

# 300 Utility Vehicle

## Operating instruction



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**(First revision in 2007)**

If this specification is reviewed, please forgive we will not notice.

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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): 540Kg

Front shaft: 240Kg

Rear shaft: 300Kg

2、Dimension parameter(mm)

Total length×total width×total height:2630×1230×1890

Minimal clearance apart from ground: 183

Wheelbase: 1800

Tread: front wheel: 1058 rear wheel: 1070

Approach angle(°): 60

Removed angle(°): 85

(II)、Using data

1、High running speed(km/h): 53

2、Small steering semi-diameter(m): 3.7

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

When  $V_0=20\text{km/h}$ : 2.5

When  $V_0=30\text{km/h}$ : 5.4

When  $V_0=40\text{km/h}$ : 9.5

When  $V_0=50\text{km/h}$ : 14.6

4、0—50Km/h accelerating time (S): 15

4、Oil consumption for 100 kilometers (L): 6 (when speed is 40km/h)

5、Exhaust:

Reach Euro II exhaust standard.

6、Limit load of good box: 300Kg

(III)、Engine

Type: VM173MN

Form: four-stroke、 water cooling、 single cylinder horizontal type、 roof valve、  
Carburetor type.

Cylinder diameter(mm): 72.75

Travel(mm): 66.8

Cylinder volume(mL): 278

Compressed ratio: 10: 1

Exhaust quantity of engine(mL): 278

Maximal power (kw/r/min): 16/6500

Maximal torque(N·m/r/min): 23/5500

Rated power (kw/r/min): 13.8/6500

Lowest fuel consuming rate (g/Kw·h): 340



300Kpa

7. Steering organization:

Adopt gear rack type redirector, transmission rate: 18: 1; total circle number of steering plate: 3.75; total swing angle of steering wheel: 75°

8. Arrester:

Running arrester adopts front and rear placement dual-pipeline hydraulic pressure brake system, front and rear wheels adopt drum type arrester. And parking arrester adopts mechanical transmission organization to work on rear wheels.

9. Goods box overturn roof and self-saving winch:

Good box could adopt overturn roof structure and equip self-saving winch to drag itself if relapsing into loose sludge.

(V)、Electric apparatuses

1. Pipeline system: pipeline system adopts single-line system, Minus ground strap, pipeline voltage is 12V。
2. Generator: type is FM169, rated power is 300W。
3. Storage cell: voltage is 12V, capacity is 24A·h。
4. Starting engine type: 12V forever magnetic DC electric engine。

### III、 Placement drawing for whole vehicle



- 1、 Engine hood
- 4、 Bump
- 7、 Safety Belt
- 10、 Rear fender
- 13、 Head Rest
- 16、 Frame

- 2、 Indicator
- 5、 Front tyre
- 8、 Side board
- 11、 Goods box
- 14、 Top cover

- 3、 Front headlight
- 6、 Seats
- 9、 Fuel tank (cap)
- 12、 Reinforce pole
- 15、 Steering Wheel



Side drawing for engine

- |                                      |                           |                                |
|--------------------------------------|---------------------------|--------------------------------|
| 1、CTV case                           | 2、Oil intake of gear case | 3、Flange of transmission shaft |
| 4、Generator                          | 5、Carburetor              | 6、Starter                      |
| 7、Idling speed electromagnetic valve | 8、Spark plug              |                                |
| 9、Oil intake of engine               |                           |                                |



VIN code position



Engine and rear suspension



Oil intake of engine

Engine oil 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 of engine (under the engine)

Intake of gear case

**Warning: Oil drain plug of engine should be tightened, otherwise engine would burned for oil leakage.**



Fuel box cover (on the left side board)

Coolant & brake fluid intake

Warning: it is very dangerous to unscrew radiator 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 cover after engine becomes cool.

Warning: Please fill up the brake liquid according to the stipulated trademark and type. Can not mix the different brake liquid from different makers. Keep the liquid level in proper position, otherwise will cause accident.

