

Foreword

First of all, thanks very much for your choosing JAC auto vehicle!

1. Please read this manual carefully before using the vehicle, which will eliminate unnecessary trouble and bring excellent performance of JAC vehicle into full play and bring you good luck!

2.JAC vehicles are jointly developed by Anhui auto research institution and Jianghuai Automobile Co., Ltd. At the premises of taking Chinese road condition into full consideration, bodywork and chassis are designed and manufactured with advanced techniques home and abroad. Excellent smoothness & crossing ability, safe & reliable braking system, handy & agile operation, convenient maintenance characterize the whole vehicle

3. Due to technique developing, JAC vehicle improves as well. All diagrams and data are the latest materials during compiling. We reserve the right to moderate the data without informing you, please be understanding.

Phone number for car purchasing:0551-2296368

Phone number for service:0551-2296331、0551-2296332 (24 hour service)

Thanks again for your choosing JAC vehicle and favor of our product.

Wish your company flourished forever!

JAC sales department

July 2009

Notice!

I. Please pay attention to the following points for the whole vehicle;

1. It's forbidden to do any refitting or adding devices to the whole vehicle, especially to systems relating to vehicle safety like electrical devices, brake, steering system etc. Our company will not take responsibility for loss caused by refitting or adding any device without permission.

2. Please maintain your vehicle properly following instructions in the <<Maintenance Manual>> so that the excellent performance of your vehicle can be brought into full play.

3. If there is any trouble in using, please take the vehicle to service station authorized by JAC for adjusting or maintenance. If it's necessary to replace parts, please use authentic parts of JAC brand. Our company will not take responsibility for loss caused by your using non-JAC parts.

II. Please pay attention to the following points for JAC chassis of class II.

1. It's forbidden do modification such as to lengthen or widen the vehicle framework without permission. Our company will not take responsibility for loss caused by modification without permission.

2. Modification done by company to modify chassis of class II cannot conflict with national traffic act or other relating criterion, otherwise loss caused by illegal modification will be beyond our responsibility.

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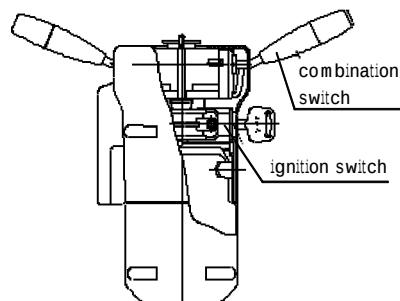
I . Use of vehicle

- (I). Use of instruments and apparatuses in the cab
- (II). Use of components in the cab
- (III). Start and running of the vehicle

(I). Use of instruments and apparatuses in the cab

1. Integrated switch and instrument cluster

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

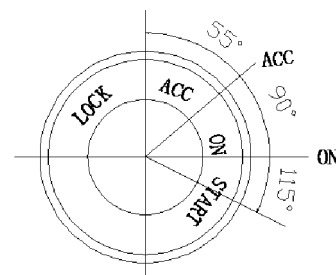


Schematic diagram of integrated switch

1) Ignition switch

Ignition switch is on the right side of integrated switch. It has four functions: LOCK, ACC, ON, START. When the key is in 'LOCK' position, the ignition switch will be connected to the power source and lockup of the steering gear is 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. Keep on turning the key to 'START' position, engine can be started. You should unlash handle of the key immediately after the engine starts. The key can return to "ON" position by the return action of spring. The

schematic diagram of ignition switch is as follows.



Schematic diagram of ignition switch

2) Combination switch (left control handle)



left control handle

Combination switch is under the control of the multifunction 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:

① "OFF" indicates that neither small light nor headlight lights. (But at this time the high beam light can light if you put up the handle.)

② is  the indication of small light. Turn the control handle clockwise by 30°, the front, rear small lights and the instrument light can light.

③  the indication of headlight. Keep on turning the left control handle clockwise by 30°, the front headlight, the rear small light and the instrument light can light.

④  the indication of steering. Forward and backward motion of the control handle can operate the left and the right turning lamps 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.

⑤ 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. Uplift the handle once, high beam headlamp lights; release the handle, it goes out. Repeating of the above action can control the working condition of the high beam headlamp to achieve the purpose of dimmer function when overtaking or passing in night.

3) Combination switch (right control handle)



right control handle

①  indication of syringe. When the washer control button on top of the control handle is pressed, cleaning mixture (antifreeze should be used in winter) in the window washer which lies in the right door-frame and underneath instrument panel can be spouted to the windshield glass through the spout under the window.

②  indication of wiper. Turning the control handle clockwise in horizontal direction can control the wiper. Turn the control handle clockwise by 12° to the 'LO' position, the wiper works at a low speed. Keep on turning clockwise by another 12°, 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.

③  indication of exhaust throttle assistant braking. Lift the right control handle upwards and do the 'up-lift-release' motion. Uplift the handle, the switch can be connected and the indicator lamp 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 lamp on the instrument panel goes out.

4) Other electric appliance switches (referring to the diagram left below) Other electric appliance switches mainly include horn button, danger warning switch, fog lamp switch and gating ceiling light switch.

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

② The  symbol (the right and below figure) is indication of danger warning switch. If the button is pressed, the front、rear、left、right

turning lamps flash at the same time and send out emergency signal for alarm indication. Press the button again, reset signal of the switch is disconnected.

③  (the right and below figure) is indication of the fog lamp. Press this button, the fog lamp lights. Press again, the switch resets.

④ Ceiling light signal indicates that door of the vehicle is shut closely or not. When there is one door open or not shut closely, the ceiling lamp lights to remind the driver.



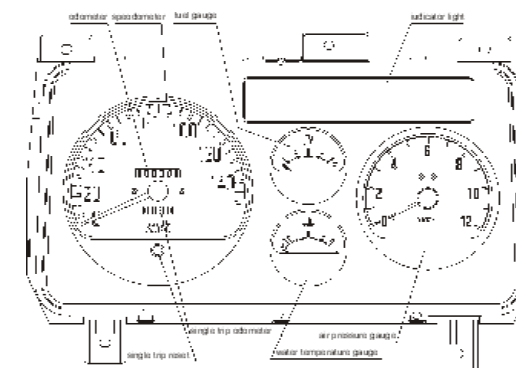
other electric appliance switch



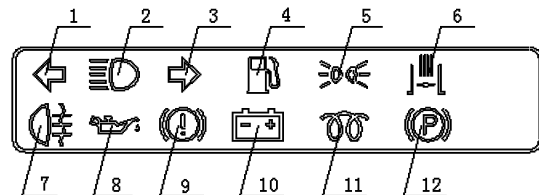
danger alarm and fog lamp switch

5) Instrument cluster

5.1) Air brake

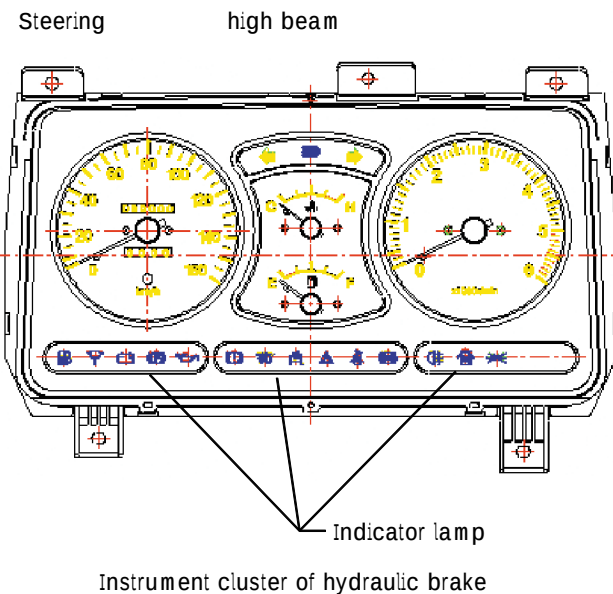


Indicator lamp

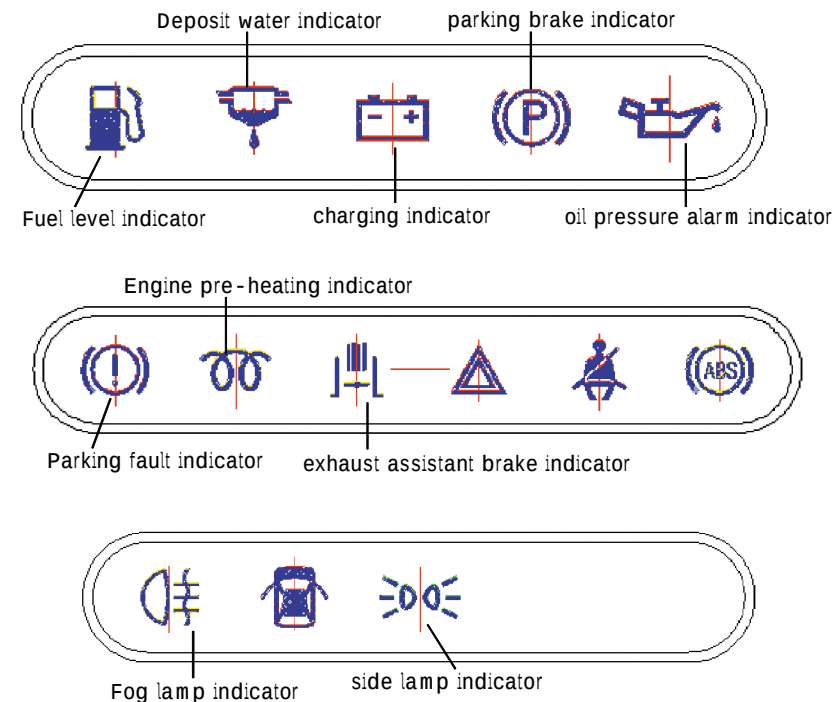


- | | |
|----------------------------|----------------------|
| 1、Turn left; | 7、fog lamp; |
| 2、high beam; | 8、oil pressure alarm |
| 3、turn right; | 9、braking fault; |
| 4、fuel alarm | 10、Charging; |
| 5、side lamp; | 11、pre-heating; |
| 6、exhaust assistant brake; | 12、parking brake |

5.2) Hydraulic brake



Indicator lamp:



① Turn indicator lamp () when the turning control handle is in the left (right) turning position, left (right) turning indicator lamp flashes. If the warning switch is pressed, the left and right turning indicator lamps flash at the same time.

② High beam indicator lamp () indicates whether the headlamp is in the status of high beam or not. When the headlamp is in high beam status, the indicator lamp lights.

③ Fuel warning lamp (): fuel level alarm, when the fuel is in shortage, fuel alarm lamp lights.

④ Parking brake indicator lamp () : When pull up the parking brake handle, the indicator lamp lights.

⑤ Generator indicator (): Indicates working condition of the generator. When the accumulator is discharging, the indicator lamp lights; while the accumulator is charging, the indicator lamp goes out.

⑥ Oil pressure indicator lamp (): Indicates engine oil pressure. When engine oil pressure is lower than 7.84 × 10⁴Pa, the indicator lamp lights, When engine oil pressure is higher than this value, the indicator lamp goes out.

⑦ Braking fault indicator lamp (): When braking fluid is not enough, the indicator lamp lights.

⑧ Exhaust assistant brake indicator lamp (): When exhaust assistant braking operates, the indicator lamp

lights. When exhaust assistant brake is disconnected, the indicator lamp goes out.

⑨ Fog lamp indicator lamp (): When braking fluid is not enough, the indicator lamp lights.

⑩ Small light indicator lamp (): When they work, the indicator lamp lights.

6) Start of choking device
This is a device that controls switch of fuel cutoff mechanism; it is controlled by ignition lock and driven by electromotor as well as installed near the engine. When the ignition lock is turned to “ON” position, choking device starts to work, fuel cutoff device is connected and the engine is able to start. If you want to stop the en-

gine, turn the ignition key to “ACC” or “LOCK” to shut the fuel cutoff mechanism, then the oil way is cut off and the engine quenches.

7) Brake pedal
When the brake pedal is depressed, four front and rear wheels are stopped at the same time to stop the vehicle or decelerate, and the brake light switch of the brake pedal is connected and brake light at back of the vehicle lights.

8) Clutch pedal
When shift during start or running, you should depress the clutch pedal to separate the clutch at first, which will turn the shift control lever into needed position and prevent gear wheels from serious bumping.

9) Accelerator pedal
Accelerator pedal controls oil supply of high-pressure oil pump of engine, more heavily you depress the pedal, more oil is supplied, which leads to accelerating.

10) Parking brake control lever
Tensing the parking brake control lever backwards will stop the vehicle and prevent the vehicle from sliding; at this time, parking brake indicator lamp on the instrument panel lights.



11) Air-conditioner (optional)

11.1) Brief description

The automobile air-conditioner that has both cool wind and warm wind is integrated with the automobile instrument panel. It has multiple functions such as supplying cool wind and warm wind, defrosting, supplying cool and warm wind at the same time. There are four high and low steps of the wind supply system. Users can choose the wind volume according to necessity as well as choose the direction of wind blowing. Air-conditioner of this vehicle is designed properly and has a compact structure and excellent performance as well as operates easily, installs and maintains conveniently.

11.2) Operation

2.1 Start the engine.

2.2 Press wind volume switch ④ to start the wind machine. This switch has four shelves and five positions from left to right, which make the wind machine to run more and more faster to increase the wind volume.

2.3 Turn on the air -conditioner switch ⑤, and the compressor starts to work, the air -conditioner system begins to blow cold wind.

2.4 If you want to use cool wind, please put the temperature -adjusting handle in “COOL” position; while warm wind in “HOT” position. You can adjust the wind -choosing handle ② to make cool (warm) wind to blow in different directions. If you

want to use warm wind separately, turn off air -conditioner switch ⑤.

2.5 Pull handle ① to exchange fresh air, which will let the fresh air outside come into the cab.

11.3) Items to notice

3.1 Temperature -adjusting handle should not be put at the position for lowest temperature while wind volume switch is at the position for small volume in case that evaporator frosts.

3.2 Do not park the vehicle under point-blank sun.

3.3 Close door and window of the cab when using air -conditioner.

3.4 Condenser should be cleaned regularly, compressed air or cold water can be used in washing while

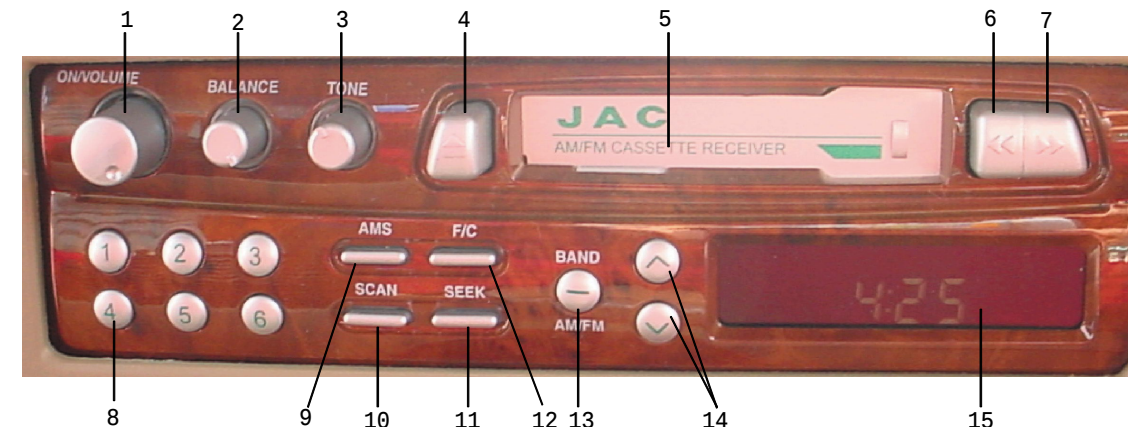
hot water or steam is forbidden.

3.5 When air -conditioner is not used in winter, air compressor should be run once a week for about five minutes in order to keep the air -conditioner in normal working condition.

3.6 When air heater is used, temperature of engine cooling water should reach to more than 70 °C. Antifreeze must be used when the vehicle is parked under the temperature of 0°C in case that elements of the radiator and air heater are frozen to crack.

3.7 If you do not know the theories and there are no reliable safety methods, do not open pipe of the air -conditioner system in case of accident.

12) Radio and tape recorder



1. Power source switch knob

2. Balance control knob

3. sound control knob

4. Tape exit knob; 5. Tape store

6. backward; 7. Recede

8. Preset knob (1-6)

9. Automatic scanning and storing

10. automatic scanning knob

11. Automatic band searching knob

12. Clock adjusting knob

13. Knob for AM/FM conversing

14. Manual FM band searching

15. Display

TB - 9206 Electronic tuning automobile radio and tape recorder

12.1) Brief description

Radio and tape recorder equipped to truck of this series is TB -9206 Electronic tuning automobile radio and tape recorder (referring to diagram shown above). This type of radio and recorder has a wide band, loud and beautiful sound as well as accurate receiving frequency.

12.2) Operation and performance

1) Power source switch/volume control Turn power source switch knob clockwise, when there is a voice "Ka-ta", it indicates that the switch is turned on. At this time, there is data on the display, then turn this knob to proper position.

2) Balance control Adjust balance control knob. Turn it left and volume

of right sound track decreases, while turn it right, volume of left sound track decreases. Turn the knob to gain the best sound effect.

3) Volume control Adjust volume control knob. Turn it clockwise and alt increases, while anticlockwise decreases.

4) Tape exit Press tape exit knob and the tape comes out of the tape store automatically.

5) Tape playing Turn on the power switch; push the tape to the tape store with the tape opening to the right, then the recorder works.

6) Forward/Backward/Turn over Press Forward knob, the tape goes forward, then press Backward knob gently, the recorder plays; Press

backward knob, the tape goes backward, then press Forward knob gently, the recorder plays; Press Forward and Backward knobs at the same time, the tape turns over and there is a turn over indication on the display; when one side of the tape finishes playing, the tape turns over to the other side automatically.

7) Band storing After choosing one band manually or automatically, press the preset knob for more than 2 seconds, and the recorder comes out temporarily silent, at the same time, number of relating preset knob shows on the display, which indicates that the band has been stored in the preset knob. Press the preset knob gently and the band stored in

this knob will be taken out.

8) FM/AM conversing Press FM/AM conversing knob to choose the suitable band, and there will be indication of AM or FM on the left side of the display.

9) F/Control This knob usually indicates time, when pressed, it shows frequency, and 5 minutes later, it returns to time display.

10) Manual FM Keep pressing this knob, frequency of the radio will changes from low to high or high to low automatically, when finds the needed band, release this knob, band searching finishes.

