900ml
Brand name: APL SJ SAE10W-40	Change Engine oil and engine oil filter	950ml
	Dismantle engine, inject oil	1000ml
Transmission oil 200ml	Change transmission oil	180ml
Brand name: 75W-80	Dismantle engine, inject oil	200ml

Fuel system description

Item	description
Fuel number	Unleaded fuel 95 or higher
Fuel tank capacity	10.5L

Cooling system description

Item		description
Coolant liquid capacity	When change	1.15L
	When dismantle	1.20L
Recommended antifreeze		The coolant or the same quality ethylene glycol antifreeze is mixed with distilled water according to 1:1. The freezing point reaches -40°C and boiling point to 108°C .

Chassis and suspensions system

Item	Standard
Chassis type	High-strength steel tubular chassis, single spar at the front, superimposed double cradle at the rear
Steering rake angle	26.30°
Front suspension	Adjustable preloading, hydraulic action telescopic fork

Front suspension travel	104mm
Rear suspension	Hydraulic double-acting shock absorber and adjustable preloading
Rear suspension travel	80mm

Front and Rear wheel description

Item	Standard
Wheel Rims material	Aluminium alloy
Front tyre	Tubeless 110/70-12
Rear tyre	Tubeless 120/70-12
Front tyre inflation pressure	32/220(Psi/kPa)
Rear tyre inflation pressure	34/234(Psi/kPa)

Braking system description

Item	Standard
Braking system	ABS
Front brake	Ø220mm disc brake with hydraulic transmission
Rear brake	Ø220mm disc brake with hydraulic transmission
Brake fluid	FMVSS DOT4+

Electrical system description

Item	Standard
Battery capacity	12V-9Ah
Fuses	20-15-15-15A
(Permanent-magnet) Alternator	12 V - 330W at 8000 rpm
Spark plug	NGK PMR9B

Bulbs/ warning lights	High-/low-beam bulb	Square lamp:12V 35/35W Round lamp:LED
	Front position lamp	LED
	Tail light bulb	LED
	License plate light bulb	LED
	Brake lamp	LED
	Front and rear turn indicator bulbs	LED
Speedometer	Instrument panel lighting bulb	LED
	Turn indicator warning light	LED
	High-beam warning light	LED
	Engine oil pressure warning light	LED
	Low fuel warning light	LED
	EFI check warning light	LED

Tightening torque

Vehicle part:

Fastening parts	Number	Thread specification	Torque Nm
Nut fixing engine hanger	1	M10	45
Nut fixing engine	1	M10	45
Front wheel axle nut	1	M12	60
Rear wheel axle nut	1	M14	100
Upper screw fixing rear shock absorber	2	M10	40
Lower screw fixing rear shock absorber	2	M8	25
Upper screw fixing front shock absorber	2	M6	12
Lower screw fixing front shock absorber	2	M12	60

Locking nut fixing direction column	1	M25	70
Nut fixing handlebar	1	M10	45
Screw fixing front brake disc	3	M8	25
Fastening bolt fixing rear wheel	5	M12	60
Screw fixing rear brake disc	5	M8	25
Reference bolts for other specifications: GB1231-2006 bolt torque standard			

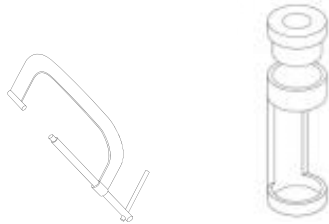

Engine part:




Fastening parts	Number	Thread specification	Torque Nm
Cylinder head screw A	4	M8	24~26
Cylinder head screw B	2	M6	10~12
Camshaft cover fixing screw	8	M6	10~12
Timing sprocket screw	2	M8	25~30
Exhaust pipe joint fixing screw	2	M6	9~12
Oil filter cover	2	M6	9~12





Combined box screw	3	M6	9~12
Intake manifold fixing screw	3	M6	9~12
Crankcase oil releasing screw	1	M18	33~38
Gear box oil releasing screw	1	M12	23~27
Pressure regulating valve screw	1	M18	33~38
Front clutch nut	1	M12	70~80
Rear clutch nut	1	M12	55~65
Generator rotor fixing screw	1	M8	23~27
Water temperature sensor	1	M12	20~24
Spark plug	1	M10	9~11
Oil pressure switch	1	M10	9~11
Reference bolts for other specifications: GB1231-2006 bolt torque standard			

TOOLING

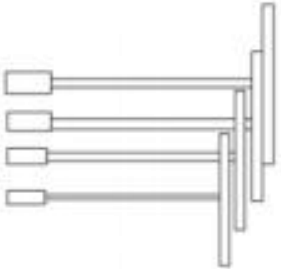

1. Special tools(The following tools are restricted to professional technicians only,consumers must not operate without authorization):


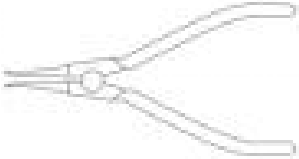
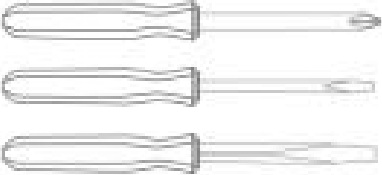
No.	Name	Tool number	Picture
1	Valve spring compressor	Z01	
2	Threaded bolt for locking crankshaft at TDC	Z02	

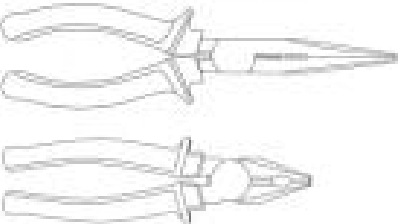
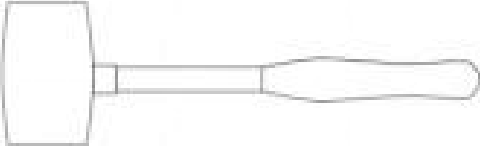

3	Clutch driving wheel locator	Z03	
4	Shaft bearing punch	Z06.1---Z06.8	
5	Oil seal punch	Z07.1--Z07.9	

6	Flywheel extractor	Z04	
7	Spark plug sleeve	Z05	
8	Fault diagnosis instrument	Z08	
9	Shock absorber adjusts handle	Z09	

2. General tools

No.	Name	Picture
1	“T” sleeve: 8#. 10#. 12#. 14#	 A line drawing showing four T-sleeve tools of varying lengths and widths. Each tool consists of a long, thin shaft with a wider, flat T-shaped head at one end. The tools are arranged in a slightly overlapping, vertical stack.
2	Tool case 1	 A photograph of an open black tool case. The case is filled with a variety of tools, including wrenches, sockets, and screwdrivers, all neatly organized in their respective compartments. The tools are arranged in rows, and the case is set against a dark background.

3	Tool case 2	
4	Spring pliers	
5	Screwdriver	

6	Pliers	
7	Nylon hammer	
8	Multimeter	

MAINTENANCE

Precautions for Maintenance

Maintenance cycle

Basic maintenance

- 1. Spark plug**
- 2. Check and replace the gear oil**
- 3. Check and replace the engine oil**
- 4. Throttle grip adjustment**
- 5. Clean the air filter**
- 6. Check and top-up the coolant**
- 7. Braking system**
- 8. Headlight inspection and adjustment**

Precautions for Maintenance

1. Before the maintenance, put the motorcycle on the ground and support the main stand.
2. Ensure that the maintenance environment is well ventilated.
3. Prepare the worktable (under the engine) and tools.
4. For threaded fasteners or seals, if not specified, counterclockwise should be loosened and clockwise should be tightened.

Maintenance cycle

I: INSPECT & CLEAN, ADJUST, LUBRICATE OR REPLACE IF NECESSARY

C: CLEAN R: REPLACE

The running in period of motorcycle is 1000km. For this reason, the driving speed should not exceed 80km/h within the

mileage 1000km.

km \ mileage		1000	5000	10000	15000	20000	25000	30000
lubrication system	Engine oil	New 300R	R	R	R	R	R	R
	Engine oil filter	New 300R	R	R	R	R	R	R
	Gear oil	New 300R			R			R
Fuel	Fuel filter net			R		R		R
Air intake system	Air filter /CVT sponges		C	C	C	R	C	C
	Intake manifold and fixed bolt	I	I	I	I	I	I	R
	Air lines	I	I	I	I	I	I	R
Electric injection system	Throttle assembly			C		C		C
	Injection nozzle					I		I
	High pressure oil pipe			I				R

	Water temperature sensor					I		I
	Oxygen sensor				I			I
	Ignition coil			I		I		I
CVT/ clutch system	Drive belt				I			R
	Clutch				I			R
	Front and back Belt fixed, moving plate				I			R
	PuLiZhu				I			R
Braking system	Brake Liquid	I		I		I		I
	Brake tubing	I		I		I		I
	Brake disc	I		I		I		I
Cooling system	Coolant	I		I		I	I	
Valve gap				I		I		I

Spark plug				R		R		R
Control drawing line	Throttle line, brake line			I		I		I
Front and rear shock absorption				I		I		I
Wheels / tires		I		I		I		I
Head tube bearing		I		I		I		I
Battery				I		I		R
Safety fastener of important bolt and nut of car body		I	I	I	I	I	I	I

Basic maintenance

1. Spark plug

A. Removal and cleaning



WARNING

In order to avoid the risk of ignition, please let the engine and silencer cool down before

performing the following operations.

(1) Park the vehicle on its main stand, unscrew and remove the 3 screws of right side cover (shown no.1), remove the right side cover (shown no.2), and find the spark plug suppressor cap (shown no.3).

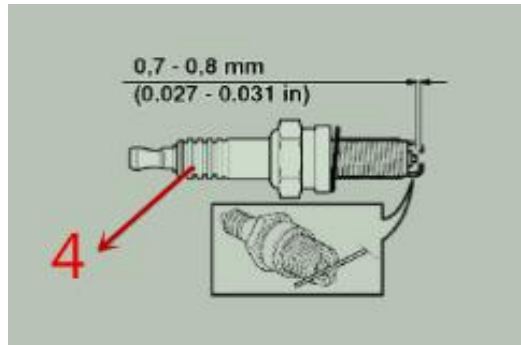


(2) Remove the spark plug suppressor cap (shown no.3).



(3) Clean off any trace of dirt from the spark plug base by using compressed air. Then unscrew it using the spanner supplied in the toolkit and remove it from the engine, being careful not to let dust or any other substance enter into the cylinder.

(4) Check that the spark plug electrode and centre porcelain (shown no.4) are free of carbon deposits or signs of corrosion. If necessary, clean using suitable spark plug cleaners, a wire and/or metal brush. Blow with a strong air blast to avoid removed dirt getting into the engine.



(5) Check the electrode gap with a feeler gauge. This gap should be 0.7 - 0.8 mm, adjust it if necessary by carefully bending the ground electrode.

B. Assembly fastening

(1) Make sure that the washer is in good conditions. Once the washer is fitted, manually screw the spark plug using spark plug sleeve (Z05).

(2) Ensure that the spark plug suppressor cap is fitted securely, so that it will not get detached when exposed to engine vibrations.

C. Technical data

Standard spark plug: NGK PMR9B

Spark plug electrode gap: 0.7 - 0.8 mm

Locking torques: 10Nm (7.38 lb ft)



CAUTION

1. If spark plug insulation material is broken and electrode corrosion is serious, spark plugs need to be replaced.
2. Tighten the spark plug correctly. Otherwise, the engine may overheat and be damaged. Use only the recommended type of spark plug; otherwise, engine duration and performance could be compromised.

2. Check and replace the gear oil



WARNING In order to avoid the risk of ignition, please let the engine and silencer cool down before performing the following operations.

A. Check

(1) Park the vehicle on its main stand (shown no.1), unscrew and remove the plug (shown no.2), unscrew and remove the screw (shown no.3), then drain off the oil (get a collecting container before carrying out these operations).



(2) Check that the quantity is within the specified limits (SEE TECHNICAL DATA), top-up with the necessary quantity if required. Visual oil color, if black or iron filings, please immediately change the oil.

(3) Tighten the drain screw (shown no.3). Locking torques: 16--20Nm.

(4) Fill the oil into Gear box from the plug (shown no.2), tighten the plug (shown no.2).

(5) Wipe the oil of the surface with a rag to confirm no leakage.



CAUTION In the case of insufficient lubrication (less oil), oil deterioration (long running time), and no use of recommended oil, it will accelerate the wear of moving parts, and produce irreparable harm.

B. Replacement

The operation steps are the same as the above A inspection process.

3. Check and replace the engine oil



WARNING In order to avoid the risk of ignition, please let the engine and silencer cool down before performing the following operations.

A. Check the quantity of engine oil

- (1) Start the engine, let it idle during a few minutes and then switch it off.
- (2) Park the vehicle on its main stand, keeps the vehicle in an upright and level position. Wait at least five minutes to let the oil that is inside the engine to run back down into the crankcase.
- (3) Unscrew and remove oil cap/dipstick (shown no.1).



(4) Clean the oil of oil cap/dipstick (shown no.1), insert the oil cap/dipstick (shown no.1) into the injection port, but do not screw in. Remove again and check for the correct oil level, it must be between the reference mark “H” and “L”. Visual oil color, if black or iron filings, please immediately change the oil.



(5) If the level is not close to the mark “H”, pour a small quantity of oil and wait approximately five minutes. Then check the oil level by step (4) until it close to the mark “H”, screw and tighten the oil cap/dipstick (shown no.1).

(6) Wipe the oil of the engine surface with a rag to confirm no leakage.



CAUTION In the case of insufficient lubrication (less oil), oil deterioration (long running time), and no use of recommended oil, it will accelerate the wear of moving parts, and produce irreparable harm.

B. Replacement

(1) Park the vehicle on its main stand, unscrew and remove oil cap/dipstick (shown no.1).

