Jiefang
Truck

Operation Manual

J6 China IV, China V series

FAW Co., Ltd.

Foreword

Welcome to use J6 Jiefang IV, Jiefang V series trucks!

This series of vehicles include trucks, tractors, dump trucks, cement mixers and various refitted trucks. They are equipped with CA6DL, CA6DM2, CA6DM3, CA6DN1, BF6M1013, CA6DK1 series of National IV and National V electronic diesel engines; BOSCH or self-propelled SCR post-processing system; 12-gear, 10-gear, 9-gear, 8-gear transmission; R13T457, R13D457, R13D485, R13T485, R13D498, R13440, R11T435, R13T440, R13T290, R16T230W drive axles; and J6 Series Cab.

For J6 pilotage tractor, the three assembles such as engine, box and bridge are maintained in a long oil changing period.

When you receive a new vehicle, we hope you take the time to read the Operation Manual carefully. It will help you get familiar with the vehicle as soon as possible, and guide you to use it correctly. Careful use of your vehicle will help carry you to ride north and south easily.

All the contents of this manual are latest information when they are printed. If there is any change, it will be revised in the second edition. If the instructions are inconsistent with the products, please contact us timely, and we will do our best to serve you.

Wish you a pleasant driving!

June, 2016

Content

J6 China IV Series 1
Driving Required Reading 2
Information to the driver **2**
Vehicle nameplate and vehicle identification code 2
Engine nameplate and cylinder number 2
Fuel 2
Urea solution 4
Vehicle inspection 4
New vehicle running-in 5
Correct operation 6
Instrument and alarm lamp **6**
Instrument diagram 6
Speedometer 9
Engine tachometer 9
Fuel gauge 9
Water thermometer 10
LCD screen (J6P) 10
Main LCD screen in high configuration 11
Secondary LCD screen in high configuration 12
Main menu 12
Main LCD screen in standard configuration 13
Secondary LCD screen in standard configuration 13
Urea level meter(low configuration) 13
Barometer (Low Configuration) 14
Barometer (J6M) 14
LCD screen in high configuration (J6M) 14
Main menu (J6M) 15
Instructions for warning lamp and indicator lamp 16
Oil pressure alarm lamp 20
Indicator lamp for electrical charging 20
Engine fault alarm lamp 21
Coolant level alarm lamp 21
Coolant temperature alarm lamp 21
STOP fault indicator lamp 22
Brake system fault alarm lamp 22
Cab turnover alarm lamp 22
Engine preheating indicator lamp 23
ABS alarm lamp 23
Lighting fault indicator lamp 24
Emission fault alarm lamp 24
Auxiliary brake indicator lamp 24
ASR fault alarm lamp (high configuration) 25
ECAS fault alarm lamp (high configuration) 25
ECAS Height Indicator (High Configuration) 25
Switches Buttons Handles 26
Remote control 26
Main switch of power supply 26
Ignition switch 27
Combination switch 27
Function switch 32
Cigarette lighter 35
24V Power supply socket 35
Steering wheel lock handle 36
Parking brake valve (referred to as manual valve) 36

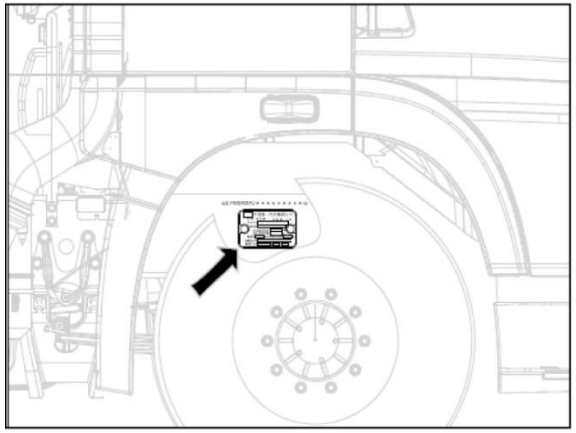
Trailer brake valve....37
Door opening/closing....37
Window regulator....38
Driver's seat....39
Seat safety belt....40
Ventilation and air conditioning unit....41
Cab ventilation....41
Air conditioning unit....41
Receiver....44
Mechanical tuning receiver (J6P)....44
Electronic tuning receiver (J6P)....45
Receiver (J6M)....46
Driving record....47
Overturn mechanism of the cab....48
Electric cab flip forward....49
Electric cab fall- back....50
Manual front turning and fall-back of cab....50
Body accessories....52
Electric exterior rearview mirror....52
Sun visor....52
Opening of front outer panel....52
Use of license plate and front tow hook....53
Spare tire regulator....54
Spark extinguisher switch (dangerous chemicals)....54
Correct driving....55
Normal engine start-up....55
Engine cold start warm-up....55
Notes for winter operation....56
Vehicle driving....56
Hill driving....56
Vehicle parking....57
Economic driving....57
Towing tractor....58
Dump truck....60
Concrete mixer truck....61
Maintenance....62
Regular maintenance....62
Check before driving....62
Check during driving....63
Check after receiving the vehicle....63
Simple inspection and maintenance....64
Coolant....64
Single-stage and double-stage air filters....67
Desert filter....68
Oil bath filter....69
Primary diesel filter....70
Secondary diesel filter....71
Spin-on type oil filter....72
Compressed gas filter....72
Exhaust post-processor....73
SCR post treatment system use and maintenance....73
Fan clutch....74
Precautions for operation of electric control system....74
Clutch....74
Suspension maintenance....75
Determination of oil leakage fault of shock absorber....81
Adjustment of the front wheel toe-in....81
Regular rotation of the wheel....82

Free rotation of the steering wheel 83
Drum brake system maintenance....83
Air drying tank 83
Replacement of friction plate 84
Wheel brake clearance adjustment 84
Use of ABS/ASR (optional) 85
Precautions of ABS/ASR....86
Maintenance of the traction seat....86
Battery 87
Fuse 87
Headlight light adjustment....87
Lubricating oil 88
Change the lubricating oil....88
Oil change cycle of each assembly....89
Engine oil change 89
Change the lubricating oil of transmission 90
Drive axle oil change....91
Oil change for steering system 91
Emergency handling....94
Tire inflation....94
Replace tires (in a flat nut form)....94
Appendix and Data....96
Common faults 96
On-board tools....105
Toolkit 108
BOSCH EDC17 Electrical control system operation schematic diagram 109
BOSCH EDC17 post treatment system structure schematic diagram 110
Electrical control system operation schematic diagram 111
Domestic air drive post treatment system structure schematic diagram....112
J6 pilotage tractor....113
Correct operation....114
Switches Buttons Handles 114
AMT Automatic Transmission Operating System....114
AMT Information LCD Display....114
AMT automatic transmission operating handle....115
AMT Vehicle Driving Operation 117
Separate heater switch 119
220V Power supply socket 120
On-board information service terminal....120
ECAS System overview 124
Remote control of ECAS system....126
ECAS system function use 127
Retarder operating switch....129
LCD display of instrument for retarder 130
Use of inter-wheel differential lock (6 x 2 model)....133
Overturn mechanism of the cab....134
Electric cab front turning....135
Electric cab fall- back....135
Manual front turning and fall-back of cab....136
Maintenance....137
Simple inspection and maintenance....137
Electronic control system of AMT automatic transmission....137
Inspection of drum-type brake friction plate 138
Maintenance and servicing of the Kangmai wheel hub....138
Lubricating oil 139
Engine oil change 139
Replace the Spin-On Oil Filters....141
Replace the centrifugal oil filter 142

Replace the oil filter (CA6DK1 engine) 142
Change the lubricating oil of transmission 142
Replace lubricating oil for 12-gear automatic transmission 143
Change the lubricating oil of drive axle 145
Change the lubricating oil of retarder 146
Appendix and Data 148
Fault alarm and analysis 148
12TA-AMT Electrical control system operation schematic diagram 158
J6 China V series 159
Correct operation 160
Instrument and alarm lamp 160
Instrument diagram 160
Speedometer 161
Engine tachometer 161
Fuel gauge 161
Water thermometer 162
LCD screen 162
Main LCD screen 163
Auxiliary LCD screen 164
Main menu 164
Instructions for warning lamp and indicator lamp 169
Switches Buttons Handles 175
Multi-function steering wheel switch 175
Sleeper light switch Buttons 175
Indoor lighting switch 176
Door open alarm light 177
On-board information service terminal 178
Fast plug-in vehicle data terminal 183
Fleet management module 186
Driver's seat 190
Driver's seat (standard configuration) 190
Driver's seat (high configuration) 192
Ventilation and air conditioning unit 194
Cab ventilation 194
Air conditioning device 194
Functional button description 195
Maintenance 197
Simple inspection and maintenance 197
Air filter 197
Air filter 197
Suspension maintenance 198
Lubricating oil 202
Engine oil change 202
Replace the Spin-On Oil Filters 204
Replace the centrifugal oil filter 204
Change the lubricating oil of transmission 205
Change the lubricating oil of drive axle 206
On-board tools 207
Toolkit 209

J6 China IV Series

Information to the driver

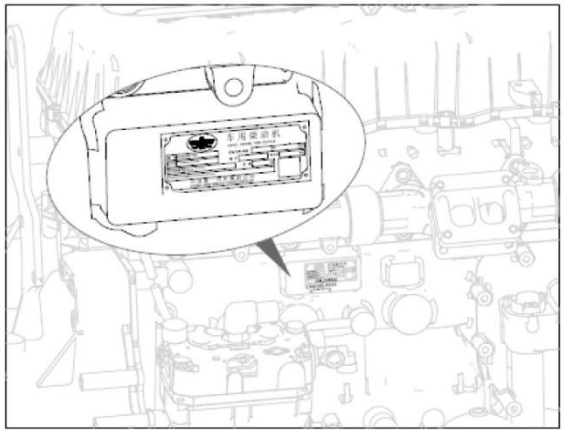


Vehicle nameplate and vehicle identification code

▶ The nameplate is located near the front axle on the left (right) side of the longitudinal beam of the frame.

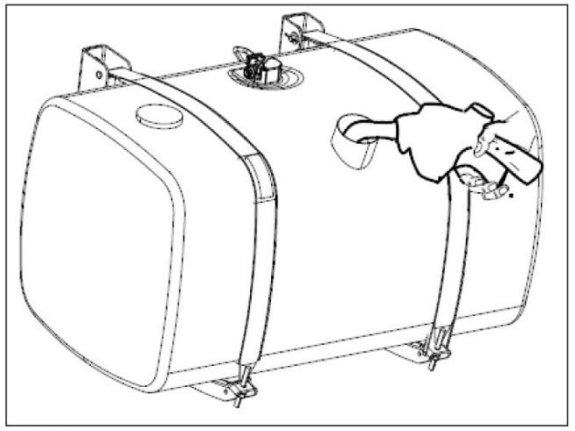
▶ Vehicle model, main weight parameters, engine model and VIN code are recorded on the nameplate.

▶ Please carefully check whether VIN identification code is consistent with the certificate of conformity.



Engine nameplate and cylinder number

▶ Engine nameplate and cylinder number are shown in the figure.



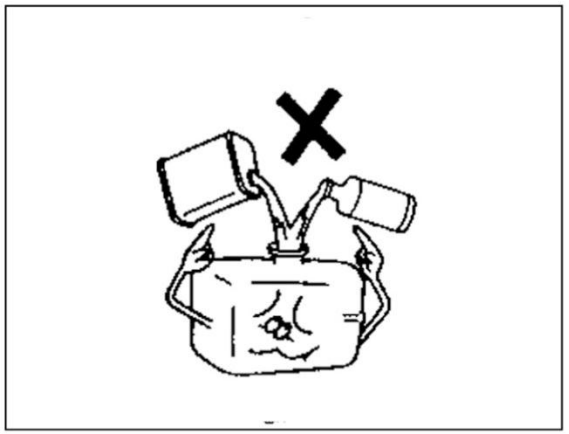
Fuel

▶ Fuel oil selection

- Diesel that satisfies GB19147 standard should be used.

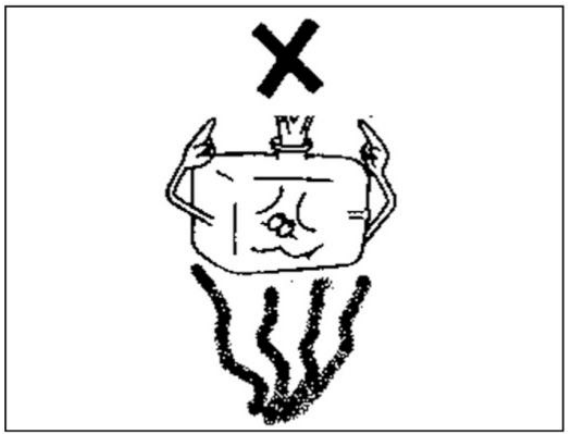
- Diesel that meets local temperature requirements should be used in cold areas.

Atmospheric temperature	Diesel grade
Above 4℃	0 #
(4～-5)℃	-10 #
(-5～-14)℃	-20 #
(-14～-29)℃	-35 #



⚠ Warning

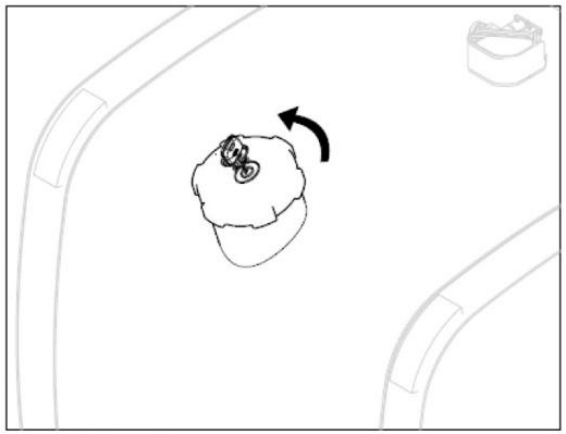
Do not fill fuel other than diesel to the diesel engine; to prevent fire or explosion, and do not mix the gasoline or alcohol in the diesel.



⚠ Warning

⊙It is forbidden to use fire to bake fuel supply system (fuel tank, fuel line, fuel primary filter, fuel secondary filter, injection pump, etc.).

⊙Before adding fuel, the engine must be stopped and smoking, open flames, etc. are prohibited.

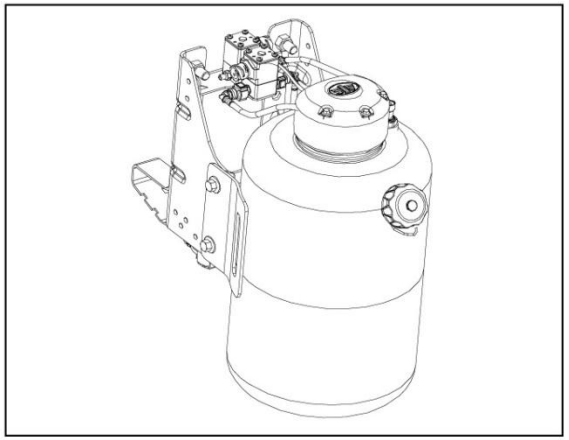


▶ Add fuel

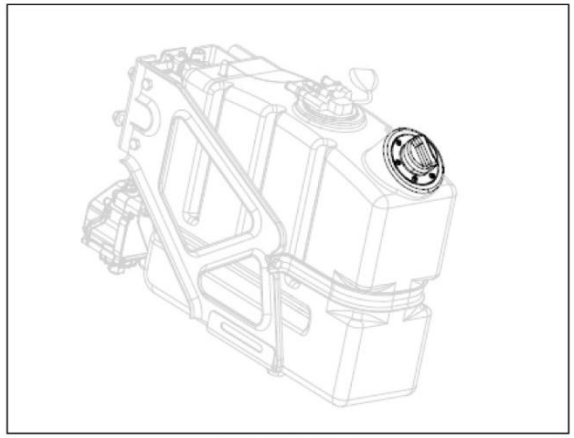
—Insert the key, hold the fuel tank cap exterior margin by hand, rotate the key counterclockwise by 90 ° and then rotate the fuel tank cap counterclockwise by 120° approximately to take it out.

—Do not allow the tank filter screen to be removed when add fuel.

—Rotate the fuel tank cap clockwise by 120° approximately. After fastening, hold the tank cap and rotate the key clockwise by 90° to lock.



Matched gas drive system



Matched Bosch system

Urea solution

▶ Selection of AdBlue

- Use the urea solution that meets GB 29518 standard.

⚠ Warning

⊙ Do not use the unacceptable urea solution or fill water to urea solution; otherwise it will result in the engine under-power.

⊙ Do not fill urea solution to the fuel tank.

▶ Notes for urea injection:

- Make sure to purchase urea aqueous solution for vehicles in accordance with GB29518 standard at regular filling stations or service stations.

- Flame must be extinguished before urea adding.

- In case of user decides to take a self-filling, please use purpose-built filling pipe in the operation and keep the filling pipe clean.

- In filling, impurities should be prevented from falling into urea tanks.

- Stop filling after the liquid level reaches the filling port.

Vehicle inspection

In order to give full play to vehicle performances and prolong the service life, vehicle inspections and maintenance must be carried out, and the following inspections should be carried out regularly.

▶ Inspection of new vehicles

- Please check carefully after receiving the new vehicle, and then put it into use and ensure safety.

* Check the connection and fastening of each part.

* Hear any abnormal noise when the engine is working. Check the installation of each accessory.

* Check the oil level of engine, transmission, drive axle and steering tank.

* Check the oil filling condition of the lubrication points.

* Check the operation of the braking system and the steering system.

* Check the electrical equipment.

* Check the free stroke of clutch pedal.

* Check the tire pressure.

* Check whether the on-board tools are complete.

▶ Check before driving

- In order to ensure the safe and comfortable driving of the vehicle, the vehicle shall be checked before driving every time.

▶ Regular check and maintenance

—Periodically check and repair according to the driving distance or time of use. The frequency of checks should be increased when the vehicle is used in harsh conditions.

New vehicle running-in

▶ The running-in period is 2500km.

▶ Requirements for running-in:

- It is within 200km in the initial running-in period, the vehicle must be driven empty and must not be loaded. The loading capacity within 1500 km should not exceed 70% of the rated load, and (1500-2500) km can be increased to 90% of the rated load.

- The maximum speed of the engine shall be limited to 1500r/ min or less within 1000km in the running-in period.

- Special attention should be paid to the engine coolant temperature and oil pressure during the running-in period, which must be within the specified range.

- During the running-in operation of new vehicles, the fuel consumption of the engine is higher and the oil level should be checked daily.

▶ Perform the following items after the running-in

- Change the engine oil.

- Change the oil filter.

- Drain the diesel strainer filter, check and tighten the fuel tank strap.

- Change the transmission oil, check and tighten fixing bolts of transmission shaft.

- Change the drive axle oil.

- Change the power steering fluid and check the steering gear fixing bolt.

- Check the fixing bolt of steering gear bracket.

- Check the connecting bolt between steering shaft and steering gear.

- Check the fixing nut of steering arm.

- Check and tighten the wheel nuts.

- Check and tighten the leaf spring U-bolt.

- Check brake clearance and friction plate wear.

- Check and tighten the front and rear suspension cushion retaining bolts of the cab.

⚠Caution

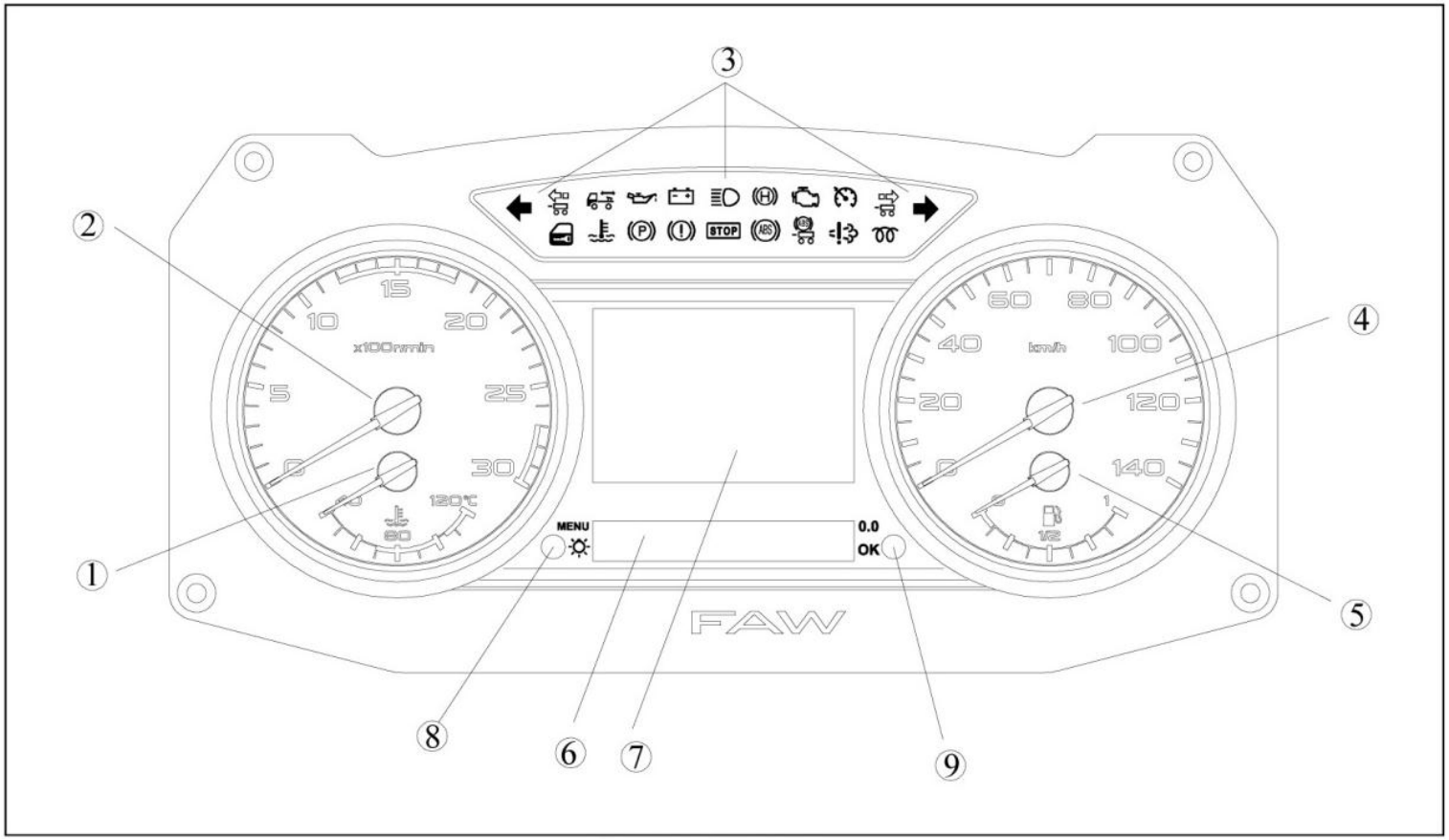
⊙ It is recommended that the fluid change should be made in FAW service stations.

⊙ Ensure to use the grease and oil recommended by this instruction.

- When replacing the parts, use those bearing FAW identifications, which can be purchased from the special stores designated by FAW or FAW service stations.

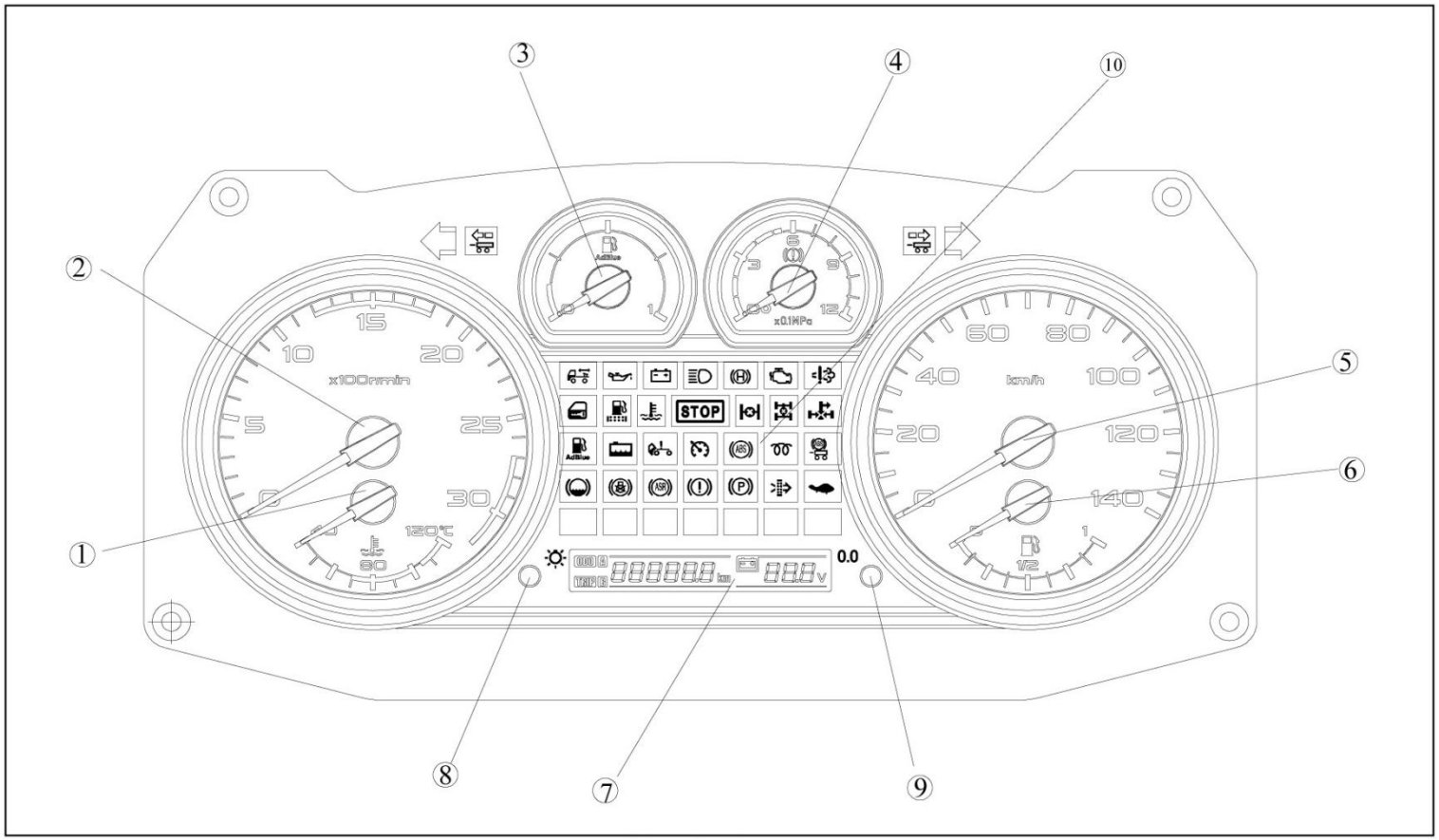
Instrument and alarm lamp

Instrument diagram



Instruments in high and standard configurations (J6P)

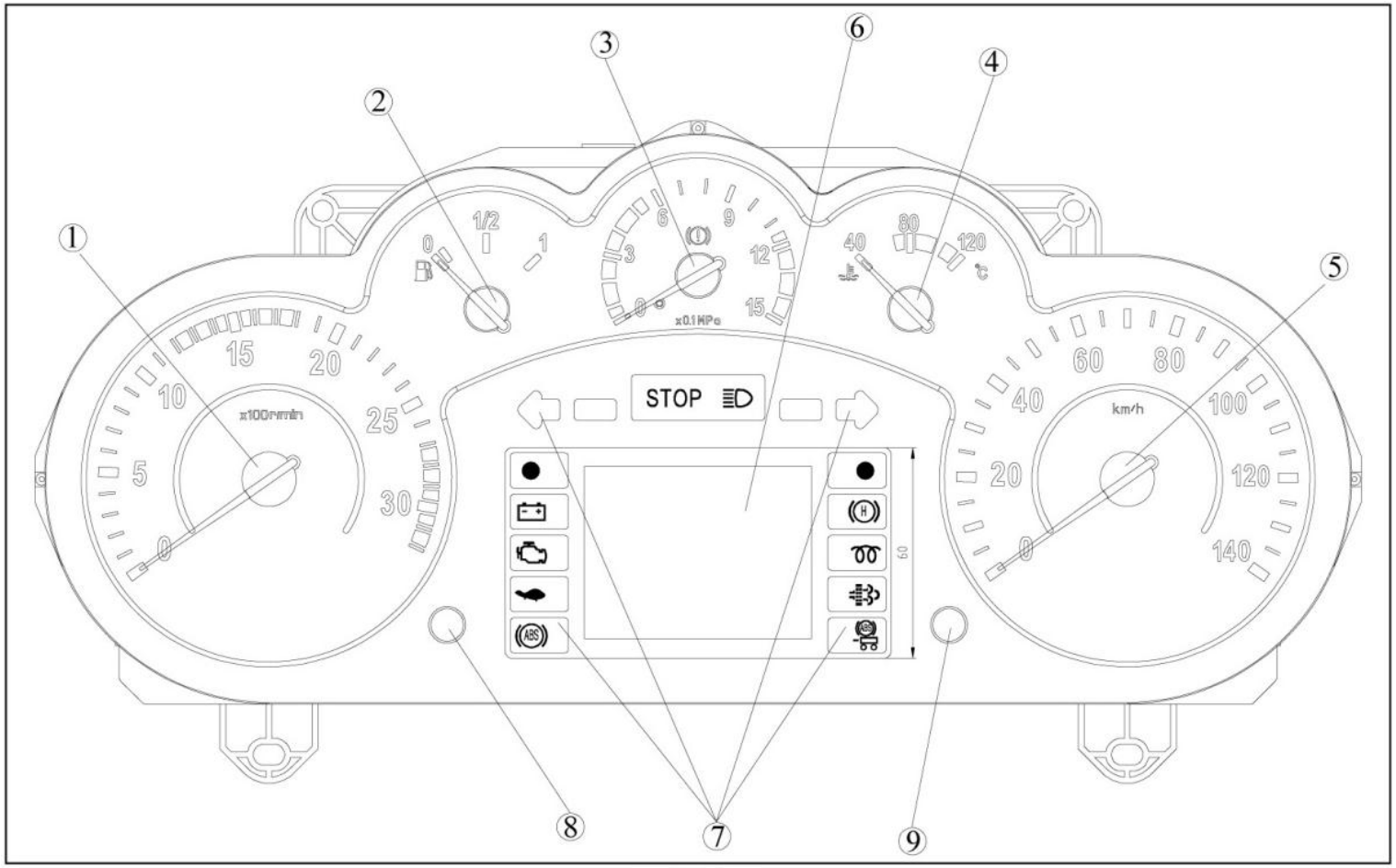
①Water thermometer	②Engine tachometer	③Indicator and alarm lamp	④Speedometer	⑤Fuel gauge	⑥Secondary LCD	⑦Main LCD	⑧Button 1	⑨Button 2



Instruments in low configuration (J6P)

①Water thermometer ②Engine tachometer ③Urea level meter ④Barometer ⑤Speedometer

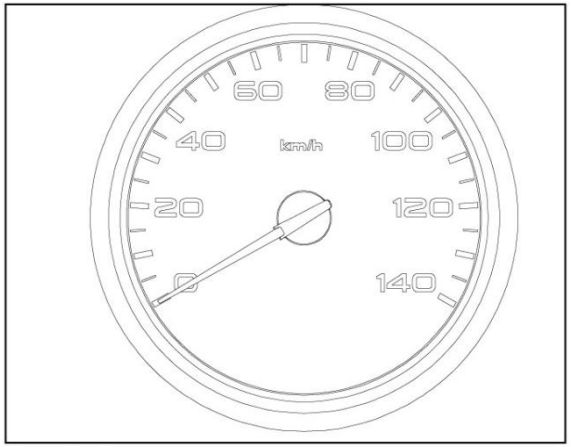
⑥Fuel gauge ⑦LCD screen ⑧Button 1 ⑨Button 2 ⑩Indicator and alarm lamp



J6M Instruments

①Engine tachometer; ②Fuel gauge; ③Barometer; ④Water thermometer; ⑤Speedometer;

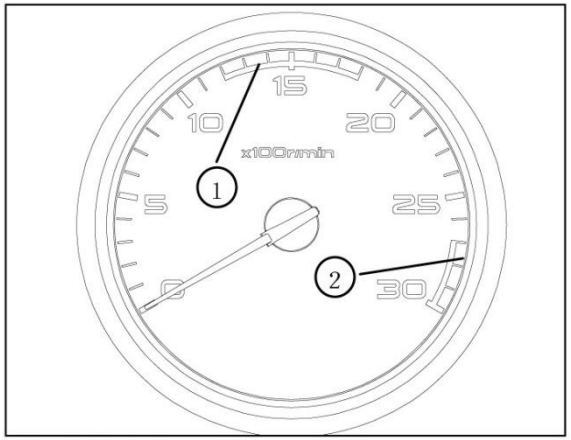
⑥ LCD screen; ⑦ Indicator and alarm lamp; ⑧Button 1 ⑨Button 2.



Speedometer

▶Indicate the speed of the vehicle.

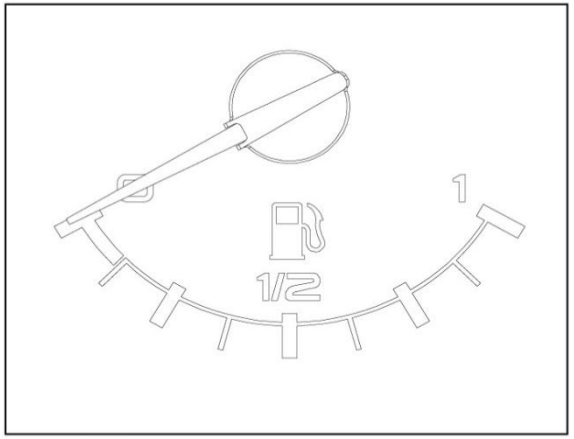
－The driving mileage is displayed on the LCD screen.



Engine tachometer

▶The engine tachometer is better to control the engine speed in the green zone ①, where the best comprehensive performance of the engine can be obtained.

▶The engine speed exceeds the red range ②, which means that the engine speed exceeds the limit. Long-time over-speed operation can cause damage to the engine.



Fuel gauge

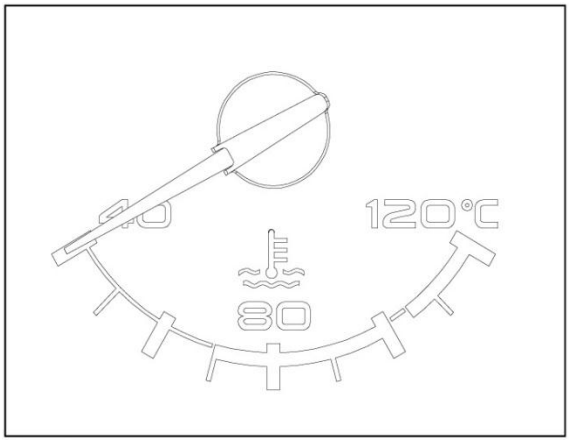
▶Indicates the amount of fuel in the fuel tank.

0: Indicates that the fuel tank is empty.

1: Indicates the fuel tank is full.

⚠Caution

When the pointer is close to the red range, the fuel shall be supplemented in time. Otherwise, the oil supply system will allow the air to enter and an exhaust is required again when starting again.



Water thermometer

▶ The water thermometer indicates the coolant temperature of the engine.

▶After each cold start of the engine, the preheating shall be carried out at low speed. When the temperature of the coolant reaches more than 50 ℃, start driving.

▶During driving, the normal temperature range of the coolant is (75 ~ 95) ℃.

▶If the pointer exceeds 105 ℃, the warning lamp will be on, indicating that the engine is overheated at this time, and the vehicle shall be parked at a safe place and run at a speed slightly higher than idle speed in order to cool the engine.

