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CF150-A Service Manual

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Zhejiang CFMOTO Power Co., Ltd.

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FORWARD

This manual introduces CF150-A maintenance information, disassembly procedure, check & adjustment methods, troubleshooting and technical specifications. There are illustrations, drawing to guide your operations.

Chapter 1 mainly introduces general operation information, tools, vehicle structure and basic specifications.

Chapter 2 mainly introduces check & adjustment methods and how to do vehicle maintenance.

Chapter 3 mainly introduces disassembly, installation, adjustment, maintenance and troubleshooting information.

CFMOTO reserves right to make improvements and modifications to the products without prior notice. Overhaul and maintenance should be done according to actual condition of vehicle.

CONTENTS

Maintenance information	1
Vehicle body、Muffler	2
Checking&Adjustment	3
Cooling&Lubricating system	4
Engine disassembly&assembly	5
Engine disassembly,check&assembly	6
Front wheel、Brake、Suspension、 Steering system	7
Rear wheel、Brake、Suspension system	8
Electric system	9
Lights、Instruments、Switches	10
Carburetor	11
Circuit diagram	12
Troubleshooting	13

Conversion table

Item	Example	Conversion
Pressure	200 kPa(2.00kgf/cm ²) 33kPa (250mmHg)	1kgf/cm ² =98.0665kPa 1kpa=1000Pa 1mmHg=133.322Pa=0.133322kPs
Torque	18N.m(1.8kgf-m)	1kgf.m=9.80665N.m
Volume	419ml	1ml=1cm ³ =1cc 1l=1000cm ³
Force	12N(1.2kgf)	1kgf=9.80665N

1 Maintenance information (Chassis)

Notes during operation	1-1
Cautions to disassembly, assembly ...	1-3
Number marking position	1-6
Table of main parameters	1-7

Table of maintenance parameters	1-8
Fastening torque	1-9
Grease, sealant	1-10
Layout of cables, pipes and guy cable ...	1-11

Notes during operation

Cautions Exhaust contains toxic ingredients. Do not run the engine in closed places or places with poor ventilation for a long time.



Cautions The liquor (dilute sulfuric acid) in Battery is strong corrosive; it may burn the skin and blind the eyes when it contacts them. In case of contact, please wash it with a great deal of clear water immediately, and receive medical treatment in hospital. Besides, please also wash it by a great deal of clear water when it contacts the clothes, for avoiding skin burn. The Battery and Battery liquor must be stored strictly, away from where children can touch.



Cautions Uniform (pilot uniform etc), cap, safety boots suitable for the operation must be worn, and the safety articles such as dustproof goggles, dustproof respirator and gloves shall be worn for protection when necessary.



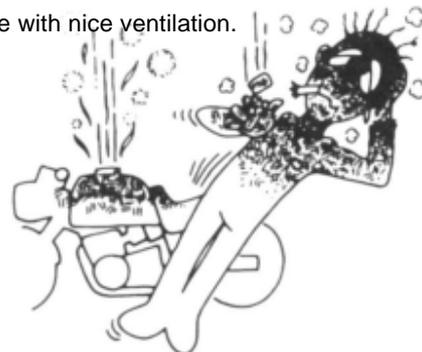
Cautions When the engine just stops, the temperature of engine, muffler is still high; please do not touch them with bare hands, for avoiding burn. Please wear uniform with long sleeves as well as gloves when maintaining.



Cautions The coolant is poisonous, please do not drink it, do not let it contact the skin, eyes neither clothes. In case it contacts the skin or clothes, please wash it immediately. When it contacts the eyes, please wash it thoroughly with a great deal of clear water immediately, and receive medical treatment in hospital. In case the coolant is drunk by mistake, please try to vomit it out, and receive medical treatment immediately after gargling. The coolant must be stored strictly, away from where children can touch.



Cautions: No smoking or naked fire is allowed at the operation site, for the gasoline is combustible. Not only flames, but electric sparks shall be avoided. Besides, the vaped gasoline is explosive, please operate it in the place with nice ventilation.



Cautions The Battery may produce combustile and explosive hydrogen when it is being charged. So it may explode if there is flame or electric spark. So please charge it in the place with nice ventilation.



Cautions do not let the turning or movable pieces



such as rear wheel, clutch etc clip your hands or clothes when maintaining.

Cautions The asbestos dust on the brake drum is carcinogenic is breathed in. Do not clean off the dust with compressed air. Use cleaning detergent to avoid dust proliferation.



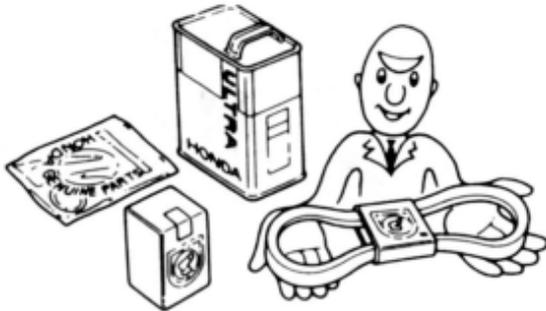
Cautions The personnel shall make them be aware of each other from time to time when operating, for safety confirmation.



1 Maintenance information (Chassis)

Cautions to disassembly, assembly

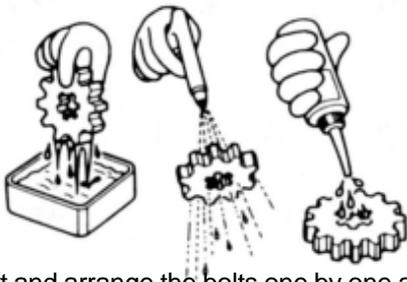
The parts, lubricant and grease must adopt the pure parts of Chunfeng Brand or recommendation.



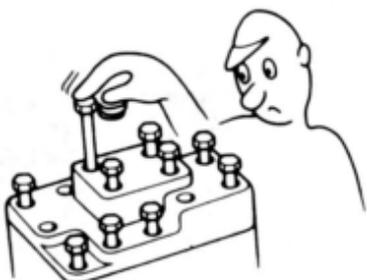
The parts of each system shall be arranged and stored separately, so that the parts can be assembled to the original places.



The parts shall be washed and the cleanser shall be blown away by compressed air prior to determination when they are disassembled and inspected. The working surface shall be lubricated before assembly.



Insert and arrange the bolts one by one and make sure the insertion volume of each bolt is equal before inserting them, when the bolt length is unidentified.



Please clean the dirt, dusts on the vehicle before maintenance.



The gasket, O-ring, piston pin retainer and split pin must be renewed after disassembly.

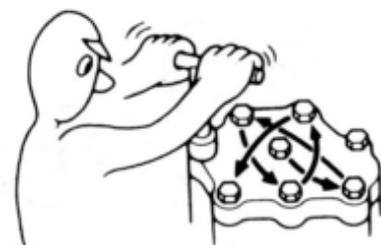
The elastic retainer will deform if it is opened too wide upon disassembly, then it will easily fall off when assembled again. Please do not use the elastic retainer that is already loose and without elasticity.



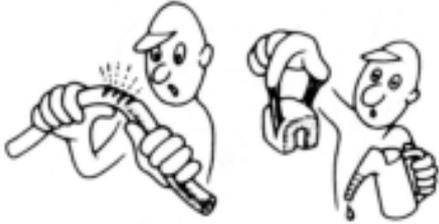
Inspect the necessary sites upon disassembly, measure the relevant data, so that the original status can be resumed after assembly.



The fasteners such as bolts, nuts and screws shall be pre-fastened, and then be fastened on the diagonal according to regulated fastening torque in the principle of from big to small, from inside to outside.



The rubber parts shall be checked whether they are aged upon disassembly, renew them in advance when necessary. Besides, try not to make volatile oil, grease etc attach on the rubber parts, for they are not resistant to corrosion of gasoline or kerosene.