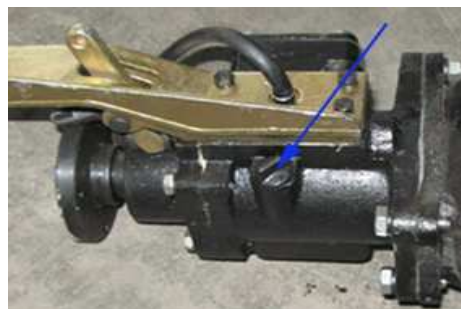


Oil checking hole of main reducer

Warning: Oil in main reducer should be filled by prescriptive trademark.  
**Oil quantity in main reducer should equal to oil intake orifice ,over more will incur oil leakage, and over less will burn out main reducer.**



MP3 player and spare switch



Oil intake of reverse gear device

Warning: Oil quantity in reverse gear should be added by regulation, much more will incur reverse gear leaks oil, while much less will incur reverse gear is burned.

#### IV、 check before drive

- 1 Check the leakage contain of engine,such as oil、 cooling fluid、 fuel、 lube and so on should have no leakage.
2. Check the height of engine oil, brake liquid and cooling liquid, if necessary, add some.
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 whether engine bracket, bolts, and bolts of transmission system and running system have loosened or fallen off.
7. When starting engine, listen and check whether there is any abnormal noise, and observe whether each instrument is normal.
8. Check whether steering is flexible and reliable; check brake free travel function(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 effective.
10. Check whether vehicle box overturn roof and self-saving winch could work normally.
11. Check fuel quantity.

Warning: (1)it is necessary to tie safety belt before driving.

(2)Driver should buy person safety insurance.

(3)Driver should control speed and try his best to keep vehicle run at economical speed.

(4)Driver should control speed strictly by the size of swerve(the highest speed could not exceed 20Km/h).

(5)For safety, the speed must be controlled within 20km/h when turn round.

(6)Better do not load the goods higher than case. If so , please tie the goods.

(7)The exhaust pipe might make big noise when rotation speed of engine reaches to 7500r/min. At this time some abnormal phenomenon will occur, like engine rotation speed unstable, decreasing power, rotation speed of engine decreased. Meanwhile the more fuel consumed and more smoke discharged. This is because the function of speed limiter, and it is normal. Please limit the speed within 50km/h when driving.

(8)The anti-freezer is filled in UTV when finishing the installation. But it is only can be driving in condition upper  $-15^{\circ}\text{C}$ . The suitable anti-freezer should be used if the environment temperature is cold than  $-15^{\circ}\text{C}$ .

## 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 for this vehicle have two kinds that are ignition switch key and oil box key, each has two, one of them should be preserved carefully for spare.

#### ② Ignition switch

Ignition switch has four positions:



“OFF” (close) position: All circuits except instrument, brake light and loudspeaker locate turnoff status.

“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 .

“LOCK” (lock) position: All circuits are cut off, and steering wheel is locked after pulling out the key (key could be pulled out only at this position).

**Waring: It could not turn ignition to “LOCK” position and pull out key before vehicle is parked stably. To prevent steering wheel from losing control.**

③ Meter



- ( a ), Speedometer 4: show running speed (for its structure, it will show running speed when stepping down accelerator pedal on neutral position) .
- ( b ), Odometer 8: show accumulated running total mileages (for its structure, it will show accumulated running total mileages when stepping down accelerator pedal on neutral position) .
- ( c ), High beam indicating light 7: When high beam of headlight is lightened, high beam indicating light will lighten.
- ( d ), Indicating light 2, 5: When steering lights to left and right are lightened, corresponding steering indicating lights on instrument will flash. When warning light is lightened, left and right steering indicating light will flash at the same time.
- ( e ), Fuel level meter 6: show fuel quantity.
- ( f ), Thermometer 1: show the temperature of coolant of engine.
- ( g ), Rotation speed meter 7: show the rotation speed of engine.
- ( h ), Gear position display 3, & 2WD and 4WD exchange display 9: no display on this model.

