

500CC Utility Vehicle User Manual

Vision 2007-1.0



UTVs Factory

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I、Notes

1. Please read this operating instruction carefully before using this vehicle, and drive, check and repair it by the requirement in this manual to keep vehicle at good technical status and prolong its using lifetime.

2. Initial running for 1000km of vehicle is period. In this period, it is necessary to accord with the regulation of period(see the chapter—for new vehicle). After period expires, it is necessary to make vehicle maintenance by regulation.

3. Quality warrant term of vehicle: in normal using situation, it is three months or 3000km mileage after buying this vehicle, if one of these two exceeds regulated value, quality warrant term expires. In quality warrant term, for those malfunctions caused by design, manufacture, assembly quality which influence your usage, our company will repair them freely.

4. Damaged parts in following items could not be repaired freely, they should be paid, please forgive:

(1) Damages caused by wrong usage, maintenance and storage which do not accord with this operating instruction.

(2) Damages caused by force majeure, chemical substance, bad substance or other natural disasters.

(3) Consumed parts in normal usage, such as: bulbs, fuse(pipe), air filter core, engine oil filter core, gasoline filter core, brake friction sheet(drum), spark plug, tyre, transmission belt, appliqué, rubber parts, standard fastening parts, lubricating oil(grease), brake liquid and so on.

(4) Damages caused by improper assembly or repair, such as self-dismantling or changing this vehicle without approval of our company and chartered sale(repair) store, or sending chartered sale(repair) store for repair which is not appointed by our company.

(5) Vehicles which could not provide warrant card or vehicle purchase credential.

(6) Malfunctions caused by using other parts or accessories which are not provided by our company.

(7) Various overhead expenses caused by repairing vehicle(such as telephone fee, vehicle fare, freightage, work missing fee, repair fee out of repair store appointed by our company).

(8) Abnormal abrasions and damages caused by wrong using gasoline, lubricating oil and brake liquid.

(9) Feeling phenomenon which could not influence mechanical performance, such

as: noise, vibration, heat and so on.

(10) Damages caused by that you do not check and maintain vehicle periodically by our requirements.

II、 Technical parameters

(I)、 Common technical data

1、 Mass parameters(kg)

Mass of whole equipments(not including driver): 590Kg

Front shaft: 260Kg

Rear shaft : 330Kg

2、 Dimension parameter(mm)

Total length×total width×total height:2600×1280×1960

Minimal clearance apart from ground: 210

Wheelbase: 1730

Tread: front wheel: 1036 rear wheel: 1040

Approach angle(°): 47

Removed angle(°): 82

(II)、 Using data

1、 High running speed(km/h): H gear : 70

2、 Small steering semi-diameter(m): 4.65

3、 Brake performance (No-load brake distance m).

When $V_0=30\text{km/h}$: 4.

When $V_0=40\text{km/h}$: 5.5

When $V_0=50\text{km/h}$: 9

4、 0—50Km/h accelerating time (H): 7.9"

0—50Km/h accelerating time (L): 8.4"

5、 Oil consumption for 100 kilometers (L): 10

6、 Exhaust: Reach Euro II exhaust standard.

7、 Loading capacity: 300Kg

(III)、 Engine

Type: CF188

Form: single cylinder, four-stroke, water cooling, 4 valves, top camshaft, single equal shaft, Carburetor type.

Cylinder diameter(mm): 87.5

Travel(mm): 82

Engine displacement: 493
Compressed ratio: 10.2: 1
Maximal power (kw/r/min): 24/6500 (EEC model less than 15kw)
Maximal torque(N·m/r/min): 38.8/5500 (EEC model: 30N.M/4500r/min)
Lowest fuel consuming rate (g/Kw·h): 340
Idling speed (r/min): 1300±100%
Start type: electronic start
Ignition type: non-touch CDI DC start
Plug type: DPR7EA-9(NGK)
Magneto type: ever-mag DC motor, ex-rotor flywheel type.
Lubricating oil category: SAE 15W—40/SF
Engraved position of factory number: Upper surface on rear part of left crankcase
Ignition ahead angle(°/r/min): 10/1500
32/1500
Lubricating type: Pressure and splash lubricating type
Engine oil pump type: TOTOR type
Engine oil filter type: whole filtering with paper element
Carburetor style: vacuum film
Air filter: Sponge element filtering
Fuel type: higher class than RQ-93
Transmission: V-belt with teeth on, auto stepless gear change, plus gear change cam with change gear transmission.
Gear change type: gear lever with hand
Clutch type: wet, hoof centrifugal type
Primary speed change ratio (stepless speed change): 0.703—2.88
Speed change ratio: Total speed reduce ratio:
 H Gear: 3.514 2.47—10.12
 L Gear: 5.857 4.12—16.87
 R Gear: 3.828 2.69—11.02
Cooling style: Closed cooling fluid circulating.
Cooling fluid type: antifreeze with prevent rust
Out dimension: 610 x 568 x 519
Net weight: 70kg
Output type: front and rear shaft output
Shaft running direction: clockwise (from back of engine).

(IV)、Chassis

1. Clutch and transmission: wet hoof auto-centrifugal clutch. V belt, auto-stepless transmission plus gear change cam transmission.

2. Main Driver:

Main driver: Tapered arc gear transmission, transmission rate: 33/9

3. Driving type: 4×4 front and rear wheels drive; Rear wheel is the normal drive. Front wheel can be took off the driving. They are all the shaft transmission.

4. Suspension:

Front suspension: swing arm type independent suspension.

Rear suspension: co-length double swing arm independent suspension, two shock absorbers on each side of rear wheel.

5. Front Wheel alignment parameter:

Front wheel extroversion angle: $0^{\circ} \pm 1^{\circ}$

Main pin inner obliquity: $11^{\circ}50' \pm 3^{\circ}$

Main pin back obliquity: $4^{\circ} \pm 1^{\circ}$

Front toe-in: -3—3mm

6. Tyre:

Front wheel: Front wheel type 25×8.00—12 Air inflating pressure: 250Kpa

Rear wheel: Tyre type 25×10.00—12 Air inflating pressure: 300Kpa

7. Steering system:

Adopt gear rack type redirector, total circle number of steering plate: 3.75;
total swing angle of steering wheel: 75° .

