

FOREWORD

Thank you for choosing JAC. We are pleased to welcome you to the growing number of discriminating people who drive JAC truck. The advanced engineering and high-quality construction of each JAC we build is something of which we are proud.

This Owner's Manual will introduce you to the features and operation of your new vehicle. It is suggested that you read it carefully since the information it contains can contribute greatly to the satisfaction you receive from your new vehicle.

The manufacturer also recommends that all service and maintenance on your vehicle be performed by an authorized JAC dealer. JAC dealers are prepared to provide high-quality service, maintenance and any other assistance that may be required.

ANHUI JIANGHUAI AUTOMOBILE CO., LTD.

May, 2008

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All information in this Owner's Manual is current at the time of publication. However JAC reserves the right to make changes at any time so that our policy of continual product improvement may be carried out.

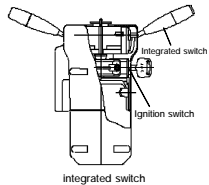
This manual applies to all current JAC models and includes description and explanation of option as well as standard equipment. As a result, you may find material in this manual that does not apply to your specific vehicle

Vehicle using

Use of instruments and apparatus in the cab

Integrated switch and instrument cluster

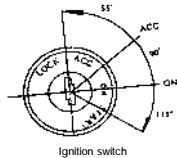
Integrated switch (figure below), which is composed of steering shaft lock seat, ignition start lock and combination switch lies underneath the steering wheel.



Integrated switch

Ignition switch

Ignition switch is on the right side of integrated switch. It has four functions: LOCK, ACC, ON, START. When the key is on the 'LOCK' position, the ignition switch has been connected to the power source and lockup of the steering gear has been disengaged. Turn the key to 'ACC' position clockwise, and circuit of accessories like radio and tape player is connected. Turn the key to 'ON' position, and the instrument circuit is connected. If keep on turning the key to 'START' position, engine can be started. You should unlatch handle of the key immediately after the engine starts. The key can return to 'ON' position by the action of spring.



Ignition switch




Combination switch (left control handle)

Combination switch is under the control of the multifunctional handle, which lies in the lower left and inferior place of the steering wheel. It can control small light, headlight, headlight dimmer and left turning or right turning by two different motion modes. The symbols and functions of

the combination switch are as follows:



left control handle

- "OFF" indicates that neither small light nor headlight lights.
-  is the indication of small light. Turn the control handle clockwise by 30° to lighten the front, rear small lights and the instrument light.
-  is the indication of headlight. Keep on turning the left control handle clockwise by 30° to lighten the front headlight, the rear small light and the instrument light.
-  is the indication of steering. Forward and backward motion of the control handle can operate the left

and the right turning lights and the turning light indicator on the instrument panel. Push the control handle forward in horizontal direction, the right turning light lights and there is indication of turning right on the instrument panel. On the other hand, pull the control handle backwards, the left turning light lights and there is indication of turning left on the instrument panel. If the control handle is in the middle position, there will be no indication of turning.


- Dimmer of headlight: Lift the left control handle upwards gently and do the "uplift-release" motion, which can control the dimmer function of the headlight. If uplifting the handle once, high beam headlight lights; if

releasing the handle, it goes out. Repeating of the above action can control the working condition of the high beam headlight to achieve the purpose of dimmer function when overtaking at night.


Combination switch (right control handle)




right control handle

-  is the indication of syringe. When the washer control button on the top of the control handle is pressed, cleaning mixture (antifreeze should be used in winter) in the window washer which lies in the right doorframe and underneath instru-

ment panel can be spouted to the windshield glass through the spout under the window.

-  is the indication of wiper. Turning the control handle clockwise in horizontal direction can control the wiper. Turn the control handle clockwise by 120 to the 'LO' position, the wiper works at a low speed. Keep on turning clockwise by another 120, the wiper can work at a high speed. When the control handle is on the original position, the wiper will be disconnected or return automatically.


-  is the indication of exhaust throttle assistant braking. Lift the right control handle upward and do the 'uplift--release' motion. Uplift the handle, the switch can be connected

and the indicator light on the instrument panel lights which shows that exhaust throttle assistant braking works. If the accelerator pedal or the clutch pedal is depressed, the exhaust assistant braking will be cancelled automatically and the indicator light on the instrument panel goes out.


Other electric appliance switches

Other electric appliance switches mainly include horn button, danger warning switch, fog lamp switch and gating ceiling light switch.

1. Horn button is in the center of the steering wheel. When the button is pressed, it can hoot.

2.  is the indication of danger warning switch. If the button is

pressed, the front, rear, left, right turning lights flash at the same time and send out emergency signal for alarm indication. If pressed again, reset signal of the switch is disconnected.

3.  is the indication of the fog light. Press this button, the fog light lights. Press it again, the switch resets.

4. Ceiling light signal indicates whether the door of the vehicle is shut closely or not. If one door keeps open or not shut closely, the ceiling light will light to remind the driver.

Other electric appliance switch

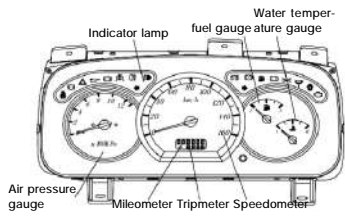


Danger alarm and fog lamp switch

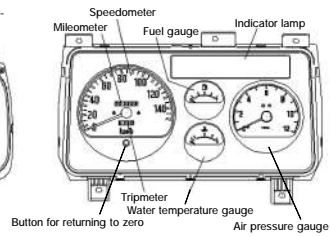


Instrument cluster

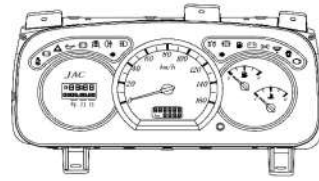
New pattern of instrument cluster (air brake)



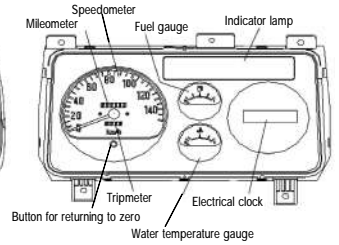
Old pattern of instrument cluster (air brake)



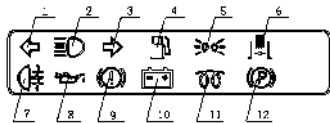
New pattern of instrument cluster (hydraulic brake)



Old pattern of instrument cluster (hydraulic brake)



Integrated cluster



- | | | | |
|--------------|-----------------|---------------------------|----------------|
| 1. turn left | 4. fuel alarm | 7. oil pressure alarm | 10.fog lamp |
| 2. high beam | 5.parking brake | 8.braking fault | 11.small light |
| 3. tur right | 6.charging | 9.exhaust assistant brake | |

- Indicators :
1. Turning indication light ($\langle \rightarrow \leftarrow \rangle$) when the turning control handle is on the left (right) turning position, left (right) turning indicator light will flash. If the warning switch is pressed, the left and right turning indication light will flash at the same time.
 2. High beam indication light ($\equiv \square$)
 3. Fuel warning lamp (fuel gauge);used for fuel level alarm, when fuel is in shortage, fuel alarm light will light.
 4. Parking brake indicator light(parking brake):

when pulling up the parking brake handle, the indicator light will light.

5. Generator indicator light(generator);in dicates the working condition of generator. When the battery is discharged, the indicator light will light; otherwise, the indicator light will go out.
- 6.Oil pressure indicator light(oil pressure) : indicates low - pressure warning of engine oil pressure. When oil pressure is lower than 0.08-0.1Mpa , the oil pressure indicator light will light. When oil pressure is higher than it, the oil pressure indicator light will go out.

7. Braking fault indicator light(braking fault) : when braking fluid is not enough, the indicator light will light..
8. Exhaust assistant brake indicator

Use of components in the cab

Cab

Brief description of the structure:

The driver cab is constructed enclosing with full metal. Window glass adopts panoramic camber windshield. In order to improve the comfort, side panel with larger upside width and raised -roof cab have been adopted. Therefore, the interior space of the cab can be more commodious and comfortable. Effective measures have taken in reducing noise, heat insulation, sound insulation and sealing. For instance, the section of roof forehead is enclosed and strengthening rib is

equipped on the roof. There are three asbestos heat insulating mattress on the upside of the engine. Sealing of the door is double skin constructed. For safety, softening has done for the main parts, which can appear knocking easily with passengers.

Air -conditioner system (choose to pack)

Brief introduction

The automobile air -conditioner with cold and warm machine is integrated with automobile cluster panel. It has many useful functions. For example, to make cold air, warm air and to remove frost. The air -conditioner system has four high and low grades, which meets your need of

choosing different air speed and direction of air sending.



Operation

1. Start the engine.
2. Press Switch 4 of the air conditioner to start air sender. The switch has four grades from left to right to make the air speed more and more quick as well as making air stronger and stronger.
3. Operate air-conditioner Switch 5, then the compressor begins to work

and the whole system works too.

4. When using cold wind, please put the Temperature adjusting handle 3 to the COOL position. When using warm wind, put it to the HOT position. To have air sending from different directions, please adjust Handle 2. To use warm wind only, please close Switch 5 of the air-conditioner.
5. Operate Handle 1 on natural wind conversion position to have natural wind outside come into the cab.

Caution!

1. Avoid putting the handle to the coldest position and pressing the air speed switch on the lowest position when using the air-conditioner in order to prevent evaporative machine from frosting.

2. Do not park the vehicle under the sun.

3. Close the door and windows of cab when using air-conditioner.

4. Use compressed air and cold water to wash the condenser. (hot water and steam are forbidden)

5. Have the compressor worked for 5 minutes once a week in winter to maintain the air conditioner work normally.

6. Make sure the temperature of water used to cold the engine reach to 70°C above when using air heater and you should use antifreeze fluid to avoid freezing radiator and inside of air heater to be cracked.

7. If you do not understand the structure and have no measures of

protection, please do not switch on the system of air conditioner to avoid accidents

The top of cab's ventilating device

You can choose two ways to ventilate the cab. Outdoor airiness and indoor airiness

Outdoor airiness

1. Clockwise the rotary-knob on the top of cab to make sure the top cab closed.

2. Turn on the switch to "IN", then turn on the rotary knob to "OPEN".

Indoor airiness

1. Clockwise the rotary knob to close the ventilator louver.
2. Turn the switch to "out" which is on the exhaust gear.



Door

1. The cab door, which has three-step opening, can improve the convenience for passengers to get on or to get off. The partial opening angle can be 30°C and 57°C. And the full opening angle can be 90°C, on all of the three positions, the door can be in stable condition. (figure above)



Outside door handle (left) Lock of door locking(right)

Pull out the outside door handle to open the door. Insert the starting switch key into the door lock and

rotate it to lock the door.

2. The door can be locked outside without the key. First press the lock button on the inner side of the doors to the fixed position, then pull the outside door handle outwards and close the door at the same time.

3. Pull out the inside door handle to open the door.

4. Press the lock button to lock the door after closing it.

Cab seat

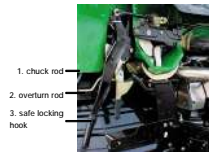
Cab seat can be classified as driver seat, assistant driver seat and rear row seat. Driver back seat adopts upright seat. The angle of backrest and the fore-and-aft position of seat can be adjusted. The maximum adjustable angle of the backrest is

56°C. The maximum adjustable distance of the seat is 160mm.



When vehicle is in the progress of maintenance, please clean the track assembly of the driver seat, recoat the lithium base grease, and tighten all of the joint nuts again. If finding the sliding track shaking or blocking, it should be repaired or be replaced with components.

Cab tilt lock mechanism cab tilt locking device



Notice



Brief introduction of the structure:

The cab has turnover functions with turnover and lockup system. Turnover system is composed of torsion bar, supporting -axle, cab's rear bracket and so on. The cab to turnover is used by torsion power. Lockup system is composed of right/left lock unit, turnover lock unit, short pull rod, long pull rod, rear bracket of cab and so on. All of these are to lock the cab too tightly and to make sure the vehicle turnover automatically when driving in any situation.

Please read the tilting notes on the left door of the cab and on the upper

flange of the wheel seriously before tilting the cab. The notes are shown in the figure above.

Use and maintenance

In order to tilt the cab and run the vehicle safely, please pay attention to the following contents.

Cab tilting method and relative notices.

1. When stopping the vehicle on the horizontal road, you should make sure that there is enough space around the cab before tilting. Or else, the cab may be damaged while tilting.

2. Pull up the parking brake, push the shifting rod into the neutral position to avoid the self-sliding of the vehicle.

3. The cab door must be fastened up. You should take away all the goods on the instrument panel, seat and floor to avoid the damage of the door and the front windshield.

4. Disengaged the locking function of the cab locking mechanism at first when tilting the cab.

5. After the locking function disengaged, hold the tilting rod with hand and pull up the safety lock hook at the same time to avoid the sudden uplift of the cab.

6. Raise the cab slowly until it tilts to the highest position, then lock it carefully with lock arm on the rear bracket.

7. When lowering the cab down, first, hold the tilting rod and disengage

the locking function of lock arm on the rear bracket, then lower the cab down slowly. After the safety lock be locked, fasten the locking mechanism.