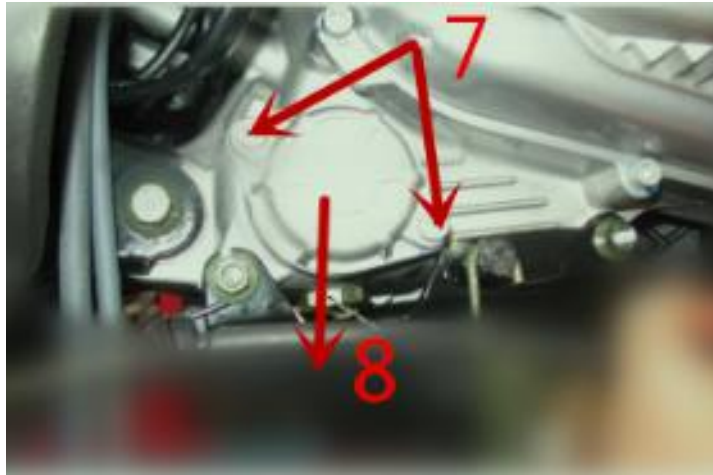


(2) Unscrew and remove the oil release bolt of right crankcase (shown no.2), remember not to dismantle the bolt (shown no.3), drain off the oil (get a collecting container before carrying out these operations).



(3)The replacement of engine oil filter

Unscrew and remove the 2 screws (shown no.7), remove the cover (shown no.8). Slide off the engine oil filter (don't use anymore). Fit a new oil filter and the cover (shown no.8), screw and tighten the 2 screws (shown no.7).



(4)Screw and tighten the screw (shown no.2).

(5)Pour approx. 950mL engine oil through the fill opening of oil cap/dipstick (shown no.1).

(6)Screw and tighten oil cap/dipstick (shown no.1).

(7)Start the engine and let it run for several minutes. Stop the engine and let it cool down.

(8)Check engine oil level again whether to meet the requirements.

4. Throttle grip adjustment

The empty travel of the throttle grip (shown no.4) should be 2-3mm, measured at the throttle trim. If this is not so, proceed as follows:



- (1) Slide off the protection cover (shown no.1).
- (2) Loosen the lock nut (shown no.3).
- (3) Turn the set screw (shown no.2) so as to obtain the specified value.
- (4) After the adjustment, tighten the lock nut (shown no.2) and check the empty travel again.
- (5) Refit the protection cover (shown no.1).

5. Clean the air filter

The air filter element used in this scooter is a polyurethane foam element. If the filter element has become clogged with dust, intake resistance will increase with a resultant decrease in power output and increase in fuel consumption due to the richer fuel/air mixture. Check, clean and replace the air filter element according to the maintenance cycle.

(1) Park the vehicle on its main stand. Undo the 3 screws (shown no.1) to remove the left side cover (shown no.2).



(2) Unscrew and remove the 5 screws (shown no.2) and the 2 screws (shown no.3).



(3) Remove the filter box cover (shown no.4) together with the filtering element (shown no.5).

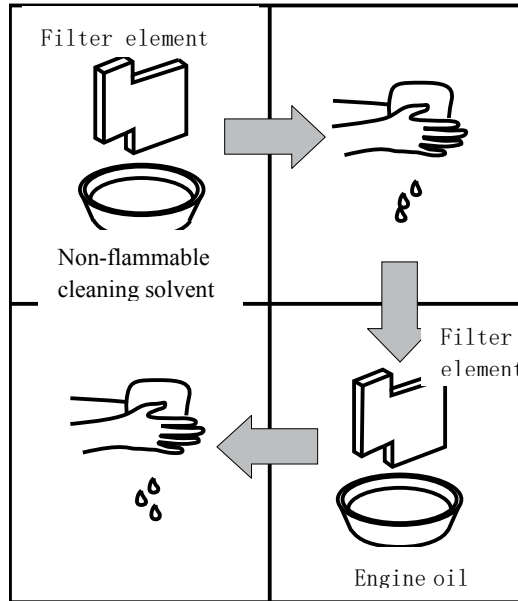
(4) Check the filtering element (shown no.5), and replace it if necessary.

(5) Washing filtering element (shown no.5)

- Fill a container of a suitable size with non-flammable water soluble cleaning solvent. Immerse the filter element in the solvent and wash it clean.
- Squeeze the solvent out of the washed filter element by pressing it between the palms of both hands. Do not twist and wring the filter element as this will lead to tearing.
- Rinse in warm free running water and dry filter element by using compressed air or warm air dryer.
- Immerse the filter element in clean engine oil, squeeze excess oil from the filter element to leave it slightly wet with

the oil.

- Reinstall the cleaned air filter element in reverse order of removal. Be absolutely sure that the filter element is securely in position and is sealing properly.





CAUTION Without the filter element, running the engine will increase engine wear.

6. Check and top-up the coolant

Undo the 3 screws (shown no.1) to remove the left side cover (shown no.2).



A. Fluid level inspection of coolant tank

- (1) Loosen (turning it anticlockwise) but do not remove the coolant tank cap (shown no.2).
- (2) Wait for some seconds so that possible pressure may be purged.
- (3) Remove the coolant tank cap (shown no.2)
- (4) Check the coolant level. If you do not see the liquid level or the liquid level is deep, top-up until liquid level close to the coolant tank cover.
- (5) Screw the coolant tank cap (shown no.2) clockwise.

B. Inspect the coolant level in the expansion tank

Make sure that the coolant level in the expansion tank (shown no.3) is between the MIN and MAX reference marks.

Otherwise, top-up.



Top-up

- (1) Remove the filler cap (shown no.4) from the expansion tank (shown no.3).
- (2) Top-up with coolant until the fluid level is close the "MAX" reference mark. Do not exceed this level. Otherwise, the coolant will spill out when the engine is running.
- (3) Refit the filler cap (shown no.4).

7. Braking system

A. Check and top-up the brake fluid

(1) Park the vehicle on its main stand.

(2) Check that the level in the reservoir is over the mark “LOWER”. If the fluid does not reach the mark “LOWER”, check brake pads and disc for wear. If the pads and/or the disc do not need replacing, top-up the fluid.



Top-up

(a) Undo the 2 screws (shown no.1) to remove the brake pump cover (shown no.2).



CAUTION In order to avoid the risk of brake fluid overflow, the brake handle cannot be held after the 2 screws are removed and the pump cover is removed mainly.

(b) Top-up the fluid to reach the mark “MAX”.



CAUTION

1. Only when the friction shoe is new, the liquid level reaches the mark "MAX", the liquid level of the brake fluid will gradually decrease with the wear of the friction shoe.
2. WHEN TOPPING-UP, DO NOT EXCEED THE "MAX" LEVEL MARK WHEN BRAKE PADS ARE WORN AS YOU RISK SPILLING FLUID WHEN CHANGING THE BRAKE PADS.

(c) Assemble the brake pump cover and the 2 screws (shown no.1) in sequence of Figure 4, 3, and 2.

B. Check ABS system (apply to GP200S)

Turn on the key, the instrument ABS indicator lights on, until the front and rear wheels move at the same time, the ABS lights will go out.



If the ABS indicator is not light or the front and rear wheels move at the same time, the ABS lamp will not extinguish:

1. Check the gap between the front wheel hall sensor (shown no.1) and the front wheel counting gear tray (shown no.2) and the clearance should be 1.0--1.6mm. If there is an excess, check and adjust the position of hall sensor (shown no.1).

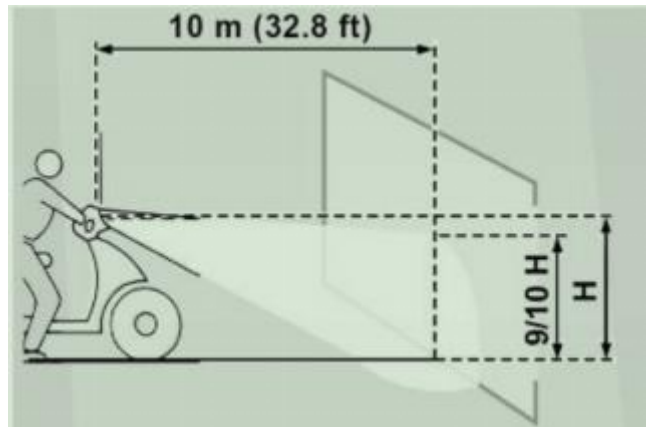
2. Check the gap between the rear wheel hall sensor (shown no.3) and the rear wheel counting gear tray (shown no.4) and the clearance should be 0.5--1.6mm. If there is an excess, check and adjust the position of hall sensor (shown no.3).



8. Headlight inspection and adjustment

A. For a quick inspection of the correct aiming of the front light beam

(1) Place the vehicle 10 m from a vertical wall and make sure the ground is level.



(2) Turn on the low beam light, sit on the vehicle and check that the light beam projected to the wall is a little below the headlight horizontal straight line (about $\frac{9}{10}$ of the total height).

B. Adjust the light beam

Unscrew and but not remove the screw (shown no.1), push the bolt (shown no.1) to the R direction to lower the light beam, push the bolt (shown no.1) to the F direction to raise the light beam.



ELECTRICAL SYSTEM

Components arrangement





1. Headlamp
2. Horn
3. Front turning lamps
4. Speed sensor
5. ABS unit
6. H2O temperature sensor
7. Fan
8. Side stand switch
9. Engine oil pressure sensor
10. Rear turning lamps
11. Taillight
12. Control unit / throttle body
13. Spark plug
14. Battery
15. Left grip switch
16. Buzzer
17. Injector
18. STARTER MOTOR
19. Voltage regulator
20. Generator
21. Fuses
22. Oxygen sensor
23. Ignition coil
24. Start-up relay
25. Relay
26. Dump valve
27. Instrument adjustment switch
28. Electric lock
29. Acceleration grip & right switch
30. Speedometer
31. Oil pump
32. Fuel Level Sensor

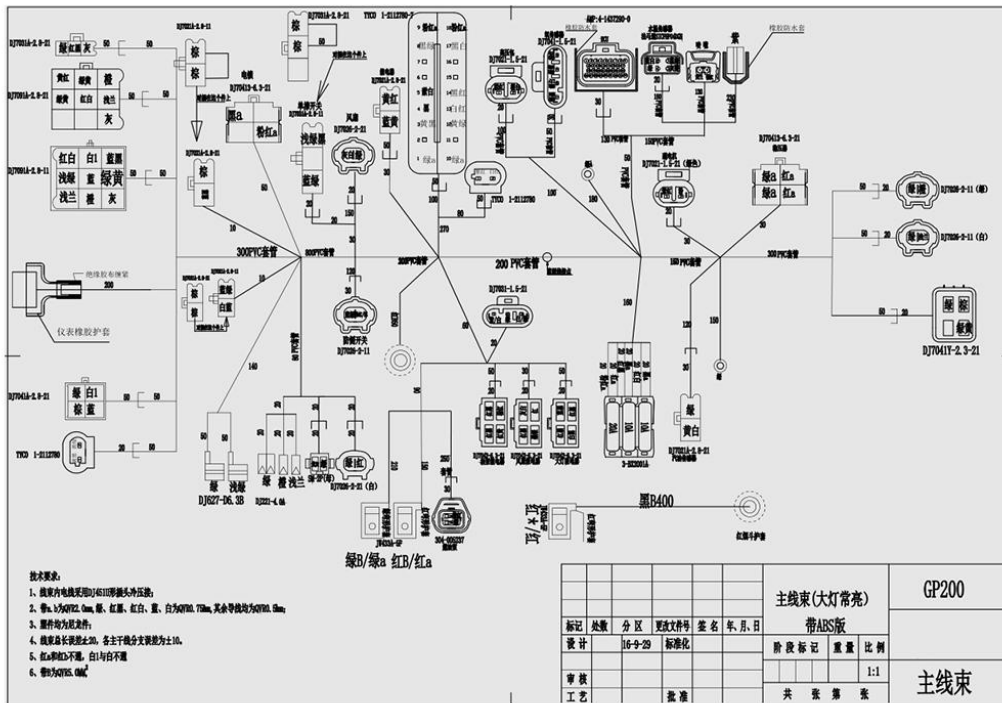
Instrument Panel Indications



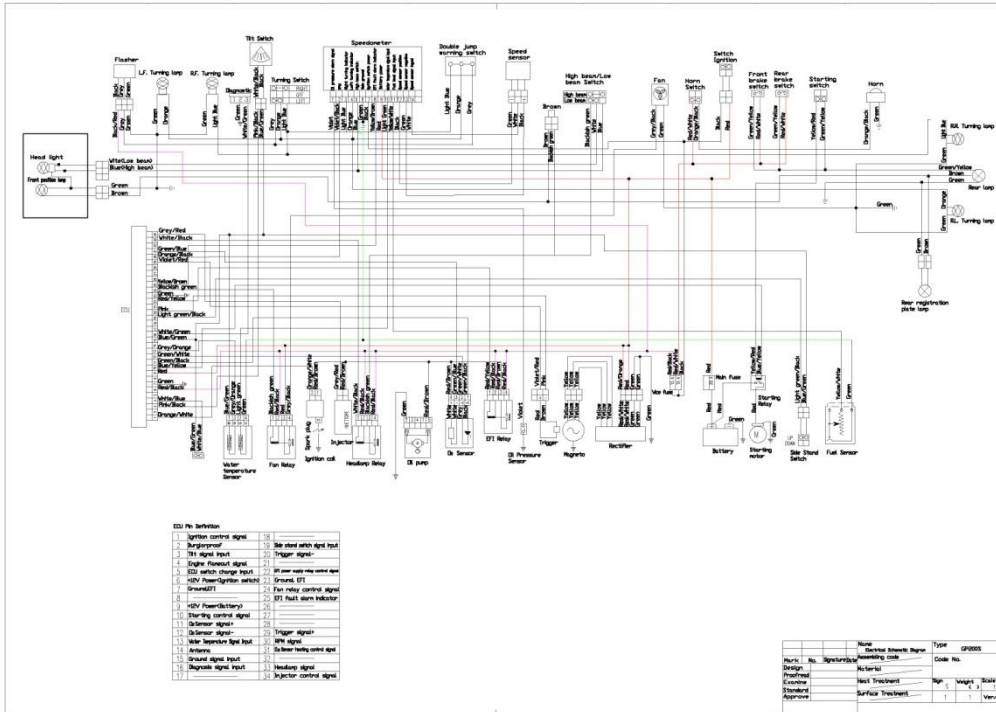
1. Engine RPM Indicator
2. Fuel gauge
3. LH Direction Indicator
4. High beam/ Low beam indicator

5. Engine fault indicator warning light: If this warning light appears during running please consult your dealer.
6. “MODE” button functions (See below), With the ignition key turned to the on position.
 - A. TRIP METER to ODOMETER to change between displays: Press the “MODE” button then release “MODE” button.
 - B. Clearing the trip counter history – When the display is TRIP METER, press the “MODE” button and hold for 5 seconds then release when zero is displayed.
 - C. MPH to KPH change: When the display is ODOMETER, press the “MODE” button and hold for 5 seconds then release.
7. Oil indicator: If this warning light appears during running check oil level if found to OK. Then please consult your dealer.
8. ABS indicator: If this warning light appears during running please consult your dealer.
9. RH Direction Indicator
10. Odometer
11. Water temperature indicator
12. Speedometer
13. USB port

Harness diagram



Conceptual diagram



REMOVE ENGINE FROM VEHICLE



CAUTION Before dismantling the engine associated parts, clean the engine thoroughly with a suitable cleaner.