Maximum turning left: 37.5° .

Maximum turning right: 37.5° .

8. Brake:

Brakes adopt front and rear placement dual-pipeline hydraulic pressure brake system, front and rear wheels adopt disk type brake. And parking brake adopts mechanical transmission disk to work on the flange of the main axle of rear wheels.

9. Loading Dump Bed:

Dump Bed adopts slope backward by electric powered pump. Dumping angle is 49° .

10. Winch:

Electric powered winch. Traction is 2000 pounds.

(V)、Electric apparatuses

1. Pipeline system: pipeline system adopts single-line system, Minus ground strap, pipeline voltage is 12V。

2. Generator: out-rotor flywheel AC magneto, rated power is 325W。

3. Battery: voltage is 12V, capacity is 36A·h。

4. Starting engine type: 12V forever magnetic DC electric engine.

III、 Placement drawing for whole vehicle





1. Top roof. 2. Safe belt. 3. Frame. 4. Steering wheel. 5. Rear mirror.
 6. Engine hood. 7. Indicator. 8. Bumper. 9. Headlight. 10. Winch
 11. Wheel. 12. Seat. 13. Side cover. 14. Rear mudguard. 15. Dump bed
 16. Reinforce pole. 17. Head rest





Engine

- 1、Carburetor 2、Start 3、Water temperature sensor 4 Hand-pull starting handle 5、 Left cover
- 6、 Rear shaft flange 7、 Front shaft flange 8、 Oil filter 9、 water outlet (temperature adjuster)
- 10、 CVT case 11、 CVT inlet 12 、 CVT inlet 13、 Plug



VIN number location (on frame of right rear wheel)



Rear suspension



Oil Intake



Dipstick

Warning: Engine oil quantity should be between upper and lower position, over more or less oil would burn out or damage engine..



Oil drain plug (bottom of engine)

Warning: Oil drain plugs of engine and gear box should be tightened, otherwise engine would burned for oil leakage. Should use the correct gear box oil and quantity. More or less oil can cause the gear box burned out..



Fuel tank intake (in left side)



Coolant, Brake liquids intakes

Warning: it is very dangerous to unscrew radiator or coolant cap when engine is hot, for steam and water will spurt by the pressure to hurt people at this time. It is necessary to unscrew radiator or coolant cap after engine becomes cool.

Warning: Brake liquid should be filled by regulated trademark, it could not mix different brake liquids from different factories and trademarks, and it is necessary to keep enough brake liquid height; otherwise it will incur brake disables, even heavy result.



Rear main speed reducer lube-check
lube-check



Front main speed reducer

Warning: Fill up the stipulated lube in main reducer.
The lube level should be a little bit lower than intake , more will cause leakage and less will cause the main reducer burnt.

IV、 Check before drive

1. Check the leakages on engine, such as oil, cooling fluid, fuel, lube and so on should have no leakage.
2. Check the levels of engine oil, brake liquid and cooling liquid, if necessary, add more.
3. Check the air pressure in tyre.
4. Check the function of safety belt.
5. Check whether steering transmission organization has been loosened.

6. Check engine supporting frame, bolts, transmission system and running system.
7. When starting engine, listen and check whether there is any abnormal noise, and observe whether each meter is normal.
8. Check whether steering is flexible and reliable; check brake free travel length and its reliability (including parking brake).
9. Check whether lighting system (steering light, brake light, warning light, small light, dipped headlight, high beam and so on) is complete and workable.
10. Check whether vehicle dump box works well. And winch works normally.
11. Check fuel quantity.

Warning:

- (1) Driver must accord with the legal driving age and requirement.
- (2) Fasten the safety belt before driving.
- (3) Driver should buy person safety insurance.
- (4) Driver should limit the speed and try his best to keep vehicle run at economical speed (35—45km/h). Overspeed driving will cause accident.
- (5) Driver should control speed strictly by the size of swerve when turn around (the highest speed could not exceed 20Km/h).
- (6) Do not load the goods over the height of the box. The loadings must be fastened if it is higher than box, in order to avoid being hurt some one by the goods rushing forward when driving or stopping.
- (7) The antifreeze in radiator is only suitable in using in temperature bellow -15 degree centigrade. Please change the correct antifreeze when below -15°C.
- (8) The sudden brake is not allowed when the speed is over 50km/h (except the emergency situation). Otherwise it might cause the vehicle damaged, or sideslip or turn over.
- (9) The two wheel drive is suggested to be used on normal road. The four wheel drive can cause the over wearing on tyre and parts.
- (10) The stepless automatic clutch used on engine. Gear change is not necessary in the most time. Make sure the vehicle must be stopped when change reverse gear.

V、 Driving operation

1. Safety driving notes for farmer vehicle

To guarantee your driving safe, please accord with following items:

—Tie safety belt—

Safety belt could avoid you are thrown out of vehicle when happening sudden swerve and accidents, and guarantee running safe effectively.

—Inspection before driving —

Careful inspection before driving is necessary to guarantee running safe and enjoy driving pleasure.

—Be familiar with your farmer vehicle—

Your driving technique and mechanical common sense are base of safety driving. We advise you practice driving on open location before driving on road.

—Accord with highway code —

According with highway code will guarantee your running safe furthest.

—It is necessary to keep aware when driving in rain—

Rain weather will drop the brake performance and operation performance of your farmer vehicle, and bring bad influence for your running safe, so it is necessary to note.

2. Operation

① Key

Keys can be used on ignition and fuel box. There are two keys, one of them should be preserved carefully for spare.

② Ignition switch

Ignition switch has four positions:



“OFF” (close) position: All circuits are turnoff except emergency light, electric fan and cigarette lighter.

“ON” (open) position: All circuits except engine are connected, and they could start at any moment or make engine keep running status .

“START” (start) position: Connect engine and ignition circuit, and start engine. Handle returns to “ON” position automatically after engine starts.

Note: You only can start the engine when gear is in “N” position. The engine can not be started up when gear is in “H”, “L” and “R” positions.

“LOCK” (lock) position: The steering wheel is locked after pulling out the key (key could be pulled out only at this position).

Warning: Ignition key can not be turned to “LOCK” position and pull out before vehicle is stopped stably. This could causes the vehicle lost control when the steering wheel is locked.