Inspection and maintenance

1. Check periodically the rubber pad assemblies which are used to strengthen the front/rear support, if found damaged, it should be replaced instantly.
2. Check periodically the locking situation of the locking mechanism, if found not work, it should be repaired or replaced immediately.
3. If it is difficult to tilt up the cab and put it down, the torsion rod cannot work. Replace the torsion rod.
4. When repairing the chassis, before removing the cab, disengage the force of the torsion rod and operate with the following steps.
 - Disengage the locking state, and tilt up the cab to the highest position.

- Remove the shaft pin connected the rear support rod and the baseboard support of the cab.
- Push the cab forward to some angle until the bolt on the torsion rod arm can be loosened.
- After the bolt removed, the torsion rod cannot work. Now the cab can be removed. (The torsion rod can not be pulled out).

Note: The mentioned above work must be done by three persons at least because two or three persons cannot push the cab forward after the force of the torsion rod disengaged.

5. Before reverting the cab to the original position, return the force of

the torsion rod and operate with the following steps:

- Put the tooth part of the spline which is cut at the bottom on one end of the torsion rod in alignment with "1" position on the support axle tube and the spline tube, and insert the torsion rod into the support axle tube (for the rod which is pulled out).
- After mounting the cab with support axle tube and the left, right bracket together to the frame, put the "1" of hub splines on the torsion rod in alignment with the spline tooth which is cut at the bottom on the other end of the torsion rod, cover the hub splines on the torsion rod and insert the spline axle tube into the right bracket in the cab.

- Tilt the cab forward until the bolt hole on the torsion rod arm aimed at the screwed hole on the right bracket in the cab, screw the bolt and tighten it.
- Put the cab down slowly, and check whether the cab is on the state of suspending in the horizontal direction after dropped down. If it works normally, lock the cab.
- 6. If finding the torsion rod not work, referring to (4)/(5) when replacing it.

Starting and running of the vehicle

Starting of the vehicle

After making preparations for starting engine, first, put the shift bar on the neutral position, turn on the ignition switch, then check horns, instruments on the instrument panel, turning lamps, braking lamps, the angle and position of the rear view mirror.

1. Routine start

Turn the key to the START position (As shown on the right figure), the engine can start. After starting, loosen the accelerator pedal immediately and keep the engine working in low speed. Pressing the accelerator pedal

violently is forbidden.

2. Start in winter

When it is very cold, referring to the following measures to start engine.



● Use hot water to take the place of cooling water, turn on the drainage switch when heating the water. When the hot water flow out and the engine body become warm, close the drainage switch.

● Heat up the oil up to 80°C~90°C, and then add it into the oil pan.

After starting the engine, check the operating state of the engine and instruments at different rotating speed. Especially check the oil pressure. Check whether there is leakage of water, oil and gas, whether the oil level is normal and whether there is noise coming from the engine as well as checking whether the color of exhaust is normal.

3. After starting the engine, do not press the accelerator pedal violently, loosen the accelerator pedal to keep the engine operating on idle for some time. After the temperature of engine rising and the engine operates

stably, uplift the clutch pedal slowly. 4. Usually run the vehicle after the temperature of engine rising to 60°C and the operating (sound) of the engine and the reading of instruments are normal. Do not run the vehicle in low temperature to avoid wearing the engine.

Starting and shifting of the vehicle After engine operates normally, press the clutch pedal, shift into low gear, loosen the parking brake, and press the horn once. Make sure that the vehicle can be operated safely, loosen the clutch pedal slowly and depress the accelerator pedal properly at the same time to start the vehicle. After starting the vehicle, the foot should be went away from the

clutch pedal. Do not keep the foot on the pedal to avoid the burning out of the clutch friction disc.

Note: Do not let the vehicle run in the first or the second gear for a long time to prevent from increasing the wearing and the fuel consumption. Loosen the clutch pedal rapidly or depress the accelerator pedal insufficiently, the engine can stop.

When running the vehicle, shift the gear according to the change of road and landform. If finding the engine power abundant and the rotating speed rises, it illustrates that the primary gear is not appropriate, the vehicle should be shifted to the next fast gear in time.

After shifting, if not finding shortage of power and chattering of transmission, the shifting operation can be considered right. For safety, when swerving, passing bridge and meeting, the vehicle can run in moderate speed. If the running condition is better, the vehicle can run in high speed so as to make the speed higher and economize the fuel.

When shifting, do not just see the shifting rod. You should watch forward and hold the steering wheel steadily with your left hand, having the hollow of the palm of your right hand stick to the top of the shifting rod and push or pull it to the right position with your right wrist.

Running, swerving, turnaround, backing and braking of the vehicle

1. Running:

Keep enough distance to the foregoing vehicle when running on flat road. Select vehicle speed according to the vehicle model, mission and concrete condition of road, generally select the speed of 50~70km/h.

Let the vehicle run in the first or second gear when starting, upgrading under heavy load and running on bumpy road or on the road with obstacles. But the vehicle cannot be run in the first or second gear too long. When upgrading with heavy load, shift the shifting rod into low gear to avoid overloading of the

engine.
When running, do not increase or decrease the vehicle speed abruptly and do not shake the steering wheel without reason, listen whether there is abnormal noise or not, check the reading and indicator lamp of all the instruments for normalization. If finding abnormal noise or abnormal events, stop the vehicle immediately and check it, take necessary adjustment and repair.
When downgrading, do not stall the engine. When downgrading steep ramp, shift the shifting rod into low gear and take braking operation at intervals to avoid the over speeding running
When running across a shallow river

or lobbolly, prevent the water from entering into air intake lines of the engine, rear axles and transmission case. Check rear axle and transmission case for entering water after padding. If there is water, drain off it and add specified quantity of gear oil. The vehicle should not run at a high speed after padding, brake pedal should be depressed at intervals to resume the braking performance as soon as possible.
When running on icy or snowy road, run at steady speed. Do not take emergency braking and do not turn the steering wheel fiercely to avoid skidding danger. Keep long safety distance from the foregoing vehicle.
When running in heavy rain, drive the

vehicle more carefully to avoid decreasing the braking performance of the brake because of moist. Do not take emergency braking operation to avoid the danger of skidding .
2. Swerving
Swerving of the vehicle produces centrifugal force which can be bigger when the vehicle speed becomes higher. The force can bring turning over in the transverse direction in serious condition. Therefore, in the 50 -100 meters position before swerving, you should ring the horn, turn on the turning lamp and reduce on the freezing and muddy road or in the weather of heavy rain, fog, wind, sand and reduce the vehicle speed to less than 10km/h, swerve the

vehicle solely alongside the right side of road. When swerving, turn the steering wheel uniformly according to the situation of road, the swerving track should be transited smoothly , the turning motion should not be too great or too small. Do not turn or return the steering wheel suddenly. Try your best to avoid taking braking operation while turning the steering wheel, especially emergency braking. When steering, if found skidding of the front wheels, put up the accelerator pedal and turn the steering wheel properly along the skidding direction, and correct the running direction after the skidding stops.

3. Turning around;

When turning the vehicle around by 180° , select the square, large - scale crossing or flat broad which have little traffic flux and turn around the vehicle at a time along the running direction. At the 50 -100 meters position in front of the turning spot, reduce the vehicle speed, shift into low gear and send out turning around signal.
When turning around with running forwards and backwards , send out a turning around signal at first, reduce the vehicle speed and run towards the right side of road . When approaching the preset spot for turning around, observe the situation of road, turn the steering wheel to the left extreme position rapidly and

have the vehicle run to the left side of road slowly. When approaching the roadside, return the steering wheel rapidly. After observing the situation behind the vehicle , start and turn around vehicle, turn the steering wheel to the right extreme position at the same time. When approaching the roadside, return the steering wheel rapidly and stop the vehicle. If the turning around operation can not be done for once , repeat the operations above.
4. Backing ;
The operation of shifting into reverse gear or shifting from reverse gear to onward gear can be done after the vehicle stopped completely. After shifting into the reverse gear, the

back -up light lights. The vehicle speed must be less than 5 km/h when backing. If the driver cannot discern the situation behind the vehicle because the vehicle is loading or because of other reasons, the backing operation must be commanded by one person who is not in the vehicle. Do not back the vehicle without commanding.

5. Parking of the vehicle and stop of the engine.

When preparing to park the vehicle , the vehicle speed reduces or the vehicle slides out of gear and indicates with turning light. After the vehicle parked. Pull up the parking brake rod . If the vehicle must be parked on the road for some

reasons, park the vehicle near the roadside and do not park the vehicle on the running lane. Under the exceptional condition like breaking down in the middle of road, two caution plates should be placed on the position of 200 meters in front of and behind the vehicle.

Avoid parking on the ramp. If the vehicle must be parked on the ramp, pull up the parking brake rod to the extreme position, shift into low gear and block the vehicle with triangular chocks or stones to prevent it from sliding. Note: Make sure that the parking brake can work when parking on the ramp at the same time, turn on the emergency warning signal indicator light.

After parking, especially after the engine operates with heavy load, do not stall the engine immediately, and keep the engine operating in low speed for several minutes. After the temperature of water decreases to less than 70°C , vehicle is going to stop.

When parking midway in winter, take the heat preservation and anti freezing measures for the engine. Prevent the oil tank from isolation in summer.

After the vehicle runs, routine service and inspection should be done on the entire vehicle.....

Note: The details of the engine structure, assembling, adjustment, using and maintenance can be consulted in the operating specification of relevant engines.

Note: there is a signboard of engine on the top or on the side of the cylinder. Marked with model of engine, serial number when leaving the factory, date when leaving the factory, demarcated rotational speed etc. please find the exact position so as to use and repair our product.

The signboard of engine



Air inlet and air exhaust systems

Inlet system includes air inlet pipe assembly, air filter, branch pipe of air inlet. Air exhaust system includes exhaust pipe, muffler and exhaust tailpipe etc.

Using and maintenance

1. Service life of engine has the closest relationship with the working condition of air filter. It is forbidden to use the engine without air filter or with air filter that cannot work. Taking the air inlet port of air filter as the initial air inlet port is also forbidden.
2. Check the inlet manifold and exhaust manifold for every 1000km running.

- Check nuts for looseness, when tightening the nut on the inlet and exhaust manifold, the torsion force should be equable, or else the air leakage can occur.

- Check the inlet and exhaust manifold for crack and hole, check the gasket for damage and erosion, if finding those phenomena, replace it with a new one.

Air filter

The function of air filter is to filtrate out the dust and the sand in the air entering into the engine.

Air filter is cyclone dust gathering air cleaner with paper filter element. After external air entering into the air filter through the air entering into the air filter through the air inlet pipe,

larger dust particle can be separated from the air by the function of cyclone vane, then can be thrown into the dust gathering plate, the separated air keep on moving and enter into the cylinder by the filtering function of the paper element.

For every 1000km running, check and maintain the air filter. When running in the condition of excessive dust, the running mileage interval for inspection and maintenance should be shortened suitably.

Cleaning of the air cleaner:

1. Remove the dish shaped nut from the covering lid. Get the filter element after opening the covering lid.
2. Clean the covering lid and inside of the outer covering with clean and

dry cloth. When cleaning, do not let the water enter into the filter element.

3. Clean the dust unloading valve to make sure it isn't worn and can work.

4. Check whether the rubber tube connected to brake is tight or not and close it tightly.

5. Clean the filter element of the filter. Use compressed air gun to remove the dry dirt or dust (air pressure should be less than 690kpa), remember to blow from inner side to outer side of the filter element to clear away the dirt or dust. Patting or knocking are forbidden.

Cooling system

Brief description of the structure

Cooling system adopts closed water-cooling pressure cycle type. It is composed of radiator, cooling fluid, thermostat, fan gear, connection hose etc.

Maintenance of cooling system

1. It's recommended to use long-term effective antifreeze preservative liquid of glycol base as cooling fluid. In the north, it can avoid damage to the engine due to solidification of cooling fluid in winter; in the south, it can increase the boiling point of cooling fluid in summer to avoid damage to engine due to air resistance in high temperature.

2. Every time before driving, check

the liquid level in the radiator, if the liquid is found insufficient, it should be added to specified level.

3. Drainage of cooling system. In cold region and in winter, for long-time parking or finishing using the vehicle everyday without using anti-freezing preservative liquid, the cooling system must be drained and the water filler cap of the radiator must be opened to avoid the incomplete drainage of cooling water.

4. After engine operating for a long time, furring can be produced in the cooling water and it should be cleaned in time. Clean it with the following method: mix 700 - 800gram kerosene, add the mixture liquid into the cooling water, run in medium

speed for 5 - 10 minutes, then after engine stop working for 10-12 hours, restart the engine and run for 10-15 minutes. Then drain the cooling system with cleaned water.

Items in using long-term effective anti-freezing preservative liquid

1. Choose suitable antifreeze according to the lowest temperature of the region, if the lowest temperature of the region is -25°C , antifreeze of which solidifying point is -30°C should be chosen.

2. Anti-freezing preservative liquid of the same type should be used in adding in case of deposition.

3. If finding deterioration of the anti-freezing preservative liquid, replace it entirely at once. Normal color of the

anti-freezing liquid is green or blue, if the liquid is deteriorated, the color will become deep red because of infiltration of impurity.

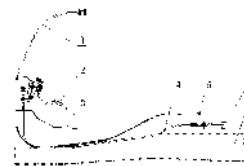
Adjusting of tension degree of fan belt pulley

1. Too light or too loose fan belt does no good to operate the engine. Consult engine assembly for details of adjusting methods.