Proper special tools must be applied to the operations which require special tools

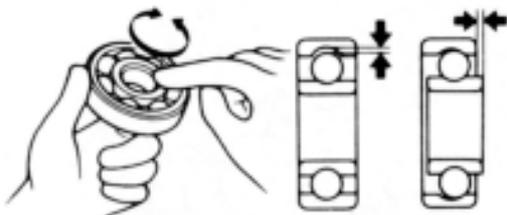


The inside or outside track of ball bearing shall be turned manually, for confirming the flexibility and smoothness of turning.

The parts that are loose axially or radially shall be renewed.

The parts that are unsmooth shall be washed with oil, and the parts that are not repaired after washing shall be renewed (the dual-side dustproof type cannot be washed)

Press it into the machine or axis, and the bearing shall be renewed if the pressed part is not tight enough.



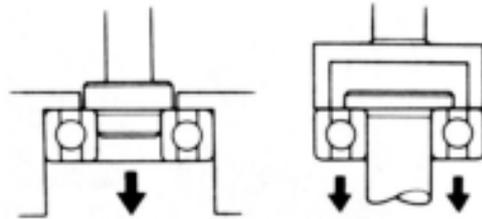
Do not let the bearing race turn back when blowing the ball bearing by compressed air after washing. If the bearing race turns back, its high back turning speed will be beyond the limit that may result in damage of bearing. The bearing shall be lubricated with engine oil or grease before assembly.



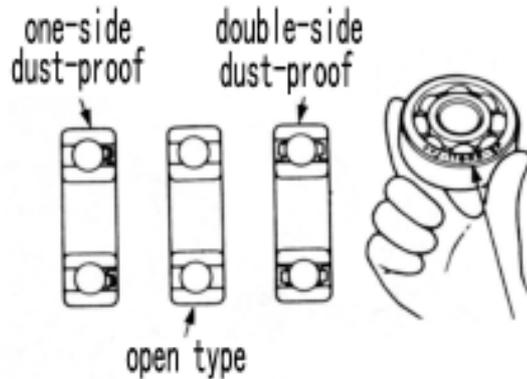
The recommended lubricating grease must be applied or injected in the appointed positions.



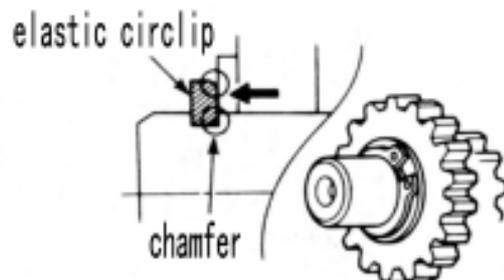
When disassembling the pressed ball bearing, the disassembled bearing must not be used again if the balls are forced for disassembly.



The installation direction of single-sided dustproof bearing shall be paid attention to upon disassembly. The surface of open-type or dual-side dustproof bearing that is with the sign of manufacturer, dimensions shall face outside upon installation.



The side with chamfer shall face the impact direction when installing the circlip. The circlip that is loose already or without elasticity shall not be used again. Rotate the circlip after assembly, for confirming that it is installed in the groove properly.



1 Maintenance information (Chassis)

Each fastening part must be inspected whether they are tightened and work well after assembly.

Brake fluid and coolant may damage coating, plastic and rubber parts. Flush these parts with water if splashed.



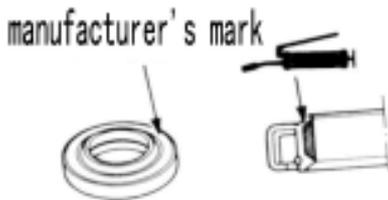
Install oil seal with the side of manufacturer's mark outward.

.do not fold or scratch the oil seal lip.

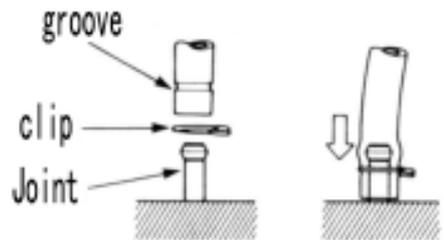
.apply grease to the oil seal lip before assembling.



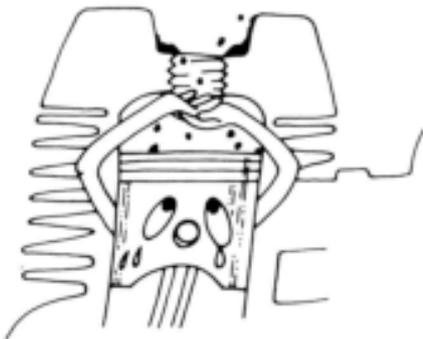
When installing pipes, insert the pipe till the end. Fit the pipe clip, if any, into the groove. Replace the pipes or hoses that cannot be tightened.



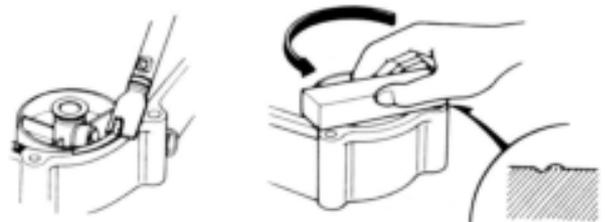
Do not mix mud or dust into engine or the hydraulic brake system.



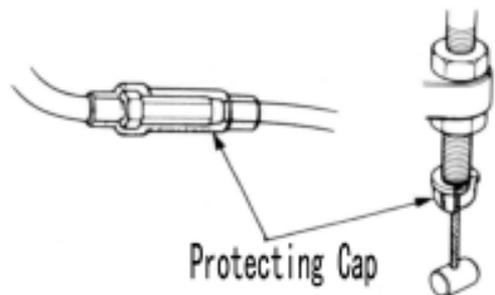
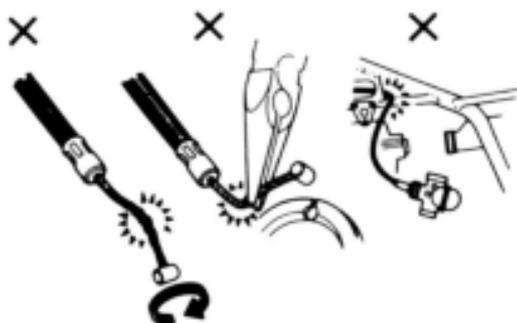
Clean the gaskets and washers of the engine cases before assembling. Remove the scratches on the contact surfaces by polishing evenly with an oilstone.



Do not twist or bend the cables too much. Distorted or damaged cables may cause poor operation.



When assembling the parts of protection caps, insert the caps to the grooves, if any.



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Location of VIN No. and Engine No.

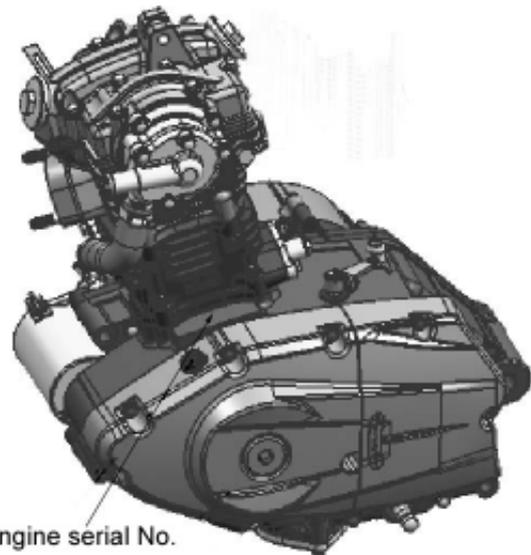
Model: CF150-A

VIN No.: LCEPDKL2XXXXXXX

Engine serial No.:157MJ-2A



VIN No.