④ Main switch of lamplight



- ( a ), When ignition switch is at "ON" position and lamplight main switch is turned to "ON" position, front and rear small light are lightened.

- ( b )、When ignition switch is at “ON” position and lamplight main switch is turned to “EO” position, front headlight and rear small light are lightened.
- ( c )、When ignition switch is at “ON” position and lamplight main switch is turned to “EO” 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” or “OFF” position, step down brake pedal, brake light will illumine.

⑤ Loudspeaker button

Press down loudspeaker 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 is brake pedal, farmer vehicle will start or accelerate by stepping it when shift handle is at "D" position 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: It is necessary to strain parking brake handle when vehicle is parked to prevent sliding; and it is necessary to press down the front button of parking brake to drop handle down when running; it could not use parking brake when running arrester is used(except emergency).

⑧ Good box overturn roof and self-saving winch

When it is necessary to over turn cargo box to discharge good, at first, open the rear door of cargo box, then open towing and turn main switch to “O” position, and press down “UP” on “TRAILER” conversion switch on the upside of instrument, at this time, cargo box will over turn backwards; and return will stop after relinquishing; while press down “DOWN” on “TRAILER” conversion switch on the upside of instrument, cargo box will drop, and return will stop after relinquishing.



When farmer vehicle stuck into the muddy area and could not run out, you could make self-saving measure by front fixity or piling. At this time, open the drag hoof of towing rope, and turn towing and overturn main switch to “O” position, then press down “IN” position and “OUT” position on “WINCH” conversion switch on the upside of instrument, at this time, winch steel wire rope will “shrink” and “expand”; return will stop after relinquishing.

Warning: When cargo box overturn or winch self-saving work has ended, it is necessary to turn towing and overturn main switch to “OFF” switch to avoid wasting electricity and incurring unnecessary loss.

⑨ Cigarette lighter

The cigarette lighter installed on vehicle and also can be used as mobile phone charger or other small electric units' power.

Note: This inlet is 12V DC. Please check the voltage which is suitable for your units.

⑩ Windshield Wiper ( Optional )

There are 2 speeds “low” and “high” when turn the switch clockwise. Turn anticlockwise is “Stop”.



## 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	30Km/h
800~1600Km	40Km/h
Exceed 1600Km	50Km/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 loosing 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、First maintenance item table

Sequence number	Category	Checking item	Adjusting content
1	Engine	Change engine oil and oil filter	Adjust idling speed : 1500±10% listen whether there is any abnormal noise in engine; clean air filter core
2	Brake	Front and rear wheel brake; parking brake; brake performance	Brake liquid height ; Brake pedal free travel: 20 ~ 30mm ; Travel of parking arrester is 2 ~ 3 gears
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	Tyre	Tyre pressure and thread depth	Check front tie-in : 2 ~ 7mm

6	Transmission organization	Whether the bolts, flange nuts on transmission shaft and the bolts on main driver are tightened.	
7	Lamplight	Illumination and signal	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	Mwter	Display is normal and correct	
10	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 empty 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	
4	Tyre	Air pressure, thread, crack and wound	Tyre air pressure: front wheel 0.25Mpa。 rear wheel 0.3Mpa  Thread depth : no less than 1.6mm
5	Lamplight	Illumination, signal and loudspeaker	Every kind of lamplights, signal switches and buttons, etc
6	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
7	Instrument	Display is normal and correct	
8	Dump Bed and self-saving winch	Work normally	
9	Transmission organization	Each bolt of transmission organization has not been loosened.	

Periodic maintenance item table for farmer vehicle

Checking term Checking Item	Kilometers	First 1000Km	Every 3000Km	Every 6000Km
	month	first 3 months	Every 3 months	Every 3months
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 drag wire	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		
Front and rear absorber	—	—	Check
Main driver, reverse gear device (including gear oil)	Check	Check	—
Storage cell	Check	Check	—
Redirector and steering transmission organization	Check	Check	—
Transmission organization	Check	Check	—
Lamplight and instrument	Check	Check	—
Brake pipeline and branch pump	Check	Check	—
Engine suspension	Check	Check	—

Front and rear axle suspension	—	Check	—
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**Note:** ①Period maintenance term takes the first reached value of mileage and time as standard.