▶After the pointer returns to the normal operating position, stop the engine for the following checks:

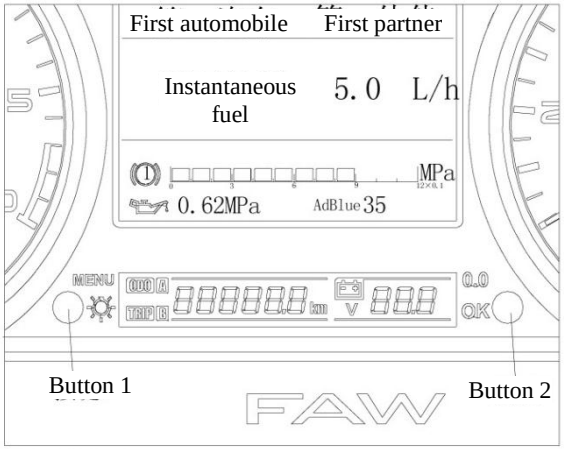
- Check the radiator and the hoses for leaks.

- Check the amount of coolant and add if the coolant is insufficient.

- Check whether there are sundries on the front of the radiator.

⚠Caution

Do not stop the engine immediately after stopping, otherwise the engine cylinder block temperature will rise sharply and cause the engine to be sintered.



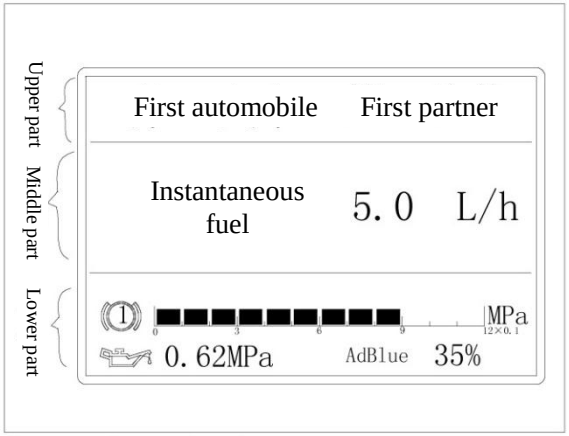
LCD screen (J6P)

▶A LCD screen includes a main LCD screen and a secondary LCD screen.

- The upper part is the main LCD screen.

- The lower part is a secondary LCD screen.

▶ According to different configurations, LCD screens can be divided into two types: high configuration and standard configuration.



Main LCD screen in high configuration

▶ The interface of main LCD screens in high configuration has three areas: upper, middle and lower areas.

- Upper part: Displaying the First Automobile First Partner in case of no alarm; In case of alarm, yellow alarm is displayed on the left side, and red alarm is displayed on the right side.

- Middle part: Oil consumption and subtotal mileage display areas. Press Button 1 to switch between the instantaneous fuel consumption, fuel consumption and the subtotal mileage, average fuel consumption and the subtotal mileage, totaling three pages.

- Lower part 1: Status bar shows the brake air pressure, and the circuit with relatively small air pressure, between the front brake circuit and the rear brake circuit.

⚠Caution

⊙The brake pressure should be maintained in the range of (0.7-0.9) MPa during driving.

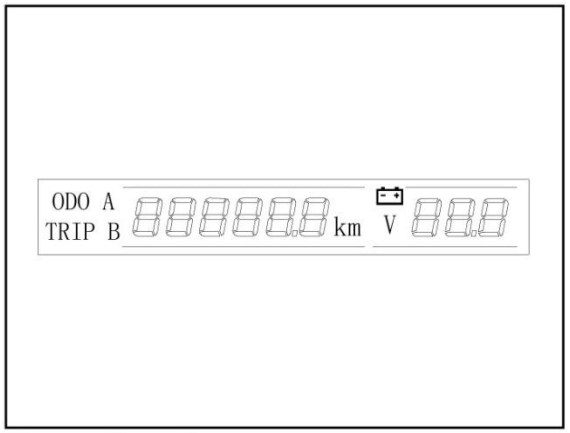
⊙ Stop the vehicle immediately and check if it is less than 0.55MPa (i.e. the brake system fault alarm lamp is on).

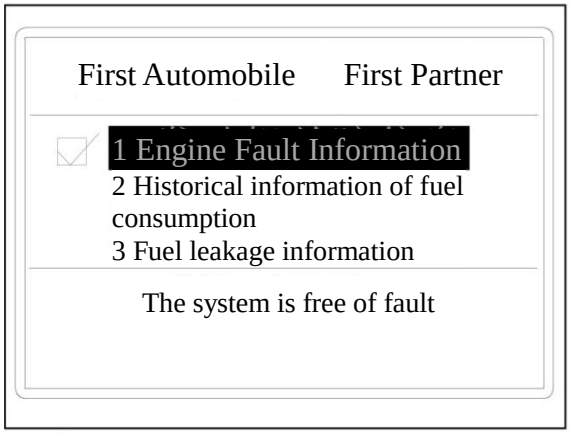
⊙ The barometer displays the fault, please check whether the air pressure sensor needs to be replaced.

- Lower part 2: The state bar (or numerical value) indicates the working pressure of the lubricant in the engine and main oil duct.

It is required to observe the oil pressure during driving. When the engine is running normally, the oil pressure indication range is (0. 25-6.0) MPa.

If the pressure gauge pointer is less than 0.7, the engine should be shut down immediately to find out the cause of the fault.





－Lower part 3: The value indicates the value of the urea liquid level.

(0-10)%: indicating that the urea tank is empty.

(90-100)%: indicating that the urea tank is full.

⚠Caution

⊙ When the liquid level of urea is lower than 15%, the liquid level alarm lamp of urea shall be on, and the urea shall be supplemented in time.

⊙ When the liquid level of urea is lower than 10%, the emission fault alarm lamp is on.

⊙ If the urea liquid level continues to decrease and the engine limits the torque, urea should be supplemented in time, and the engine torque limit shall be relieved.

Secondary LCD screen in high configuration

▶The secondary LCD screen is divided into two areas: left and right.

- Left side: Displays the subtotal mileage, total mileage. Press key 2 to realize mileage switchover; Long press key 2 to clear the mileage.

- Right side: Displays battery voltage value. The reading range of the voltmeter is (16 ~ 32) V. Normal voltage shall be between (24-28) V. If it is lower than 22V or higher than 30V, the charging system shall be checked and repaired in time.

Main menu

▶Only the LCD screen in high configuration has the main menu operation function. It can only be used when parking.

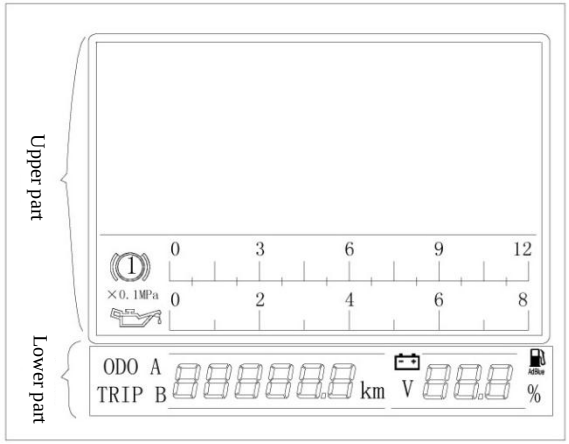
- The selection of the items on the LCD screen can be realized by pressing button 1 and button 2.

Long press the button: the pressing time is longer than 1.5s.

Short press the button: the pressing time is 50ms~1.5s.

- Long press button 1 to enter the main menu interface, short press button 1 to select up and down, and short press button 2 to enter the sub-menu or select.

- The main menu is divided into two areas: upper and lower. The upper part is the menu item display area, and the lower part is the auxiliary area.

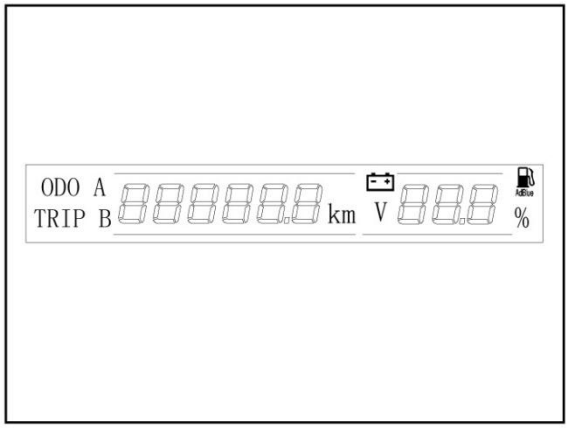


Main LCD screen in standard configuration

▶The main LCD screen interface is divided into two areas: upper and lower.

- Upper part: Yellow alarm on the left and red alarm on the right.

- The lower brake pressure and oil pressure have the same display function as the high matching main LCD screen.



Secondary LCD screen in standard configuration

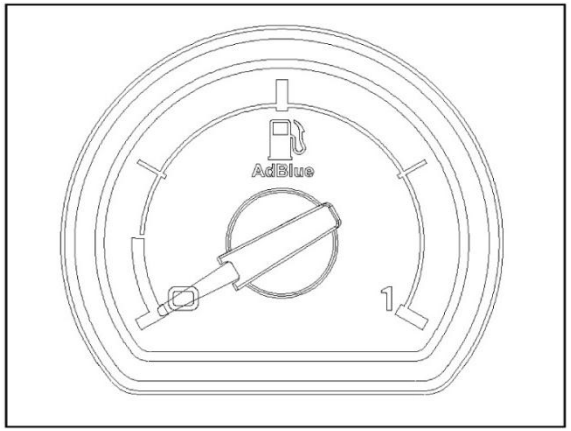
▶The secondary LCD screen is divided into two areas: left and right.

- Left side: Displays the subtotal mileage, total mileage. Press key 1 to realize mileage switchover; long press key 1 to clear the mileage.

- Right side: Urea level information and battery voltage value are displayed.

Press Button 2 to display the battery voltage information.

Release Button 2 to display the urea level.

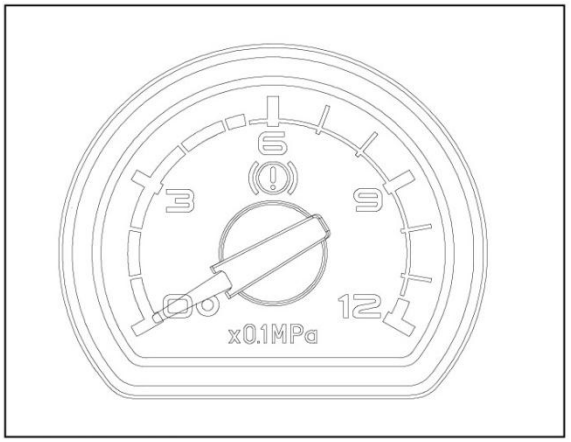


Urea level meter(low configuration)

▶Indicating the amount of urea liquid.

0: Indicates that the fuel tank is empty.

1: Indicates the fuel tank is full.

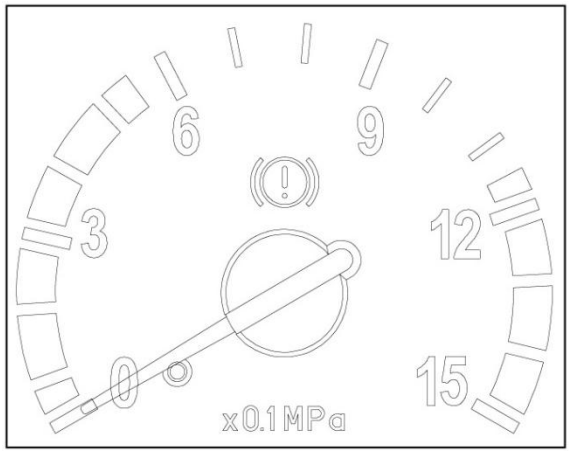


Barometer (Low Configuration)

▶Double pointer type.

- The front pointer of the barometer indicates the barometric pressure of the cylinder used for front wheel braking (the front braking circuit).

- The rear pointer of the barometer indicates the barometric pressure of the cylinder used for rear wheel braking (the rear braking circuit).

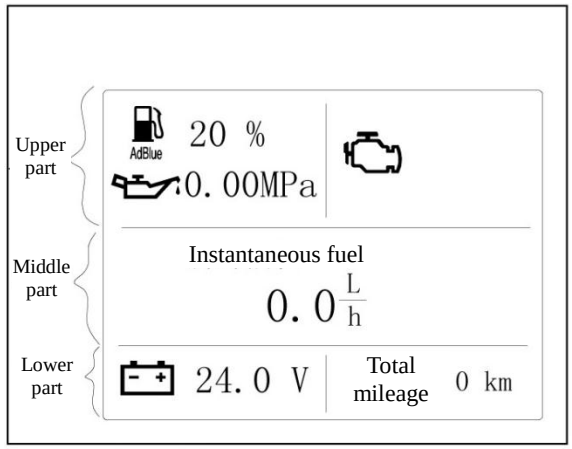


Barometer (J6M)

▶Double pointer type.

- The front pointer of the barometer indicates the barometric pressure of the cylinder used for front wheel braking (the front braking circuit).

- The rear pointer of the barometer indicates the barometric pressure of the cylinder used for rear wheel braking (the rear braking circuit).

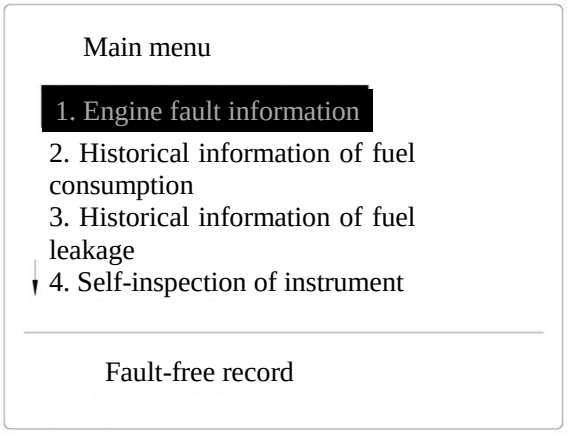


LCD screen in high configuration (J6M)

▶The main LCD interface is divided into three areas: upper, middle and lower.

- Upper part: When there is no alarm, the battery voltage status bar and oil pressure status bar are displayed. When there is alarm, the left side shows the battery voltage and oil pressure value, and the right side shows alarm information. When the urea level is detected, the urea level and oil pressure value are shown in the left side, and the alarm information is shown in the right side.

* When the engine is running normally, the oil pressure indication range is 2.2~6.5; CA6DK1 is 3.9~6.0; and the range of others is 2.5~6.



* If the pressure gauge pointer is less than 0.7 and the CA6DK1 is less than 1.3, the engine should be shut down immediately to find out the cause of the fault.

- Middle part: Oil consumption and subtotal mileage display areas. Press Button 2 to switch among instantaneous fuel consumption, fuel consumption and subtotal mileage, average fuel consumption and subtotal mileage. Press Button 2 to clear the subtotal mileage.

- Lower part: Display the total mileage. Display the battery voltage and the total mil1eage when detecting the urea level.

Main menu (J6M)

▶Only the LCD screen in high configuration has the main menu operation function.

It can only be used when parking.

- The selection of the items on the LCD screen can be realized by pressing button 1 and button 2. Long press the button: the pressing time is longer than 1.5s. Short press the button: the pressing time is 50ms~1.5s.

- Long press Button 1 to enter the main menu interface, short press Button 1 to select up and down, and press Button 2 to enter the sub-menu or select.

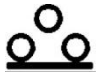
- The main menu is divided into two areas: upper and lower. The upper part is the menu item display area, and the lower part is the auxiliary area.

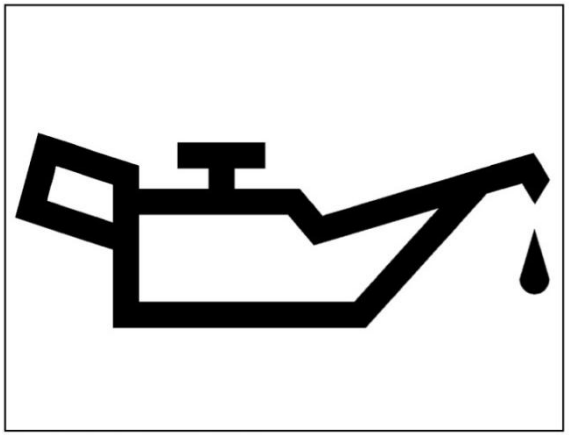
Instructions for warning lamp and indicator lamp

Icon	Name of alarm Lamp/indicator lamp	On
	STOP fault alarm lamp	In case of fault of coolant level, brake system, oil pressure, cab turnover, coolant temperature
	Brake system fault alarm lamp	When the air pressure of reservoir is insufficient
	Auxiliary brake indicator lamp	When the engine brake system or exhaust brake system is working
	Indicator lamp for parking brake	When parking brake is used
	Coolant temperature alarm lamp	When the engine is overheated
	Unclosed door alarm lamp	When the door is not closed
	ABS main vehicle alarm lamp	In case of the main vehicle ABS fault
	ABS trailer alarm lamp	In case of the trailer ABS fault
	Emission fault alarm lamp	In case of emission system fault
	Engine preheating indicator lamp	When the engine preheating device is operating

Icon	Name of alarm Lamp/indicator lamp	On
	Headlamp high beam indicator lamp	When the headlamp high beam is on
	Left turn indicator lamp	In case of left turn
	Right turn indicator lamp	When turns right
	Indicator lamp for electrical charging	When the battery system fails
	Oil pressure alarm lamp	When the oil pressure is too low
	Trailer connection alarm lamp	When the trailer is not connected or unlocked
	Engine fault alarm lamp	When the engine electronic fuel injection system fails
	Cruise operation indicator lamp	When the cruise control is working
	Trailer left turn indicator lamp	When the trailer turns left
	Trailer right turn indicator lamp	When the trailer turns right
	Dynamometer indicator	When the dynamometer is in operation,

Icon	Name of alarm Lamp/indicator lamp	On
	Inter-wheel differential lock indicator lamp	When the inter-wheel differential lock is engaged
	Axle-to-axle differential lock indicator lamp	When the axle-to-axle differential lock is engaged
	Coolant level alarm lamp	When the coolant level is too low
	Lamp fault alarm lamp	When brake light is broken
	Cab turnover alarm lamp	When the cab is in turnover or the lock is not in place
	Brake fluid level alarm lamp	When the brake fluid level is too low
	Air filter plugging warning lamp	When the air filter is plugged
	Fuel filter plugging alarm lamp	When the fuel filter is plugged
	Urea liquid level warning lamp	When the liquid level of urea is too low
	Low-speed-gear indicator	When the transmission is in a low gear position
	ASR alarm lamp	When ASR works

Icon	Name of alarm Lamp/indicator lamp	On
	Gearbox fault alarm lamp	When the gearbox fails
	Gearbox oil temperature alarm lamp	When the transmission oil temperature is too high
	Retarder Operating Instruction	When the retarder works
	ECAS height indicator	During the ECAS height adjustment
	ECAS fault alarm	When ECAS system fails
	Indication of ECAS prompt axis	ECAS Lifting Shaft and Operating Indicator Lamp
	Drive Help Instruction ECAS Floating Bridge	When Floating Bridge Driver Help Function Works
	Lifting indication of ECAS pontoon bridge	When the pontoon bridge is lifted



Oil pressure alarm lamp

▶When the key is turned to the ON position, the lamp is on; the lamp turns off after the engine is started.

▶If the lamp is on during driving, the vehicle shall be parked at the safety site for the following inspections:

- Check the engine oil quantity and add when insufficient.

- Check all parts of the engine for oil leakage.

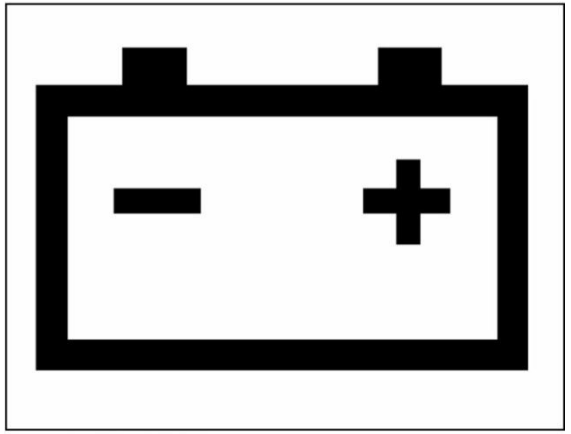
- Check if the oil filter is blocked. If there is blockage, replace it in time.

- If the oil quantity is normal and there is no oil leakage, the lubrication system has failed. Please contact an authorized service store.

⚠Caution

⊙ Never run with the warning light on, otherwise the engine will be sintered.

⊙ When it is cold and sometimes the engine oil is viscous, this warning lamp will still be illuminated temporarily after the engine is started, which is normal.



Indicator lamp for electrical charging

▶Indicates the charging status of the generator. The lamp is on when the ignition is turned on; the lamp turns off after the engine is started.

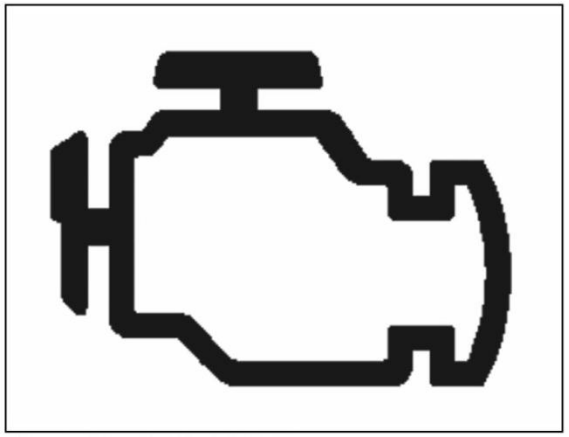
▶If the lamp is on during driving, the vehicle shall be parked at the safety site for the following inspections:

- Check whether the belt of the generator is broken and whether the belt tension is normal.

- Check if the fuse in the charging circuit (in the fuse box) is fused.

- Whether the binding post connection of generator is loose.

- No abnormality is found in the above-mentioned inspection, indicating that the charging system has failed, please contact the nearby FAW service station.

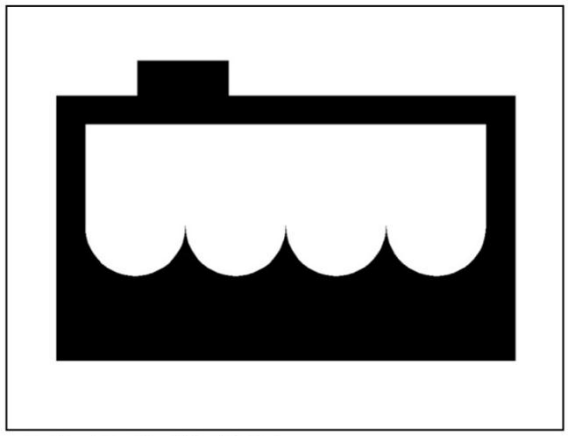


Engine fault alarm lamp

▶It is illuminated when the engine electrical control component goes wrong.

⚠Caution

When the engine fault warning lamp is normally on, the electric control system will conduct the rotation speed and vehicle speed limit control of the engine and vehicle appropriately according to the hazard degree of the fault. At this time, the vehicle should be driven at a low speed to the nearest service station and repaired by a professional maintenance staff.



Coolant level alarm lamp

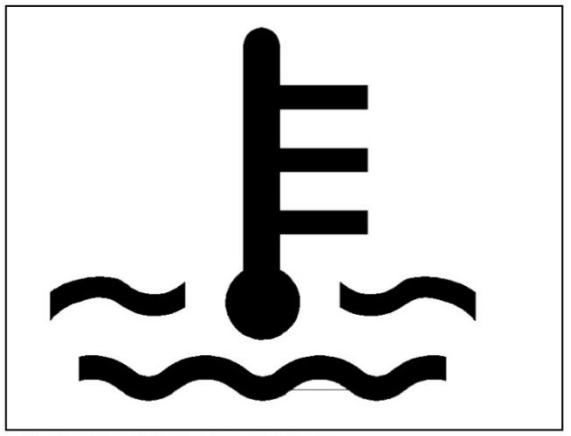
▶The engine coolant is insufficient, the alarm lamp is ON.

▶When the lamp is on, the vehicle shall be parked and inspected at a safe site and measures shall be taken:

- Stop the engine to lower the coolant temperature.
- Check the radiator and the lines for water leaks.
- If there is any leakage, please contact FAW Maintenance Station nearby.

⚠Warning

The expansion tank pressure cap must not be opened before the water temperature drops. When opening, cover it with a cloth, loosen it slowly, and then open the pressure cap after pressure relief to avoid being scalded with hot water.



Coolant temperature alarm lamp

▶When the engine is overheated, the alarm lamp is on.

▶When the lamp will be illuminated, the vehicle shall be driven to the safety site for inspection.

⚠Warning

Operate the engine at a speed slightly above the idle speed in order to decrease the engine temperature. Never close the engine for natural cooling.



STOP fault indicator lamp

▶When one or more functions fail among the coolant level, the brake system, the oil pressure and the coolant temperature, the lamp is on. Remind the driver to stop and check in accordance with the indication of the warning lamp or indicator lamp.



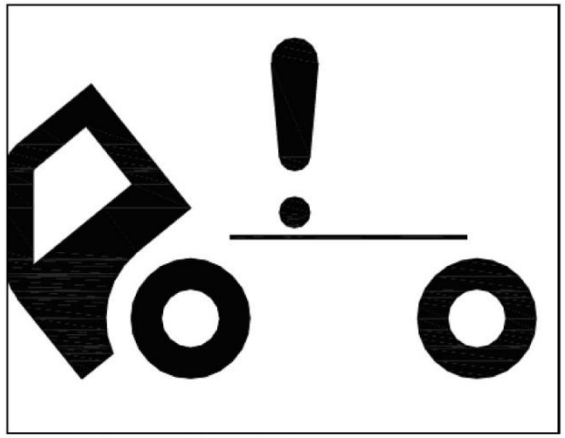
Brake system fault alarm lamp

▶When the air pressure is lower than 0.55 MPa, the alarm lamp will be ON during driving.

▶Please stop immediately and check the braking system.

⚠Warning

After the brake system fault alarm lamp is on, the braking effect will be significantly reduced and the driving cannot be continued.

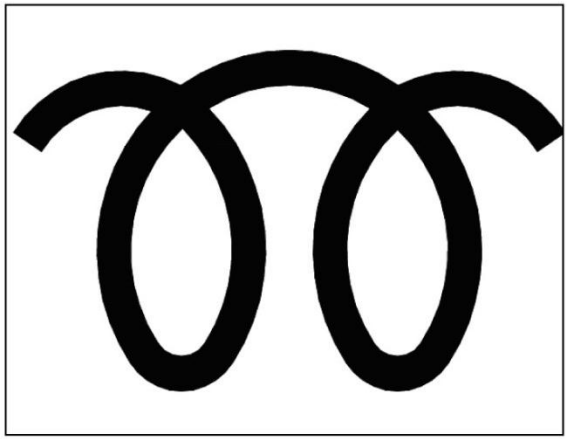


Cab turnover alarm lamp

When the cab is tilted forward or the lock is not in place, the lamp is on.

⚠Caution

When falling back, you must check and confirm that the cab lock is in place, otherwise there will be a danger.

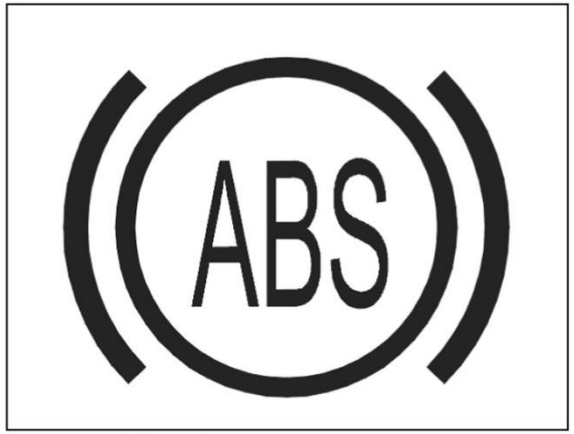


Engine preheating indicator lamp

During the engine preheating, the Indicator lamp is on.

⚠Caution

The electronically controlled engine is automatically preheated and the vehicle can be started only after the engine preheating indicator lamp is off.

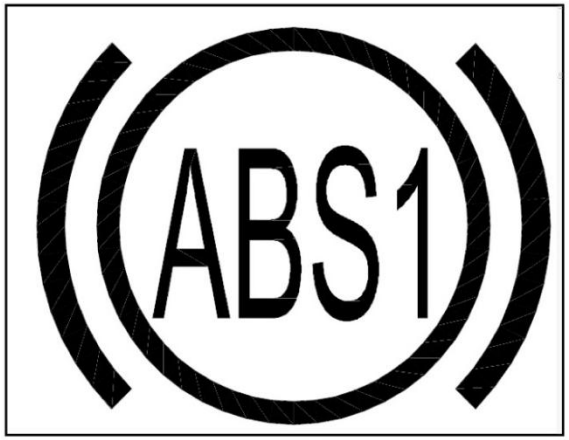


ABS alarm lamp

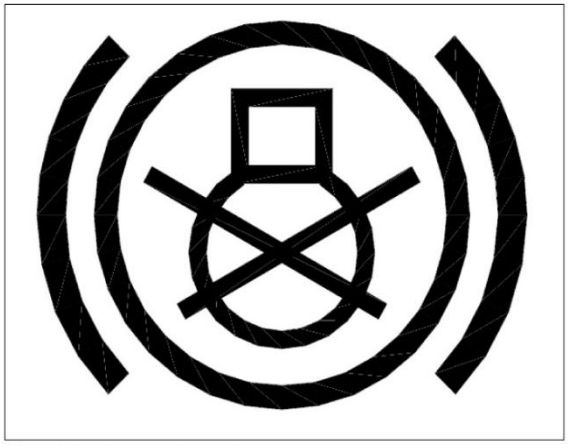
▶Turn on the ignition switch, the alarm lamp is on, and the system performs self-inspection. If the system does not have a fault record, the indicator lamp will be off in approximately 3 seconds; if there is a fault record in the ECU memory, but the fault has been eliminated, the indicator lamp will be off when the vehicle speed reaches 7km/ h.

▶If the vehicle speed reaches 7km/ h, the alarm lamp remains on. It indicates that the ABS system has failed.

▶The lamp is on (red) indicating that the ABS system of the tractor has failed.

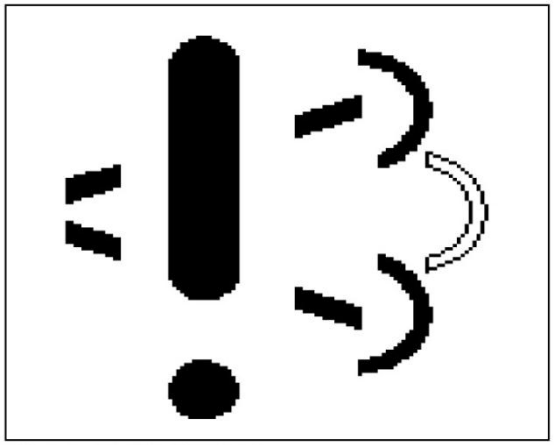


▶The light is ON (yellow), which indicates that the ABS system of the trailer is out of order.



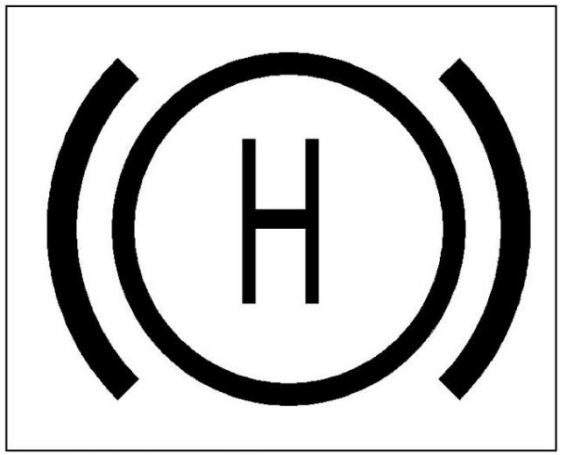
Lighting fault indicator lamp

▶The lamp is on when brake light is broken.



Emission fault alarm lamp

▶When the OBD system detects a problem with the emission system, the emission fault lamp is on, and the emission system needs to be checked.



Auxiliary brake indicator lamp

▶ When the system performs self-check, the Indicator lamp is on briefly.

▶When the engine braking or exhaust brake system is working, the Indicator lamp is on.



ASR fault alarm lamp (high configuration)

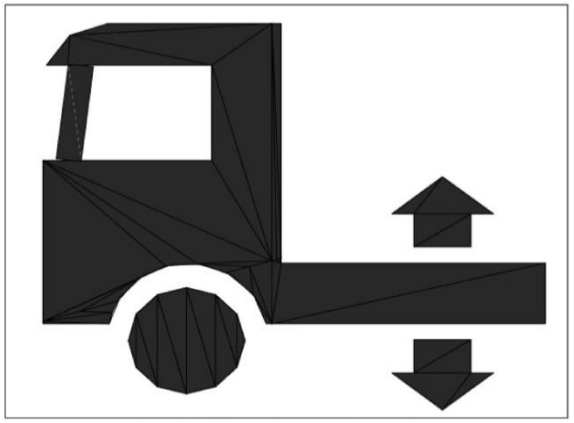
▶Turn on the ignition switch and the alarm lamp is ON. If the system does not fail, the alarm lights will go off in about three seconds. If the system fails, the alarm lights are always ON.

▶The alarm lights flicker and the ASR function works (normally).



ECAS fault alarm lamp (high configuration)

▶Turn on the ignition switch and the alarm lamp turns on. If the system is not faulty, the alarm lamp will go out after about 3 seconds. If the alarm lamp is ON all the time, it will prompt the system to malfunction. If the alarm lamp flickers, it will prompt the system to malfunction seriously, and the system will stop working. Please go to FAW Maintenance Station for repair.



ECAS Height Indicator (High Configuration)

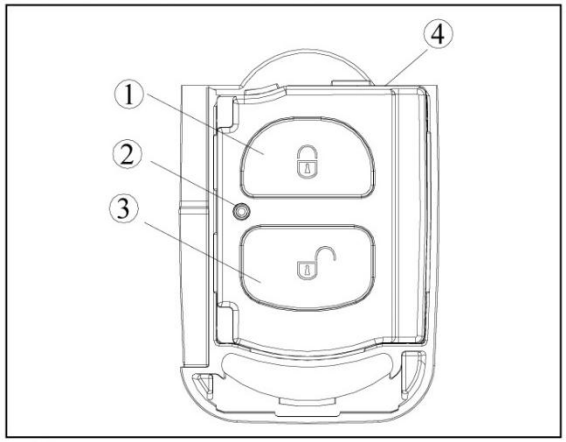
▶When the height of the vehicle is not normal, the indicator is ON.

▶If the height indicator is ON, you can manually adjust it by using the normal height button on the remote control.

⚠Caution

If the current barometer shows a lower barometric value, the vehicle may not be able to return to the normal height.

Switches Buttons Handles

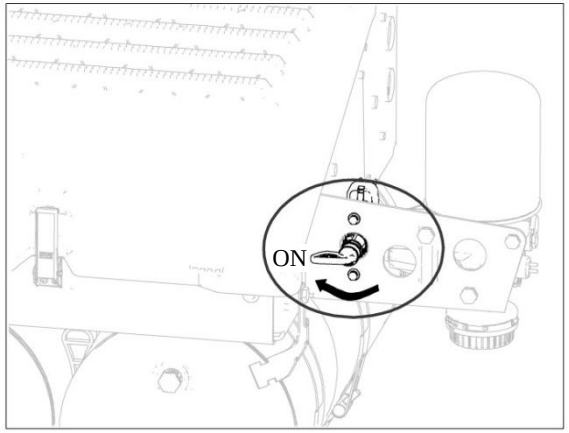


Remote control

▶The remote control has a matching relationship with the door controller. When the remote control loses or fails, it is necessary to replace the remote control and the door controller.

- ①Remote control lock button
- ②Status indicator
- ③Remote unlock button
- ④Battery Removal Port

▶If the status indicator of the remote control is flashing or not flashing, the battery of the remote control needs to be replaced.



Main switch of power supply

▶The main switch of power supply is located near the battery frame.

▶When the switch is on, the arrow points to "ON".

▶When the switch is disconnected, the arrow points to "OFF".

⚠Caution

⊙ For non-dangerous goods transport vehicles, when turning off the key switch and leaving the vehicle, you should turn off the main switch of manual power supply.