③ Meter






- 1、Thermometer 2.3.、Indicators 4、Fuel 5、High beam 6、kilometer mark
 7、Speed indicator 8、2 and 4 wheel drive

- (a)、Speedometer 7: Display the speed of vehicle.
- (b)、Kilometer mark 6 : Display the accumulated driving distance.
- (c)、High-beam 5: Light when high-beam is on.
- (d)、Indicators 2, 3 : Blink when the relative direction indicators light. Blink in same times when warning light is on.
- (e)、Fuel meter 4 : Display the quantity of fuel.
- (f)、Gear display: The corresponding indicating (L, H, N, R, P) will be displayed when the gear changed.
- (g)、Thermometer 1: Display the temperature of engine coolant..
- (h) . 2WD/4WD transfer and differential lock display 8: When single axle indicator lights, it is only the rear axle is in driving. When two axles indicator lights, the both front and rear axles are in driving. When display “X” in the middle, it means the both front and rear axles are in driving. Meanwhile the front differential will be locked up.

④ Main switch of lights



- (a)、 When ignition switch is at “ON” position and lamplight main switch is turned to “” position, front and rear small light are lightened.
- (b)、 When ignition switch is at “ON” position and lamplight main switch is turned to “” position, front headlight and rear small light are lightened.
- (c)、 When ignition switch is at “ON” position and lamplight main switch is turned to “” position, press down lamplight main switch handle, headlight changes to far light from close light; raise lamplight main switch handle, headlight changes to close light from far light;
- (d)、 When ignition switch is at “ON” position and lamplight main switch is at “OFF” position, raise lamplight main switch handle(feeling elastic), high beam illumines, and high beam extinguishes after releasing the handle.



- (e)、 When ignition switch is at “ON” position, press the red button switch at the front of combination switch cover, warning light will flash; and pull out button switch, warning light will extinguish.



- (f)、 When ignition switch is at “ON” position, turn lamplight main switch handle anticlockwise, left steering light will flash; and turn lamplight main switch handle clockwise, right steering light will flash.
- (g)、 When ignition switch is at “ON” position, step down brake pedal, brake light will illumine.

⑤ Horn button

Press down horn button on steering wheel (anyone of these two), loudspeaker will hoot.



⑥ Accelerator pedal and brake pedal

At the front of driver's right foot, the left one is brake pedal, right one is accelerator. farmer vehicle will start going or accelerating by stepping down the accelerating pedal when gear pole is in “L” , “H” or “R” position.



⑦ Parking brake handle

When pulling up parking brake handle, rear wheels will produce brake force to prevent vehicle from sliding when vehicle is parked.



Warning: After parking the vehicle, pull up the hand brake bar. Push down the handle before start moving. The hand brake can not be used to stop vehicle when moving(except emergency).

⑧ Dump Bed

When need to dump, firstly, open the rear door of cargo box, then press main switch to "O" position, and press down "UP" of "TRAILER" switch, at this time, cargo box will be up backwards; And stop after releasing the press; while press down "DOWN" on "TRAILER" switch, the cargo box will be back. And stop after when release the press.

Warning: Set the main switch back to "OFF" when finish dumping and winching in void being power wasting.

When cargo box reaches the top or bottom, please stop pushing the button at once in case to damage the motor and switch.



⑨ 4×2、4×4WD and differential locking exchangeable

When select “4X2”, it is rear wheel drive mode (this is the normal driving mode). When select “4X4”, the front and rear wheels will be drove at same times(normally, this drive mode will be used on muddy and rugged road. When select “4X4 lock” mode, it is 4 wheel drive mode and also the front differential locked (this drive mode only used on very rough road or when the car got stuck).

Warning: 1. Engine is matched with stepless automatic clutch. There is no any assistant unit in gear changing. So the vehicle must be stopped when change 2WD from 4WD.

2. The corresponding gear position will be displayed on meter when change gears. But sometimes this is not the meaning that the gear is in its position. You just need step on the accelerator pedal lightly, and then the gear will be in its position. (Please note that better do not step on pedal hard before the gear is in its position in case to damage the transmission gear) .

Note: It will increase the wear and tear when use four wheel drive. Please use two wheel drive on the normal road. In case to prolong the usage of the vehicle, four wheel drive could only be used on muddy, slippery, snow or up-slope road.

⑩ Windshield and wiper (optional)

Clockwise turning the switch is the “Low” and “High” wiping speed. Anti-clockwise turning to the bottom is “Off”.



VI、Running-in of new vehicle

Cooperation between the surfaces of each part of new vehicle is locating adjusting and running-in phase, for surface friction of each part is big, the result of running-in quality influences greatly using lifetime of farmer vehicle. In running-in period, please implement strictly the regulation about speed limit, load limit and periodic maintenance to reduce

1. Highest speed:

Running mileage	Highest limit speed
Initial 800Km	40Km/h
800~1600Km	50Km/h
Exceed 1600Km	60Km/h

2. Accelerate and decelerate

It is necessary to avoid sudden and frequent acceleration and deceleration and keep running in even speed in running-in period.

3. Heating engine before running

In running-in period, it is necessary to run at idling speed for 3-5 minutes after starting engine to pre-heat engine, then start running after lubricating oil flows on each friction surface.

4. Note engine cooling

In running-in period, it is necessary to note water temperature in engine to avoid running in low temperature for long time and in high temperature without water, this will strengthen abrasion and drag cylinder.

5. Check the loosening situation on each linking part of all bolts usually

For fastening bolts on each part of new vehicle are easy to loosen, it is necessary to note the fixed situation of each bolt, especially the bolts of transmission organization and fixed equipment.

6. First maintenance of vehicle

In running-in period, after running for 1000km, it is necessary to complete first maintenance, maintenance details could refer to “Maintenance and repair”.

Warning: First maintenance is necessary to implement best performance of farmer vehicle, prolong using lifetime and insure safe.