2. Adjusting methods: Adjust the fan belt with adjusting bolts first, then do accurate adjusting with the tension rod: adjust degree of tension of the V-belt with fingers, press each belt with 98N force. Length of crankshaft belt pulley - belt tension pulley is 10-15 mm and length of belt tension pulley - fan belt pulley is 7-8mm.

Accelerating transmission system

Schematic diagram of accelerating transmission device



- Hand throttle
1. Braking pedal bracket
 2. Manual throttle drawing wire
 3. Accelerator drawing wire
 4. Accelerator assembly
 5. Accelerator pedal assembly
 6. Acceleration oscillating arm of the engine
 7. Frame

Brief description of the structure:

Accelerating transmission device is composed of accelerator pedal mechanism, accelerator drawing wire and speed governor handle of the engine. (As shown in the figure above)

When pressing the pedal, driving device of the mechanism pulls the

drawing wire and controls the opening extent of the accelerator to increase or decrease the speed

1. Accelerator pedal mechanism: This mechanism adopts the latest structure of ISUZU truck. It operates simply and safely and is connected to the accelerating drawing wire and

the hand throttle drawing wire; structure of the pedal adopts injected molding type, which makes the assembly convenient and causes little operating noise.

2. Accelerating wire drawing:

It is operated with soft drawing wire and has a safe structure; it's characterized with convenient layout, little frictional resistance and stable transmission.



3 Manual throttle drawing wire:

Using with the foot throttle can quicken the preheating of the engine or increase the idling speed.

Using and adjustment

1. Check the chucking position of the linkage rod and the accelerator mechanism for rightness and reliability, check the direction of the wire drawing for straight and check on the cornering for smooth transition.
2. The pedal should be depressed easily and to the extreme position without jamming. When released, it should return freely.
3. When pressing the pedal, if the free play is too large or the opening degree of the accelerator is insufficient, adjust the position of bolts.

Fuel supply system

Brief description of the structure:

Fuel supply system is composed of fuel tank, fuel filter, fuel pump, fuel injection pump, fuel inlet pipe and fuel return pipe.

The function of the fuel supply system is to inject specified quantity of diesel well atomized into the cylinder regularly with definite interval of injection and under definite pressure according to engine -operating requirement as well as making the diesel mix with the air well and rapidly. Operating state of fuel supply system has great influence on power and economic performance of the engine.



Rough filter: fuel supply pipe is mounted with DX150T type spin-on precipitator. Its flow volume is 1.5L/min. It can filter big foreign particles and can separate oil from water.

Fuel tank: oil filler is mounted with filtering screen so as to prevent big foreign particles from entering into fuel tank. The lowest position of bottom of fuel tank is mounted with oil bolt to clear the deposit and water away.

Using and maintenance of rough filter:

1. Check the chucking position of pipeline interface for sealing ,reliability and air leakage.
2. Check DX150T type precipitator for water -proofing maintenance for every 1000km or 200hs'working . It's unnecessary to change the filter element.

Chassis

Clutch

Brief description of the structure:

The clutch equipped for this series truck is single-plate dry type diaphragm spring clutch. Clutch facing is composed of two friction discs and clutch facing riveted with rivet. Clutch pressure plate presses friction discs on pillar by using pressure produced by diaphragm spring to produce jointing force.

Adjustment of the clutch operating system:

1. Adjust the limit screw of the clutch pedal to make sure that the free play of the pedal is 3-5mm.
2. Adjust the master cylinder of the clutch: Loosen the locknut on the push rod of the master cylinder, ro-

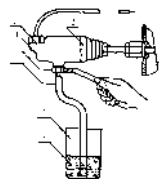
tate the end of the push rod to contact gently with piston of the master cylinder, then rotate the push rod for 3/4 circle in the contrary direction, tighten the locknut of the push rod, and the clearance between the push rod and the piston is about 0.5-1mm.

3. Adjust the clutch release pump: rotate the adjusting nut on pump's push rod and have the clutch release finger touch the clutch release bearing. Then rotate adjusting nut in the contrary direction and make the free play of clutch release fork reach to 2-3mm. Tighten the nut at last. Part of the vehicle model use clutch booster. Adjust the free play of the rocker arm end on clutch release fork

to 3-5mm

4. Bleed air from wheel cylinder of the clutch

Air or oil leakage in the hydraulic pipeline of the clutch is not allowed, or else, it can result in the disability of the pedal, deficiency of the effective travel and incomplete release of the clutch etc., which make the clutch not work normally. The work of air bleeding should be completed by two persons. One person presses the clutch pedal and the other bleeds the air.



1. release fork
2. dust cover
3. copper washer
4. release cylinder
5. wrench
6. soft plastic pipe
7. container
8. braking

Take off the rubber cap of the air bleed screw on the wheel cylinder, link a plastic pipe on the air bleed screw, put the other end of the pipe into the container filled with brake fluid, press the clutch pedal for sev-

eral times, fill the master cylinder and hydraulic pipeline with brake fluid, then loosen the air bleed screw. Air bubble can be puffed from the oil ring if there is air in the pipeline. Before the pedal reaches the floor, tighten the air bleed screw. Repeat the operation mentioned above until there is no air bubble releasing.

Maintenance and adjustment of clutch
Long time use or incorrect adjustment and incomplete air bleeding of the clutch can cause incomplete release of the clutch and make the clutch in half contact state for a long time, which aggravate wearing of the clutch pressure plate and friction linings. Decrepitating, burning and exfoliation of the friction lining, and

burnout of the release bearing can even result in the abnormal operation of the clutch. When doing maintenance, all kinds of clearances of the clutch must be adjusted. When doing class-three maintenance, clean the master pump and distributor pump and liquid reservoir tank, filling the new lubrication into the inside of release bearing.

Transmission

Transmissions equipped for the chassis of this series of truck are LC5T97, LC5T30, LC6T46. Among these, LC5T97 and LC5T30 are manual fixed axle with stages. There are five forward gears and one back gear. The second, third, fourth and fifth gear has synchronizer that is synchromesh. The first and back gear are constant mesh. Transmission uses synchronizer to make gear shifting convenient. It can reduce wear and tear of tooth and shock, prolong the life of gear linkage, shorten the time of gear shifting, improve the average vehicle and reduce labor intensity etc.

Gear shifting of transmission is

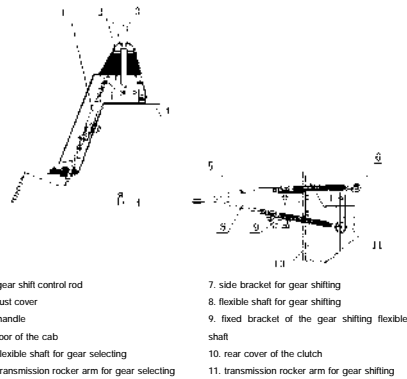
worked by transmission gear shifting control mechanism, controlled by long-distance soft shaft and rod.

Shifting control device of transmission.

Shifting control device of transmission is controlled by long-distance soft high-floor short rod, using two flexible shafts to choose and shift gear. It is composed by control bar base assembly and gear selecting/shifting and prop stand. The inner core shaft of flexible shaft is steel wire rope. Gear selecting/shifting is accomplished by steer wire rope's pulling and pushing motion. The ball on the flexible shaft and adjusting screw are used for adjusting the total length of the flexible shaft to ensure

the gear selecting/shifting can be completed. There are marks of the transmission, which is shown in the figure below.

Control handle of transmission
Schematic diagram of the transmission gear shift control device



1. gear shift control rod
- 2.dust cover
3. handle
- 4.floor of the cab
5. flexible shaft for gear selecting
6. transmission rocker arm for gear selecting

7. side bracket for gear shifting
8. flexible shaft for gear shifting
9. fixed bracket of the gear shifting flexible shaft
10. rear cover of the clutch
11. transmission rocker arm for gear shifting

Using and maintenance:

1. If finding the gear shifting cannot operate or operates difficulty when the engine is not working, it shows that the gear shifting rod (or the flexible shaft) has maladjustment or the bolt becomes loose, now you must adjust the control rod (or the flexible shaft), check and tighten every bolt and every nut.
2. If finding out-of-gear when running on the rough road, the control rod (or the flexible shaft) has maladjustment, and it should be adjusted correctly.
3. If finding free play of the control rod is too large, check and tighten every bolt and every nut.
4. Do not take gear shifting operation

when the engine works at an over fast speed to avoid accelerating the wear of the synchronizer.

5. When shifting, the force should be gentle. The hand force must be acted on the control rod until the gear reaches the correct position. Shifting with flap of push and loosening is inappropriate and the shifting operation cannot be accomplished easily in this way.

6. You can shift from forward gear to reverse gear or from reverse gear to forward gear only after the vehicle stops stably, or else, the gear can be damaged.

7. The fifth gear is over-speed gear, it can be used when the vehicle speed is over 50 km/h to avoid dam-

age of the over-speed gear resulting from over loading.

8. During driving, if there is any abnormal noise in the transmission, stop the vehicle and check it to eliminate the malfunction.

9. When sliding on the downgrade, stalling of the engine is not allowed; starting the engine with the inertia of sliding on the downgrade is forbidden in case of damage of the gear and the synchronizer.

10. During breaking-in period of the new vehicle, because the metal chipping which is produced by the frictional function between new parts does harm to components in the transmission, especially to the durability of the conical rings of the syn-

chronizer, so the lubricating oil should be replaced after the breaking-in period of the new vehicle expires. Under general condition, replace the lubricating oil once for every 6000 km running. When replacing the lubricating oil, first drain off the oil in the transmission, prop up the rear axle, shift the transmission into the reverse gear, add kerosene, keep the transmission rotating for 2-3 minutes, then drain off kerosene, add pure gear oil.

11. Check the oil level in the transmission frequently, if the oil level is under the lower edge surface of the oil filler bolt hole, sufficient oil should be added.

12. Check the outside bolt of the

transmission and the flange of the second shaft for tightening and working condition of the components in the transmission frequently. Because the vent plug is easy to block by dust, which causes increasing pressure in the transmission, oil seepage or leakage, so the vent plug should be cleaned periodically.

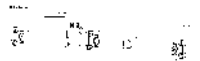
13. The movement part of shifting operation component should be lubricated well, or else, it will be hard to shift because of the wearing of the movement parts. If the position of gear selecting is found incorrectly, or gear shifting is difficult or the transmission is out of gear automatically in using, firstly you should readjust the gear selecting and shifting mech-

anism.

14. Gear selecting/shifting should be arranged well. The smallest bending radius should be 200mm or larger than that.

Drive shaft

Brief description of structure:
Drive shaft of this loaded truck is exposed cardan shaft. The front flange yoke of drive shaft assembly is connected with transmission, while the rear flange yoke is connected with rear driving gear flange.



1. Intermediate driving shaft
2. rear axle driving shaft

Using and maintenance:

1. Drive shaft has been counterpoised in factory, it should be ensured not to impact in use and not to

knock and stack when doing disassembly and assembly work or carrying. Replace a new one if the shaft is distorted or the balancer is desquamated, otherwise, there will be vibration, noise, and extra impact in running, which can damage other assemblies and even endangered running.

2. Check oil seals of center supporting bearing, needle bearing of cross shaft, sliding spline regularly, replace invalid oil seals instantly

3. When doing class -one maintenance, lubricate the universal joint, slide spline and intermediate bearing. When adding lubrication to the universal, extrude the oil pistol quickly to fully lubricate the needle bearing

of universal joint, check and tighten drive shaft and the connecting bolt in every position of intermediate support.

When doing class -two maintenance, check whether the dust cap drop and whether the universal joint's free rotate motion get stuck. When the cross shaft lies in the needle bearing, tear down the universal joint if the radial play is too wide. Replace the needle bearing or cross shaft according to your requirement

When doing class -three maintenance, disassembling the drive shaft is necessary, pay attention to making the mutual mark for the flange yoke, cross shaft and connecting yoke. For slide spline shaft, make the cooper-

ative mark on the flange so as to mount on the original position. After finishing all the maintenance items, having balanced check again is better. The standard of dynamic balance is 2750 turn per minute and the unbalanced volume is less than 144g/cm

Rear axle

Brief description of structure:

Rear axle is single reduction driving axle, which is composed of final drive and differential and axle housing. It is medium and final class speed reduction driving mechanism in driving system. Final drive can not only change the direction of driving force, but also reduce the rotate speed. It's composed of drive pinion and driven gear and final drive. The drive pinion is connected with drive shaft, whose end with spline is connected with universal joint assembly by coupling flange. Driving bevel gear's toe end axle journal is mounted on guiding cylindrical roller bearing and bears radial force only.

Driven gear is also called crown gear and is fixed to left half flange of the differential case with bolts. Differential is a kind of device that is composed of differential case, cross shaft and four planetary pinions is a device that makes the left wheel and the right wheel run at a different speed when necessary. Rear axle housing is an integrated axle housing that is made of welding punched armor plate.

Final drive's tooth face meshing and adjustment of gear lash

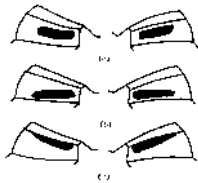
1. Check drive gear bearing's pre-tension level. The pre-tension force of drive gear bearing should be adjusted. When measuring bearing case's bolt hole, tangential stress is

15-30N.