②Inspection in table includes: if necessary, it is necessary to make further wash, lubrication or change.

③ “—” shows no requirement.

### VIII、 Malfunction analysis and elimination

(I) Engine malfunction			
Malfunction phenomenon	Malfunction system	Reason	Solving method
Start difficulty or could not start	1. Fuel supply system	①Fuel in oil box has been used. ②Switch for oil box or carburetor has been clogged ③Fuel system leaks air. ④Oil route has been blocked ⑤There is fuel in cylinder ⑥Air filter has been blocked	Add fuel Unblock Screw carburetor and linking screws by regulation Clean oil route Eliminate accumulated oil in cylinder Clean air filter

<p>Start difficultly or could not start</p>	<p>2. Electric system</p>	<p>① There are many accumulated carbons on spark plug</p> <p>② Insulation body of spark plug has been damaged.</p> <p>③ Ignition loop has been damaged</p> <p>④ TCI ignition device has been damaged</p> <p>⑤ Magnetolectric machine has been damaged</p> <p>⑥ Storage cell feedbacks electricity</p>	<p>Eliminate accumulated carbons and use gasoline to wash</p> <p>Change spark plug</p> <p>Change</p> <p>Change</p> <p>Repair or Change</p> <p>Repair or Change</p>
<p>Bad idling speed of engine</p>	<p>3. Air route</p>	<p>① Spark plug leaks air</p> <p>② Combined surface of cylinder cover or cylinder body leaks air</p> <p>③ Crankcase leaks air</p> <p>④ Piston ring or cylinder body has been damaged heavily</p> <p>⑤ Piston ring has broken or blocked</p> <p>⑥ Air exhaust is bad, muffler has been blocked</p> <p>⑦ Blending air is too dense or thin</p>	<p>Screw spark plug</p> <p>Clean plane, install plane and screw nuts</p> <p>Disassemble box body, change gasket and screw bolts</p> <p>Change piston loop or cylinder body</p> <p>Clean or Change piston loop</p> <p>Clean and unblock</p> <p>Adjust carbureter</p>

	4. Transmission part and others	<p>① Surpassing clutch has been damaged</p> <p>② Start electric engine has been locked</p> <p>③ Other machines locking malfunction, such as linking pole big head or gear</p> <p>④ High-pressure wire contacts badly, leaks electricity or has been damaged.</p> <p>⑤ Circuit contacts badly</p> <p>⑥ Ignition time is wrong</p>	<p>Adjust Carburetor</p> <p>Repair or Change</p> <p>Change</p> <p>Repair or Change</p> <p>Repair</p> <p>Adjust</p>
	1. without idling speed	<p>① Carburetor adjusts wrongly</p> <p>② Oil routine and air routine have been blocked</p> <p>③ Oil surface in bobber chamber is too high</p>	<p>Re-adjust idling screw</p> <p>Wash oil routine and air routine</p> <p>Adjust oil surface in bobber chamber</p>
	2. Idling speed is not stable	<p>① Blending air is too thin</p> <p>② Clearance of spark plug is too small</p>	<p>Adjust carburetor</p> <p>Adjust to regulated value</p>
	3. Idling speed is too high	<p>① Air saving spring force of carburetor is too small</p> <p>② Intake pipe, exhaust pipe and muffler have been blocked</p> <p>③ Electrical wire tie-in for electromagnetic thick adding valve has not been Unblocked</p>	<p>Change</p> <p>Re-adjust</p> <p>Unblock</p>

Engine works abnormally	1. Circuit	①High-pressure wire or ignition loop leaks electricity ②Ignition contacts badly ③There are too many accumulated carbons between electrodes of spark plug ④TCI has been burned or hit	Change Unblock Eliminate accumulated carbon Change
	2. Air routine	①Air valve clearance is wrong ②Air valve seat has been damaged ③Air valve spring has been tired or broken	Adjust to regulated clearance Change Change
	3. Oil routine	①Oil quantity in gasoline is too few ②Gasoline filter has been blocked ③Carburetor has been blocked	Add gasoline Eliminate Remove