VII、Maintenance and repair

1、1. First maintenance item table:

Sequence number	Category	Checking item	Adjusting content
1	Engine	Change engine oil and oil filter. Check coolant.	Adjust idling speed : 1300±100r/m listen whether there is any abnormal noise in engine; clean air filter core.
2	Brake	Front and rear wheel arrester; parking arrester; brake performance	Brake liquid height; Brake pedal free travel : 15 ~ 20mm; Travel of parking arrester is 2~3 tooth.
3	Steering organization	Operate flexibly without any block phenomenon	Fastening bolts on redirector and steering transmission organization which could influence safety performance
4	Transmission box	Stepless shift performance and belt abrasion	
5	Gear Box	Change gear lube.	
6	Front/Rear main driver	Change gear lube	

7	Tyre	Tyre pressure and thread depth	Check front tie-in : -3 ~ 3mm
8	Transmission organization	Whether the bolts, flange nuts on transmission shaft and the bolts on main driver are tightened.	
9	Lamplight	Illumination and signal	Every kind of lamplights, signal switches and buttons, etc
10	Storage cell	Liquid height in storage cell(except the maintenance-free battery)	Liquid surface should be between upper and lower limit marked, it is necessary to note only distilled water could be filled in storage cell
11	Meter	Display is normal and correct	
12	Dump bed and self-saving winch	Work normally	

2、Routine maintenance item table (checked by consumer)

Sequence number	Category	Checking item	Adjusting content
1	Engine	Engine oil level; leakage situation, cooling water level	Oil level is between upper and lower limit; engine oil, cooling liquid, fuel and other mediums do not have any leakage; clean filter periodically
2	Steering organization	Operate flexibly without any block phenomenon	Each linking drag pole, ball head and locking nut are tightened.

3	Brake	Brake liquid height; brake pedal travel and free travel; brake performance	The thickness of pad must not be less than 4.5mm.
4	Gear box	Gear oil level, any noise	Oil level must in the limitation.
5	F/R main driver	Gear oil level, any noise	Oil level should be to the intake.
6	Tyre	Air pressure, thread, crack and wound	Tyre air pressure: front wheel 0.20Mpa。 rear wheel 0.25Mpa Thread depth : no less than 1.6mm
7	Lamplight	Illumination, signal and loudspeaker	Every kind of lamplights, signal switches and buttons, etc
8	Battery	Liquid height in storage cell(except the maintenance-free battery)	Liquid surface should be between upper and lower limit marked, it is necessary to note only distilled water could be filled in storage cell
9	Meter	Display is normal and correct	
10	Dump bed and self-saving winch	Work normally	
11	Transmission organization	Each bolt of transmission organization has not been loosened.	

Periodic maintenance item table for UTV

Checking term Checking Item	Kilometers	First 1000Km	Every 3000Km	Every 6000Km
	month	first 3 months	Every 3 months	Every 3 months
Brake soft pipe	Check	Check	—	
	Change once every three years			
Brake liquid	Change once every one and half year			
Brake	Check	Check	—	
Steering organization	Check	Check	—	
Accelerator cable	Check	Check	—	
Brake pedal free travel	Check	Check	—	
Carburetor	Check	Check	—	
Tyre	Check	Check	—	
Spark plug	—	Check	—	
Engine oil	Change	Change	—	
Air filter(filter core)	—	Clean	—	
	Change if necessary (usually change once every 10000Km)			
Valve clearance	—	Check	—	
Shift driving belt	—	Check	—	
Fuel pipe	Check	Check	—	
	Change once every three years			
Gear oil in Gear box	change	change	—	
Gear oil in F/R main driver	change	change	—	
Front and rear absorber	—	—	Check	

Main driver, reverse gear device (including gear oil)	Check	Check	—
Battery	Check	Check	—
Redirector and steering transmission organization	Check	Check	—
Transmission organization	Check	Check	—
Lamplight and meter	Check	Check	—
Brake pipeline and branch pump	Check	Check	—
Engine suspension	Check	Check	—
Front and rear axle suspension	—	Check	—

Note: ①Period maintenance term takes the first reached value of mileage and time as standard.
 ②Inspection in table includes: if necessary, need more wash, lubrication or change.
 ③ “—” shows no requirement.

VIII、 Malfunction analysis and elimination

(I) Engine malfunction			
Malfunction phenomenon	Malfunction system	Reason	Solving method
Start difficultly or could not start	1. pressure in cylinder is too low.	Cylinder wear out	change
		Piston wear out.	change
		Leakage on Washer of cylinder.	change
		Wearing on Pipe of air valve or seat of valve is not suitable.	Repair or change
		plug is loose.	Tighten
		Starting motor is too slow.	Check electric system.
		Air circulation is not right.	Adjust
		Gap of valve is not suitable.	Adjust

Start difficultly or could not start	2. No ignition generated from plug	<ul style="list-style-type: none"> ① Dirt on spark plug ② Wet on plug ③ Ignition coil problem ④ Touch loop got open or short circuit ⑤ Magneto problem ⑥ CDI problem 	<p>Clean or change</p> <p>Clean, dry or Change</p> <p>Change</p> <p>Change</p> <p>Change</p> <p>Change</p>
	3. No fuel in carburetor	<p>Vent hole on tank jammed</p> <p>Problem or blocked in fuel pipe.</p> <p>Problem on needle valve of carburetor</p> <p>Blocked in fuel tank</p> <p>Blocked in fuel filter</p>	<p>Clean or change</p> <p>Clean or change</p> <p>Change</p> <p>Change</p> <p>Clean or Change</p>
	4. Miscellaneous	Gear is not in neutral	Put gear on neutral

Engine has no idle speed or uneven	1. Mechanic problem	<p>Valve gap no suitable</p> <p>Valve base is not suitable</p> <p>Problem on air pipe</p> <p>Broken on bush of swing arms</p> <p>Fuel level of bobber cab is not right</p> <p>⑥ Jam on muzzle of carburetor</p> <p>⑦ Fuel pipe problem</p> <p>⑧ Adjust screw of idle sets wrong.</p>	<p>Adjust</p> <p>Repair or Change</p> <p>Change</p> <p>Change</p> <p>Adjust the height of bobber</p> <p>Clean</p> <p>Change</p> <p>Adjust</p>
	2. Electric parts problem	<p>① Dirt on plug</p> <p>② Gap of plug not correct</p> <p>③ Ignition loop problem</p> <p>④ CDI problem</p> <p>⑤ Magneto problem</p>	<p>Clean or Change</p> <p>Change or Adjust</p> <p>Change</p> <p>Change</p> <p>Change</p>