2. The adjustment of drive gear bearing's pre-tension force is a process of adding and reducing number of adjusting shim. When adjusting shim adds, friction moment will be reduced. When adjusting shim reduces, friction moment will be added. Thickness of friction moment has three norms of 0.40mm, 0.45mm, 0.50mm.

3. Check final drive for meshing between drive pinion and driven gear. The contact area and side play between drive pinion and driven gear can be adjusted by means of adjusting shim and adjusting collar of differential bearing. There are four kind of shims according to thickness,

0.30mm, 0.40mm, 0.45 and 0.5mm. Normally, the clearance between these two gears is 0.15 - 0.25mm, while the side play ranges under 0.07mm. To adjust side play, measure four points with equal angle around the driven gear, and the gauge outfit of micrometer should be in a vertical position.



To adjust tooth contact area, driven gear should be coated with red lead in three points, and 2-3 teeth should be coated in every point. Then rotate gears clockwise and anti-clockwise to get the trace of contact area. (see the right figure). If tooth contact area doesn't conform to the requirement showed in figure (a), adjust it to conform to the requirement. If trace deviate from convex or concave tooth root, add adjusting shim. If trace deviate from convex or concave tooth top, reduce adjusting shim.

Correct contact trace should deviate from toe end of tooth, as figure (a), trace deviate from convex or concave tooth root, as figure (b), trace deviate from convex or concave

tooth top, as figure(c).

Adjustment of rear axle's hub bearing: tighten the bearing lock nut to a certain force moment and release 1/3 - 1/4 circle. Pre-tightening force moment is 490-588N.m

Maintenance of rear axle:

1. Hyperbola bevel gear requires a strict standard of lubricating, only can be filled with specified gear oil. Don't use or mix with other gear oil, or else, it will result in quickened scratch and wear.
2. Don't remove or adjust the conical gears and bearings of final drive, for they have been matched and adjusted in factory. Removing and adjusting should be done only as the gears are worn and the gear clearance is

beyond the specified value or the bearing axial clearance is too large, or the damaged parts must be replaced.

3. Clean the vent plug regularly, disassemble it when doing class-one maintenance to make sure ventilation expedite. A jammed air drain can bring higher air pressure in the rear axle, which will result in lubricant leak from the drive pinion seal and other welding line. Check the level of lubricant in axle housing.

4. For a new vehicle, lubricant should be replaced when doing class-two maintenance. Afterwards, check the quality of lubricant during class-two maintenance every time. Replace new lubricant if color -change or

thinness has taken place.

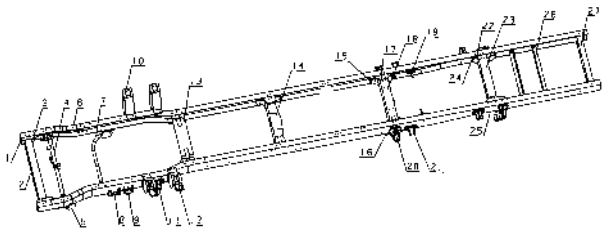
5. Dismantle the rear cover when doing class -three maintenance. Clean the inner cavity and final drive assembly, screw bolt and nut referring to the specified force moment.

Frame

Brief description of structure: Truck of this series is of side-member structure.

Using and maintenance

Side member, cross member and every component fixed on the frame are connected using rivet or thread and welding. Only when all the components are in perfect condition, can the frame be used well. Having overall check when doing class -three maintenance. Tighten the rivet and thread if they loose and renovate the cross member in time if there are crack and shape distortion on it. Shape distortion and damage of frame have close relationship with overloading and parking location and driving condition (vehicle speed and road condition).



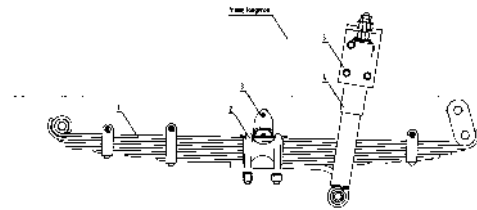
- | | | | |
|--|---------------------------------------|--|---|
| 1. front bumper bracket assembly | 7. engine front support assembly | 15. frame's rear spring front reinforced plate | 21. additional spring support |
| 2. the first cross beam | 8. front steel spring limit stop | 16. frame's reinforced plate | 22. the sixth cross beam coupling plate |
| 3. the first cross beam reinforced plate | 9. engine front support outer support | 17. the fifth cross beam reinforced plate | 23. the sixth cross beam |
| 4. the second cross beam assembly | 10. cab's rear support assembly | 18. the fifth cross beam | 24. frame's rear spring rear reinforced plate |
| 5. front spring fixed support assembly | 11. front spring shackle bracket | 19. rear shock absorber's support assembly | 25. frame's reinforced plate |
| 6. side member | 12. cab's rear support assembly | 20. rear spring fixed support | 26. spare-tire carrier cross member |
| | 13. the third cross beam assembly | | 27. rear cross member |
| | 14. the fourth cross beam | | |

Suspension

Brief introduction of the structure:
The suspension of this series of

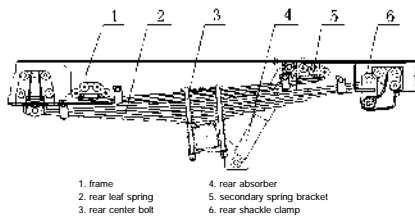
trucks is composed of leaf spring and bi-directional hydraulic telescopic shock absorber. There is transverse

stabilizer mounted forward and backward. The next figure shows our front suspension assembly.



- | | |
|----------------------------|-----------------------------------|
| 1. front leaf spring | 4. shock absorber |
| 2. front saddle clamp bolt | 5. front shock absorber supporter |
| 3. damping ring | |

The next figure shows rear suspension assembly.



Using and maintenance of leaf spring
1. When vehicle runs for 200km and 500km during the beginning of break-in period, check and tighten U-type bolt on leaf spring with specified torque under load bearing state.

2. After break-in period, tighten U-type bolt on leaf spring with specified torque when vehicle is fully loaded. Do it also when leaf spring is replaced or reset for running every 2000-3000km.

3. Tighten U-type bolt on leaf spring with specified torque when vehicle is fully loaded for running for 2000km-3000km.

4. Check and tighten exposed bolts and nuts of the suspension (with vehicle fully loaded) when doing class-one maintenance. Check rubber parts of the suspension, if the rubber parts are worn greatly, replace them instantly.

5. When doing class-two maintenance, carry out class-one items and dismantle the leaf spring as well as lubricating it, check the transverse stabilizer rod at the same time.

6. When doing class-three maintenance, carry out class-two items and dismantle all the rubber parts and

replace new ones.

7. When replacing leaf spring and dismantling or assembling center bolt, pay attention to the assembling direction of front and rear steel plate. When tightening leaf spring U-type bolt and nut, screw it using well-distributed force at first, then screw front U-type nut according to specified force moment and screw rear ones. Using and inspection of shock absorber:

1. Check the absorber for temperature after running a certain length on bad road surface (usually more than 10km) There is no resistance if the temperature is low (lower than air temperature) and shock absorption doesn't function. If one absorber has

much lower temperature than the symmetrical one, the lower one's resistance is much more smaller. Lower resistance result from lacking in oil or from damage of some important parts, and the absorber that lack in resistance should be removed to inspect.

2. Check the shock absorber for oil leak if continuous abnormal vibration is detected in running. Oil leak should be dealt with in time, so that the shock absorber can work normally.

3. Check absorber when maintaining vehicle. To check absorber, stick up it and hold its lower end by vise, then pull and press it for several times. Normally the resistance is bigger when pulled, otherwise the

absorber is damaged or lack in oil. Repair and replace parts and add absorber oil in time to avoid serious damage.

4. If it's necessary to replace absorber rod, replace oil sealing at the same time. If necessary, don't dismantle valve parts casually.

5. When doing class-three maintenance, dismantle and clean the absorber, replace the absorber oil. Don't forget cleaning when adding oil.

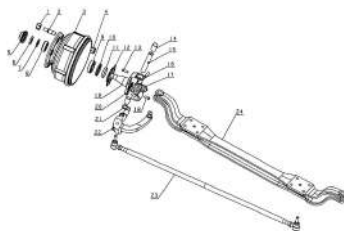
Front axle

Brief description of structure:

Front axle assembly is composed of front axle, steering knuckle, left & right steering knuckle arms, king pin, front brake and tie rod etc.

Adjustment of front axle:

1. Adjusting of the front wheel hub bearing: To adjust front hub bearing in axial retightening force, tighten fastening nut with wrench, and loosen knuckle nut for about 120°C. Rotate the hub clockwise and anti-clockwise, make sure that roller against the tapered contact the bearing outer race properly, then tighten nut to the position where the rabbet aims the split pin hole. Check the hub if it can rotate freely and don't swing a lot. Now, distort the split pin and fix it.



1.tire nut	7.lock plate	14.bush	20.thrust bearing
2.front hub bolt	8.hub outside gearing	15.king pin	21.steering knuckle king pin lid
3.front hub and brake drum assembly	9.hub inside gearing	16.king pin latch	22.steering bending arm
4.front hub inside nut	10.oil seal	17.nut	23.tie rod assembly
5.hub cap	11.oil seal carrier	18.steering stop bolt	24.front axle
6.steering knuckle	12.oil guard	19.steering knuckle pin bush assembly	
	13.brake bottom plate bolt		

2. Adjustment of clearance between knuckle and front axle: The clearance is adjusted via adjusting shim, it should be less than 0.1mm. Use thrust washer to adjust its clearance.

3. Adjustment of toeing -in. The toeing -in can be adjusted via adjusting tie rod. Park the vehicle on a flat ground, jack up its header and orient front wheel just as vehicle run forward. Loosen locking nuts of tie rod, rotate the tie rod till the toeing -in fit the specified size. Then tighten the locking nuts.

Using and maintenance:

1. When doing class -one maintenance, check tightening situation of each nut. Lubricate longitudinal and tie rod ball pin, steering knuckle king

pin and bush.

2. When doing class -two maintenance items as well as doing some checking. Check whether there is damage and crack on steering knuckle, steering knuckle bending arm and left and right steering knuckle arm. Check the fitness of steering knuckle king pin and bush. Check the wearing situation of longitudinal and tie rod connector. Adjust toe -in and dismantle hub according to the formulation as well as lubricating hub gearing and adding lubrication.

3. When doing class -three maintenance, disassemble to clean and check it, then assemble it again .

● Use thrust plate to adjust steering knuckle and front axle if the clearance between them become wide, keep the clearance less than 0.1mm.

● Replace king pin or bush if the clearance between steering knuckle king pin and bush reach 0.15mm. Replace king pin if its diameter has worn to 0.07mm.

● Replace ball pin or ball cup of steering longitudinal rod have worn a lot and the clearance can not be removed.

● Replace hub oil seal if there is damage and aging of cutting edge.

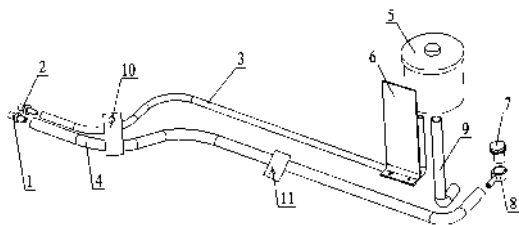
Steering system

The steering system of this series of truck is power steering system.

Power steering system

It is composed of steering control mechanism, transmission mechanism,

utilized power-steering gear, power steering pump and power-steering pipeline etc.



- 1. steering gear fuel inlet nipple
- 2. steering gear fuel outlet nipple
- 3. power-steering fuel return flexible pipe
- 4. power-steering flexible pipe assembly

- 5. power-steering oil container assembly
- 6. power-steering oil container supporter
- 7. oil pump outlet bolt
- 8. oil pump inlet nipple

- 9. oil pump inlet flexible pipe
- 10. hose clamp
- 11. wire clip

Power steering system adopts driver's physical power and engine power as steering energy. It can be steering solely driven by driver if the boost device do not work. So compared with common mechanical steering system, power-steering system is acuter and safer, easing fatigue of driver to a large extent.

Checking procedures of power-steering system's working state:

1. Put front wheel on the steering platform.
2. Turn the steering wheel to left and right pole to check if the steering wheel has phenomenon of getting stuck and getting impeded.
3. Check free play of steering wheel when engine runs in idle speed. Free

play of steering wheel is 15-35mm. Rotate adjusting screw clockwise to decrease the free play, while rotate anti-clockwise to increase it.

4. Rotational force of steering wheel is around 19.6N when engine runs in idle speed.

5. Check working condition of all of the switches including starter switch, rain wiper switch, exhaust brake switch, horn switch and combination switch.

Procedures of air exhausting in power steering system:

1. Add steering oil (specified oil) into oil tank.
2. After standing up the front axle by using jack, use prop stand to support frame.

3. Rotate steering wheel to left and right pole for several times.

4. Check oil level of power-steering oil tank, add steering oil if there is not enough oil. Check whether oil level is in normal temperature scope.

5. Start engine, rotate steering wheel to left and right pole for several times if engine runs in idle speed. During the process of exhausting air, add steering oil constantly into oil tank to ensure power-steering oil tank full.