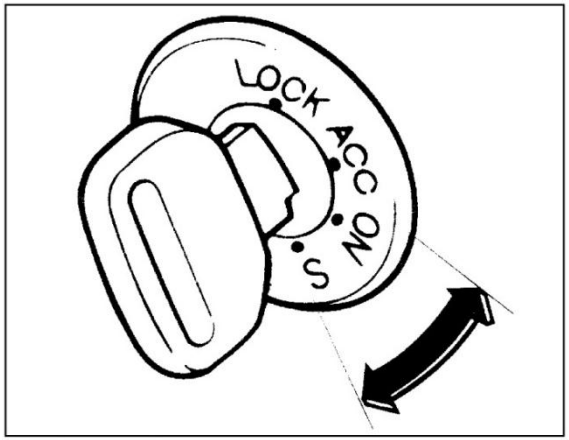
⊙ For dangerous goods transport vehicles, use the manual power switch as a completely disconnected power supply (i.e. it does not contain any normal power). The purpose is to completely disconnect the whole vehicle power supply in dangerous areas. Therefore, it is not recommended for normal use. If this switch needs to be turned off at ordinary times, it will not be operated until the ignition switch is turned off for at least 20 minutes. Otherwise, it will cause the fault of urea inversion and damage the post-treatment system by freezing the pipeline.

⊙ When the engine is operating, it is not possible to turn off the main switch of power supply.

⊙ To turn on or turn off the main switch of power supply, you should confirm that the key is at LOCK.

⊙ It is strictly prohibited to modify the wiring at the main switch of power supply for the avoidance of fire.

⊙ When washing the vehicle, turn off the main switch of power supply to avoid the jet of high-pressure water gun.



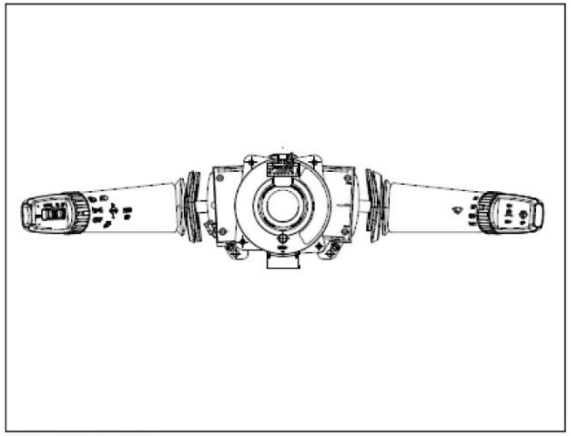
Ignition switch

▶LOCK: Turn off the power supply of the electrical system.

▶ACC: Turn the key clockwise to ACC and turn on the power supply of accessory. The cigarette lighter may be used for the vehicle while stopping driving.

▶ON: Turn the key clockwise to ON, and turn on the electrical system power supply.

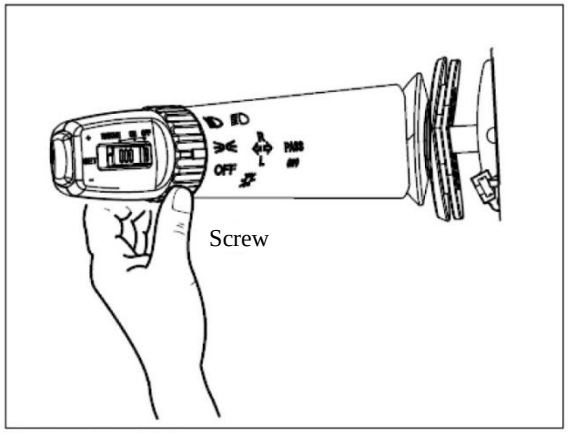
▶S: Continue to turn the key to the bottom, start the engine, and then the key will automatically reset to the ON position after releasing hand.



Combination switch

▶The combination switch includes: light switch, variable light switch, steering switch, cruise control switch; wiper switch, scrubber switch, and auxiliary brake switch.

▶The left handle has the function of light switch, dimmer switch, turn signal switch and cruise control switch.

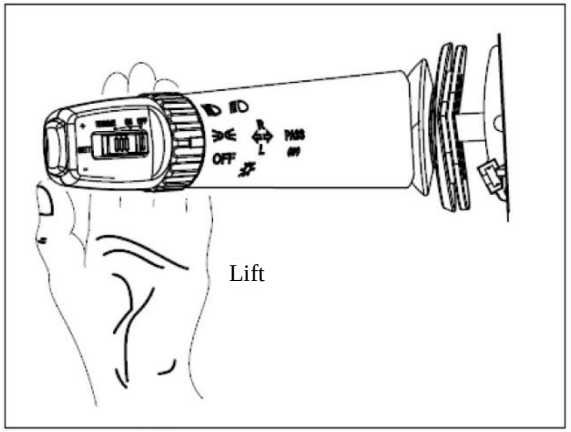


▶Light switch

- Close all lights when the left handle is in the OFF position.

- When turning the slip ring on the left handle to the position, the outline marker lamp (front and rear small lights), instrument light and rear license plate light are on.

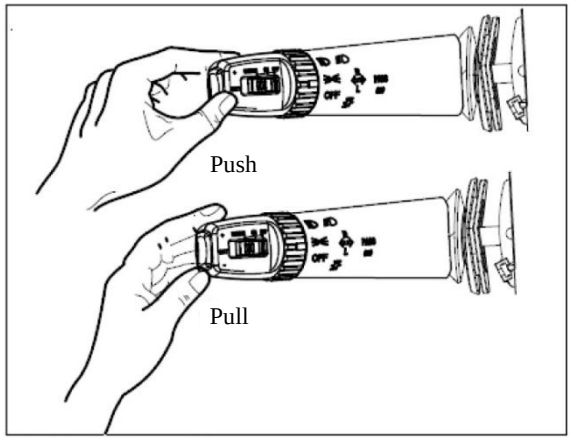
- When turning the slip ring on the left handle to the position again, the head lamp is on.



▶Dimmer switch

- In any case, the left handle is lifted up to turn on the high beam of head lamp. Alert the front or opposite vehicle. The rear handle will return to the position automatically after releasing hand, and the high beam lamp will be off.

- When the slip ring on the left handle is rotated to the position , lift the handle upward to turn on the high beam lamp, and lift it again to turn on the low beam lamp. Repeat the above operations, that is, to give the high and low beam alternating overtaking signals.

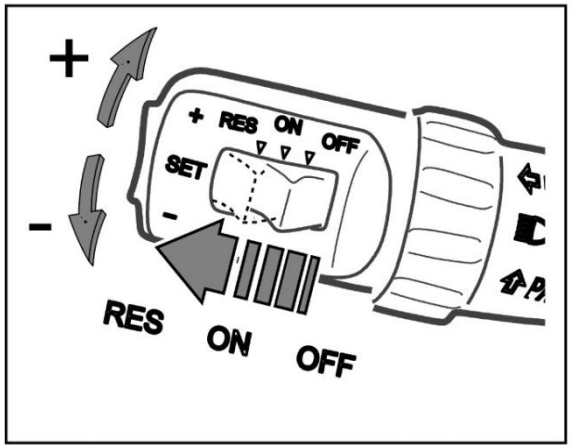


▶Turn lamp switch

- The turn lamp turns off when the left handle is in the middle position.

- When the left handle is pushed forward, the right turn lamp is on.

- When the left handle is pulled backward, the left turn lamp is on.



The cruise control function allows the engine to operate in a favorable speed range while allowing the vehicle to automatically maintain the speed and travel at a fixed speed. The driver does not need to control the accelerator pedal during this process.

⚠Caution

The cruise control function can only be used when the vehicle speed reaches 35km/ h. The cruise allowed maximum speed is 105km/ h. The system will automatically deactivate the cruise function when the vehicle speed drops below 35km/ h.

▶Starting of the cruise function

- Release the clutch pedal and brake pedal, turn off the auxiliary brake switch and set the main switch of the cruise in the ON position

▶Set the cruise speed

- Press the SET+ or SET- for a short time, then release it while releasing the accelerator pedal to activate the cruise function, and set the current vehicle speed to the cruise speed.

▶Increase/decrease cruise speed

- Press the SET+/SET-switch in a short time and then release it. The speed will be increased / decreased by 2 km/h on the current basis. Each time you press the switch, the vehicle speed will increase/ decrease by 2km/h and automatically set the increased/ decreased speed to the cruise speed.

- While pressing the SET+/SET- switch for a long time, the vehicle speed will increase/ decrease all the time on the current basis until this switch is released, and the increased/ decreased speed will be set to the cruise speed automatically.

⚠Caution

When the cruise function is not used, set the main switch of the cruise in the OFF position in order to turn off the cruise function. If the cruise main switch is in the ON position, the cruise function is likely to be activated accidentally, which is very dangerous.

▶Releasing of the cruise function

- The cruise function can be deactivated by any of the following methods

* Depress the clutch pedal.

* Depress the brake pedal.

* Place the exhaust brake switch in the ON position.

*The main switch is placed in the OFF position (the cruise function is also switched off).

⚠Caution

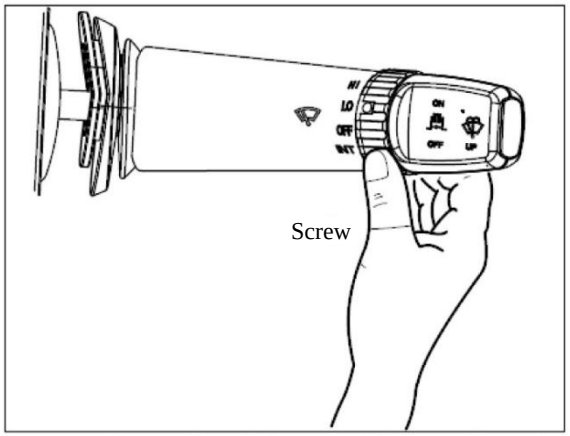
During cruise, if the accelerator pedal is pressed, the vehicle speed will be temporarily increased, but the cruise speed will not be increased. When the accelerator pedal is released, the vehicle speed will return to the original set cruise speed.

▶Recovering of the cruise function and cruise speed

- If the cruise function is relieved by means other than the main cruise switch (i.e. by pressing the clutch pedal or brake pedal or placing the auxiliary brake switch in the ON position), and the main cruise switch is still in the ON position, when the speed is over 35 km/h, press the RES switch for a short time and then release it, then the cruise function will be heavy. New activation, at the same time, the cruise speed is restored to the cruise speed set before the cruise function is released.

⚠Caution

If the cruise function is deactivated and turned off by using the cruise main switch, the SET+/SET-switch is needed to activate the cruise function again.



▶The right handle has the functions of wiper switch, windshield scrubber switch and auxiliary brake switch.

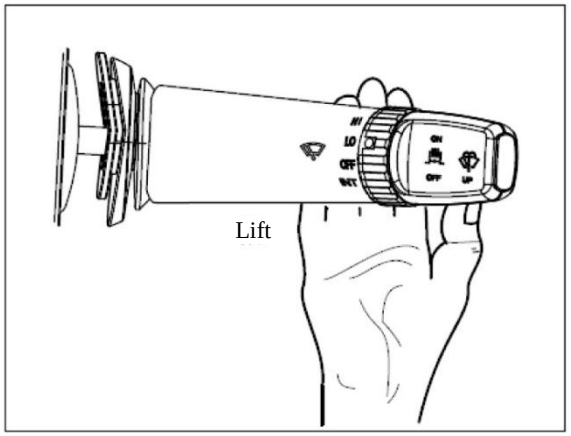
▶Wiper switch:

- When the sliding ring on the right handle is in the middle position (OFF), the wiper does not work.

- When the slip ring on the right handle is turned to "LO" position, the wiper operates at low speed.

- When the slip ring on the right handle is turned to "HI" position, the wiper operates at high speed.

- When the slip ring on the right handle is turned to “INT” position, the wiper is operating in an intermittent manner.



▶Windshield washer switch

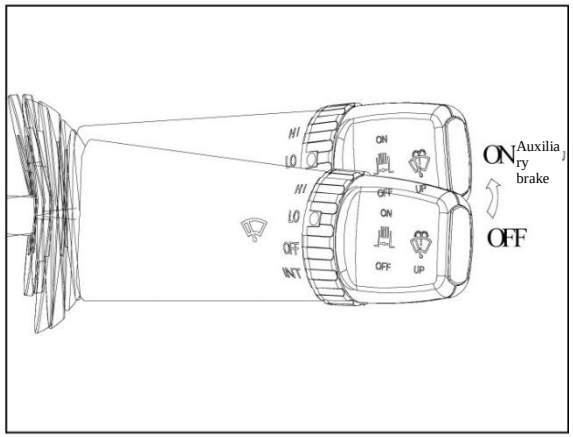
- Lift the handle upward so that the washing liquid is sprayed onto the windshield; Stop the injection after releasing hand.

- When the wiper switch is in "OFF" position and the washer switch is operated, the wiper will automatically wipe the water twice.

⚠Caution

⊙ The motor will be burnt if the scrubber continues to rotate for more than 20 seconds or without detergent.

⊙ Before using up the washing liquid, add the washing liquid to the liquid storage tank.



▶Auxiliary brake switch

It is used to absorb the energy of the engine to assist the braking system in reducing the speed of the vehicle, to reduce the wear of the braking system, especially when the vehicle is traveling downhill. The auxiliary braking system and conventional braking system are two sets of independent systems.

▶Activate the auxiliary braking function

- With the engine speed more than (1000 1500) rpm (varying from engine models), the driver can enable the auxiliary brake function according to the following way:

* Turn the auxiliary brake switch to the OFF position.

* Loosen clutch pedal;

* Loosen accelerator pedal;

- When the above conditions are met, the electronic control system will activate the auxiliary braking function and the auxiliary brake indicator lamp will be illuminated.

▶Release auxiliary braking function

- The driver may use any of the following methods to deactivate the auxiliary braking:

* Depress the accelerator pedal;

* Engine speed is lower than (1000～1500) rpm. (different models have different speeds)

* Turn the auxiliary brake switch to the OFF position.

- After the auxiliary braking function is deactivated, the auxiliary brake indicator lamp will go off.

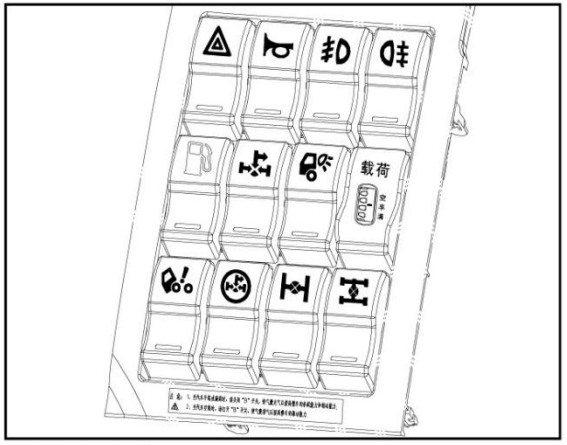
⚠Warning

⊙ When the engine brake is working, it is strictly prohibited to shift without stepping on clutch.

⊙ When the user does not use the auxiliary braking function, set the auxiliary brake ON/ OFF switch to the OFF position to turn off the auxiliary braking function to prevent the auxiliary braking function from being activated accidentally.

⊙ Do not use the auxiliary brake function while the vehicle is in neutral during driving.

Engine model	Auxiliary engine braking recommended speed range (r/min)
CA6DL	2000~2400
CA6DM2	1800~2200
CA6DN1	1800~2200
CA6DK1	2200~2600



Function switch

▶Located in the middle part of the instrument panel.

- The number and arrangement of functional switches are based on the actual vehicle configuration.

▶Hazardous alarm switch

—The switch is red.

- Press the switch and the left and right turning lights flicker at the same time. Press again and turn the left and right lights out at the same time.

▶Front fog lamp switch

- Use the front fog lamp when foggy or dusty.

- Press the front fog light switch and turn on the indicator. Press it again, reset the switch and turn off the indicator.

▶Rear fog lamp switch

- When foggy or dusty, use the rear fog lamp in order to alert the rear vehicle.

- Only when the front fog lamp is turned on, the rear fog lamp can be turned on by turning on the rear fog lamp switch.

▶Working lamp control switch

- When the switch is pressed and connected, the working lamp switch and the relay work together to supply power for the rear working lamp.

▶Speaker change-over switch

- When the switch is pressed, the air horn is in a working state. When the switch is pressed back, the electric horn is in a working state.

▶Overturn switch of the cab

- After turning the ignition switch to the "ACC" gear, press the switch, and then operate the cab overturn mechanism outside the vehicle to achieve the cab lifting and falling (see the section of "Cab Overturn Mechanism").

▶Control switch of on-board crane 吊机

- When the switch is pressed, the control relay contacts of the on-board crane are connected to supply power to the control device of the crane.

▶Inter-axle differential lock switch

- Used to lock the inter-axle differential between the middle axle and the rear axle.

- The indicator lamp illuminates when the differential lock is engaged.

- Pressing the switch upward, the differential lock is disengaged and the indicator lamp is off.

▶Inter-wheel differential lock switch

- The inter-wheel differential lock is used to lock the inter-wheel differential between the middle and rear axles at the same time.

- When the vehicle is in the stop state or at the speed equivalent to walking, the inter-wheel differential lock is operated by the push-key switch.

- After the vehicle passes the bad road, the differential lock shall be deactivated immediately, and the accelerator shall be released, and the clutch shall be depressed, and the differential lock switch shall be pressed back to the original position, and the differential lock function shall be deactivated after the switch indicator lamp is off.

⚠Caution

⊙ Engage the inter-axle differential lock and then engage the inter-wheel differential lock.

⊙ When the inter- wheel differential lock indicator lamp is on, the vehicle must not turn.

▶ECAS drive help switch

- When the switch is pressed, the ECAS controller is driven to control the float bridge to rise. When the speed reaches the limit, the float bridge falls automatically.

▶Floating bridge lift switch

- On the premise that the driving axle is not fully loaded, press the switch to lift the pontoon. If the float bridge lifting is successful, the float bridge lifting indicator lights up on the instrument.

- Press this switch again, or when the driving axle load exceeds the set load, the floating axle falls automatically and the lifting indicator of the floating axle goes out.

▶ASR mandatory switch

- Self-reset switch. When driving on ice and snow road, press the switch. The controller receives the trigger signal to control the anti-side-slip system, and then press the first switch upward to relieve the working state of the system.

▶Power takeoff switch

- Press this switch and the power takeoff lamp on the dashboard will be ON. When the power takeoff is in operation,

▶Parking power takeoff switch

- Press this switch and the power takeoff lamp on the dashboard will be ON. When the power takeoff is in operation,

⚠Caution

⊙ When driving requires a PTO to work, it is necessary to press the PTO switch.

⊙ When parking requires a PTO to work, it is necessary to press the PTO switch and the power take-off device.

▶Inductive load control switch B

- When the switch is pressed, the floating bridge brake solenoid valve is forcibly controlled to work.

▶Fuel preheating switch

- When the switch is pressed, the driving relay controls the heating system of the oil pipe and the fuel fine filter.

⚠Caution

If the ambient temperature is above 0℃, the fuel preheating switch must be closed.

▶PTO switch PTO

- When the PTO switch is pressed, the engine works at the target speed stored in advance by PTO, and the throttle pedal loses its function.

- When PTO switch is pressed, the conversion between manual throttle and pedal throttle is realized. When the engine ECU responds to the position sensor signal of the hand throttle, the throttle pedal loses its function.

▶PTO adjusting increment switch SET

— In the engine PTO mode, the engine speed is increased by operating the PTO adjusting increment switch (i.e, "Set+" signal). When the switch is pressed at the point, the starting speed increases according to the calibrated increment (50 revolutions per time). When the switch is pressed for a long time, the engine speed rises linearly according to the calibration slope (200 rpm/s). Press and hold the button until the upper limit of the engine PTO speed is calibrated.

▶PTO adjusting decrement switch RESUME

- In the engine PTO mode, the engine speed is decreased by operating the PTO adjusting decrement switch (i.e., "Resume-" signal). When the press switch is pressed at the point, the engine speed decreases according to the calibration increment (50 rpm/time). When the switch is pressed for a long time, the engine speed decreases linearly according to the calibration slope (200 rpm/s) until the lower limit of engine PTO speed is calibrated.

▶PTO speed regulating switch

- In the engine PTO mode, the engine speed regulation is realized by operating the PTO speed regulating switch.

- Press the switch upward to increase the engine speed. When the switch is pressed on the upward point, the engine speed increases according to the calibrated increment (50 revolutions per time). When the switch is pressed upward for a long time, the engine speed rises linearly according to the calibration slope (200 rpm/s) until the upper limit of the PTO speed of the engine is calibrated.

- Press the switch downward to reduce the engine speed. When the switch is pressed on the downward point, the engine speed decreases according to the calibrated decrement (50 revolutions per time). When the switch is pressed downward for a long time, the engine speed decreases linearly according to the calibration slope (200 rpm/s) until the upper limit of the PTO speed of the engine is calibrated.

▶Two-gear fuel-saving switch 经济 动力

- The two-gear fuel-saving switch is divided into two gears with the identifiers of "economy" and "power".

- According to the vehicle load, the driver can switch the "dial wheel" on the switch to the corresponding gear.

- Economic gear: It is recommended to use no-load flat road and simple road condition.

- Power gear: It is recommended to use when full load, climbing or complicated road conditions require power.

- The fuel-saving switch needs to cooperate with the electronic control unit to work. When the electronic control unit receives the working condition signal marked by the fuel-saving switch, the electronic control unit will automatically limit the engine's torque and speed according to different working conditions so that the engine can run in the specified torque and speed region so as to achieve the purpose of saving fuel consumption of the whole vehicle. When the value change causes the fault, the engine will automatically return to the power section of the "power gear" to run, and then the instrument fault alarm lamp will be ON.

▶Three-gear fuel-saving switch 节 油

- The three-gear fuel-saving switch is divided into three gears with the identifiers of "empty", “half” and "full". Among them, "empty" means "no load", "half" means "half load", and "full" means "full load". According to the vehicle load, the driver can switch the "dial wheel" on the switch to the corresponding gear.

- The fuel-saving switch needs to cooperate with the electronic control unit to work. When the electronic control unit receives the working condition signal marked by the fuel-saving switch, the electronic control unit will automatically limit the engine's torque and speed according to different working conditions so that the engine can run in the specified torque and speed region so as to achieve the purpose of saving fuel consumption of the whole vehicle. When the switch breaks, short circuit and the fault caused by the change of resistance value, the engine will automatically return to the overload power section. At the moment, the instrument fault alarm lamp will be ON, and the fault code will be displayed.

▶Power supply control switch

- The power supply control switch is special for dangerous goods transport vehicle, and is in a self-reset form.

- In special or emergency situations, stop first. It is necessary to open the protective cover of the switch and press the switch to realize the power cut-off when the power supply of the whole vehicle is disconnected except the normal power supply during driving.

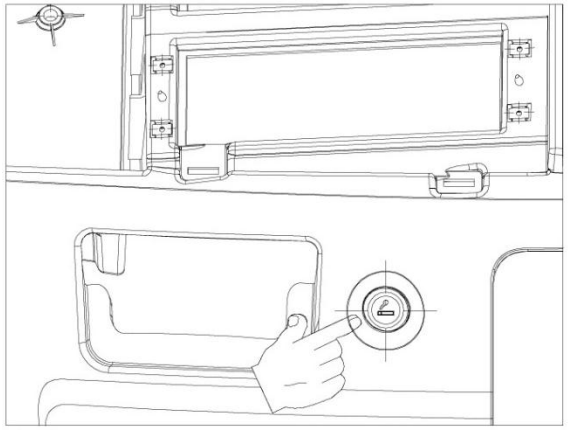
- When the power control switch is pressed, it is necessary for starting the vehicle again to ensure that the key is in the LOCK gear. At the moment, turning the key to the START gear can start the vehicle normally.

⚠Caution

⊙ When a vehicle is running, it is forbidden to operate the power control switch.

⊙ If you need to disconnect all the power supply of the vehicle, you must operate the manual power supply main switch on the chassis.

⊙ When the switch is not controlled by the power supply, make sure that the protective cover of the switch is in a closed state, so as to avoid the hidden danger of sudden power fault caused by mis-touch operation.



Cigarette lighter

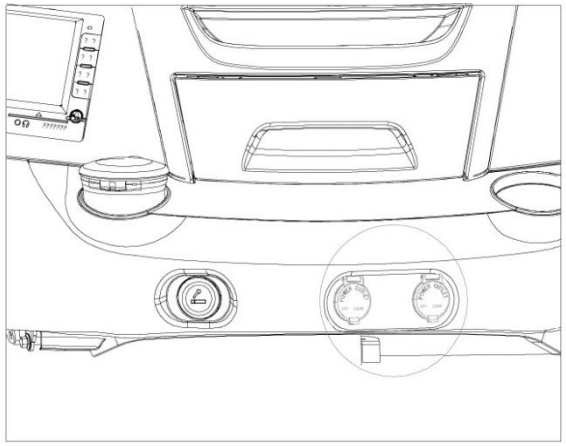
▶ The cigarette lighter is located in the lower middle part of the instrument panel. Press the key, after the resistance wire is red, the key will pop up, and then the key can be pulled out and used.

Ashtray

▶ The side of the cigarette lighter is equipped with a ashtray.

▶ The cigarette ends and matches shall be completely extinguished and then put into the ashtray. When used, the ashtray cover must be covered.

▶ Do not put articles other than the cigarette ends or be full of cigarette ends, otherwise it is easy to cause fire.



24V Power supply socket

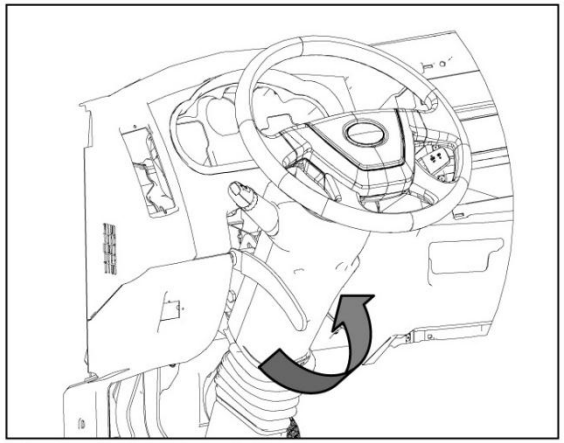
▶ The 24V power supply socket is located in the middle of the dashboard and on the right side of the cigarette lighter. The figure shows two 24V power supply sockets in the circle, which can supply power for 24V power equipment.

▶ Open the power supply socket cover plate, and insert the electric equipment into it in order to use.

⚠Caution

⊙The power of the electrical equipment connected to each 24V power supply socket shall not exceed 120W.

⊙Do not insert metal or other conductors into 24V power supply socket.

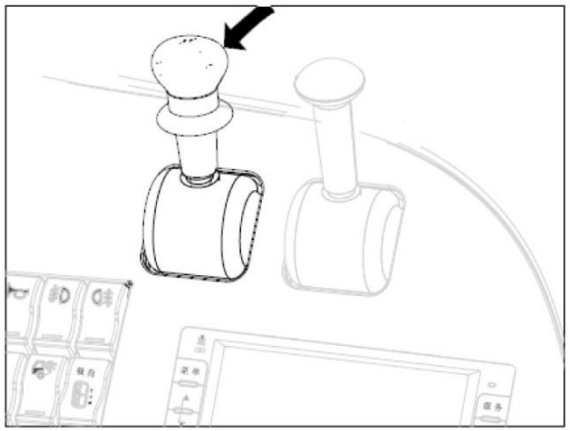


Steering wheel lock handle

▶The steering wheel lock handle is on the steering column. Firstly, the locking handle is pulled counterclockwise according to the figure above, until the locking handle is released, the position of the steering wheel can be adjusted.

▶The steering wheel can slide and swing forward and backward. The adjustment distance between upper and lower is 65.1 mm, and the adjustment angle between front and rear is ±5.5 °mm.

▶ After adjustment, the lock handle is pulled clockwise until the lock handle is locked.



Parking brake valve (referred to as manual valve)

▶The brake valve is located on the dashboard.

▶When braking, pull the left brake valve back to the bottom.

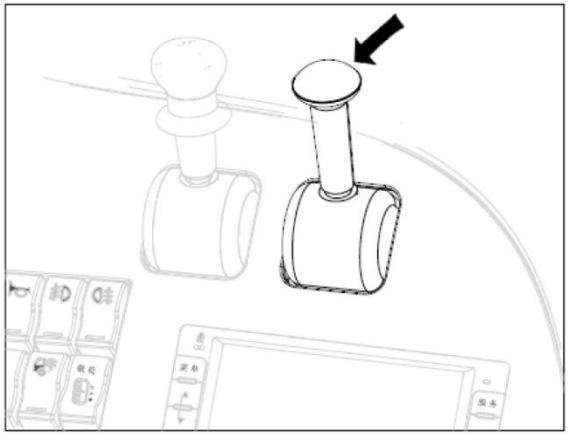
▶When the brake is released, lift the manual valve control lever 1 upward, and push the handle forward to the bottom.

▶In case of emergency, parking braking can be used as emergency braking, but the service braking cannot be replaced for a long time.

⚠Caution

⊙ Before loosening the manual valve, confirm that the air pressure has reached 0.055MPa. Do not force to start.

⊙ After long-term parking, when the air pressure of the air storage tank drops below 0.5 MPa, the re-charging must reach 0.75 MPa before the parking brake can be released.



Trailer brake valve

▶Only used to control the trailer braking.

▶When the trailer is braking, pull the right brake valve back to the bottom.

▶In the case of downhill, push down the trailer brake valve to control the speed of the trailer to prevent the trailer from collision with the tractor.

▶ The braking force of the trailer brake is proportional to the angle of the brake handle.

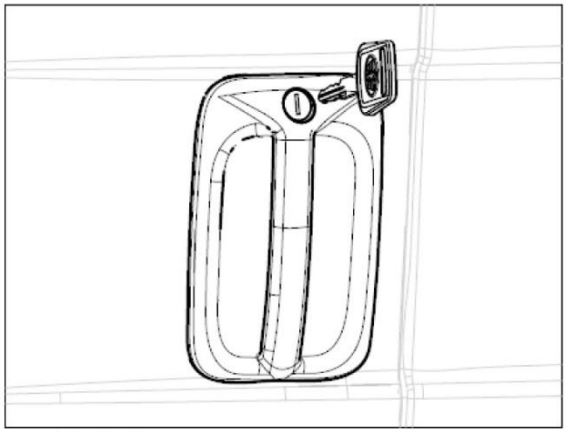
▶Releasing the hand, the trailer brake valve handle will automatically return to the release (travel) position.

▶Even if trailer braking is used, other normal braking operations can be carried out.

⚠Caution

⊙ The trailer brake shall not be used as the parking brake.

⊙ Long-term continuous use will cause the trailer brake to overheat and avoidance should be mad.



Door opening/closing

▶Operation of door lock (operation outside the vehicle)

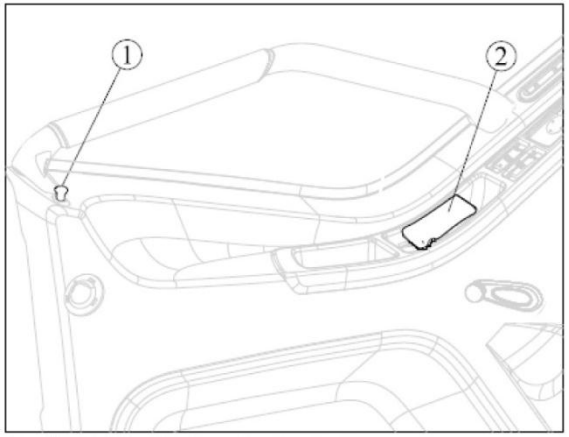
- After opening the door lock, pull the outside handle to open the door.

- Only keys can be used to lock doors outside the vehicle.

⚠Caution

⊙ Before opening the door, pay attention to whether there is a pedestrian or follow-up vehicle before and after the door is opened, and the door can be opened only after the safety is confirmed.

⊙ Before starting, please confirm that the door is closed tightly.



▶Operation of door lock (operation inside the vehicle)

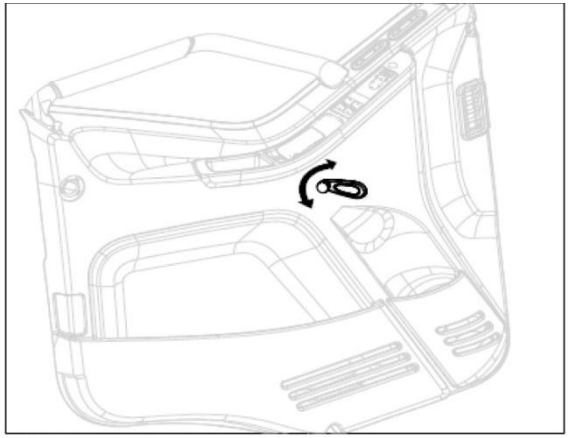
- Close the door, and press the inner lock button ① to lock the door.

- Pull up the lock button and pull the handle. Push out the door and the door can be opened.

⚠Caution

⊙ If the door is not closed in place, the door alarm light is on, remind you to close the door. If the door is not closed in place, the door alarm light is on, remind you to close the door.

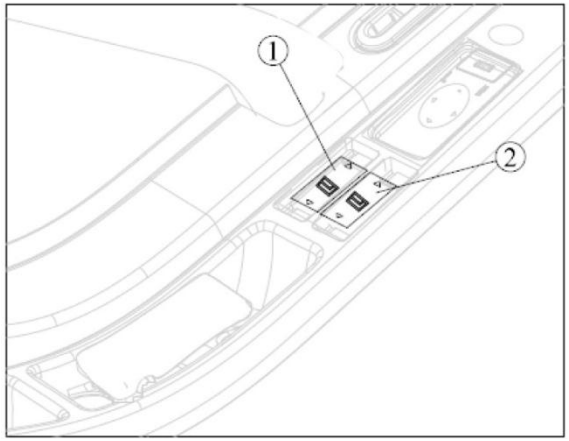
⊙ The door alarm lamp is a two-gear circular switch. Press the door alarm light to always turn on, and then press it again to enter the door alarm status.



Window regulator

▶Operation of manual window regulator

- Shake the window regulator handle to allow the door glass to rise and fall.



▶Electric window regulator

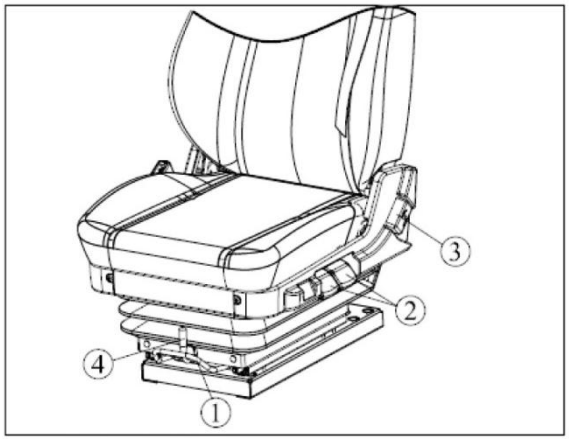
- At the driver's side, you can control the window regulator of the left and right doors.

- ①Press the left button to control the left door.

- ②Press the right button to control the right door.

⚠Caution

In controlling the lifting of right door glass, the right key on the left door takes precedence over the control key on the right door.



Driver's seat

There are four functions:

- ①Front and rear adjustment of the seat.
- ②Height adjustment of front and rear of seat cushion.
- ③Seat back angle adjustment.
- ④Seat cushion stiffness lock adjustment.

① Front and rear adjustment of seat

- When adjusting the front and rear positions of the seat, pull the front and rear adjusting handle upward, adjust the seat to the desired position by the force of the body, then release the handle and lock the seat.

② Height adjustment of front and rear of seat cushion.

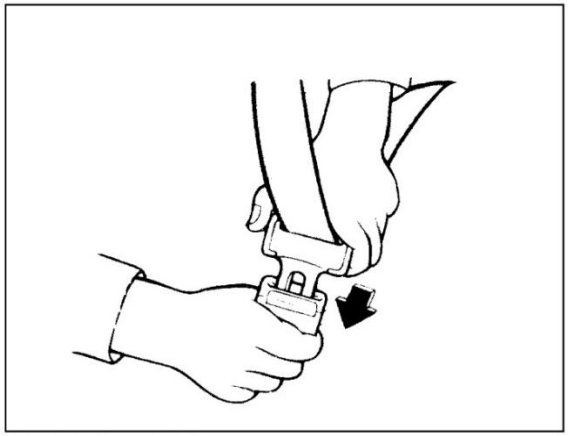
- When adjusting the front height of the seat cushion, lift the front height adjustment handle upward, change the front height of the seat cushion by the body pressure, then release the handle and lock the seat; if you want to adjust the rear height of the seat cushion, lift the rear handle and operate as the above.