11) Automatic band searching Press the automatic band searching knob gently and the recorder searches

bands from low frequency to high frequency automatically; when it finds a band, the recorder will lock up the band automatically and the display indicates the band frequency received.

12) Automatically scanning Press the automatically scanning knob gently; the radio searches bands from low frequency to high frequency automatically, when finds a band, band frequency will be shown on the display and flashes for 5 minutes, at this time, gently pressing the knob will lock the band up, otherwise, band searching will go on.

13) Automatically memorizer scanning/Automatic scanning and storing Press this knob gently, the memoriz-

er will scan bands stored in the preset device automatically; keep pressing this knob for more than 2 seconds, the memorizer will scan the whole bands from low frequency to high frequency automatically and store the bands with strong signals to the preset device.

14) Clock adjusting Keep pressing F/C knob and keep pressing manually upward to adjust minute; while downward to adjust hour.

15) Display Indicates time or frequency

II. Use of cab components

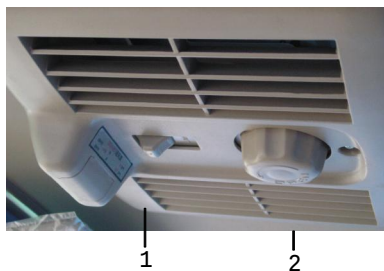
1. Structure description

The cab adopts full metal and flat-headed enclosed structure. Window glass adopts panoramic camber windshield. In order to improve comfort, side panel with larger upside width and raised-roof cab have been adopted. Therefore the interior space of the cab is more commodious and comfortable. Effective measures have been taken in noise reducing, heat insulation, sound insulation and sealing. For instances, the section of roof forehead is enclosed and reinforced rib is equipped to the roof. There are three pieces of asbestos heat insulating mattress on

the upside of the engine. Sealing of the door adopts double skin construction. In the aspect of safety, softening has been done to the main parts, which appears knocking easily with passengers

2. Cab ceiling ventilation device (Right diagram)

There are two ways for cab ventilation: outside air indraught and inside ventilation



1.Ventilation switch; 2.Ventilation knob

1) Outside air indraught

① Turn the knob at the cab-ceiling intake clockwise until the ventilation grilles are surely closed completely.

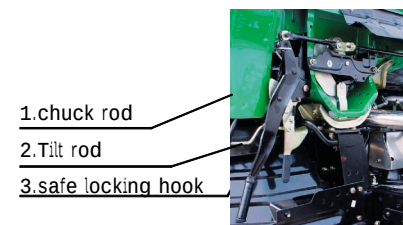
② Turn the switch to “IN” to let the air come in, then turn the knob to “OPEN” to open the direction.

2) Inside ventilation

① Turn the knob clockwise until the ventilation grilles are surely closed completely.

② Turn the switch to “OUT” to exhaust air.

3. Cab tilt locking mechanism



Cab tilt locking mechanism



notice

1) Brief description of the structure

The cab has tilt function and is made up of tilt mechanism and locking mechanism. Tilt mechanism is composed of torsion bar, supporting axle

duct, left and right front brackets and cab rear supporting rod etc. cab tilt is achieved by torsion force. Locking mechanism is composed of right & left locking units, tilt locking unit, short pull rod, long pull rod, lock hook and safety lock hook of the rear cab bracket etc. Function of locking mechanism is to lock the cab reliably so that the cab will not tilt automatically in any situation. (Structure diagram is as follows)

Please read the cab tilt notes on the left door of the cab and on the upper flange of the wheel carefully before tilting the cab. The notes are shown in above figure

Use and maintenance

In order to ensure reliable cab tilting and safe vehicle running, please pay attention to the following items.

(1) Method of cab tilting and relative items to notice:



support rod assembly

① Stop the vehicle on horizontal road; 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 lever into the neutral position to avoid self-sliding of the vehicle.

③ The cab door must be fastened up. You should take all articles on the instrument panel, seats and floor away in case that they damage the door and the front windshield.

④ Disengage the locking function of the cab locking mechanism before tilting the cab.

⑤ After the locking function disengaged, hold the tilting rod with hands

and pull up the safety lock hook at the same time in case of sudden up-lift of the cab.

⑥ Raise the cab slowly until it is tilted to the utmost position, and then lock it reliably with lock arm on the rear bracket. As shown in the right figure.

⑦ When lowering the cab down, first hold the tilting rod and disengage the locking function of lock arm on the rear bracket, and then lower the cab down slowly. After the safety lock locked, lock up the locking mechanism.

(2) Inspection and maintenance

① Check the rubber pad assemblies which are used to strengthen the front/rear supports periodically, if

there is any damage, replace the damaged parts instantly.

② Check the locking situation of the locking mechanism periodically, if locking mechanism is found invalid, it should be repaired or replaced immediately.

③ If you feel arduous when the cab is tilted up or feel heavy when the cab drops down, which indicates that the torsion bar is invalid, replace the torsion bar.

④ If it needs to remove the cab in chassis repairing, disengage the force of the torsion bar first and remove the cab following the steps below.

a. Disengage the locking state, and tilt up the cab to the utmost position.

b. Remove the shaft pin connecting the rear support bar and the cab soleplate framework.

c. Push the cab forwards by some angle until the bolts on the torsion bar arm can be loosened.

d. After the bolt removed, the torsion bar does not work and the cab can be removed (The torsion bar need not be pulled out).

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

⑤ Before reverting the cab to the original position, return the force of the torsion bar first. The following steps

should be followed:

a. Put the tooth part of the spline which is cut at the bottom on one end of the torsion bar in alignment with '1' position on the support axle tube and the spline tube, and then insert the torsion bar into the support axle tube (the locking rod has been pulled out).

b. After mounting the cab with support axle tube and the left, right brackets to the framework together, put the '1' of hub splines on the torsion bar in alignment with the spline tooth which is cut at the bottom on the other end of the torsion bar, cover the hub splines on the torsion bar and insert the spline axle tube into the right bracket in the cab.

c. Tilt the cab forwards until the bolt hole on the torsion bar arm aiming at the screwed hole on the right bracket in the cab, screw the bolt and tighten it.

d. Put the cab down slowly, and check whether the cab is in the state of suspending in horizontal direction after dropping down. If normal, lock the cab up.

⑥ If the torsion bar is found invalid, replace it according to step ④ and step ⑤.

4. Door

1) The cab door that has three-step opening is very convenient for passengers to get on or off. The opening angle of the door can be 30°、57° and 90°. The former two angles are partially open and the last angle is full open. In all the three positions, the door can keep in stable condition.



outside door handle



lock button

2) Outside door handle

Pull out the outside door handle, and then the door can be opened. Insert the starting switch key into the door lock and turn, and then the door can be locked.

3) The door can be locked outside without key. First press down the lock button (figure above) at the inner side of the door into the fixed position, then pull the outside door handle outwards and at the same time close the door.

4) Pull out the inside door handle, and the door can be opened. After closing the door, the door can be locked if the lock button is pressed down.

5. Cab seat

Cab seat can be classified as driver seat、assistant driver seat and rear row seat. Driver back seat adopts upright seat. Angle of the backrest and the fore-and-aft position of the seat can be adjusted. The maximum adjustable angle of the backrest is 56°. The maximum adjustable dis-

tance of the seat is 1800mm mm. The seat adjusting system is shown in the right figure.

When vehicle is in the progress of maintenance, please clean the slide track assembly of the driver seat, re-coat the lithium base grease, and tighten all connecting again. If the cab slide track seat is found shake

or block because of distortion, components of it should be repaired or replaced.

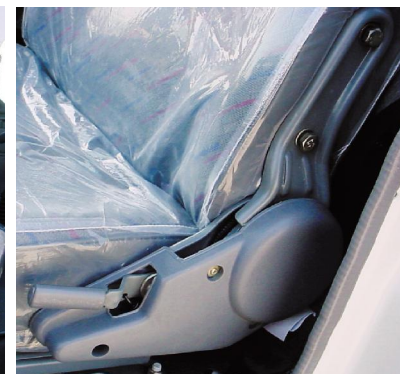
Safety belts of high quality have been equipped to trucks of this series. Please fasten your safety belt up in driving or riding.

(III). Start and running of the vehicle

1. Start of the vehicle

1) Inspection before start

① Check quantity of water stored in the radiator and lubricants in engine; gearbox, rear axle and steering mechanism. Check quantity of electrolyte in the accumulator. Check whether oil level in the oil tank conforms to the specification. Check



pipe joints for leak.

② Check braking system: Depress the brake pedal and pull the parking brake control lever to check whether the braking system works well

③ Transmission system: Check the transmission system for its reliability.

④ Check the steering mechanism: Free turn angle of steering wheel, whether the windage is normal and whether the bolts are loose.

⑤ Check electric system: Check whether electric apparatus and lighting instrument work normally.

⑥ Check whether transmission gears are right, operation parts work normally, gear indication is right and shifting is easy.

⑦ Check whether the tire pressure is

according to specification.

⑧ Check whether elasticity of the fan belt is normal

⑨ Check whether all tools and accessories with the vehicle are prepared.

⑩ Check whether the windshield glass is clean and transparent

2) Start of engine

After doing preparation for engine start, put the shifting lever in neutral position, turn on the ignition switch, check whether horn and instruments on instrument panel work normally, turn lights and brake lights are complete, position and angle of the re-view mirror are proper.

① Routine start

Turn the key to “START” (as

shown at right) and the engine can start. After engine starting, release accelerator pedal immediately and keep the engine running at a low speed. It is forbidden to depress the accelerator pedal violently.

② Start in winter



starting switch

When the temperature is very low, the engine can be started with following measures:

a. Use hot water as cooling water. When fill hot water, turn on the water-draining switch. Turn off the draining switch after hot water flowing out and the engine is warmed up.

b. Heat up the oil to about 80°C ~ 90°C, and then add it to oil pan casing.

After starting the engine, Check working condition of engine and instrument at different rotate speeds, especially oil pressure. Check the vehicle for water leak, oil leak and air leak; Check whether the oil level is normal, whether there are abnormal

noises in engine; whether color of exhausted air is normal.

③ After starting the engine, do not depress the accelerator pedal violently; release the pedal to keep the engine idling for some time. After the temperature of the engine rises and the engine runs stably, uplift the clutch pedal slowly. (You should keep the engine idling for some time until it reaches normal working temperature before driving)

④ You should start the vehicle after temperature of the engine rising to above 60°C when running and instrument reading of every part of the engine are normal. Never start the vehicle in low temperature in case of increasing abrading of engine

3) Start and shifting of vehicle

After the engine running normally, depress the clutch pedal; shift into low gear; release the parking brake; press the horn once. Making sure that it's possible to drive safely, release the clutch pedal slowly and depress the accelerator pedal to start the vehicle gradually. After the vehicle starting, your foot should get away from the clutch pedal, and never keep your foot on it in case of clutch friction disc burning out.

Notes: 1st gear and 2nd gear should not be used for a too long time in case of wearing and oil consuming increasing. Your foot should be kept away from the clutch pedal in case of primary wearing of clutch friction

disc. If you release the clutch pedal too quickly or depress the accelerator pedal insufficiently, the engine may be choked.

You should shift according to change of road and landform in driving. When find that engine power is abundant and the rotating speed rises, which indicates that the former gear is not proper and should be shifted to higher one, shift to a higher gear instantly; at this time, if there is no indication that engine power is insufficient and the transmission parts wobble, the shifting can be thought to be proper. When find that engine power is insufficient and the vehicle speed decreases, shift to a higher gear instantly; at this time, if the vehi-

cle runs normally, it indicates that the shifting is proper.

At the premise of safety, moderate speed gear can be used in swerving, passing bridge or meeting. Under good running condition, High - speed gear can be used, when vehicle speed is high, fuel is saved and economic.

When shifting, you should look forward as well as have a look at the shifting lever; hold the steering wheel stably with your left hand and the center of your palm should keep close to top of the shifting lever; push or pull the shifting lever to proper position with the force of the wrist of your right hand

2. Running, swerving, turning around, backing up and braking of vehicle

1) Running: When run on even road, your vehicle should keep a certain distance from the vehicle running in front. Running speed should be decided by vehicle model, task and detail of road; it's economic to choose a speed among 50—70km/h. 1st and 2nd gears can be used in vehicle starting, upgrading with heavy load, running on uneven road or encountering obstacles; but they should not be used for a too long time in common running. When grading with heavy load, the shifting lever should be changed to low gear

in case of over load of the engine.

During driving, you should not change into a high speed or a low speed abruptly or shake the steering wheel without reason; pay attention whether there is any abnormal noise in the vehicle; check instrument readings and indicator light regularly. If there are abnormal noises or abnormal situation, you should stop the vehicle immediately to do necessary adjusting or repairing.

You can not choke the engine in downgrading; instead, you should shift to low gear and do braking operation at intervals to avoid the engine to run at an over speed. If the vehicle is equipped with exhaust assist-braking device, decreasing

should be achieved with the exhaust assist-braking device.

When running across a shallow river or loblolly, engine air pipe, rear axle and gearbox should be prevented from water. Inspect rear axle and gearbox for water coming into after across water. If there is water, drain it and add specified quantity of gear oil. The vehicle should not run at a high speed after across water, brake pedal should be depressed at intervals to make the braking ability return as soon as possible.

When drive on icy or snowy road, you should drive at a steady speed and never brake abruptly or turn the steering wheel fiercely in case of vehicle side sliding; the vehicle should

also be kept for a long distance from the vehicle running in front. When drive in heavy rain, you must take special care in case that braking device is damped and braking ability is weakened. Never brake abruptly or turn the steering wheel fiercely in case of vehicle side sliding.

2) Swerve There will be a centrifugal force in swerve; the higher the running speed the greater the force, which may lead to vehicle turning over in transverse direction. When it's 50—100m away from the swerve position, you should ring the horn, turn on turn lights etc. to make a turn signal, decrease the running speed. On freezing or muddy road or in heavy foggy day or in day that blows

heavy wind and sand, the running speed should be decreased to below 10km/h; the vehicle should be swerved alongside right side of the road slowly; turn the steering wheel equably according to the road condition; swerve track should be smooth and the swerve should not be too small or too great or too fierce. Braking in turning should be avoided, especially emergency braking.

When there occurs sideslip to front wheel in turning, you should uplift the accelerator pedal and turn the steering wheel in opposite direction; when there occurs sideslip to rear wheel in turning, you should turn the steering wheel along the sideslip di-

rection properly; after sideslip stopping, adjust the running direction.

3) Turning around: When you want to turn the vehicle around by 180, you should choose a square, great intersection or even broad road that have little traffic. Turn around along the vehicle and starts to decelerate from 50~100m away from the position to turn around, and then use a low gear with sending out a turning around signal.

When turning around along the vehicle as well as backwards, send out a turning around signal first, decelerate and moves alongside right side of the road. When approaches the pre-set spot for turning around, watch the road condition, turn the steering

wheel to left extreme position to make the vehicle run to left side of the road slowly. When approaches road side, turn the steering wheel right rapidly and stop the vehicle immediately, if this cannot be achieved once, repeat above operation.

4) Backing up: Shifting into backing up gear or shifting into forward gear from backing up gear should be done after stopping the vehicle completely. When using backup gear, backing up light lights. Backing up speed should be limited to 5km/h. If the driver cannot see the situation behind the vehicle because of load or other reasons, there must be someone to lead outside the vehicle and never back up the vehicle blindly.

5) Stop of vehicle and engine: When the vehicle is going to stop, it should decelerate or slide without shelve and indicate this with swerving light. Tense the parking brake control lever after the vehicle stops. If the vehicle needs to stop on road, it should stop close to the roadside and never on the running roadway. If there is a special situation that the vehicle needs to stop on the center of the road, warning boards should be laid on the places 200 meters away from both front and back of the vehicle. You should avoid stopping the vehicle on ramp as possible as you can. If you have to, pull the parking brake control lever to the death and drive the vehicle at low gear as well as

stop the vehicle wheel with a triangle cushion block or stone in case of vehicle slide. Notes: the parking brake should works reliably when the vehicle stops on ramp as well as the emergency alarm indicator lamp lights. After the vehicle stops, especially after the engine runs under a heavy load, the engine cannot be stopped at once but should keep running at a low speed for a few minutes and be stopped as temperature of the cooling water falls under 70°C. When stop the vehicle on midway, you should take anti-freezing methods to keep the engine warm in winter and prevent the oil tank from being insulated under burning sun in summer.

II .Engine

(I). Inlet and exhaust systems

(II). Cooling system

(III). Accelerating transmission system

(IV). Fuel supply system

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

(I). Air intake、exhaust systems

1. Brief description of structure

Intake system includes air intake tube assembly、air cleaner assembly、engine air intake tube and air intake manifold; Some also includes transitrone. Air exhaust system includes exhaust pipe、muffler and exhaust tailpipe etc.

2. Air cleaner

Inlet pipe and air cleaner assembly that are installed on back of the cab and move with the cab tilting are connected flexibly

The function of air filter is to filter out the dust and the sand coming into the engine.

Air filter is cyclone dust gathering air

cleaner with paper filter element. After external air comes 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 comes 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 end cover. Take away the end

cover, remove the inner nut and take off the filter element assembly.

2) Clean the cover cap and the inner part of the housing with dry and clean cloth. When cleaning, do not let the moisture come into the air filter.

③ Check and clean dust exhauster regularly to ensure that it is complete and effective.

④ Clean filter element of the air cleaner: Clear dry contamination or dirt with a compressed -air gun (air pressure should be lower than 690kPa). The air must blow from inside of the filter element to the outside, or you can pat face of the panel. Never clean contamination and dirt by beating or striking. If the filter

element is found to be jammed due to too long time of using, which results in damage or oil pollution to surface of the filter element, the filter element must be replaced.

Using and maintenance:

1) The service life of the engine has great relationship with the workmanship of the air filter. It's absolutely forbidden that the engine works without air filter or on the condition that the air filter is disabled. Taking the intake opening of air filter as the original intake opening is forbidden.

2) For every 1000km running, check the inlet and exhaust manifold according to the following steps:

a. Check nuts for looseness, when tightening the nuts on the inlet and

the exhaust manifolds, the torsion force should be equable, or else there will be air leak.

b. Check the inlet and the exhaust manifolds for crack and hole, check the gasket for damage and erosion, if found, replace them with a new ones.

3. Using and inspection of air intake system

① Durability of engine relates to working condition of the air cleaner. It's forbidden to let the engine run under the condition that there is no air cleaner or the air cleaner doesn't work; it's also forbidden to use intake opening of the air cleaner as the primary air intake opening.