6. Rotate steering wheel to make wheel confront forward.

7. After switching off engine, check oil level and add steering oil if necessary.

Note: check whether steering oil is in high temperature scope, if steering

ring oil has been cooled, check whether it is at normal temperature. If finding problem, repeat step4 and step5. If the problem still exists, repair power-steering pump.

Check and maintenance:

1. Replace steering gear oil in time and clean & replace filtering screen in oil tank when a new truck runs for 3000-4000km and runs every 5000 km afterwards.
2. Check oil volume and oil quality in oil cylinder often, adding or replacing if oil goes bad.
3. Pay attention to the mark of oil inlet and outlet in pipeline connecting when strip and re-assemble steering mechanism to make sure it is connected right. After connecting pipe-

line, check it to prevent air from entering into oil outlet pipeline of oil pump. Start engine to make it run in idle speed and add oil into oil tank. If the system has not been poured enough oil, rotate steering wheel repeatedly left and right to extreme position and add oil into oil tank at the same time until oil level in oil tank doesn't drop and has no air bubble. Add oil until oil level is marked. When adding, check oil tank and pipeline connector of steering system to make sure them clean, having no impurity. Specific connect are as follows:

- Connect oil outlet to oil inlet of steering oil pump.
- Connect oil return hole of steering gear to oil return hole of oil tank.

4. When power-steering system doesn't work, driver can use hand depending on mechanical steering part. However, using mechanical steering only for a long time is forbidden.

5. Power-steering system has a function of spot turn. Be sure to avoid rotating steering wheel to extreme position to prevent decreasing life of components.

6. Add liquid oil according to prescription. If surrounding temperature is 0°C above, use L-HM464# antiwear hydraulic oil. If surrounding temperature is 0°C below, use L-LM32# antiwear hydraulic oil or 8# hydraulic automatic steering oil. (mixture of different oil type is forbidden). Use DEXRON II type hydraulic oil for im-

port power-engine steering gear or steering pump. (referring to American General Motors Corporation standard)

Using and maintenance:

1. Using of power-engine steering system

- Rotating steering wheel to extreme position for 5s is forbidden.
- Continuing rotating steering wheel after rotating to dead space is forbidden.

● Rotating steering wheel when wheels stand still is forbidden.

● Rotating steering wheel for more than 90r/min is forbidden.

2. Maintenance of power-engine steering system

Carry out principle of vehicle maintenance

that is "preventing mainly, check and measure periodically and maintain obligatorily". Obey Ministry of Communication standard JT/T201-95

* Norm of vehicle maintenance craft * and Ministry of city Construction standard CJ17-86 * city bus repair in technique condition *.

● Make inspection and adjustment on steering system before driving, during driving and after driving to guarantee driving safety.

● Class-one maintenance (2000-3000km)

○ Add lubrication periodically into every lubricating point and add power-steering oil in time when power-steering system oil is not enough.

○ Make sure cross shaft and steering cross and straight pull rod rotate flexible and tight

○ Check the tightening condition of every connection point to make sure them tight.

○ Check connection point of pipeline to make sure there is no leakage.

● Class-two maintenance (10000-15000km)

○ Replace power-steering oil.

○ Clean filtering screen of power-steering oil tank.

○ Check slack of steering-wheel and adjust it to allowable value.

○ Make flaw detection on front shaft, ball pin, steering knuckle, steering knuckle arm, steering drop arm and steering gear support frame.

○ Disassemble cross and straight pull

rod, clean and check each component to make sure there is no crack on the body of cross and straight pull rod as well as making sure screw thread on two ends not worn and limit wearing scope to 2mm for cotter pin hole of cross and straight pull rod, 0.5mm for spherical surface. Also make sure spring can work well.

○ Referring to JT/T 201—95 for other non-mentioned part.

● For vehicle mounted steering drop arm limit bolt :

- Make sure limiting reliability
- Do instant replacement if finding damage on steering gear support frame check arm.
- Check connection bolt connecting steering gear and support frame as well as checking support frame and vehicle frame to make sure them tight.

○ When doing left and right steering, steering straight pull rod should not be interfered in steering gear support frame limit arm. If it results in the damage of straight, replace it in time.

Braking system

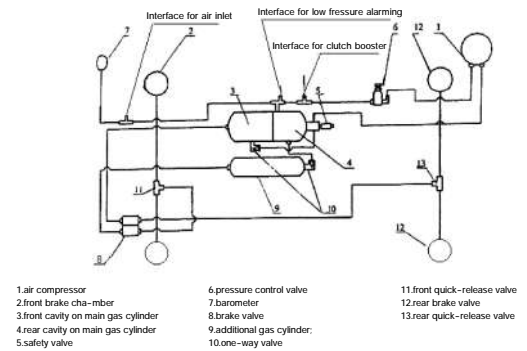
Braking systems of trucks of this series are: parking brake system (center drum) and running brake system (air brake, hydraulic brake)

Running brake system

Air brake

1. Brief description of this system:
Compared with hydraulic brake, air brake can bring greater braking force under the condition that force on the pedal is not great and the pedal stroke is not long; at the same time, dual-circuit air-pressure driving braking device is equipped to front and rear wheel separately, so the braking is safe, reliable, labor-saving, and more effective; even if one of the brakes does not work, the vehicle can still brake safely.

2. Structure and theory (referring to the following diagram).



Brake pipeline is arranged as follows: compressed air produced by air compressor 1 comes into the main air reservoir 3 (namely wet air reservoir); and then the air is separated into two and come into the front chamber 9 of the auxiliary air reservoir and the rear chamber 4 of the main air reservoir. Compressed air in the front chamber 9 of the auxiliary air reservoir and the rear chamber 4 of the main air reservoir come into upper and lower chambers of brake valve 8, and then the air is transported separately to rear brake chamber 12 and front brake chamber 2. Check

valves 10 installed on ends of the air inlet pipes of the front chamber 9 of the auxiliary air reservoir and the rear chamber 4 of the main air reservoir in case that compressed air in the air reservoir flows backwards. There are interfaces for air pressure gauge 7 and pressure -adjusting valve 6. When air pressure reaches 0.74 - 0.84Mpa, compressed air props up valve of the pressure -adjusting valve, and comes into upper cover of the air compressor to make air inlet valve open and the air compressor idles. When brake valve 8 is depressed, front and rear brake chamber 2 and 12 operate at the same time, which makes front and rear brakes operate. When the brake ped-

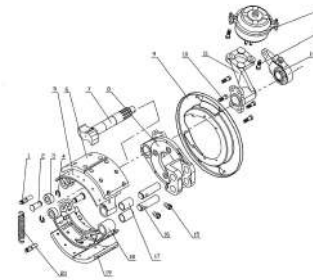
al is released, compressed air in front and rear brake chambers go into the atmosphere by front and rear air-deflating valves 11 and 13.

Brake assembly

The function of brake is to utilize power produced by friction between brake drum and brake shoe slice to

absorb kinetic energy of vehicle to decelerate or stop the vehicle. Front and rear brakes of this brake system adopt imbalanced structure and are

mainly composed of brake chamber, brake arm and brake



- | | |
|--|---|
| 1. return spring locating pin | 10. hex bolt |
| 2. roller shaft-brake shoe | 11. front brake air chamber support frame with liner assembly |
| 3. roller-brake shoe | 12. front left brake air chamber assembly |
| 4. gripping ring-brake shoe roller shaft | 13. hex bolt |
| 5/18. front brake shoe with liner assembly | 14. front brake adjusting arm assembly |
| 6/19. front brake friction plate | 15. shoe shaft fixed bolt |
| 7. brake cam | 16. front brake shoe-shoe shaft assembly |
| 8. front brake baseboard with liner assembly | 17. front and rear brake shoe shaft-liner |
| 9. front brake dust cap | 18. return spring |

Adjusting arm

1) Lubrication: mount oil month on adjusting arm, use lithium base grease periodically to lubricate adjusting arm (maximum lubrication interval is limited to 10000km), or else, life of adjusting arm will decrease.
2) Check adjusting arm's counterclockwise force moment periodically; rotate adjusting nut of adjusting arm counterclockwise when running every 20000km and measure whether the rotary moment is bigger than 18Nm, measure for three times repeatedly. If the moment is smaller than 18Nm, it indicates adjusting arm has been damage and needs to be replaced the adjusting arm assembly.

Brake

Front brake has the same structure with the rear brake. It is shoe brake with camshaft with fixed sustainer. When braking, front and rear shoe slices of the brake press to the rotating brake drum by the action of the same push force; so the rear brake shoe is called power-reducing brake shoe. All above lead to imbalance of forces that front and rear brake shoes press on the brake drum, so this kind of brake is called simple imbalanced brake.

Clearance between friction disc of the brake shoe and the brake drum must be proper, before adjusting the clearance, make the front wheel off ground; adjusting steps are as follows:

Full adjustment

1. Loosening fixed nut of brake shoe bearing pin and nut of binding bolt on cam bracket.
2. Rotate brake shoe bearing pin so as to make clearance between front shoe and bearing pin end the same as that between rear shoe and bearing pin.
3. Start braking, make brake shoe friction disc lean against brake drum closely and brake camshaft automatic positioned and tighten nut of binding bolt on support frame.
4. Release braking and rotate worm so as to make brake shoe friction disc lean against brake drum closely. Then counter-rotate worm, released by 3/4r, brake drum should be rotate freely.

5. Test drive after adjustment, check working condition of brake, whether the brake drum get hot and whether braking distance is proper. If not, readjust it

Partial adjustment

Turn worm of the brake arm to adjust clearance between friction disc at the camshaft end of the brake assembly and the brake drum. Adjusting methods are as follows: Face to the worm, turn the worm clockwise, at the same time, rotate the brake drum come - and -go continuously till the brake drum is suppressed completely, and then return the worm anticlockwise by 1/2 - 3/4 circle, at this time, wind age of the end of the brake drum shaft is 0.25 - 0.4mm, while camshaft

end is 0.45mm.

Brake valve

Brake valve is a mechanism with which the whole air brake system controls the brake.

Using and Maintenance: routine inspection

1. Before running, air pressure in the pipeline should be checked, when the air pressure is more than 0.6Mpa, the vehicle can start, and the normal running air pressure is 0.74 - 0.84Mpa; if the air pressure is lower than this value, check the air pipeline for leak and check whether the air compressor works normally.
2. Check working condition of the brake in running whether there is any trailing or the braking cannot return

and deal with the problems in time. If the air pressure is lower than 0.45Mpa but the annunciator does not warn, check the annunciator, replace it if necessary.

3. If the brake shoe slice is damaged or over worn, replace for new one; surface of the new liner should be grinded, and there should be no oil dirt, scratches, chap on the surface. Friction disc must be made of the same material.

4. Replacing friction disc or re-installing shoe slice shaft and brake camshaft will damage contact condition between former friction disc and brake drum, because of which, full adjustment must be done. (see detailed adjusting methods above)

Periodical inspection

1. Class -one inspection (1500 - 2000km)

- Exclude oil water in air-reservoir
- Fill lubrication into position that needs lubrication.
- Check and adjust loosening and tightening degree of air compressor.

2. Class -two inspection (10000 - 12000km)

- Disassemble and adjust brake as well as adjusting clearance between brake shoe friction disc and brake drum.

- Check working condition of air conditioner compressor and clean air outlet valve clud away.

- Disassemble and check brake chamber rubber film and replace it if

necessary.

3. Class -three inspection (24000-30000km)

- Disassemble and adjust brake valve and check brake chamber rubber film, replace it if necessary.
- Check brake and brake pipeline, replace it if necessary.

- Clean all of the pipelines to ensure pipeline unblocked.

Hydraulic brake

1. Brief description of this system:

Hydraulic brake , which is composed of vacuum booster, vacuum tube, brake master cylinder brake pipeline front and rear brake , is safe, labor-saving and sensitive.

When depressing running brake pedal, the reason why the braking is

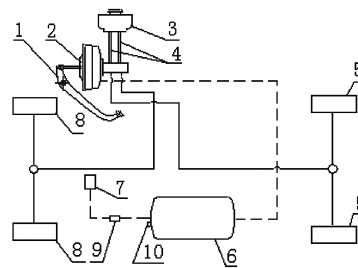
non-effective is likely that there is air in system without lacking of braking oil, follow the following steps to release air: right rear wheel brake-left rear brake-right front brake-left front brake. Follow air outlet methods below:

- Clean air -drain screw of main cylinder and wheel cylinder.

- Remove oil -drain plug of main cylinder or reservoir and fill it with brake fluid until lever reach the edge.

- Depress the brake pedal several times before holding it depressed and release the air drain screw to bleed. Repeat doing this until air in tube be bled completely. Keep a little oil left, or air can reenter the system.

- Fill reservoir with brake fluid.



1. brake pedal
2. vacuum booster and main cylinder assembly
3. reservoir
4. connection cylinder
5. rear brake
6. vacuum cylinder
7. intake manifold
8. front brake
9. vacuum check valve
10. connect to vacuum - alarm

2. Note for using brake fluid

- The specified brake fluid of this series of truck is synthetic brake fluid of class JG3(GB10830).

Never use mixed brake fluid.

- Synthetic brake fluid is good at sopping up. They should be stored in a clean sealed dry container, keep away from water, organic solvent, petroleum, and dust. Otherwise the vehicle's capability of brake would be cut down seriously.