③ Seat back angle adjustment

—Pull the angle adjustment handle forward, adjust the seat back to the appropriate angle with the force of the back of the body, then release the handle and lock the seat back.

④ Seat cushion stiffness locking handle

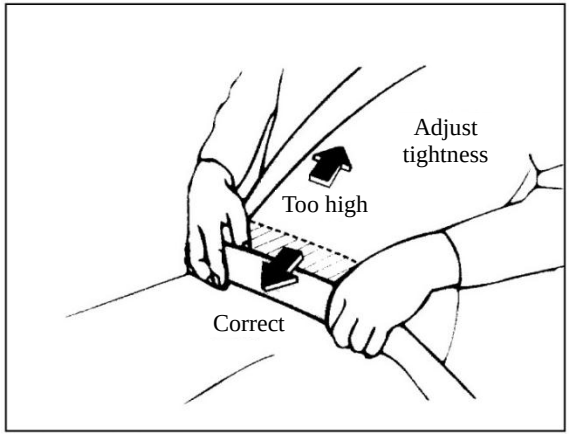
- Normally, the adjustment handle is in the horizontal position and the anti-vibration system works normally.
- In the case of poor road conditions, pull the adjusting handle upward to lock the anti-vibration system and turn into the fixed seat.



Seat safety belt

⚠Warning

Based on the fact, safety belt can effectively protect passengers, avoid and reduce passenger casualties. Therefore, in the spirit of the safety first spirit, the Company reminds you that the safety belt must be fastened when driving.

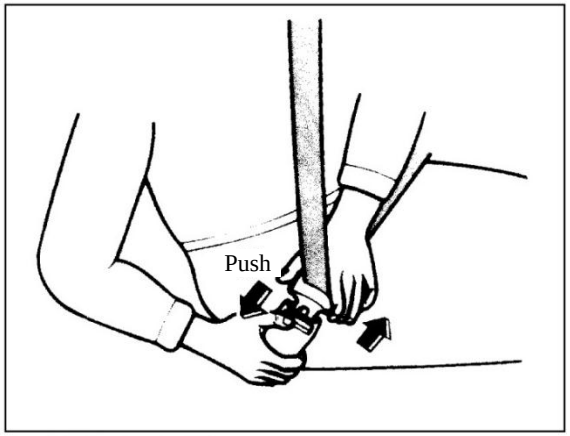


▶Fasten the safety belt

- Sit on the seat so that the back of body comfortably rests on the back of the seat, slowly pull out the tongue and insert the buckle until the buckle sounds.

⚠Caution

The position of safety belt shall be lowered to the hip position as far as possible, and it shall not be placed in the waist position. Then pull the shoulder belt upwards so that the belt is tight.



▶Release the safety belt

- Press the red key in order to automatically withdraw the woven tap.

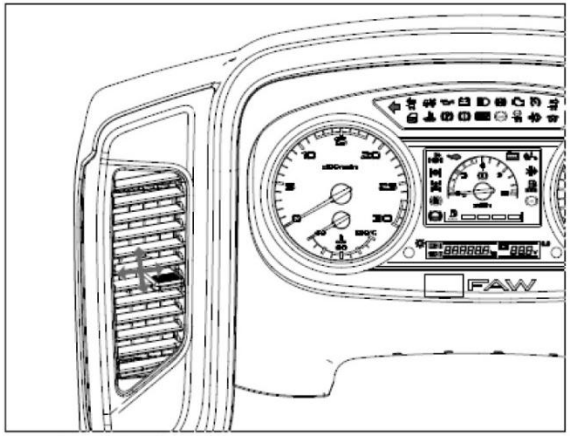
⚠Warning

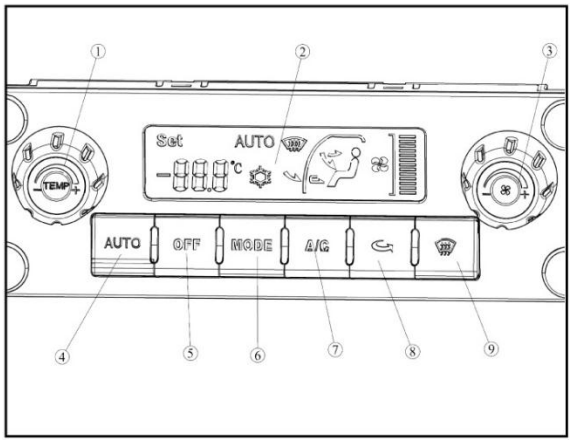
⊙ During vehicle driving, it is not allowed to put back the seat back; otherwise, when the emergency braking occurs, the passenger's body will be escaped from the safety belt, leading to accidental serious injuries such as reined neck, and broken cervical vertebra, etc.

⊙ When the safety belt is impacted by collision, the safety belt shall be replaced even if the safety belt is not found to be damaged.

⊙ When tightening the safety belt, make sure if the safety belt is twisted. The twisted part has a small area, so the local pressure applied to the body is too large, and there is a danger.

Ventilation and air conditioning unit





Cab ventilation

▶Forced ventilation

- With the fan, the outdoor fresh air is forced into the chamber, and blown to the required position through the ventilation grille at the instrument panel and the air outlet, thus the ventilation of indoor ventilation is realized.

- Adjust the horizontal and vertical blades of the ventilation grid to adjust the wind direction.

- Adjust the dial wheel under the grille so as to adjust the air volume or close completely.

Air conditioning unit

▶The panel of air conditioning control mechanism is shown in the figure.

- ①Temperature setting knob
- ②Temperature, state and air flow display zone
- ③Air volume setting knob
- ④Automatic control button
- ⑤System close button
- ⑥Blower port switch button
- ⑦Air conditioner switch
- ⑧Inner and outer air conversion button
- ⑨Defrost button

▶Temperature setting knob①

- The knob controls the temperature level, and the clockwise rotation allows the temperature to gradually increase, otherwise, to decrease, and it can rotate 360 degrees.

▶Temperature, state and air flow display zone ②

- Temperature display

* The temperature range in the vehicle is (-40-80) ℃, and the set temperature range is shown as LO, (18-29) ℃and HI respectively. LO is in a forced refrigeration state, and HI is in a forced heating state.

* When the temperature is set, the LCD screen displays "Set" and sets the temperature value. After the temperature is set, the temperature in the vehicle will be restored in about 5 seconds.

Functional button description

This system adopts the principle of automatic control, manual priority, one-button control and rear key priority.

▶Automatic control

- After the "AUTO" key is pressed, the system resumes its previous operation mode and begins to control itself. LCD displays "AUTO".

- When the temperature in the vehicle is higher than the set temperature and the temperature difference is greater than 1 ℃, the compressor is turned on, the air conditioning begins to refrigerate, and the LCD screen displays.

- When the temperature in the vehicle is lower than the set temperature and the temperature difference is greater than 1℃, the compressor is forbidden to open and the LCD screen will not display.

- When the difference between temperature in the vehicle and the set temperature is less than 1℃, the system keeps in the above state.

- When the temperature is set to LO, the system is in a forced refrigeration state. When the temperature is set to HI, the system is in a forced heating state.

▶Manual control

The functions of knobs and keys can be chosen manually through manual controls while other functions can remain an automatic state. The display screen does not display "AUTO".

- Temperature setting knob ①: (1) Rotate the setting temperature clockwise until it reaches HI gradually. Conversely, set the temperature down until LO is reached.

- Air volume setting knob ③: Clockwise rotate the knob to increase the air volume gradually, and vice versa.

- Air outlet mode conversion button ⑥: Press the MODE key, The air outlet mode circulates in the order of blowing surface → blowing surface / blowing foot → blowing foot → blowing foot for defrosting. If the initial state is defrosting, it will exit the defrosting state. The LCD screen will display the corresponding pattern of each outlet mode.

- Internal and external air conversion button ⑧: Press the button to change the air conditioning between the internal and external air extraction modes, and the LCD screen displays the corresponding pattern.

- Defrosting button ⑨: If the system is in a non-defrosting state after pressing, it will enter a defrosting state. The air outlet mode is automatically converted to the defrosting mode, and the air intake mode is converted to the external air intake mode. If the system is in a defrosting state, it exits the state and returns to the memory state.

- A/C switch ⑦: After it is pressed, the system enters the refrigeration mode and the LCD screen displays. And after it is pressed again, the system exits the refrigeration mode.

⚠Caution

⊙ Under normal environmental conditions, it is more appropriate to set the temperature in the range of (22-26) ℃.

⊙ When the temperature is set on the LO or HI gear, the system will operate in a full refrigeration or heating mode, which can realize cooling, heating and defrosting more quickly.

Caution

⊙ When it is necessary to melt the ice and snow on the outside of windshield glass, the internal and external air transfer knob should be placed in the internal circulation position.

⊙ When it is necessary to melt the ice and snow on the inside of windshield glass, the internal and external air transfer knob should be placed in the external circulation position.

⊙ When heavy rain causes humidity increase in the cab and fogging on the inside of windshield glass, the A/C switch should be turned on and the compressor should be started to dehumidify the cab air.

In case of heavy rain or much dust in the outside of the cab, the internal and external gas conversion buttons shall be placed in the internal cycle state.

⊙ When using the heater for defrosting, the engine coolant temperature should be above 60 ℃.

⊙ In order to avoid the excessive temperature of engine cooling water, the use of air-conditioning should be stopped when the vehicle works continuously at low speed and heavy load (such as climbing).

⊙ In parking, the fan switch should be placed in the OFF position, and the internal and external air switch button should be placed in the position to prevent indoor dust.

⊙ Under idle conditions, air conditioning should not be used for more than 30 minutes.

⊙ In order to prevent dust from entering the cab, the external air filter should be maintained regularly. Under normal environment, it is recommended to clean the filter element every 5 000 km and replace it every 30 000 km. In the environment of poor air quality, the period of filter element cleaning and replacement shall be properly shortened.

⊙If the air conditioner is used for a long time under the internal air circulation, the air exchange switch button should be placed in the external air position to introduce fresh air in order to keep the indoor air fresh.

⊙ The refrigerant of air-conditioning system must be filled regularly with HFC-134a according to the regulations in the warning label of air-conditioning operation and maintenance. The designated refrigeration oil must be used in the air conditioning system (See the label on compressor body).

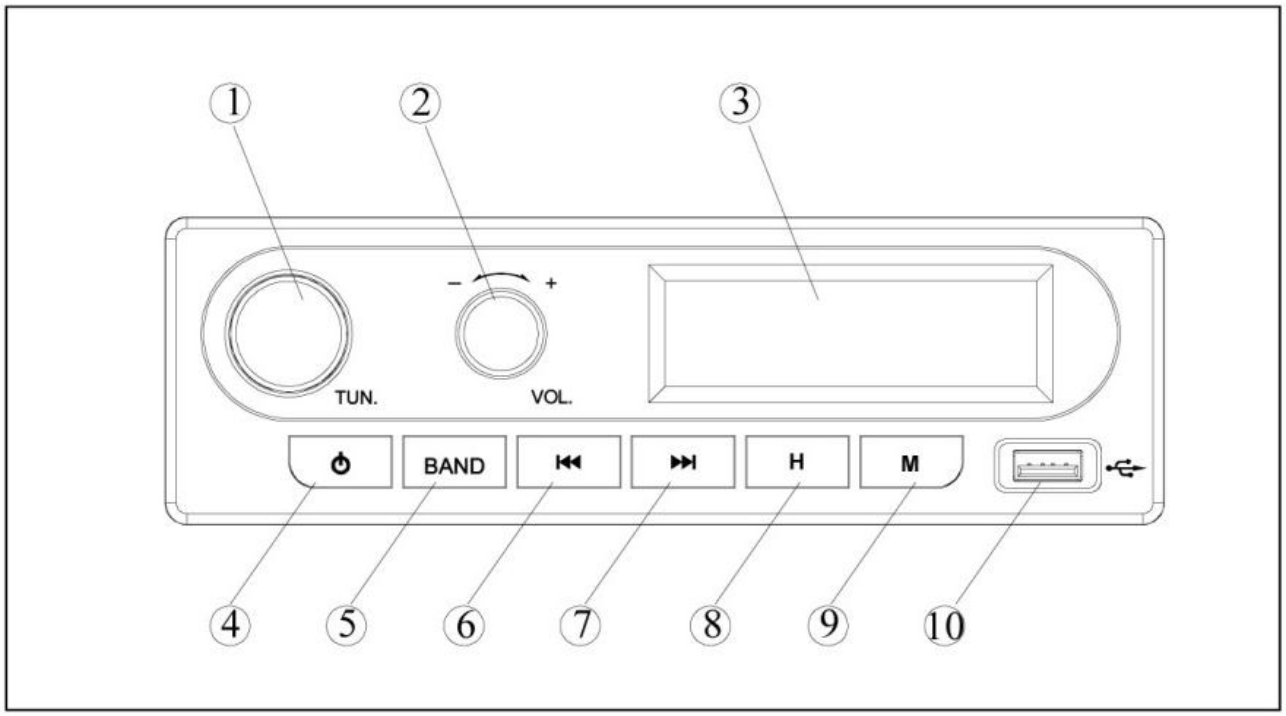
⊙ The specified brand engine coolant should be used, with no water being added, to prevent the heater core from corrosion.

Receiver

Caution

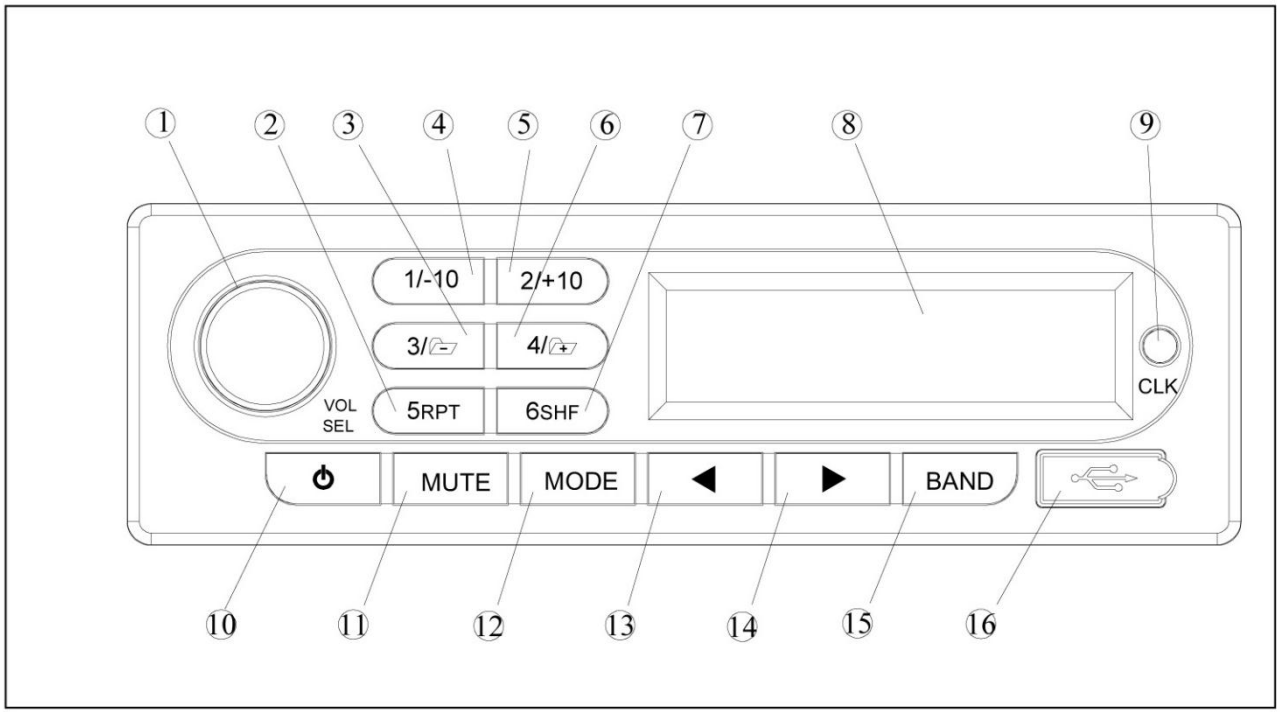
When parking, if the radio is used, the ignition switch key should be

Mechanical tuning receiver (J6P)



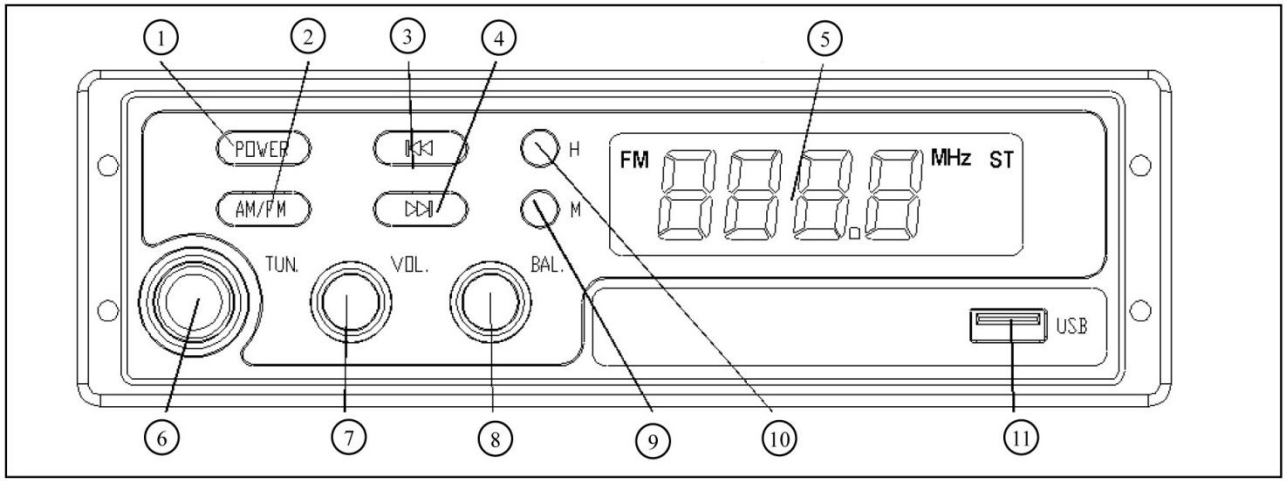
① Tuning knob; ②Volume knob; ③ LCD screen; ④ Power switch; ⑤Band selection
⑥ Last song ⑦ Next song ⑧ Clock hour setting ⑨ Clock minute setting ⑩ USB interface

Electronic tuning receiver (J6P)



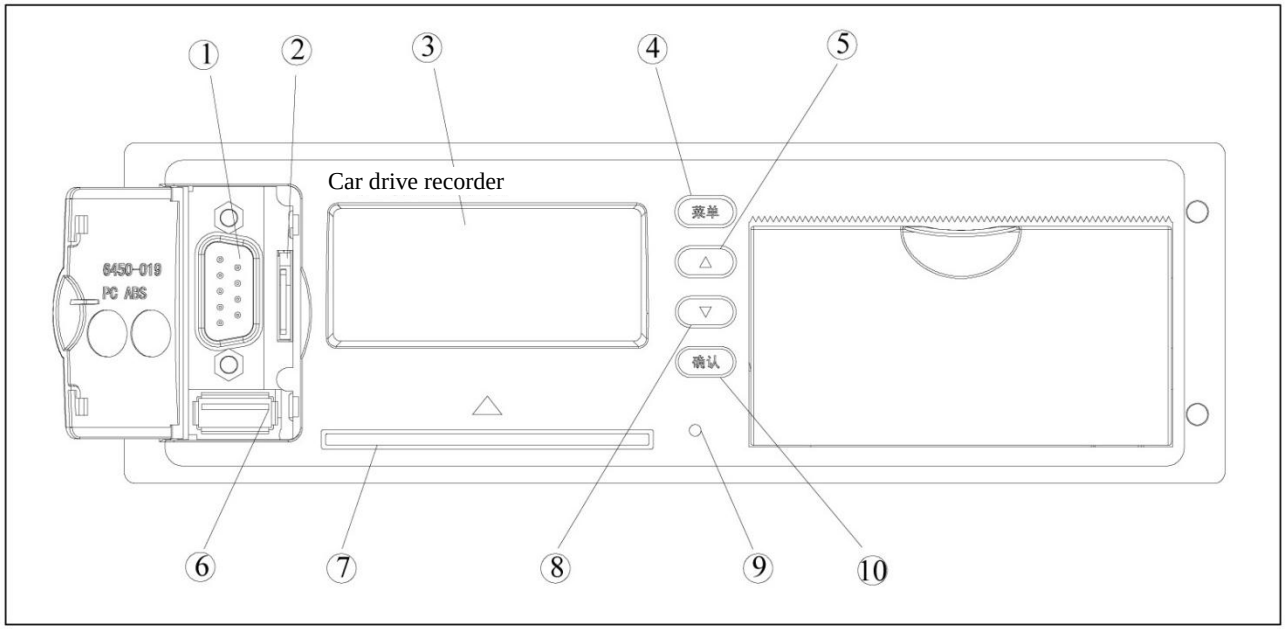
① Volume knob; ② Memory 5-key/circular play; ③ Memory 3-key/last front folder; ④ Memory 1-key/forward 10 songs; ⑤ Memory 2-key/backward 10 songs ⑥Memory 4-key/next folder; ⑦Memory 6-key/random play; ⑧LCD screen; ⑨clock settings; ⑩power switch, and ⑪ mute ⑫ Mode switching; ⑬ Last song; ⑭ Next song; ⑮ Band selection; ⑯ USB interface.

Receiver (J6M)



① Power switch; ② AM/FM conversion button; ③ Last song; ④ Next song; ⑤ LCD display; ⑥ Turning knob ⑦ Volume knob; ⑧ Balance knob; ⑨ Clock minute setting; ⑩ Clock hour setting; ⑪ USB socket.

Driving record



①RS232 interface ② TF card slot, ③ LCD screen, ④ Menu key, ⑤ Up-turn key

⑥USB interface ⑦ IC card slot ⑧ Down-turn key ⑨ Speaker mouth ⑩ OK key

Caution

When not in use, RS232 interface and USB interface should be covered to prevent static electricity.

Overturn mechanism of the cab

⚠Warning

⊙ Before the cab is turned over, the vehicle shall be parked on the horizontal surface, and the transmission shall be placed in neutral position, and the manual valve shall be pulled up, the door shall be closed, and the outer panel of front wall shall be open.

⊙ During the turnover and fall-back of the cab, no body can be allowed in the front and rear of the cab.

⊙ The cab must be turned over to the maximum angle. Do not start the engine and other operations when driving does not reach the maximum turnover angle.

⊙ After the cab falls back, it is necessary to confirm that the cab is locked. The vehicle can be driven only after confirming that the cab turnover alarm lamp is off.

During driving, the reversing lever must be in the fall- back position of the cab.

⚠Caution

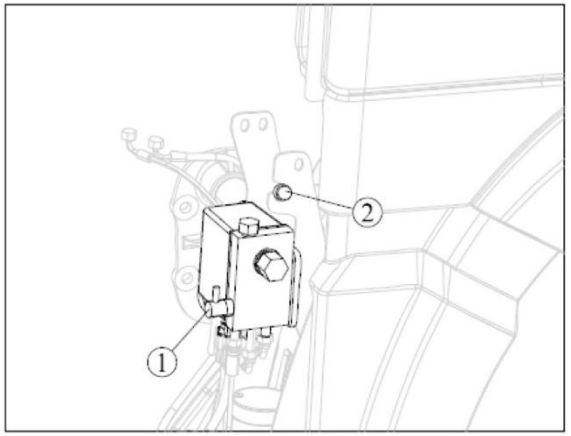
⊙ Before driving, the position of the reversing rod on the oil pump should be checked and confirmed.

⊙ Be sure to keep the environment clean during oil filling, so as to avoid dust, fiber, feather and other foreign matters into hydraulic oil.

⊙ The working medium of the overturn mechanism is No. 10 aviation hydraulic oil, and other types of oil shall not be mixed.

⊙ When washing vehicles or repairing engines, special attention should be paid to avoid damaging oil pipes and wires in the system. No water is allowed to enter the oil filling port of the oil pump.

⊙ The continuous operation of electric drive pump shall not exceed five times (although the protection circuit of motor is set internally, the excessive heat will reduce the service life of the motor).



Electric cab flip forward

▶Turn on the "cab overturn switch" on the cab interior function switch.

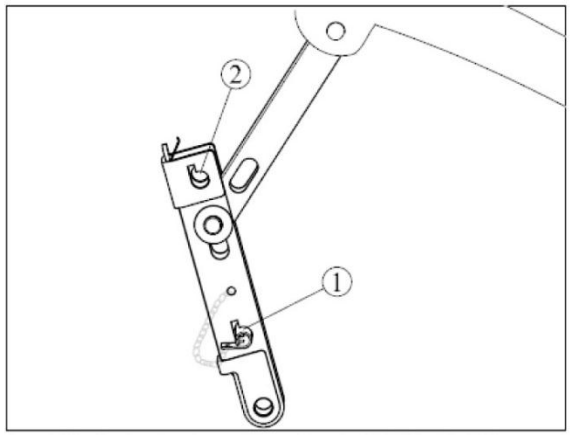
▶Open the front outer panel.

▶Turn the reversing rod① to the forward turnover gear and press the switch. At this moment, the cab begins to roll forward. The cab stops flipping until the maximum distance. Loosen the switch and stop the hydraulic cylinder.

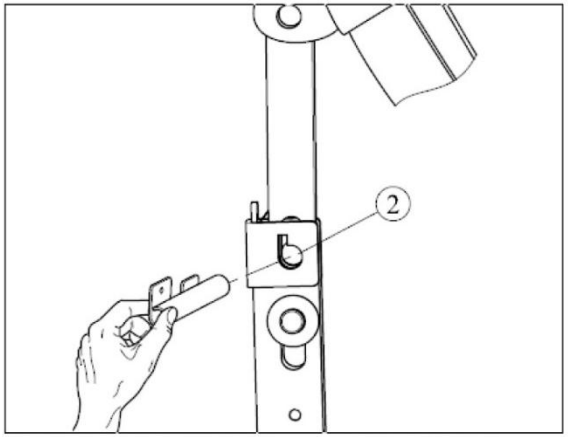
▶The switch② is normally open. The hydraulic cylinder work is step less. The switch can be released at any time to stop the cab at any position.

⚠Caution

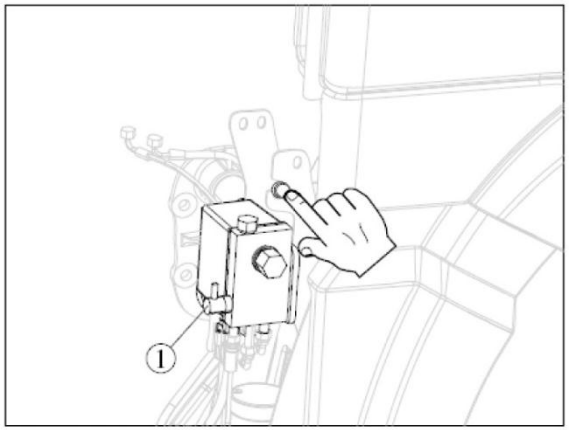
The direction of operation of the change-over switch shall be subject to the identification on the manual/ electric oil pump.



▶After the cab is turned over, the insurance pin ① is screwed out.



▶Insert into the lock stop hole ② to lock the brace rod.

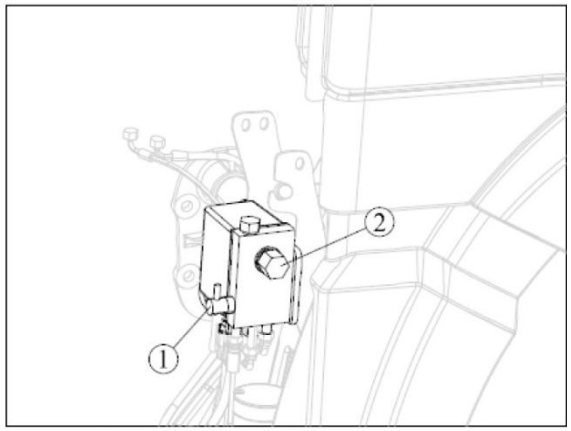


Electric cab fall- back

▶Turning the change-over switch① to the fall-back gear, and pressing the switch, the cab will start to fall back. After the cab falls to the lowest point, the lock tongue in the hydraulic lock fastens the lock plunger, and releasing the switch, the hydraulic cylinder will stop working.

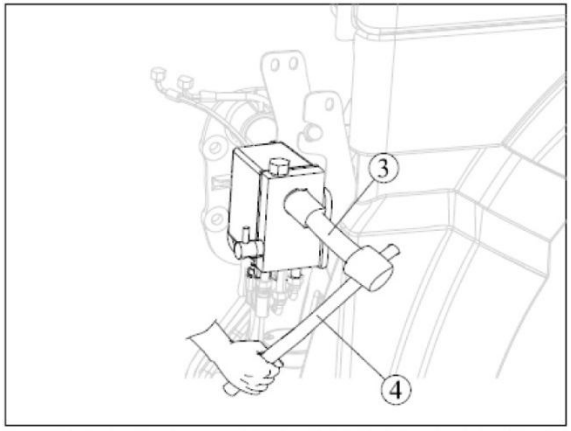
⚠Caution

In the case of battery shortage or motor pump fault, use a manual pump to realize a cab overturn.



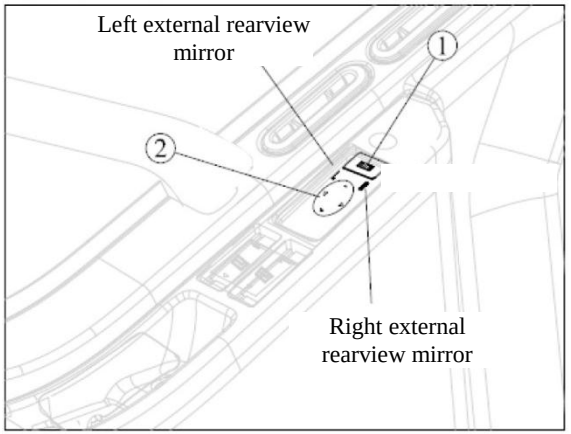
Manual front turning and fall-back of cab

▶Turn the reversing rod ① so that it is in an upward or downward position.



▶With the connecting sleeve ③ and the pressure bar ④ in the vehicle-mounted tool, insert the connecting sleeve into the hexagonal turning head ② of the manual pump, then insert the pressure bar into the hole on the sleeve, and shake it up and down to make the cab roll forward or fall back to the body accessories.

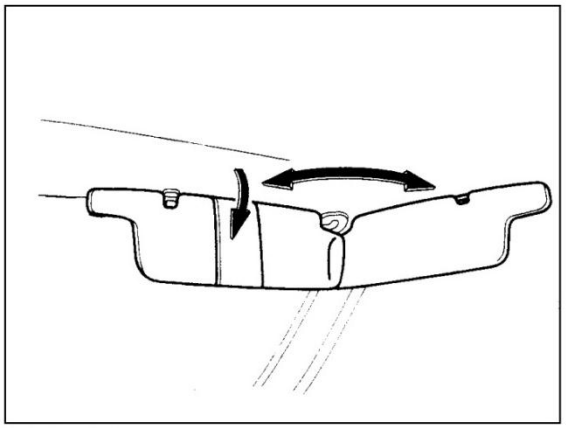
Body accessories



Electric exterior rearview mirror

▶It has the following functions:

- ① Left and right rearview mirror conversion
- ② Angle adjustment of rearview mirror

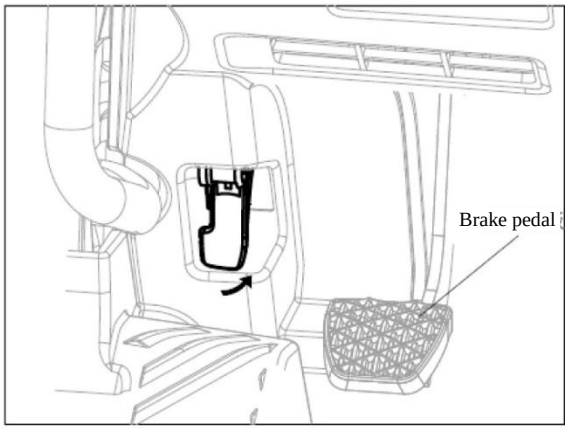


Sun visor

▶In case of direct sunlight during driving, the sun visor can be lowered.

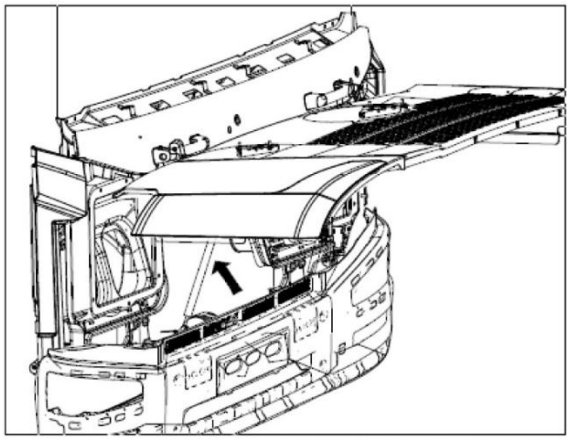
▶By adjusting the sun shade to an appropriate angle, shield the sun and guarantee the effective field of vision.

▶Pull the sunshade out of the fixing clip and turn it to the side of the door to shield the side light.

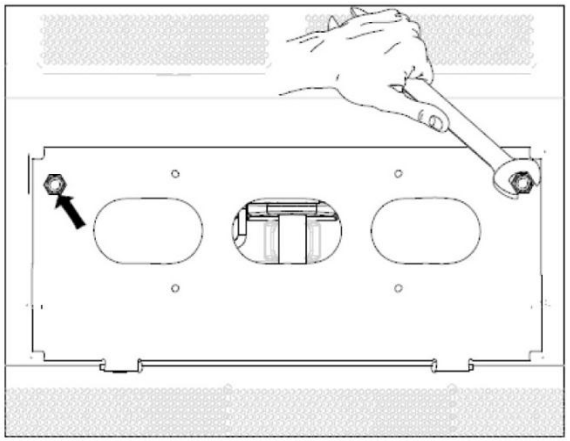


Opening of front outer panel

▶When opening the outer panel, lift the open handle under the right side of the cab so that the pin lock can be opened.



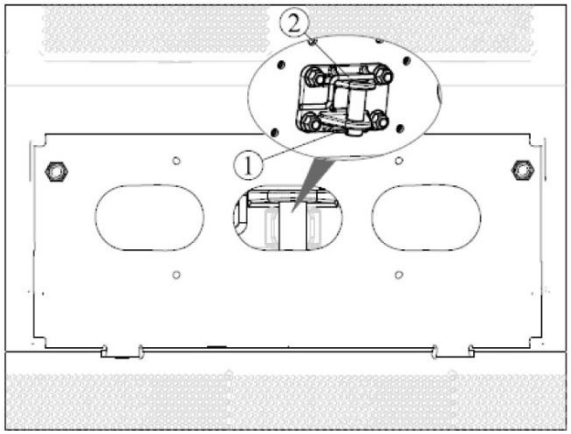
▶Turn the outer panel up and open it by gas spring support. As shown in the picture.



Use of license plate and front tow hook

▶Unscrew fastening bolts from the upper part of the license plate.

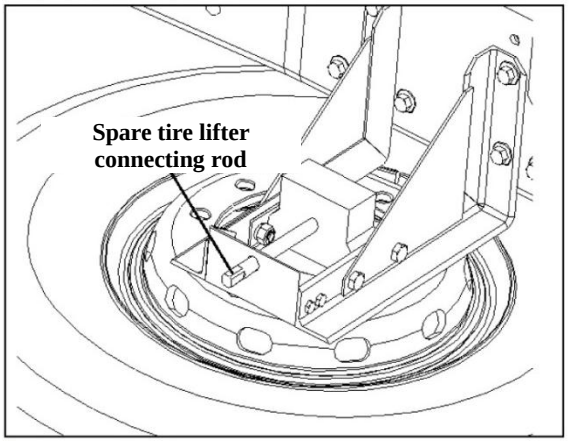
▶Open the license plate downward, and use the front hook device.