② after 1000km of running, the air

intake and exhaust manifolds should be checked for following items:

a. Whether nuts loosen; tighten nuts of air intake and exhaust manifolds with uniform torque, or there will be air leak.

b. Whether there are cracks or holes on air intake and exhaust manifolds; whether there is damage or corrosion to the gaskets. If found, replace for new ones.

(II). 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.. Type of the radiator is

straight-through tube.

The specific structure and type of the cooling system components can be consulted in detail in the operating specification of relevant engines.

2. Using and maintenance of cooling system

1) It's recommend to use long-term effective anti-freezing and 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 a long time of engine running, there will be furring that should be cleaned in time in the cooling water. Clean it with following method: mix 700~800 grams of caustic soda with 150 grams of kerosene, add the mixture liquid into the cooling water, keep the engine running at a medi-

um speed for 5~10 minutes, after stopping for 10~12 hours, restart the engine and keep it running for 10~15 minutes. Then drain the liquor and wash the cooling system with clean water.

3. Items to notice 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 find deterioration of the anti-

freezing preservative liquid, replace it entirely at once. 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.

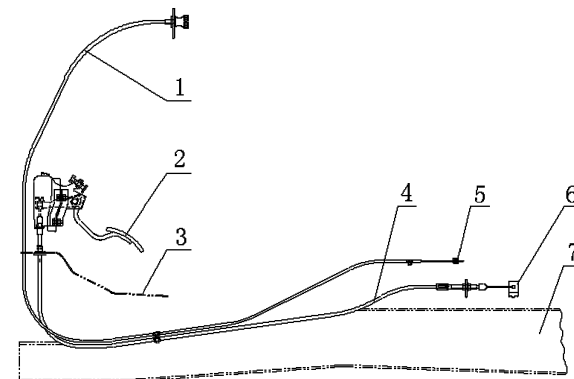
4. Adjusting of tension degree of fan belt pulley

① Neither the fan belt is too tight nor too loose does good to normal operating of the engine. Refer to instruction book of 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 lever; adjust degree of tension of the V-belt with fingers, pressing each belt with 4kg force. The standard of

degree of tension of crankshaft belt pulley—belt tension pulley is 10—15 mm and the belt tension pulley - fan belt pulley is 7—8 mm.

(III) Accelerating transmission system



1, stalling wire drawing; 2, assembly of accelerator mechanism and pedal; 3, front floor of the cab; 4, acceleration wire drawing; 5, stalling oscillating arm of the engine; 6, acceleration oscillating arm of the engine; 7, frame
Schematic diagram of accelerating transmission device

1. 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 depress 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 reliably and is connected to the accelerating drawing wire and the hand throttle drawing wire; struc-

ture of the pedal adopts injected molding type, which makes the assembly convenient and causes little operating noise.

2) Accelerating wire drawing:

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

3) Manual throttle drawing wire:

When Used together with the foot throttle, it can quicken the preheating of the engine or increase the idling speed.

2. Using and adjustment

1) Check whether the connecting position of the linkage rod and the accelerator mechanism is right and reliable; check whether the trend of the

drawing wire is straight and check the corners 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 depressing the pedal, if the free play is too large or the opening



degree of the accelerator is insufficient, adjust the position of bolts to make it return safely.

(IV) Fuel supply system

1. 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.



diesel precipitator

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 the engine -operating requirement as well as make 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.

Strainer: A rotating precipitator of D×200M type (as shown in the right picture) that can filtrate great grain impurity and separate oil from water is equipped to the fuel pipe.

2) Fuel tank: Capacity of the fuel tanks of HFC1045 trucks is 90 L; a

lock is installed to the fuel tank cover as well as a strainer to inside of the fueling opening to prevent impurity of large grain coming into the fuel tank. Oil -draining plug is installed to the lowest position of the lower side of the fuel tank for sake that it's convenient to drain the deposit and water in the bottom of the fuel tank in cleaning.

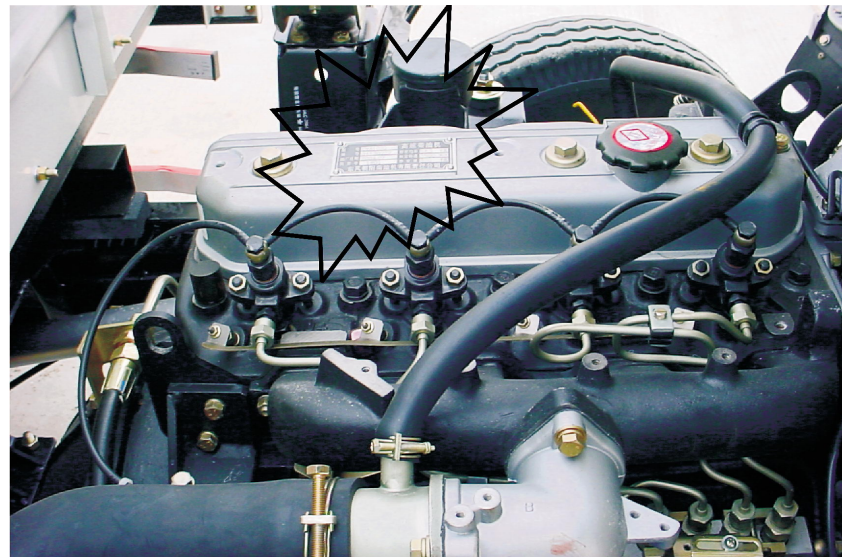
2. Using and maintenance of strainer

1) Check the connecting positions of the pipes for sealing, reliability and

air leak.

2) Drain water and maintain the DX150T4 precipitator after it works for 10000km or 200hours. It's unne-

cessary to replace the filter element in using.



III、Chassis

(I) Clutch

(II) Transmission

(III) Propeller shaft

(IV) Rear axle

(V) Suspension

(VI) Front axle

(VII) Steering system

(VIII) Braking system

(IX) Tires and spare wheel regulator

(I) Clutch

1. Brief description of the structure

The clutch equipped to the truck of this series is single -plate dry type diaphragm spring clutch, and outside diameter of the driven plate is $\Phi 275$.

Adjustment of the clutch operating system

- 1) Adjust the limit screw of the clutch pedal (right figure) 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, rotate 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 release cylinder of the clutch (right figure) Take off the return spring of the release fork, push the release cylinder piston to the bottom of the cylinder, loosen the locknut on the push rod, push the release fork towards the backside of the engine to the position where the release bearing and the release fork contact barely, turn the ball nut until it clutch release cylinder contacts the release fork, then turn back the spherical nut on the push rod for 3

circles, tighten the nut, install the return spring of the release fork.



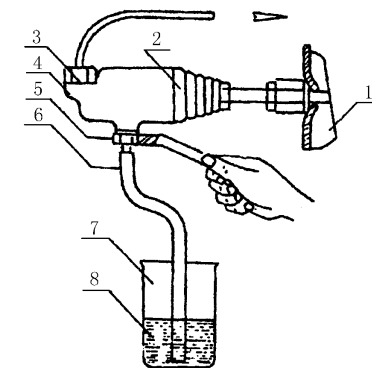
Clutch pedal



clutch release cylinder

4) Bleed air from clutch release cylinder

Air or oil leak 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 can not work normally. There had better be two persons to do the work of air bleeding, one person depresses the clutch pedal in the cab, and the other one bleeds air at the release cylinder. Tighten the air deflation screw, as the clutch pedal has not touched the cab floor.



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

At first, take off cap of the air deflation screw and connect a plastic duct to it; connect the other end of the duct to a container containing

brake fluid. Depress the clutch pedal for several times to make the brake fluid fill the master cylinder and the hydraulic pipe, and then release the air deflation screw; at this time if there were air in the oil path, there will be bubbles out of the oil ring. Tighten the air deflation screw, as the clutch pedal has not touched the cab floor, and then depress the clutch pedal for several times, keep the pedal being depressed, release the air deflation screw again to deflate air. Repeat above operation until there are no bubbles out of the brake fluid, tighten the air deflating valve and put on the rubber cap of the valve. Brake fluid should be added to the brake fluid container to max.

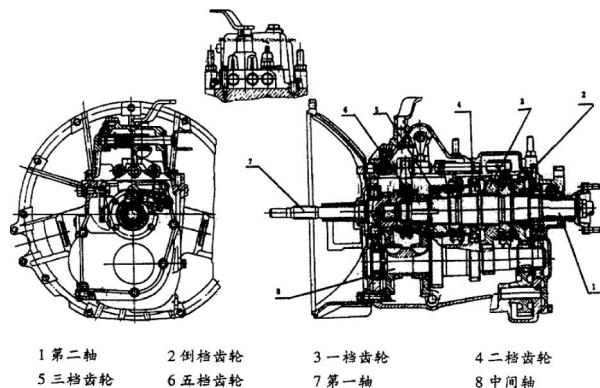
level in deflating.

Sometimes after deflating, the clutch pedal is weak again, and when deflating, there are bubbles again; this results from that there is some place of the pipeline from master cylinder to release cylinder not sealed. When maintain, pay attention that aluminum washer of the oil intake pipe of the release cylinder should neither be warping or be replaced with steel washer. Air deflation must be done every time after removing the master cylinder, the release cylinder or the oil pipe.

3. Maintenance and adjustment

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 lin-

ings. Decrepitating, burning and ex-foliation 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.



1 第二轴 2 倒档齿轮 3 一档齿轮 4 二档齿轮
5 三档齿轮 6 五档齿轮 7 第一轴 8 中间轴

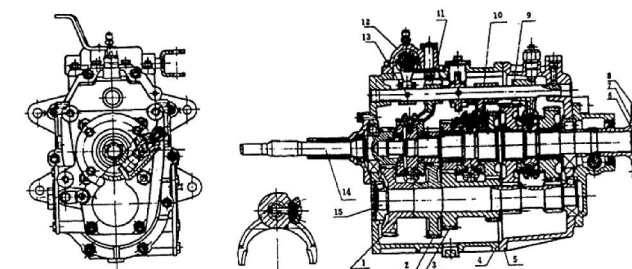
Schematic diagram of CAS5-20 transmission assembly

1. Transmission

1) Brief description of structure

Types of the transmission equipped to the chassis of truck of this series mainly are LC5T88, CAS5 -20 or CAS5 -25. All gears of the chassis are equipped with synchronizers.

The chassis has five forward gears and one reverse gear, among which the 4th gear is direct gear and the 5th gear is overdrive gear (five gears of CAS5 -25 are all direct gears and there is no overdrive gear equipped to it).



1. 一级减速齿轮 2. 第五速齿轮 3. 第二及第三速齿轮 4. 前壳体
5. 后壳体 6. 第二轴总成 7. 第一轴凸缘螺母 8. 第二轴凸缘
9. 第一档及倒档变速叉 10. 第二档及第三级变速叉 11. 第四档及第五档变速叉 12. 变速机构座总
13. 变速叉轴 14. 第一轴总成 15. 中间轴

Schematic diagram of LC5T88 transmission assembly

Take LC5T88 transmission as an example, five forward gears of it are all equipped with locking-ring synchronizers and gears of all shelves adopt helical constant meshing. Needle bearings are installed to reverse gear of the main shaft, the 1st gear and

the 2nd gear. Reverse gear on center shaft is integrated with the 1st gear and the 2nd gear. Driving gear and the 5th gear are installed on the center shaft with semi-circle splines. Synchronizers equipped to the transmission make gear shifting con-

venient as well as decrease impact abrasion to gear ends, shorten the time of shifting, increase average speed and reduce labor intension of the driver etc.

Selecting and shifting are mainly completed by mechanisms inside the transmission cover assembly.

2) Using and maintenance:

1) If the gear shifting can not operate or is hard to operate as the engine is not working, which indicates that the gear shifting lever (or the flexible shaft) is not adjusted well or the bolts become loose, you must adjust the control lever (or the flexible shaft), check and tighten each bolt and nut.

2) If there is out-of-gear as the vehicle running on rough road, which in-

dicates that the gear shifting lever (or the flexible shaft) is not adjusted well, you must adjust the control lever (or the flexible shaft).

3) If free play of the control lever is too large, check and tighten each bolt and nut.

4) Do not take gear-shifting operation when the engine works at an over fast speed to avoid to aggravate wearing of the synchronizer.

5) When shifting, the force should be gentle. The hand force must be acted on the control lever 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) If the fifth gear is over-speed gear, it can be used when the vehicle speed is over 50 km/h to avoid damage of the over-speed gear resulting from over load.

8) During driving, if there is any abnormal noise in the transmission, stop the vehicle and check it, 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 was 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 synchronizer, 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 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 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 of pressure in the transmission, oil seepage or leakage, so the vent plug should be cleaned periodically.

13) The movement parts of shifting operation component should be kept

in good lubricating condition, or else, it will be hard to shift because of the wearing of the movement parts. If the position of gear selecting is found incorrect, or gear shifting is difficult or the transmission is out of gear automatically in using, firstly you should readjust the gear selecting and shifting mechanism.

2.Shifting control device of the transmission

1) Brief description of structure

The shifting control device of the transmission adopts long distance soft cable type with high floor and short lever, and it takes two hoses to implement the gear selecting and shifting which is shown in the figure right above. It is mainly composed of

operating lever seat, hoses for gear selecting or shifting and the bracket. The core shaft of the hoses is steel cable; pushing or pulling motion of the steel cable completes the operation of gear selecting or shifting. The ball on the hoses and adjusting screws are used to adjust the total length of the hoses to ensure that the gear selecting or shifting can be to the correct position. There are sym-



Shifting control handle

bols of each gear on the shifting control handle; it is shown in the figure right below.

2) Using and maintenance

1. Because the motion of push and pull are achieved with steel wire rope in the flexible shaft, when selecting/shifting, you must apply gentle but not violent force in case of core wire damage.

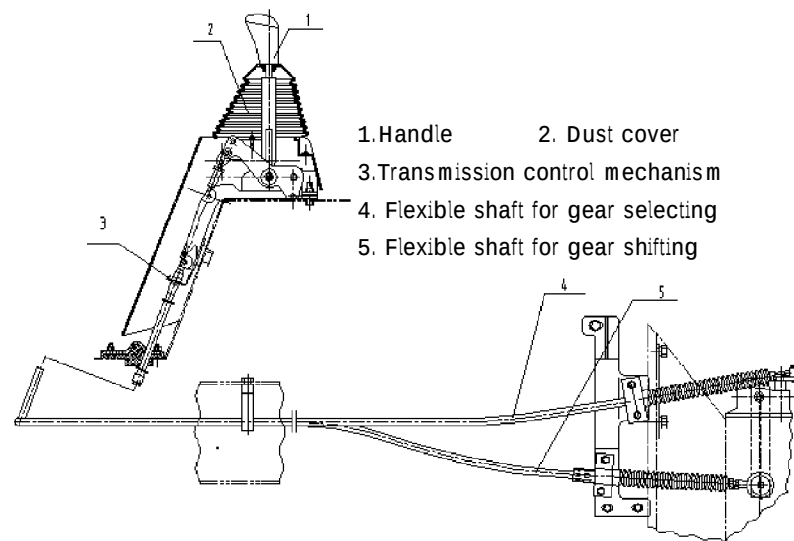
2. If the selecting position is inaccurate, it's hard to shift or it throws out of gear of its own, and there is nothing wrong with the transmission, length of the flexible shaft should be readjusted and agility of the flexible shaft should be checked, if the problem still exists, which indicates that the flexible shaft is damaged, the

flexible shaft should be replaced.

3. When in neutral position, if the control lever cannot return automatically, check whether the torsion bar spring and the smooth spring are invalid.

4. Check fixing clips of the hose for looseness or falling off, falling off of clips is also one of the causes that lead to hard selecting and shifting.

5. When replacing the flexible shaft, arrange the flexible shaft along with the frame and its bending radius should be no less than 200mm, otherwise, life length of the flexible shaft will be shortened and there will be a greater resistance to operation.



- 1.Handle
- 2. Dust cover
- 3.Transmission control mechanism
- 4. Flexible shaft for gear selecting
- 5. Flexible shaft for gear shifting

(III) Drive shaft

1. Brief description of structure

The drive shaft that adopts exposed structure is composed of center drive shaft and rear axle drive shaft and has three universal joints.

Front side of the center drive shaft connects with hand brake drum and transmission flange; while rear side is installed in center bearing, and is fixed to lower side of the frame cross beam by center bearing. There are seat rings on center bearing seat that can absorb heat movement as well as decrease impact causing by complicated load such as axial scurry and radial jumping etc. to drive shaft. Rear flange of the center drive shaft should be compacted with nuts and

riveted effectively. Spline spindles are welded to the front side of the drive shaft of the rear axle, to which universal joints are installed, so that the drive shaft can flex and circumvolve freely. The splines adopt involute type and clearance between teeth is small, which can decrease impact effectively as rotate speed of the drive shaft changes.

2. Using and inspection

1) Drive shaft has been counterpoised in factory, it should be ensured not to impact in use and not to knock and stack in disassembly and carry. Replace for a new one if the shaft is distorted or the balancer is desquamated, otherwise there will be vibration, noise, and extra impact in travel, which can damage other as-

semblies and even endanger driving. 2) Check oil seals of center supporting bearing, needle bearing of cross shaft, sliding spline regularly, replace invalid oil seals instantly.

(IV)Rear axle

1. Brief description of structure
Rear axle that adopts single decelerating is the driving axle and is composed of master retarder, differential and axle housing; rear axle is also the final part of transmission system of the truck. Master retarder can not only change the direction of driving



force, but also reduce the rotate speed. It is composed of driving gear and driven gear which join together. The end with splines of the driving gear is connected with universal joint assembly by coupling flange. Shaft neck with small end of the driving gear is mounted to guide 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 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.

2. Using and inspection

1) Lubricate to hyperbola bevel gear requires highly, only specified gear oil is allowed to fill into the axle housing, and other gear oil can not be used, or it will result in quickened scratch and wearing of the gear surface.

2) It's unnecessary to remove or adjust the conical gears and bearings of master retarder of the rear axle, 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 to make sure that ventilation is expedite. A jammed air drain can bring higher air pressure in the rear axle, which will result in oil leak at the joints and the driving gear oil seal.

4) Check the lubricant level in the axle housing regularly. Check quality of the lubricant regularly, and replace for new lubricant if the chroma and viscosity is abnormal.

(V)Suspension

1. Brief description of structure
Suspension system is made up of leaf spring, two -direction hydraulic shock absorber and cushion block etc. Rear leaf spring adopts main and auxiliary leaf springs, which improves smoothness.

2. Using and maintenance of leaf spring

1) When the vehicle has run for 200km and 500km in breaking -in period, check and tighten U -bolts and U -nuts of the leaf spring according to specified tightening torque, as the vehicle is under loading.