- Clean system with alcohol before replacing brake fluid with different brand , Follow these if alcohol is unavailable.

- After draining all old brake fluid , fill reservoir with new fluid near to the opening and bleed system again to sweep old

fluid away.

○ Fill system with brake fluid.

○ Brake pedal's free play should be 5 - 8mm after adjusted, or it will cause main booster work abnormally and make brake drum over hot.

3. Running brake system

● Brief description of this system:

The running brake is hydraulic drum, both front and rear are two leading shoe brake. It is composed of bottom plate, wheel cylinder, brake shoe set with pad, and return spring set.

● Adjustment of running brake

The clearance between pad and drum will be bigger and bigger due to wear. In order to ensure brake work well, adjust it regularly following these steps.

Jack up the wheel which you want to adjust and remove the seal plug. Dial the adjusting gear of wheel cylinder piston along the direction of arrow near the adjusting hole on bottom plate with special adjusting screw and at the same time rotate the brake drum until the drum not rotated by hands. Then rotate the adjusting gear back for 5 - 9 teeth, keep the pad 0.2 - 0.45mm away from the drum, so that the drum can rotate freely again.

● Use & Check

Replace the pad which is worn out or damaged. Before installed, the new pad should be ground. Make sure that the new pad has not oil coat, also has not crack and chap and other flaw.

The clearance should be adjusted in every time of maintenance. Check drums with hands for temperature every time you park, adjust the clearance if the temperature is too high. Check wheel cylinders for leakage, and replace leather gasket if leakage is detected. Protect drums from being wrong result from over heat and other reasons.

4. Vacuum booster

● Brief description of this system:

Booster of this series of truck is dual diaphragm vacuum booster, which is composed of return spring, control valve, rubber diaphragm, noise elimination board, and so on.

● Adjustment

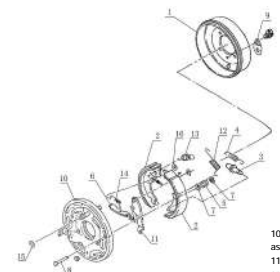
Booster has been adjusted in factory,

don't disassemble it and protect the diaphragm from being been damaged.

Parking brake system

Brief description of structure:

Parking brake system is composed of parking brake, control cable assembly and control handle. Parking brake is a brake of center-drum type (picture below) that is mounted on rear side of the transmission, acts on the drive shaft and is mainly used in parking as well as in emergency working with foot brake. Control handle and parking brake pull arm are connected by flexible shaft.



- | | | |
|---|---|--|
| 1. parking brake drum | 5. parking brake shoe compression spring | 10. parking brake backing plate assembly |
| 2. parking brake shoe with friction disc assembly | 6. parking brake shoe push rod assembly | 11. parking brake shoe rocker arm assembly |
| 3. parking brake adjusting bolt assembly | 7. brake shoe seat | 12. parking brake shoe drag spring |
| 4. parking brake shoe bottom end drag spring | 8. brake shoe compression spring push rod | 13. parking brake shoe drag spring |
| | 9. adjusting window lid | 14. parking brake push rod support spring |
| | | 15. card |
| | | 16. grommet |

Adjustment

Clearance between parking brake drum and friction disc is 0.65mm, and the upper clearance is as same as the lower clearance. Because of friction disc wearing, this clearance must be adjusted in time. The steps of adjusting are shown as follows:

1. Jack up the rear axle to make one wheel off ground.
2. Put the parking brake handle to the lowest position, and shift the gear to neutral position.
3. Turn the small hole on the brake drum to the lowest side, put a screwdriver into the hole and toggle the gear-type adjusting bolt till the brake drum can be stopped completely, and then return the adjusting bolt by

2-6 teeth.

If adjusting above is executed correctly, when the parking brake is tensed, the vehicle can be stopped on a 20% ramp.

Using and maintenance

1. Check and adjust clearance between the brake and the brake shoe slice regularly.

2. When doing class -two maintenance, disassemble brake to check wearing condition of brake lining . If thickness of gasket has been worn down by 2mm below ,

Disassemble the gasket and reassemble it. Gasket gluing intensity: when boosting transversely , boosting by 2.94mpa under normal atmospheric temperature is not allowed to

dropped. Glued gasket should be rubbing processed. Size (after rubbing processed): $R94.5 \pm 0.15\text{mm}$.

Wheel and spare wheel riser Wheel

Brief description

Every truck has seven wheels in all, one of which is spare wheel.

Using and maintenance

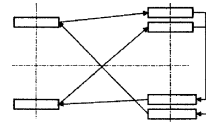
In order to use for a longer time, please charge tire according to specified pressure valve. Never drive when pressure is insufficient. It is normal that pressure increases during travel, and do not try to reduce it by deflating. Check the tire pressure when tire is not hot. If the two central patterns on tire tread touch against ground under fully loaded, the pressure is normal.

Clean the rust and other dirty on rim before installed. It should be talked

on the surface between inner tube and outer tire. Wheel nuts should be tightened with two steps. Tighten all of them firstly before tightening them with specified torque according to diagonal sequence.

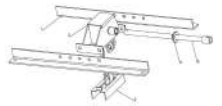
Check wheel nuts regularly, and retighten them with torque if loosening is detected.

Transposition of tires should be done in class-three maintenance to ensure even wearing. Tires are usually changed with each other crossed.



Spare wheel riser regulator

Description of structure and using
Spare wheel riser is driven by catenary's suspension internal geared wheel. It is mounted underneath the frame. To operate it , fix it on the frame and tighten it with hand before rocking back for 15 degree. (As shown in the left picture below)



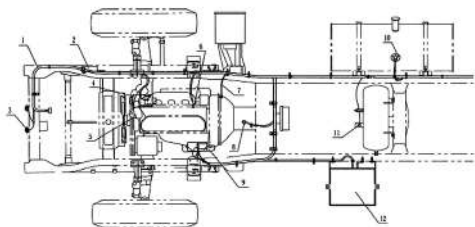
1. Spare wheel cross-beam support frame
2. Spare wheel regulator shell assembly
3. Spare wheel carrier frame assembly
4. supporting sleeve
5. connecting rod assembly

Maintenance of spare wheel regulator
Check whether the spare tire is loose and whether chain and wheel bracket spring rupture before everyday using; if there is anything wrong, replace it immediately. Lubrication should be applied to the driving parts of the riser in case of rust and for convenient rising.

Disassemble spare wheel riser when doing class -three maintenance. Check, clean and replace components if they have been worn greatly.

Electrical equipment

General: schematic diagram of chassis electrical equipment



- | | | |
|-----------------------------------|-----------------------------|-----------------------------------|
| 1. chassis cable harness assembly | 5. water temperature sensor | 9. starter |
| 2. start/choke controller | 6. oil pressure sensor | 10. fuel gauge sensor |
| 3. electric horn device | 7. engine earth cable | 11. low air pressure alarm device |
| 4. generator | 8. backgear earth cable | 12. battery |

Starter

Note:

- Starter should be connected with battery correctly.
- Every time starting, don't keep starter working continuously for more than 15s and stop for 1-2 seconds in the interval, since over hot may damage it. Rest it before trying to start it again.
- After several continuative failures of start, check starter, solenoid switch, battery, wires as well as oil supply system. Retry after the trouble shooting.

Generator and Regulator

Note:

- Generator should be connected with regulator correctly and reliably, and the polarities of generator and

regulator should be matched properly.

- Never check generator by short-circuit fire wire and magnetic field.
- The diode and insulation of generator can be inspected with multi-meter and ohmmeter. Don't use megohmmeter and AC power to inspect to avoid burning diode.

Lighting device.

Headlight

This series of truck have two headlights which are embedded in front of cab symmetrically. The headlight called double filament bulb with two different pieces of filament and can shine two different kinds of ray, the brighter one is used as high light

while the dimmer one is used as low light. If running at night, turn on the high light to lighten the road, and switch to low light when two vehicles pass each other to avoid dazzling your eyes.



In order to lighten road clearly with headlight, adjusting stripping and

re-assembly headlight is necessary. Methods for it: park vehicle on flat road, put vision screen that paralleled flat surface of headlight on place straight ahead (also using flat wall) to keep distance of 10m between vision screen and flat surface of headlight. (figure below)



Adjust and test using measuring cell. Oppose specified distance to measuring cell to check offset distance of light beam's horizontal and vertical lighting position from left side, right side, distance place and nearby place on screen of measuring cell.

Adjust horizontal and vertical adjusting screw of headlight. Adjust dimmed beam to make the offset distance that left and right light drift to left and right side (Vleft-Vleft, Vright-Vright are midpoint) be limited to 100mm.

Small light

Two small lights are embedded on the two symmetrical corner of front panel. They should be turned on when vehicle parks in dark or fog or when vehicle runs on bright road to show the position and the width of the vehicle.

Fog light

Fog light can light further in fog than other light. They should be turned on when vehicle runs or parks in fog or

in dark to ensure vehicle can be seen clearly. Fog light is combined with headlight.

Ceiling light

The ceiling light is mounted on the ceiling, and it is combined with inside rear mirror together. It can lighten the cab, and it can also observe the condition backward.

Battery

Battery equipped to trucks of this series is aneroid and sealed by a plastic case, and it has a big capacity as well as a light weight.

Use & Note

1. Keep the case clean in case of discharging to reduce the capacity.

10 days in summer. Specific gravity is measured with gravimeter. Table 1 shows normal specific gravity of the electrolyte.

5. The battery should always being charged. Check voltage of the battery if engine is hard to start. Charge additionally if it is detected that specific gravity of electrolyte lower than 1.18 - 1.20, otherwise, battery plate will be vulcanized and it will reduce lifespan of the battery. Additional charging should be kept for 13 - 16 hours, and it can take in 1/10 of capacitance into battery. Cut down the charging current by half after single cell's voltage reaches 2.4V, and the charging time should be 3 - 5 hours. If the specific gravity of electrolyte

don't rise any more, and this situation keeps for 2 - 3 hours, it indicates that the accumulator has been charged fully. Table 2 shows the relationship between temperature and the corrected specific gravity value of electrolyte.

6. Protect the joint of terminal post and wire from dirt and looseness, or the terminal post will be burnt out. After tightening the joints, apply a vaseline coat on the terminal post that can protect the joints from rust and loose contact, so that engine can start easily.

7. If left unused for a long time, the battery should be removed and preserved in a place where is dry, shady, cool, and ventilative. Addi-



2. Make sure that the holes on the upper cap not choked, or the plate will be damaged by the vapor produced by electrolyzing.
3. The electrolyte level should be 10-15mm higher than the plate. Only distilled water can be filled into the battery. Never fill the battery with fountain or river water, for they will do harm to it.
4. Check specific gravity and level of the electrolyte regularly. Do it every 10-15 days in winter, while every 5-

tional charging should be done once every month.

Table 1 Specific gravity of electrolyte

Local temperature	Specific gravity of fully charged battery under 15°C	
	Winter	Summer
Where temp -40°C below in winter	1.310	1.270
Where temp -40°C above in winter	1.290	1.260
Where temp -30°C above in winter	1.280	1.250
Where temp -20°C above in winter	1.270	1.240
Where temp 0°C below in winter	1.270	1.240

Table 2 corrected specific gravityvalue of electrolyte under 15°C

Measured temp of electrolyte	+45°C	+30°C	+15°C	0°C	-15°C	-30°C	-45°C
Corrected value on hydrometer	+0.02	+0.01	0	-0.01	-0.02	-0.03	-0.04

sensor

Fuel level gauge sensor.

The fuel level sensor adopts sliding-resistor type. Floaters rise and drop with the oil level changing, which causes the resistor to connect or short-circuit to make the electromagnetic fuel level gauge change. Connect terminal of the fuel level alarm lamp with the indicator light to indicate the lowest fuel level.

Water temperature gauge sensor

The temperature sensor is a thermistor that is mounted in water jacket to indicate temperature of cooling water and it matches with the water temperature gauge on instrument board. The water temperature sensor has a negative temperature coefficient and

its resistance decreases with the increase of water temperature, which change current going by it. Don't replace the sensor with a positive temperature coefficient one, or the water temperature gauge will not work correctly.

Oil pressure alarm

Oil pressure alarm device is a normal closed switch. It will be opened when oil pressure reaches or over the lowest pressure, so that circuit is disconnected and indicator goes out.

Vehicle maintenance

Notice during breaking -in period

To improve vehicle's reliability and economical efficiency and also to use it longer, follow these during breaking -in period which is specified as 2000-2500km.

Before breaking-in

1. Clean vehicle with water, and check all bolts and nuts for tighten.
2. Check the radiator for enough water, and check engine, transmission, rear axle, and steering gear box for enough lubrication, also check battery and reservoir for liquid level. Check all tube conjunction for leakage.
3. Check brake system, driving system and steering system for correct

operation.

4. Check electrical equipment and light instrument for correct operation, and check brake system for normal air pressure.

5. Check the shift gears for right, the control parts for normality, transmission for shifting smoothly, and the indicator should work well.

6. Check tires for proper air pressure..

7. Check if tools and accessories are taken.

During breaking-in

1. Run new vehicle on flat road and limit weight of load to 50% and 75% of rated value separately

Not only will over loading reduce service life of vehicle, but also it will en-

danger running .