▶Pull out the lower split pin①, pull the drag hook pin handle② upward to pull out the drag hook pin, and insert the pin after inserting the wire rope.

▶Turn up the license plate and fasten it with bolts.

Spare tire regulator



▶Remove the spare tire

- Use the special wrench in the on-board tool, turn the connecting rod counterclockwise, and move the spare tire bracket down. After the spare tire has landed, remove the bracket from the spare tire.

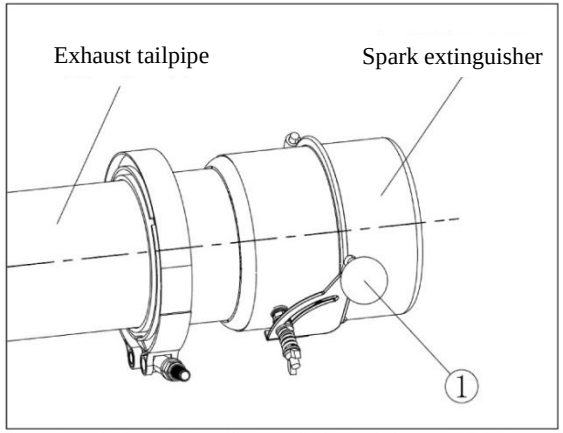
▶Install a spare tire

- Hang a bracket on the spare tire, turn the connecting rod clockwise with a special wrench to raise the spare tire.

- When a spoke of the spare tire contacts the supporting beam, the spanner is rolled to tighten the spring. Finally, the connecting rod is tightened with (100±10) Nm moment.

- Installing a side protective plate (optional): Install the side protective plate, connect the side sign lamp harness connector, insert fixed pins into fixed pin holes at both ends, and then complete the installation of the side protective plate.

Spark extinguisher switch (dangerous chemicals)



▶Install the spark extinguisher at the rear end of the exhaust tailpipe.

▶Use the device when driving dangerous chemicals vehicles into flammable, explosive production areas and fire-free areas such as flammable and explosive chemicals depots.

▶Rotate the operating handle① of the spark extinguisher to turn on/off the spark extinguisher.

⚠Warning

Please use spark extinguishers in accordance with the requirements of the state and relevant departments.

Correct driving

Normal engine start-up

▶Operation before start-up

- Verify that the manual valve is in the parking position.
- Verify that the speed control lever is in the NEUTRAL position.
- Turn the key to the ON position and observe whether the instrument is normal.
- Step down the clutch pedal, continue to turn the key to the S block, turn on the start switch, start the engine. Once the engine starts, release the key immediately and make it return to the ON gear automatically.
- After the engine is running smoothly, release the clutch pedal at a constant speed.
- After starting, pay attention to observe the oil pressure, coolant temperature, charging indication, etc.

⚠Caution

⊙ Do not step on the accelerator violently after starting so as to prevent the oil pressure from sudden rising and the oil too thick. Therefore, the friction surface of each part can not be reached by the oil in time, thus accelerating the wear of parts.

⊙ The continuous working time of the starter shall not exceed 30 s, and the two-times starting interval shall be at least 1 minute. If the starter fails to start three times continuously, the oil circuit and circuit should be checked. The life of the starter and battery will be damaged if the starter fails to start three times continuously.

⊙ In order to improve the service life of the booster, the engine should run for (3 ~ 5) minutes at idle speed before parking, so that it is fully lubricated.

Engine cold start warm-up

▶When the external temperature is lower than 0℃, the preheating indicator lights up, indicating that the engine is preheating. Do not start the engine until the preheating indicator lights out. After the engine is started, run the engine at low speed for several minutes, and preheat the engine.

▶When the water temperature reaches more than 50 ℃, start the engine. During the preheating process, observe the operation of each instrument, indicator lamp and warning lamp. Be careful not to run at idle for a long time.

▶During the initial preheating, each indicator lamp is on, but the alarm lamp goes out with the increase of oil and gas pressure after the vehicle is started.

▶ When the pointer reaches 0.55MPa, the oil pressure reaches 0.1MPa, and the coolant temperature reaches more than 50℃, the vehicle is in the starting condition.

▶At this time, the parking brake lamp is still on, reminding you to release the parking brake valve before starting it.

Notes for winter operation

▶Oil should be selected correctly according to the ambient temperature at that time. When the temperature is lower than 10℃, the oil exchange period should be shortened accordingly.

▶Fuel: When the air temperature is lower than 4 ℃, use winter fuel. Check if the fuel is condensed and remove the moisture from the primary fuel filter.

▶Coolant: The long-term antifreeze that is suitable for the freezing point shall be selected according to the ambient temperature.

Vehicle driving

▶It can be started only when the engine is running normally, and each instrument, indicator lamp and alarm lamp are normal.

▶When starting, the manual valve shall be in the released braking position.

▶During driving, pay attention to keeping the engine coolant temperature at (75 ~ 95) ℃.

▶It is required to observe the oil pressure.

⚠Caution

⊙ Try to avoid emergency starting, speeding up and emergency braking.

⊙ During driving, do not place the foot on the clutch pedal. After shifting, the foot should leave the pedal immediately.

⊙ It is strictly prohibited to shift without stepping on clutch.

⊙ It is necessary to shift into the reverse gear after the vehicle is completely stopped.

Hill driving

▶For driving down a long and steep slope on a slope, exhaust brake should be used, and the variable speed control rod should be placed on the gear which climbs the same slope. When the braking force is insufficient, the parking brake can be used at the same time.

▶In order to reduce the wear and heating phenomenon during braking, the vehicle speed shall be reduced and it shall be shifted to the lower gear before driving down the long and steep slope.

▶When driving up the slop, if the vehicle speed decreases gradually, it should be shifted to the lower gear in time.

⚠Warning

When downhill, it is forbidden to turn off the engine and drive in neutral gear.

Vehicle parking

▶When parking, the accelerator pedal should be released first to reduce the speed of the vehicle.

▶Depress the brake pedal slowly and change the transmission to neutral. After the vehicle stops steadily, pull up the manual valve handle upward so that it is in the braking state.

▶Operate at idle speed for some time. Turn off the power (turn the start switch key to LOCK position).

⚠Warning

⊙ Avoid parking on steep slope. If you have to park on the slope, you must use padding to fix the wheels.

⊙ After driving, the exhaust pipe is in high-temperature state, so it is not allowed to park the vehicle near the combustible materials such as dry grass.

⊙ After the vehicle is stopped, it is necessary to run the engine at idle speed for a period of time to allow the supercharger to cool naturally.

Otherwise, the supercharger may overheat and damage.

Economic driving

▶Unnecessary high speed driving and low gear driving will cause an increase in fuel consumption.

▶Try to avoid frequent emergency acceleration so as to avoid the rapid increase of fuel consumption.

▶During driving, the coolant temperature shall be kept within the normal range. The engine needs to be preheated before driving in winter. If the engine temperature is too low, the fuel consumption will be increased and the service life of the engine will be reduced. Excessive preheating time will also increase fuel consumption.

▶The insufficient tire inflation will increase the rolling resistance of the tire so as to increase the fuel consumption and reduce the service life of the tire.

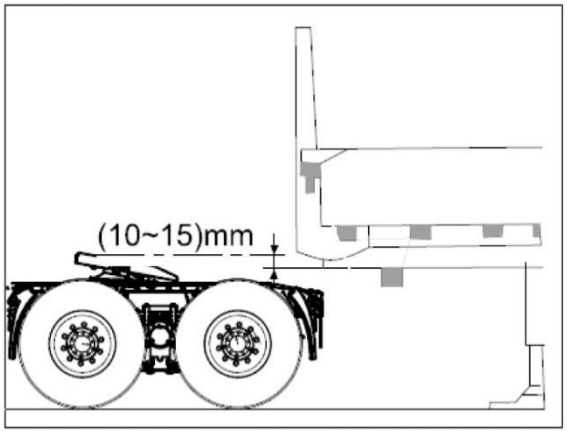
▶When the vehicle is decelerated or slowed down in driving down the long slop, the exhaust brake shall be used as far as possible to reduce the service frequency of the service brake.

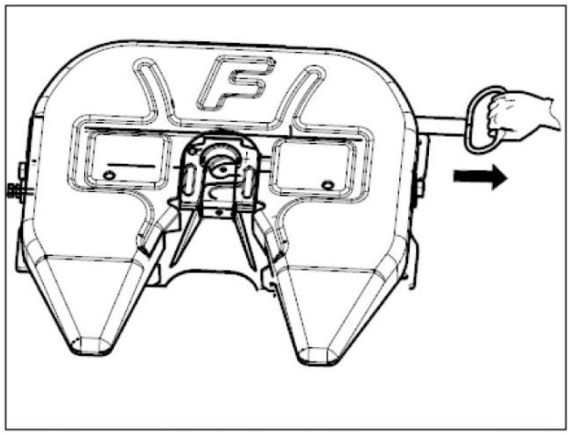
▶Use lubricating oil with suitable viscosity to reduce the frictional resistance of the engine, which not only saves the fuel, but also improves the service life of the vehicle.

▶When decelerating in making a turn, it is not only able to reduce fuel consumption but also improve the service life of the tire.

▶Regularly check whether the alignment parameters of the front wheels are correct and the setting of the front harness may increase fuel consumption and reduce the service life of the tire.

Towing tractor





▶Before the coupling of semi-trailer, the flat site shall be selected and the parking brake of semi-trailer shall be tensioned.

▶When the semi-trailer is engaged:

- Move the tractor rearward so that the tractor and semi-trailer are on the same line.

- Adjust the landing gear of the semi-trailer so that the body bottom plate is 10-15 mm lower than the center of the traction seat.

- Pull the handle of the traction seat outward to open the lock hook, then slowly move the tractor backward to connect it with the semi-trailer.

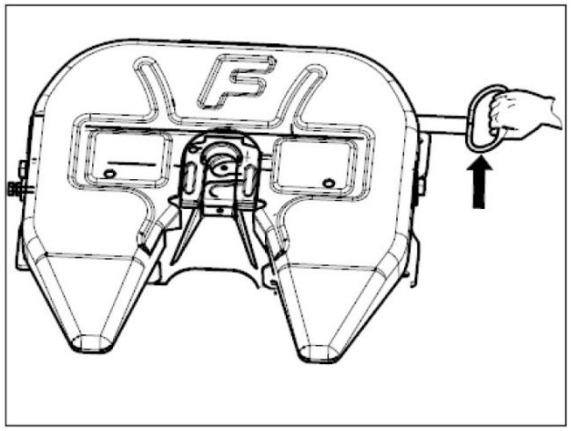
- Turn off the engine and pull the manual valve for the tractor.

- Verify that the traction pin enters the lock hook opening. Check the connection status of the left and right and confirm that there is no clearance between the upper surface of the traction seat and the body bottom floor.

- Connect the gas circuit and electric circuit of the tractor and semi-trailer.

⚠Warning

Don't start immediately after the semi-trailer is connected. The semi-trailer should be checked again to ensure that there is no gap between the upper surface of the traction seat and the bottom plate of the semi-trailer. Otherwise, the semi-trailer will be separated from the tractor and cause serious accidents.



▶When the semi-trailer is disengaged:

- The tractor and semi-trailer are on a straight line and parked on a flat site.

- Tighten the manual valve of tractor and the parking brake handle of semi-trailer, and squeeze the wheel with the wheel pad wood to prevent any movement.

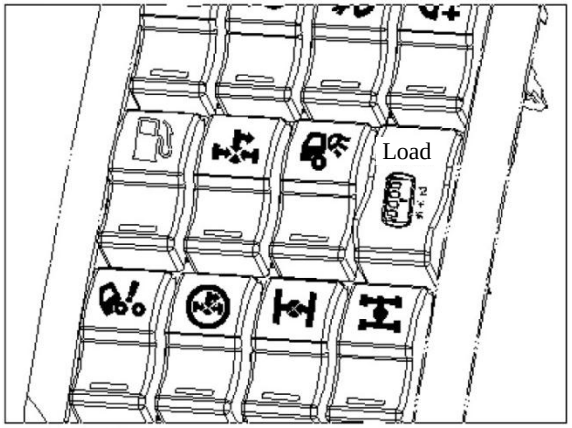
- Lower the semi-trailer landing gear to the ground.

- Adjust the landing gear of the semi-trailer so that the body bottom plate of the semi-trailer is (10-15) mm higher than the center of the traction seat.

- Disconnect the air circuit and the electric circuit.

- Raise the handle of the semi-trailer upward and pull it outward to release the lock hook and move the tractor forward slowly to separate it from the semi-trailer.

Dump truck



▶Parking power takeoff

- When the engine idles, the variable speed control rod is hung to the neutral position in the low gear area.

- At the same time, press the power take-off switch and parking power take-off switch on the dashboard function switch, step on the clutch pedal, put the variable speed control rod into any gear in the low gear area, slowly release the clutch pedal, and then accelerate slightly to realize the parking lift.

▶Driving power takeoff

- Step on the clutch pedal, and put the variable speed control rod into any gear in the low gear area. Just press the power take-off switch , then slowly release the clutch pedal, and at the same time accelerate slightly to realize the driving lift.

Concrete mixer truck

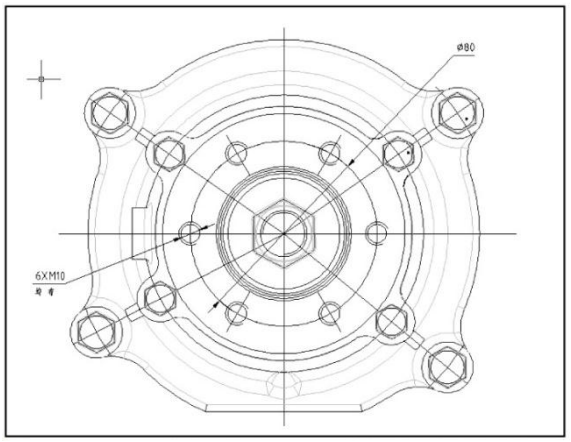
▶Power take-off mode: PTO power take-off mode of engine.

▶The transmission ratio of engine PTO output shaft to crankshaft is:

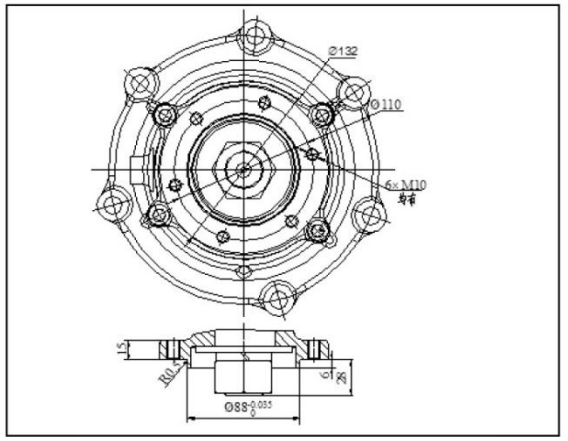
- CA6DL engine: I=0.957.
- CA6DM2 engine: I=0.926.

▶The PTO allows the output torque as follows:

- CA6DL engine: 800Nm.
- CA6DM2 engine: 1200Nm.

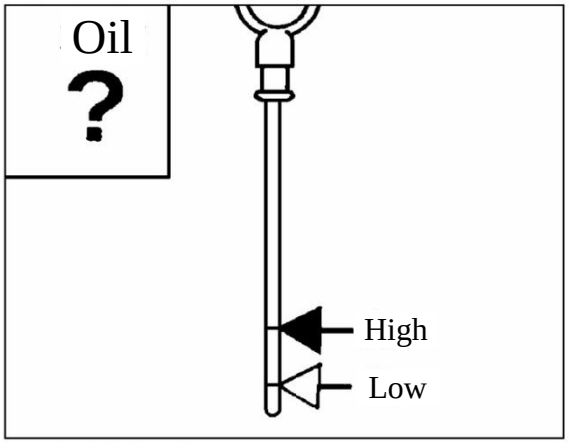


▶ Diagram on PTO output flange of CA6DL engine.



▶Diagram on PTO output flange of CA6DM2 engine.

Regular maintenance



Check before driving

▶Check the oil level of engine lubricant before leaving the vehicle. The oil level should be between the two marking lines.

▶Check the fuel tank storage capacity.

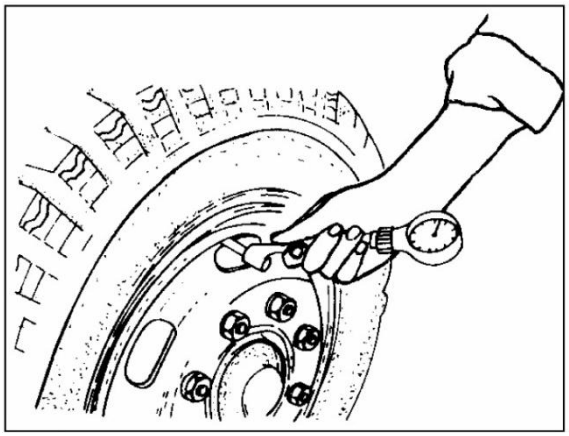
▶Check the coolant level which should be between the two marking lines.

▶Check whether all lamps are normal.

▶Check whether the cab lock mechanism is locked.

▶Check the liquid level height in the power steering tank, which must be kept between the two marks.

▶Check the brake fluid should be between two marking lines.



▶Check the tire pressure. The tire pressure should meet the following requirements:

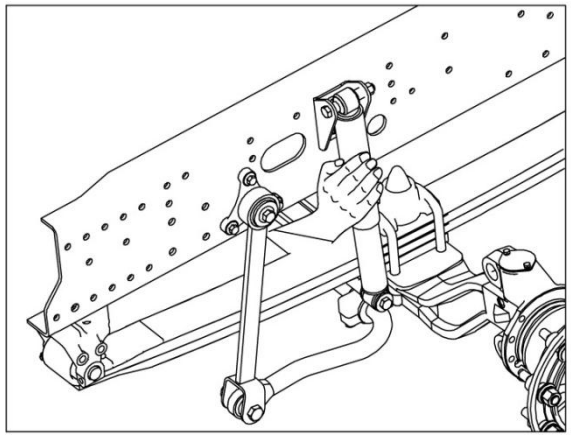
- Front, rear tire and spare tire pressure are shown in the table below:

- Measure tire pressure and conduct it when the tire is at room temperature.

⚠Warning

The tire pressure shall be kept within the specified range. If the tire pressure is too high, it will accelerate wear and shorten the tire life; If the air pressure is too low, it will produce cracks and affect the vehicle's driving speed and increase the fuel consumption.

Tire	Air pressure (kPa)
315\80R22.5	850~900
315\70R22.5 315\60R22.5 295\80R22.5	830
11.00-20 11.00R20 12.00-20 12.00R20	740~780
11.00R22.5	720 (Level 14) 830 (Level 16)
12.00R22.5	750-850
9.00-20	Air pressure of front wheel: 880 Air pressure of rear wheel: 810
9.00R20	790 (Level 14) 900 (Level 16)
10.00R22.5	790
10.00-20	Air pressure of front wheel: 810 Air pressure of rear wheel: 740
10.00R20	830 (Level 14) 930 (Level 16)



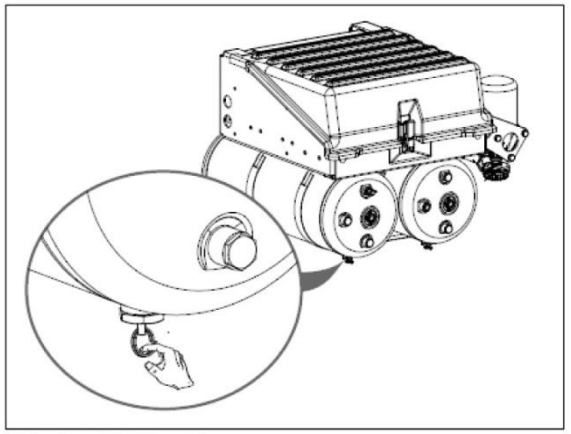
Check during driving

▶On the safe site, travel at about 20km/ h, check the braking effect and the working condition of steering mechanism.

▶Check of shock absorber

- If there is abnormal continuous jitter in the vehicle during driving, check the shock absorber for oil leakage.

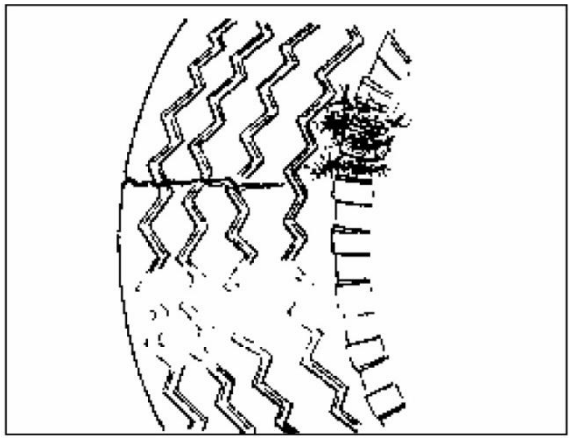
- After driving a long journey on the road (not less than 10km), stop the vehicle and touch the shock absorber for heating. If it is not hot, it indicates that the shock absorber has failed. Replace the new part in time.



Check after receiving the vehicle

▶This vehicle is equipped with air dryer, so the air reservoir is not required to drain daily. However, the water shall be drained by way of water drain valve once a few days. If water can be drained out several times, replace the drying tank on the air dryer immediately.

▶Check whether there is air leakage in the braking system, and confirm whether the air dryer works normally. If the above phenomenon exists, repair it in time.



▶Check the tire tread surface for scratches, cracks, or abnormal wear.

▶Check whether the tire tread surface is embedded with metal plate, stone and other sundries, and if any, it shall be removed in time.

▶Check to see if there are any stones and other debris between the rear wheel twins. If so, it should be removed in time.

Simple inspection and maintenance

Coolant

▶Precautions

- You must use a coolant that meets the Q/CAM-192 standard and is marked with "FAW Spare Parts" on the lid.

- Use coolant throughout the year.

- Do not mix with other brands during use.

▶Inspection and replacement period of coolant:

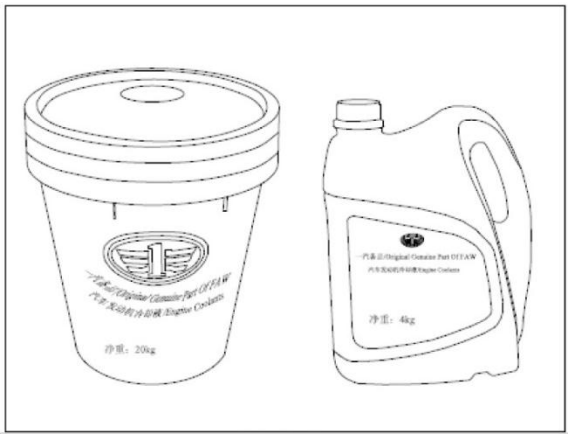
Check and replace the mileage (10,000 km).	Check and replacement years
≥10	≥2

- The inspection and replacement period shall be subject to the mileage or service life (whichever is the earlier).

- Clean the cooling system while replacing.

▶The user shall select the coolant model in the following table according to the temperature conditions of the vehicle in the area of use:

Model	Part Code	Freezing point temperature	Color Specification
YQ-2004X	523204 04 0262	-20℃	Dark blue, transparent, and free from precipitation.
YQ-2004D	523204 04 0278	-35℃	Dark blue, transparent, and free from precipitation.
YQ-2004J	523204 04 0322	-45℃	Orange-red, transparent, no precipitation
YQ-2002	523204 04 0323	-8℃	Light green transparent, no precipitation



⚠Caution

⊙ The user must check the package cask and confirm the following information before use:

—The packaging barrel can be made in the form of 20kg and 4kg, with the barrel color of Van Gogh yellow.

—The cover is a one-time cover with "FAW Spare Parts" on it.

— The barrel body shall have genuine anti-counterfeit labels, if not, all of them are fake products.

—Barrel cover shall be complete and free from damage. If it is incomplete, please refuse to use it.

—Confirm the expiration date of the product. The shelf life is 18 months under normal temperature and sealed containers.

- Before entering winter, confirm whether the freezing point temperature of the used coolant meets the requirements of the lowest temperature in the area used by the vehicle.

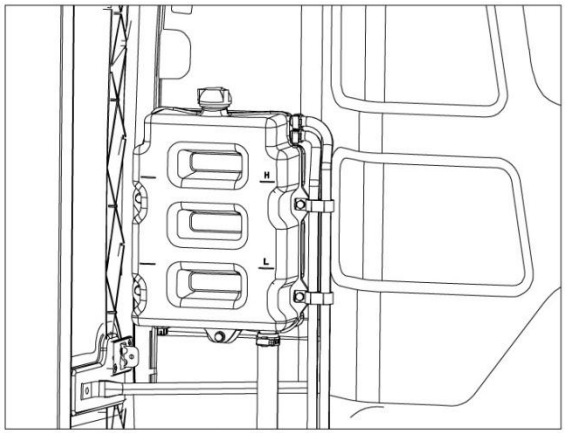
⊙ Safety and environmental protection

- Avoid contact with eyes, and wash with clean water immediately in case of contact; the product is harmful to health. In case of drinking by mistake, seek medical advice immediately.

- Risk of scalding from high temperature coolant.

- Coolant should be kept away from child for storage.

- Protect the environment and do not pour the coolant into sewers, soil and water sources. Recover it in a timely manner.



▶Addition of coolant

⚠Warning

⊙ It is not allowed to open the pressure cap immediately after the engine is stopped, so as to avoid the hot-pressing gas in the cooling system from rushing out and scalding person.

⊙ After the engine has stopped running for 10 minutes, put the protective materials such as cloth, etc. on the cover, and then rotate the cover to the first stop. After releasing the pressure, unscrew the pressure cover.

- Unscrew the filler cap of the expansion tank to add coolant. Add to the upper line and tighten the filler cap.

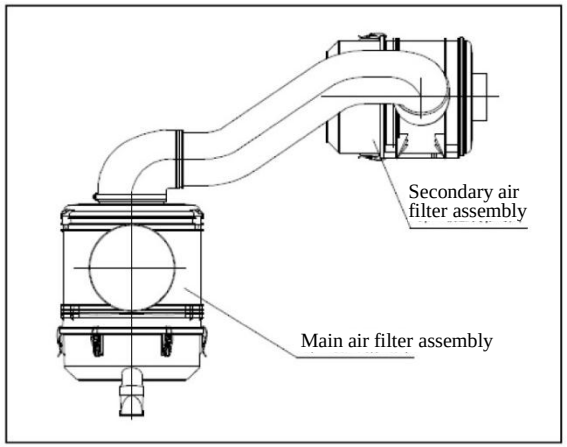
- When adding coolant, pay attention to the speed of adding coolant, and do not add it too fast. Generally, there is no need to vent the cooling system because the position of the expansion tank is very high, and the bubbles in the coolant can be eliminated automatically through the filling port of the air pipe.

- Start the engine and run to the normal temperature (the coolant lines from the radiator upper water chamber to the thermostat chamber are hot obviously), check the height of the coolant level and add coolant if the fluid level drops.

- In normal use, if the engine is overheated or the coolant level alarm lamp is on, check the height of the coolant level and supplement them in time.

▶Draining of coolant

- Unscrew the filler cap of the expansion tank, and open the drain plug on the bottom of the radiator to remove the coolant.



Single-stage and double-stage air filters

▶The air filter core must be maintained in time so as not to cause problems such as blockage of the filter core, decrease of engine power and increase of fuel consumption. If the filter core is damaged, it will cause engine wear and tear.

▶Maintenance of main filter element (main air filter):

- In a general area, the filter element is maintained once every 10,000 km. If you often drive in windy or dusty areas, the maintenance mileage of the filter element should be shortened appropriately.

- When the filter element is maintained four times or used for one year, a new filter element must be replaced.

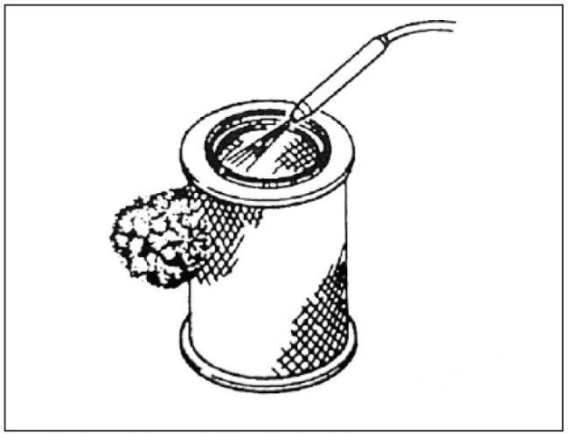
▶ Maintenance of secondary filter element (secondary air filter):

—The filter element should be replaced when a vehicle travels every 100,000 km or for one year.

⚠Warning

⊙ When the user uses the filter element, the filter element manufactured by the original manufacturer shall be used, and the filter element that has passed the test by the FAW Technical Center and provides the test report may also be used.

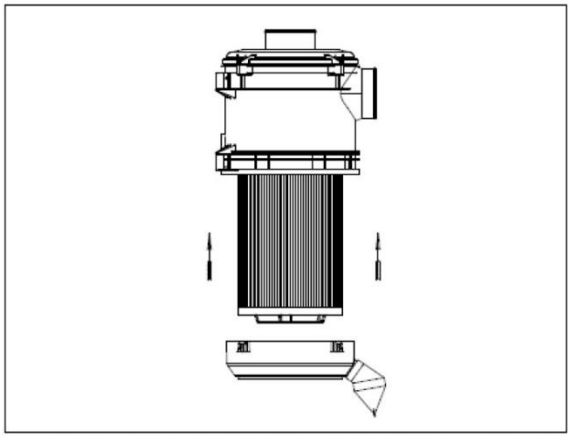
⊙ Never use non-conforming filter element, otherwise the abnormal wear of the engine will be generated.



▶Maintenance procedure of air filter

- Loosen the snap ring of the end cap of the air filter, remove the lower cover, and remove the dust from the end cover, and wipe the end cover with a rag.

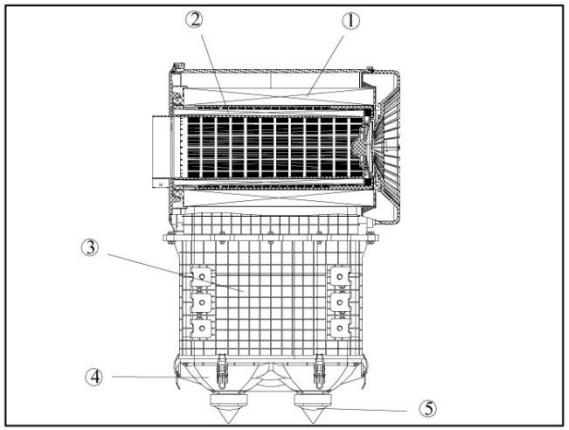
- Gently pull out the filter element, blow (400-600) kPa dry clean compressed air from the inside of the filter element, and blow the filter element clean and clean the sealed end face.



- Before assembly, check whether the sealing ring of the end face of filter element is in good condition, and check whether the filter paper is damaged. If there is any damage, replace the new filter element.

- Press the filter element into the housing to the correct position and install the end cover.

- Thoroughly inspect the tightness of the connection line between the air filter outlet and the air inlet of the engine supercharger.



Desert filter

▶Every 250 hours: Clean up the ash basin ④, check the dust bag ⑤, clean up the dust accumulation inside the rough filter module of the cyclone tube ③. In complex and harsh environments (dusty and humid), the maintenance interval is reduced by half.

⚠Warning

⊙ Users should not use sharp tools when cleaning cyclone tubes. Otherwise, the cyclone tube will be damaged and the filtration efficiency will be reduced.

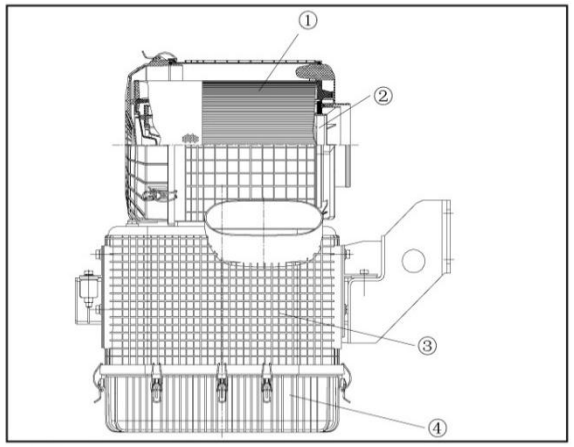
▶Maintenance of primary filter element:

- Every 750h driving: service the main filter element ①; in the complex and harsh environment (dusty, humid), the above interval should be halved;

- Change the main filter every 3000 hours or a year. In complex and harsh environments (dusty and humid), the maintenance interval is reduced by half.

▶Maintenance of secondary filter element:

- Secondary filter element ② is replaced with the main filter element. No maintenance is required during the period.



▶Maintenance steps of cyclone tube rough filter module ③:

- Remove the main filter element ① and the secondary filter element ②, and disconnect the air outlet from the engine or block it with clean materials.

- Open the ash storage basin ④ and clean up the dust inside the ash basin.

- Repeatedly blow with compressed air, or clean up the dust deposited in each part of the swirl tube module ③ with a brush.

Oil bath filter

▶Maintenance of primary oil bath air filter:

- In the general regions, change the engine oil of the same model as the engine used during the same period every 250h driving; in the frequently heavy sand storm regions or dust regions, the above oil change maintenance interval should be halved.

- If the engine oil is not easy to flow when the drain pan④ is shaken, clean the oil bath filter element and change the oil. Check this every day in the harsh working conditions.

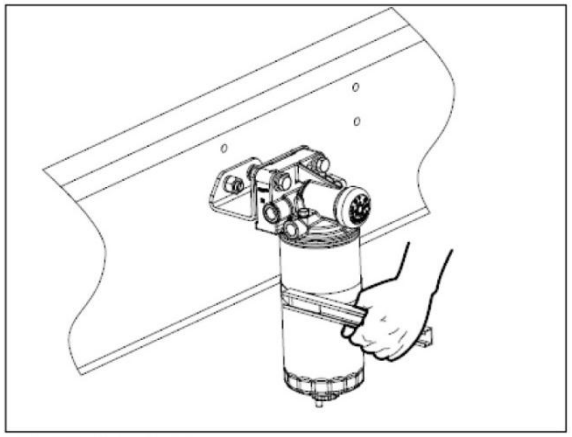
▶Maintenance of primary filter element:

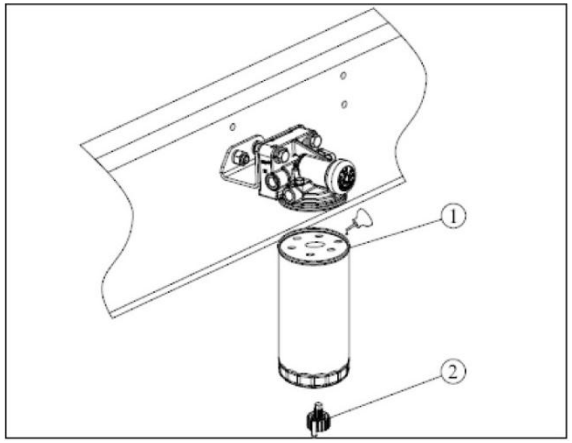
- Every 750h driving: service the main filter element ①; in the complex and harsh environment (dusty, humid), the above interval should be halved;

- Change the main filter element every 3000 hours or a year. In complex and harsh environments (dusty and humid), the maintenance interval is reduced by half.

▶Maintenance of secondary filter element:

- Secondary filter element ② is replaced with the main filter element. No maintenance is required during the period.





▶Maintenance steps for primary oil bath filter element:

- Loosen the drain pan draw hook, take down the drain pan④ and remove the oil bath filter element ③;

- Clean the dust in the filter element ribs and dust deposition on the oil sump bottom with the brush;

- Dry the filter element③ and drain pan④ with the compressed air or allow them to dry in the natural air;

- Add 4L oil to the oil surface to the bottom shell ④. Be careful not to add it too much.

- Assemble the chassis ④ and fix it firmly with a hook.