2) After breaking -in period or the leaf spring is replaced and new one is installed, check and tighten

U -bolts and U -nuts of the leaf spring according to specified tightening torque, as the vehicle is fully loaded.

3) After every 2000—3000km in running, check and tighten U -bolts and U -nuts of the leaf spring according

to specified tightening torque, as the vehicle is fully loaded.

4) Check and tighten exposed bolts and nuts of the suspension (under full load); check rubber parts of the suspension, if the rubber parts are worn greatly, replace them instantly.

5) When replace leaves of the leaf spring, disassemble or install center bolts, pay attention to the installation direction of the front and rear armor plates. When tighten U-bolts and U-nuts of the leaf spring, tighten uniformly at first, and then tighten the front U-nuts according to specified tightening torque, at last tighten the rear U-bolts and U-nuts.

3. Using and inspection of shock absorber

1) Check temperature of the shock absorber after a distance of running on bad road, (commonly more than 10km). If the temperature is lower than condition temperature, it indicates that the shock absorber doesn't work; if temperatures of the left shock absorber and the right shock absorber are different and one is much higher than the other one, the one with lower temperature has much less resistance. Little resistance usually results from lack in oil or damage of some important parts. The shock absorber that is 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 working condition of the shock absorber when maintaining the vehicle. Erect the shock absorber and nip its lower end in a bench vice, then pull and press it for several times; if the resistance is stable, the resistance in pulling should be bigger than in pressing, otherwise the shock absorber maybe is damaged or lack in oil.

4) Repair or replace parts if necessary as well as add shock absorber oil. Inspection and repairing in time can avoid reject resulting from seri-

ous damage of the parts.

5) If the shock absorber lever needs to replace, oil seal should be replaced in time. If unnecessary, the valve parts should not be removed.

(VI)Front axle

1. 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.

The front axle adopts I-beam formed section forged steel. Toe -in of the front wheel is 3~6mm (diagonal tire) and 1~3mm (radial tire). Proper alignment of the front wheel can improve stability and agility in running, so that driver's fatigue can be reduced and wearing of the tire is slowed.

2. Adjustment of front axle

1) Adjusting of the front wheel hub bearing: when adjust axial pre-tightening degree of the hub bearing, tighten lock nuts with a torque spanner, and then loose steering knuckle nut by about 1/3 circle, rotate the hub forward and reversibly to make the bearing roller contact the prick surface of the bearing outer ring, and then align nut notch with cotter pin hole with a torque spanner in direction of increasing the torque; at this time, the hub should rotate freely and has no obvious swaying. At last, bend the cotter pin to fix it up.

2) Adjusting of clearance between steering knuckle and front axle: clearance between steering knuckle

and front axle should be no more than 0.1mm, and the clearance is adjusted with adjusting shim and the shim should be no more than 2 pieces.

3) Adjusting of toe -in: Toe -in is adjusted with tie rod. Stop the vehicle on flat ground, jack up the front wheel in beeline running position, loose left and right lock nuts of the tie rod, rotate the tie rod to make toe -in accord with the orientation size, and then tighten the lock nuts. The tightening torque is 107-127N·m.

(VII)Steering system

Brief description of structure

The steering gear adopts recirculating ball -rack and sector type. The steering shaft assembly has rigid

cross shaft gimbals with it; upper section and lower section of it are connected with square splines, extension journey of which is 100mm to ensure cab tilting. Redirector of this kind is highly efficient, operates agilely, wears little and durable.

Using and maintenance

1. Turning the steering wheel to extreme end at starting position is forbidden.

2. Check free stroke of the turning angle of the steering wheel after every 1000km's running as the vehicle is under loading; the turning angle should be ± 150 , if beyond this scale, it should be adjusted. Check connecting points of the redirector for looseness before adjusting; when

adjusting, adjust the clearance between segment gear of the rocker arm shaft and gear of the steering nut, namely, loose tightening nut of the adjusting screw. Turn the screw clockwise to make turning angle of the free stroke of the steering wheel less than ± 150 , and then tighten the tightening nut. If free stroke of the steering wheel is still more than ± 150 after adjusting, remove redirector from the vehicle, and remove the upper cover, decrease thickness of the adjusting shim properly to eliminate axial clearance of the steering screw, at last, install the upper cover.

3. Check oil level of the redirector after every 3000km's running; the redirector should be removed and

washed in spring and autumn and seasonal oil replacing should be adjusted.

4. Gear oil for hyperbola gear should be filled into the redirector, and lubricant not conforming to the requirement is forbidden to use.

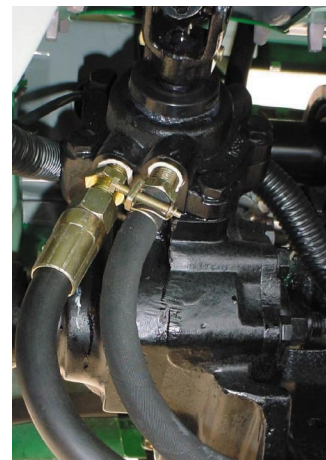
Power steering system (Optional)

1. Brief description of structure

Power steering system is mainly made up of steering control mechanism, integrated power steering (as shown in the right diagram), power steering cylinder and power steering pipeline.

Steering energy source of the power steering mechanism comes from energy of the driver as well as engine power. Usually, when the power de-

vice is ineffective, the driver can execute steering independently. Therefore, comparing with common mechanical steering system, power steering system is agile, reliable and safe, which will reduce fatigue of the driver greatly.



2. Inspection process of working condition of the steering mechanism.

1) Place front wheel of the vehicle on the swivel table.

2) Turn the steering wheel to extreme ends of both sides to check whether the steering wheel gets stuck or there is any abnormal impedance in turning.

3) Check free stroke of the steering wheel as the engine is idling. Free stroke of the steering wheel should be 10—15mm, if it is more than 10—15mm, turn the adjusting screw clockwise, it decreases; while turn anticlockwise, it increases.

4) The measured rotating force of the steering wheel should be about 19.6N as the engine idles.

5) Check working condition of the following switches: Start switch, wiper switch, exhaust braking switch, horn switch and combination switch.

3. Steps of air deflation for power steering system

1) Add steering oil to power steering oilcan (specified oil should be used)

2) After jacking up the front axle, prop the frame with brackets.

3) Turn the steering wheel to extreme ends of both sides for several times.

4) Check oil level in the power steering oilcan, add oil if insufficient. Check whether the oil level is in the scale of oil level in normal temperature.

5) Start the vehicle, and turn the steering wheel to extreme ends for several times as the engine is idling.

Oil should be added to the oilcan continuously during air deflation to ensure that the power steering oilcan is not empty. When there is no air discharged, it indicates that air in the steering system has been exhausted.

6) Turn the steering wheel to make the wheel forward.

7) Check the oil level after the engine is shut, add steering oil if necessary.

Notes: Check whether temperature of the steering oil belongs to high temperature scale, if the steering oil has cooled down, check whether it belongs to normal temperature scale. If there is something wrong, repeat step 4 and 5; if the problem still exists, repair the power steering pump.

4. Using and inspection

1) After 3000—4000km's running or every 5000km 's running in the future, the steering oil should be replaced in time and the oilcan strainer net should be washed or replaced at the same time.

2) Check the oilcan for changing of oil quantity and oil quality regularly, if there is any change, add or replace.

3) Pay special attention to marks of oil inlet/outlet when assembling or disassembling steering mechanism; oil inlet pipe and oil outlet pipe should not be installed in reverse. After the pipelines are connected properly, no air is allowed to come into the oil inlet pipe. Start the generator to keep it idling, and then fill oil

in to the oilcan; turn the steering wheel to extreme ends right and left repeatedly before the system is filled with oil till the oil level does not fall any more and there is no air bubble. Fill oil till the filling mark. Pay special attention to keep joints of oilcan and oil path of the steering system clean, sundries are not allowed.

Specific connections are as follows

a) Oil outlet of the steering oil pump should be connected to oil inlet of the redirector.

b) Oil return opening of the redirector should be connected to oil return opening of the oilcan.

4) If the power steering is invalid, steering can also be achieved by mechanical steering components with the driver's operating, but me-

chanical steering is not allowed to use for a long time separately.

5) Power steering has a function of spot turn, while turning to extreme ends in fixed place should be avoided in case that lifespan of the parts is shortened.

6) Fill hydraulic oil according to specification, L—HM464# anti-abrading hydraulic oil should be used for steering system as the environment temperature is above 0°C; while below 0°C, L-LM32# hydraulic oil or 8# automatic drive oil should be used (oil of different brands should not be mixed). Imported power steering or steering pump should use DEXRONII hydraulic oil (referring to American GM standard)

5. Items to notice and daily maintenance for the power steering system in using

1) Items to notice in using:

a. To turn the steering wheel to extreme end for over 5 seconds is forbidden.

b. To turn the steering wheel continuously as the steering wheel is at extreme end is forbidden.

c. Spot turning is forbidden.

d. To turn the steering wheel at a speed more than 90 turns/min. is forbidden.

2) Daily maintenance:

The driver should check and tighten the safety parts of the steering system before driving, in driving and after driving to adjust these parts to

normal condition to ensure safety of driving.

(VIII)Braking system

Braking systems of trucks of this series are: parking brake system, service brake system (air brake, hydraulic brake)



1. Parking brake system

1) Brief description of structure

Parking brake system is composed of parking brake, control cable assembly and control handle (the right picture). Parking brake is a brake of center-drum type that is installed 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; diameter of the steel wire inside the flexible shaft is $\Phi 3.5\text{mm}$. Parking brake is composed of backboard, parking brake shoe with friction disc, adjusting bolt assembly and return spring.

2) Adjusting

Clearance between parking brake drum and friction disc as they do not contact 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:

- Jack up the rear axle to make one wheel off ground.
- Put the parking brake handle to the lowest position, the gear shifts to neutral position.
- Turn the small hole on the brake drum to the lowest side, put a screw-driver 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 above adjusting is executed correctly, when the parking brake is tensed, the vehicle can stop on a 20% ramp; the vehicle cannot start at 2nd gear.

3) Using and inspection

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

2. Service brake system

2.1 Air brake

1) Brief description of this system

Comparing with hydraulic brake, air brake can brings greater braking force under the condition that force on the pedal is not great and the pedal stroke is not long; at the same

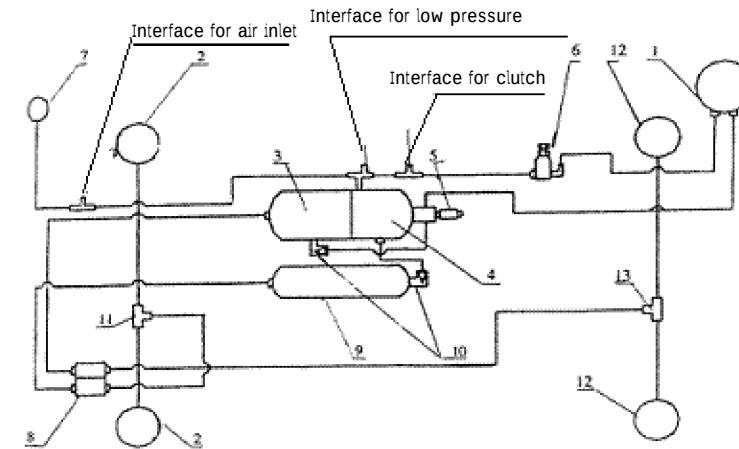
time, dual-circuit air-pressure driving braking device is equipped to front and rear wheel separately, so

the braking is safe, reliable, labor-saving, and more effective; even if one of the brake does not work, the

vehicle still can brake safely.

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

1. 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 separates into two and come into the front chamber 9 of the auxiliary air reservoir and the rear chamber 4 of the main air reservoir, 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



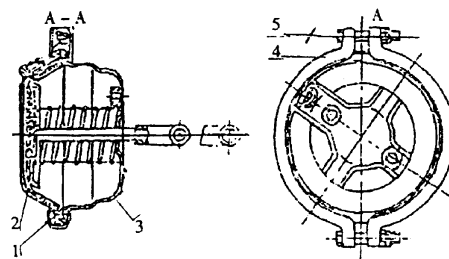
1. air compressor; 2. front brake chamber; 3. front cavity on main gas cylinder
4. rear cavity on main gas cylinder; 5. safety valve; 6. pressure control valve
7. barometer; 8. brake valve; 9. additional gas cylinder; 10. one-way valve
11. front quick-release valve; 12. rear brake valve; 13. rear quick-release valve

8, and then the air is transported separately to rear brake chamber 12 and front brake chamber 2. Check valves 10 are 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 pedal is released, compressed air in front and rear brake chambers go into the atmosphere by front and rear air-deflating valves 11 and 13.

2.1.1 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



1. 制动室膜 2. 盖
3. 制动室壳 4. 卡箍
5. 紧固螺栓

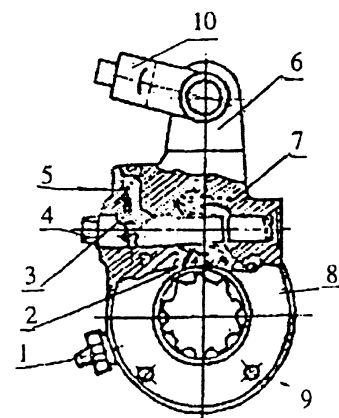
decelerate or stop the vehicle. Front and rear brakes of this brake system adopt imbalanced structure and are mainly composed of brake chamber, brake arm and brake.

2.1.2 Brake chamber:

Shape of the brake chamber adopts canister type, and outside tightening adopts clip -hoop type. Front and rear brake chamber adopt the same type. As shown in the following diagram:

2.1.3 Brake arm

Structure of the brake arm is shown as follows. Brake arm 6 has worm 7 and worm wheel 2, in the worm wheel, splines are connected with brake camshaft; to turn the worm shaft 4 will change the relative posi-

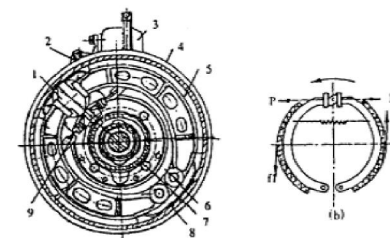


Sketch of brake arm structure

1. 油嘴 2. 蜗轮
3. 锁止球 4. 蜗杆
5. 弹簧 6. 制动臂
7. 蜗杆 8. 盖
9. 铆钉
10. 制动室推杆

tion of brake arm and brake cams -haft to adjust clearance between brake shoe slice and brake drum. High-speed worm shaft 4 communicates with worm wheel chamber, lubricant filled from oil nozzle can prevent lubricating lever 4 from rust.

2.1.4 Brake



Sketch of the brake structure

Front brake has the same structure with the rear brake. The following picture shows 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; therefore, it brings friction force between brake drum and shoe

slice, direction of which is opposite to direction of the wheel turning. Direction of moment produced by friction force on the front shoe is as same as direction of the push force, and they both press to the brake drum, which increases braking efficiency of the front shoe and assists power, so the front brake shoe is called power -assisted brake shoe; while direction of moment produced by friction force on the rear shoe is just opposite to direction of the push force, which decreases pressure that brake shoe applies on brake drum, so that braking efficiency of the rear shoe decreases resulting in power reducing, so the rear brake shoe is called power -reducing brake shoe.

All above leads 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:

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, windage of the end of the ed of the brake drum shaft is 0.25 -0.4mm, while camshaft end 0.45mm. After adjusting, do test -drive to check working condition of the brake and whether the brake drum heats and whether the braking distance is proper, if not, readjust the vehicle.

2.1.5 Brake valve

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

2.1.6 Maintenance

2.2 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.

2.3 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 if necessary.

2.4 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.

Replacing friction disc or reinstalling shoe slice shaft and brake camshaft will damage contact condition between former friction disc and brake drum, because of which, complete adjustment must be done.

2.2 Hydraulic brake

1) Brief description of structure

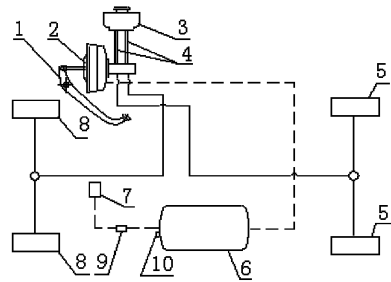
Service brake of trucks of HFC1045 series adopts hydraulic brake and is mainly composed of vacuum booster, vacuum tank, brake master cylinder, control mechanism, brake pipeline, front & rear brake, and is reliable and safe as well as operates lightly, reacts agilely, etc.

When depress the service brake pedal, if you feel the braking is weak,

but the brake liquor is sufficient, the cause of ineffective braking maybe that there is air in the brake system, and the air should be deflated according to the following sequence: right rear wheel brake - left rear wheel brake - right front wheel brake - left rear wheel brake. Method of air deflation is as follows:

- Clean up begrimed on deflating screw of the brake master cylinder and release cylinder
- Unscrew screw plug of the filling opening of master cylinder or fluid pot, and fill brake fluid to full position.
- After depressing brake pedal several times continuously, depress emergency brake pedal, and loose deflating bolt to deflate air; repeat

these actions for several times till air in the brake pipeline is exhausted. When deflating, pay attention not to let schematic diagram hydrostatic brake system



1. Brake pedal; 2. Vacuum booster and main cylinder assembly
 3. Reservoir; 4. Connection hose;
 5. Rear brake; 6. Vacuum cylinder
 7. Intake manifold; 8. Front brake;
 9. Vacuum check valve
 10. Connect to vacuum - alarm
- hydraulic tube- - - vacuum tube

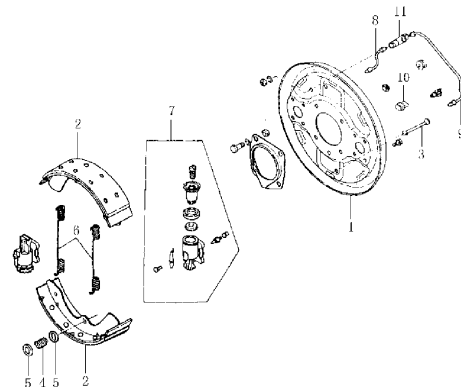
the reserved fluid leak completely, or air will come into the pipeline again.

c. Fill brake liquor into the oil reser-

voir fully.