Engine is too hot	1.Heat radiation condition is bad	<ul style="list-style-type: none"> <li>①Radiating sheet of cooler has oil stain and sand</li> <li>②Cooler or water pipe leaks water</li> <li>③Corrode, kettle and cooling liquid could not cycle normally</li> <li>④Cooling fan accumulates too much oil stain or fan has been damaged</li> <li>⑤Soft pipe is concaved, and cooling water could not flow normally</li> <li>⑥Water pump happens malfunction, and cooling liquid cycle quantity is short</li> <li>⑦Temperature saver could not open normally, and cooling liquid is blocked</li> <li>⑧After stopping at high speed, accumulated heat in engine is too much and cooling liquid is boiling</li> </ul>	<p>Remove</p> <p>Check, repair and supply cooling liquid</p> <p>Use soft water cooling liquid or Change</p> <p>Wash or Change</p> <p>Adjust by direction</p> <p>Check or repair</p> <p>Check 、 Change</p> <p style="text-align: right;">Avoid stopping suddenly after running at high speed</p>
	2.Operation method and transmission system problem	<ul style="list-style-type: none"> <li>①Stop suddenly after running at high speed</li> <li>②Belt or clutch slips</li> </ul>	<p>Change operation method</p> <p>Check, remove or change</p>
Engine is too hot	3.Ignition system happens malfunction	<ul style="list-style-type: none"> <li>①Ignition is bad</li> <li>②Ignition is too late or early</li> </ul>	<p>Remove</p> <p>Adjust ignition angle</p>
	4.Fuel system happens malfunction	<ul style="list-style-type: none"> <li>①Blending air is too thick or thin</li> <li>②Gasoline Octane number is too low</li> </ul>	<p>Adjust carburetor</p> <p>Change with gasoline whose Octane number accords with requirement</p>

	5.Lubrication is bad	①Lubricating oil does not accord with requirement ②Oil quantity is short	Change Add engine oil
	6.Others	Muffler has been blocked	Wash
Gasoline engine stops automatically	1.Fuel system happens malfunction	①Fuel is used out ②Oil routine has been blocked ③Oil switch has been damaged ④Carburetor has been blocked	Add oil Eliminate Repair or Change Wash
	2.Electric apparatus system happens malfunction	①Fire is cut off	Check Electric apparatus curtain by the sequence from spark plug to magnetoelectric machine
	3.Engine cylinder has been broken or locked	①Gasoline engine is too hot ②Break heavily and piston is locked ③Lock for bad lubricating of linking pole head bearing	Repair or Change Repair or Change Change or repair after inspection
Gasoline engine lacks power and accelerating performance is bad.	1.Fuel system happens malfunction	① <b>Octane number is too low</b> ②Oil routine is blocked and oil supply is not smooth	Change with gasoline whose <b>Octane number accords with regulation</b> Clean oil routine
	2.Electric apparatus system happens malfunction	①Ignition time is too early or late ②Spark is too weak or fire is cut off	Adjust ignition time Check by the sequence from spark plug to <b>magnetoelectric machine</b>
	3.Air routine happens malfunction	①Blending gas is too thick or thin ②Engine leaks air ③Muffler has been blocked	Adjust carburetor Check and repair Unblock