Primary diesel filter

▶Water shall be drained in time every 2500km.

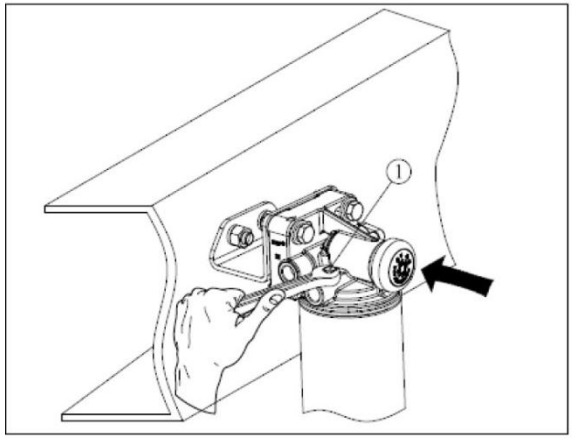
▶Replace the primary diesel filter when driving every 15,000 km.

- When replacing, remove the primary diesel filter and water cup with special wrench, clean the water cup and replace the new coarse filter.

- During the assembly, apply the engine oil to the gasket① surface first, then slightly screw the strainer filter to the pedestal by hand and then screw it in by 3/4 turn, and then tighten the drainage screw plug ②.

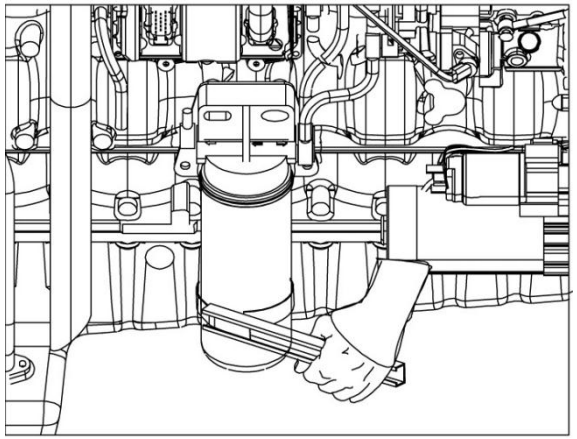
⚠Caution

Don't miss the gasket.



- After assembly, unscrew the bleeding screw plug ①. Press the manual oil pump to fill the crude filter with fuel, so as to ensure that the sealing parts do not leak oil. Replace the new gasket, if necessary. Finally tighten the air-bleeder plug.

▶ When the oil inlet and outlet joints are disconnected, check whether the gasket is in good condition. If there is any damage, replace it in time. The tightening torque of the oil pipe joint is (20-25) Nm.



Secondary diesel filter

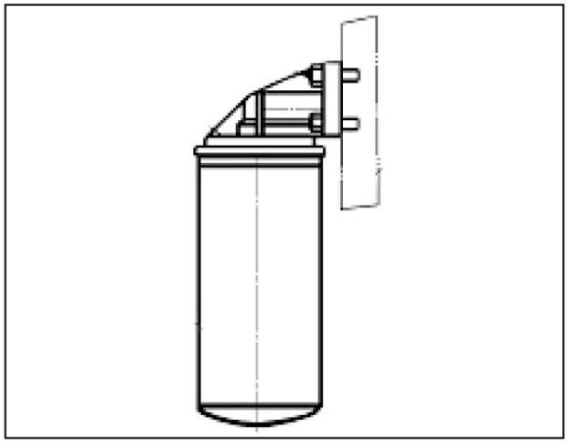
▶A secondary diesel filter plays an important role in ensuring the normal operation of fuel injection pump and injector, and must be maintained in time. If secondary diesel filters are found to be oil-poor, they must be dismantled and replaced with new ones in time.

▶Replace filters when driving every 10,000 km usually.

▶ When replacing a new filter, apply a little lubricating oil to the gasket surface and then rotate it on the base and tighten it by hand.

⚠Caution

During assembly, be sure not to neglect loading the sealing ring, and pay attention to checking the integrity of each sealing ring; if damaged, replace it in time.



Spin-on type oil filter

▶Change the oil filter normally every 6 months or 10,000 km.

▶Change the oil filter every 3 months or every 5000km in dusty areas.

- Remove the oil filter with special tool counterclockwise.

- The filter mounting surface must be flat and smooth without dirt.

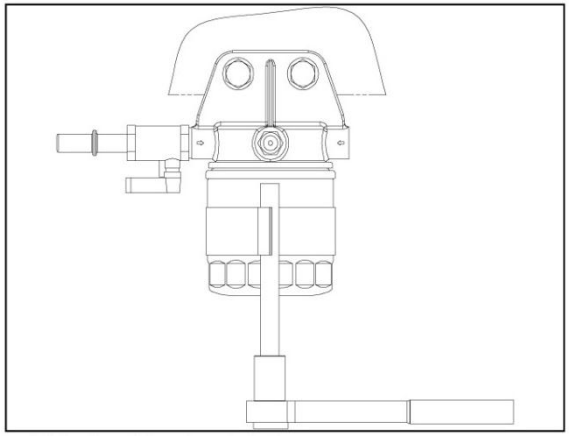
- Apply engine oil to the surface of the filter seal during installation.

- Tighten the oil filter clockwise until the rubber seal pad contacts the base face and tighten one turn.

⚠Warning

⊙ When the user buys the spin-on type oil filter assembly, the oil filter assembly produced by the original factory shall be purchased. The oil filter that has passed the test by the FAW Technical Center and provides the test report may also be purchased.

⊙ Never purchase unqualified products, otherwise, the abnormal wear and damage of parts of the engine may be caused.



Compressed gas filter

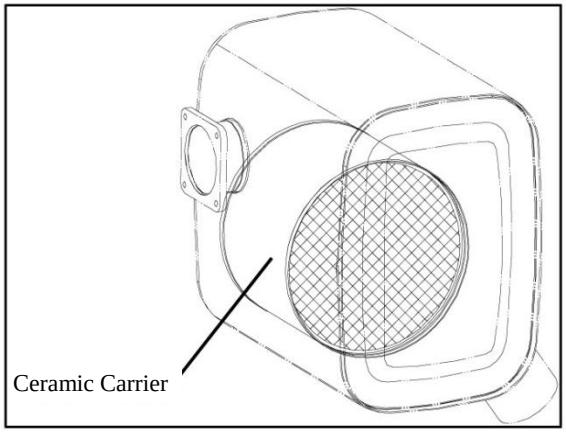
▶The filter element should be replaced when a vehicle travels every 100,000 km or for one year

- When replacing, remove the filter element with special wrench and replace the new filter element.

- During the assembly, apply the engine oil to the gasket surface first, then slightly screw the strainer filter to the pedestal by hand and then screw it in by 3/4 turn.

⚠Caution

Don't miss the gasket.



Exhaust post-processor

▶ When the engine is working, the surface temperature of the post-processor assembly and exhaust pipeline is high, so attention should be paid to preventing scald.

▶Any inflammable and explosive articles shall be out of contact in the vicinity or the surface of the post-processor assembly. Clean it without any delay if there's oil stain on the surface of the post-processor assembly.

▶Do not refit the exhaust system parts in any way; otherwise it will impact the postprocessor efficiency, cause the emission to exceed the limit.

▶The postprocessor assembly is equipped with fragile ceramic carrier; prevent knock, external force impact and ingress of foreign matter during the use; if the assembly air leak or ceramic carrier breaking is resulted in due to the above causes, replace them in the designated service station in time.

▶Prevent the fuel, engine oil, coolant and water intruding the postprocessor since such fluid can pollute the postprocessor and reduce the conversion efficiency. The polluted postprocessor must be replaced in the designated service station in time.

▶In case the postprocessor back pressure is too high and the engine performance severely drops, replace the postprocessor in the designated service station in time.

⚠Caution

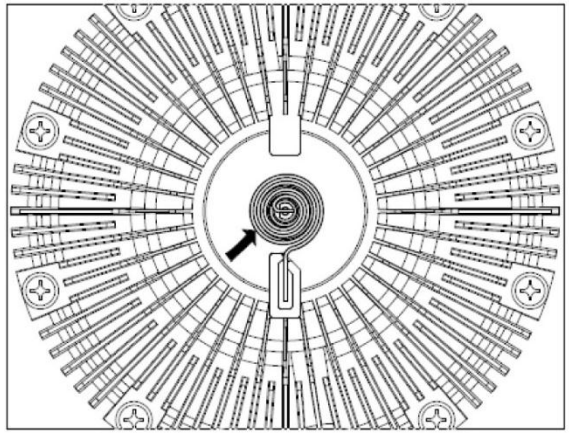
If the postprocessor assembly is damaged, ensure to replace it in the designated service station; otherwise it will result in the emission exceeding limit, enable the OBD and limit the engine torque.

SCR post treatment system use and maintenance

▶Cleaning of urea tank every 50,000 km.

▶With air drive post treatment system, replace the urea solution tank filter every 50000km driving; shorten or increase the replacement mileage according to the urea solution water solution condition.

▶With BOSCH post treatment system, replace the urea solution tank filter every 30,000km driving; shorten or increase the replacement mileage according to the urea solution water solution condition.



Fan clutch

▶In case of overheating of coolant during driving, check whether the cooling liquid is sufficient, and whether the thermostat and water pump are working normally, and check whether the fan clutch operates normally.

▶If the following conditions occur, replace the fan clutch:

- Silicone oil leaks at the fan clutch bearing.

- The temperature sensing element has a collision and fracture phenomenon.

- When turning by hand, there is abnormal sound or rotation.

Precautions for operation of electric control system

▶The maintenance personnel of the electric control system must be trained before operation.

▶As the oil circuit of high-pressure oil supply section of electric control system has high working pressure, special attention shall be paid to safety during maintenance. Be sure of the pressure relief before disassembling it.

▶The ECU and various sensors of the electronic control system are not allowed to be disassembled and repaired randomly. If damage is confirmed, it must be replaced with the same model of FAW.

▶The harness connectors of electrical control system must be firmly connected.

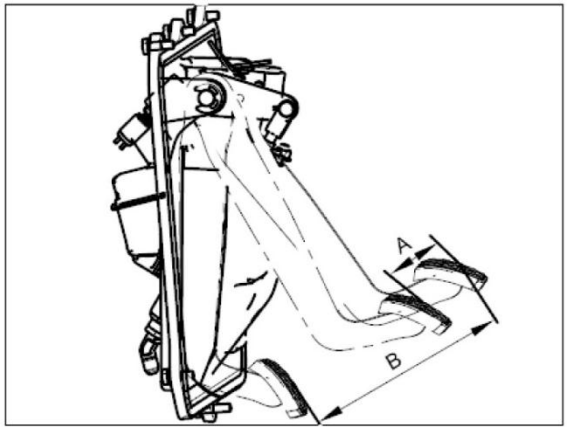
▶The power supply must be switched off before the components of the electric control system are removed.

▶The ECU of the electronic control system should be kept away from heat sources and should be dust-proof, waterproof, anti-interference, and anti-collision.

▶Do not turn off the main switch of the vehicle power supply within 10 minutes after the engine goes out, otherwise the urea system may be damaged.

▶When welding the whole vehicle, it is necessary to disconnect the positive and negative poles of the battery, otherwise the ECU may be damaged.

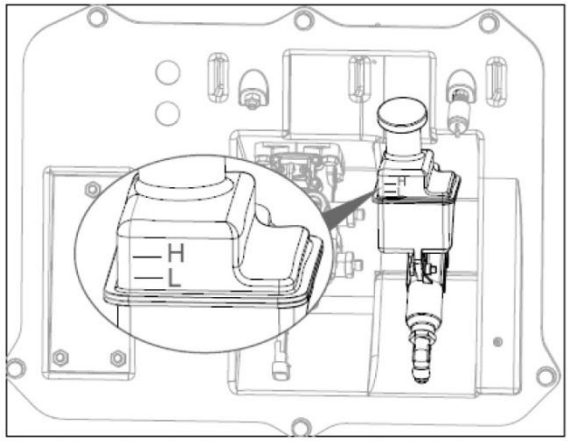
▶When engine fault lights or exhaust fault lights are ON, please go to FAW Liberation Service Station in time for maintenance.



Clutch

▶Clutch pedal free stroke A: (15～25)mm.

▶Clutch pedal total stroke B: (160～180)mm.



▶The clutch oil tank is located on the left side of the front wall. Open the front outer panel. Check the level of liquid level and add clutch hydraulic fluid if insufficient.

▶Replace the clutch hydraulic control brake fluid every 2 years.

▶Oil volume: about 0.3L, keeping the liquid level between “H” Line and “L” line.

▶Oil: DOT3(Q/CAM-50).

Suspension maintenance

▶Tighten the bolt nuts of key components.

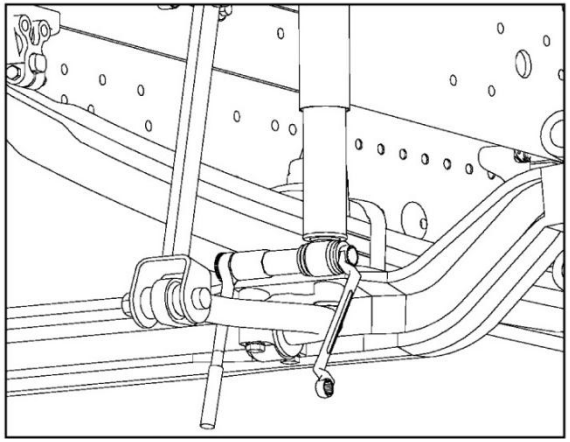
⚠Caution

⊙ Before tightening bolts and nuts, make sure the threads themselves and the surface to be connected are clean.

⊙ Before tightening, bolt threads should be coated with gear oil as required, and the gear brand is 80W/90 GL-5.

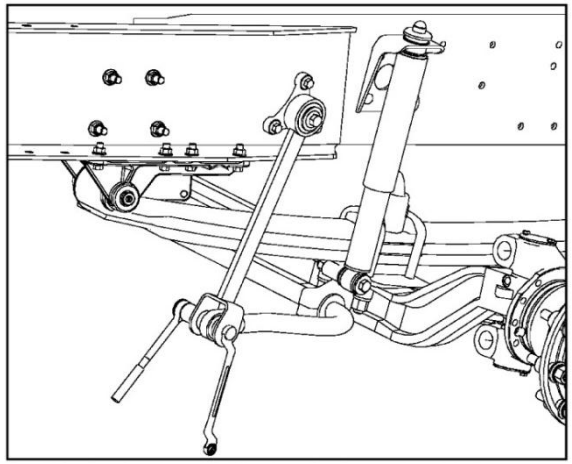
⊙ Each bolt thread should be evenly tightened to the specified torque.

▶Carry out regular maintenance every 30,000 km or every six months (2500 km for the first time).



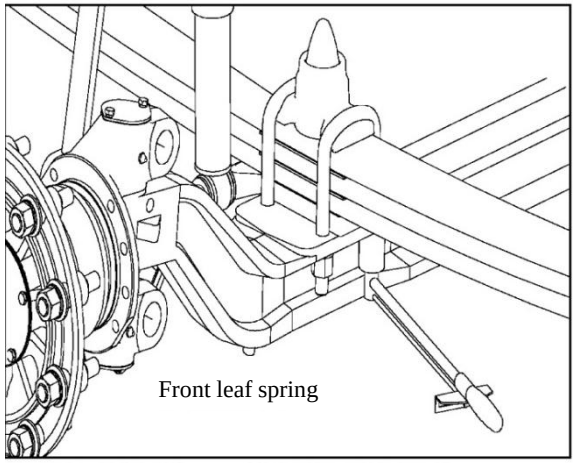
▶Check and tighten the bolt and nut connected under the shock absorber, and the tightening torque value is shown in the table below.

Thread specifications	Tightening torque (Nm)
M16×1.5	220±30



▶Check and tighten the horizontal stabilizer bar bolts and nuts, and the tightening torque value is shown in the table below.

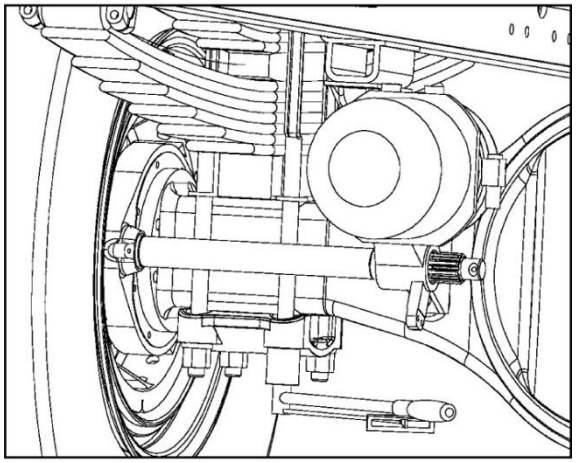
Thread specifications	Tightening torque (Nm)
M18×1.5	380±30



▶Tightening of leaf spring U-bolt

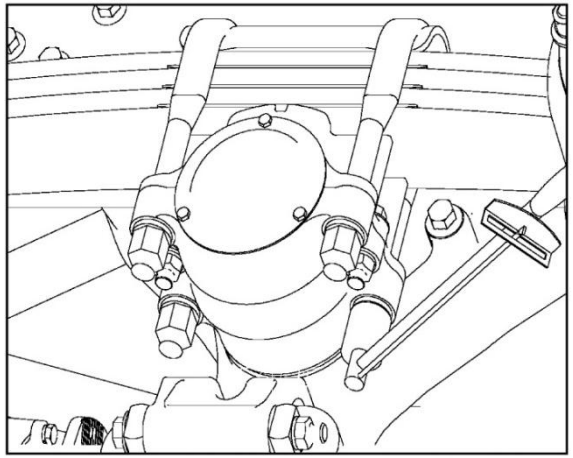
- Uniformly tighten the U-shaped bolts and nuts of front leaf spring (in the direction of travel of the vehicle), and the tightening torque value is shown in the table below.

Thread specifications	Tightening torque (Nm)
M20×1.5	500±50



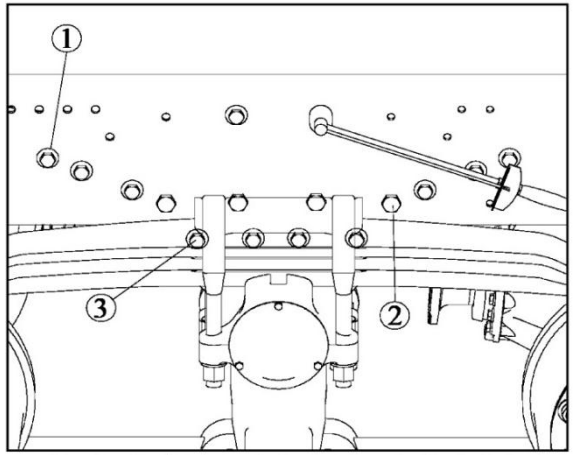
- Uniformly tighten U-shaped bolts and nuts for leaf springs. The torque values are shown in the table below.

Thread specifications	Tightening torque (Nm)
M22×1.5	600±50
M24×1.5	



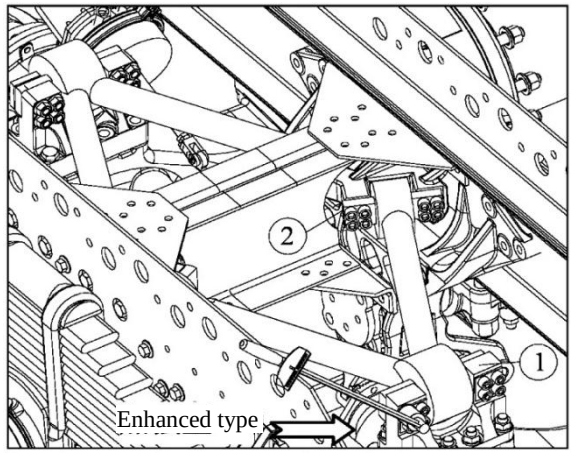
- Uniformly tighten U-shaped bolts and nuts for balanced suspension leaf springs. The torque values are shown in the table below.

Thread specifications	Tightening torque (Nm)
M27×2	750±50
M30×2	1000±50



- Check and tighten the fixed bolt and nut of the balance suspension frame, and the tightening torque value is shown in the table below.

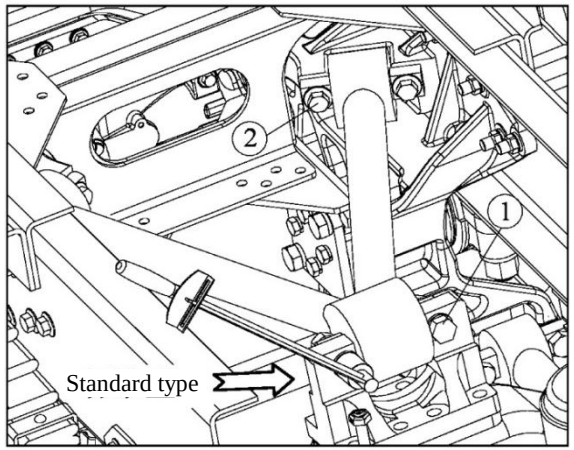
Thread specifications	Tightening torque (Nm)
M18×1.5 (① in the Figure)	380±30
M18×1.5 (② in the Figure)	380±30
M20×1.5 (③ in the Figure)	500±50



▶Check and tighten upper anti-reaction rod bolts and nuts.

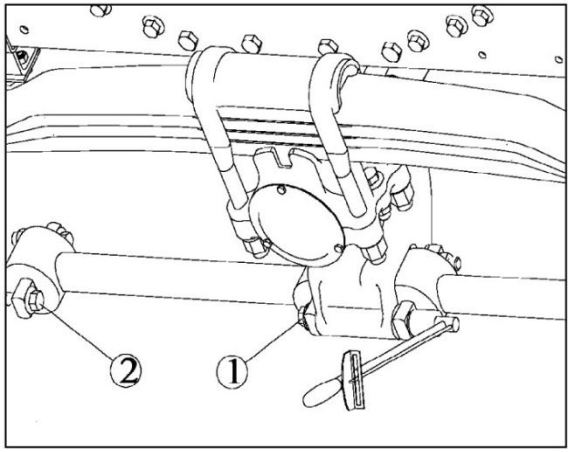
- For tightening strengthened reaction rods, the torque values are shown in the table below.

Thread specifications	Tightening torque (Nm)
M16×1.5 (Big end ①)	260±20
M14×1.5 (Small end ②)	165±5



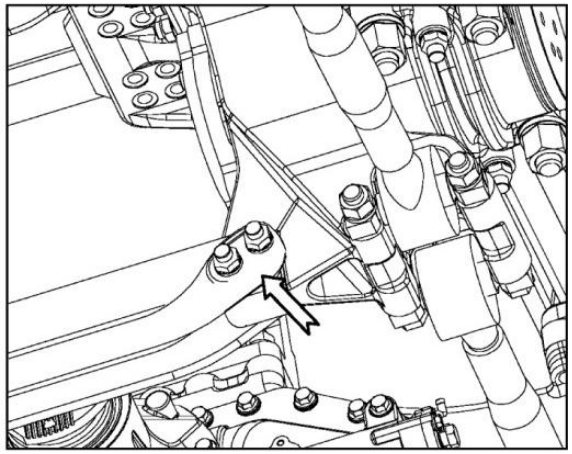
- For tightening standard reaction rods, the tightening torque values are shown in the table below.

Thread specifications	Tightening torque (Nm)
M24×1.5 (large end ①)	950±100
M20×1.5 (small end ②)	500±50
M22×1.5 (small end ②)	600±50



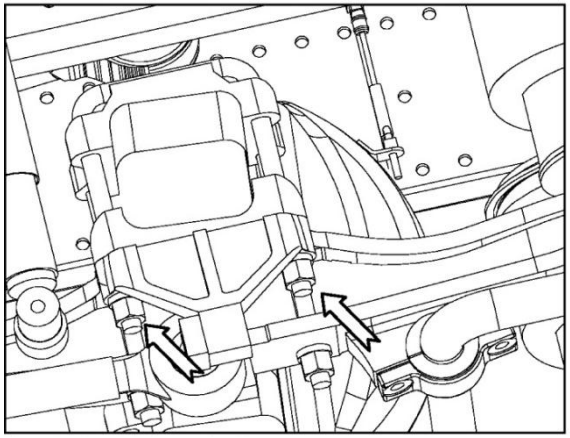
- Check and tighten the lower reaction bar bolt and nut, and the tightening torque values are shown in the table below.

Thread specifications	Tightening torque (Nm)
M20×1.5 (① in the figure)	500±50
M24×1.5 (① in the figure)	950±100
M24×1.5 (② in the figure)	950±100



- Check and tighten the lower connecting plate bolts and nuts, and the tightening torque values are shown in the table below.

Thread specifications	Tightening torque (Nm)
M20×1.5	500±50

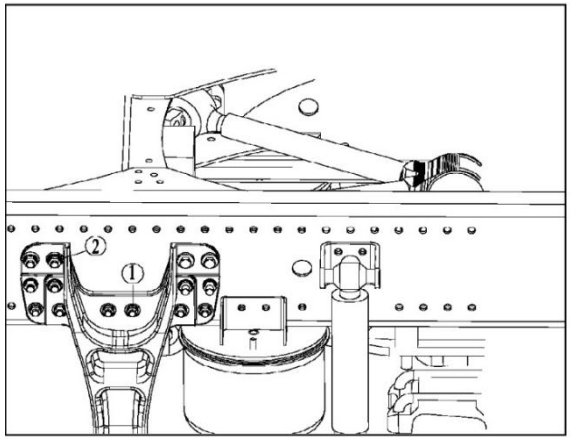


▶Air suspension (optional)

- Fasten U-shaped bolts.

- The bolts and nuts should be tightened evenly to the specified torque value.

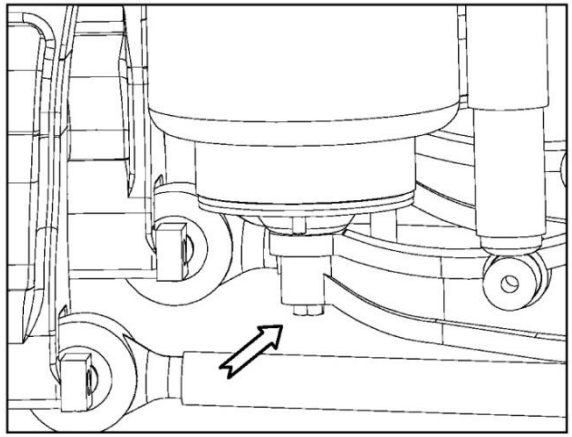
Thread specifications	Tightening torque (Nm)
M22×1.5	600±50



- Fasten bolts and nuts for connecting the large bracket of air suspension to the frame.

- All the bolts and nuts should be tightened evenly to the specified torque value.

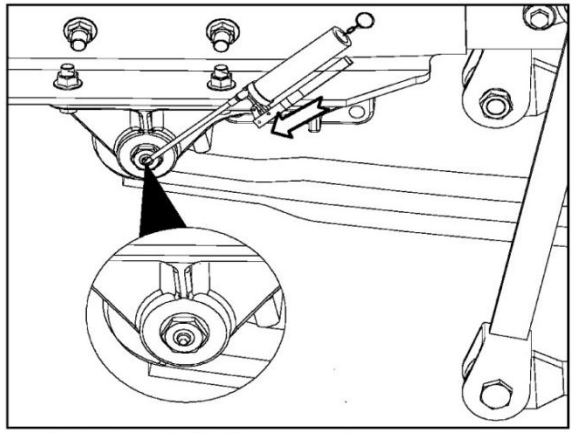
Thread specifications	Tightening torque (Nm)
M14×1.5 (① in the figure)	170±15
M16×1.5 (② in the figure)	260±20



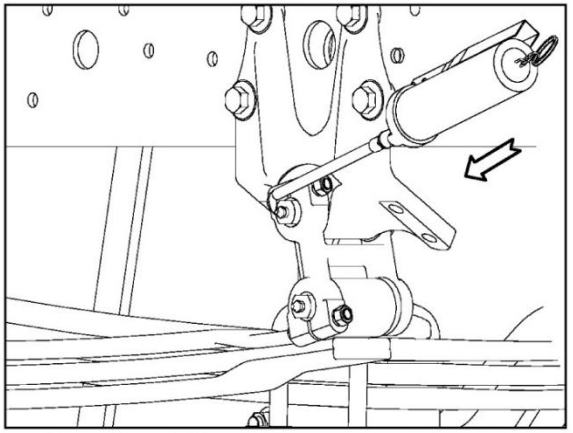
- Fasten connecting bolts between the air suspension airbag and the lower bracket.

- The bolts should be tightened evenly to the specified torque value.

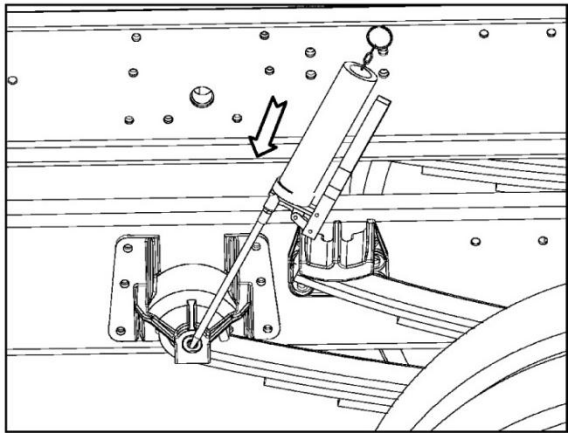
Thread specifications	Tightening torque (Nm)
M18×1.5	260±20



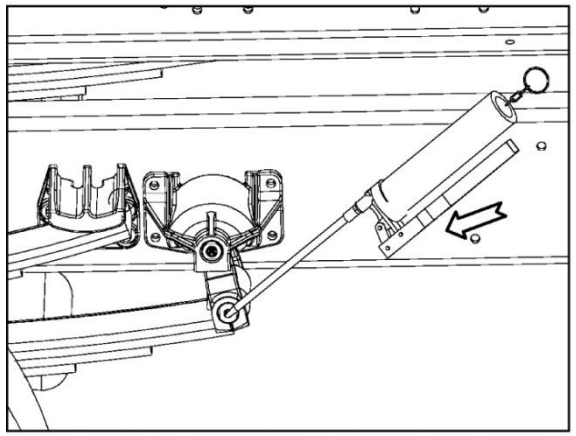
- Apply grease to the front bracket pin of the front leaf spring.



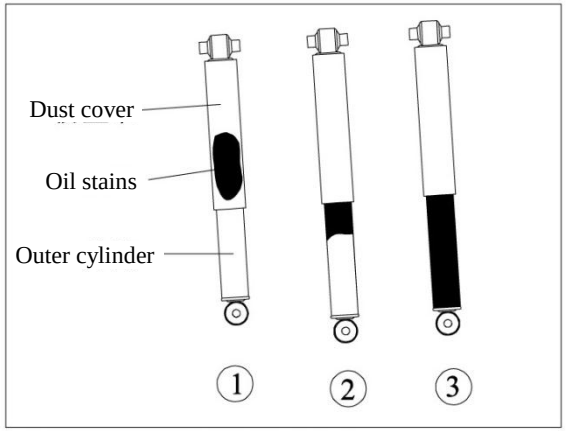
- Apply grease to the rear bracket pin an ring pins of the front leaf spring.



- Apply grease to the front bracket pin of the rear leaf spring.



- Apply grease to the rear bracket pin an ring pins of the rear leaf spring.

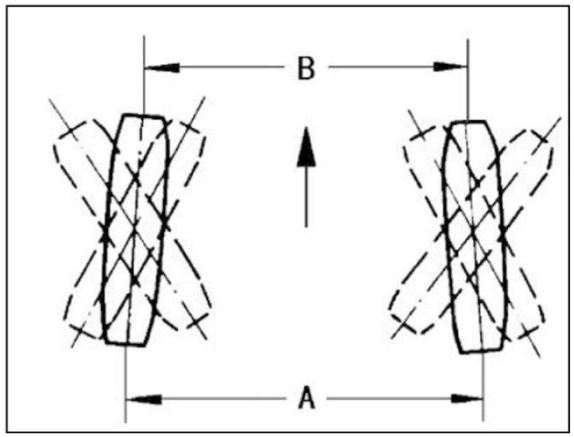


Determination of oil leakage fault of shock absorber

- If only the dust cover has oil stains, the shock absorber does not need to be replaced. (Figure ①)

- Tensile the shock absorber. If there are some oil marks on the outer cylinder, the shock absorber need not be replaced if the oil marks do not appear again after two weeks of drying. (Figure ②)

- Tensile shock absorber. If the oil mark on the outer cylinder is obvious, the humidity is serious, and there is a trend of development. With the development of time, the outer cylinder is covered by working oil of the shock absorber, so the shock absorber needs to be replaced. (Figure ③)



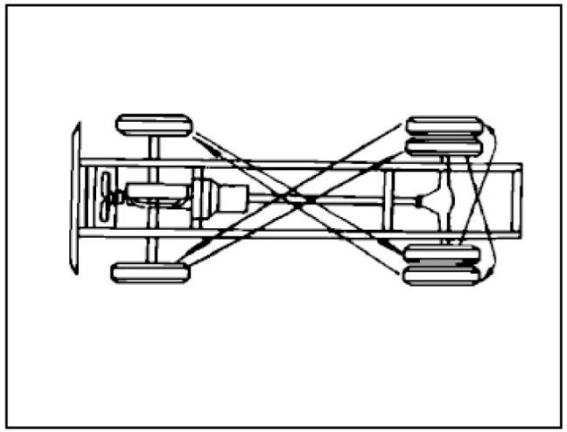
Adjustment of the front wheel toe-in

▶After a vehicle travels every 10,000km, check whether the toe-in value is within the specified range. If not, adjust it in time.

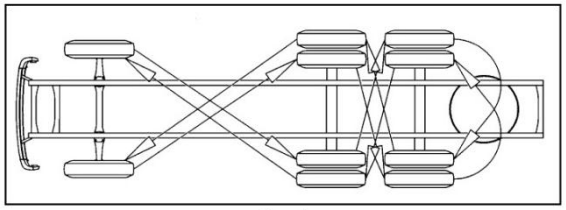
- The toe-in value of front wheel:

A-B＝(2~6)mm (oblique rubber tire)

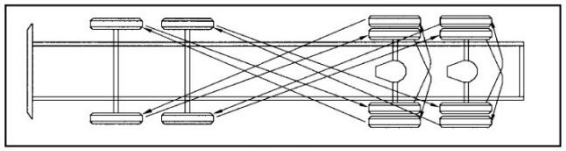
A-B＝(0~2)mm (meridian tire)



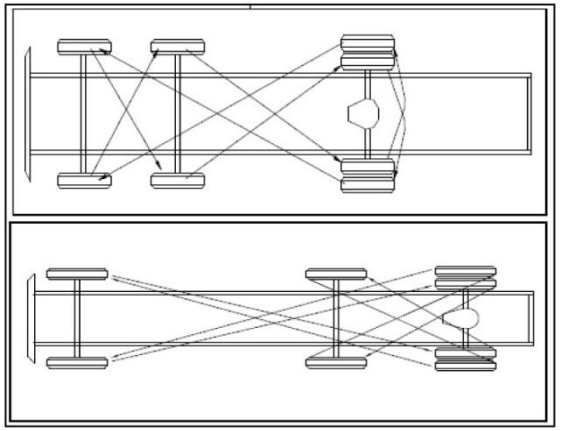
4×2



6×4



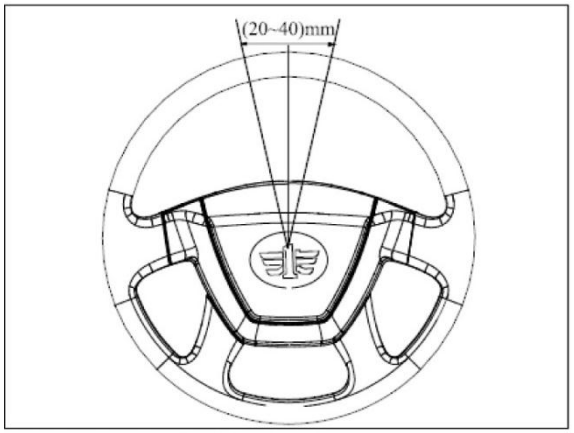
8×4



6×2

Regular rotation of the wheel

▶When a vehicle travels 10,000 km, the wheels shall be rotated according to the order shown in the figure.