Engine serial No.

1 Maintenance information (Chassis)

Main specifications

Item		Specifications	
Model name and type		Leader CF150-A	
Length		2040mm	
Width		750mm	
Height		1070mm	
Wheel base		1280mm	
Engine model		157MJ-2A	
Displacement		144.9ml	
Fuel grade (Octane)		90# or above	
Gross weight		128kg	
Passengers		2 persons(including driver)	
Load capacity		150kg	
Tire specifications		F/W	2.75-18 42P
		R/W	3.25-18 52P
Min. ground clearance		170mm	
Min. turn radius		4.2m	
Steering device	Turn angle	Right	42°
		Left	42°
Brake system	Front	Disc	
	Rear	Drum	
Suspension system	Suspension type	Front wheel	Telescopic fork
		Rear wheel	Swingarm
Frame type		Steel tube and plate	
Item		Standard	
Fuel supply system	Fuel capacity	15L	
	Fuel switch	Flow rate: $\geq 430\text{mL/min}$	
	Carburetor	Type: CPZ27	
	Idle speed	1500 \pm 150r/min	

1

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Maintenance data

Front wheel

Item		Standard value	Service limit
Front wheel	Bending of front wheel shaft	—	0.2mm
	Rim run-out	Longitudal	0.8mm
		Horizontal	0.8mm
	Tire	Remaining groove	—
Air pressure		175kPa (1.75kgf / cm ²)	—

Rear wheel

Item		Standard value	Service limit	
Rear wheel	Rim run-out	Longitudal	0.8mm	
		Horizontal	0.8mm	
	Tire	Remaining groove	—	1.6mm
		Air pressure	Single person: 200kPa (2.0kgf / cm ²)	—
Double person: 225kPa (2.25kgf / cm ²)	—			

Brake system

Item		Standard value	Service limit
Front brake	Free play of front brake	10 – 20mm	—
	Brake disc wear	4mm	3mm
Rear brake	Free play of rear brake	10 – 20mm	—
	Brake drum wear	Standard diameter : 130mm	132mm

Lights, Dashboard, Switchs

Item		Standard value
Fuse	Main	20A
	Auxiliary	10A
Lights bulb and	Headlight (Hi / Lo)	12V-35W/35W
	Position light	12V-5W
	Brake light / Tail light	12V-21W/5W
	Turn light	12V-10W x4
	Dashboard light	12V-2W x2、 12V-3W x2
	Turn indicator light	12V-2W x2
	High-beam indicator light	12V-2W
	Gearshift indicator light	12V-2W x5
	Neutral indicator light	12V-2W
	Water temp. alarm light	12V-2W

1 Maintenance information (Chassis)

Tightening torque

Item	Torque N·m(kgf·m)	Item	Torque N·m(kgf·m)
5mm Bolt、Nut	5 (0.5)	5mm Screw	4 (0.4)
6mm Bolt、Nut	10 (1.0)	6mm Screw	9 (0.9)
8mm Bolt、Nut	22 (2.2)	8mm Screw	25 (2.5)
10mm Bolt、Nut	34 (3.5)	6mmSH Bolt with flange	12 (1.2)
12mm Bolt、Nut	54 (5.5)	6mm Bolt and nut with flange	26 (2.7)
		8mm Bolt and nut with flange	39 (4.0)
		10mm Bolt and nut with flange	

Please apply standard torque to tighten if torque value is not described at below table

Note: 1. Coat engine oil on threads and contact surface of bolts and nuts.

2. Replace new one if self-locking bolt is removed.

Item	Pcs	Diameter (mm)	Tightening torque N·m (kgf·m)	Remarks
Disassembly of engine				
Mounting bolt, engine suspension	8	8	30 (3.1)	
Nut, engine suspension shaft	1	14	100 (10.1)	
Front wheel, front suspension, steering system	1	10	40 (4.1)	
Nut, steering column	4	8	20 (2.1)	
Screw, handlebar	1	12	65 (10.1)	
Nut, front wheel shaft	1	12	65 (10.1)	
Upper Bolt, shock absorber	2	8	20 (2.1)	
Lower bolt, shock absorber	2	10	40 (4.1)	
Rear wheel, rear suspension				
Nut, rear wheel shaft	1	14	100 (10.1)	
Upper Bolt, shock absorber	2	10	40 (4.1)	
Lower bolt, shock absorber	2	10	40 (4.1)	
Retainer nut, rear brake	1	8	20 (2.1)	
Brake system				
Mounting bolt, front brake disc	4	8	30 (3.1)	
Mounting bolt, front brake caliper	2	8	30 (3.1)	
Muffler				
Nut, exhaust pipe	2	8	26 (2.7)	
Bolt, exhaust muffler	1	10	40 (4.1)	

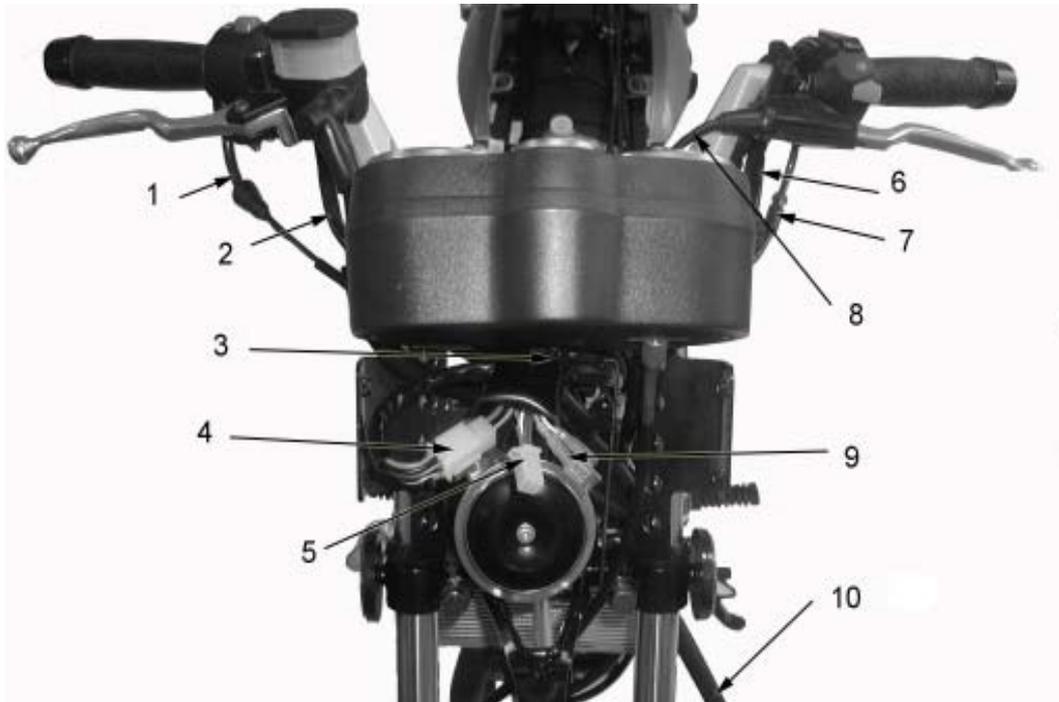
Lubricant grease & sealant

Coating area	Oil or Grease
Race, steering tube Lips of dustproof seal, front wheel Rotation area, rear brake suspension arm shaft Connections of dashboard cable Connections of throttle cable and choke cable Throttle and choke Rotation area, rear left footrest Rotation area, rear right footrest Rotation area, side stand Bushing, rear swing arm Gear, counter Shaft, main stand	Multi-purpose grease
Nut threads and contact surface, rear wheel shaft	Engine oil
Lips of dustproof seal, front shock absorber	Shock absorber oil #5
Inner round surface, handlebar	Engine oil