Remove the left and right side cover

1. Undo the 6 screws (shown no.1), remove the right side cover (shown no.2) and left side cover (shown no.3).

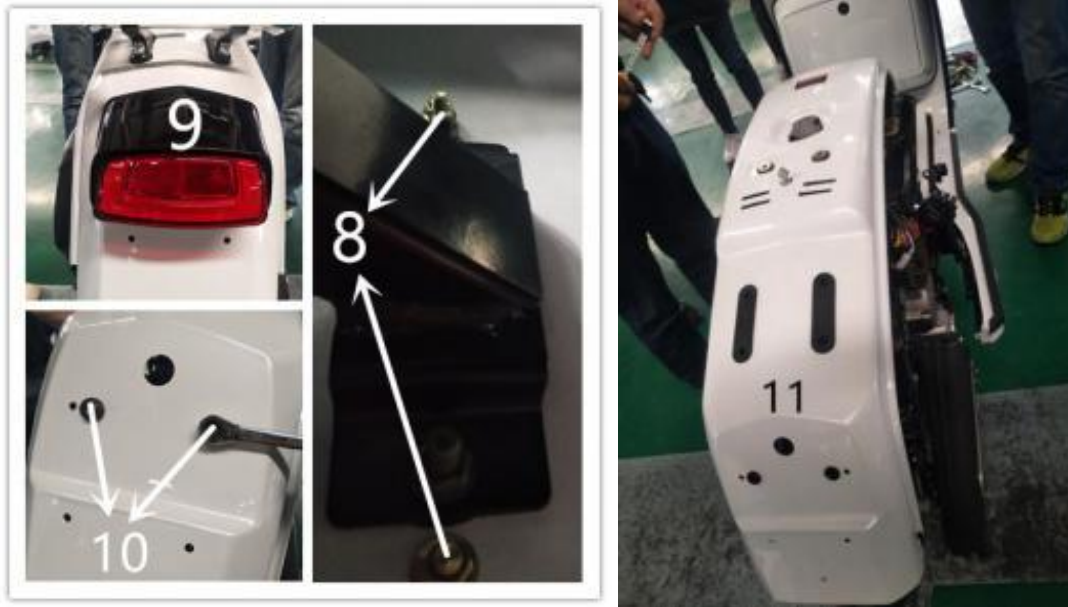


Remove the main cover

1. Unscrew and remove the 2 screws (shown no.2), take down the cushion (shown no.1), unscrew and remove the 2 screws (shown no.3).
2. Unscrew and remove the screw (shown no.4), take down the battery cover (shown no.5), unscrew and remove the 2 screws (shown no.6).
3. Unscrew and remove the 4 screws (shown no.7), take down the hand-holder (shown no.8).



4. Unscrew and remove the 2 nuts (shown no.8), take down the taillight (shown no.9), unscrew and remove the 2 screws (shown no.10), take down the main cover (shown no.11).



Remove the Fuel evaporation system

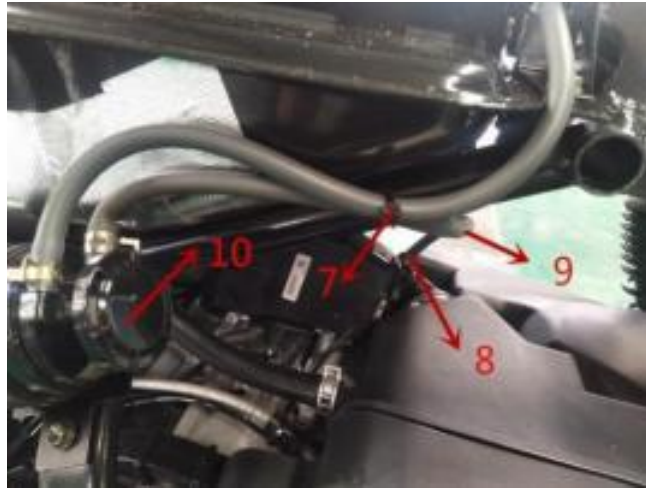
1. Loosen the clamp (shown no.1), pull out the trachea (shown no.2).



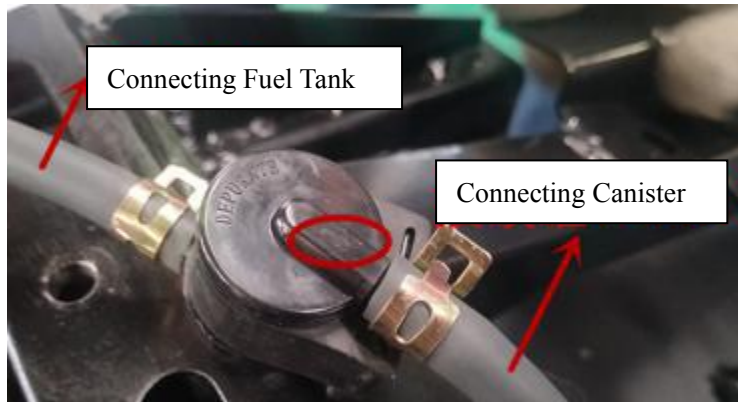
2. Unscrew and remove the screw (shown no.3), take down the air valve (shown no.4), dump valve (shown no.5) and bracket (shown no.6).



3. Cut the tie band (shown no.7), loosen the clamp (shown no.8), pull out the trachea (shown no.9) and remove the carbon canister (shown no.10).



CAUTION The trachea of the system should not be disassembled. If it is disassembled, attention should be paid to the dumping valve (shown no.5). The arrow direction should be connected with "TANK" port of the carbon tan (shown no.10).

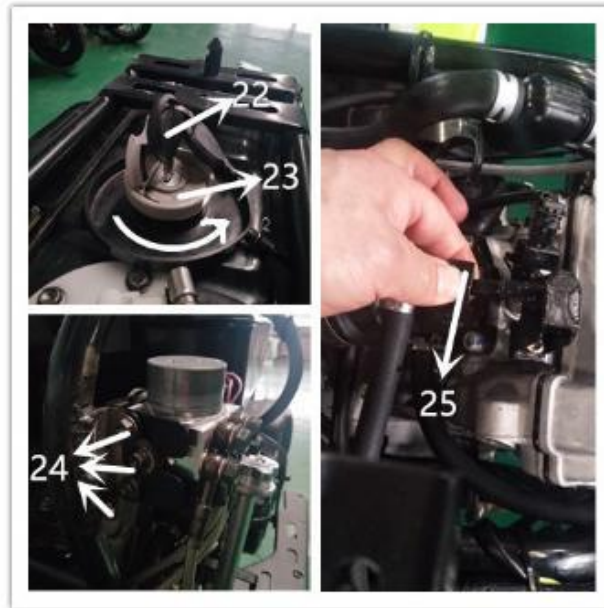


Remove the Fuel tank

1. Disconnect the oil pump plug (shown no.18) and the oil level sensor plug (shown no.19)
2. Take down the 3 relays (shown no.16), unscrew and remove the 2 screws (shown no.17), 2 screws (shown no.20), and 2 screws (shown no.21). Remove the battery bracket.




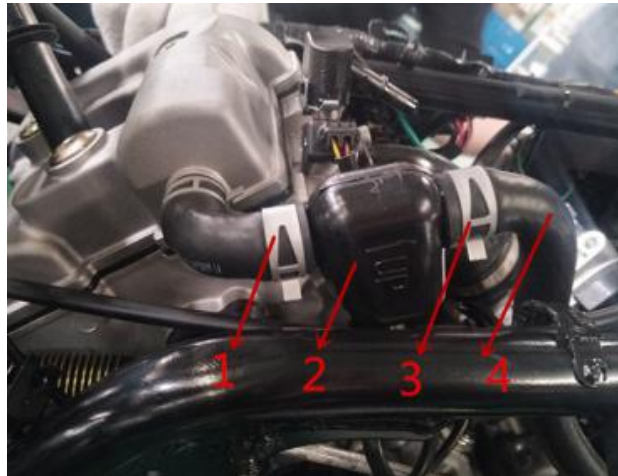
3. To open the fuel cap, insert the ignition key (shown no.22) into the cap (shown no.23) and turn the fuel cap tab clockwise, undo the screw fixed to ABS (shown no.24), pinch and pull out the fast joint of the high pressure oil pipe (shown no.25) with the hand, remove the fuel tank.



Remove the air filter

1. Remove the clamp (shown no.1 and no.3), separate the trachea (shown no.4) and take down the return valve (shown no.2).

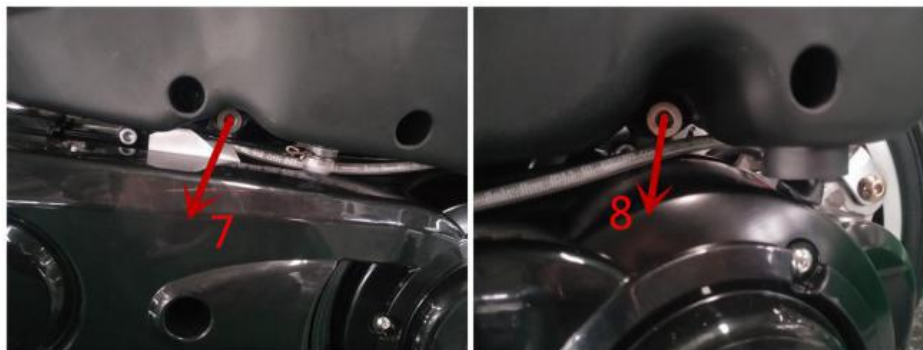
 **CAUTION** Reassemble and remove the oil in the return valve (shown no.2). The "UP" arrow points to the air filter.



2. Loosen the clamp (shown no.5) and separate the air filter outlet pipe (shown no.6).



3. Unscrew and remove the 2 screws (shown no.7 and no.8).



4. Unscrew and remove the 2 screws (shown no.9).



5. Take down the air filter and front fender.

Remove the exhaust system

1. Undo but not remove the two Hoop screws (shown no.3).
2. Undo and remove the screw (shown no.4).
3. Undo but not remove the two screws (shown no.5), remove the exhaust system (shown no.6).





4. Loosen the clip (shown no.7), disconnect the oxygen sensor connector (shown no.8), and remove the oxygen sensor (shown no.9).



5. Unscrew the 2 nuts (shown no.10), remove the exhaust pipe (shown no.11).



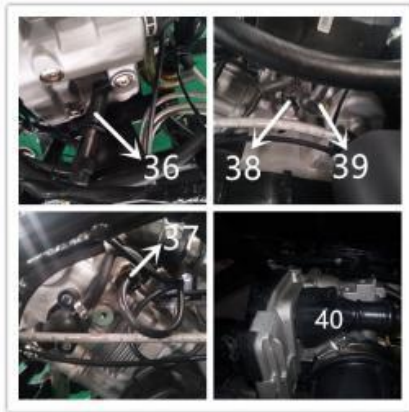
Emptying coolant

1. Unscrew the screw of clamp (shown no.4) and slide out the water pipe (shown no.5), so that the coolant is collected in the well prepared container.



Remove the connection plug

1. Pull out the spark plug cap (shown no.36).
2. Disconnect water temperature sensor plug (shown no.37).
3. Disconnect oil temperature sensor plug (shown no.38).
4. Disconnect the start motor line plug (shown no.39).
5. Disconnect the ECU plug (shown no.40).
6. Disconnect generator wire plug (shown no.41 and no.42).

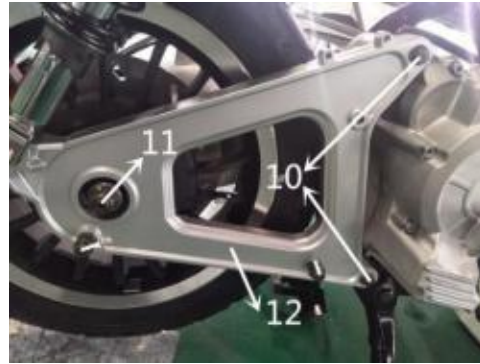


7. Loosen the clamp (shown no.1) and remove the throttle body (shown no.2).



Remove the rear wheel

1. Unscrew and remove the screws (shown no.7 and no.8), take down the right rear shock absorbers (shown no.9).
2. Unscrew and remove the 2 screws (shown no.10) and nuts (shown no.11) , take down the rear fork (shown no.12).