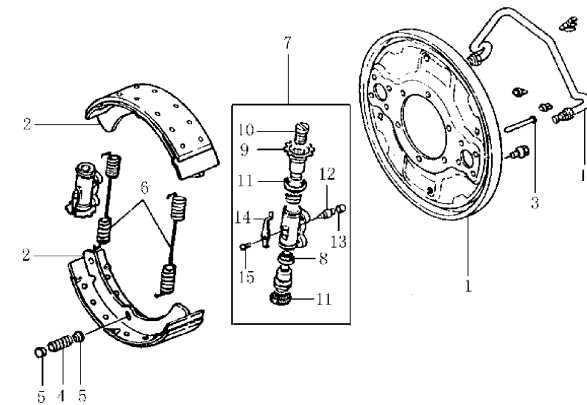
2) Structure of the brake

Front brake:



1. backboard of the front brake; 2. Brake shoe slice assembly;
3. Brake shoe press spring drag rod; 4. Brake shoe press spring;
5. Brake shoe press spring seat; 6. Return spring of brake shoe;
7. Release cylinder assembly of front brake;
8. Front connection pipe assembly; 9. Rear connection pipe assembly;
10. Check the hole for jam; 11. Three-way fitting;

Rear brake:



1. Back board of the rear brake; 2. Brake shoe with friction disc assembly;
3. Brake shoe press spring drag rod; 4. Brake shoe press spring;
5. Brake shoe press spring seat; 6. Return spring of brake shoe;
7. Release cylinder block of the rear brake; 8. Release cylinder rubber cup;
9. Release cylinder plug of the rear brake;
10. Adjusting bolt of the release cylinder plug;
11. Release cylinder cover; 12. Stopper claw;
13. Fixing screw of the stopper claw; 14. Deflation screw of release cylinder;
15. Cover of deflation screw of the release cylinder; 16. Brake pipe assembly

The front, rear axle adopt two-way self-energizing hydraulic brake.

3) Items to notice in using brake fluid
(1) Brake liquor used in trucks of this series is compound brake fluid of JG3 level (GB10830).

(2) Compound brake fluid of different brands is forbidden to use.

(3) Compound brake fluid can absorb moisture greatly, and the container containing the brake fluid should keep clean, sealed and dry, sundries like water, organic solvent, petroleum product, dust etc. are forbidden to enter, otherwise, brake efficiency will be affected seriously.

(4) When replace for brake fluid of different brands, the former brake fluid in the system should be cleaned

with alcohol, if there is no alcohol, the following steps can be taken:

- a. Discharge all the brake fluid, and fill brake fluid JG3 into the oil reservoir nearly full for instead, and then discharge all brake fluid in the pipeline completely to clean the former brake fluid.
- b. Refill the brake fluid according to specification.
- c. After adjusting of the brake system finishing, free stroke of the brake pedal should be 8 -12mm, or the master cylinder will work under abnormal condition, which will lead to faults like overheating of the brake drum.

2.2.1 Service brake

1) Brief description of structure

Service brake adopts hydraulic drum type, and its front brake and rear brake adopt double acting leading shoe type; the service brake is composed of brake baseboard, brake release cylinder, brake shoe & liner assembly and return spring assembly.

2) Adjusting of the service brake

As the service brake liner is worn gradually in using, clearance between the liner and the brake drum increases, it must be adjusted to ensure braking efficiency. Adjusting is shown as follows:

Jack up the wheel and take off the seal stopper, toggle the adjusting gear of the release cylinder plug ac-

cording to arrow direction at baseboard adjusting hole side with a special adjusting screwdriver, at the same time, rotate the brake drum come -and -go continuously until the brake drum is hooped completely, and then return adjusting gear of the brake release cylinder plug by 5 -9 teeth to make the clearance between brake drum and friction disc be 0.2 -0.45mm; after all these, the brake drum will turn agilely.

3) Using and inspection

After the brake shoe slice is over worn, it should be replaced for new one. Surface of the new slice should be grinded, and there should be no oil dirt, scratches or chap etc. on the surface.

Clearance adjusting should be done in every maintenance class. When stop the vehicle, touch four brake drums with hands to check their temperature, if the temperature is too high, readjust the clearance. Seal condition of the release cylinder should also be checked regularly, if there is any oil leak, replace rubber ring immediately to prevent a series of faults such as overheating of the brake drum.

2.2.2. Vacuum power take-off

1) Brief description of structure

2) Vacuum booster equipped to trucks of HFC1045 series adopts double diaphragm and is mainly made up of outer casing return spring, control valve, rubber film, and

sound damping device etc.

2) Adjusting

The vacuum booster has been adjusted in the factory; do not disassemble it in using in case of diaphragm damage.

(IX) Wheel and spare wheel regulator

1. Wheel

1) Brief description

A truck has 7 wheels in all, one of which is spare wheel and installed on lower side of the rear frame. Specification of the tire is 6.50 -16 or 6.50R16, and the air pressure is about 530Kpa.

2) Using and maintenance

It's very important to charge the tire according to specification, so that a longer running mileage can be gained; to run as there is no air or the air is insufficient is forbidden. It's normal that air temperature of the tire increases a little in running; to decrease air pressure by deflating is forbidden. Check the air pressure in the tire under cold condition, if size of the road pattern is proper (two center prints contact the ground) when the vehicle is under loading, it indicates that the tire pressure is normal.

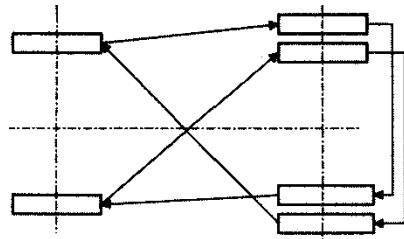
Rust and other sundries on the rims should be cleaned up when installing tires, talcum powder had better be

scattered between the inner tire and the outer tire. Front and rear wheel nuts should be tightened by two times in installation; at first, tighten the nuts in turn to align the wheels, and then tighten them to specified torque in diagonal sequence.

After the vehicle running for a certain time, check the tire nuts for looseness, if the nuts are loose, tighten them according to specified torque.

3) Transposition of tire

Transposition of tires should be done in 2nd class maintenance to ensure even wearing. Tires are usually changed with each other across. (As shown in the right above picture)



2. Spare wheel regulator

1) Description of structure and using

Spare wheel regulator (picture right below) adopts inner engaged driving gear of suspension chain type. The regulator is fixed to the frame, when rise the spare wheel, you only need to fix the spare wheel on the wheel bracket; after rocking it tightening with hands, return by 15° in reversing direction.



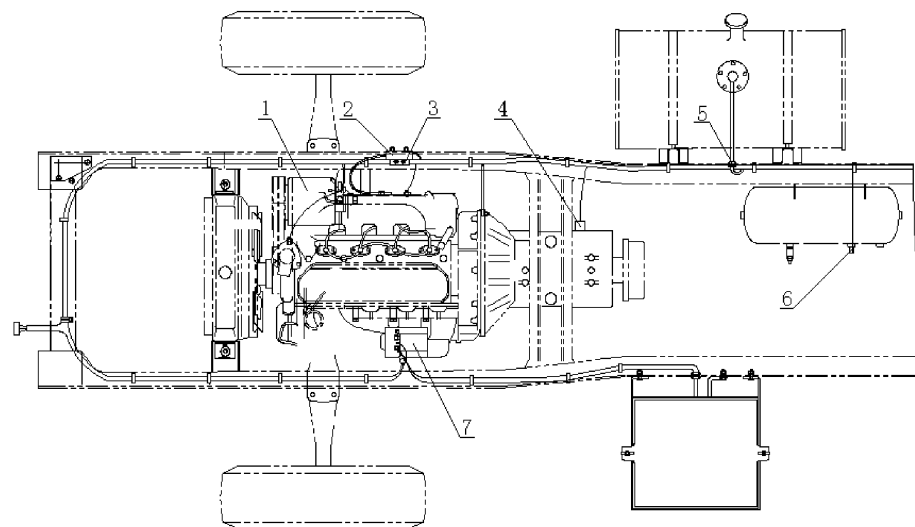
2) Maintenance of spare wheel regulator

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

IV、Electrical apparatus

- (I) Starter, generator and regulator
- (II) Lighting device
- (III) Accumulator
- (IV) Sensor

General: schematic diagram of chassis electrical apparatus



1. generator assembly; 2. Start/choke controller; 3. Electric choking device bracket; 4. reverse lamp switch;
5. Guard ring of starter wire; 6. low air pressure alarm device; 7. Starter assembly

(I) Starter, generator and regulator

1. Starter

Note:

- Starter should be connected with battery correctly.
- The starter should not be kept working continuously for more than 15s; it can only start again 1-2 minutes later after the last start in case that the starter heats resulting in a shorter lifespan.
- After several continuative failures of start, check starter, solenoid switch, battery, wires as well as oil supply system. Retry after the trouble is eliminated.

2. 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 or AC power of which voltage exceeds 200v to check; otherwise, the diode will be burnt out.

(II) Lighting device.

1. Headlight

1. Headlight Four headlights are equipped to trucks of this series and installed on both sides of the cab symmetrically. The headlight which adopts double filament bulb has two different pieces of filaments and can give out two different kinds of ray, the brighter one is used as high-beam light while the dimmer one is



headlamp(old series)

used as dimmer light. When running in night, turn on the high-beam light to lighten the road, but switch to dimmer light when two vehicles pass each other.

2. Small light Two small lights are installed on both corners of the front panel; when park in foggy weather or run on bright road, in which situation, headlights should not be turned on, turn on the small lights to indicate position and size of the vehicle.

3. Fog lamp When run in fog or park, In order to lighten the road clearly and indicate position of the vehicle, the fog lamp should be turned on, and the fog lamp is installed on both ends of the bumper.

4. Ceiling lamp Ceiling lamp is in-

stalled on cab ceiling, when used for driving lighting, ceiling lamp integrates with inner rear vision mirror, so that, except for cab lighting, the situation behind the vehicle also can be watched.

(III)Accumulator

1. Brief introduction

1)General

Accumulator 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.



2. Use & Note

1) Keep the case clean in case of self-discharge of the accumulator that will reduce the capacity.

2) Make sure that the holes on the upper cap are not jammed, 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 accumulator. Never fill the accumulator 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 5~10 days in summer. Specific gravity is measured with gravimeter. Table 1

shows normal specific gravity of the electrolyte.

5) The accumulator should always being charged. Check voltage of the accumulator if engine is hard to start. Charge additionally, if it is detected that specific gravity of electrolyte is lower than 1.18~1.20, otherwise, battery plate will be vulcanized and it will reduce lifespan of the accumulator. 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. When the specific gravity of electrolyte don't rise any more, and this situation keeps for 2~3 more

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 accumulator should be removed and preserved in a place where is dry, shady, cool, and ventilative. Additional charging should also be done every month.

(IV)sensor

3. Oil pressure alarm device

1. Fuel level gauge sensor.

The fuel level sensor adopts sliding-resister type. Floaters rise and drop with the oil level changing, which causes the resister 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.

2. 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 for one with positive temperature coefficient, or the water temperature gauge will not work correctly.

3. Oil pressure alarm device

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

V、maintenance

(I) Daily maintenance

(II) 1st class maintenance

(III) 2nd class maintenance

(IV) Seasonal maintenance

(V) Items to notice in breaking-in period

After breaking-in period, daily maintenance should be done periodically according to working condition and technical requirements. Generally, mileage of 1st class maintenance should be 2000-2500km if the vehicle runs on common roads. Mileage of 2nd class maintenance should be 15000km. Seasonal maintenance should be done when summer begins or winter begins.

(I) Daily maintenance

1. Check whether fuel, oil and cooling water are sufficient before driving and whether there is oil leak; exhaust air in oil paths at different rotate speeds. Check whether engine and instruments work normally; check working condition of steering mech-

anism, brake, tire, lights, horn, wiper and towing devices; check whether tools and accessories with vehicle are prepared; check whether the loading is proper and reliable.

2. Pay attention to working condition of all instruments, engine and parts of chassis in running; check whether temperatures of wheel hub, brake, transmission and rear axle are normal; check tightening condition of propeller shaft, wheel hub, leaf spring, steering system and braking system; check whether the pressure of tires is normal; check the wheel butts for looseness.

3. After daily driving, clean inside and outside of the vehicle body and every part of the chassis; cut off the

power source, add fuel, lubricants and cooling water, lubricate points need lubricating, and cooling water should be drained in winter if there isn't any anti-freeze added to the cooling water. Check and inflate the tires according to specification. Clean outside of the accumulator and check whether it is installed fixedly. The accumulator should be taken to warm room in exceedingly cold weather. Five items should be ensured sufficient (water, fuel, lubricants, distilled water in accumulator, tire pressure); four items should be ensured not to leak (oil, water, air, electricity)

(II) 1st class maintenance

1st class maintenance concentrates on tightening, lubricating, besides daily maintenance, the following items should be done:

1. Check and clean air cleaner and fuel filter
2. Check whether engine, transmission, rear axle, redirector, fuel injector and adjustor leak; check whether oil or gear oil is sufficient and clean vent holes.
3. Clean dirt and dust on outside and poles of the accumulator and dredge holes on the cover. Check specific gravity of the electrolyte, liquor level and tightening condition of the lead.
4. Clean begrimes on the generator and carbon brush as well as com-

mutators; check condition of the starter switch, lubricate generator bearing. Check whether timing lines of the fuel injector align and check whether relevant control valves and cables are agile.

5. Check fuel hose, brake hose, vacuum hose, pipe joints of cooling water, radiator and water pump for looseness and leak, and tighten them.

6. Check and adjust free strokes of all pedals and check whether control mechanisms are tightened and work normally; check and adjust clearances between clutch friction disc, parking brake shoe slice and service brake shoe slice, and fill brake fluid.

7. Check and tighten the redirector,

adjust windage of the steering wheel; adjust degree of tightness of front wheel toe-in and wheel hub bearing. Check tightening condition of driving gear nuts of the rear axle.

8. Check condition and tightening condition of the leaf spring, lubricate leaf spring pins; check and tighten engine supporting, center bearing of transmission shaft and connection parts of universal joints.

9. Check tire surface, air pressure and tightening condition of the tire (including spare tire)

10. Check working condition of horn, turning lights, brake lights, lighting devices and electric apparatus.

11. Lubricate points to lubricate of water pump, transmission shaft, ball

pins of transverse and vertical steering pull rods, release bearing of clutch, parking brake and door hinges.

(III) 2nd class maintenance

2nd class maintenance concentrates on inspection, adjustment, lubrication; besides items in 1st class maintenance, the following items should be done:

1. Check air pressure in the cylinder, remove carbon deposits in the combustion chamber, and measure abrading degree of the cylinder.
2. Check seal condition of the valve, adjust valve clearance, do adjusting and rubbing if necessary, and then readjust.
3. Replace engine oil, fine mesh filter

element and seal rings, and wash lubrication system of engine.

4. Check and adjust angle of advance of the diesel engine; check injection pressure and atomization condition of the fuel injector; wash the oil tank.

5. Check whether the thermostat works normally; check drip condition of the draining hole of the water pump.

6. Check whether vent -pipe of the crankcase is complete and fastened.

7. Check working condition of the generator and starter; especially check whether electric brush and commutators abrade.

8. Check and adjust separating clearance of the clutch

9. Readjust clearance between friction disc of service brake and the brake as well as clearance between friction disc of parking brake and the brake.

10. Tighten bearing cover of transmission; check whether shifting of transmission is normal. Check and lubricate odometer hose.

11. Clean and replace gear oil for transmission, rear axle and steering gear.

12. Check the frame for cracks, check the bolts for looseness, check whether parts of cab and carriage are complete, check whether the devices are fixing.

13. Jack up the vehicle to make front and rear wheel off ground; start the

engine, after the engine is heated, accelerate in interval and listen whether there is any abnormal noise in the engine, watch whether there is any abnormal noise in the transmission system, shaking and swaying of the wheels, and other parts.

(IV) Seasonal maintenance

In order to make some parts meet the requirements of climate change in aspects of technique and working requirement, seasonal maintenance should be added in summer and winter.

At the beginning of summer:

1. Clean cooling system up and remove scale in it.
2. Use lubricant for summer.
3. Fueling with #0 light diesel oil

specified in GB252.

4. Clean up the battery and adjust the specific gravity of electrolyte.

At the beginning of 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. Fueling with #10 light diesel oil specified in GB252.

(V) Items to notice in breaking-in period

Proper breaking -in of new vehicle has a great influence on prolonging vehicle lifespan and improving reliability and economy of vehicle.

Mileage of breaking -in is 2000 - 2500km, and the following specifications should be executed during breaking-in period.

1. Before breaking-in period

- 1) Wash the vehicle with water, and check whether all bolts and nuts are tightened.
- 2) Check whether there is enough water in the radiator, and whether quantity of lubricants in engine, transmission, rear axle, and steering gear as well as liquid levels in battery and oil reservoir conform to specification; Check pipeline joints for leak.
- 3) Check whether start system, driving system, and steering system work normally.

4) Check whether electrical equipments and lamp instruments work normally, and check whether air pressure of the air brake is normal.

5) Check whether gears of the transmission are right, whether the control parts are normal, whether indication of the gear position transmission is right, and whether the shifting is smooth and free.

6) Check whether air pressures of tires are proper.

7) Check whether tools and accessories are prepared.

2. During breaking-in period

1) The new truck should run on smooth road, and don't make it load more than 50% of its rated load before it travels 800km and don't load

more than 75% before 1500km, or it will shorten truck's life and bring driver danger.

2) Don't run faster than the following speed.

First gear	7km/h
Second gear	14km/h
Third gear	26km/h
Forth gear	40km/h
Fifth gear	56km/h

3) At the beginning, check temperatures of the rear axle, transmission case, drive shaft, and brake drum. Give ear to the sound of chassis when driving and stop to inspect if abnormal noise is heard, then shoot trouble before driving again.

4) Pay special attention to temperature of the cooling water and oil

pressure. Do not drive the vehicle as temperature of the cooling water is under 60°C; do not drive at a high speed when the temperature is below the normal temperature (among 80°C to 90°C).

5) Check whether the engine cylinder cover, wheel nuts, car body, and the U-bolt of leaf spring are tightened regularly. Check whether the steering system, brake system, and clutch can operate normally. Inspect free stroke of steering wheel; inspect operating stroke and free stroke of the brake pedal and clutch pedal.

Notes: Cylinder cover bolts should be tightened twice as the cylinder is cool according to diagonal sequence from the center to both sides and

crossed sequence.

6) Replace engine oil after 2500km running (do it when engine is hot), then replace again in second-class maintenance.

3. After breaking-in periods

1) Replace engine oil, oil filter element, gear oil for transmission and rear axle, lubricant for steering gear and lubricating grease for wheel rim bearings

2) Check tightening condition of outer bolts and nuts of the whole vehicle according to specified tightening torque.