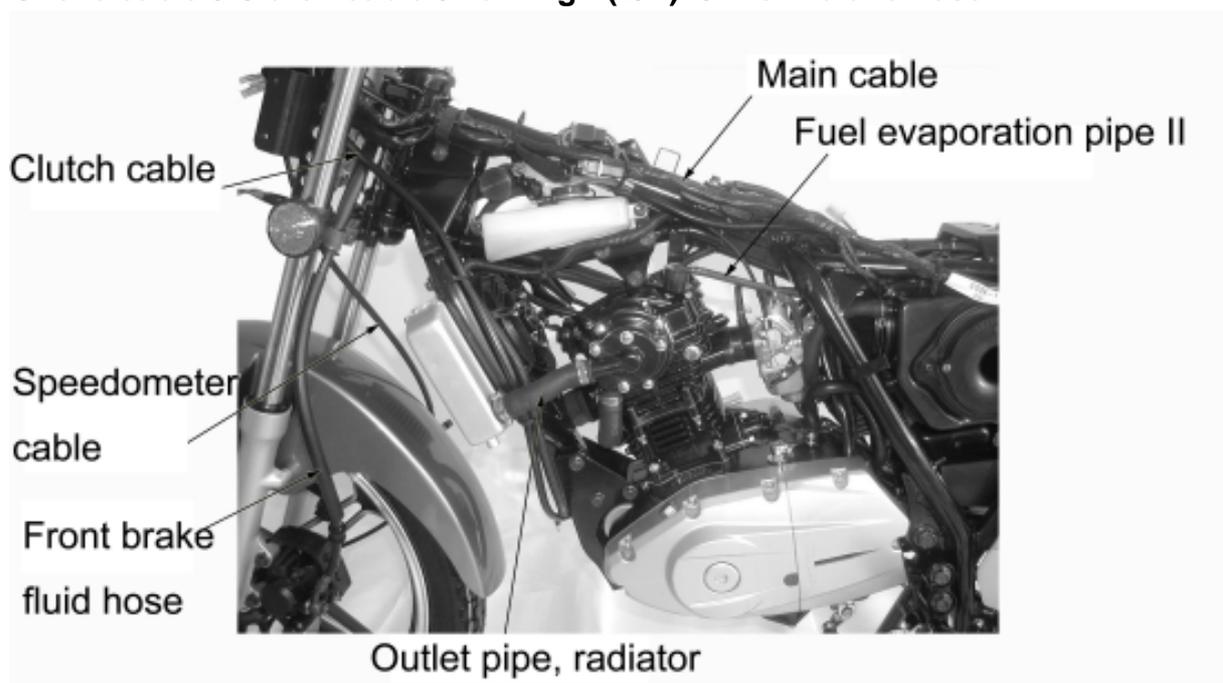
1 Maintenance information (Chassis)

Diagram of cables, pipes and wiring

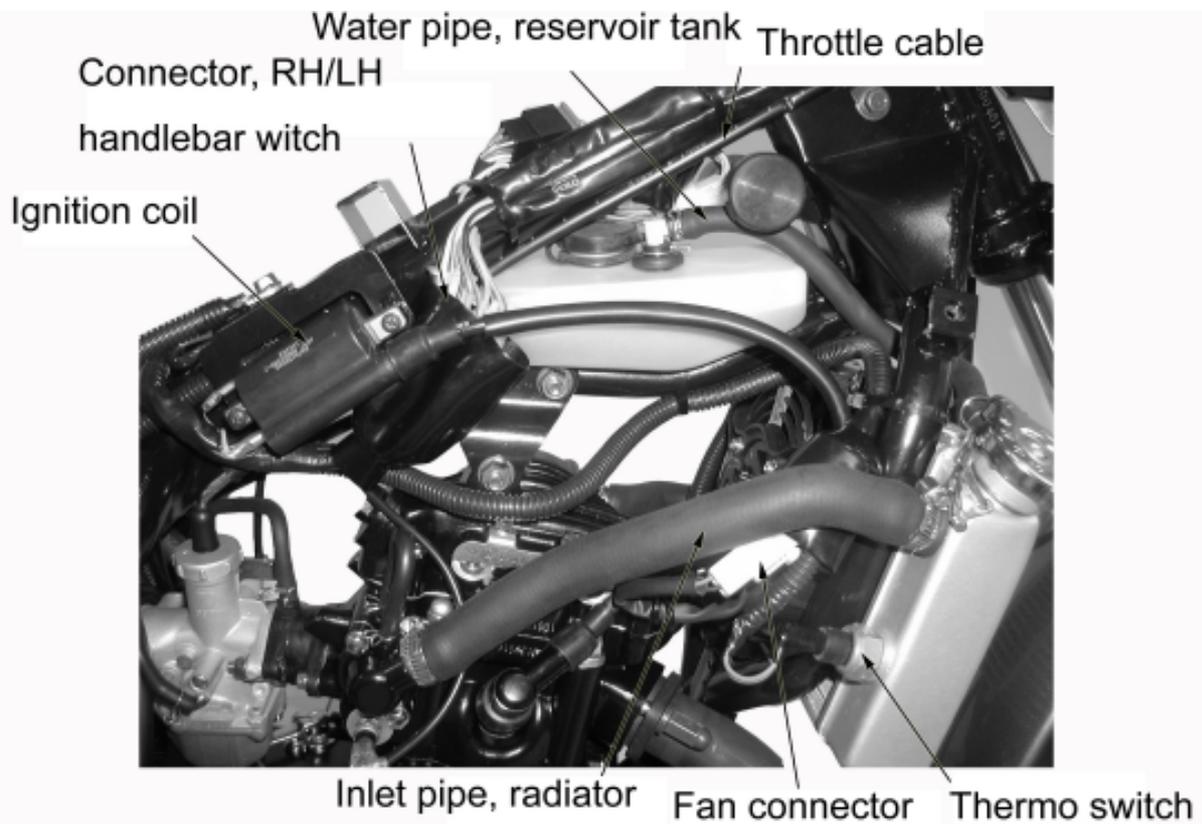
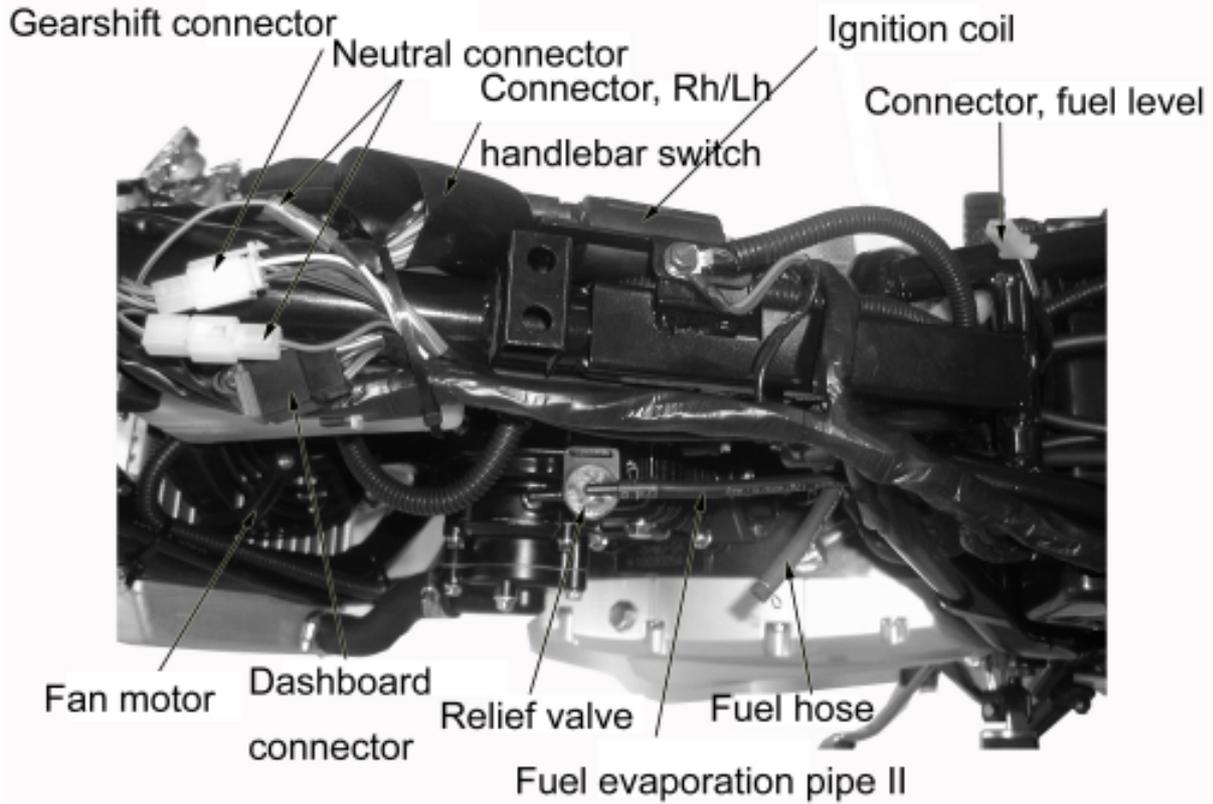
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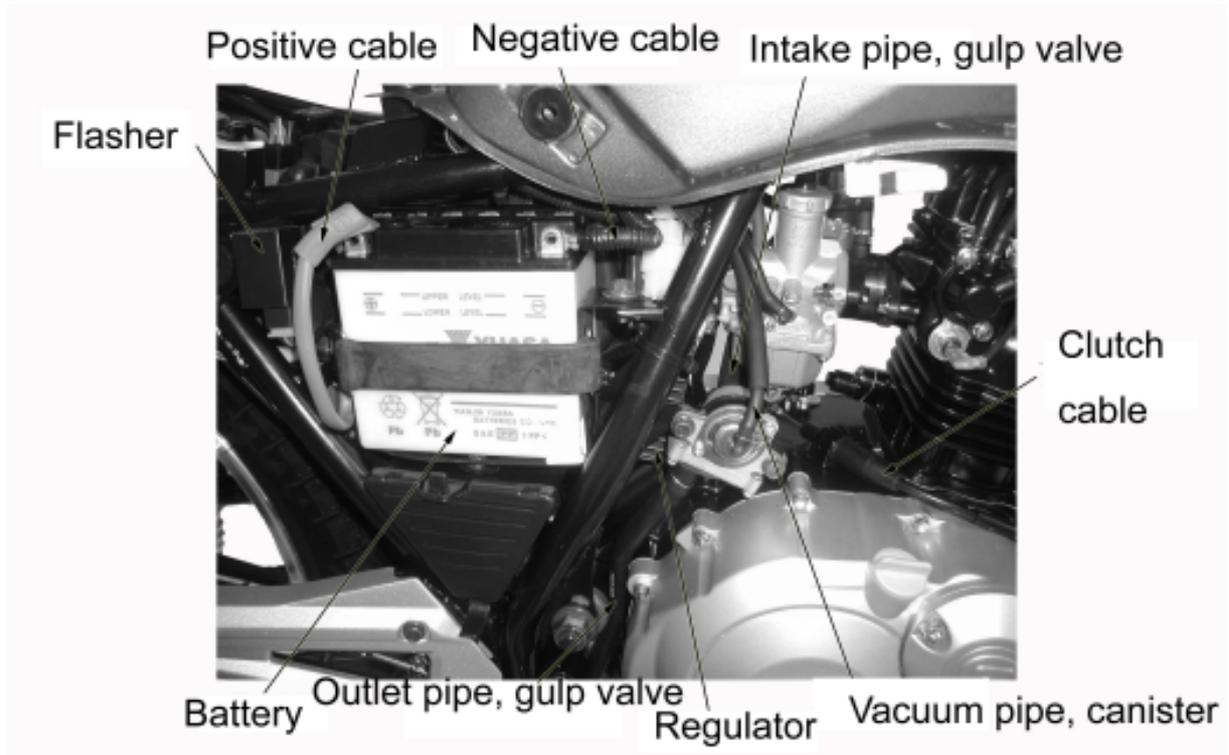
- 1.Throttle cable 2.Harness,handlbar switch(RH) 3.harness dashboard
4.Ignition switch connector 5.Headlight connector 6.Harness,handlbar switch(LH)
7.Choke cable 8.Clutch cable 9.Turn light(L/R)10.Front brake hose