3. Hold the left brake lever (shown no.1), unscrew and remove the 5 screws (shown no.13), and take down the rear wheel (shown no.14).





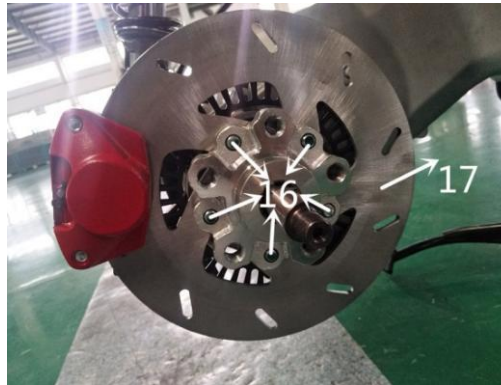
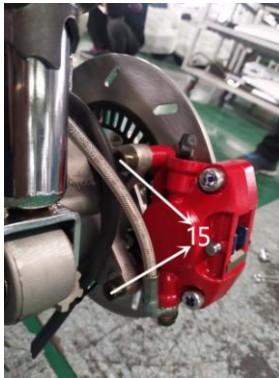
CAUTION When reassembling, the bolt thread part of Figure 13 is coated with Loctite 243 thread adhesive, and the tightening torque is 60Nm.

4. Hold the left brake lever (shown no.1), unscrew and remove the 5 screws (shown no.16).



CAUTION When reassembling, the bolt thread part of Figure 13 is coated with Loctite 243 thread adhesive, and the tightening torque is 25Nm.

5. Unscrew and remove the 2 screws (shown no.15), take down the brake disc (shown no.17).

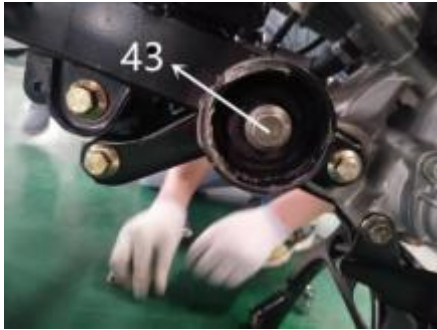


6. Unscrew and remove the screw (shown no.28), take down the sensor (shown no.29).



Take down the engine

1. Unscrew and remove the engine fixed shaft nut (shown no.43), do not remove the fixed shaft (shown no.43).



2. Reconfirm that the connection of the engine has been removed, remove the fixed shaft (shown no.43), and take down the engine.

Assemble again



CAUTION

Reassembly according to the above reverse procedure, and tighten to the required torque.

ENGINE DISASSEMBLY



CAUTION Before the engine is disassembled, clean it thoroughly with a suitable cleaner to prevent impurities from entering the engine.

Basic principle

1. Replacement of rubber parts

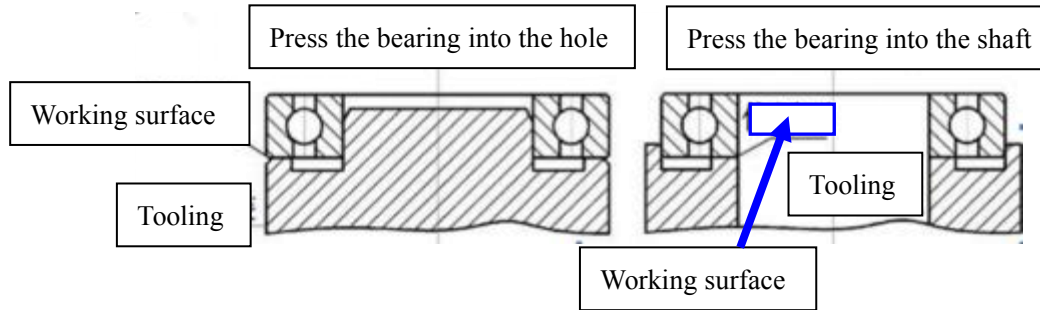
In principle, the engine has been used more than 2 years should replace the rubber parts, such as oil seal, O ring and so on. In 2 years, the crankshaft oil seal (shown no.2) and the drive shaft oil seal (shown no.1) should have no breakage or aging, otherwise change them.

2. Fastener torque by standard

To the tightening torque of the nut that is not indicated, see 《reference list of tightening torque for screws》 and GB1231-2006 bolt torque standard

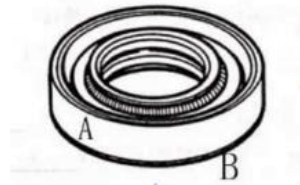
3. Principle of bearing assembly

When the bearing is replaced, the principle that the new shaft is pressed into the bearing hole or shaft is not to force the bearing outer ring and inner ring at the same time. otherwise the bearing may damage or produce murmurs again.



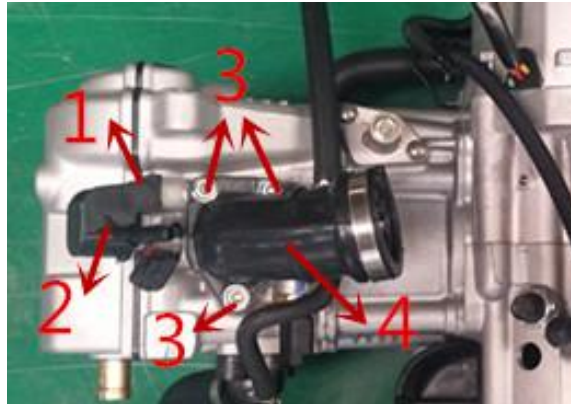
4. Principle of oil seal assembly

When the oil seal is replaced, a little anaerobic adhesive is applied to the surface of the A surface. The bottom B surface of the oil seal is a force surface. When the seal is knocked down, a uniform force should be guaranteed and a little butter is applied to the lip when the seal is replaced; especially, it should be noted that the oil seal spring should be checked to be intact when the oil seal is assembled.



Disassemble intake manifold

1. Remove the screw (shown no.1) and take down the fuel injector (shown no.2).
2. Remove the 3 screws (shown no.3) and take down the intake manifold (shown no.4).



Discharge oil, fill oil

1. Discharge oil from gear box

Unscrew and remove gear box oil discharge screw (shown no.3), release oil (prepare suitable containers in advance to collect gear oil).



Reassembly attention:

(1). Rear gear box: Add 200CC lubricating oil of 75W/80.

(2). The tightening torque of the oil discharge screw (shown no.3) is 25Nm.

2. Discharge oil from crankcase

Unscrew and remove crankcase oil discharge screw (shown no.2), release oil (prepare suitable containers in advance to collect engine oil).



CAUTION Figure 3 bolt is a pressure maintaining and voltage regulating device, and cannot be easily disassembled. The release of waste oil is handled in accordance with the relevant laws of the state.

Reassembly attention:

- (1). Crankcase: Add 1000CC lubricating oil of 10W/40, it is recommended to use the grade APL SJ above.
- (2). If the pressure regulating valve screw (shown no.3) is disassembled and assembled, check the parts no.3, no.4, no.5 and no.6 are fully loaded; otherwise it may damage the engine.

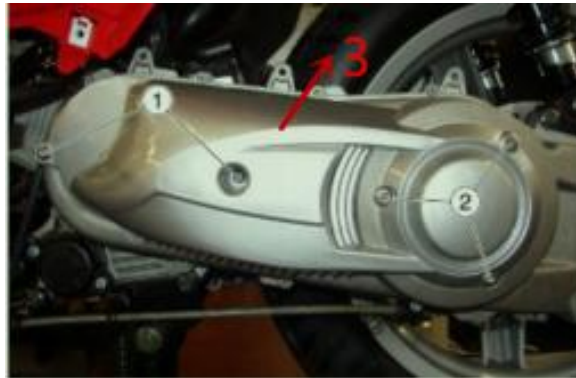
The tightening torque of the oil discharge screw (shown no.2) is 33~38Nm.

The tightening torque of the pressure regulating valve screw (shown no.3) is 33~38Nm.

Disassemble CVT cover

1. Remove the air duct

(1) Unscrew and remove the 2 screws (shown no.1) and 3 screws (shown no.2), remove the air duct.



(2) Unscrew and remove the screw (shown no.4), take down the air-box cover (shown no.5)

(3) Clean or replace the air filter.



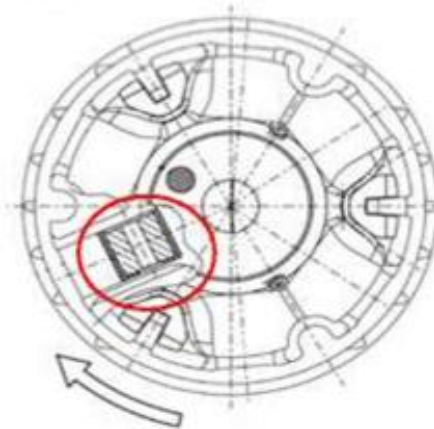
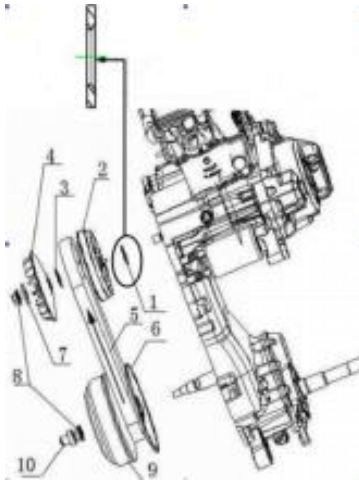
2. Remove the CVT cover

(1) Unscrew and remove the screw (shown no.1), Take down the CVT cover (shown no.2) by using screwdriver (shown no.3).



Disassemble front and back clutch

1. Take down the plastic cover (shown no.10).
2. Remove the 2 nuts counter clockwise (shown no.8).
3. Take down the figure 7—4—3—9—5. 6—2—1 in turn.

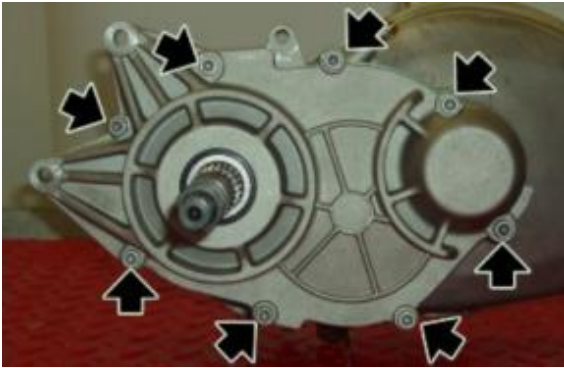


Reassembly attention:

- (1). Figure 6 and 9 are components. When Install 5 to 6, hard and counter clockwise rotation of the upper sheet of 6.
- (2). When you install belt (shown no.5), pay attention to direction, arrow forward.
- (3). The gasket (shown no.1) is mounted on the side of the box according to the direction of the picture, that is, the chamfering of the inner hole.
- (4). Assembly sequence 1 - 2 - 6. 9 - 5 - 3 - 4 - 7. 8 - 10
- (5). Check and confirm: the seal face of clutch roller (PuLiZhu) is opposite to clutch rotation.
- (6). Front off nut (Coated with Loctite 243 thread adhesive), tightening torque 70 ~ 80Nm.
Back off nut (Coated with Loctite 243 thread adhesive), tightening torque 55 ~ 65 Nm.

Disassemble Gear box

1. Rotate the engine and remove the screw of the gear box.
2. Take down the cover of the gear box and the seal gasket.
3. Take down the 3 axes, and the rear axle can be struck by nylon hammer.



Reassembly attention:

- (1). Check sealing gasket. If oil immersion, damage and folding occur, it must be replaced.
- (2). Check whether the locating pin is on the gear box cover or the left box body, and then place the sealing gasket.

Disassemble water pipe and sensor

1. Undo the water pipe clamp (shown no.3) and remove the water pipe (shown no.4).
2. If not necessary, do not disassemble the water temperature sensor (shown no.1) and the oil pressure switch (shown no.2).



Reassembly attention:

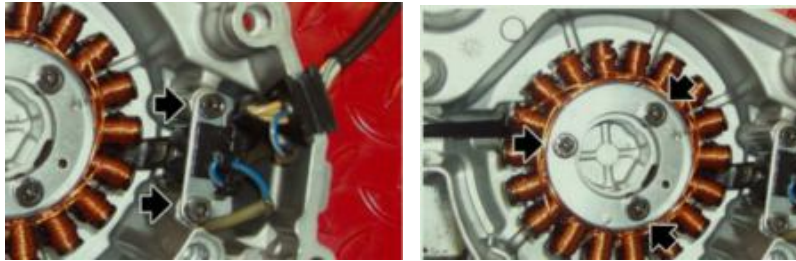
- (1). Water temperature sensor (shown no.3): tightening torque 20 ~ 24Nm.
- (2). The oil pressure switch (shown no.5): tightening torque 9 ~ 11Nm.

Disassemble generator cover

1. Remove the generator cover screws in turn and Take down the generator cover and gasket.



2. Remove the 5 screws and Take down the stator components. If not necessary, it will not be disassembled.



Reassembly attention:

- (1). Check sealing gasket. If oil immersion, damage and folding occur, it must be replaced.
- (2). Check whether the locating pin is on the gear box cover or the left box body, and then place the sealing gasket.
- (3). Special tooling detection trigger gap: 0.7 ± 0.1 mm.
- (4). Align the position and direction of the oil pump shaft and the pump shaft according to the figure below.



Disassemble generator rotor

1. Removing the starter motor

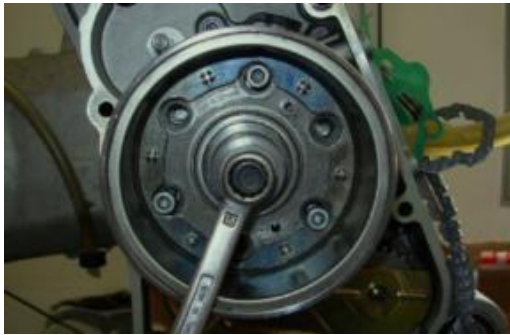
Unscrew and remove the two screws, take out the starter motor.