3) Lubricating grease should be filled to every lubricating point

4) Maintain the vehicle according to 1st class maintenance

VI、Fault diagnosis and elimination

- 1. Transmission shaft faults and elimination**
- 2. Clutch faults and elimination**
- 3. Front axle faults and elimination**
- 4. Transmission faults and elimination**
- 5. Rear axle faults and elimination**
- 6. Steering mechanism fault and elimination**
- 7. Fault of ineffective parking brake and elimination**
- 8. Service brake faults and elimination**
- 9. Wheel faults and elimination**
- 10. Suspension faults and elimination**
- 11. Electric apparatus faults and elimination**

Many kinds of faults maybe occur in running with the running mileage increasing. You must check the vehicle carefully to find the fault position, analyze the causes of fault and search for effective methods to eliminate faults, so that the vehicle can return to normal working condition, which prolongs durability of the vehicle. Engine faults and elimination can be referred to instructions of engine using along with the vehicle.

1. Faults of transmission shaft and elimination of faults

Possible causes and characteristics of faults	Methods of check & elimination
(1) Transmission shaft chatters, dithers (a) Universal joint is over worn (b) Transmission shaft distorts and bends (c) Connecting bolt of the flange or fixing bolt of the center support looses (d) Rubber sleeve of center support damages (e) Lubricant is insufficient	(a) Adjust installation direction of the cross shaft or replace direction knuckle assembly (b) Align or replace (c) Tighten (d) Replace (e) Add lubricant immediately after cleaning
(2) Center support is over heating (a) Oil seal of bearing is too tight (b) Included angle between axes of center transmission shaft and axes of crankshaft is too large (c) Lubricant is insufficient	(a) Eliminated of its own after certain time of running. (b) Check and adjust the included angle (c) Add lubricant regularly

2. Clutch faults and elimination

Possible causes and characteristics of faults	Methods of check & elimination
(1) Clutch dithering (a) The vehicle overloads too much (b) Not start at a low-speed gear (c) Release bearing is short of oil and damaged (d) Corrugated sheet cracks, friction disc damages, rivets loose, spring of shock absorber ruptures or shock absorbing damping slice damages.	(a) Load according to specification (b) Start at 1st gear (c) Clean, lubricate or replace (d) Replace
(2) Clutch slip (a) Friction disc is too thin, rivet reveal or has oil dirt on it (b) Pressure of diaphragm spring is insufficient (c) Free stroke of the clutch pedal is too small (d) The vehicle overloads too much (e) Not start at a low-speed gear (f) Keep one's foot on clutch pedal in driving	(a) Clean it up or rivet a new friction disc (b) Replace (c) Fit to 3-5mm (d) Load according to specification (e) Start at a low-speed gear (f) Change bad driving habits
(3) Clutch release is not complete (a) Free stroke of clutch pedal is too large (b) Inner and outer lock rings wear or rupture	(a) Fit to 3-5mm (b) Replace
Possible causes and characteristics of faults	Methods of check & elimination
(c) Corrugated sheet cracks or distorts (d) Spring of shock absorber ruptures	(c) Replace (d) Replace

3. Front axle faults and elimination

Possible causes and characteristics of faults	Methods of check & elimination
(1) It's hard to turn or the steering wheel cannot return smoothly (a) Steering tie rod is not lubricated sufficiently (b) Front wheel alignment is improper (c) Toe-in angle is improper (d) Camber angle and rear inclination angle of king pin are improper (e) Thrust bearing is abraded (f) Inflation pressure of tire is too low	(a) Lubricate king pin and ball end (b) Correct (c) Correct (d) Check wearing of the sleeve and deviation of steering knuckle and front wheel tie rod. Replace if necessary (e) Replace (f) Inflate properly
(2) Tire is abnormally abraded (a) Front wheel alignment is improper (b) Inflation pressure of tire is improper	(a) Adjust, replace parts if necessary (b) Adjust, inflate

Possible causes and characteristics of faults	Methods of check & elimination
(3) Vibrates or swings (a) Alignment of front wheel is improper (b) King pin bushing is worn (c) Pre-tightening degree of hub bearing is improper (d) Hub bearing is worn (e) Ball ends of tie rod loose (f) U-bolts, U-nuts loose (g) Hub nuts loose (h) Disc distorts (i) Tires do not balance (j) Tire deviates (k) Air pressure is nonuniform or insufficient	(a) Adjust, replace parts if necessary (b) Replace bushing (c) Adjust (d) Replace (e) Replace all parts at the end of the tie rod (f) Tighten (g) Tighten (h) Replace (i) Adjust balance (j) Correct (k) Adjust and inflate
(4) Wheel hub leaks lubricant (a) Oil seal is abraded (b) Hub cover bolt looses (c) Lubricant is too much	(a) Replace (b) Tighten (c) Add specified quantity of lubricant

4. Transmission faults and elimination

Possible causes and characteristics of faults	Methods of check & elimination
(1) Gear gets out (a) Coupling joint is abraded or damaged (b) Screws and nuts loose (c) Connection rod is not adjusted well (d) Lock ball and spring deform, are abraded or damaged (e) Shift fork and groove surface are abraded (f) Synchronizer wheel hub and bush are abraded (g) Synchronizer bush and tooth surface of the gear clutch are abraded or damaged (h) Input or output bearing is abraded or damaged (i) Stop ring or thrust washer is abraded or damaged (j) Installing screws of transmission and engine loose	(a) Replace (b) Tighten (c) Readjust (d) Repair or replace (e) Replace shift fork (f) Replace (g) Replace (h) Replace bearing (i) Replace (j) Tighten

Possible causes and characteristics of faults	Methods of check & elimination
(2) Gears are hard to mesh (a) Engine idling speed is too high (b) Clutch meshing is not good (c) Clutch disc adheres (d) Sliding bush of clutch inflects (e) Input or output bearing is abraded or damaged (f) Guide bearing of engine crankshaft is abraded or damaged (g) Synchronizer cone and ring are damaged (h) Control system looses or is not adjusted properly (i) Shift fork is abraded (j) Control lever is not lubricated well (k) Lubricant is insufficient or the viscosity degree is too low	(a) Adjust idling speed (b) Adjust clutch (c) Repair or replace (d) Replace (e) Replace bearing (f) Replace bearing (g) Replace (h) Tighten or adjust (i) Replace (j) Lubricate (k) Add or replace lubricant

Possible causes and characteristics of faults	Methods of check & elimination
(3) Transmission chatters (a) Installing screws of transmission and engine loose (b) Gears or bearings are abraded	(a) Tighten (b) Replace
(4) Gear shifting is hard (a) Shifting lever is not adjusted properly (b) Articulated joints and pins are abraded (c) Control damages (d) Bolts and nuts loose	(a) Adjust the control lever (b) Replace (c) Replace (d) Check and tighten

5. Faults of rear axle and elimination

Possible causes and characteristics of faults	Methods of check & elimination
(1) Rear axle makes abnormal noise (a) Pinion bearing is abraded or damaged (b) Side bearing of the differential is abraded or damaged (c) Pinion looses (d) Differential gear looses (e) Gear rings and pinions are abraded (f) Thrust washer damages (g) Differential cross shaft damages (h) Gear rings and pinions are abraded (i) Side bearing of the differential and pinion are abraded or damaged (j) Tightening bolt of the gear ring looses. (k) Gear ring and pinion teeth do not contact well (l) Pinion spline damages (m) Shaft spline of rear axle damages (n) Wheel hub bearing looses	(a) Replace bearing (b) Replace bearing (c) Adjust pre-tightening degree of bearing (d) Adjust pre-tightening degree of bearing (e) Adjust gear clearance (f) Replace (g) Replace (h) Replace (i) Replace (j) Tighten (k) Replace or adjust (l) Replace (m) Replace (n) Replace

Possible causes and characteristics of faults	Methods of check & elimination
(o) Wheel hub bearing is abraded (p) Tightening bolts of gearbox loose (q) Oil is insufficient (r) Oil quality is not good	(o) Adjust pre-tightening degree of bearing (p) Tighten (q) Fuel (r) Replace
(2) oil seal of semi-shaft leaks oil (a) Ventilation hole or rear axle is jammed (b) Lubricant quality is bad (c) Driving & driven gears as well as bearing are adjusted too tightly	(a) Readjust after filling lubricant (b) Replace lubricant in time according to season changing (c) Readjust
(3) Rear axle heats (a) oil seal gasket damages, oil outlet bolt looses, ventilation hole is jammed, which causes that the lubricant is insufficient (b) Lubricant quality is bad (c) Driving & driven gears as well as bearing are adjusted too tightly	(a) Readjust after filling lubricants (b) Replace lubricant in time according to season changing (c) Readjust

6. Faults of steering mechanism and elimination

Possible causes and characteristics of faults	Methods of check & elimination
(1) it's hard to turn or steering wheel cannot return smoothly (a) Steering wheel shaft, sliding shaft or steering wheel column deforms (b) Universal joints loose or get stuck (c) Bearing of steering wheel column does not rotate well (d) Steering transmission shaft is not lubricated sufficiently (e) Tyre pressure is too low	(a) Replace parts (b) Replace universal joints (c) Replace parts (d) Add lubricant (e) Inflate properly
(2) Steering wheel vibrates, steering operation is not stable (a) Transmission shaft of the steering system looses (b) Front wheel lose balance (c) Tire shimmy is too great (d) Disc grinding wheel damages (e) Steering transmission shaft is abraded severely or the clearance is too large	(a) Tighten properly (b) Balance the wheel (c) Correct shimmy (d) Replace (e) Replace parts

Possible causes and characteristics of faults	Methods of check & elimination
(3) Front wheel deviates (a) One of front wheel brakes sticks or shock absorber at one side is invalid. (b) Air pressure of one of the front tires is too low (c) Reeds of leaf spring are misplaced or rupture (d) Disc grinding wheel damages (e) Toe-in of the front wheel is improper	(a) Adjust brake clearance or replace shock absorber (b) Charge enough air (c) Check front spring assembly (d) Correct or replace (e) Readjust
(4) Power steering pump leaks oil (a) Oil seal or O-ring damages (b) Lock nut or oil outlet plug of the oil seal damages	(a) Replace (b) Repair
(5) Steering is heavy (a) Steering gear fails (b) Steering gear fails (c) Pre-tightening force of the segment gear shaft bearing is improper	(a) Replace plug components (b) Measure output pressure of the pump, replace the gear if necessary (c) Adjust pre-tightening force of the segment gear shaft bearing

7. Parking brake is ineffective and relative elimination

Possible causes and characteristics of faults	Methods of check & elimination
(a) Clearance between shoe slice and drum of the parking brake is too large (b) There is oil dirt on brake drum and shoe slice (c) Friction disc is over worn (d) Parking brake cable is not adjusted and comes off; clip spring is not installed	(a) Both upper and lower clearance should be adjusted to 0.65mm (b) Clean (c) Replace (d) Adjust, weld the joints properly, install clip spring

8. Fault of service brake and elimination

Possible causes and characteristics of faults	Methods of check & elimination
(1) Service brake is ineffective (a) Brake hose or pipeline ruptures (b) Master cylinder valve of the brake is invalid	(a) Repair or replace (b) Check & repair or replace
(2) Brake efficiency is not good (a) Air pressure is insufficient (b) Free stroke of pedal is too long (c) Clearance between brake drum and shoe slice is too large	(a) Check or replace air pump, check the pipeline for leak (b) Adjust to 8-12mm (c) Adjust

Possible causes and characteristics of faults	Methods of check & elimination
(3) Brake deviates (a) Clearances between brake drum and brake shoe slice of each wheel are different from each other (b) Brake drum distorts (c) There is oil dirt on the brake drum or brake shoe slice (d) Air pressures of tyres are not uniform (e) Return spring of brake shoe slice ruptures (f) Frame twists, front suspension is misplaced, front wheel alignment angle changes	(a) Adjust the clearances to be uniform (b) Replace (c) After washing with petrol or buck, polish the shoe slice with abrasive cloth (d) Inflate according to specification (e) Replace (f) Correct, replace and take corresponding measures
(4) Brake drum heats (a) Clearance between brake drum and shoe slice is too small (b) Return spring of the brake shoe slice ruptures or is invalid	(a) Adjust (b) Replace

9. Wheel faults and elimination

Possible causes and characteristics of faults	Methods of check & elimination
(1) Tyres are exceedingly worn (a) Tyre pressure is too low or too high (b) Overload is too much or the loading is uneven. (c) Wheel hub bearing looses (d) Toe-ins of the front wheel are incorrect (e) Emergency braking, sudden start, too frequent speedup (f) Interchanging of tyre crossly is not done	(a) Inflate according to specification (b) Load according to specification (c) Adjust (d) Adjust to 4 - 6mm (diagonal tyre), 1 - 3mm (radial ply tyre) (e) Drive at a steady speed and do not drive too fast (f) Interchange tyres crossly on scheduled date.

10. Faults of suspension mechanism and elimination

Possible causes and characteristics of faults	Methods of check & elimination
(1) Leaf spring breaks off (a) The loading is too heavy or off position (b) Emergency braking is applied too frequent, or speed on uneven road is too high. (c) U-bolts loose, armor plate clips loose or break (d) Shock absorber is ineffective	(a) Load according to specification and arrange loads reasonably. (b) Concentrate on driving and avoid emergency braking as possible as you can, lower the speed on uneven road (c) Tighten U-bolts, armor plate clips or replace armor plate clips (d) Check & repair or replace
(2) There is	Check and replace fault rubber parts fro suspension system
(3) Shock absorption is not very effective (a) Lacking in shock absorber fluid (b) Scheduled maintenance is not done (c) Rubber rings damage	(a) Fill according to specification (b) Scheduled maintenance should be done (c) Replace

11. Faults of electrical parts and fault elimination

Possible causes and characteristics of faults	Methods of check & elimination
(1) The horn sounds continuously (a) Connection is incorrect (b) Some wire grounds and the spring is invalid	(a) Check and reconnect (b) Remove, check and replace
(2) Capacity of electricity is insufficient (a) new accumulator is not charged and discharged for circulation and is not charged to rated quantity (b) Generator cannot be charged or charged completely (c) Pole plate damages (d) Electrolyte level is too low or specific gravity is improper	(a) Charge sufficient electricity (b) Check and repair the joints to eliminate faults (c) Check and repair (d) Add electrolyte and charge the accumulator with it removed from the vehicle

Possible causes and characteristics of faults	Methods of check & elimination
(3)Electrolyte of the accumulator is consumed too quickly (a) Quantity of charging and discharging electricity is too great; electrolyte vaporizes or overflows. (b) Some part of the accumulator leaks (c) Partition panel is damaged or broken down	(a) Decrease continuous starting time, and lower charging electricity of generator (b) Replace accumulator case (c) Check and repair
(44)Accumulator self - discharges (a) Certain part of the output line short - circuits (b) Pole plates short - circuit (c) Partition panel is damaged or broken down (d) Outer surface of the accumulator is not clean, and there are metal sundries	(a) Clean output line, eliminate fault of short - circuit (b) Check and repair (c) Check and repair (d) Clean outer surface of the accumulator, tighten protection cover of the accumulator case, replace electrolyte if necessary

VII、Illustration of vehicle

- (I) Special-purpose chassis
- (II) Truck
- (III) Transport van
- (IV) Stake truck
- (V) Van-type truck
- (VI) Mail car

(I) Special-purpose chassis

No.	Vehicle model	Engine model	Engine displacement/power (ml/kW)	Contour dimension (length×width×height) (mm)	Wheel base (mm)	Number of leaf spring (Front/rear)
1	HFC1043K8 Special-purpose chassis	YZ4102ZLQ CY4100ZLQ CYQD32T HFC4DA1-1 4100QBZL	3432/70 3707/70 3153/80.9 2771/68 3298/70	5793×1810×2160	3308	3/16
2	HFC1043K8R1 Special-purpose chassis	YZ4102ZLQ CY4100ZLQ CYQD32T HFC4DA1-1 4100QBZL	3432/70 3707/70 3153/80.9 2771/68 3298/70	5793×1810×2160	3308	3/16
3	HFC1045KS Special-purpose chassis	YZ4102QB CY4102Q	3423/63 3268/57	5790×1830×2150	3308	3+2/9+7 3+4/9+7
4	HFC1045KR1S Special-purpose chassis	YZ4102QB CY4102Q	3423/63 3268/57	5790×1830×2150	3308	3+2/9+7 3+4/9+7
5	HFC1045K1S Special-purpose chassis	4JB1	2771/57	5795×1810×2160	3308	3/16

Tire specification	Tread (Front/Rear) (mm)	GVW (kg)	Max. Number of allowable passengers in the cab (person)	Curb weight (kg)	Approach/ Departure angle (°)	Front suspension/ rear suspension (mm)	Max. Speed (km/h)	Memo
6.50-16 7.00-16	1580/1395	4490	2	2180	23/14	1105/1380	95	ID No. of chassis:1218869 One of the following configurations can be chosen for front leaf spring: 3pieces +2cushion blocks or 3pieces+4 cushion blocks
6.50-16 7.00-16	1580/1395	4490	2	2180	23/14	1105/1380	95	ID No.of chassis.:1219006 One of the following configurations can be chosen for front leaf spring: 3pieces +2cushion blocks or 3pieces+4 cushion blocks
6.50-16	1580/1395	4490	3	1960	23/14	1105/1377	95	ID No. of chassis:1003613

HFC1045

series trucks

Tire specification	Tread (Front/Rear) (mm)	GVW (kg)	Max. Number of allowable passengers in the cab (person)	Curb weight (kg)	Approach/Departure angle (°)	Front suspension/rear suspension (mm)	Max. Speed (km/h)	Memo
6.50-16	1580/1395	4490	3	1980	23/14	1105/1377	95	ID No. of chassis:10036119
6.50-16	1580/1395	4465	3	2210	23/14	1105/1380	95	ID No. of chassis:1007239 Front leaf spring: 3 +2 cushion blocks