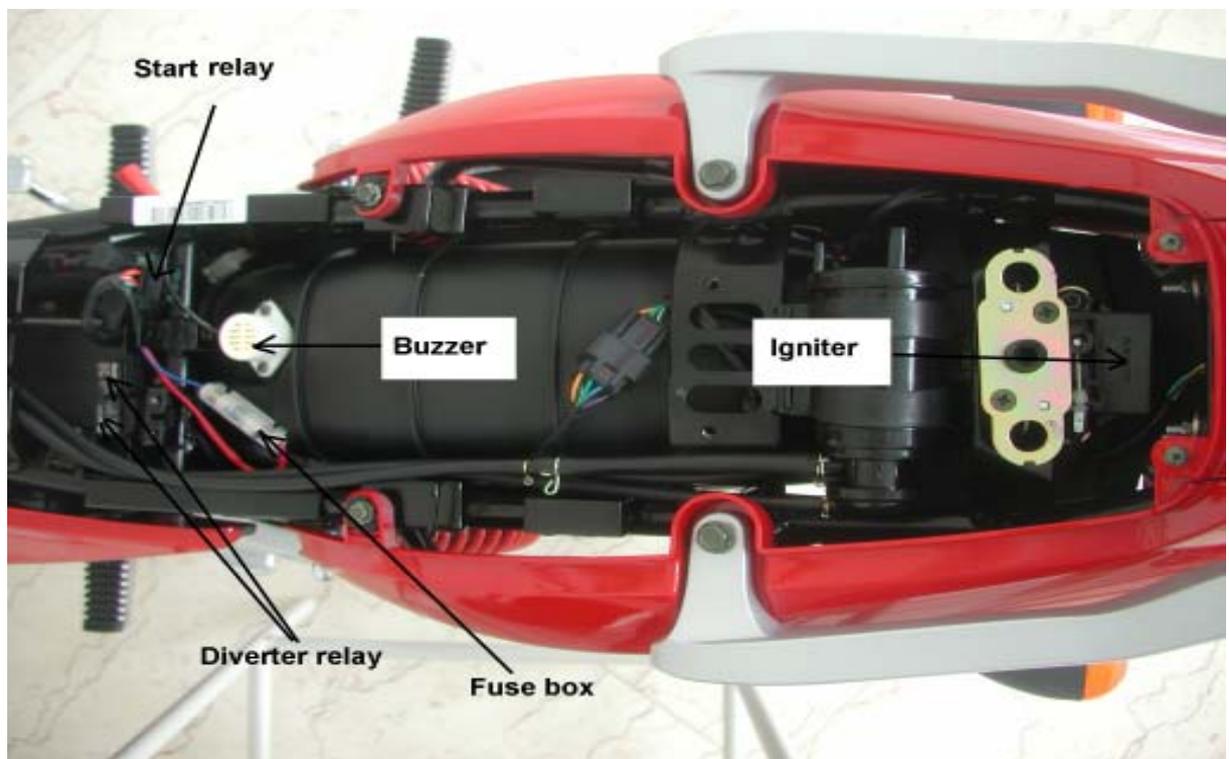
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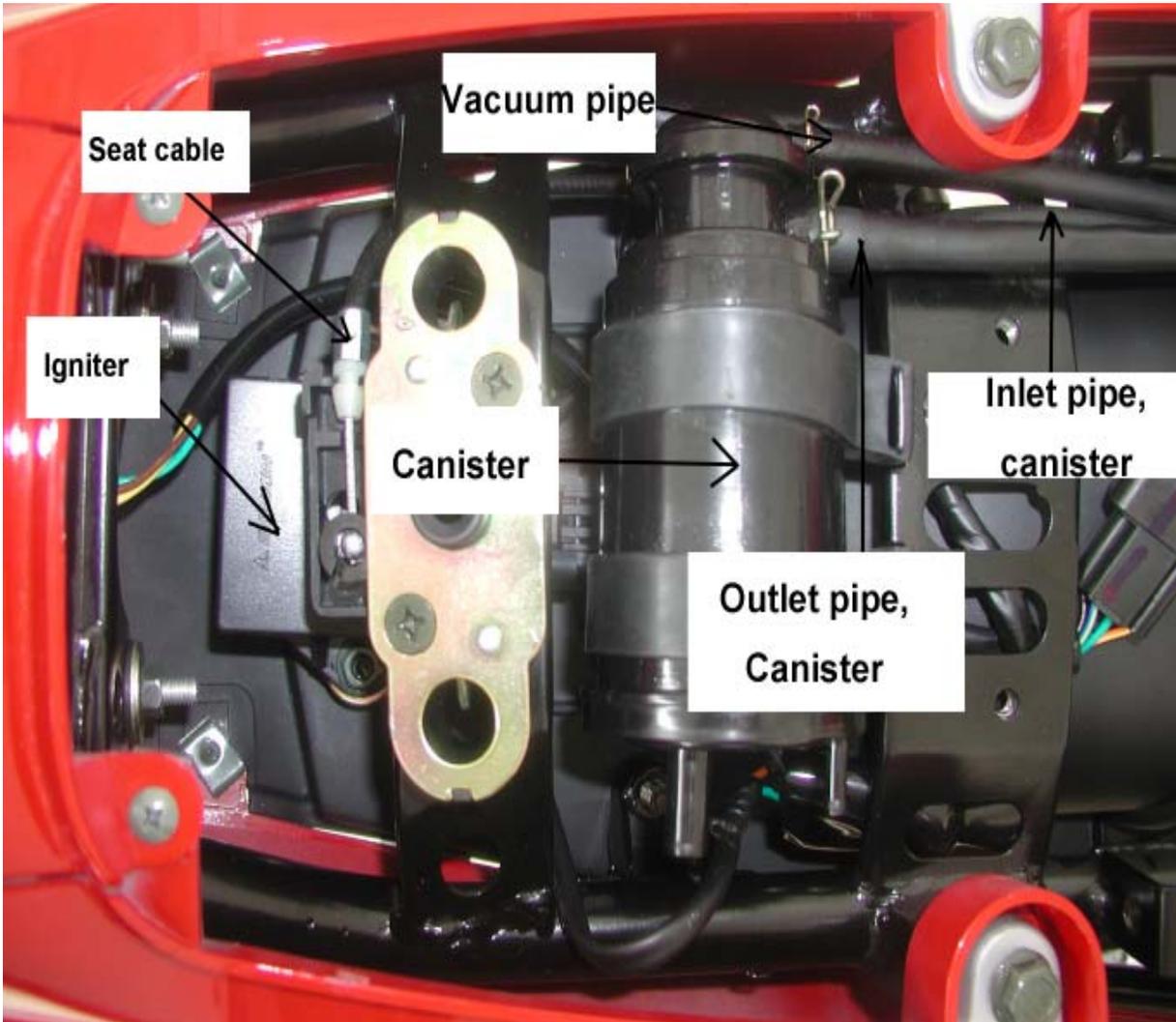
1 Maintenance information (Chassis)