Free rotation of the steering wheel

▶Check the amount of free rotation of the steering wheel after a vehicle travels every 10,000 km.

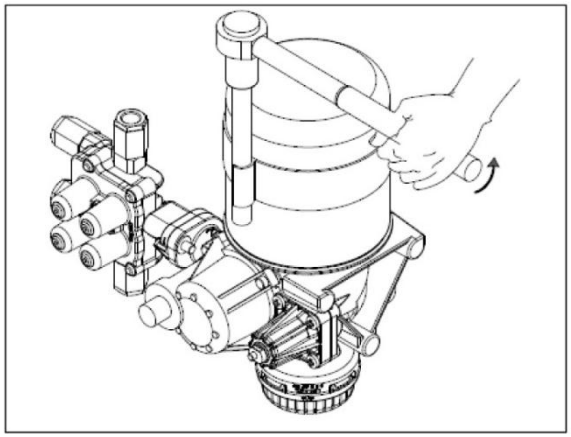
▶Place the front wheel in a straight-line driving position, and turn the steering wheel to the left and right until resistance is felt (at this time, the front wheel should not deflect). The amount of rotation should be in the range of (20 to 40) mm.

Drum brake system maintenance

▶To maintain the front and rear wheel brakes, inject grease from the grease fitting until the bottom of the camshaft overflows.

▶Injection amount: about 16g for the front brake and about 80g for the rear brake.

▶It is not necessary to adjust the brake clearance usually in operation. However, periodic inspection is necessary. The brake clearance can be checked through the check hole of the dust-proof disc.



Air drying tank

▶Drying tank needs to be replaced when any of the following phenomena occurs:

- There is a small amount of water released from the air chamber.

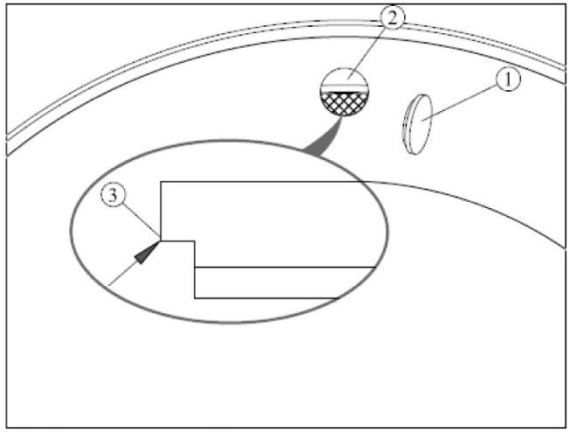
- There is any oil droplet at the exhaust port on the air handling unit.

- Road vehicles should be replaced every 20,000 km or half a year.

- Non-road vehicles should be replaced every 10,000 km or quarterly.

⚠Caution

A small amount of oil pollution at the exhaust outlet is a normal phenomenon. It is not necessary to replace it. If oil droplets are produced, please check whether the air compressor is invalid.



Replacement of friction plate

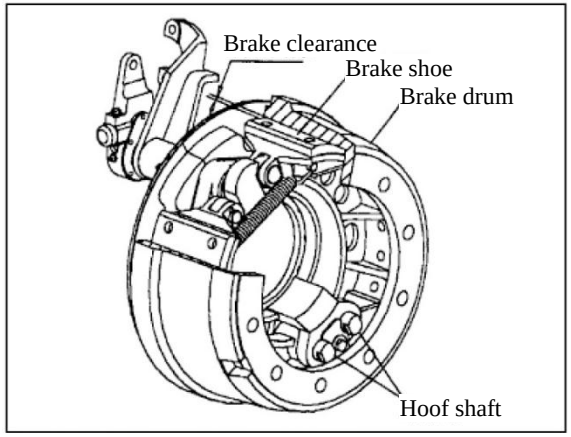
▶Screw off the blocking cover①

▶Check the wearing degree of the friction plate through the dust baffle inspection hole ②.

▶If the friction plate is worn to the side step ③, it needs to be replaced.

⚠Caution

Replace the brake friction plate, please go to the service station designated by FAW, and use products without asbestos fiber, which is conducive to safety and environmental protection.



Wheel brake clearance adjustment

▶The wheel brake clearance adjustment is made after the brake shoe friction plate is worn to reduce the clearance with the brake drum.

▶The clearance adjustment is different depending on the usage and it is usually made when the vehicle is traveling every 10,000 km.

- In order to make the left and right wheels have the same braking effect, the stroke of push rod of left and right brake chambers should be minimized and should not exceed 5mm.

- It is forbidden to adjust the brake by rotating the connecting fork and changing the length of the push rod.

▶Method of adjustment:

- Remove dust cover of adjusting arm.

- Push locking-sleeve for adjusting arm to the hexagonal head of the worm shaft and turn the worm shaft with a wrench to keep the clearance between the brake drum and the brake shoe in the range:(0.7±0.1) mm (measured at the inspection hole of dust shield).

- Brake chamber push rod stroke:

Front brake chamber (40 ±5) mm.

Rear brake chamber (40 ±5) mm.

Use of ABS/ASR (optional)

▶ABS is an electronic control system that monitors and controls the vehicle speed during braking. It can prevent the locking of the wheels caused by excessive brake force, so that the vehicle can maintain the lateral traction force under the condition of full braking, ensuring the stability of the driving, the steering control of the vehicle and the optimum effect of braking coordination of the main trailer; At the same time the brake friction between the available tire and the road surface as well as the optimization of vehicle deceleration and braking distance are also guaranteed.

▶ASR function is another main function of ABS system. It can improve the stability and maneuverability of the vehicle's starting and accelerating direction, obtain the most appropriate driving force and improve the adhesion performance when the vehicle starts and accelerates, and improve the starting ability of the vehicle. When starting, ASR ensures that the braking power of each driving wheel can be adjusted independently at low speed by applying appropriate braking moment or reducing engine torque to the driving wheel so as to utilize the driving force of each driving wheel fully, obtain the maximum traction force, and improve the starting acceleration performance of the vehicle.

▶ABS/ASR system consists of ECU, wheel speed sensor and sensor wire, gear ring, anti-lock solenoid valve, ABS indicator lamp, ASR alarm lamp, ASR mandatory switch, ASR solenoid valve, double-way valve, engine control interface, etc.

▶ Do not step on the brake pedal repeatedly. Depressing the brake pedal repeatedly will cause the ABS control command to be broken down, resulting in a decrease in braking capacity and an increase in braking distance.

▶If the wheels are not locked and the front wheels still have the guiding function when the ABS is emergency braking , emergency can be avoided by both braking and steering the wheel.

▶The ABS wheel sensor and ring gear are installed on the wheel, so the sensor probe and the tooth circle should always be kept clean to prevent mud and oil stains, especially ferromagnetic material adhering to its surface, which will cause sensor to fail or transmit wrong signal to the ECU and affect the normal operation of ABS.

▶Vehicles should strictly follow the prescribed tire pressure standards, and at the same time maintain the balance of coaxial tire pressure. It is strictly prohibited to use tires with different specifications.

▶Pay attention to check the clearance between the wheel speed sensor and the ring gear. If the clearance is too large, the sensor can be pushed in by hand to make the sensor lean against the upper gear ring, otherwise it will directly affect the normal operation of ABS.

⚠Caution

If ABS lamp is on with the vehicle running, it indicates the ABS system has fault. However, the regular brake still is active and the driving is safe. However, such vehicles should be diagnosed and repaired as soon as possible at the designated maintenance plant to restore the ABS system function to normal condition.

Precautions of ABS/ASR

▶It is strictly forbidden to wash out ECU with water.

▶Do not measure the ECU with a multimeter.

▶Turn off the power when removing ABS.

▶When charging batteries or welding vehicles with high voltage electricity outside the vehicle, the electrical circuit must be disconnected. Otherwise, the electronic control components will be damaged.

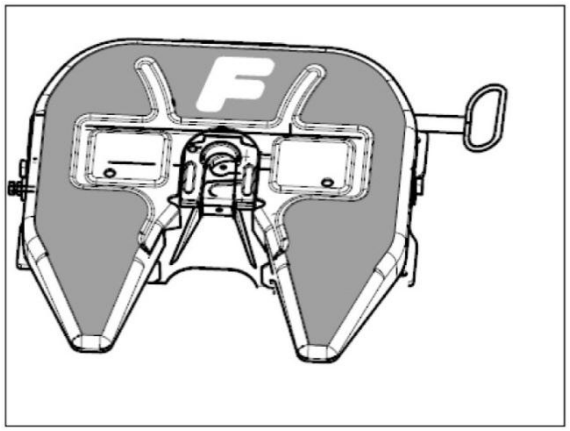
▶Frequently check whether the voltage of the generator is stable.

▶The damaged ABS and ASR indicator light should be replaced in time.

▶The capacity of the fuse can not be changed randomly.

▶After the maintenance of the bridge, check the clearance between the sensor and the ring gear. Do not tap the sensor.

▶In the case of a trailer, it must be equipped with ABS which complies with national standards in order to ensure the performance of the whole vehicle.



Maintenance of the traction seat

▶ Before the tractor is connected with the semi-trailer, clean the top surface of the tractor and lubricate the surface of the tractor with heavy-duty grease.

▶The wedge block bolt shall be filled with grease through the hole on the upper surface of the traction seat when a vehicle travels every 5000km.

▶After a vehicle travels every 5000km, adjust and inspect the following parts:

- In order to compensate for the wear of traction pins and lock hooks and prevent the wedge from being too tight to pull out the handle when the tractor is connected with the semi-trailer, the adjusting bolt is screwed out, then screwed in a clockwise direction until the adjusting bolt contacts the wedge, and then the half circle is screwed out counter-clockwise to lock nuts on the adjusting bolt.

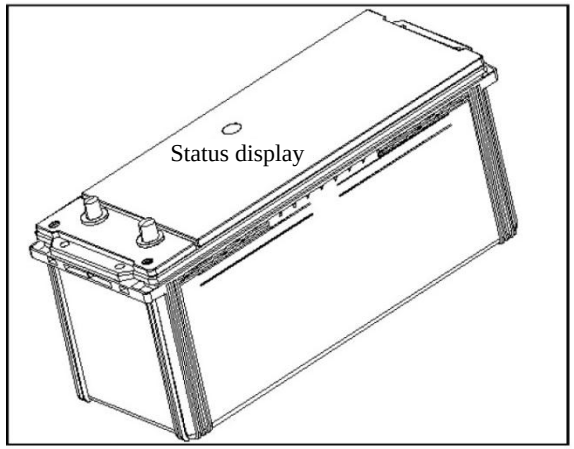
- In order to check the wear of the bracket rubber bushing, press traction seat plate to swing it with hand. When the hand is lifted, the traction seat will be returned to the original position. At this time, the person adjusting it shall feel the elasticity applied to the hand, otherwise the rubber bushing should be replaced.

- Check whether the hook bolt and wedge block bolt are tightened.

- Check the support shaft bolts at any time to ensure they are tight.

⚠Caution

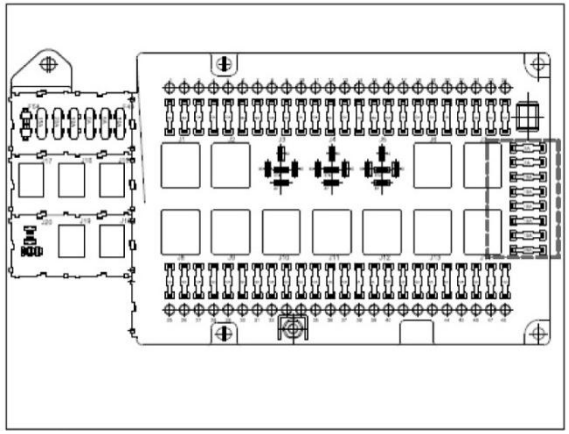
The trailer is allowed to be installed with another six 21W bulbs (three on one side). It is not allowed to increase the number of trailer turning lights or use of different power bulbs randomly.



Battery

▶ Regularly check whether the battery case is deformed, leaked or damaged and check the battery post terminal for liquid seepage and melting. Replace the battery with the above phenomenon.

▶ When a vehicle travels every 2 months, the battery status display should be check. The display shows green and the battery is in good condition. The display shows black and the battery needs to be recharged. The display shows white and the battery needs to be replaced.



Fuse

▶ The fuse is located on the right side of the dashboard.

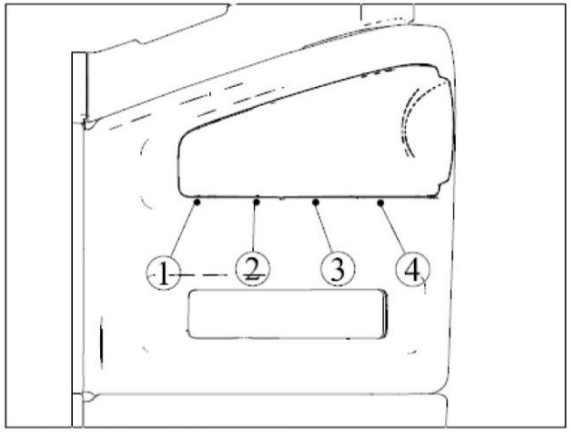
▶ Open the cover plate to find the corresponding fuse specifications and functional instructions.

▶ The spare chip fuse is on the right side of the fuse box. See the dotted frame.

⚠Caution

Before replacing the chip fuse, the ignition switch and other electrical equipment should be turned off.

Fuses of the same specifications must be replaced and inferior fuses must not be used.



Headlight light adjustment

▶ Method of headlight light adjustment

- Light up the high-beam and rotate the two dimming knobs under the high-light table to adjust the distance-light beam of the left and single-right headlights. The light shape must conform to GB4599.

	Adjustment direction of optical axis			
	Left headlamp			
	Up	Down	Left	Right
Screw 1			Clockwise	Counterclockwise
Screw 2	Clockwise	Counterclockwise		

	Adjustment direction of optical axis			
	Left headlamp			
	Up	Down	Left	Right
Screw 3	Clockwise	Counterclockwise		
Screw 4			Counterclockwise	Clockwise

⚠Caution

⊙ The adjustment rotating direction of the right headlamp is opposite to that of the left one.

⊙ The direction of screw rotation is observed from the front.

Replacing a light bulb

▶When each bulb of a combined lamp assembly needs to be replaced, it is required to choose the original lamp as much as possible.

▶When the bulb of the side marker lamp (side lamp) needs to be replaced, the same power bulb must be used, and it is prohibited to replace it with high-power bulb.

Lubricating oil

Change the lubricating oil

▶When replacing, disassembling, and reassembling the lubricating oil assembly, bearings, bushings, and others should be lubricated, and the friction surface of the parts with relative motion should be coated with grease.

▶Check the oil level of each assembly regularly and replenish it in time.

▶When the vehicle reaches the required mileage, the lubricant or gear oil of the corresponding assembly must be replaced.

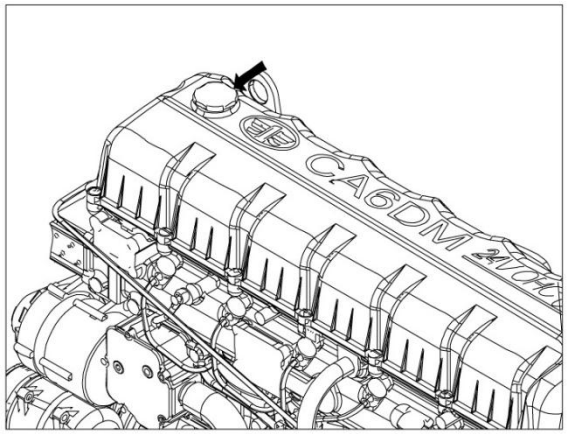
Oil change cycle of each assembly

- Engine every 10,000 km
- Transmission every 50,000 km
- Drive axle every 50,000 km or one year
- Steering system every 20,000 km or half a year

⚠Warning

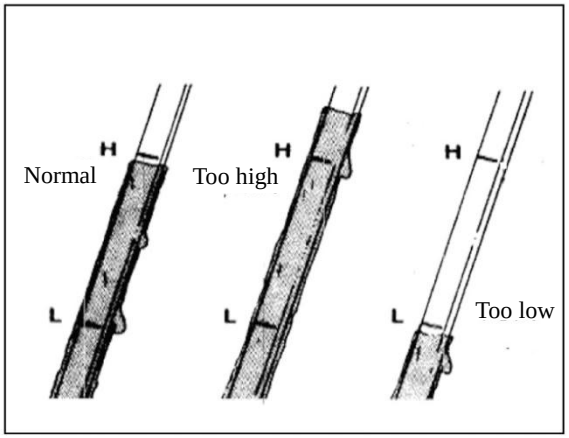
⊙ In strict accordance with the regulations, the lubricating oil that meet the standards are selected.

⊙ It is forbidden to mix different brands of lubricating oil produced by different manufacturers.



Engine oil change

- Park the vehicle on a flat surface and place sliding resistance block at the wheel.
- Under the state of hot vehicle (the oil temperature is about 80 ℃), unscrew the oil drain plug on the lower part of the oil pan (observe the oil heat, and do not get burned), and remove the impurities absorbed by the plug.
- Tighten the oil drain plug after the oil is drained.



- Turn over the cab and will see the oil filler opening. Add new lubricating oil so that the oil level reaches the upper limit of the oil scale.
- After the engine starts, idles for several minutes and stops for 30min, check the oil scale and the oil level shall be between the two marks.
- Cycle for change engine oil

- When the running-in of new vehicle is over (traveling 2500km).
- When driving every 10,000 km.

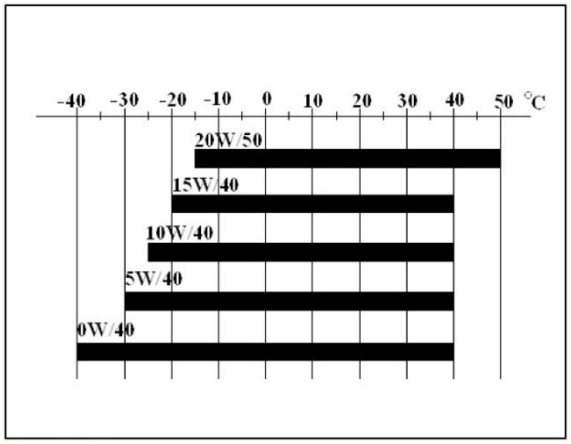
▶Oil quantity:

- About 23L (CA6DL series of engines)
- About 33L (CA6DM2 engine)
- About 34L (CA6DN1 engine)
- About 21L (CA6DE3 engine)
- About 22L (BF6M1013 engine)
- About 29L (CA6DK1 engine)

⚠Warning

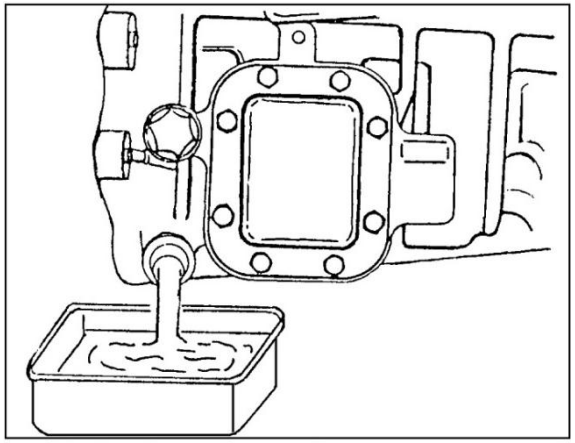
⊙ As oil viscosity is greatly influenced by temperature, the oil with the proper viscosity should be selected according to the ambient temperature.

⊙ The short-term ambient temperature is lower than applicable the temperature range of oil, which will affect the starting performance, but will not cause harm. However, if unsuitable oil is used for a long time, the engine wear will be accelerated.



▶Oil: CH-4

- 15W/40 oil is suitable for -20℃～40℃.
- 10W/40 oil is suitable for -25℃～40℃.
- 5W/40 oil is suitable for -30℃～40℃.



Change the lubricating oil of transmission

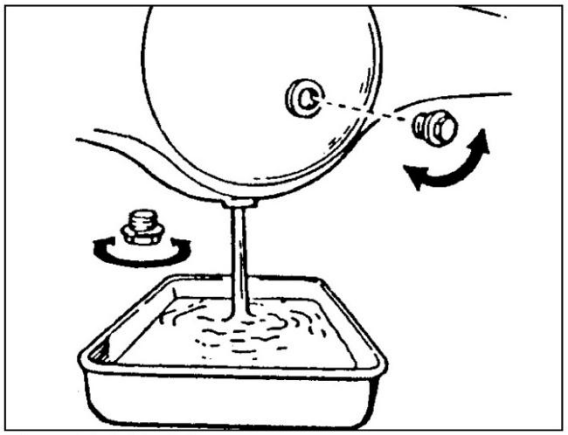
▶When a vehicle travels every 10,000 km, the oil level and leakage of the lubricating oil should be checked and supplemented at any time.

▶Oil change cycle

- When the running-in of new vehicle is over (traveling 2500km).
- The lubricating oil should be replaced when a vehicle travels every 50,000 km.

▶Oil:

80W/90 GL-5 or 85W/90 GL-5 heavy duty vehicle gear oil.



▶Oil quantity:

- It varies according to the specific type of transmission

- When the oil is filled until the oil filling hole overflows.

Transmission	Reference value of oil quantity (L)
12th gear	About 15L About 16L with PTO
10th gear	About 13L About 13.5L with PTO
9th gear	About 10.3L About 10.8L with PTO
8th gear	About 13L About 13.5L with PTO

⚠Caution

⊙ The lubricating oil shall be replaced when the vehicle has been just stopped (the vehicle is hot).

⊙ Be careful not to be scalded by hot oil.

⊙ Clean up the adsorbed impurities on the oil drain plug.

⊙ Dredge ventilation plugs.

Drive axle oil change

▶When a vehicle travels every 10,000 km or for a month, the oil level and leakage of the lubricating oil should be checked and supplemented at any time.

▶Oil should be added until the oil level is flush with the inspection hole.

▶Oil: 80W/90GL-5 heavy duty vehicle gear oil (Q/CAM-29.3)

▶Change oil cycle and oil quantity:

- When the running-in of new vehicle is over (traveling 2500km).

- Lubricants should be replaced for road vehicles every 50,000 km or a year.

- Lubricants should be replaced for off-road vehicles every 20,000 km or a year.

- Oil quantity: see table below

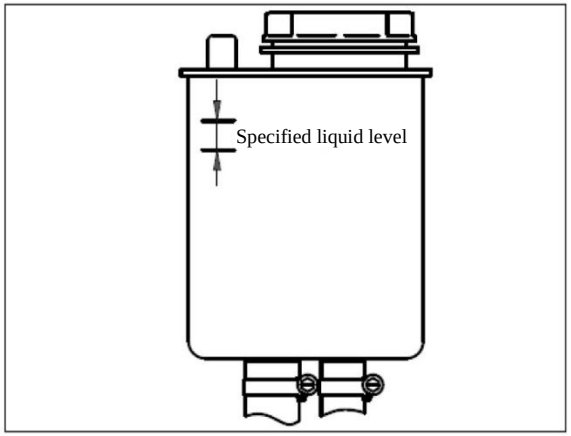
⚠Warning

⊙ The lubricating oil shall be replaced when the vehicle has been just stopped (the vehicle is hot).

⊙ Be careful not to be scalded by hot oil.

⊙ Clean up the adsorbed impurities on the oil drain plug.

Model of drive axle	Oil quantity (L)
R13T457	Middle axle: about 20 Inter-axle differential: about 0.8 Rear axle: about 15
R13D457 R13D485	About 15
R13T485	Middle axle: about 19 Rear axle: about 15
R13D498	About 23
R11T435	Middle axle: about 15 (J6M) Rear axle: about 12 (J6M)
R13T440	Middle axle: about 19 Rear axle: about 14
R13T290	Middle axle: the main reducer is about 9, one side hub reducer: 2 Rear axle: the main reducer is about 8, one side hub reducer: 2
R16T230W	Middle axle: the main reducer is about 18, one side hub reducer: 3.5 Rear axle: the main reducer is about 14, one side hub reducer: 3.5



Oil change for steering system

▶When the vehicle is running 10,000 km, check the oil level of the hydraulic oil and add it as required.

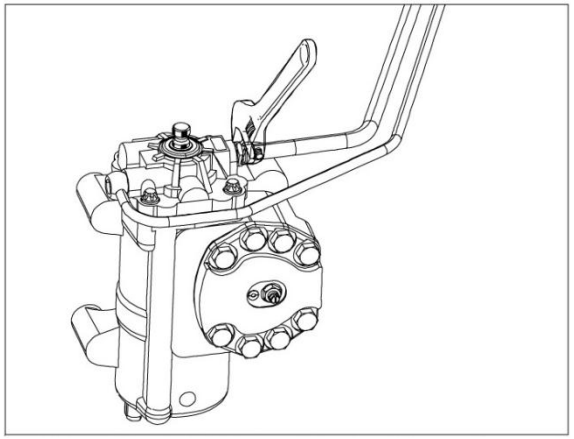
▶Oil quantity:

- 5L: Single front axle steering vehicle with 90 cylinder diameter steering gear.

- 6L: Single front axle steering vehicle with 100 cylinder diameter steering gear.

- 7L: Single front axle steering vehicle with 110 cylinder diameter steering gear.

- 8L: Double front axle steering vehicle with 100 cylinder diameter steering gear.



- 9L: Double front axle steering vehicle with 110 cylinder diameter steering gear.

▶ Oil: TF-8M hydraulic transmission oil (condensation point is -32 ℃) according to Q/CAM-217.

▶Oil change cycle:

- When the running-in of new vehicle is over (traveling 2500km).

Hydraulic oil and filter element in the steering oil tank is replaced when a vehicle travels every 20,000 km or for half a year. Oil change method:

- Push up the front axle.

- Remove the low pressure oil connector from the steering gear.

- Turn the steering wheel left and right to the limit position for 2~3 times And then drain the oil.

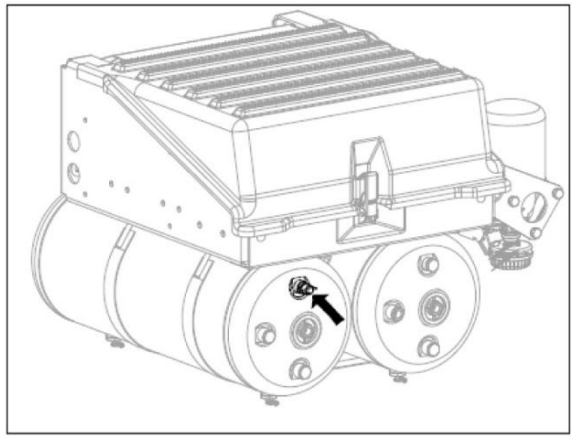
- Reinstall the connector.

▶Open the top cover of the steering tank, fill the tank with hydraulic oil until the top cover of the high filter core, and idle the engine.

▶Turn the steering wheel left and right to the extreme position (staying no longer than 5 seconds), and then oil continue to added to the tank until the high filter element is covered with no drop and no air bubble.

▶He oil level should be between the upper and lower marking lines.

Emergency handling

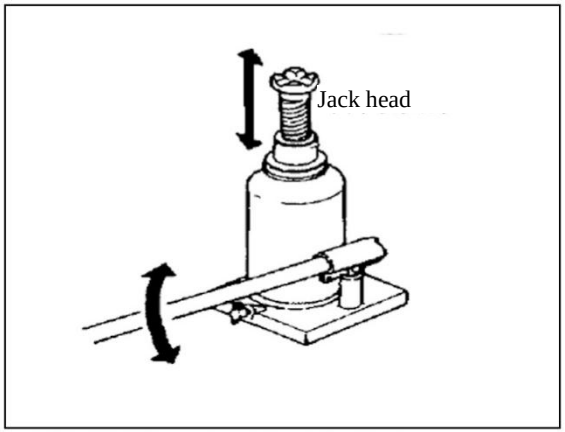


Tire inflation

▶In the way of driving, if the tire is deflated, it needs to be inflated in time.

▶Inflatable method: by using the tire inflation unit in the vehicle tool, first connect one end to the tire valve, then screw the other end into t the test connector of the air reservoir and start the engine to make the air compressor work. That is tire inflation.

▶Check the air pressure gauge after inflation and adjust the air pressure to the specified value.

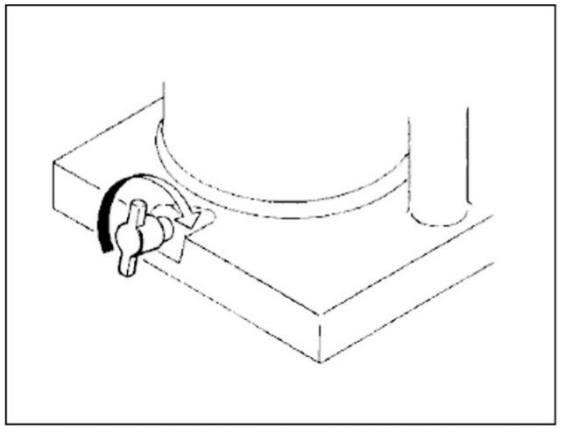


Replace tires (in a flat nut form)

▶Removal of tires

- When removing the tire, loosen the wheel nuts first and then use the jack. Wheel nuts are right-handed.

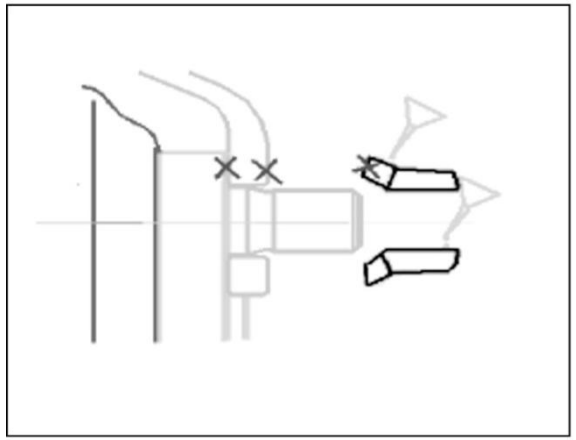
- Insert into the jack sleeve with the socket wrench handle, shake the handle up and down, and extend the jack head and lift the vehicle. When the tire is slightly off the ground, unscrew the nut and remove the tire.

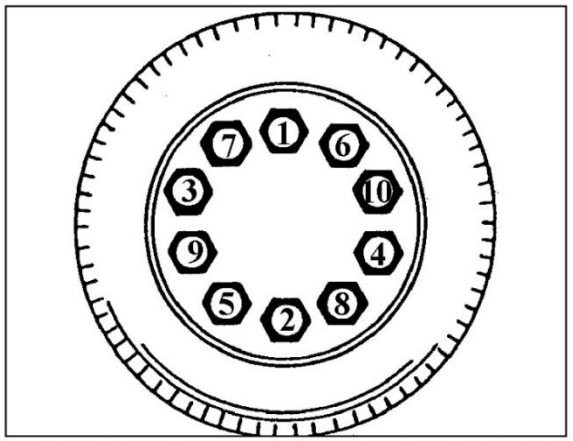


- Then tighten the release valve clockwise to fix the jack.

⚠Warning

When using the jack, rotate the release valve slowly to descend the vehicle. If tightening and twisting too fast, the vehicle will drop sharply and the jack will slip off, which is very dangerous.





▶Installation of tires

- Before installing the tires, the threaded parts of the bolts and nuts and the mounting surface of the rims should be cleaned, otherwise the nuts will loosen. If the thread of the bolt or nut is damaged or the rim is deformed or cracked, it should be replaced.

- When installing tires, lubricate the screw face of nuts with engine oil or gear oil or grease, and spray two drops or two times slightly. The oil on the screw face should be slightly moist, and excessive oil should be rubbed off with rags. No oil (coating, rust, foreign body) is allowed on the part marked "X" in the drawing.

- Tighten the nut until it does not loosen, then loosen the jack, put down the vehicle, and tighten the nut in the shown order.

emergency handling

- After the wheel is grounded, turn the tire in a semicircle and tight again.

- After replacing the tire, an initial test run should be performed.

- After driving (50 to 100) km, tighten it again according to the specified torque. Tightening torque is (500~600) Nm.

⚠Caution

⊙ Do not use molybdenum disulfide, organic molybdenum and other lubricants with molybdenum.

⊙ Insufficient or excessive tightening of wheel nuts will cause hub bolts to break and rim cracks, leading to wheel shedding.

⊙ When installing double tires and after lowering the jack, tighten nuts 2 to 3 times in a diagonal order.

⊙ Stagger the inner and outer valve nozzles to facilitate the inflation.

Common faults

▶Do not start the engine.

- Starter is not rotated or slowly.

Fault diagnosis	Solutions
Starter solenoid switch current fuse blows	Replace
Insufficient battery voltage	Charge or replace the battery
Battery cables fall off, loose and corrode	Clean corroded parts and install them
Engine oil viscosity is too high	Replace with engine oil with proper viscosity
Starter operation is abnormal	To FAW service station for service
The shift lever is not in neutral	Return handle to neutral position

- It is possible to rotate the starter normally.