No.	Vehicle model	Engine model	Engine displacement/power (ml/kW)	Contour dimension (length×width×height) (mm)	Wheel base (mm)	Number of leaf spring (Front/rear)
6	HFC1045K1R1S Special-purpose chassis	4JB1	2771/57	5795×1810×2160	3308	3/16
7	HFC1045K1 Special-purpose chassis	CA498 CYQD32T CA4D32	3168/62.5 3153/80.9 3168/62.5	5795×1810×2160	3308	3/16
8	HFC1045K1R1 Special-purpose chassis	CA498 CYQD32T CA4D32	3168/62.5 3153/80.9 3168/62.5	5795×1810×2160	3308	3/16
9	HFC1045K2 Special-purpose chassis	CYQD32T CY4100ZLQ	3153/80.9 3707/70	5795×1810×2160	3308	3/16 11/9+7
10	HFC1045K2R1 Special-purpose chassis	CYQD32T CY4100ZLQ	3153/80.9 3707/70	5795×1810×2160	3308	3/16 11/9+7
11.6	HFC1045K2S Special-purpose chassis	4100QBZL YZ4102ZLQ	3298/70 3432/70	5793×1810×2160	3308	3/16 11/9+7
12.7	HFC1045K2R1S Special-purpose chassis	4100QBZL YZ4102ZLQ	3298/70 3432/70	5793×1810×2160	3308	3/16 11/9+7

Tire specification	Tread (Front/Rear) (mm)	GVW (kg)	Max. Number of allowable passengers in the cab (person)	Curb weight (kg)	Approach/Departure angle (°)	Front suspension/rear suspension (mm)	Max. Speed (km/h)	Memo
6.50-16	1580/1395	4465	3	2230	23/14	1105/1380	95	ID No. of chassis:1007238 3+2cushion blocks are adopted in front leaf spring
6.50-16	1580/1395	4490	3	2180	23/14	1105/1380	95	ID No. of chassis:1008328 One of the following configurations can be chosen for front leaf spring:3pieces+2cushion blocksor 3pieces+4cushion blocks
6.50-16	1580/1395	4490	3	2200	23/14	1105/1380	95	ID No. of chassis:1008327 One of the following configurations can be chosen for front leaf spring:3pieces+2cushion blocksor 3pieces+4cushion blocks

Tire specification	Tread (Front/Rear) (mm)	GVW (kg)	Max. Number of allowable passengers in the cab (person)	Curb weight (kg)	Approach/Departure angle (°)	Front suspension/rear suspension (mm)	Max. Speed (km/h)	Memo
6.50-16 7.00-16	1580/1395	4490	3	2180	23/14	1105/1380	95	ID No. of chassis:1008686 One of the following configurations can be chosen for front leaf spring:3pieces+2cushion blocks
6.50-16 7.00-16	1580/1395	4490	3	2200	23/14	1105/1380	95	ID No. of chassis:1008685 One of the following configurations can be chosen for front leaf spring:3pieces+2cushion blocks

Tire specification	Tread (Front/Rear) (mm)	GVW (kg)	Max. Number of allowable passengers in the cab (person)	Curb weight (kg)	Approach/Departure angle (°)	Front suspension/rear suspension (mm)	Max. Speed (km/h)	Memo
6.50-16 7.00-16	1580/1395	4490	3	2180	23/14	1105/1380	95	ID No. of chassis:1009310 One of the following configurations can be chosen for front leaf spring +2,+4 cushion blocks
6.50-16 7.00-16	1580/1395	4490	3	2210	23/14	1105/1380	95	ID No. of chassis:1009309 One of the following configurations can be chosen for front leaf spring +2,+4cushion blocks

No.	Vehicle model	Engine model	Engine displacement/power (ml/kW)	Contour dimension (length×width×height) (mm)	Wheel base (mm)	Number of leaf spring (Front/rear)
13	HFC1045K3 Special - purpose chassis	YZ4D30TC	2977/75	5795×1810×2160	3308	3/16
14	HFC1045K3R1 Special - purpose chassis	YZ4D30TC	2977/75	5795×1810×2160	3308	3/16
15	HFC1045K8 Special - purpose chassis	CYQD32T	3153/80.9	5793×1810×2160	3308	3/16
16	HFC1045K8R1 Special - purpose chassis	CYQD32T	3153/80.9	5793×1810×2160	3308	3/16
17	HFC1045K9 Special - purpose chassis	YZ4102ZLQ CY4100ZLQ CYQD32T HFC4DA1-1 4100QBZL	3432/70 3707/70 3153/80.9 2771/68 3298/70	5793×1810×2160	3308	3/16
18	HFC1045K9R1 Special - purpose chassis	YZ4102ZLQ CY4100ZLQ CYQD32T HFC4DA1-1 4100QBZL	3432/70 3707/70 3153/80.9 2771/68 3298/70	5793×1810×2160	3308	3/16

Tire specification	Tread (Front/Rear) (mm)	GVW (kg)	Max. Number of allowable passengers in the cab (person)	Curb weight (kg)	Approach/Departure angle (°)	Front suspension/rear suspension (mm)	Max. Speed (km/h)	Memo
6.50-16 7.00-16	1580/1395	4490	3	2200	23/14	1105/1380	95	ID No. of chassis:1214619 2 cushion blocks are added to the front leaf spring
6.50-16 7.00-16	1580/1395	4490	3	2200	23/14	1105/1380	95	ID No. of chassis:1214610 2 cushion blocks are added to the front leaf spring

Tire specification	Tread (Front/Rear) (mm)	GVW (kg)	Max. Number of allowable passengers in the cab (person)	Curb weight (kg)	Approach/Departure angle (°)	Front suspension/rear suspension (mm)	Max. Speed (km/h)	Memo
6.50-16 7.00-16	1580/1395	4490	3	2180	23/14	1105/1380	95	ID No. Of chassis:1215093 2 cushion blocks are added to the front leaf spring
6.50-16 7.00-16	1580/1395	4490	3	2200	23/14	1105/1380	95	ID No. Of chassis:1215094 2 cushion blocks are added to the front leaf spring

Tire specification	Tread (Front/Rear) (mm)	GVW (kg)	Max. Number of allowable passengers in the cab (person)	Curb weight (kg)	Approach/Departure angle (°)	Front suspension/rear suspension (mm)	Max. Speed (km/h)	Memo
6.50-16 7.00-16	1580/1395	4490	3	2180	23/14	1105/1380	95	ID No. Of chassis:1216873 One of the following configurations can be chosen for front leaf spring: 3pieces +2 cushion blocks, 3pieces+4cushion blocks
6.50-16 7.00-16	1580/1395	4490	3	2180	23/14	1105/1380	95	ID No. Of chassis:1216871 One of the following configurations can be chosen for front leaf spring: 3pieces +2, 3pieces +4cushion blocks

No.	Vehicle model	Engine model	Engine displacement/power (ml/kW)	Contour dimension (length×width×height) (mm)	Wheel base (mm)	Number of leaf spring (Front/rear)
19	HFC1045K93 Special-purpose chassis	CYQD32Tic	3153/101.5	5793×1820×2160	3308	3/16
20	HFC1045K93R1 Special-purpose chassis	CYQD32Tic	3153/101.5	5793×1820×2160	3308	3/16
21	HFC1045K1RD Special-purpose chassis	CYQD32T	3153/80.9	5200×1830×2200	2800	3/9+7
22	HFC1045K1RS Special-purpose chassis	HFC4DA1-1	2771/68	5790×1810×2200	3308	3/9+7

No.	Vehicle model	Engine model	Engine displacement/power (ml/kW)	Contour dimension (length×width×height) (mm)	Wheel base (mm)	Number of leaf spring (Front/rear)
23	HFC1045KRS Special-purpose chassis	YZ4102QB CY4102Q YZ4102ZLQ YZ4102ZLQ 4100QBZL CYQD32T	3423/63 3268/57 3432/70 3432/81 3298/70 3153/80.9	5790×1830×2150	3308	3+2/6 3+4/6
24	HFC1050K Special-purpose chassis	4100QBZL YZ4102ZLQ YZ4102ZLQ CYQD32T	3298/70 3432/70 3432/81 3153/80.9	5890×1830×2150	3308	3+2/16
25	HFC1050KR Special-purpose chassis	CYQD32T 4100QBZL	3153/80.9 3298/70	5890×1830×2150	3308	3/9+7

Tire specification	Tread (Front/Rear) (mm)	GVW (kg)	Max. Number of allowable passengers in the cab (person)	Curb weight (kg)	Approach/ Departure angle (°)	Front suspension/ rear suspension (mm)	Max. Speed (km/h)	Memo
6.50-16 7.00-16	1580/1395	4490	2	2180	23/14	1105/1380	95	ID No. Of chassis:1220432 One of the following configurations can be chosen for front leaf spring: 3pieces +2,3pieces +4cushion blocks
6.50-16 7.00-16	1580/1395	4490	2	2180	23/14	1105/1380	95	ID No. Of chassis:1220475 One of the following configurations can be chosen for front leaf spring: 3pieces +2, 3pieces +4cushion blocks
6.50-16	1580/1395	4235	2+3	2200	23/14	1105/1295	95	ID No. Of chassis:1220822

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Tire specification	Tread (Front/Rear) (mm)	GVW (kg)	Max. Number of allowable passengers in the cab (person)	Curb weight (kg)	Approach/Departure angle (°)	Front suspension/rear suspension (mm)	Max. Speed (km/h)	Memo
6.50-16	1580/1395	4490	2+3	2050	23/14	1105/1377	95	ID No. Of chassis:1220823
6.50-16	1580/1395	4490	3+3	2050	23/14	1105/1377	95	ID No. Of chassis:1003612
6.50-16	1580/1395	5400	3	2280	23/14	1105/1477	95	ID No. Of chassis: 1007659 3pieces +2cushion blocks are installed to the front leaf spring
6.50-16	1580/1395	5400	3+3	2380	23/14	1105/1477	95	ID No. Of chassis:1010290

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No.	Vehicle model	Engine model	Engine displacement/power (ml/kW)	Contour dimension (length×width×height) (mm)	Wheel base (mm)	Number of leaf spring (Front/rear)
26	HFC1045K103 Special-purpose chassis	CA4DC2-10E3 YC4F115-30	3168/76 2660/85	5793×1810×2160	3308	3/16

Tire specification	Tread (Front/Rear) (mm)	GVW (kg)	Max. Number of allowable passengers in the cab (person)	Curb weight (kg)	Approach/Departure angle (°)	Front suspension/rear suspension (mm)	Max. Speed (km/h)	Memo
6.50-16 7.00-16	1580/1395	4490	2	2180	23/14	1105/1380	95	ID No. Of chassis:1221449

(II) Cargo truck

No.	Vehicle model	Engine model	Engine power (ml/kw)	Outer dimension (Length×width×height) (mm)	Usable dimension of body (Length×width×height) (mm)	Wheel base (mm)
1	HFC1043K8 Cargo truck	YZ4102ZLQ CY4100ZLQ CYQD32T HFC4DA1-1 4100QBZL	3432/70 3707/70 3153/80.9 2771/68 3298/70	5980×2020×2200	4180×1900×400	3308
2	HFC1043K8R1 Cargo truck	YZ4102ZLQ CY4100ZLQ CYQD32T HFC4DA1-1 4100QBZL	3432/70 3707/70 3153/80.9 2771/68 3298/70	5980×2020×2200	3850×1900×400	3308
3	HFC1045KS Cargo truck	YZ4102QB 4100QB-1A CY4102Q 4D30Y(B)	3423/63 3298/63 3268/57 2977/46	5980×2020×2150	4180×1900×400	3308
4	HFC1045KR1S Cargo truck	YZ4102QB 4100QB-1A CY4102Q 4D30Y(B)	3423/63 3298/63 3268/57 2977/46	5980×2020×2150	3850×1900×400	3308

Number of leaf spring (front/rear)	Tyre specification	Tread (Front/rear) (mm)	GVW (kg)	Load capacity (kg)	Curb weight (kg)	Approach/ Departure angle (°)	Front/rear suspension (mm)	Max. speed
3/16	6.50-16 7.00-16	1580/1395	4490	1800	2560	23/14	1105/1567	95
3/16	6.50-16 7.00-16	1580/1395	4490	1800	2560	23/14	1105/1567	95
3+2/9+7 3+4/9+7	6.50-16	1580/1395	4490	1950	2540	23/14	1105/1567	95
3+2/9+7 3+4/9+7	6.50-16	1580/1395	4490	1950	2540	23/14	1105/1567	95

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No.	Vehicle model	Engine model	Engine power (ml/kw)	Outer dimension (Length×width×height) (mm)	Usable dimension of body (Length×width×height) (mm)	Wheel base (mm)
5	HFC1045K1 Cargo truck	CA498 CA4D32	3168/62.5 3168/62.5	5980×2020×2150	4180×1900×400	3308
6	HFC1045K1R1 Cargo truck	CA498 CA4D32	3168/62.5 3168/62.5	5980×2020×2150	3850×1900×400	3308
7	HFC1045K1S Cargo truck	GW4D28 4JB1 HFC4DA1	2771/57 2771/57 2771/57	5980×2020×2150	4180×1900×400	3308
8	HFC1045K1R1S Cargo truck	GW4D28 4JB1 HFC4DA1	2771/57 2771/57 2771/57	5980×2020×2150	3850×1900×400	3308

No.	Vehicle model	Engine model	Engine power (ml/kw)	Outer dimension (Length×width×height) (mm)	Usable dimension of body (Length×width×height) (mm)	Wheel base (mm)
9	HFC1045K2 Cargo truck	CYQD32T CY4100ZLQ	3153/80.9 3707/70	5980×2020×2150	4180×1900×400	3308
10	HFC1045K2R1 Cargo truck	CYQD32T CY4100ZLQ	3153/80.9 3707/70	5980×2020×2150	3850×1900×400	3308
11	HFC1045K2S Cargo truck	4100QBZL YZ4102ZLQ	3298/70 3432/70	5980×2020×2150	4180×1900×400	3308
12	HFC1045K2R1S Cargo truck	4100QBZL YZ4102ZLQ	3298/70 3432/70	5980×2020×2150	3850×1900×400	3308

Number of leaf spring (front/rear)	Tyre specification	Tread (Front/rear) (mm)	GVW (kg)	Load capacity (kg)	Curb weight (kg)	Approach/Departure angle (°)	Front/rear suspension (mm)	Max. speed
3/16	6.50-16	1580/1395	4490	1755	2540	23/14	1105/1567	95
3/16	6.50-16	1580/1395	4490	1755	2540	23/14	1105/1567	95
3/16	6.50-16	1580/1395	4465	1720	2550	23/14	1105/1567	95
3/16	6.50-16	1580/1395	4465	1720	2550	23/14	1105/1567	95

Number of leaf spring (front/rear)	Tyre specification	Tread (Front/rear) (mm)	GVW (kg)	Load capacity (kg)	Curb weight (kg)	Approach/Departure angle (°)	Front/rear suspension (mm)	Max. speed
3/16	6.50-16 7.00-16	1580/1395	4415	1700	2540	23/14	1105/1567	95
3/16	6.50-16 7.00-16	1580/1395	4415	1700	2520	23/14	1105/1567	95
3+2/9+7 3+4/9+7	6.50-16	1580/1395	4490	1950	2540	23/14	1105/1525	95
3/16 11/9+7	6.50-16 7.00-16	1580/1395	4490	1755	2540	23/14	1105/1567	95

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No.	Vehicle model	Engine model	Engine power (m l/k W)	Outer dimension (Length×width×height) (m m)	Usable dimension of body (Length×width×height) (m m)	W heel base (m m)
13	HFC1045K8 Cargo truck	CYQD32T	3153/80.9	5980×2020×2160	4180×1900×400	3308
14	HFC1045K8R1 Cargo truck	CYQD32T	3153/80.9	5980×2020×2160	3850×1900×400	3308
15	HFC1045K9 Cargo truck	YZ4102ZLQ CY4100ZLQ CYQD32T HFC4DA1-1 4100QBZL	3432/70 3707/70 3153/80.9 2771/68 3298/70	5980×2020×2200	4180×1900×400	3308
16	HFC1045K9R1 Cargo truck	YZ4102ZLQ CY4100ZLQ CYQD32T HFC4DA1-1 4100QBZL	3432/70 3707/70 3153/80.9 2771/68 3298/70	5980×2020×2200	3850×1900×400	3308

No.	Vehicle model	Engine model	Engine power (m l/k W)	Outer dimension (Length×width×height) (m m)	Usable dimension of body (Length×width×height) (m m)	W heel base (m m)
17	HFC1045K93 Cargo truck	CYQD32Tic	3153/101.5	5980×2020×2160	4180×1900×400	3308
18	HFC1045K93R1 Cargo truck	CYQD32Tic	3153/101.5	5980×2020×2160	3850×1900×400	3308

Number of leaf spring (front/rear)	Tyre specification	Tread (Front/rear) (mm)	GVW (kg)	Load capacity (kg)	Curb weight (kg)	Approach/Departure angle (°)	Front/rear suspension (mm)	Max. speed
3/16	6.50-16 7.00-16	1580/1395	4495	1750	2545	23/14	1105/1567	95
3/16	6.50-16 7.00-16	1580/1395	4495	1750	2545	23/14	1105/1567	95
3/16	6.50-16 7.00-16	1580/1395	4490	1755	2540	23/14	1105/1567	95
3/16	6.50-16 7.00-16	1580/1395	4490	1755	2540	23/14	1105/1567	95

Number of leaf spring (front/rear)	Tyre specification	Tread (Front/rear) (mm)	GVW (kg)	Load capacity (kg)	Curb weight (kg)	Approach/Departure angle (°)	Front/rear suspension (mm)	Max. speed
3/9+7 2 or 4 cushion blocks can be chosen to install to the front leaf spring	6.50-16 7.00-16	1580/1395	4490	1800	2560	23/14	1105/1567	95
3/9+7 2 or 4 cushion blocks can be chosen to install to the front leaf spring	6.50-16 7.00-16	1580/1395	4490	1800	2560	23/14	1105/1567	95

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No.	Vehicle model	Engine model	Engine power (ml/kW)	Outer dimension (Length×width×height) (mm)	Usable dimension of body (Length×width×height) (mm)	Wheel base (mm)
19	HFC1045K1RD Cargo truck	HFC4DA1-1	2771/68	5360×1880×2150	2600×1770×400	2800
20	HFC1045K1RS Cargo truck	HFC4DA1-1	2771/68	5938×1880×2150	3170×1770×400	3308
21	HFC1045KRS Cargo truck	YZ4102QB 4100QB-1A CY4102Q YZ4102ZLQ YZ4102ZLQ 4100QBZL CYQD32T	3423/63 3298/62.5 3268/57.3 3432/70 3432/81 3298/70 3513/80.9	5938×1880×2150	3170×1770×400	3308

Number of leaf spring (front/rear)	Tyre specification	Tread (Front/rear) (mm)	GVW (kg)	Load capacity (kg)	Curb weight (kg)	Approach/ Departure angle (°)	Front/rear suspension (mm)	Max. speed
3/9+7 Install 2 cushion blocks to front leaf spring	6.50-16	1580/1395	4235	1490	2420	23/14	1105/1455	95
3/9+7 Install 2 cushion blocks to front leaf spring	6.50-16	1580/1395	4490	1950	2540	23/14	1105/1525	95
3+2/9+7 3+4/9+7	6.50-16	1580/1395	4490	1950	2540	23/14	1105/1525	95