2. Speed limit

gear I 7km/h

gear II 14km/h

gear III 26km/h

gear IV 40km/h

gear V 56km/h

3. Check temperature of rear axle, transmission, steering shaft and braking drum during initial stage. Check whether there is abnormal sound of chassis. Stop running if finding those problems and rerun after clearing of fault.

4. Both the cooling temperature and oil pressure should be noticed very well. Don't drive in high speed and limit the temperature to 80°C-90°C.

5. Check cylinder head of engine,

wheel nut, box and steel plate spring for tighten.. Check steering brake and clutch for normal operation. Check steering wheel for free play and operating stroke.

6. Oil should be replaced after 2500km running (do it when engine is hot), then it will be replaced again in second- class maintenance.

After breaking -in period

1. Replace engine oil and oil filter core. Replace oil in transmission case and rear axle, and replace lubrication in steering fear, also hub bearing grease.

2. Check all external bolts and nuts with specified torque.

3. Apply lubrication on all points where should be lubricated.

Daily maintenance

Shoot trouble immediately if it is found.

Doing periodic service is necessary. Vehicle's maintenance intervals should be different due to different condition of different region. Adjust service intervals properly referring to local condition based on relate formulation. Notes for maintenance of chassis are as follows (seasonal maintenance is not included).

Daily maintenance

To ensure vehicle a good running condition, do necessary check after driving.

1. Check and fill engine with cooling water and antirustling &antifreezing compound. Drain off cooling water in

winter. If using antifreeze, drain off it according to the temperature.

2. Check engine for volume of lubricator.

3. Check fan belt for tightening and damage.

4. Check braking system for operating and check air pressure (or hydraulic pressure) for sealing

5. Check steering system for operating. Check bolt and nut for loosening. Check cotter pin for locking up.

6. Check steel plate spring for damage.

7. Check tire for air pressure. Check tire for damage and nut for tightening.

8. Drain off water reservoir daily.

Second-class maintenance

After break -in period and finish maintenance during break -in period by force. Do daily maintenance and periodic maintenance according to running condition and technical condition. Traveled distance of second -class maintenance is 1500km when running on road of good condition. Please go to special repair station of JAC to allow us to supply best service for you.

Seasonal maintenance

When winter and summer alternate, carry out seasonal maintenance

Summer:

1. Clean out water scale in the cooling system.
2. Replace lubrication for summer.
3. Fuel with #0 light diesel oil specified in GB252.
4. Clean up the battery and adjust the specific gravity of electrolyte.

Winter:

1. Clean up the accumulator and adjust the specific gravity of electrolyte, and then remove the accumulator and charge it.
2. Install cold -proof devices; install antiskid devices if necessary.
3. Fuel with #10 light diesel oil specified in GB252.

Trouble shooting

Being used, the vehicle will often be broken along with it travels longer and longer. In order to recover vehicle to normal situation and to prolong its service life, the trouble must be found out and been disposed in an effective way.

To shoot troubles of engine, refer to Engine Operating Instruction Manual.

Electrical system trouble shooting

Fuel gauge doesn't move

Dismantle sensor wire of fuel gauge and make it earthing. If needle turns to F, it means fuel gauge works well while sensor of fuel gauge has trouble or instrument fuse has burn out. Check and replace them. If fuel gauge stands still, it means it has been broken down.

Oil pressure indicator lamp doesn't light

Dismantle oil pressure alarm and make it earthing. If oil pressure indicator lamp doesn't light, it means switch of oil pressure alarm has been broken. Replace it with a new one. If

oil pressure indicator lamp still doesn't light, it means bulb has been burned down or oil pipe of engine has trouble.

Vehicle light's signal indicator lamp doesn't light

If switch of vehicle light and signal lamp work well, but indicator lamp doesn't work, it means there is bad contact between bulb and instrument plate, or bulb has been burned down.

1. Electrical system trouble shooting

Trouble symptom and probable cause	Checking and remedy
1. Starter doesn't work a. Bad contact b. Bad contact of battery input terminal c. Consistency of lubricant's not good d. Bad contact of starter relay	a. Wipe or replace contact element b. Wipe or screw c. Replace lubricant d. Repair or replace
2. Insufficient battery capacity a. New battery without circulation of charging and discharging or has not been charged to rated quantity b. Generator without charging or enough charging c. Damaged pole plate d. low level or improper specific gravity of electrolyte.	a. Charge as specified b. Check connections and repair c. Check and repair d. Fill up electrolyte and charge outside vehicle
3. Too much waste of electrolyte.	a. Reduce the frequency of starting and shorten starting time. Decrease amperage of charging current b. Replace battery case
4. Self-discharge of battery a. earth short on battery output cable b. A short-circuit between pole plates c. Damaged or broken down cell divider d. Dirt external surface of battery case. Metal impurities mixed with electrolyte	a. Clean the output cable, dispose the short-circuit b. Check and repair c. Check and repair d. Clean the battery case. Tighten shield. Replace electrolyte if necessary

2. Clutch trouble shooting

Trouble symptom and probable cause	Checking and remedy
1. Shaking clutch a. Overloading b. Not start in low gear c. Defective release bearing or insufficient oil d. Corrugated fin cracked, friction lining worn, loose rivet, damper spring broken, or damper fin broken down	a. Load as rated b. Start in first gear when loading much c. Clean, lubricate or replaced. Replace
2. Clutch slip a. Thin friction lining, rivet reveal, or oil coat b. Weak pressure of diaphragm spring c. Too short free play of pedal d. Vehicle loads too much e. Not start in low gear f. The pedal is held pressed when running	a. Clean, or rivet a new friction lining b. Replace c. Adjust to 3-5mm d. Load as rated e. Start in low gear f. Change bad driving habit
3. Clutch can't release completely a. Too long free play of pedal b. Crack or distort of wave sheet. Broken damper spring	a. Adjust 3-5mm b. Replace c. Replace

3. Drive shaft trouble shooting

Trouble symptom and probable cause	Checking and remedy
1. Noise or vibration of driveshaft a. Over- worn universal joint b. Bending driveshaft c. Loose couple flange or center bracket bolts e. Insufficient lubrication	a. Change spider direction or replace universal joint assembly b. Align or replace c. Screw d. Replace e. Fill up after cleaning
2. Overheating center bracket a. Oil seal is too tight b. Inclination between driveshaft and crankshaft is too big c. Insufficient lubrication	a. It will disappear along with traveling b. Check and adjust the inclination c. Fill up regularly

4. Transmission trouble shooting

Trouble symptom and probable cause	Checking and remedy
1. Gears break off a. Gears break off b. Worn or damaged coupling c. Improperly adjusted linkage d. Distorted, worn, or crack spring or locking ball e. Worn shift fork and groove face f. Worn synchronizer hub and sleeve g. Worn or damaged synchronizer hub and engagement sleeve h. Worn or damaged bearing of input shaft and output shaft i. Worn or damaged thrust ring and thrust washer j. loosening mounting bolt	a. Replace the coupling b. Screw c. Readjust d. Repair or replace parts e. Replace shift fork f. Replace g. Replace h. Replace bearing i. Replace j. Screw
2. Gears are hard to mesh a. High idle speed of engine b. Improper meshing of clutch c. Coherence of clutch plate d. Bending clutch slip sleeve	a. Adjust the idle speed b. Adjust clutch c. Repair or replace d. Replace

Trouble symptom and probable cause	Checking and remedy
e. Worn or damaged bearing or input shaft or output f. Worn or damaged guide bearing of crankshaft g. Worn cone and cone ring of synchronizer h. Loose control mechanism or improper adjustment i. Worn shift lever j. Improper lubricated knob k. Insufficient or low viscosity lubrication	e. Replace bearing f. Replace bearing g. Replace h. Screw or adjust i. Replace j. Apply lubricator k. Fill up or replace
3. Noise from transmission a. Loosen bolts which mount transmission to engine b. Worn gear or bearing	a. Screw b. Replace
4. Hard to shift a. Improper adjust of shift knob b. Worn hinge joint or pin c. Worn control mechanism d. Loosening bolts or nuts	a. Adjust shift knob b. Replace c. Replace d. Check and screw

5. Front axle trouble shooting

Trouble symptom and probable cause	Checking and remedy
1. Hard to steering , steering wheel doesn't return well a. Insufficient lubrication of steering linkage mechanism b. Improper alignment of front wheel c. Improper toe in front of the wheel d. Improper camber and caster of king pin e. Worn thrust bearing f. Insufficient pressure of tire	a. Apply lubrication on king pin and ball stud b. Adjust c. Adjust d. Check the linear for wear, and check knuckle and tie rod for deviation, replace if necessary e. Replace f. Inflate properly
2. Abnormal worn tire a. Improper position fix of front wheel b. Improper pressure of front tire	a. Adjust, and replace if necessary b. Adjust, and inflate

6. Rear axle trouble shooting

Trouble symptom and probable cause	Checking and remedy
1. Abnormal noise from rear axle a. Worn or damaged pinion bearing b. Worn or damaged side bearing of differential c. Loosening pinion bearing d. Loosening differential bearing e. Worn pinion and ring gear f. Worn thrust washer g. Worn differential spider h. Worn pinion and ring gear i. Worn or damaged side gear and planetary gear j. Loosening tightening bolts of ring gear k. Improper contact between ring gear and pinion l. Worn pinion spline m. Worn rear half shaft spline n. Loosening hub bearing o. Worn hub bearing p. Loosening tightening bolts of differential case q. Insufficient oil r. Bad oil	a. Replace bearing b. Replace bearing c. Adjust preload d. Adjust preload e. Adjust tooth space f. Replace g. Replace h. Replace i. Replace j. Screw k. Replace or adjust l. Replace m. Replace n. Replace o. Adjust bearing preload p. Screw q. Fill up r. Replace

Trouble symptom and probable cause	Checking and remedy
<p>2. Half shaft seal leaking</p> <p>a. Jammed rear axle vent hole b. Bad lubrication c. Tightening between pinion and driven gear, tight bearing, and tightening on bearing</p>	<p>a. Fill up and readjust b. Replace lubrication accord with the season c. Readjust</p>
<p>3. Hot rear axle</p> <p>a. Oil leak because of damaged seal gasket, loosening oil drain plug, and jammed vent hole, result in insufficient lubrication b. Bad lubrication c. Over-tighten between pinion and driven gear, over-tighten on bearing</p>	<p>a. Fill up b. Replace lubrication accord with the season c. Readjust</p>

7. Steering mechanism trouble shooting

Trouble symptom and probable cause	Checking and remedy
<p>1. Hard to steer and steering wheel with bad return</p> <p>a. Distorted main shaft, sliding shaft or column b. Loosening universal joint or column cover c. Improper rotation of steering wheel bearing d. Insufficient lubrication of steering linkage mechanism e. Low pressure tire</p>	<p>a. Replace parts b. Replace universal joint c. Replace parts d. Fill up lubrication e. Inflate properly</p>
<p>2. Shake of steering wheel, instable steering</p> <p>a. Loosening steering linkage mechanism b. Unbalanced front wheel c. Pendulant too much d. Damaged grinding wheel e. Badly worn or too wide clearance of steering linkage mechanism</p>	<p>a. Tighten properly b. Balance the wheel c. Adjust d. Replace e. Replace parts</p>

7. Parking brake failure shooting

Trouble symptom and probable cause	Checking and remedy
3. Wander front wheel a. One of the front brake or damper is disabled b. One of the front tire low pressure c. Disalign or break of front leaf spring d. Damaged grinding wheel e. Improper toe in front of the wheel	a. Adjust the brake clearance or replace damper b. Inflate tires c. Check front spring assembly d. Adjustor replace
4. Power steering bump leaking a. Damaged oil seal or O ring b. Damaged oil seal locking nuts or oil -drain plug	a. Replace b. Repair

8. Running brake trouble shooting

Trouble symptom and probable cause	Checking and remedy
1. Insufficient of brake force a. Brake chamber's pull stroke is short and the maximum adjusting pressure is small b. Sintered shoe and pasted with soil water and oily dirt c. Rusted cam frame or shoe shaft d. Air leak of brake chamber's leather film, pipeline and junction point e. Air leak of brake valve and air outlet valve f. Improper clearance between brake drum and shoe	a. Adjust length of pull rod b. Clean with alkaline water c. Clear rust away and lubricate d. Replace leather film and check air leak position e. Replace valve bearer f. Readjust g. Check or replace h. Make it unblocked i. Check opening degree of air inlet valve
2. Brake bias a. Improper clearance of brake shoe b. Rust of single sided cam shaft frame shaft or cam shaft frame c. Shoe has oily dirt d. Unequal pressure of left and right wheel e. Brake drum is out of shape and bad contact of friction disc	a. Readjust b. Remove rust and lubricate c. Clean d. Inflate accord with formulation e. Check and grind

9. Parking brake trouble shooting

Trouble symptom and probable cause	Checking and remedy
<ul style="list-style-type: none"> a. Big clearance between parking brake and brake drum b. Oily dirt on brake drum and shoe c. Over wearing of friction disc 	<ul style="list-style-type: none"> a. Adjust it to 0.65mm b. Clean c. Replace

10. Suspension trouble shooting

Trouble symptom and probable cause	Checking and remedy
<ul style="list-style-type: none"> 1. Steel plate spring break <ul style="list-style-type: none"> a. Overload or go out of right position b. Frequent emergency brake and high speed on an even road c. Saddle clamp bolt and steel plate clip are uncrowned 	<ul style="list-style-type: none"> a. Load as rated and distribute on the right place b. Concentrate on driving, avoid emergency brake and slow down the speed on bad road c. screw saddle clamp bolt and steel plate clip or replace
<ul style="list-style-type: none"> 2. Noise through running 	<ul style="list-style-type: none"> Check or replace suspension rubber belt
<ul style="list-style-type: none"> 3. Inefficient of shock absorption <ul style="list-style-type: none"> a. Lack of shock absorption fluid b. No maintenance periodically c. Damaged leather ring 	<ul style="list-style-type: none"> a. Fill up b. Maintenance periodically c. Replace

11. Wheel trouble shooting

Trouble symptom and probable cause	Checking and remedy
1. Badly worn wheel a. High or low tire pressure b. Overloading or dissymmetrical loading c. Loosening hub bearing d. Improper toe-in of front wheel e. emergency brake, start or stop and frequent sudden acceleration f. No wheel transposition	a. Inflate as rated b. Load as rated c. Adjust d. Adjust the toe-in to 1-3mm(for radial tire) e. Drive stably, don't drive too fast f. Do transposition regularly

Important information

Location of product emblem and VIN code

1. Location of product emblem: In a position that is exterior side of the

rear side of the right longitudinal member on the frame. As shown in the following diagram:
Please find the location on vehicle.