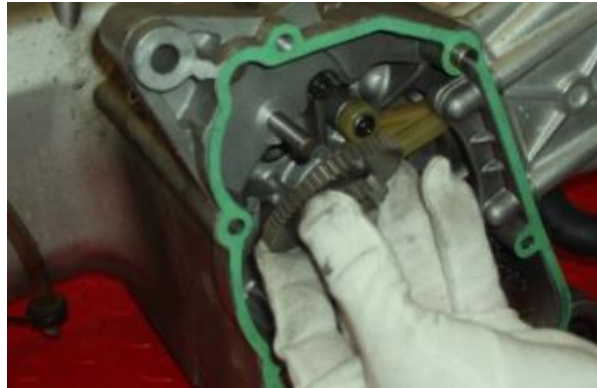
2. Rotate the crankshaft to make the piston reach the TDC and lock the crankshaft with the special tool below.



3. Remove the screws of the generator rotor, undo the generator rotor with special tools, take off the rotor assembly, and take out the semicircle key (if the crankshaft is not replaced, do not take out).



4. Remove the intermediate gear;

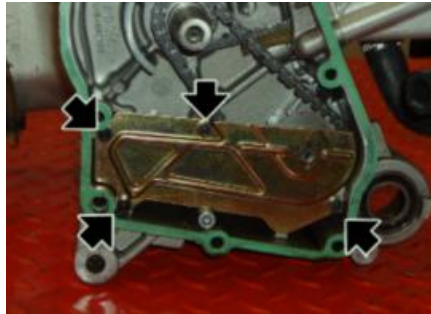


Reassembly attention:

- (1). If the semicircular key has been removed, please tap lightly with the copper hammer, and the upper plane is parallel to the centerline of the crankshaft.
- (2). The key slot on the rotor is aligned with the upper half key of the crankshaft.
- (3). The inner hole chamfering edge of the rotor fastening bolt gasket is headed towards the bolt head.
- (4). The rotor fastening bolts are coated with Anaerobic Thread Locking adhesive, and the tightening torque is 23--27Nm.

Disassemble engine oil pump

1. Unscrew and remove the 4 screws, Take down the Oil baffle.



2. Unscrew and remove the 2 screws, take off the chain, sprocket and engine oil pump.



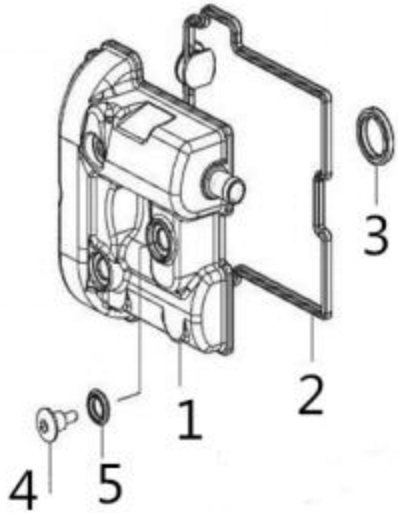
Disassemble heat engine

1. Remove the cylinder head cover

(1). Remove the screw (shown no.4). Figure 5 is a seal sleeve.

(2). Remove cylinder head cover (shown no.1), gasket (shown no.2) and sealing ring (shown no.3)

All 2, 3 and 5 of the drawings are rubber seals. If they are damaged or increased, they should be replaced.



2. Rotate the crankshaft to make the piston reach the TDC and lock the crankshaft with the special tool below.



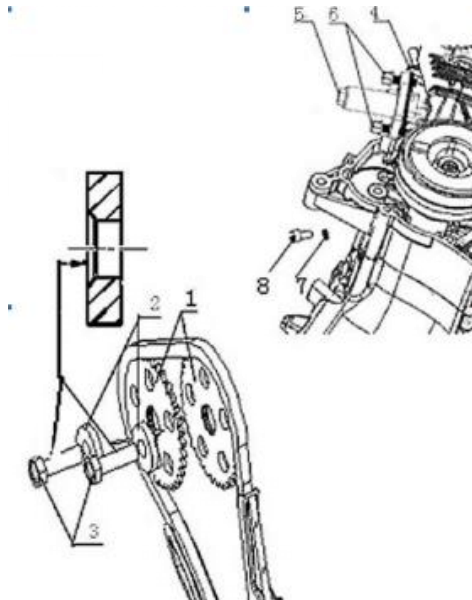
3. Remove the tensioner

Unscrew and remove the screw (shown no.1), close the spring, remove the screw (shown no.2) and remove the tensioner.



4. Remove the timing sprocket

To facilitate assembly, mark the chain and 2 sprockets before removing, remove the screws (shown no.3), and Take down the washers (shown no.2) and sprockets (shown no.1).



Reassembly attention:

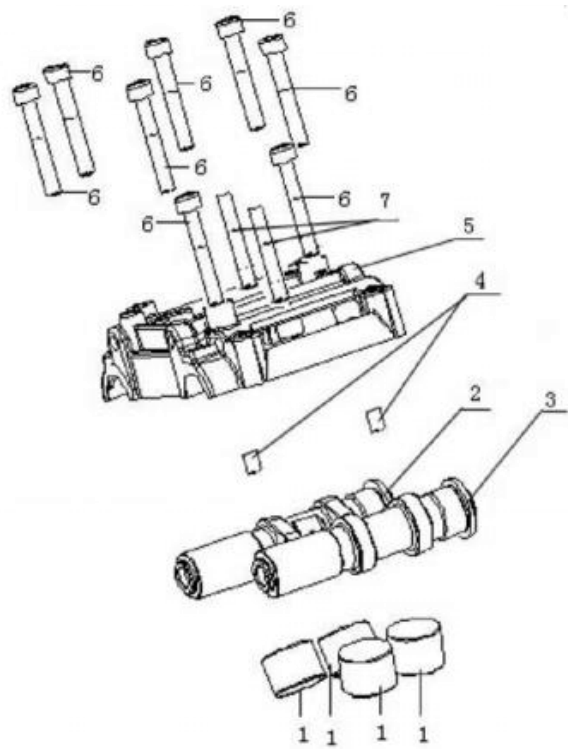
- (1). First, install 1, 2, 3 of the drawings, then install 4, 5, and 6 of the drawings.
- (2). The gasket (shown no.2) has a direction, and the inner hole chamfering faces to the head of the bolt (shown no.3).
- (3). Align the chain and sprocket marks made in disassembly.
- (4). The bolt (shown no.3) are coated with Anaerobic Thread, and then fastened, the tightening torque is 25--30Nm.

5. Remove the intake and exhaust camshaft

Remove 8 screws (shown no.6), Take down camshaft cover (shown no.5), intake camshaft (shown no.2) and exhaust camshaft (shown no.3).

6. Use a sucker or magnet to remove the valve tappet (shown no.1).





Reassembly attention:

(1). The valve tappet (shown no.1) must be placed according to the early marking position; if once forgotten, use the tape measure to measure the gap one by one and replace the valve tappet, with a thickness mark on the inside, until the requirement is met.

Intake valve clearance: 0.10 ~ 0.15; exhaust valve clearance: 0.20 ~ 0.25.



(2). Use auxiliary tool \varnothing 6.3mm pin (shown no.7) through the camshaft cover (shown no.5) to fix the intake camshaft (shown no.2) and the exhaust camshaft (shown no.3).

Intake camshaft (marked "A" blue)

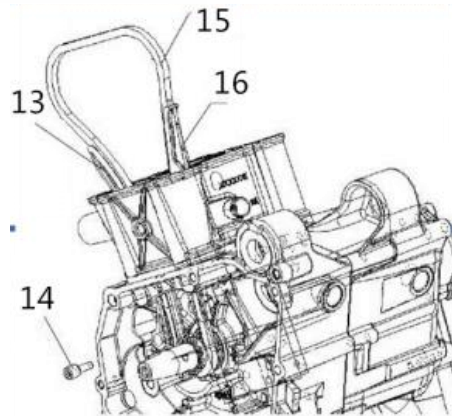
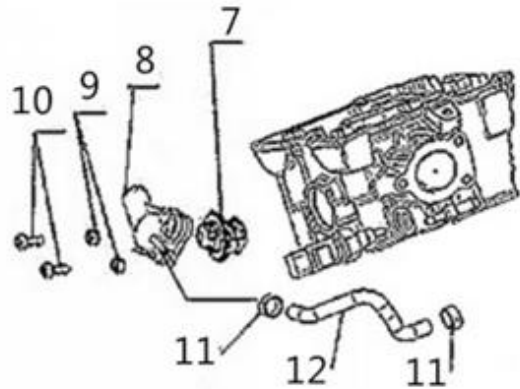
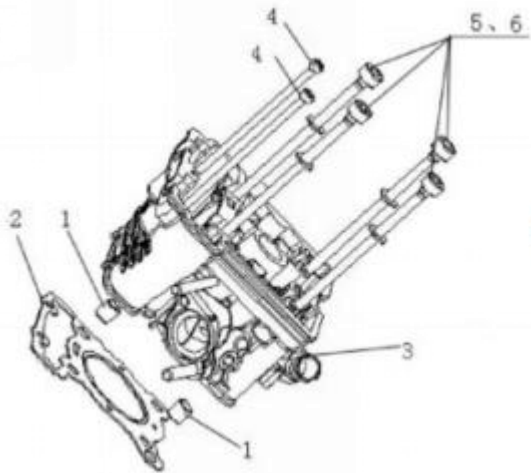
Exhaust camshaft (marked "S" white)

(3).When using the bolt (shown no.6) to fix the camshaft cover (shown no.5), it should be observed that first install the inner ring and reload the outer ring. The tightening torque is 9--11Nm.



7. Remove the 2 bolts (shown no.4) and 4 bolts (shown no.5, no.6), take down the head of the cylinder (shown no.3) and seal (shown no.2), and the positioning pin (shown no.1) connected to the head of the cylinder (shown no.3).

If not necessary, do not remove 7, 8, 9, 10, 11, and 12 in the figure.



Reassembly attention:

- (1). Check the sealing gasket (shown no.2). If oil immersion, damage and folding occur, it must be replaced.
 - (2). After cleaning and maintenance of the components, install the locating pin (shown no.1) and the gasket (shown no.2), tighten the bolt (shown no.6) first and then tighten the bolt (shown no.4). The operation is as follows:
 - A. The bolt (shown no.6) needs to be pretwisted diagonally first.
 - B. Pre tighten the bolt (shown no.4). The tightening torque is 5Nm.
 - C. Tighten the bolt (shown no.6). The tightening torque is $24\sim 26\text{Nm}+90^\circ$.
 - D. Then tighten the bolt (shown no.4). The tightening torque is $10\sim 12\text{Nm}$.
 - (3). Figure 11 or 12 is not allowed to use two times as much as possible. If maintenance is not necessary, 11 and 12 in the Figure are not dismantled.
8. Disassemble cylinder head: if there is no need, do not decompose.
- (1). The position of the valve tappet must be marked first and then removed with a suction cup or magnet.



(2). Use special tool to compress valve spring and take out valve lock clip.

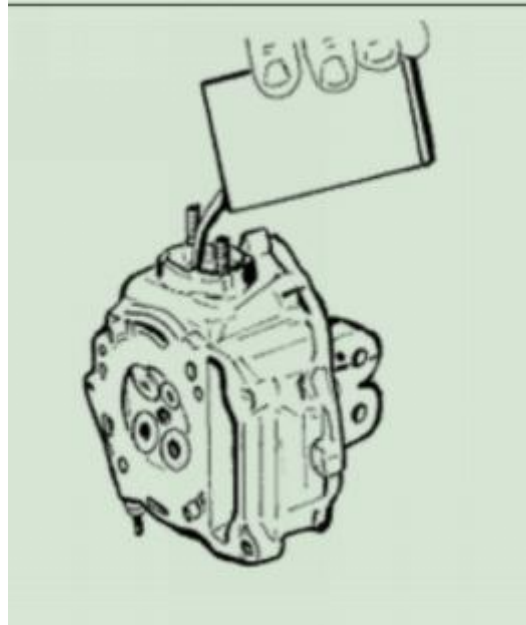


(3). Take down the relevant parts connected with the valve in turn. If there is no need, do not Take down the valve oil seal.



Reassembly attention:

After the above procedure is assembled, the tightness of the valve seat must be tested. Import gasoline from intake and exhaust port, observe leakage from intake and exhaust valve seat, do not leak too much.

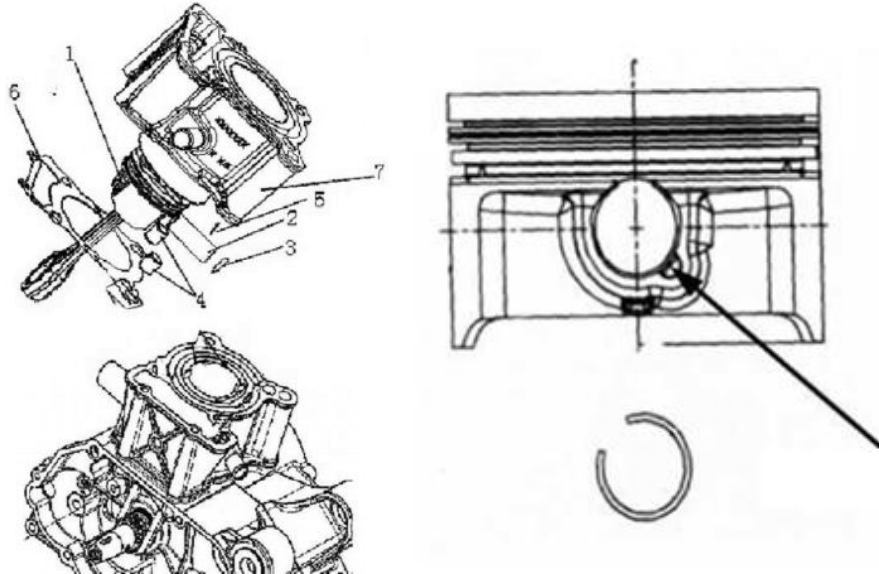


9. Disassemble cylinder

Remove the cylinder (shown no.7) and the seal pad (shown no.6).