<p>Engine middle and high speed is uneven</p>	<p>Mechanical problem</p>	<p>① The force of Valve spring is weak. ② Cam axle worn out ③ Plug is dirty. ④ Gap of plug is too small. ⑤ Air circulation is not right. ⑥ Ignition loop problem ⑦ Floater of carburetor is too lower. ⑧ Air filter is dirty. ⑨ Block in fuel pipe cause fuel supply problem ⑩ Fuel pipe problem</p>	<p>Change Change Clean or Change Adjust or change Adjust or change Change Adjust the height of floater Clean or change Clean Change</p>
<p>Exhaust blue smoke</p>	<p>Mechanical fault</p>	<p>① too many lube ② Piston ring worn out ③ Valve pipe worn out ④ Cylinder wall scratched ⑤ Valve rod worn out ⑥ Seal of valve rod broken</p>	<p>Drain the extra lube Change Change Change Change Change</p>

	<p>1. Fuel supply system fault</p>	<p>① Jam in muzzle of carburetor ② Level of Floater not correct ③ Air filter is dirty ④ Leakage on air intake pipe ⑤ Too many lube</p>	<p>Clean or change Adjust the height Clean or change Tighten or change Drain the extra lube</p>
<p>Engine power is not enough</p>	<p>2. Electrical parts problem</p>	<p>① Dirt on plug ② Gap of plug not correct ③ Ignition loop problem ④ CDI problem ⑤ Magneto problem</p>	<p>Clean or Change Change or Adjust Change Change Change</p>
	<p>3. Mechanical problem</p>	<p>Gap of Valve is not correct The force of valve spring is weak. ③ Air circulation is not right. ④ Cylinder worn out ⑤ Piston Ring worn out ⑥ Valve base not correct ⑦ Swing arm or cam shaft worn out</p>	<p>Change operation method Check, remove or change Adjust Change Change Change or repair Change</p>

Engine overheats	1. Fuel system fault	<ul style="list-style-type: none"> ① Octane number is lower ② Fuel pass blocked ③ Fuel pump problem ④ Fuel level in floater is lower 	<p>Use the right fuel</p> <p>Clean the fuel pass</p> <p>Change</p> <p>Adjust the height of floater</p>
	2. Electric System problem	<ul style="list-style-type: none"> ① Ignition time is late or early ② Spark is weak or no spark 	<p>Adjust ignition time</p> <p>Check from plug to magneto</p>
	3. Air pass problem	<ul style="list-style-type: none"> ① Air mixture is too thick or thin ② Leakage on engine ③ Air filter is dirty ④ Cylinder, piston, ring worn out ⑤ Leakages on connecting face ⑥ Block in exhaust pipe ⑦ Leakage on Air inlet pipe 	<p>Adjust carburetor</p> <p>Repair</p> <p>Clean or change filter</p> <p>Repair or change</p> <p>Repair or change</p> <p>Dredge</p> <p>Repair or change</p>
	4. Engine cooling system	<ul style="list-style-type: none"> ① Block in water channel or radiator ② Air in Cooling system or coolant is not enough ③ Water pump problem ④ Unsuitable coolant ⑤ Constant temperature unit problem ⑥ Fault on motor of fan or switch of heat-sensor 	<p>Clear</p> <p>Release air, refill coolant</p> <p>Change</p> <p>Change</p> <p>Change</p> <p>Change</p>

	5. Miscellaneous	<p>① Carbon accumulated on top of piston</p> <p>② Too many or less lube</p> <p>③ Unsuitable lube used</p>	<p>Clear</p> <p>Drain or Refill</p> <p>Change</p>
Noise from engine	Noise on air valve	<p>Gap on valve is too big</p> <p>Spring on valve is broken</p> <p>Swing arm or cam shaft worn out</p>	<p>Adjust</p> <p>Change</p> <p>Change</p>
	Noise from piston	<p>① Piston worn out</p> <p>② Cylinder worn out</p> <p>③ Carbon gathered in firebox</p> <p>④ Piston pin or pin hole worn out</p> <p>⑤ Piston ring or ring notch worn out</p>	<p>Change</p> <p>Change</p> <p>Clean</p> <p>Change</p> <p>Change</p>
	Noise from chain of circulation	<p>Chain elongated</p> <p>Chain worn out</p> <p>Adjustor of chain problem</p>	<p>Change chain & sprocket</p> <p>Repair & Change</p>
	Noise from clutch	<p>① Spline of crankshaft damaged</p> <p>② Spline of clutch damaged</p>	<p>Change crankshaft</p> <p>Change clutch</p>
	Noise from Crankshaft	<p>① Bearing noise</p> <p>② Needle bearing damaged</p> <p>③ Gap too big</p>	<p>Change</p> <p>Change</p> <p>Change</p>
	Noise from CVT	<p>① Belt loose or worn out</p> <p>② Roller or main wheel damage</p>	<p>Change</p> <p>Change</p>

	Noise from transmission system	<ul style="list-style-type: none"> ① Gear damaged ② Input and output shaft damaged ③ Bearing worn out ④ Bush worn out 	<p>Change</p> <p>Change</p> <p>Change</p> <p>Change</p>
Gasoline engine lacks power and accelerating Clutch skidding	1.Fuel system happens malfunction	<p>Octane number is too low</p> <p>Oil routine is blocked and oil supply is not smooth</p>	<p>Change with gasoline whose Octane number accords with regulation</p> <p>Clean oil routine</p>
	Transmission system	<ul style="list-style-type: none"> ① Hoof of clutch worn out ② Spring on clutch is weak ③ Out wheel worn out ④ Belt worn out & loose 	<p>Change</p> <p>Change</p> <p>Change</p> <p>Change</p>
Gear change not smooth or got stuck	Gear box or Gear change system	<ul style="list-style-type: none"> ① Operating gear damaged ② Shift rod twisted ③ Shift drum worn out ④ Shift pulling stick unsuitable 	<p>Change</p> <p>Change</p> <p>Change</p> <p>Adjust</p>
Carburetor works not properly	Starting problem	<ul style="list-style-type: none"> ① Blocked in muzzle ② Blocked in muzzle channel ③ Leakage on connecting part of carburetor and starting part ④ Starting pin not work properly 	<p>Clean</p> <p>Clean</p> <p>Tighten, Adjust or change</p> <p>Adjust</p>