Manufacturer: Anhui Jianghuai Automobile Co., Ltd	
MODEL:	<input type="text"/>
CHASSIS NO:	<input type="text"/>
ENGINE NO:	<input type="text"/>
VIN:	<input type="text"/>

Product emblem



Independent small emblem



2. Location of VIN code: Steel seal of VIN codes for chassis of cargo truck without box, cargo truck, transport van and stake truck is printed on exterior side of frame's right longitu-

nal member and rear side of the rear bracket of the rear leaf spring (VIN codes for other refitted vehicles can be printed on position near the front leaf spring at the premises that reliability, safety and comfort of products can be guaranteed)

Additionally, for trucks, of which total masses are less than 3.5t, independent emblem of VIN codes are pasted on the instrument panel near the column. Refer to the diagram above.

Note: Any user who use JAC complete vehicle or chassis should not change emblem or symbols adopted by JAC. Otherwise, the user will take all of the responsibilities.

Appendix 1:

NO.	Vehicle model	Engine model	Engine displacement and power (ml/kW)	Outside dimension (Length×width×height) (mm)	Axle distance (mm)	Number of steel plate spring (front/rear)
1	HFC1061KS	YZ4105QF	4087/75	6810×2010×2300	3815	9/12
2	HFC1061KR1S	YZ4105QF	4087/75	6810×2010×2300	3815	9/12
3	HFC1061K1S	CY4102BQ YZ4108Q	3856/70.6 4324/81	6810×2010×2300	3815	9/12
4	HFC1061K1R1S	CY4102BQ YZ4108Q	3856/70.6 4324/81	6810×2010×2300	3815	9/12
5	HFC1061K2	CY4102BZLQ CY4102BZQ	3856/88 3856/88	6810×1995×2250	3815	9/12
6	HFC1061K2R1	CY4102BZLQ CY4102BZQ	3856/88 3856/88	6810×1995×2250	3815	9/12

Tyre size	Wheel track (front/rear) (mm)	Total mass (kg)	Cab space (people)	Curb mass (kg)	Approach angle/departure angle (°)	Front suspension/rear suspension (mm)	Maximum speed (km/h)
7.50-16	1665/1525	6437	3人	2560	23/14	1085/1910	95
7.50-16	1665/1525	6437	3人	2580	23/14	1085/1910	95
7.50-16	1665/1525	6437	3人	2560	23/14	1085/1910	95
7.50-16	1665/1525	6437	3人	2580	23/14	1085/1910	95
7.50-16	1665/1525	6325	3人	2710	23/14	1085/1910	95
7.50-16	1665/1525	6325	3人	2740	23/14	1085/1910	95

NO.	Vehicle model	Engine model	Engine displacement and power (ml/kW)	Outside dimension (Length×width×height) (mm)	Axle distance (mm)	Number of steel plate spring (front/rear)
7	HFC1061K1	CY4105Q CY4102BZQ	4087/74 3856/81	6810×2010×2300	3815	9/12
8	HFC1061K1R1	CY4105Q CY4102BZQ	4087/74 3856/81	6810×2010×2300	3815	9/12
9	HFC1061K6	YZ4105ZLQ YZ4102ZLQ	4087/90 3423/81	6810×1995×2250	3815	9/12
10	HFC1061K6R1	YZ4105ZLQ YZ4102ZLQ	4087/90 3423/81	6810×1995×2250	3815	9/12
11	HFC1061K7	YZ4105ZLQ YZ4102ZLQ CY4102BZLQ CY4102BZQ	4087/90 3423/81 3856/88 3856/88	6810×1995×2250	3815	9/12
12	HFC1061K7R1	YZ4105ZLQ YZ4102ZLQ CY4102BZLQ CY4102BZQ	4087/90 3423/81 3856/88 3856/88	6810×1995×2250	3815	9/12

Tyre size	Wheel track (front/rear) (mm)	Total mass (kg)	Cab space (people)	Curb mass (kg)	Approach angle/departure angle (°)	Front suspension/rear suspension (mm)	Maximum speed (km/h)
7.50-16	1665/1525	6437	3人	2560	23/14	1085/1910	95
7.50-16	1665/1525	6437	3人	2580	23/14	1085/1910	95
7.50-16	1665/1525	6125	3人	2740	23/14	1085/1910	95
7.50-16	1665/1525	6125	3人	2740	23/14	1085/1910	95
7.50-16	1665/1525	6155	3人	2740	23/14	1085/1910	95
7.50-16	1665/1525	6155	3人	2740	23/14	1085/1910	95

NO.	Vehicle model	Engine model	Engine displacement and power (ml/kW)	Outside dimension (Length×width×height) (mm)	Axle distance (mm)	Number of steel plate spring (front/rear)
13	HFC1061K8	CY4102BZLQ	3856/88	6810×1995×2250	3815	9/12
14	HFC1061K8R1	CY4102BZLQ	3856/88	6810×1995×2250	3815	9/12
15	HFC1061K9	CYQD32Tic	3153/101.5	6810×1995×2250	3815	9/12
16	HFC1061K9R1	CYQD32Tic	3153/101.5	6810×1995×2250	3815	9/12
17	HFC1063K	YZ4105QF CY4105Q	4087/75 4087/74	6990×2130×2315	4105	9/12

Tyre size	Wheel track (front/rear) (mm)	Total mass (kg)	Cab space (people)	Curb mass (kg)	Approach angle/departure angle (°)	Front suspension/rearsuspension(mm)	Maximum speed (km/h)
7.50-16	1665/1525	6125	3人	2710	23/14	1085/1910	95
7.50-16	1665/1525	6125	3人	2710	23/14	1085/1910	95
7.50-16	1665/1525	6125	3人	2710	23/14	1085/1910	95
7.50-16	1665/1525	6125	3人	2710	23/14	1085/1910	95
8.25-16	1665/1600	6450	3人	2650	24/15	1085/1915	95

NO.	Vehicle model	Engine model	Engine displacement and power (ml/kW)	Outside dimension (Length×width×height) (mm)	Axle distance (mm)	Number of steel plate spring (front/rear)
18	HFC1063KR1	YZ4105QF CY4105Q	4087/75 4087/74	6990×2130×2315	4150	9/12
19	HFC1063K1	YZ4108Q	4324/81	6990×2130×2315	4150	9/12
20	HFC1063K1R1	YZ4108Q	4324/81	6990×2130×2315	4150	9/12
21	HFC1063K2	CY4102BZQ	3856/81	6990×2130×2315	4150	9/12
22	HFC1063K2R1	CY4102BZQ	3856/81	6990×2130×2315	4150	9/12
23	HFC1063K4	CY4102BZLQ	3856/81	6990×2110×2260	4150	9/12

Tyre size	Wheel track (front/rear) (mm)	Total mass (kg)	Cab space (people)	Curb mass (kg)	Approach angle/departure angle (°)	Front suspension/rear suspension(mm)	Maximum speed (km/h)
8.25-16	1665/1600	6450	3人	2650	24/15	1085/1915	95
8.25-16	1665/1600	6450	3人	2630	24/15	1085/1755	95
8.25-16	1665/1600	6450	3人	2650	24/15	1085/1755	95
8.25-16	1665/1600	6450	3人	2630	24/15	1085/1755	95
8.25-16	1665/1600	6450	3人	2650	24/15	1085/1915	95
8.25-16	1665/1600	6325	3人	2795	24/15	1085/1755	95

NO.	Vehicle model	Engine model	Engine displacement and power (ml/kW)	Outside dimension (Length×width×height) (mm)	Axle distance (mm)	Number of steel plate spring (front/rear)
24	HFC1063K4R1	CY4102BZLQ	3856/88	6990×2110×2260	4150	9/12
25	HFC1063K5	CY4102BZQ	3856/88	6990×2130×2315	4150	9/12
26	HFC1063K5R1	CY4102BZQ	3856/88	6990×2130×2315	4150	9/12
27	HFC1063K6	YZ4105ZLQ	4087/90	6990×2110×2260	4150	9/12
28	HFC1063K6R1	YZ4105ZLQ	4087/90	6990×2110×2260	4150	9/12
29	HFC1083KR1	CA4DF2-13	44752/96	8390×2270×2360	4700	7/9+9

Tyre size	Wheel track (front/rear) (mm)	Total mass (kg)	Cab space (people)	Curb mass (kg)	Approach angle/departure angle (°)	Front suspension/rear suspension (mm)	Maximum speed (km/h)
8.25-16	1665/1600	6300	3人	2825	24/15	1085/1755	95
8.25-16	1665/1600	6300	3人	2630	25/13	1085/1755	98
8.25-16	1665/1600	6300	3人	2650	25/13	1085/1755	98
8.25-16	1665/1600	6325	3人	2825	23/14	1085/1755	95
8.25-16	1665/1600	6325	3人	2825	23/14	1085/1755	95
7.50-20	1830/1724	8480	3人	4230	28/15	1165/2539	98

Appendix 2: Chassis lubrication

No.	Position to lubricate	Lubricant code	Lubricating points/dosage	Maintenance time (type)				
				Every day	1 st class	2 nd class	3 rd class	Seasonal
1	Transmission shaft universal joint	G	3					
2	Transmission shaft spline	G	1	Add			Replace	
3	Battery terminal	G	2		Add		Replace	Replace
4	Transmission	Z	6L (for reference)		Add	Replace	Replace	
5	Clutch master cylinder oil cup	Y	0.5L	Replace once per year				
6	Steering gear	Z	1		Add		Replace	
7	Steering knuckle, tie-rod ball pin	G	2 for each	Check	Add			
8	Oil strainer element		1			Replace	Replace	
9	Generator	G	2	Add				

No.	Position to lubricate	Lubricant code	Lubricating points/dosage	Maintenance time (type)				
				Every day	1 st class	2 nd class	3 rd class	Seasonal
10	Power steering	D	1		Add	Replace	Replace	
11	Front, rear wheel rim bearing	ZL	2 for each				Replace	
12	Shock absorber	Q	2				Add	
13	Water pump bearing	G	1		Add	Add		
14	Front bearing of transmission primary shaft (in the crankshaft)	G	1			Replace		
15	Rear axle	Z	1		Add		Replace	
16	Engine lubricating system		1	Add		Replace		Replace
17	Rear cooling system driving mechanism	ZL	2		Add			

Appendix 3: Oil type in lubrication

Symbol in the table	Illustration
B	L-BCD4 Diesel engine oil GB11123(Summer), LECD30 Diesel engine oil GB11123(Winter)
J	15W/20 or 15W/40 Thickened oil
G	GB49 2# Calcium base grease
ZL	GB5671 Lithium base grease
Q	Half of HU-20# gasoline engine oil(GB2537)and half of 45# transformer oil(GB2536)
Y	Brake fluid JG3(GB10830)
Z	Medium-load vehicle gear oil(GL-4)85W/90
D	L-HM46(GB11119)(0°C above),antiwear hydraulic oil L-LM32(GB11119)(0°C below)

Appendix 4: Tightening torques of main tightening parts(for reference)

No.	Name	Unit; N.M(KGLF.M)
1	Ball pin nuts of steering tie-rod	186±20(19±2)
2	Nuts connecting transmission and clutch casing	68.8-93.2(7-9.5)
3	Flange nuts of intermediate steering shaft	343-539(35-55)
4	Nuts on tyre	196-245(20-25)
5	Flange nuts of driving gear	220-250(23-25.5)
6	Fixing nuts of steering drag rod	441±49(45±5)
7	Front U-bolts	250
8	Rear U-bolts	350
9	Fixing nuts of steering gear	68.8-88.2(7-9)
10	Fixing nuts of steering bend arm	441±49(45±5)
11	Fixing nuts of steering wheel	49-78.4(5-8)
12	Flange of transmission	>166.7(17)
13	Nuts of pitman arm shaft	196-235.2(20-24)