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1 Maintenance information (Engine)

Maintenance information

General precaution information.....	1-16
Introduction of fuel, oil and coolant.....	1-17
Engine break-in.....	1-17
Engine picture & Location of engine serial No.....	1-18
Engine specifications.....	1-19
Overhaul data.....	1-20
Tightening torque data.....	1-24
Tools.....	1-25
Engine coolant,lubricants,grease and sealant.....	1-27

General precautions

Caution: Proper repair and maintenance is very important not only to worker's safety, but also to engine reliability and safety.

1. The personnel shall make them be aware of each other from time to time when operating, for safety confirmation.
2. Exhaust contains toxic ingredients. Do not run the engine in closed places or places with poor ventilation for a long time.
3. No smoking or naked fire is allowed at the operation site, for the gasoline is combustible. Not only flames, but electric sparks shall be avoided. Besides, the vapored gasoline is explosive, please operate it in the place with nice ventilation.
4. Do not use gasoline to wash or clean components or parts
5. When the engine just stops, the temperature of engine, muffler is still high; please do not touch them with bare hands, for avoiding burn. Please wear uniform with long sleeves as well as gloves when maintaining.
6. In case fuel, lubricant system, cooling system or exhaust system has been repaired or maintained, it's necessary to inspect its marking line or any leakage.
7. Place engine oil, coolant or waste components with proper way to protect environment.

Notes:

1. The parts, lubricant and grease must adopt the genuine parts of CFMOTO or recommendation.
2. The parts of each system shall be arranged and stored separately, so that the parts can be assembled to the original places.
3. Proper special tools must be applied to the operations which require special tools
4. Please clean the dirt, dusts on the vehicle before maintenance.
5. The recommended lubricating grease must be applied or injected in the appointed positions.
6. The fasteners such as bolts, nuts and screws shall be pre-fastened, and then be fastened on the diagonal according to regulated fastening torque in the principle of from big to small, from inside to outside.
7. When bolts tightened by required torque with wrench, if there're grease or oil on bolt threads and screws, must clean it before assembly.
8. The parts shall be washed and the cleanser shall be blown away by compressed air prior to determination when they are disassembled and inspected. The working surface shall be lubricated before assembly.
9. Inspect the necessary sites upon disassembly, measure the relevant data, so that the original status can be resumed after assembly.
10. The gasket, O-ring, piston pin retainer and split pin must be renewed after disassembly.

1 Maintenance information (Engine)

Introduction of fuel, engine oil and coolant

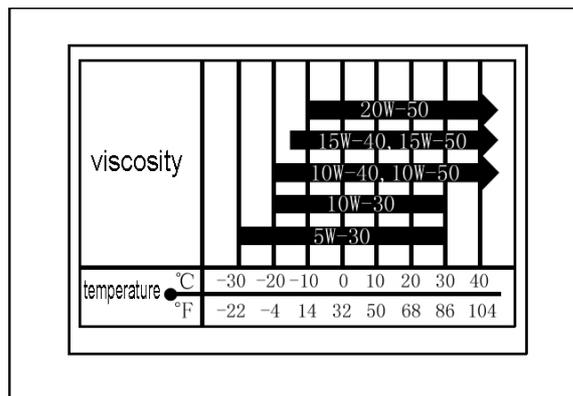
Fuel: Octane 90# or above, unleaded

Engine oil: Oil type (SAE10W-40)

Oil grade :API (SF or SG)

If above-mentioned oil is unavailable, please choose

as right picture shows according to temperature.



Coolant: Coolant is anti-corrosive and anti-rust and freezing point should be 5° lower than lowest surrounding temperature.

Recommended coolant:- 35°C, anti-frozen, anti-corrosive and high-boiling point

Warning !: Engine coolant is toxic, do NOT drink. Keep out of reach of children and store carefully.

Caution: Do not mix other brand coolant to use.

Engine break-in

There're many moving parts inside engine, such as piston, piston ring, cylinder, gears and so on. It's very important to break-in during initial drive. Break-in can make moving components match each other better, contact better and adjust clearance to guarantee engine better performance and reliability.