	<p>Idle and low speed not stable</p>	<ul style="list-style-type: none"> ① Reducer valve blocked or loose ② Valve channel Blocked ③ Air inlet channel blocked ④ Air inlet bypass Blocked ⑤ Starting pin not closed completely ⑥ Idle screw not suitable ⑦ Height of floater not correct 	<p>Clean or tighten</p> <p>Clean</p> <p>Clean</p> <p>Clean</p> <p>Adjust</p> <p>Adjust</p> <p>Adjust</p>
	<p>Not stable in high and middle speed</p>	<ul style="list-style-type: none"> ① Muzzle blocked ② Main air channel blocked ③ Needle valve blocked ④ Throttle not work well ⑤ Fuel filter blocked ⑥ Height of floater not right ⑦ Starting pin not closed 	<p>Clean</p> <p>Clean</p> <p>Clean</p> <p>Adjust</p> <p>Clean or change</p> <p>Adjust</p> <p>Adjust</p>
	<p>Spill over or fuel level fluctuated</p>	<ul style="list-style-type: none"> ① Needle valve worn out or damaged ② Spring on valve broken ③ Floater not work well ④ Dirt or scale in valve 	<p>Change</p> <p>Change</p> <p>Adjust or change</p> <p>Clean</p>
<p>Engine coolant temperature is lower</p>	<p>Cooling System</p>	<ul style="list-style-type: none"> ① Fault on heat sensor switch on fan ② Cold weather ③ problem on constant temperature meter 	<p>Change</p> <p>Cover the radiator</p> <p>Change</p>

Spark weak	Ignition System	① Fault on starter ② problem on spark plug ③ Magneto problem ④ Voltage of battery is weak ⑤ Ignition loop problem ⑥ Starting loop problem	Change Change Change Change Change Change
(II) Malfunction in transmission system			
Vehicle speed does not increase by engine speed	Transmission system	Shift belt slips Speed adjusting plate abrasion is too much Speeding adjusting plate slipping is blocked Spring force of adjuster is short	Change Change Repair or Change Repair or Change
Out of gear	Gear Box or Gear shifting system	① Speed changing drum groove worn out ② Right and Left gear changing rods bended ③ High and Low driven gear groove wear to taper ④ Speed changing principal and countershaft worn out ⑤ Sector gear tooth worn out ⑥ The force of spring of sector gear is weak or broken.	Change Change Change Repair or Change Repair or Change Change
(III) Malfunction in running system, suspension and steering organization			
Running is leaning	Running system	Air pressure in left and right wheel is different	Adjust air pressure in tyre

<p>Running is leaning</p>	<p>Running system</p>	<p>Load of left and right wheel is different</p> <p>Spring force of left and right absorbing spring</p> <p>Front wheel location is wrong</p> <p>One side wheel is locked or brake could not release</p> <p>Front and rear suspension parts have been loosened, bent or damaged</p>	<p>Adjust load</p> <p>Adjust or Change</p> <p>Check or adjust</p> <p>Repair arrester</p> <p>Screw or Change suspension parts</p>
<p>Tyre is abraded abnormally or greatly</p>	<p>Steering organization, running system, suspension</p>	<p>Left and right absorber has been damaged, spring force is short</p> <p>Tyre is not balance, and wheel hub is distorted</p> <p>Front wheel location is wrong</p> <p>Vehicle is over-load</p> <p>Tyre has not change its position</p> <p>Wheel hub bearing has been damaged or adjustment is wrong</p> <p>Wheel assembly jump (axial, radial) is too great</p> <p>Air pressure in tyre is too high or too low</p>	<p>Adjust or Change</p> <p>Change</p> <p>Check or adjust</p> <p>Check load</p> <p>Change</p> <p>Adjust or Change</p> <p>Change</p> <p>Adjust air pressure in tyre</p>
<p>Front wheel shakes, swing or jump</p>	<p>Steering organization, running system</p>	<p>Tyre and wheel is not balance</p> <p>Wheel hub bearing has been damaged or adjustment is</p>	<p>Balance wheel or Change tyre</p> <p>Change or adjust</p>

<p>Front wheel shakes, swing or jump</p>	<p>Steering organization, running system</p>	<p>wrong</p> <p>Left and right swing arm ball head has been abraded or loosened</p> <p>Drag pole tie-in has been abraded or loosened</p> <p>Front wheel location is wrong</p> <p>Wheel (axial, radial)jump is too big</p> <p>Tyre has tympanic bag</p> <p>Free travel of redirector is too big</p> <p>Fixed bolts on each part of steering organization has been loosened</p>	<p>Change</p> <p>Change</p> <p>Check、adjust</p> <p>Change tyre or wheel hub</p> <p>Change tyre</p> <p>Change or adjust</p> <p>Fasten</p>
<p>Steering is heavy</p>	<p>Steering organization running system</p>	<p>Air pressure in tyre is short</p> <p>Ball head of left and right swing arm and drag pole is blocked</p> <p>Front wheel location is wrong</p> <p>Steering pole pipe is blocked</p> <p>Mesh clearance of redirector is too small</p>	<p>Charge the tyre to applicable air pressure</p> <p>Change</p> <p>Check and adjust</p> <p>Repair or Change</p> <p>Adjust</p>
<p>(IV) Malfunction in brake system</p>			
<p>Brake is not hard enough</p>	<p>Brake system</p>	<p>Brake pipeline leaks oil</p> <p>Brake disk and brake hoof contacts badly or dirt on surface</p> <p>Brake drum and brake hoof wear badly</p>	<p>Repair</p> <p>Repair or clean the dust</p> <p>Change</p>