(II) Malfunction in transmission system			
Vehicle speed does not increase by engine speed	Transmission system	①Shift belt slips ②Speed adjusting plate abrasion is too much ③Speeding adjusting plate slipping is blocked ④Spring force of adjuster is short	Change Change Repair or Change Repair or Change
Out of gear	Reverse gear device	①Self-locking spring is too soft or broken off ②Gear of gear linking cover is abraded to tapered ③Mesh length of gear linking cover is short ④Self-locking slot of gear shifting shaft has been abraded ⑤Mesh of gear and linking cover is not to position	Adjust or Change Change Adjust or Change Repair or Change Adjust, Repair or Change
(III) Malfunction in steering system, suspension and steering organization			
Running is leaning	Running system	①Air pressure in left and right wheel is different ②Load of left and right wheel is different ③Spring force of left and right absorbing spring ④Front wheel location is wrong ⑤One side wheel is locked or brake could not release ⑥Front and rear suspension	Adjust air pressure in tyre Adjust load Adjust or Change Check or adjust Repair arrester Screw or Change suspension parts
Running is	Running system		

leaning		parts have been loosened, bent or damaged	
Tyre is abraded abnormally or greatly	Steering organization, running system, suspension	<p>①Left and right absorber has been damaged, spring force is short</p> <p>②Tyre is not balance, and wheel hub is distorted</p> <p>③Front wheel location is wrong</p> <p>④Vehicle is over-load</p> <p>⑤Tyre has not change its position</p> <p>⑥Wheel hub bearing has been damaged or adjustment is wrong</p> <p>⑦Wheel assembly jump (axial, radial) is too great</p> <p>⑧Air pressure in tyre is too hig 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>
Front wheel shakes, swing or jump	Steering organization, running system	<p>①Tyre and wheel is not balance</p> <p>②Wheel hub bearing has been damaged or adjustment is wrong</p> <p>③Left and right swing arm ball head has been abraded or loosened</p> <p>④Drag pole tie-in has been abraded or loosened</p> <p>⑤Front wheel location is wrong</p> <p>⑥Wheel (axial, radial)jump is too big</p>	<p>Balance wheel or Change tyre</p> <p>Wheel</p> <p>Change or adjust</p> <p>Change</p> <p>Change</p>

Front wheel shakes, swing or jump	Steering organization, running system	<ul style="list-style-type: none"> <li>⑦Tyre has tympanic bag</li> <li>⑧Free travel of redirector is too big</li> <li>⑨Fixed bolts on each part of steering organization has been loosened</li> </ul>	<p>Check、 adjust</p> <p>Change tyre or wheel hub</p> <p>Change tyre</p> <p>Change or adjust</p> <p>Fasten</p>
Steering is heavy	Steering organization running system	<ul style="list-style-type: none"> <li>①Air pressure in tyre is short</li> <li>②Ball head of left and right swing arm and drag pole is blocked</li> <li>③Front wheel location is wrong</li> <li>④Steering pole pipe is blocked</li> <li>⑤Mesh clearance of redirector is too small</li> </ul>	<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>
(IV) Malfunction in brake system			
Brake is short	Brake system	<ul style="list-style-type: none"> <li>①Brake pipeline leaks fluid.</li> <li>②Aperture of brake drum and brake pad is too big</li> <li>③Brake drum and brake hoof contacts badly</li> <li>④Abrasion of brake drum and brake hoop is great</li> <li>⑤Brake main pump is damaged or leaks oil</li> <li>⑥Brake branch pump is</li> </ul>	<p>Repair</p> <p>Clean or Change</p> <p>Adjust</p> <p>Repair</p> <p>Repair or Change</p> <p>Repair or Change</p>

		<p>damaged or leaks oil</p> <p>⑦ Brake liquid is short</p> <p>⑧ Brake pipeline has air</p> <p>⑨ Arrester is too hot</p>	<p>Add</p> <p>Eliminate air</p> <p>Repair or Change</p>
Brake leaning	is Brake system suspension	<p>① Some brake drums and hoofs have oil stain</p> <p>② Gap of brake drum and brake hoof is not even</p> <p>③ Individual brake branch pump leaks oil or is blocked</p> <p>④ Air pressure in left and right tyre is not even</p> <p>⑤ Front wheel adjustment is wrong</p> <p>⑥ Vehicle frame is distorted, and left and right wheelbase is different</p> <p>⑦ Some brake pipelines is not smooth</p> <p>⑧ Individual brake drum and brake hoof contacts badly</p> <p>⑨ Suspension parts loose</p> <p>⑩ Vehicle is leaning</p> <p>⑪ Thread abrasion of left and right wheel is different</p>	<p>Clean or Change</p> <p>Adjust</p> <p>Repair or Change</p> <p>Make air pressure in left and right wheel even</p> <p>Adjust by regulation</p> <p>Repair or adjust</p> <p>Check and repair</p> <p>Repair</p> <p>Check, repair and fasten</p> <p>Verify, repair and adjust</p> <p>Change</p>
Brake block	clip Brake system  Brake system	<p>① Brake main pump could not return correctly</p> <p>② Brake hoop return spring is too soft</p> <p>③ Parking brake adjustment is wrong</p>	<p>Repair main pump</p> <p>Change</p> <p>Adjust</p>