Recommended break-in period is 1000Km.

Notes for break-in:

- 1、 Turn throttle slowly step by step after start engine. Do not turn faster and slower.
- 2、 Try to drive on a good road, do not drive in up and down road for long time.
- 3、 Keep oil path smooth.
- 4、 Try to avoid sudden acceleration or high RPM with no-load condition.
- 5、 Do regular repair and maintenance during break-in period. Remove it if any troubles occur.
- 6、 After break-in, please change engine oil, adjust electrode of spark plug and valves clearance, inspect oil path, and clean carbon deposit on head of piston and cylinder head if needed. Do a complete engine inspect and maintenance according to service manual before normal driving.

0~500km: Do not run engine at $\geq 50\%$ throttle position; do not change speed frequently; do not run engine at a fixed throttle position; Avoid sudden acceleration; Turn throttle slowly.

500~1000km: Do not run engine at $\geq 75\%$ throttle position for long time.

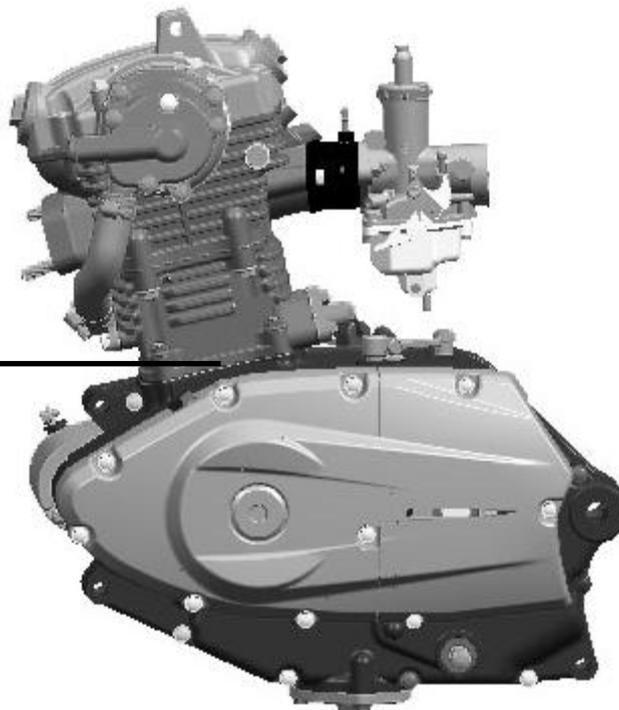
Attention: -Do regular repair and maintenance during break-in period, if any troubles, please remove it immediately.

-After break-in, do a complete maintenance and drive normally.

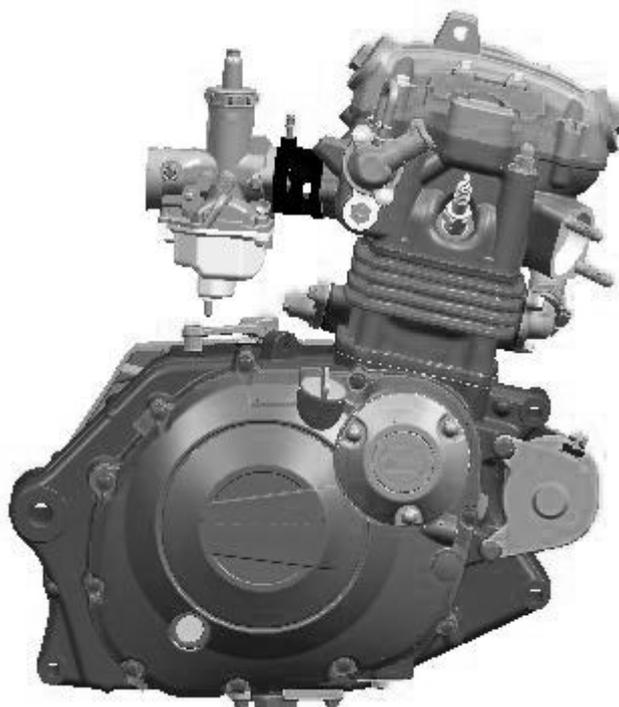
Location of Engine serial Number

Left side view

Location of
engine serial number



Right side view



1 Maintenance information (Engine)

Engine technical specifications

Item No.	Item	Specifications			
1	Engine type	Single cylinder, 4-stroke, water-cooled, 2 valves and SOHC			
2	Bore×Stroke	57mm×56.8mm			
3	Displacement	144.9ml			
4	Compression ratio	9.8: 1			
5	Idle speed	1500±150r/min			
6	Starting mode	Carburetor			
7	Electric system	Ignition type	CDI		
		Spark plug & gap	CR9EP/0.8-0.9mm		
		Flywheel	3-phase AC (rotor and stator)		
8	Combustion system	Type	Triangular		
		Air filter	Sponge element		
		Gasoline	RQ-90		
9	Valves system	Valve type	SOHC/ Chain drive		
10	Lubrication system	Type	Pressure splash		
		Oil pump	Rotor drive		
		Filter element	Full-flow paper element		
		Oil grade	SAE10W – 40/SF		
11	Cooling system	Cooling type	Close-loop recycle cooling		
		Coolant type	-35? anti-freezing and anti-corrosive		
12	Transmission system	Clutch type	Wet and multi-disc manual clutch		
		Transmission type	Constant mesh		
		Number of gears shift	5 gears		
		Type and order of gear shifting	Mechanical reciprocating /1-0-2-3-4-5-4-3-2-0-1		
		Transmission ratio	Primary ratio	3.471	
			Secondary ratio	1 gear	3
				2 gear	1.857
3 gear	1.368				
4 gear	1.143				
5 gear	0.957				
13	Dimension	L×W×H (mm): 386×311×439			
14	Net weight	27.5kg			
15	Drive mode	Chain drive			
16	Rotation direction of output shaft	Anti-clockwise from left side view when goes forward			

1

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Service data

Valves & cylinder head

(mm)

Item	Standard data		Service data	Remarks
Dia. Of valve stem	IN.	27.5	—	
	EX.	24	—	
Valve clearance (cold engine)	IN.	0.06-0.08	—	
	EX.	0.1-0.13	—	
Clearance between valve guide bush and valve stem	IN.	0.01-0.037	—	
	EX.	0.03-0.057	—	
Inner dia. Of valve guide bush	IN. & EX	5-5.012	—	
Outer dia. Of valve stem	IN.	4.975-4.990	—	
	EX.	4.955-4.970	—	
Run-out of valve stem	IN. & EX	0.03	0.05	
Length of valve stem end	IN. & EX	5.3-5.5/4.8-5.0	4.8/4.3	
Thickness of valve head	IN. & EX	0.5/0.8	—	
Seal run-out of valve head	IN. & EX	0.03	—	
Seal width of valve seat	IN. & EX	0.9-1.1	—	
Free length of valve spring	Inner spring	32.54	31	
	Outer spring	34.98	32.5	
Elasticity of valve spring	Inner spring	33.7-44.3N when compressed to 26.78mm	—	
	Outer spring	88.6-104N when compressed to 29.78mm	—	
Height of cam.	IN.	33.67	—	
	EX	33.314	—	
Clearance between outer dia. Of camshaft and camshaft hole	φ22	0.032-0.066	0.150	
Outer dia. Of camshaft	φ22	21.959-21.980	—	
Inner dia. Of camshaft hole	φ22	22.012-22.025	—	
Run-out of camshaft	0.008		—	
Dia. Of rocker arm shaft	IN. & EX	11.977-11.995	—	
Inner dia. Of rocker arm shaft hole	IN. & EX	12-12.018	—	
Flatness of contact surface of cylinder head	0.03		—	
Flatness of contact surface of cylinder head cover	0.03		—	