		<p>Brake main pump is damaged or leaks oil</p> <p>⑤ Brake branch pump is damaged or leaks oil</p> <p>⑥ Brake liquid is short</p> <p>⑦ Brake pipeline has air</p> <p>⑧ Arrester is too hot</p>	<p>Repair or change</p> <p>Repair or Change</p> <p>Add</p> <p>Eliminate air</p> <p>Repair or Change</p>
Brake leaning	is Brake suspension system	<p>Some brake drums and hoof pads have oil stain</p> <p>Individual brake branch pump leaks oil or is blocked</p> <p>The air pressure in right and left tyre is not even</p> <p>Front wheel adjustment is wrong</p> <p>⑤ Vehicle frame is distorted, and left and right wheelbase is different</p> <p>⑥ Some brake pipelines is not smooth</p> <p>⑦ Individual brake drum and brake hoop contacts badly</p> <p>⑧ Suspension parts loose</p> <p>⑨ Vehicle is leaning</p> <p>⑩ Thread abrasion of left and right wheel is different</p>	<p>Clean or Change</p> <p>Repair or Change</p> <p>Equalize the air pressure</p> <p>Adjust as the stipulation</p> <p>Repair or Adjust</p> <p>Repair or adjust</p> <p>Repair</p> <p>Check, repair and fasten</p> <p>Verify, repair and adjust</p> <p>Change</p>
Brake block	clip Brake system	<p>Brake main pump could not return correctly</p> <p>Brake hoop return spring is too soft</p> <p>Parking brake adjustment is</p>	<p>Repair main pump</p> <p>Change</p> <p>Adjust</p>

<p>Brake clip block</p>	<p>Brake system</p>	<p>wrong Parking brake drag line could not return Brake branch clip block Abrasion of brake drum and brake hoop is too big, and clearance is too great Brake pipeline has been concaved</p>	<p>Lubricate or Change Repair or Change Change Change</p>
<p>(V) Malfunction in lamplight, circuit and meter system</p>			
<p>Front headlight does not illuminate</p>	<p>Lighting system</p>	<p>Bulb has been damaged Adjuster has been damaged(adjusting voltage is too high to burn bulb) Fuse has been burned Headlight relay has been damaged Lead or grounding happens malfunction Combination switch has been damaged Storage cell has been damaged(incur bulb is burned)</p>	<p>Change bulb Change adjuster Check、 Change Change Repair circuit Repair、 Change Change</p>
<p>Only one front headlight does not illuminate</p>	<p>Lighting system</p>	<p>Bulb has been damaged Lead or grounding happens malfunction</p>	<p>Change Repair circuit</p>
<p>Steering light does not illuminate</p>		<p>Steering relay has been damaged Individual steering bulb has burned</p>	<p>Change Change</p>

		<p>③ Grounding is bad</p> <p>④ Fuse burn out</p> <p>⑤ Switch damaged</p>	<p>Repair</p> <p>Change</p> <p>Change</p>
<p>Starter does not rotate when starting</p>		<p>Starter has been damaged</p> <p>Starting relay has been damaged</p> <p>Grounding of starter is bad</p> <p>Ignition switch has been damaged</p>	<p>Repair or Change</p> <p>Change</p> <p>Repair</p> <p>Change</p>
<p>All electric apparatuses do not work</p>	<p>Circuit system</p>	<p>Total fuse has been burned</p> <p>Ignition switch has been damaged</p> <p>General wire or grounding wire has been cut off</p> <p>Electric bottle contacts badly or happens oxygenation</p>	<p>Check and Change</p> <p>Change</p> <p>Repair circuit</p> <p>Repair</p>
<p>Some kind of lamplight is bad or complete lamplights are damaged (not including headlight)</p>	<p>Lamplight、circuit</p> <p>Lamplight、circuit</p>	<p>Switch has been damaged</p> <p>Bulb has been burned</p> <p>Circuit has been cut off, linking parts contact badly</p> <p>Fuse has been burned.</p> <p>Grounding wire contacts badly</p>	<p>Change</p> <p>Change</p> <p>Repair circuit</p> <p>Change</p> <p>Repair</p>
<p>Meter works badly</p>	<p>Meter and wire</p>	<p>Fuse has been burned.</p> <p>Route has been cut off, tie-in contacts badly</p> <p>Instrument has been damaged</p> <p>Sensor has been damaged</p>	<p>Change</p> <p>Repair route</p> <p>Change</p> <p>Change</p>

IX、Screwing moment of important bolts

Engine

Sequence number	Item	Quantity	Thread diameter mm	Torque (Nm)
1	Sensor of reverse gear	1	M10x1.25	20
2	Spark plug	1	M12x1.25	18
3	Sensor of water temperature	1	R/c1/8	8
4	Adjust nuts of air valve gap	4	M5	10
5	Nut of driving disk	1	M20x1.5	115
6	Nut of driven disk	1	M20x1.5	115
7	Round nut of driven disk	1	M30x1	100
8	Nut of front output axle	1	M14X1.5	97
9	Nut of driving prick gear	1	M22X1	145
10	Nut of driven prick gear	1	M16X1.5	150
11	Fixed nut of clutch	1	M18X1.5	70
12	Nut of position limitation of driven gear	1	M60	110
13	Nut of position limitation of front output bearing	1	M55	80
14	Bolts of swing arm axle	2	M14X1.25	28
15	Drain bolt	1	M12X1.5	30
16	Clutch installing bolts	6	M8	26
17	Stator of magneto Bolts	3	M6	10
18	Screws on CVT stopping wind board	3	M6	10
19	Oil pipe connecting bolts	2	M14X1.5	18
20	Oil pump installing bolts	3	M6	10
21	Bolts on pressure limiting valve	2	M6	10
22	Bolts on principal prick gear cover	4	M8	32
23	Bolts on driven prick	4	M8	25

	gear cover			
24	Gear positioning bolt	1	M14X1.5	18
25	Bolt on hand start disk	1	M10X1.25	55
26	Bolts on crankcase	14	M6	10
		3	M8	25
27	Bolt on Gear changing sector gear	1	M6	12
28	Bolt on oil filter	1	M20X1.5	63
29	Bolt on oil filter	1	M20X1.5	63
30	Bolts on start motor	2	M6	10
31	Bolts on cylinder cover	4	M10	38
32	Nuts on cylinder cover	2	M6	10
		1	M8	25
33	Bolts on cylinder	4	M6	10
34	Bolt on cover of cylinder	12	M6	10
35	Bolts on chain adjuster	2	M6	10
36	Nuts on chain adjuster	1	M8	8
37	Bolts on fan motor	3	M6	10
38	Bolts on constant temperature unit	2	M6	10
39	Bolts on pump cover	3	M6	6
40	Bolts on pump	2	M6	10
41	Bolts on circulation unit	2	M6	15
42	Other Bolts		M5	4.5—6
			M6	8—12
			M8	18--25