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No.	Vehicle model	Engine model	Engine power (m l/k W)	Outer dimension (Length×width×height) (m m)	Usable dimension of body (Length×width×height) (m m)	W heel base (m m)
22	HFC1045K103 Cargo truck	CA4DC2-10E3 YC4F115-30	3168/76 2660/85	5980×2020×2200	4180×1900×400	3308

Number of leaf spring (front/rear)	Tyre specification	Tread (Front/rear) (m m)	GVW (kg)	Load capacity (kg)	Curb weight (kg)	Approach/ Departure angle (°)	Front/rear suspension (m m)	Max. speed
3/16	6.50-16 7.00-16	1580/1395	4490	1820	2540	23/14	1105/1567	95

(III) Transport van

No.	Vehicle model	Engine model	Engine power (m l/k W)	Contour dimension (Length×width×height) (m m)	Usable dimension of body (Length×width×height) (m m)	W heel base (m m)
23	HFC5043XXYK8 Transport van	YZ4102ZLQ CY4100ZLQ CYQD32T HFC4DA1-1 4100QBZL	3432/70 3707/70 3153/80.9 2771/68 3298/70	5980×1910×2950	4155×1810×1850	3308
24	HFC5043XXYK8R1 Transport van	YZ4102ZLQ CY4100ZLQ CYQD32T HFC4DA1-1 4100QBZL	3432/70 3707/70 3153/80.9 2771/68 3298/70	5980×1910×2950	3825×1810×1850	3308
25	HFC5045XXYK Transport van	YZ4102QB CY4102Q	3432/63 3268/62.5	5980×1910×2800	4150×1810×1750	3308
26	HFC5045XXYKR1 Transport van	YZ4102QB CY4102Q	3432/63 3268/62.5	5980×1910×2800	3825×1810×1750	3308

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Number of leaf spring (front/rear)	Tyre specification	Tread (Front/rear) (mm)	GVW (kg)	Load capacity (kg)	Curb weight (kg)	Approach/Departure angle (°)	Front/rear suspension (mm)	Max. speed
3/16	6.50-16 7.00-16	1580/1395	4420	990	3300	23/14	1105/1567	95
3/16	6.50-16 7.00-16	1580/1395	4420	990	3300	23/14	1105/1567	95
3+2/16 3+4/16	6.50-16	1580/1395	4045	955	2855	23/14	1105/1567	95
3+2/16 3+4/16	6.50-16	1580/1395	4045	955	2855	23/14	1105/1567	95

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No.	Vehicle model	Engine model	Engine power (ml/kW)	Contour dimension (Length×width×height) (mm)	Usable dimension of body (Length×width×height) (mm)	Wheel base (mm)
27	HFC5045XXYK1S Transport van	4JB1 CA498 CYQD32T CA4D32 YZ4102QB CY4102Q	2771/57 3168/62.5 3153/80.9 3168/62.5 3423/63 3268/57	5980×1910×2800	4150×1810×1750	3308
28	HFC5045XXYK1R1S Transport van	4JB1 CA498 CYQD32T CA4D32 YZ4102QB CY4102Q	2771/57 3168/62.5 3153/80.9 3168/62.5 3423/63 3268/57	5980×1910×2800	3825×1810×1750	3308
29	HFC5045XXYK2 Transport van	CYQD32T CY4100ZLQ	3153/80.9 3707/70	5980×1910×2850	4150×1810×1750	3308

No.	Vehicle model	Engine model	Engine power (m l/k W)	Contour dimension (Length×width×height) (m m)	Usable dimension of body (Length×width×height) (m m)	Wheel base (m m)
30	HFC5045XXYK2R1 Transport van	CYQD32T CY4100ZLQ	3153/80.9 3707/70	5980×1910×2800	3825×1810×1750	3308
31	HFC5045XXYK2S Transport van	4100QBZL YZ4102ZLQ	3298/70 3432/70	5980×1910×2950	4150×1810×1850	3308
32	HFC5045XXYK2R1S Transport van	4100QBZL YZ4102ZLQ	3298/70 3432/70	5980×1910×2950	3825×1810×1850	3308

Number of leaf spring (front/rear)	Tyre specification	Tread (Front/rear) (m m)	GVW (kg)	Load capacity (kg)	Curb weight (kg)	Approach/ Departure angle (°)	Front/rear suspension (m m)	Max. speed
3+2/16	6.50-16	1580/1395	4295-4455	1250	2850-3010	23/14	1105/1567	95
3/16	6.50-16	1580/1395	4295-4455	1250	2850-3010	23/14	1105/1567	95
3/16 11/9+7	6.50-16 7.00-16	1580/1395	4490	1270	3025	23/14	1105/1567	95
3/16 11/9+7	6.50-16 7.00-16	1580/1395	4490	1270	3025	23/14	1105/1567	95
3/16 11/9+7	6.50-16 7.00-16	1580/1395	4470	1255	3020	23/14	1105/1567	95
3/16 11/9+7	6.50-16 7.00-16	1580/1395	4470	1255	3020	23/14	1105/1567	95

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No.	Vehicle model	Engine model	Engine power (m l/k W)	Contour dimension (Length×width×height) (m m)	Usable dimension of body (Length×width×height) (m m)	Wheel base (m m)
33	HFC5045XXYK9 Transport van	YZ4102ZLQ CY4100ZLQ CYQD32T HFC4DA1-1	3432/70 3707/70 3153/80.9 2771/68	5980×1910×2950	4150×1810×1850	3308
34	HFC5045XXYK9R1 Transport van	YZ4102ZLQ CY4100ZLQ CYQD32T HFC4DA1-1	3432/70 3707/70 3153/80.9 2771/68	5980×1910×2950	3825×1810×1850	3308
35	HFC5045XXYK9 Transport van	CYQD32Tic	3153/101.5	5980×1910×2950	4150×1810×1850	33008
36	HFC5045XXYK9R1 Transport van	CYQD32Tic	3153/101.5	5980×1910×2950	3825×1810×1850	3308

Number of leaf spring (front/rear)	Tyre specification	Tread (Front/rear) (m m)	GVW (kg)	Load capacity (kg)	Curb weight (kg)	Approach/ Departure angle (°)	Front/rear suspension (m m)	Max. speed
3/16	6.50-16	1580/1395	4470	1255	3020	23/14	1105/1567	95
3/16	6.50-16	1580/1395	4470	1255	3020	23/14	1105/1567	95
3/16	6.50-16	1580/1395	4490	1310	3050	23/14	1105/1567	95
3/16	6.50-16	1580/1395	4490	1210	3050	23/14	1105/1567	95

No.	Vehicle model	Engine model	Engine power (m l/k w)	Contour dimension (Length×width×height) (m m)	Usable dimension of body (Length×width×height) (m m)	Wheel base (m m)
37	HFC5045XXYKRL Transport van	YZ4102QB CY4102Q YZ4102ZLQ YZ4102ZLQ 4100QBZL CYQD32T	3432/70 3268/57.3 3432/70 3432/81 3298/70 3153/80.9	5980×1910×2850	3085×1810×1750	3308
38	HFC5045XXYKRL1 Transport van	YZ4102QB 4100QB-1A CY4102Q YZ4102ZLQ YZ4102ZLQ 4100QBZL CYQD32T	3432/63 3298/62.5 3268/57.3 3432/70 3432/81 3298/70 3153/80.9	5980×1910×2850	3080×1810×1750	3308
39	HFC5045XXYK3 Transport van	YZ4D30TC	3000/75	5980×1910×2850	4150×1810×1750	3308
40	HFC5045XXYK3R1 Transport van	YZ4D30TC	3000/75	5980×1910×2850	3825×1810×1750	3308

Number of leaf spring (front/rear)	Tyre specification	Tread (Front/rear) (m m)	GVW (kg)	Load capacity (kg)	Curb weight (kg)	Approach/ Departure angle (°)	Front/rear suspension (m m)	Max. speed
3+2/6 3+4/6	6.50-16	1580/1395	4080	530	3100	23/14	1105/1567	95
3+2/6 3+4/6	6.50-16	1580/1395	4440	1250	2800	13/14	1105/1567	95
3/16	6.50-16 7.00-16	1580/1395	4495	780	3520	23/14	1105/1567	95
3/16	6.50-16 7.00-16	1580/1395	4495	780	3520	23/14	1105/1567	95

(IV) Stake truck

No.	Vehicle model	Engine model	Engine power (ml/kW)	Contour dimension (Length×width×height) (mm)	Usable dimension of body (Length×width×height) (mm)	Wheel base (mm)
41	HFC5043CCYK8 Stake truck	YZ4102ZLQ CY4100ZLQ CYQD32T HFC4DA1-1 4100QBZL	3432/70 3707/70 3153/80.9 2771/68 3298/70	5980×2020×2850	4180×1900×400	3308
42	HFC5043CCYK8R1 Stake truck	YZ4102ZLQ CY4100ZLQ CYQD32T HFC4DA1-1 4100QBZL	3432/70 3707/70 3153/80.9 2771/68 3298/70	5980×2020×2850	3850×1900×400	3308
43	HFC5045CCYK Stake truck	YZ4102QB 4100QB-1A CY4102Q 4D30Y(B)	3423/63 3298/63 3268/57 2977/46	5980×2020×2850	4180×1900×400	3308
44	HFC5045CCYKR1 Stake truck	YZ4102QB 4100QB-1A CY4102Q 4D30Y(B)	3423/63 3298/63 3268/57 2977/46	5980×2020×2250	3850×1960×400	3308

Number of leaf spring (front/rear)	Tyre specification	Tread (Front/rear) (mm)	GVW (kg)	Load capacity (kg)	Curb weight (kg)	Approach/ Departure angle (°)	Front/rear suspension (mm)	Max. speed
3/16	6.50-16 7.00-16	1580/1395	4420	990	3300	23/14	1105/1567	95
3/16	6.50-16 7.00-16	1580/1395	4420	990	3300	23/14	1105/1567	95
3+2/9+7 3+4/9+7	6.50-16	1580/1395	4045	1480	2370	23/14	1105/1567	95
3+2/9+7 3+4/9+7	6.50-16	1580/1395	4045	1480	2370	23/14	1105/1497	95

HFC1045

series trucks

No.	Vehicle model	Engine model	Engine power (m l/k W)	Contour dimension (Length×width×height) (m m)	Usable dimension of body (Length×width×height) (m m)	Wheel base (m m)
45	HFC5045CCYK2 Stake truck	CA498 CYQD32T GW4D28	3168/62.5 3153/80.9 2771/57	5980×1910×2850	4180×1900×400	3308
46	HFC5045CCYK2R1 Stake truck	CA498 CYQD32T GW4D28	3168/62.5 3153/80.9 2771/57	5980×1910×2850	3850×1900×400	3308
47	HFC5045CCYK9 Stake truck	YZ4102ZLQ CY4100ZLQ CYQD32T HFC4DA1-1	3432/70 3707/70 3153/80.9 2771/68	5980×2020×2850	4180×1900×400	3308
48	HFC5045CCYK9R1 Stake truck	YZ4102ZLQ CY4100ZLQ CYQD32T HFC4DA1-1	3432/70 3707/70 3153/80.9 2771/68	5980×2020×2850	3850×1900×400	3308

Number of leaf spring (front/rear)	Tyre specification	Tread (Front/rear) (m m)	GVW (kg)	Load capacity (kg)	Curb weight (kg)	Approach/ Departure angle (°)	Front/rear suspension (m m)	Max. speed
3/16	6.50-16	1580/1395	4045	1480	2370	23/14	1105/1567	95
3/16 3+2/16	6.50-16	1580/1395	4045	1480	2370	23/14	1105/1567	95
3/16	6.50-16	1580/1395	4045	1480	2370	23/14	1105/1567	95
3/16	6.50-16	1580/1395	4045	1480	2370	23/14	1105/1567	95

(V) Van-type truck

No.	Vehicle model	Engine model	Engine power (m l/k W)	Contour dimension (Length×width×height) (m m)	Usable dimension of body (Length×width×height) (m m)	Wheel base (m m)
49	HFC5045XXBKS Van-type truck	CYQD32T CY4100ZLQ 4100QBZL YZ4102ZLQ	3153/80.9 3707/70 3298/70 3432/70	5980×1910×2800	4150×1810×1750	3308
50	HFC5045XXBKR1S Van-type truck	CYQD32T CY4100ZLQ 4100QBZL YZ4102ZLQ	3153/80.9 3707/70 3298/70 3432/70	5980×1910×2800	3825×1810×1750	3308

Number of leaf spring (front/rear)	Tyre specification	Tread (Front/rear) (m m)	GVW (kg)	Load capacity (kg)	Curb weight (kg)	Approach/ Departure angle (°)	Front/rear suspension (m m)	Max. speed
3+2/16	6.50-16	1580/1395	4165	990	3045	23/14	1105/1567	95
3/16	6.50-16	1580/1395	4165	990	3045	23/14	1105/1567	95

(VI) Mail car

No.	Vehicle model	Engine model	Engine power (m l/k w)	Contour dimension (Length×width×height) (m m)	Usable dimension of body (Length×width×height) (m m)	Wheel base (m m)	Contour dimension (Length×width×height) (m m)
51	HFC5045XYZK Mail car	CA498 CYQD32T	3168/62.5 3153/80.9	5980×1910×2800	4150×1810×1750	3308	3/16
52	HFC5045XYZKR1 Mail car	CA498 CYQD32T	3168/62.5 3153/80.9	5980×1910×2800	3825×1810×1750	3308	3/16

Tire specification	Tread (Front/rear) (m m)	GVW (kg)	Load capacity (kg)	Curb weight (kg)	Approach/ Departure angle (°)	Front/rear suspension (m m)	Max. Speed	Memo
6.50-16	1580/1395	4465	1420	2850	23/14	1105/1567	95	HFC1045K1 special- purpose 1008328
6.50-16	1580/1395	4465	1420	2850	23/14	1105/1567	95	HFC1045K1 R1special- purpose 1008327

VIII、Appendix

Appendix 1: Table of chassis lubrication

Appendix 2: Tightening torques of main tightening parts

Location of product scutcheon and VIN code

Main documents along with vehicle

Appendix 1 : Table of chassis lubrication (for reference)

No.	Position to lubricate	Lubricant code	Lubricating points/dosage	Maintenance time(type)			
				Every day	1 st class	2 nd class	Seasonal
1	Transmission shaft gimbal	G	3				
2	Transmission shaft spline	G	1	Add			
3	Accumulator terminal	G	2		Add		Replace
4	Transmission	Z	1.7 - 2L		Add	Replace	
5	Clutch master cylinder oil cup	Y	0.5L	Replace one time per year			
6	Steering gear	Z	1		Add		
7	Steering knuckle, tie-rod ball pin	G	2 for each	Check	Add		
8	Oil strainer element		1			Replace	

No.	Position to lubricate	Lubricant code	Lubricating points/dosage	Maintenance time(type)			
				Every day	1 st class	2 nd class	
9	Generator	G	2	Add			
10	Power steering	D	1		Add	Replace	
11	Front, rear wheel rim bearing	ZL	2 for each				
12	Shock absorber	Q	2				
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		
16	Engine lubricating system		1	Add		Replace	Replace

Appendix 2: Tightening torques of main tightening parts(for reference)

No.	Name	Unit: N.m (Kgf.m)
1	Nut connecting transmission and clutch casing	88.2-107.8(9-11)
2	Flange nuts of center transmission shaft	≥176.4(18)
3	Ball pin nuts of steering tie-rod	127-167(13-17)
4	Steering drop arm nuts	196.1-235.4(20-24)
5	Transmission flange nuts	≥166.6(17)
6	Driving gear flange nuts	245-274.4(25-28)
7	Tire nuts	196-245(20-25)
8	Front spring U-nuts	157-216(16-22)
9	Rear spring U-nuts	157-216(16-22)
10	Steering drop arm fixing nuts	441±49(45±5)
11	Steering bend arm fixing nuts	441±49(45±5)
12	Steering wheel fixing nuts	49-78.4(5-8)
13	Nut connecting transmission and clutch case	88.2-107.8(9-11)

I. Location of product emblem and VIN code

(1) Location of product scutcheon:
In proper position of exterior side face of the rear side of the frame right longeron. As shown in the following diagram;

Please pay attention to find the specific location.

Manufacturer: Anhui Jianghuai Automobile Co., Ltd

MODEL:

CHASSIS NO:

ENGINE NO:

VIN:

Product scutcheon



Independent small scutcheon



position to paste independent small scutcheon

Position to paste the scutcheon

(2) Location of VIN code: Steel seal of VIN codes for special-purpose chassis, cargo truck, van-type truck, transport van and stake truck is printed on exterior side face of frame right longeron, 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 scutcheons of VIN codes are pasted on the instrument panel near the column. Refer to the above diagram.
(3) Any user who use JAC complete vehicle or chassis should not change scutcheons or symbols adopted by JAC. Otherwise, the user will take all responsibility.

II . Location of engine emblem

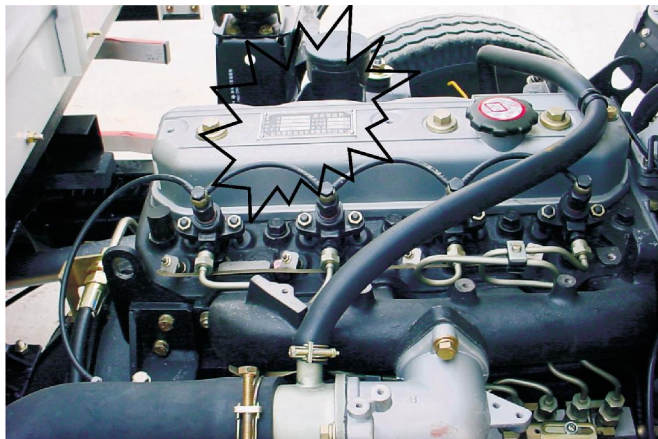
Notes: The emblem is stuck to the upper side

or side face of the cylinder cover.

Engine model, serial number, declared power, declared speed, and producing date etc. are all marked on the emblem. Please pay attention to find

its specific location for convenient maintenance consideration.

The location is shown in the picture right above.



Main documents along with vehicle

- 1.《Instruction for trucks of HFC1045 series》
- 2.《Instruction of engine using》
3. Certificate of quality
4. Emblems of JAC trucks are at the right side of the longeron of frame front suspension.

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