10. Disassemble piston

Remove the retaining ring (shown no.3) and remove the piston pin (shown no.2) and take down the piston (shown no.1).



Reassembly attention:

- (1). Routine installation: A little lubricant is applied to the parts before assembly.
- (2). The piston pin should be missed out of the piston gap. The piston top arrow points to the exhaust direction.
- (3). If you only need to replace the gasket (shown no.6), you must measure its thickness by using the vernier caliper and then choose the same thickness gasket (shown no.6).
- (4). If the crankshaft, the crankcase, the piston and the cylinder are replaced at the same time or part, do not install the sealing gasket, press the cylinder with auxiliary tools, measure the height from the upper plane of the cylinder to the top of the piston, and select the thickness of the sealed gasket according to the table below.

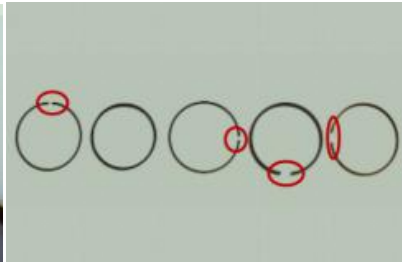
Thickness grouping of cylinder seal			
Engine capacity	Volumetric compression ratio	measured data	thickness of the liner
125CC	12.0:1	1.05~1.2	0.3
		1.2~1.4	0.4
		1.4~1.55	0.5
200CC	11.6:1	-1.35~-1.2	0.3
		-1.2~-1.0	0.4
		-1.0~-0.85	0.5

(5). If replacing the cylinder or / and piston, it must be replaced by the next table group:

Cylinder & piston diameter grouping				
Engine capacity	Grouping mark	Cylinder diameter	piston diameter	Tolerance clearance
125CC	M	58.01~58.017	57.963~57.970	0.04~0.054
	N	58.017~58.024	57.970~57.977	0.04~0.054
	O	58.024~58.031	57.977~57.984	0.04~0.054
	P	58.031~58.038	57.984~57.991	0.04~0.054
200CC	M	63.01~63.017	62.958~62.965	0.045~0.059
	N	63.017~63.024	62.965~62.972	0.045~0.059
	O	63.024~63.031	62.972~62.979	0.045~0.059
	P	63.031~63.038	62.979~62.986	0.045~0.059

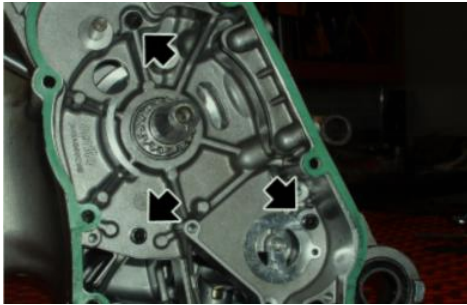


(6). The letter of the piston ring top ring and the second ring must point to the top of the piston, and the opening of each ring is stagger 90 degrees. See the following figure:



Disassemble crankcase

(1). Remove the 3 bolts.



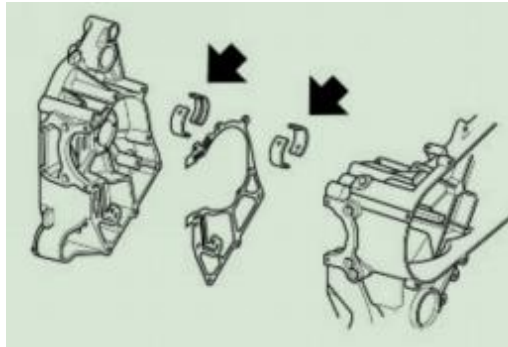
(2). Tapping the right crankcase with a nylon hammer and separating the right crankcase.



(3). Tapping the left crank with a nylon hammer and taking the crankshaft out.



(4)It is not recommended to remove the bush.



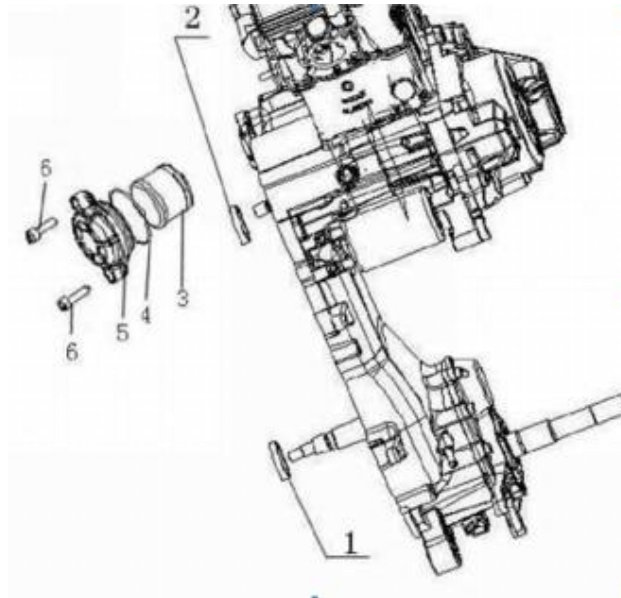
Reassembly attention:

- (1). The tightening torque of the 3 bolts in the figure is 10-12Nm.
- (2). After the assembly is completed, the crankshaft stop pin must be used to move the crankshaft to the TDC.
(This step is especially important)



Disassemble engine oil filter

Remove the 2 bolts (shown no.6). Remove the oil filter cover (shown no.5), O circle (shown no.4) and filter element (shown no.3).

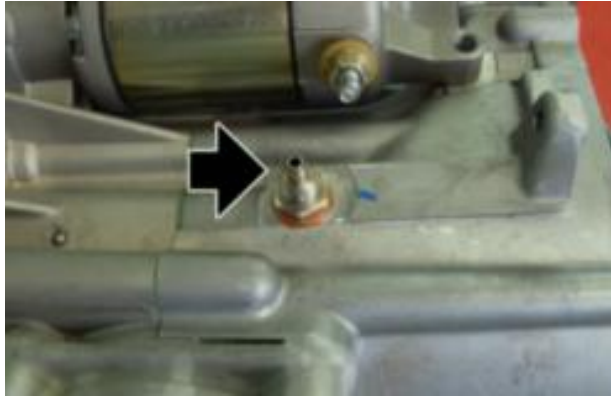


Reassembly attention:

1. When installing the driving shaft oil seal (shown no.1) and the crankshaft oil seal (shown no.2), pay attention to lip protection, the inner ring is coated with butter.
2. During the maintenance and cleaning of the filter (shown no.3), pay attention to the O ring (shown no.4) not to be damaged. When reinstalling the 5 and 4 combinations, the surface is coated with lubricating oil and pressed from the middle.
3. After fastening Bolts (shown no.6), clean the lubricant around the oil filter cover (shown no.5) so as not to bring the illusion of oil leakage.

Assembly

1. Assemble the engine by the above reverse process.
 2. Focus on oil pressure inspection
- (1)Remove hydraulic pressure sensor and install oil pressure test device at the drawing position.



(2) Starting the engine, the oil pressure detection data are as follows:

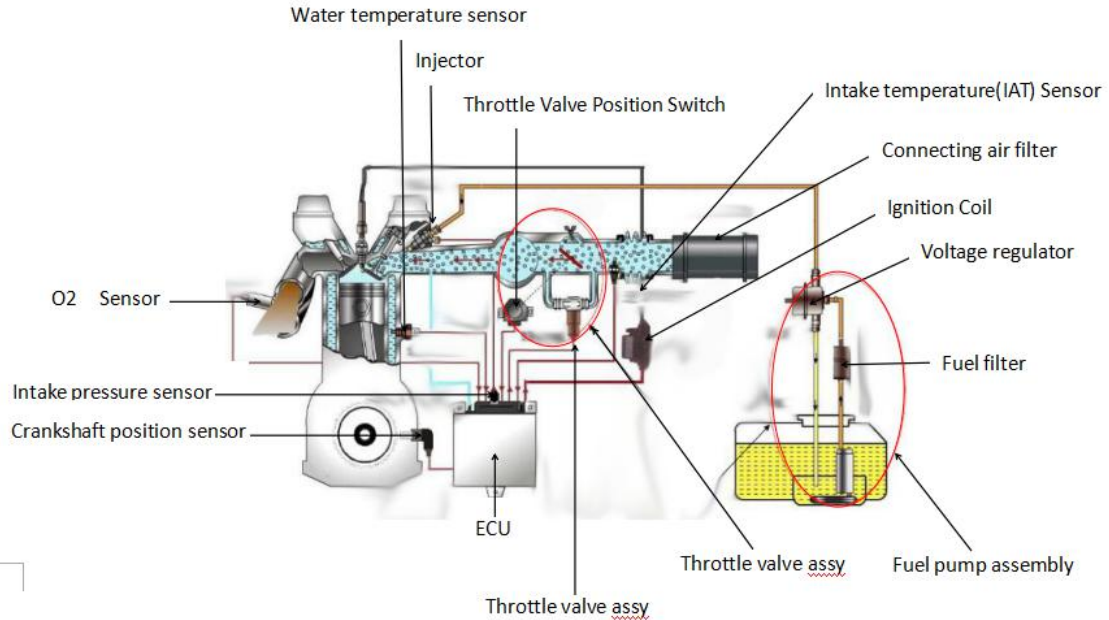
When the idle speed is 1700 ± 100 rpm, the oil pressure is more than 0.18MPa.

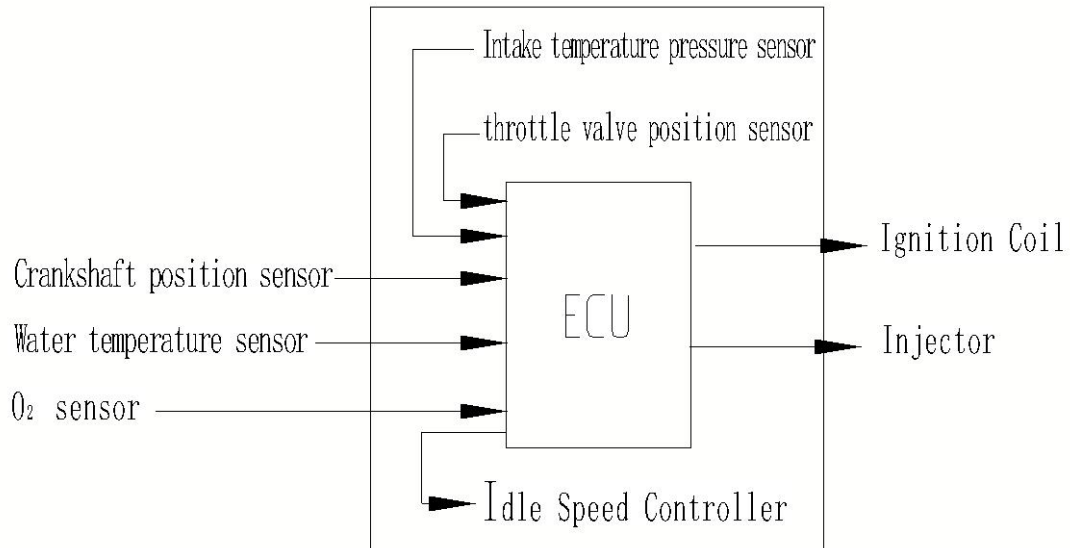
When the speed is 6000rpm, the oil pressure is 0.35~0.65MPa.

(3) If the engine oil pressure is not within the specified limits, check oil quantity, oil filter, oil pressure regulating valve and oil pump in turn.

EFI SYSTEM

The vehicle uses the Magneti Marelli EFI system. The schematic diagram as follows:





The fuel supply system consists of oil pump assy (including filter, pressure regulators), high-pressure oil pipe and injector.

The ignition system consists of ECU, high voltage coil, high voltage wire, spark plug cap and spark plug.

Maintenance instructions for EFI system

1. Special Notice: Please use the genuine parts; otherwise it will not be able to ensure the normal operation of the EFI system. Although the installation appearance size of EFI system is similar, the performance parameters are different.
2. Maintenance process attention (Important items, please read carefully).
 - ① When disconnected and connected, the ignition switch must be switched off, otherwise it may damage the electrical appliances.
 - ② The fuel injection pressure of the EFI system is high (about 250kPa), and all fuel pipelines are made of high pressure oil pipes. After the engine has stopped running for a long time, the fuel pressure in the oil circuit is also kept high. Therefore, do not remove the tubing easily during the maintenance process, and relieve the pressure of the fuel system before dismantling the tubing.
 - Lift the main stand.
 - Disconnect the wiring harness of the oil pump assembly and the vehicle wiring harness connector.
 - Start the engine until the engine is automatically extinguished, then switch the ignition key 2-3 times continuously, 3 seconds interval, then turn off the key switch.

- After complete above operation, the fuel pipe can be disassembled .when the fuel pipe was reinstalled, then the wiring harness connector of the oil pump assembly can reconnected.
- ③ When the fuel pump is removed from the fuel tank, do not turn on the electricity, so as to avoid producing electric sparks and causing fires.
 - ④ Fuel pumps are not allowed to run tests under dry conditions or in water.
 - ⑤ The regulation of idle speed is completely cured by the EFI system without manual adjustment. Throttle limit screw of throttle body has been adjusted when it is released from factory. It does not allow users to replace their initial position at will.
 - ⑥ When the engine is running, dismantling the battery is not allowed.