Brake clip block		<p>④Parking brake drag line could not return</p> <p>⑤Brake branch clip block</p> <p>⑥Abrasion of brake drum and brake hoop is too big, and clearance is too great</p> <p>⑦Brake pipeline has been concaved</p>	<p>Lubricate or Change</p> <p>Repair or Change</p> <p>Change</p> <p>Change</p>
(V) Malfunction in lamplight, circuit and instrument system			
Front headlight does not illuminate	Lighting system	<p>①Bulb has been damaged</p> <p>②Adjuster has been damaged(adjusting voltage is too high to burn bulb)</p> <p>③Fuse has been burned</p> <p>④Headlight relay has been damaged</p> <p>⑤Lead or grounding happens malfunction</p> <p>⑥Combination switch has been damaged</p> <p>⑦Storage cell has been damaged(incur bulb is burned)</p>	<p>Change bulb</p> <p>Change adjuster</p> <p>Check、 Change</p> <p>Change</p> <p>Repair circuit</p> <p>Repair、 Change</p> <p>Change</p>
Only one front headlight does not illuminate	Lighting system	<p>①Bulb has been damaged</p> <p>②Lead or grounding happens malfunction</p>	<p>Change</p> <p>Repair circuit</p>
Steering light does not illuminate		<p>①Steering relay has been damaged</p> <p>②Individual steering bulb has burned</p> <p>③Grounding is bad</p>	<p>Change</p> <p>Change</p> <p>Repair</p>

Starter does not rotate when starting		<ul style="list-style-type: none"> <li>① Starter has been damaged</li> <li>② Starting relay has been damaged</li> <li>③ Grounding of starter is bad</li> <li>④ Ignition switch has been damaged</li> </ul>	<ul style="list-style-type: none"> <li>Repair or Change</li> <li>Change</li> <li>Repair</li> <li>Change</li> </ul>
All electric apparatuses do not work	Circuit system	<ul style="list-style-type: none"> <li>① Total fuse has been burned</li> <li>② Ignition switch has been damaged</li> <li>③ General wire or grounding wire has been cut off</li> <li>④ Electric bottle contacts badly or happens oxygenation</li> </ul>	<ul style="list-style-type: none"> <li>Check and Change</li> <li>Change</li> <li>Repair circuit</li> <li>Repair</li> </ul>
Some kind of lamplight is bad or complete lamplights are damaged (not including headlight)	<p>Lamplight、circuit</p> <p>Lamplight、circuit</p>	<ul style="list-style-type: none"> <li>① Switch has been damaged</li> <li>② Bulb has been burned</li> <li>③ Circuit has been cut off, linking parts contact badly</li> <li>④ Fuse has been burned.</li> <li>⑤ Grounding wire contacts badly</li> </ul>	<ul style="list-style-type: none"> <li>Change</li> <li>Change</li> <li>Repair circuit</li> <li>Change</li> <li>Repair</li> </ul>
Instrument works badly	Instrument and route	<ul style="list-style-type: none"> <li>① Fuse has been burned.</li> <li>② Route has been cut off, tie-in contacts badly</li> <li>③ Instrument has been damaged</li> <li>④ Sensor has been damaged</li> </ul>	<ul style="list-style-type: none"> <li>Change</li> <li>Repair route</li> <li>Change</li> <li>Change</li> </ul>