FRONT, REAR SUSPENSION :

s.q.	Item	Qty.	Thread diameter mm	Torque (N·m)
1	Bolts on front steering joint and absorber	4	M12×50	110
2	Bolts on front and rear brake disk	18	M10×50	60
3	Bolts on front and rear brake grip	4	M12×50	110
4	Bolts on support frame of front and rear break sub-pumps	4	M12×20	110
5	Bolts on front steering joint connector and beam pin	2	M10×30	60
6	Nuts of front and rear sub-axles	4	M18	200

7	Nuts of pulling rode connector	2	M12	100
8	Locknuts of pulling rode	4	M12	60
9	Screw on Steering	4	M10×30	50
10	Bolts on steering transfer fork	2	M8×25	25
11	Screws on steering column	2	M10×20	50
12	Nuts on front absorber	2	M8	25
13	Screw of winch	4	M8×16	25
14	Screw of main brake pump	2	M10×55	55
15	Bolt on push rode of main brake	1	M10	50
16	Bolt on beam pin of push rode of main brake	1	M8×20	23
17	Nuts of flange of drive shaft	4	M14	100
18	Nuts on tyre	16	M12	55
19	Screws on cab roof	6 2	M12×95 M12×70	60
20	Nut of steering wheel	1	M12	70
21	Bolts on hand brake	2	M8x20	28
22	Bolts on bumper	2	M10x20	50
23	Bolts on driving axle	2	M8x25	30
24	Bolts on flange and rear wheel upper swing arm	1	M12x90	70
25	Bolts on flange and rear wheel lower swing arm	2	M12x175	70
26	Bolts on front axle gear box	6	M8x28	25
27	Screw on front axle motor	4	M8×20	13
28	Screw on front axle pin shaft	1	M8x10	10
29	Nut on front axle	1	M14x1.5	62
30	Bolts on differential	6	M10x1.25x18	40
31	Bolt on oil intake of front axle	1	M14x1.25x12	25
32	Drain bolt on front axle	1	M10x1.25	25
33	Bolts on rear axle box	2	M10x1.25x25	40
34	Bolts on rear axle box	4	M8x25	25
35	Nut on rear axle input shaft	1	M12x1.25	62
36	Bolts on base of rear axle input shaft	4	M8x30	25
37	Bolt on rear axle positioning	1	M65x1.5x10	90
38	Nut	1	M8	16
39	Drain bolt on rear axle	1	M14X1.25X12	25
40	Bolt on oil intake of rear axle	1	M20X1.5X12	25

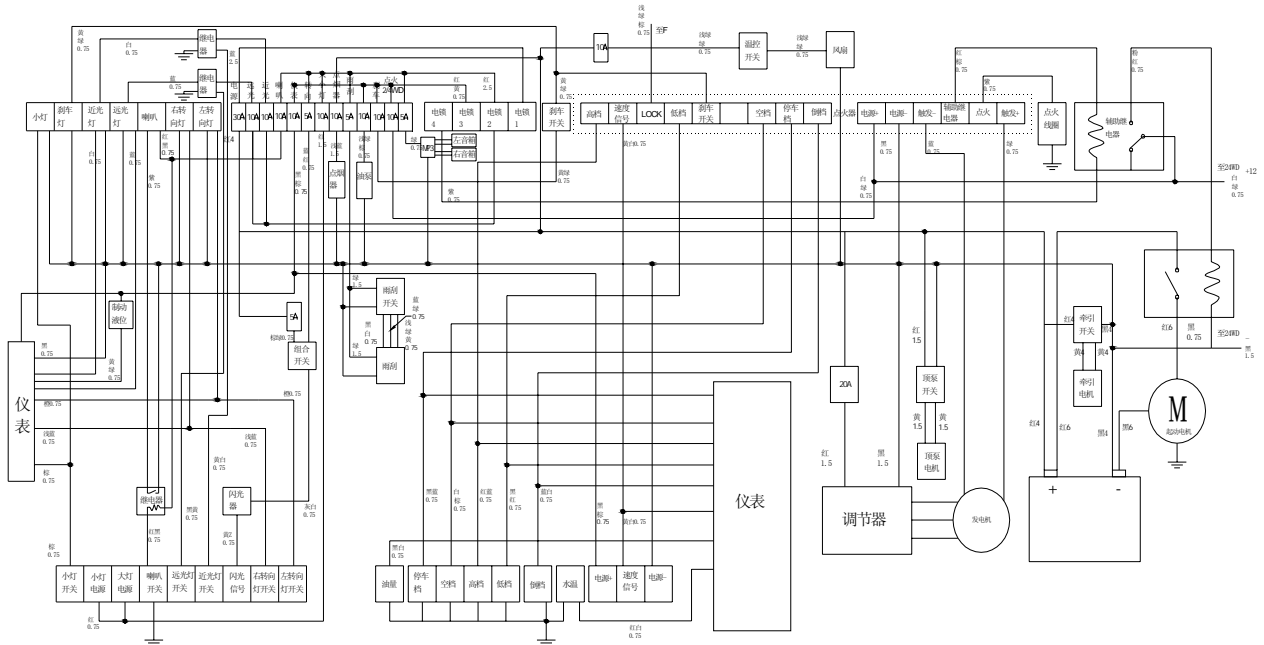
Other screws (8.8 grade)	Specification	Tightening moment
	M6	10N·m
	M8	25N·m
	M10	50N·m
	M12	80N·m

X、Specification and usage quantity for fuel, lubricating oil and brake liquid

Category	Specification	Capacity	Remark
Fuel	RQ-90 or upper grade lead-free gasoline	27L	Content of fuel box
Lubricating oil (engine, Gear box)	SAE15W—40/SF or SC	1900ml(change oil) 2000ml(change filter) 2200ml(repair engine)	
Lubricating oil (front main driver)	SAE15W—40/SF or SAE80W—90/GL-4	First 0.33L/change 0.28	
Lubricating oil (Rear main driver)		First 0.30L/change 0.25	
Brake liquid	Gb1083 JG3	1.1L	
Engine coolant	Distilled water: Glycol =1:1		

UTV 500CC Circuit Map

XY500-S 农夫车电路总图



4WD and 4WD Transfer Circuit

XY500-S 农夫车二、四驱转换电路图