OBD system introduction

Vehicle diagnostics system, referred to as OBD(On-Board Diagnostic). When the system fails, the fault light (MIL) or the engine (Check Engine) warning light is lit, The OBD system will save the fault information into the memory and read the related information in the form of a fault code through the standard diagnostic instrument and the diagnostic interface. According to the indication of the fault code, the maintenance personnel can quickly and accurately determine the nature and location of the fault.

1. Fault information record

The ECU continuously monitors sensors, actuators, related circuits, fault indicator lights and battery voltage, and even the ECU itself, and to the sensor output signal, actuator drive signal and internal signal (such as lambda closed loop control, cylinder temperature / coolant temperature, idle speed control and battery) Reliability detection is carried out by voltage control, etc.

Once a fault occurs in a link, or a signal is not trusted, the ECU immediately sets up a fault information record in the RAM's fault memory. The fault information record is stored in the form of a fault code. The fault code is called current fault code; the transient fault caused by bad contact, and the current lost record is the history fault code; the fault has been excluded, but the code operation of the barrier code is also used in the history fault code. The form is stored in the fault memory.

2. Fault code table

P0110	Air temperature sensor	Intake Temperature Sensor
P0115	Water temperature sensor	Engine Coolant Temperature Circuit High Voltage or Open
P0120	Throttle position sensor	TPS Circuit Low Voltage or Open
P0130	Lambda sensor	O2 Sensor Circuit
P0135	Lambda sensor heater	O2 Sensor Heater Circuit
P0201	Injector	Injector Circuit/Open - Cylinder 1
P0230	Fuel pump relay	Fuel Pump Primary Circuit
P0335	Engine rpm sensor	Crankshaft Position Sensor "A" Circuit
P0351	Coil high tension	Cylinder 1 Ignition Coil Malfunction
P0480	Fan relay	Fan 1 Control Circuit
P0505	Idle control actuator	Idle Speed Control Error
P0530	Light relay	Light relay
P0560	Battery voltage	System Voltage
P0611	Data buffering...	Data buffering...(Non fault)

3. OBD fault indicator description and control

The fault indicator is generally an indicator light that can be displayed on the speedometer and the shape meets the requirements of the regulations.

The fault indicator described as follows:

① In the normal mode, no fault code:

Turn on the ignition switch, ECU initializes, the fault lights are on, and the MIL lights go out immediately after the engine starts successfully.

② When produce the fault code:

At the time of engine operation, if the fault occurs, the fault lamp is light on, which reminds drivers to have faults. When the engine is stopped, the fault will be stored in the ECU.

③ Have fault code:

Under the special situation, Can turn off the key and keep more than 10 seconds, and then fast continuous switch key 5 times to reset the ECU, the ECU reset will clear all self-learning data, after reset the vehicle may have some abnormal conditions. The ECU will need learning again to restore normal.

4. OBD diagnostic connect and use:

OBD diagnostic function: Read fault code, clear fault code, data flow display, status identification display, etc.



①Connect the diagnostic instrument to the diagnostic interface on the vehicle.



②Connect the ignition switch.

③Read fault code; Inquire maintenance manual to confirm the fault parts and types; formulate the maintenance plan according to the query information and experience.

④After troubleshooting, remove the history fault code with the fault diagnostic instrument.

5. According to the fault, the diagnosis process for maintenance

A. Before starting the of fault diagnosis according to the engine fault phenomenon, a preliminary examination should be carried out first.

- ①. Confirm that the engine fault indicator is working normally
- ②. Check with the fault diagnosis device to confirm that there is no fault information record.
- ③. Confirm the fault phenomenon of the owner's complaint and confirm the condition of the failure.

B. And then check appearance:

- ①. Check whether there is leakage in the fuel line;
- ②. Check whether the intake pipe is clogged, leaked, crushed or damaged.
- ③. Check whether the high voltage line of the ignition system is broken or aged.
- ④. Check whether the wire grounding is clean and firm.
- ⑤. Check whether all sensors and actuator joints are loose or poorly contacted.

Important note: if the above phenomenon exists, the maintenance work should be carried out according to the fault phenomenon, otherwise the fault diagnosis and maintenance work will be affected.

6. Common fault:

(1). When starting, the engine does not turn or turn slowly.

General fault parts: 1, battery; 2, starting motor; 3, wiring harness or starting relay and related control circuit; 4, engine mechanical parts.

General diagnosis process:

No.	Inspection steps	Follow steps
1	when the engine start, Check the voltage between the two terminals of the battery with multimeter, whether there is about 9-12V.	Replace battery
2	Ignition switch keep at the starting position, use multimeter to check the positive terminal of starter motor whether have more than 9V voltage.	Check starting motor related lines
3	Remove starter motor and check starting motor's working condition. The key is to check whether there is a circuit breakage or stuck due to poor lubrication.	Repair or replace the starting motor
4	If the fault occurs only in winter, then check the engine oil choose whether right, cause the resistance of starting motor is too high.	Replace appropriate lubricating oil
5	Check whether the internal mechanical resistance of the engine was too large, and whether the transmission system was working normally.	Inspect the internal of engine

(2). When starting, the engine can be towed but cannot start successfully.

General fault parts:1, fuel tank without oil; 2, fuel pump; 3, speed sensor; 4, ignition coil; 5, engine mechanical parts.

General diagnosis process:

No.	Inspection steps	Follow steps
1	Connect the OBD diagnostic, observe the data items of the engine speed, start engine, and observe whether there is a speed signal output.	Inspect speed sensor circuit and speed sensor
2	Remove the spark plug cap, connect the spark plug, let the spark plug on the engine block, start the engine, check whether there was continuous blue and white high pressure fire.	Inspect ignition system
3	Connect the fuel pressure gauge, turn on the key switch and check whether the fuel pressure was around 250KPa. If there was no fuel pressure gauge, can pinch the high pressure oil pipe by hand, judge the hardness.	Inspect fuel system
4	Check the pressure of the engine cylinder and observe whether there is insufficient pressure in the engine cylinder.	Exclude engine mechanical failure (pay attention to check whether engine valve clearance is too small).

5	Remove the injector from the intake pipe (the oil circuit and wiring harness connector is not removed), start the engine and check whether there is fuel injection.	Inspect injector circuit, injector
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(3). Start difficulty

General fault parts: 1, fuel has water; 2, fuel pump; 3, coolant temperature sensor; 4, injector; 5, ignition coil; 6, throttle body and idle bypass airway; 7, inlet; 8, ignition timing; 9, spark plug; 10, engine mechanical part.

General diagnosis process:

No.	Inspection steps	Follow steps
1	Remove the coolant temperature (cylinder head temperature) sensor connector and start the engine to see if the engine has started successfully.	Inspect circuit or replace coolant temperature (cylinder head temperature) sensor
2	Connect the fuel pressure gauge, turn on the key switch and check whether the fuel pressure was around 250kPa. If there was no fuel pressure gauge, can pinch the high pressure oil pipe by hand, judge the hardness.	Inspect fuel system

3	Remove the spark plug cap, connect the spark plug, let the spark plug on the engine block, start the engine, check whether there was continuous blue and white high pressure fire.	Inspect ignition system
4	Softly turning throttle, observe whether easy to start.	Cleaning throttle and idle airways
5	Check whether the air filter is clogged, and whether there is a leak in the intake port (especially the intake pipe connection).	Inspect intake system
6	Check spark plug and observe the type and clearance	adjust or replace
7	Check engine cylinder pressure to see if there is insufficient cylinder pressure.	Exclude engine mechanical failure (pay attention to check whether engine valve clearance is too small).
8	Check whether the fuel label (and whether it contains ethanol) meets the requirements of the vehicle.	replace fuel

(4). Starting normal, but idle speed unstable.

General fault parts:1, fuel has water; 2, fuel injector; 3, spark plug; 4, throttle body and idle bypass airway; 5, Intake port; 6, idle speed regulator; 7, ignition timing; 8, spark plug; 9, engine mechanical part; 10, coolant temperature (cylinder temperature) sensor.

General diagnosis process:

No.	Inspection steps	Follow steps	Remark
1	Check whether the air filter is clogged, and whether there is air leakage in the intake system.	Inspect intake system	
2	Check if the throttle is stuck.	Cleaning or replacing	
3	Check spark plug and observe the type and clearance	adjust or replace	
4	Check whether there is carbon deposition in throttle body and idle bypass.	Cleaning	
5	Check whether the fuel label (and whether it contains ethanol) meets the requirements of the vehicle.	replace fuel	
6	Check engine cylinder pressure to see if there is insufficient cylinder pressure.	Exclude engine mechanical failure (pay attention to	

		check whether engine valve clearance is too small).	
7	Check the ignition sequence and ignition timing of the engine.	Inspect ignition timing	
8	Check whether there is leakage, blockage or excessive flow in fuel injector.	replace	
9	Remove the coolant temperature sensor connector and start the engine, observe whether the idle is stable during the engine warm-up process.	Inspect the circuit or replace the sensor	Idling instability during the warm up process

(5). starting normal, but idle speed too high.

General fault parts::1, throttle body and idle bypass air duct; 2, idle speed regulator; 3, coolant temperature sensor; 4, Ignition timing.

General diagnosis process:

No.	Inspection steps	Follow steps
1	Check whether the throttle cable is stuck or too tight, resulting in the throttle valve not completely closed.	adjustment
2	Check whether there is air leakage in the intake system.	Inspect intake system
3	The idle speed regulator is removed to check whether there is carbon deposition in throttle body, idle speed regulator and idle bypass.	Cleaning the related parts
4	Remove the coolant temperature sensor connector and start the engine, observe whether the idle is too high	Inspect the circuit or replace the sensor
5	Check whether the ignition timing of the engine meets the specifications.	Inspect ignition timing

(6). When accelerate, the engine speed won't go to up, or flameout. Reaction slowly. Acceleration performance weak

General fault parts: 1, fuel has water; 2, intake pressure sensor and throttle position sensor; 3, spark plug; 4, throttle body and idle bypass airway; 5, Intake port; 6, idle speed regulator; 7, injector; 8, ignition timing; 9, exhaust pipe.

General diagnosis process:

No.	Inspection steps	Follow steps	Remark
1	Check whether the air filter is blocked.	Inspect intake system	
2	Connect the fuel pressure gauge and start the engine to check whether the fuel pressure of the engine is around 250kPa at all working conditions.	Inspect fuel system	
3	Check spark plug and observe the type and clearance	adjust or replace	
4	The idle speed regulator is removed to check whether there is carbon deposition in throttle body, idle speed regulator and idle bypass.	Cleaning the related parts	
5	Check whether the ECU unit and its circuit are normal.	Inspect the circuit or replace the ECU assembly	
6	Check whether there is leakage or blockage in the injector.	replace	
7	Check whether the fuel label (and whether it contains	replace fuel	

	ethanol) meets the requirements of the vehicle.		
8	Check the ignition sequence and ignition timing of the engine.	Inspect ignition timing	
9	Check whether the exhaust pipe is smooth.	Repair or replace the exhaust pipe	
10	Remove the spark plug cap, connect the spark plug, let the spark plug on the engine block, start the engine, check whether there was continuous blue and white high pressure fire.	Inspect ignition system	
11	Check whether there are clutch slipping, low tire pressure, braking delay, and whether the user adjusted the last stage transmission ratio.	Repair	acceleration performance weak

Fuel injector disassembly and installation

1. Disconnect the oil pump connector, start the engine until the engine goes out automatically, remove the fuel tank.
2. The two fingers press the plug button at the same time and pull out the quick connector.



3. Disconnect the injector connector.



4. Remove the bolt and take off the fuel injector.



5. Assembly according to the above reverse process.

Throttle valve disassembly and installation

1. Remove the fuel tank.
2. Disconnect the plug.



3. Take off the throttle line (shown no.1).



4. Unscrewing the clamp between air filter and throttle body (shown no.2), unscrewing the throttle body and the hoop connected to the intake manifold (shown no.3)

5. Take off the throttle body (shown no.4).

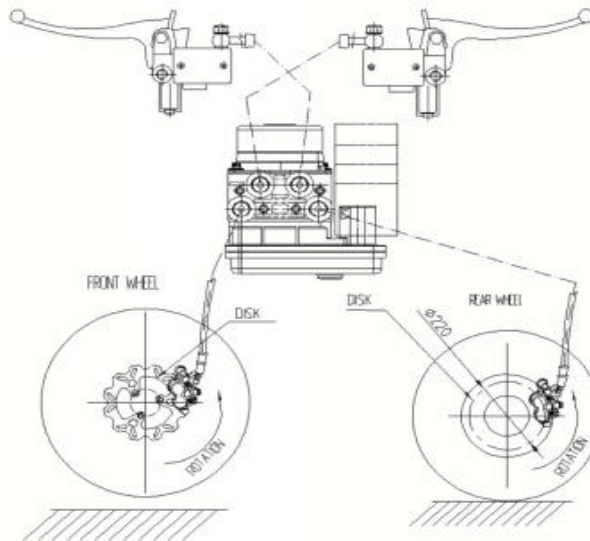
6. Assembly according to the above reverse process.

BRAKING SYSTEM

This vehicle is equipped with ABS brake system: a front disc brake, a rear disc brake, and ABS integrated unit.

Operate the right brake handle and apply pressure on the front brake caliper.

Operate the left brake handle and apply pressure on the rear brake caliper.



Dismantle front brake calipers and brake disc

1. First lift the main stand, then unscrew and remove the bolt (shown no.1). The tightening torque M8 is 25Nm.



2. Unscrew and remove the front wheel bolt (shown no.2). Take down the front wheel. The tightening torque M12 is 60Nm.



3. Use the strap (shown no.3) to pull up the bushing widget to prevent loss, unscrew and remove the 3 bolts (shown no.4), remove the brake disc (shown a) and the front ring gear (shown b).