1 Maintenance information (Engine)

Cylinder/Piston/Piston ring/Crankshaft (mm)

Item	Standard data		Service date	Remarks
Cylinder pressure	1200kPa		—	
Clearance between piston and cylinder	0.02-0.04		—	
Dia. Of piston skirt	56.97-56.99 7mm away from piston skirt end where measured		—	
Inner dia. Of cylinder	57-57.019		—	
Flatness of cylinder contact surface	0.02		—	
Free open cut of piston ring	1-ring	R ≈7	—	
	2-ring	R ≈7	—	
Close clearance of piston ring	1-ring	0.15-0.25	—	
	2-ring	0.15-0.25	—	
Clearance between piston ring and piston groove	1-ring	0.015-0.05	—	
	2-ring	0.015-0.05	—	
Thickness of piston ring	1-ring	0.97-0.99	—	
	2-ring	0.97-0.99	—	
Width of piston groove	1-ring	1.005-1.02	—	
	2-ring	1.005-1.02	—	
	Oil ring	1.86-1.96	—	
Inner dia. Of piston pin hole	15.002-15.008		—	
Outer dia. Of piston pin	14.994-15.000		—	
Inner dia. Of connecting rod small end	15.006-15.014		—	
Clearance of connecting rod big end	0.15-0.45		—	
Thickness of connecting rod big end	15.95-16.00		—	
Run-out of crankshaft	0.04		—	

Lubricating system

Item	Standard data		Service data	Remarks
Clearance between oil pump inner rotor and outer rotor	0.08mm-0.15mm		—	
Clearance between oil pump outer rotor and hole of oil pump body	0.15mm-0.193mm		—	
Oil pressure	10-30kPa when at 3000r/min		—	
Oil type	SAE10W-40, API Sf or SG		—	
Oil capacity	When change oil	1200ml	—	
	When replace oil filter	1250ml	—	
	When engine overhaul	1450ml	—	

1

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Clutch+Transmission

(mm)

Item	Standard value	Service limit	Remarks
Drive disc of clutch	2.9-3.1	2.8	
Number of drive disc	5		
Driven disc of clutch	1.5-1.6	—	
Distortion of driven disc		0.10	
Number of driven disc	4		
Free length of clutch spring	30.4-31.6	29.5	
Numer of spring	5		
Adjustment of clutch screw	Finish rotation of screw and return circle of 1/4-1/2		
Thickness of gear slot	No. 1 and No. 2 gear	5-5.15	—
	No. 3 gear	5.5-5.65	—
Thickness of gear shifter fork	No. 1 and No. 2 gear	4.8-4.9	—
	No. 3 gear	5.3-5.4	—

Cooling system

(mm)

Item	Standard value	Limit value	Remarks
Temperature of thermostat opening	68-74℃	—	
Travel of thermostat valve	When 95℃, 3.5-4.5mm	—	
Pressure of radiator cover opening	108kPa	—	
Alarming switch of water temperature	Type	0030-022600	
	Temperature when Switch "ON"	116℃~120℃	
	Temperature when Switch "OFF"	116℃~112℃	
	Resistance (when 25℃)	≥ 1MΩ	
Coolant type	-30℃ anti-freezing and anti-corrosive and high-boiling point	—	

1 Maintenance information (Engine)

Air intake system

Item	Standard data	Remarks
Carburetor type	CPZ27	
Choke size (mm)	ø24	
Idle speed (r/min)	1500 ±150	

1

Electric system

Item	Standard data	Remarks
Spark plug	Type	CR9EP
	Gap	0.8-0.9
Characteristic of spark plug	>8mm, 1 Mpa	
Resistance of ignition coil	Primary	4±0.2 Ω
	Secondary	15±10 kΩ
Resistance of flywheel coil	Pick-up	110±11 Ω
Voltage with no-load of flywheel (cold engine)	>50V(AC), 5000 r/min	
Max. power of flywheel	140W, 6000 r/min	
Voltage of regulator	13.5V-15.0V , 5000 r/min	
Peak voltage of primary ignition coil	12V	
Peak voltage of pick-up coil	>1.5V	
Resistance of starter relay	3Ω-5Ω	

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157MJ-2A Engine tightening torque table

Item	Qty	Dia. Of thread (mm)	Torque (N.m)	Remarks
Bolt, crankcase	12	M6	10~12	
Bolt, oil pump	3	M6	10~12	
Bolt plug, oil view hole	1	M12×1.25	18~25	
Bolt cover, front left side cover	1	M26×1.5	28~32	
Bolt, tensioner plate	1	M8	18~25	
Bolt, overriding clutch	3	M8	28~32	Apply locking glues
Nut, flywheel	1	M10	65~75	Apply locking glues
Nut, crankshaft	1	M16×1.5(L)	85~95	
Nut, clutch	1	M16	55~65	Apply locking glues
Bolt, flywheel stator	3	M6	16~20	Apply locking glues
Bolt, pick-up	2	M5	10~12	
Drain bolt, crankcase	1	M14×1.25	25~30	
Retainer bolt, crankcase	1	M14×1.25	25~30	
Bolt, oil pass of right side cover	1	M14×1.25	25~30	
Bolt, water pump	1	M6	10~12	
Stud L (connecting crankcase)	2	YM8	7~11	
Stud R (connecting crankcase)	2	YM8	7~11	
Nut, cylinder head	4	M8	28~32	
Switch, water temperature	1	R1/8	8~10	Apply locking glues
Spark plug	1		17~19	
Stud, exhaust	2	M8	25~30	
Bolt, timing sprocket	2	M6-10.9	15~18	Apply locking glues
Adjustable Nut, valve clearance	2	M6×0.75	10~12	
Other bolts, screws and nuts		M5	6~8	
		M6	10~12	
		M8	18~25	

1 Maintenance information (Engine)

157MJ-2A Engine repair tools

Measuring gauges				
Item	Tool Name	Specification	Purposes	Remarks
1	Vernier caliper	0-150mm	Measure length and width.	
2	Micrometer	0-25mm	Measure outer diameter of rocker shaft, valve stem and camshaft.	
3	Dial indicator	25-50mm	Measure Max. lift travel of camshaft	
4	Dial indicator	75-100mm	Measure size of piston skirt	
5	Inside caliper		Measure cylinder inner diameter	
6	Internal quick caliper	10-34mm	Measure inner diameter of rocker, piston pin hole and small end hole of connecting rod	
7	Dial indicator	1/100	Measure run-out	
8	Knife-edge Steel Ruler		Measure surface flatness	
9	Feeler gauge		Measure surface flatness and adjust valve clearance	
10	Plastigauge		Measure clearance	
11	Spring balance		Measure spring elasticity	
12	Tachometer		Measure engine RPM	
13	Cylinder pressure gauge	0-2MPa	Measure cylinder pressure	
14	Oil pressure gauge		Measure oil pressure	
15	Barometer		Measure open pressure of radiator cap	
16	Ohmmeter		Measure resistance and voltage	
17	Amperemeter		Measure current/switch "ON" or "OFF"	
18	Thermometer		Measure coolant temperature	
19	Ignition timing light		Check ignition timing	
20	Torque measuring wrench	One set	Measure tightening torque	
Common and auxiliary tools				
22	Alcohol burner		Heating	
23	Magnetic stand		Install dial indicator	
24	Flat plate		Help for measurement	
25	V-block		Measure vibration	
26	Tweezers		Install valve clips	
27	Circlip pliers		Remove and install circlips	
28	Nipper pliers		Remove and install circlips	
29	Shock starter		Remove cross bolts	
30	Straight screwdriver			
31	Cross screwdriver		Remove cross screws	
32	Wrench sleeves	One set	Remove bolts and nuts	
33	Internal hexagonal wrench			