## IX、Screwing moment of important bolts

Sequence number	Item	Quantity	Thread diameter mm	Torque (Nm)
1	Nuts of cylinder head	4	M8	22
2	Spark plug	1	M12	18
3	Adjusting nuts for valve clearance	2	M6	14
4	Fixed bolts of camshaft chain wheel	1	M10	60
5	Bolts of chain adjuster	1	M8	8
6	Fixed nuts of crankcase combination	9	M6	10
7	Fixed nuts of left cover of crankcase	11	M6	10
8	Nuts of magnetoelectric machine flywheel	1	M16×1	80
9	Fixed nuts of driving belt wheel	1	M14×1.25	60
10	Fixed nuts of driven clutch	1	M14×1.25	60
11	Bolts of oil filter network cover	1	M36	32

### FRONT, REAR SUSPENSION AND OTHER PARTS:

DATA NAME	SPECIFICATION	QNT	MOMENT	REMARK
Screws on engine fix sleeve	M10×60	3	40N·m	
Screw on enginesuport	M10×240	1	50N·m	
Adjusting nuts for enigne	M12	2	40 N·m	
Fix screws for steering unit	M10×30	4	50 N·m	
Across rod nuts		4	60 N·m	
Nuts on across rod joint	M12	2	70 N·m	
Bolts on steering across bar	M8×25	2	25 N·m	
Screws on fixing the steering plate	M10×20	2	50 N·m	
Screws on front brake bottom plate	M10×2	8	50 N·m	
Bolts on lower swing arm	M12×80	4	55 N·m	

Nuts on lower swing bottom head	M12	2	90 N • m	
Bolts on lower swing bottom head	M10×35	4	55 N • m	
Bolts on front absorber across bar	M12×60	2	95 N • m	
Nuts on front absorber	M8	3	25 N • m	
Screws in fix winch	M8×16	4	25 N • m	
Screws in fix brake main pump	M10×55	2	55 N • m	
Nuts on brake main pump push rod	M10	1	50 N • m	
Bolts on brake main pump push rod	M8×20	1	23 N • m	
Nuts on front hub				拧紧后退回 2/5~1/2
Nut on steering wheel	M12	1	80 N • m	
Rear U bolts	M12	4	90 N • m	
Bolts on rear absorber	M8-55	4	25N • m	
Nut on cam of engine	M14	1	140N • m	
Nut on cam of reverse gear	M16	1	160N • m	
Screws in fixing reverse gear unit	M10	4	50N • m	
Screws in fixing main driver	M8		28N • m	
Nuts on tyre	M12	16	55N • m	
Screws on fram	M12×95 M12×70	6 2	110N • m	
Engine drain bolt			45N • m	
Rear axle drain bolt			55N • m	
Bolts on exhaust pipe	M8	2	15N • m	
Screws on carburetor	M6	2	10N • m	
Bolts on rear brake plate	M8	8	23N • m	
Screw on dump bed	M12×65	2	60N • m	
Screws on uplift pump	M10×50	1	50N • m	
Screws on steering limiter	M10×20	2	50N • m	
Adjusting Screws on steering limiter	M10×30	1	50N • m	
Bolts on chassis	M16×110	2	150N • m	

Bolts on hand brake	M8×20	2	28N·m	
Bolts on bumper	M10×20	4	50N·m	
Bolts on fuel tank	M8×20	3	28N·m	
Bolts on transmission	M8×25	8	30N·m	

## **X、Specification and usage quantity for fuel,**

### **lubricating oil and brake liquid**

Category	Specification	Capacity	Remark
Fuel	RQ-93 lead-free gasoline	27L	Quantity of oil box
Lubricating oil (transmission box)	80w/90	0.25L	
Lubricating oil (generator)	SAE15W—40	1.35L	
Lubricating oil (main retarder)	18# hyperbola gear oil	0.8L	
Lubricating oil(reverse gear device)	18# hyperbola gear oil	0.12L	
Brake liquid	GB1083 JG3 grade	1.1L	