4. Unscrew and remove 2 nuts and 2 built-in bolts (shown no.5), unscrew and remove the bolts (shown no.6).



5. Take down the 2 pads (shown no.7).



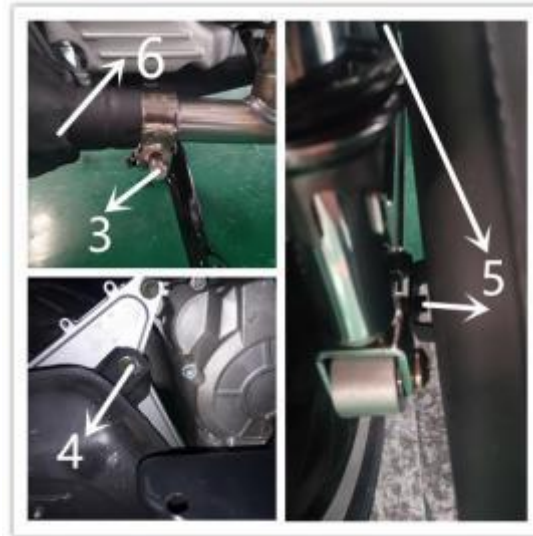
6. Inspection and replacement of the pad and brake discs are described in part III.

Dismantle rear brake calipers and brake disc

1. Lift the vehicle main stand, unscrew and remove the 3 screws on the right side cover (shown no.1), remove the right side cover (shown no.2).



2. Unscrew but not remove the bolt (shown no.3).
3. Unscrew and remove the bolt (shown no.4).
4. Unscrew but not remove the 2 bolts (shown no.5) and take down the muffler (shown no.6).



5. Unscrew and remove the bolts (shown no.7 and no.8) and remove right rear shock absorbers (shown no.9).

6. Unscrew and remove the 2 bolts (shown no.10) and nut (shown no.11), and remove the rear fork (shown no.12), the tightening torque of the nut (shown no.11) is 100Nm.



7. Hold the left brake lever (shown no.1), unscrew and remove the 5 bolts (shown no.13) and remove the rear wheel (shown no.14). The tightening torque is M12.



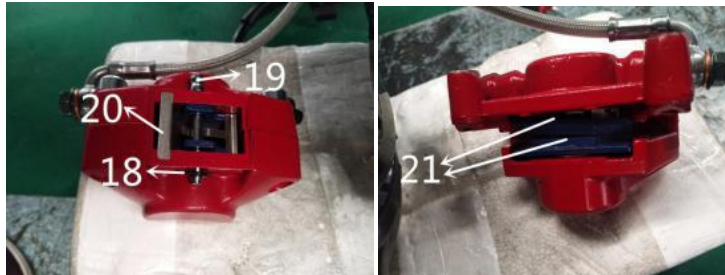
8. Hold the left brake lever (shown no.1), unscrew and remove the 5 bolts (shown no.16).

9. Unscrew and remove the 2 bolts (shown no.15), remove the brake disc (shown no.17). The tightening torque M8 is 25Nm.



10. Remove the clip (shown no.18), pull out the pin shaft (shown no.19), take off the spring leaf (shown no.20), and pay attention to the spring leaf (shown no.20) in accordance with the direction of the picture.

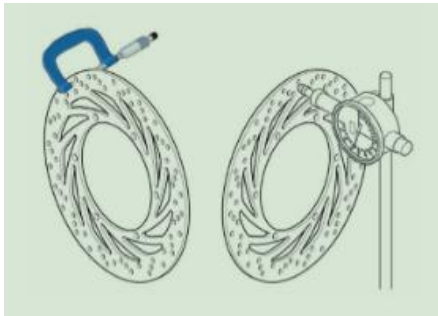
11. Take down the pad (shown no.21).



12. Inspection and replacement of pad and brake disc are described in part III.

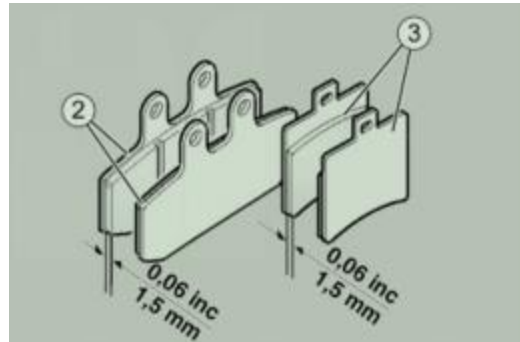
Inspection of front and rear pad and brake disc

1. Brake disc inspection and replacement



- (1). Perform visual inspection on the surface and replace it if there is serious scratch or rust.
- (2). Use micrometer to measure the thickness on the brake disc circumference. If the minimum thickness is less than or near the minimum limit (3.6mm), replace it.
- (3). Use the dial gauge to measure the beating of the brake disc. If it exceeds the tolerance limit (0.3mm), replace it.

2. Brake pad inspection and replacement



(1) Figure 2 is front brake pad; Figure 3 is rear brake pad.

(2) The thickness of the pad material is measured with a vernier depth caliper (shown no.2 and no.3). As long as the material thickness of one pad is reduced to 1.5mm, need to replace two pads at the same time.

Clear the brake fluid loop bubble.

Taking the dangers of vehicles and riders into account, it is necessary to remove bubbles in the brake fluid circuit after retrofitting or restoring the brake system.

1. Front brake fluid circuit

(1). Pull out the rubber cap of the vent valve (shown no.1).

(2). A clear plastic pipe (shown no.3) is inserted on the vent valve (shown no.2), and the other end of the tube (shown no.3) is connected to a container for collecting the discharged brake fluid.



- (3). Quickly compress and loosen the right brake lever several times, then press hard on the right brake lever.
- (4). Loosen the valve (shown no.2) about 1/4 circle to allow the brake fluid to flow into the container. Release the pressure on the brake lever until the end of the stroke.
- (5) Repeat the above operation until there is no bubble in the brake fluid entering the container.



- (6) Tighten the vent valve (shown no.2) and remove the pipe (shown no.3) and install the bleed valve rubber cap (shown no. 1).
- (7) Add the brake fluid to the "MAX" scale line in the upper pump.

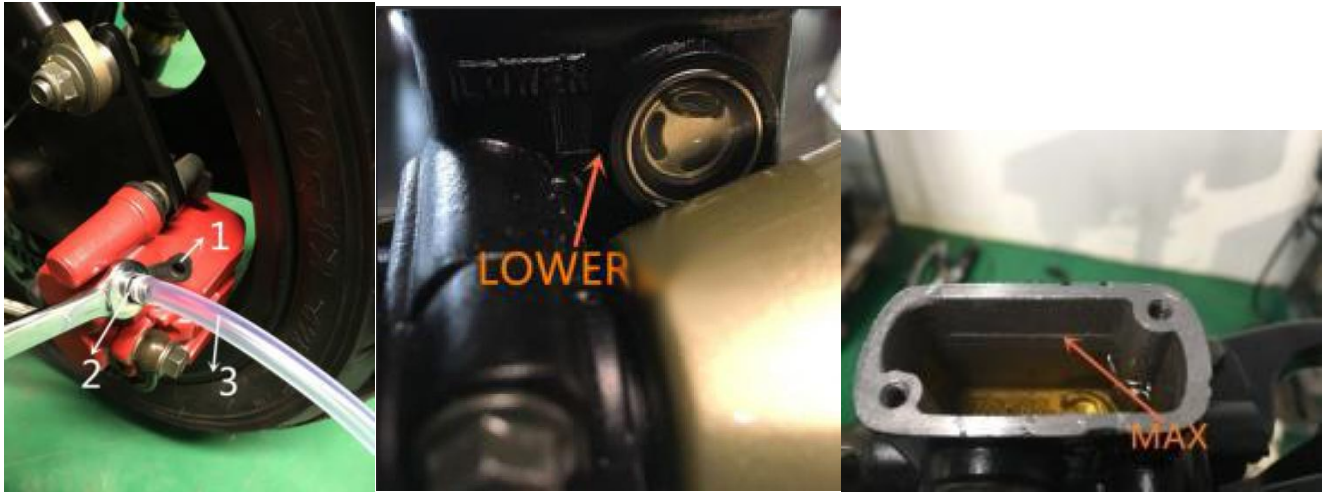
2. Rear brake fluid circuit

The clearance process is the same as front brake fluid circuit.

Brake fluid replacement

1. Front brake fluid replacement

(1). Pull out the rubber cap of the vent valve (shown no.1).



(2). A clear plastic pipe (shown no.3) is inserted on the vent valve (shown no.2), and the other end of the tube (shown no.3) is connected to a container for collecting the discharged brake fluid.

- (3). Quickly compress and loosen the right brake lever several times, then press hard on the right brake lever.
- (4). Loosen the valve about one circle to allow the brake fluid to flow into the container. Release the pressure on the brake lever until the end of the stroke.
- (5). Always check the liquid level of the pump storage chamber. If it is lower than the "LOWER" mark, turn off the bleed valve (shown no.2).



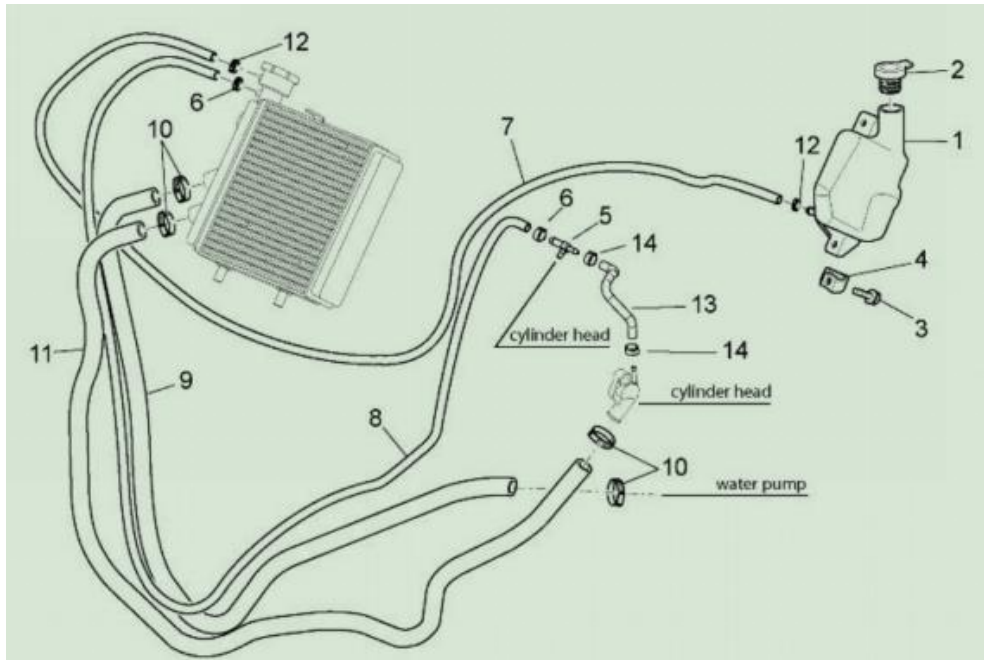
- (6). Add brake fluid to the "MAX" above scale of the tank.
- (7). Repeat steps (3) (4) (5) (6).
- (8). Observe the liquid in the transparent plastic pipe. When the color of the liquid is replaced from black to clear, tighten the discharge valve (shown no.2) and remove the pipe (shown no.3).
- (9). Install the rubber cap of the vent valve (shown no.1).
- (10). Add the brake fluid to the "MAX" scale line in the pump storage chamber.

2. Rear brake fluid replacement

The replace process is the same as front brake fluid.

COOLING SYSTEM

System composition



Coolant replacement

1. Coolant emptying

(1) Remove the 6 bolts (shown no.1), remove the right cover (shown no.2) and the left cover (shown no.3).



(2) Release clamps (shown no.4), Slide off the water pipe (shown no.5), Collect the coolant into the pre-prepared container.



2. Coolant injection

(1) Plugged in outlet pipe (shown no.5) again, tighten the clamps (shown no.4),



(2) Fill the expansion tank with coolant until the liquid level reaches the "MAX" reference line.

(3) Fill the water tank with coolant until it is full and cover the water tank cover (shown no.2).



(4) Start the engine and idle running until the fan works.

(5) Turn off the engine and cool it down fully (about 12 hours).

(6) Check the liquid level of expansion tank and water tank again, if necessary, add to the correct level.

(7) Reinstall the right cover (shown no.2) and left cover (shown no.3).

FINAL INSPECTION

After Vehicle maintenance, before the normal riding, the following checks shall be carried out.

Appearance check

1. The paint surface of a leaking part
2. Assembly of plastic parts with external leakage
3. Scratch

Tightening torque check

1. Front and Rear suspending device
2. Front and Rear brake calipers, brake discs
3. Front and Rear wheels and wheel shafts
4. Connection between engine and frame
5. Handlebar, steering mechanism
6. Plastic parts fastening

Electrical system

First check the battery positive and negative, then check following

1. Key switch
2. Head light: High beam, low beam, position light and warning light
3. Adjust the low beam according regulations.
4. Front & rear brake switch and stop lamp
5. Direction switch and turning lamp
6. Instrument Panel Indications
7. Horn
8. Starting motor
9. The function of engine emergency stop switch and side stand switch

Liquid level check

1. Hydraulic brake system level
2. Engine coolant liquid level
3. Engine oil level
4. Engine gear oil level

Vehicle road check

1. Vehicle cold start
2. Instrument panel operation
3. The sensitivity of throttle control
4. Stability of acceleration and brake
5. Front and Rear brake effect (GP200S with ABS, GP125S with ABS or CBS)
6. Front and Rear shock absorption effect
7. Is there any abnormal noise

Inspection of vehicles after driving

1. Vehicle hot start
2. Brake rod stroke
3. Front and Rear tyre pressure
4. Angle of rear view mirror
5. Radiator fan run
6. Possible leaks
7. Abnormal sound of engine

When the above check is completed, the user can ride normally.



A real classic



**GP125S/200S
Maintenance Manual**