Fault diagnosis	Solutions
Lack of fuel	Refueling and releasing air
Fault of the oil-breaking control system	Check control circuit, air circuit and mechanical part
Fuel system mixed with air	Release air
Fuel filter is blocked	Replace filter element
Freezing of fuel	Heating fuel pipe
Air filter is blocked	Clean or replace filter
Insufficient engine warm-up time	Correct operation
Engine preheat circuit fuse blows	Replace the fuse

The engine can be started but the engine will go off immediately

Fault diagnosis	Solutions
Idle speed is too low	To FAW service station for adjustment
Fuel filter is blocked	Replace filter element
Air filter is blocked	Clean or replace filter

Black smoke

Fault diagnosis	Solutions
Air filter is blocked	Clean or replace filter

Overheating of engine

Fault diagnosis	Solutions
Foreign matter attached to the front of the radiator	Clean with soft brush
The thermostat fails	Replace
Insufficient coolant	Supplement coolant
Water pump leakage	Replace
Fan clutch fails	Replace

Engine oil pressure does not rise

Fault diagnosis	Solutions
Engine oil is insufficient	Supplement engine oil
Engine oil viscosity is not suitable	Replace engine oil with proper viscosity
Oil pump fault	Replace the oil pump
Plugged Oil Filter	Replace

Excessive oil consumption

Fault diagnosis	Solutions
Use not suitable oil	Replace engine lubricating oil that meet the requirements
Excessive engine oil	Add appropriate amount of oil
Oil leakage	Check the lubrication system to eliminate the loose place with oil leakage
Engine oil replacement interval too long	Replace engine lubricating oil immediately
Plugged Oil Filter	Replace filter element

Excessive fuel consumption

Fault diagnosis	Solutions
Fuel leak	Check the fuel system to eliminate the loose place with oil leakage
Air filter is blocked	Clean or replace filter
Insufficient tire pressure	Adjust the air pressure as required
Clutch sliding	Replace the clutch driven plate assembly

Insufficient dynamic property

Fault diagnosis	Solutions
Not release parking brake	Release parking brake
Air filter is blocked	Clean or replace filter
Fuel filter is blocked	Replace filter element
Intercooler leak and plugging	Check and clean
Clutch sliding	Replace the clutch driven plate assembly
Fuel system mixed with air	Release air
The fuel injection pump is not operating properly.	Check and adjust

Incomplete clutch separation

Fault diagnosis	Solutions
Low air pressure	Engine revolutions is raised to increase air pressure
Insufficient clutch fluid	Add brake fluid

Poor braking performance

Fault diagnosis	Solutions
Brake pad wear	Replace
Brake valve fault	Replace

Braking deviation

Fault diagnosis	Solutions
Uneven tire pressure	Adjust air pressure as required
Eccentric wear of tire	Replacing tires
Unbalanced loading of goods	Even load
Uneven brake clearance between left and right wheel	Adjust the brake clearance to the specified value

The steering wheel is operating heavy

Fault diagnosis	Solutions
Uneven tire pressure	Adjust air pressure as required
Eccentric wear of tire	Replacing tires
Unbalanced loading of goods	Even load
Uneven brake clearance between left and right wheel	Adjust the brake clearance to the specified value

Steering wheel swing

Fault diagnosis	Solutions
Loose wheel nuts	Tighten with specified torque
Insufficient tire pressure	Adjust t air pressure as required
Eccentric wear of tire	Replacing tires
Loose ball pin on steering pull rod	Replace
Incorrect front wheel alignment parameters	To FAW service station for adjustment
Imbalance between wheels	To FAW service station for adjustment

Vehicle lamp doesn't work

Fault diagnosis	Solutions
Bulb wires break	Replacing a light bulb
Chip fuse blows	Replace chip fuses with specified amperage
Relay is damaged	Replace
Light switch is damaged	Repair or replace
Line breakage or poor grounding	To FAW service station for adjustment

Repeated discharge of battery

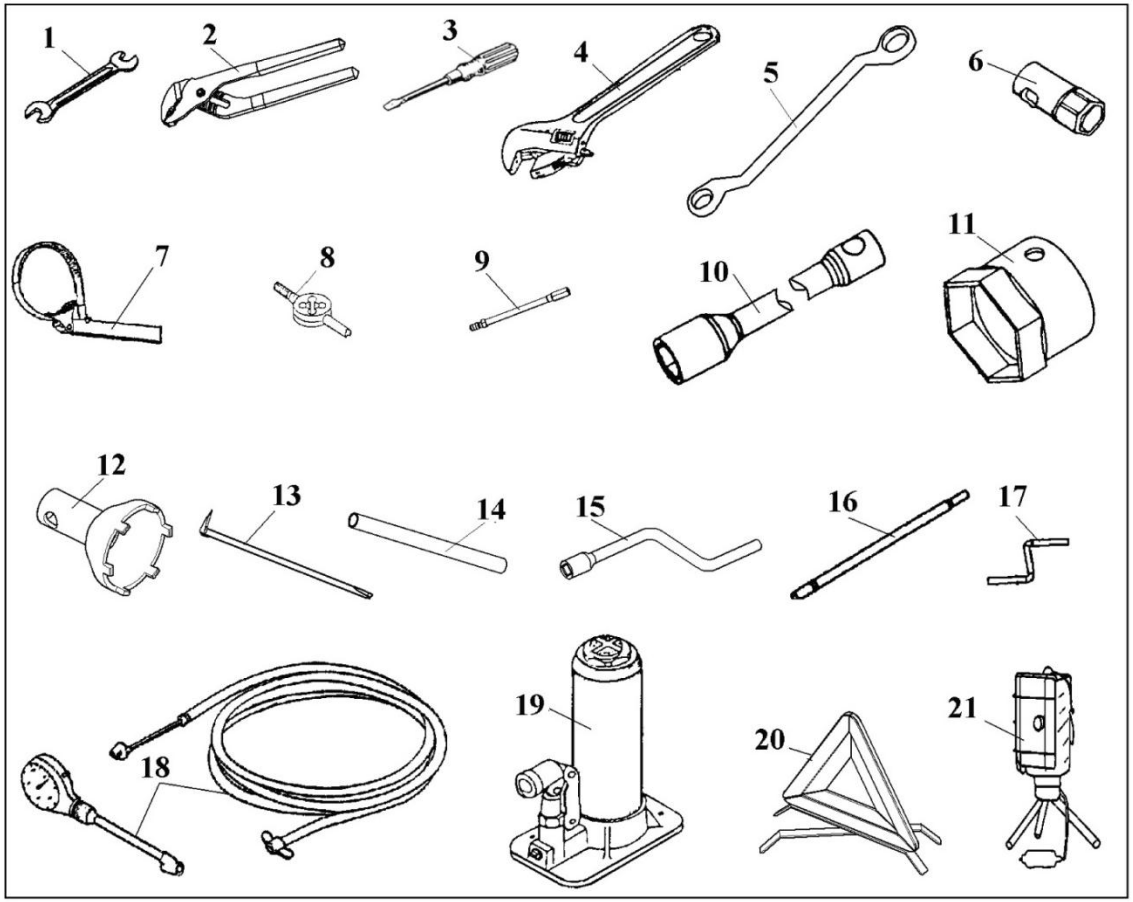
Fault diagnosis	Solutions
Battery connector falls off, loose or corroded	Clean the corroded parts and securely tighten the connectors
Battery fluid is insufficient.	Supplement electrolyte.
Battery delivered to service life	Replace battery
Idling speed is too low	To FAW service station for adjustment
Turn the switch in the ON gear	The switch should be closed frequently

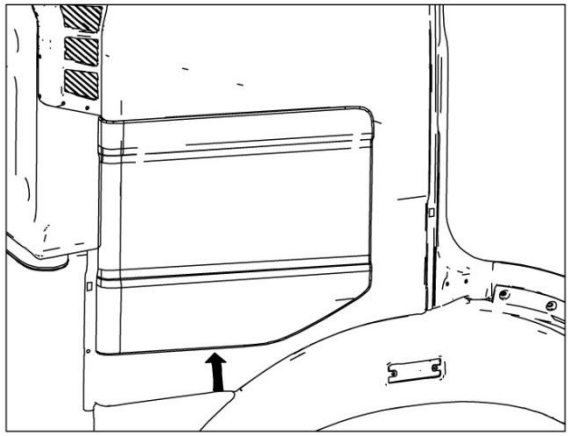
On-board tools

S/N	Name	Quantity	Remarks
1	8×10 double-ended wrench	1	
	11×13 double-ended wrench	1	
	16×18 double-ended wrench	1	
	21×24 double-ended wrench	1	
2	Multi-function boosting pliers assembly	1	
3	Dual-purpose screwdriver assembly	1	
4	Adjustable wrench assembly	1	
5	13×16 double offset ring spanner	1	
	18×21 double offset ring spanner	1	
6	Sleeve wrench for U-shaped bolt of leaf spring	2	The size of opposite side is 30, 36, 41 or 46
7	Screw-on type filter wrench	1	
8	Valve core repair tap wrench	1	
9	Inflating valve extension rod assembly	1	

Continued

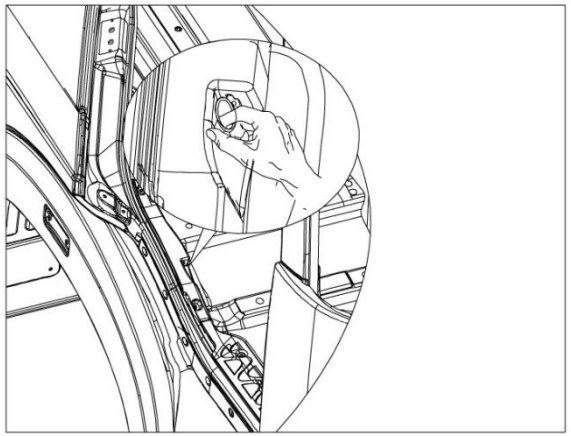
S/N	Name	Quantity	
10	30×33 wheel socket wrench	1	
11	Sleeve wrench for rear wheel hub bearing nuts	1	Car without wheel reduction
	Front axle steering knuckle nut socket wrench	1	
12	Wrench for round nut of wheel-side deceleration axle head	1	Dedicated for hub reducer
13	Pry bar and wrenching bar	1	
14	Loop bar	1	
15	Spare frame wrench	1	
16	Multi-function sleeve	1	
17	Multi-function sleeve wrenching bar assembly	1	
18	Tire inflation unit assembly	1	
19	Manual vertical hydraulic jack	1	
20	Warning triangle assembly	1	
21	On-board tool lamp	1	


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Toolkit

▶The toolkit is placed in the toolbox on the right side of the cab, outside and behind the cab.



▶The opening handle of the toolbox is located at the intersection of the right door of the cab and the floor.

- Pull the handle and open the toolbox slowly under the action of the lifting cylinder.

▶The multi-purpose sleeve is placed at the end of the toolbox, close to the guard plate.

▶The toolkit is placed in the toolbox on the right side of the cab, outside and behind the cab.

▶The jack is stored in the rear toolbox on the right side of the cab.

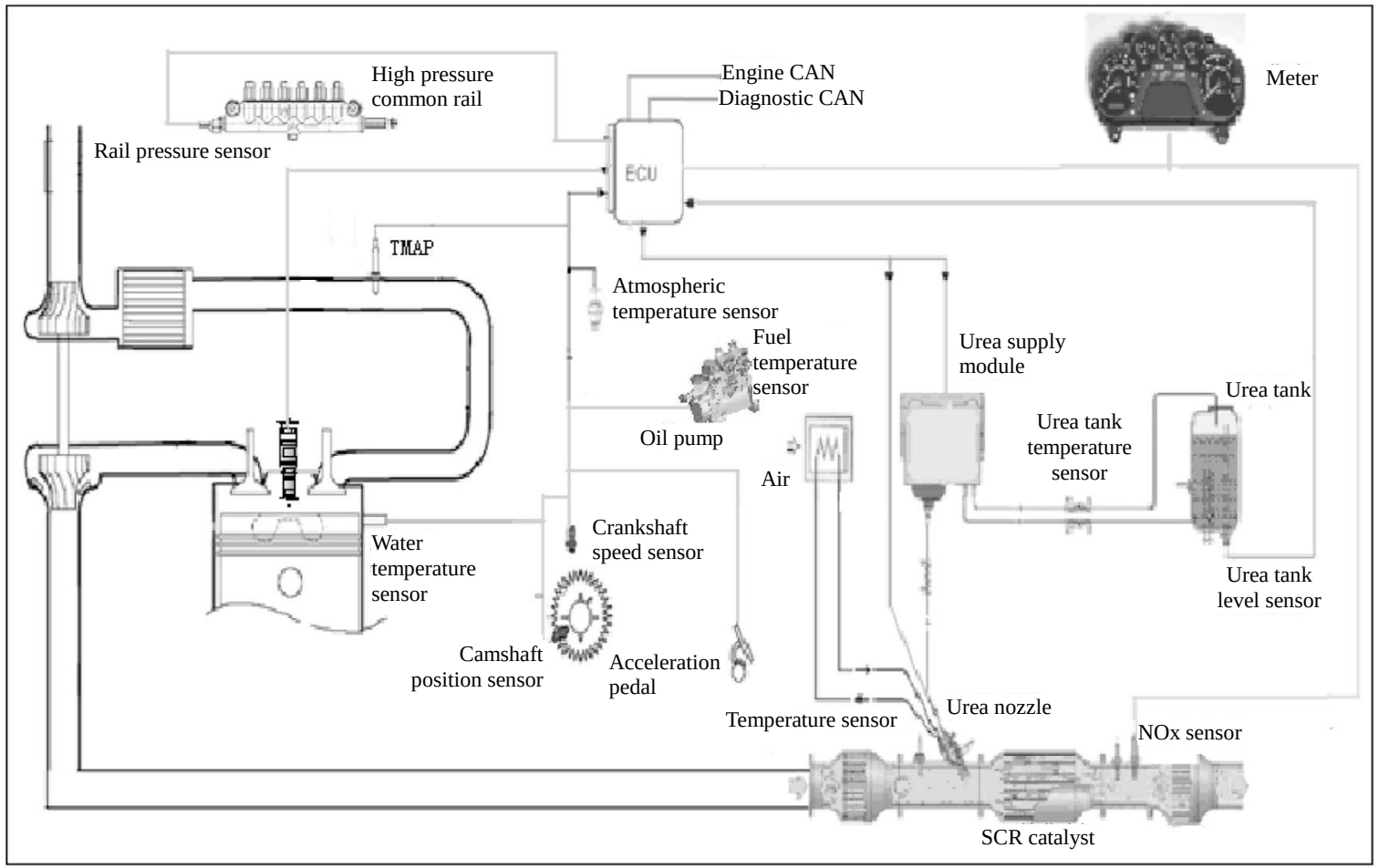
⚠Caution

⊙ The jack can be used only on the hard supporting surface. It should avoid severe vibration or sliding. It must be placed in the right horizontal position of the vehicle fulcrum. The maximum inclination angle should not exceed 6°. The lifting weight of the jack should not be less than the vehicle tonnage. It should not be overloaded.

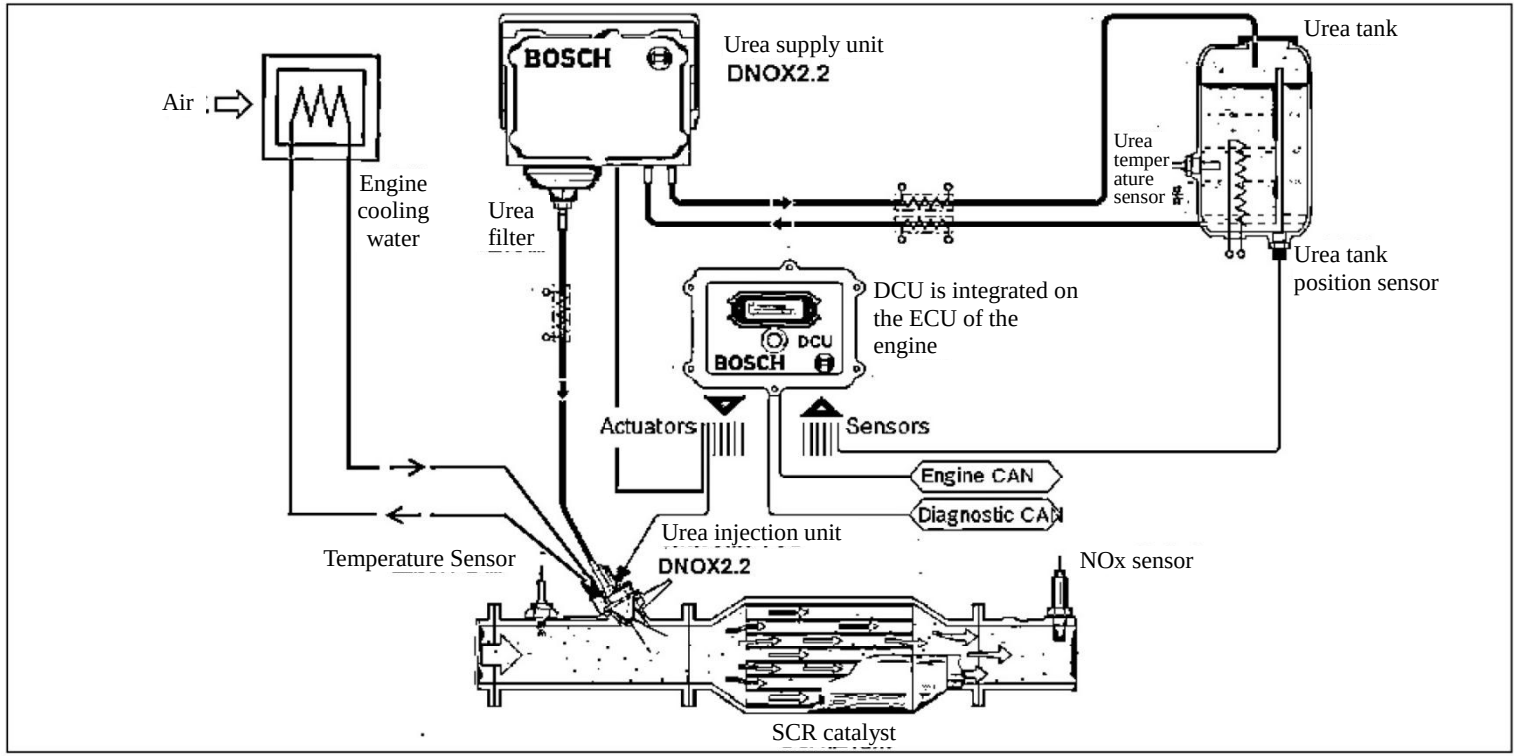
⊙ When the vehicle is lifted, a stable entity with the same height shall be inserted into the corresponding part of the vehicle, otherwise the personnel can not work under the vehicle.

⊙ When the jack needs to be unloaded, the release valve must be rotated slowly to make the vehicle descend slowly. If tightening and twisting too fast, the vehicle will drop sharply and the jack will slip off, which is very dangerous.

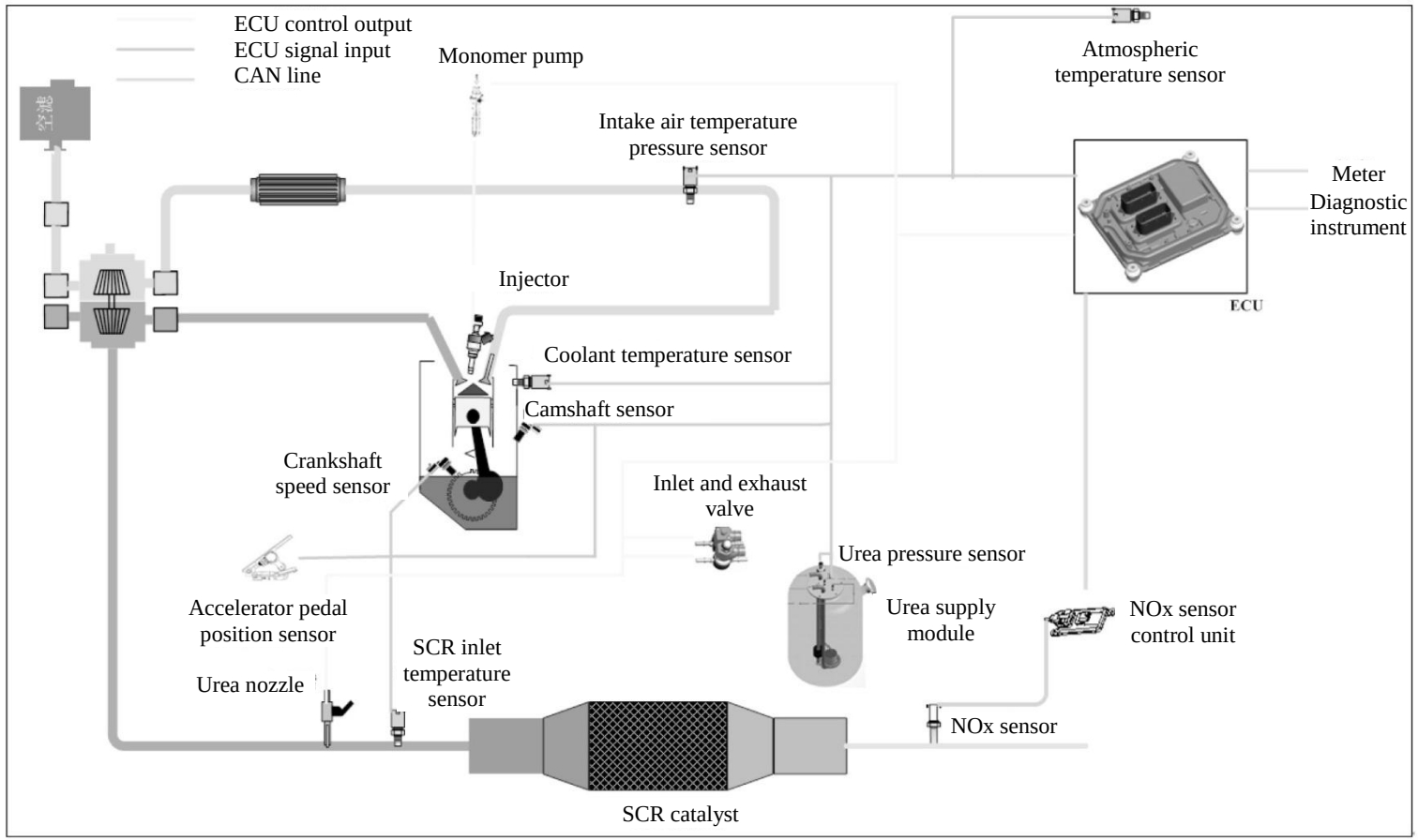
BOSCH EDC17 Electrical control system operation schematic diagram



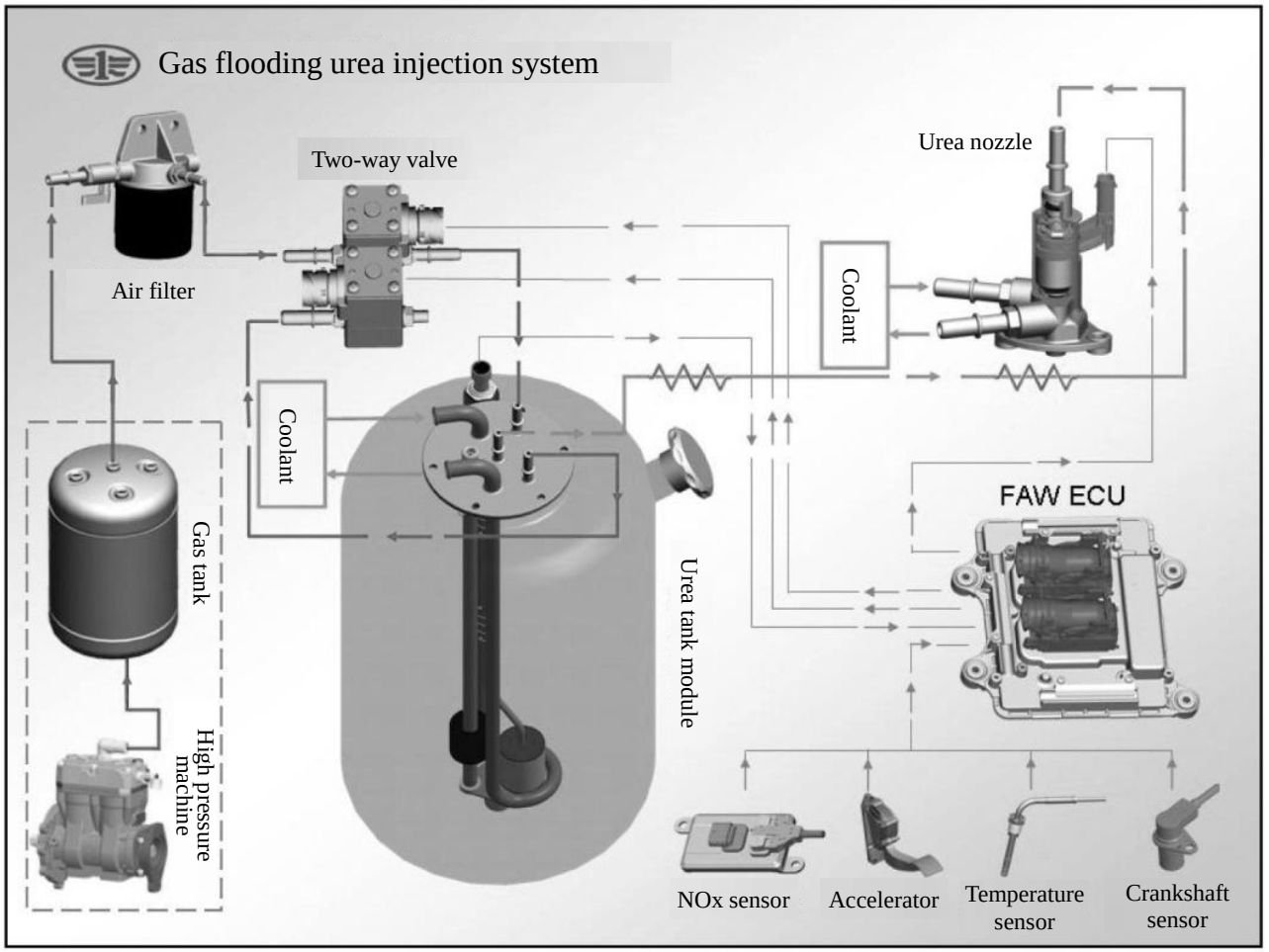
BOSCH EDC17 post treatment system structure schematic diagram



Electrical control system operation schematic diagram

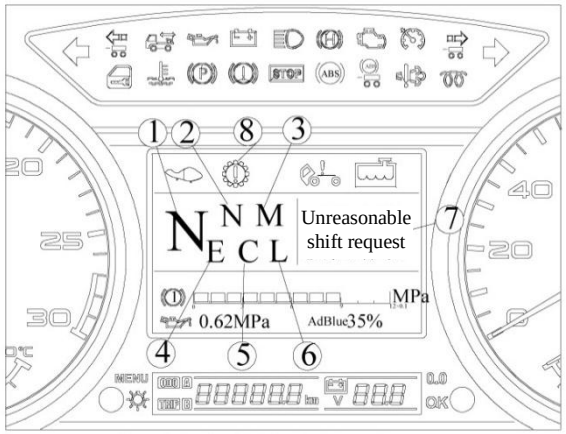


Domestic air drive post treatment system structure schematic diagram



J6 pilotage tractor

Switches Buttons Handles



AMT Automatic Transmission Operating System

▶ AMT automatic transmission has 12 forward gears and one reverse gears. According to the running state of the vehicle and the driver's intention, the clutch can be automatically separated, combined and shifted.

AMT Information LCD Display

① Current gear

② Target gear

③ A/M mode display

④ E/P mode display

⑤ C mode display

⑥ L mode display

⑦ Text information prompt area

⑧ Alarm lamp display

⑦ Text information prompt area

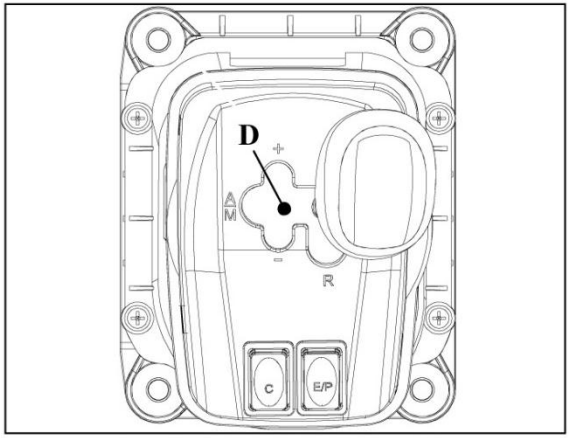
- When AMT automatic transmission appears operation prompt or system fault alarm, the text message prompt is displayed in this area.

- When AMT automatic transmission system has no text message, the fuel consumption information is normally displayed in this area.

⑧ Alarm lamp display

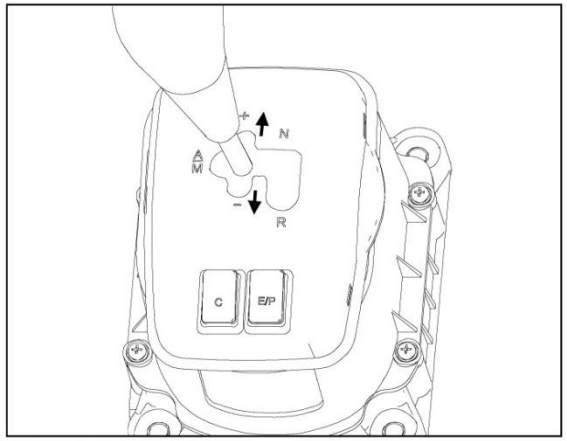
- When the AMT system fails in general, the transmission fault lamp is yellow (shown on the left side).

- When the AMT system fails seriously, the transmission fault lamp is red (shown on the right side).



AMT automatic transmission operating handle

D	Forward gear
N	Neutral
R	Reverse gear
+	Up-shift gear
-	Down-shift gear
A/M	Automatic mode/manual mode
E/P	Economic mode/power mode
C	Climbing mode



▶Manipulating handle up (+)/down (-) gear

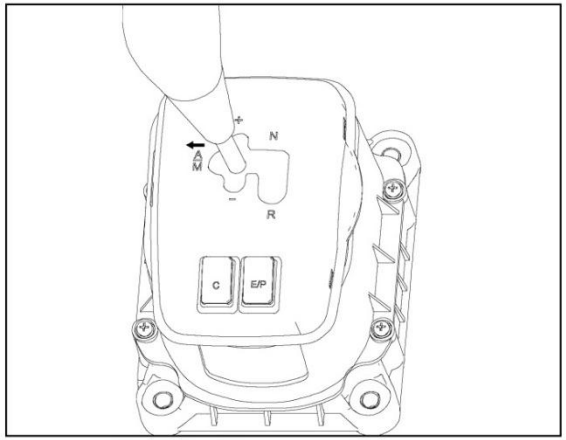
- When the handle is in the D position, push the handle forward once, and the transmission goes up with one gear.

- Push the handle forward twice continuously and quickly, and the transmission goes up with two gears.

- Otherwise, it goes down with gears.

⚠Caution

AMT automatic transmission operating handle is an electronic control product, which is easy to operate. When shifting, there is no need to exert any excessive control force.



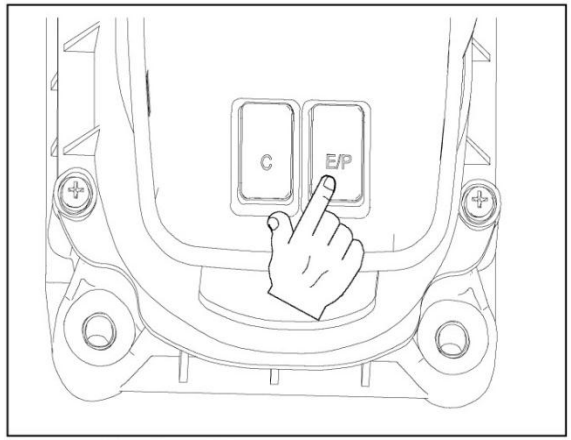
▶A/M mode switching

- The default mode of the system is automatic mode. It can be switched between automatic and manual modes by pulling the handle to A/M position.

- The corresponding mode will be displayed on the instrument. It displays "A" in automatic mode and "M" in a manual mode.

⚠Caution

Shifting mode can be switched at any time during the driving process of the vehicle.



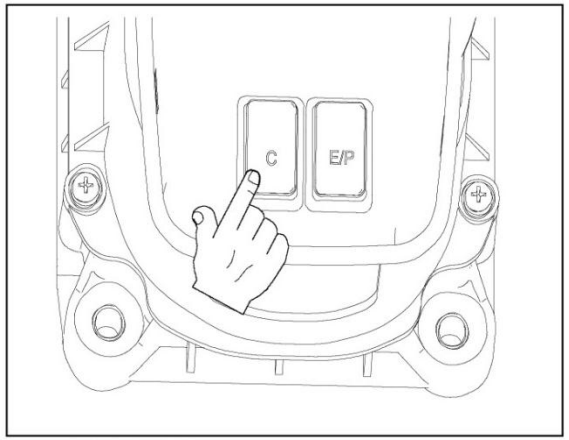
▶E/P mode switching

- The default mode of the system is the economic mode. Through the E/P button, the system can be switched between the economic mode and the dynamic mode.

- “E” is shown in the display area on instrument as the economic mode, and "P" as the dynamic mode.

- Running under the economic mode "E" can save fuel, mainly for light-duty vehicles or flat roads.

- Running under the dynamic mode "P" can achieve greater dynamic performance, mainly for heavy-duty uphill vehicles.



▶C mode selection

- Press the C mode button, the display area on the instrument will display "C". At the moment, the vehicle is in climbing mode.

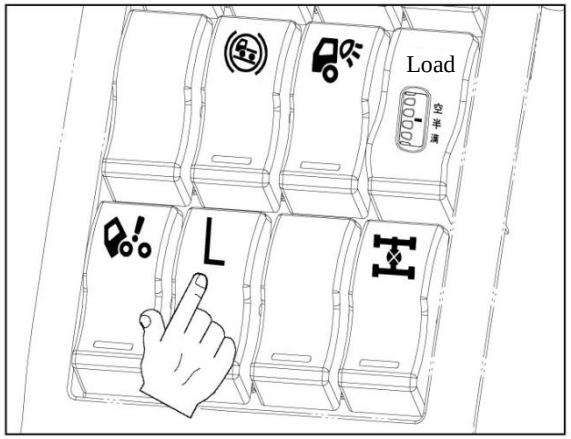
- The climbing mode is used for heavy-duty driving and ramp start.

⚠Caution

⊙ In climbing mode, the maximum gear of the vehicle can only be raised to the 4th gear.

After climbing, it should be closed in time.

⊙ When it is necessary to carry out clutch self-learning, start the engine and press "C" for 6 seconds to trigger clutch self-learning. The instrument will prompt the learning process and results.



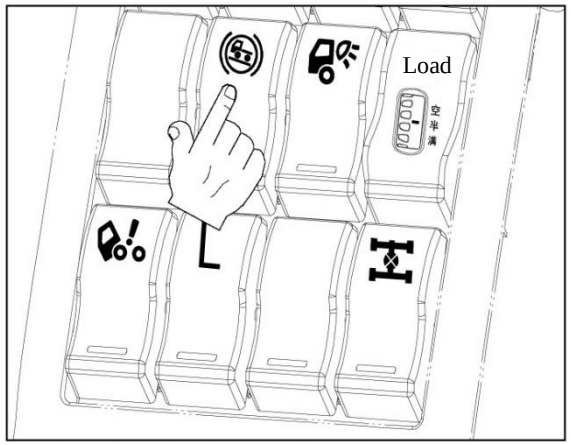
▶L mode selection

- Press the L mode button on the dashboard, and the display area on the dashboard will display "L". At the moment, the vehicle is in the low-speed mode.

- The low-speed mode is mainly used for vehicle depot transfers.

⚠Caution

In the low-speed mode, vehicles can only travel in Gear 1 or R.



▶Selection of Auxiliary Braking Function on Slope

- Press the key on the dashboard and the display area on the dashboard will display the Chinese character "Slope Start Assistant Opening". At the moment, the vehicle starting to release the brake pedal will have the auxiliary braking effect.

- The auxiliary braking function of the slope road is mainly used for the start-up of the road with a large gradient.

⚠Caution

When the slope auxiliary braking function is effective, it can effectively prevent the vehicle from sliding, and the starting time is slightly longer or no difference.

AMT Vehicle Driving Operation

▶Start the engine

- Turn the key switch to the ON position and wait for AMT self-check to complete. The text information prompt area on the instrument will show “The self-check of shift system successes".

- After confirming that the current gear area of the instrument shows Gear "N", turn the key to the "START" gear.

⚠Caution

If the alarm light on the instrument is on and the display area shows "insufficient pressure in the gear shifting system" when the power is on, idle in place for a period of time. When the air pressure rises, it can be released automatically.

▶Vehicle starting

- Confirm that there is no alarm information in the display area of instrument alarm lamp and the prompt area of instrument text information.

- Manipulate the AMT handle and change it into the D (forward gear) position.

- Make sure that the "current gear area" on the instrument shows the starting gear, then step on the accelerator pedal to make the vehicle start smoothly.

⚠Caution

⊙In the low temperature in winter, the AMT transmission oil is viscous. In order to ensure the normal lubrication of the parts inside the transmission, the vehicle should be fully warmed up before starting the operation.

⊙In the economy mode (E), the default starting gear is 2nd gear, and the driver can switch the starting gear between 1st and 3rd gears by the joystick lift.

⊙ In the power mode (P), the default starting gear is Gear 1, and the driver can start in Gear 2 or 1 by manipulating the handle to lift gear.

⊙ In the climbing mode (C), the default starting gear is Gear 1.

⊙ In the low-speed mode, the default starting gear is Gear 1.

▶Automatic mode (A)shift

- In the automatic mode, AMT transmission will shift automatically according to road conditions and driver's intentions.

- In the automatic mode, the driver can manipulate the handle lifting gear for manual intervention shift.

⚠Caution

⊙ The AMT transmission will not respond to this shift request if the driver chooses the gear that will cause the engine to overspeed or stall when manual intervention is applied.

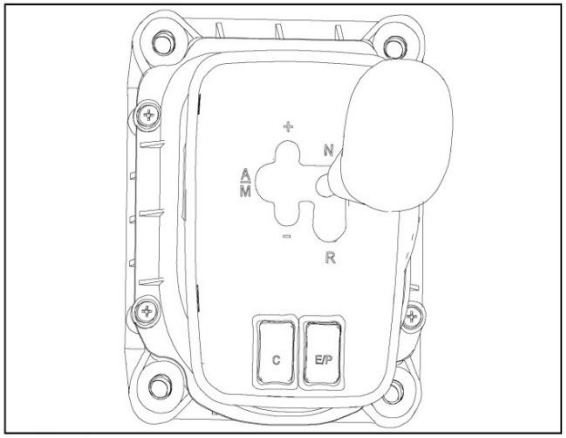
⊙ After manual intervention, the vehicle will continue to drive in the automatic shift mode.

▶Manual mode (M) shift

- In the manual mode, the driver controls the handle to lift and lower gears.

⚠Caution

In the course of vehicle driving, AMT transmission will restrict gears to prevent any engine stalling and over speed.



▶Parking

- When parking, press the brake pedal to reduce the speed.

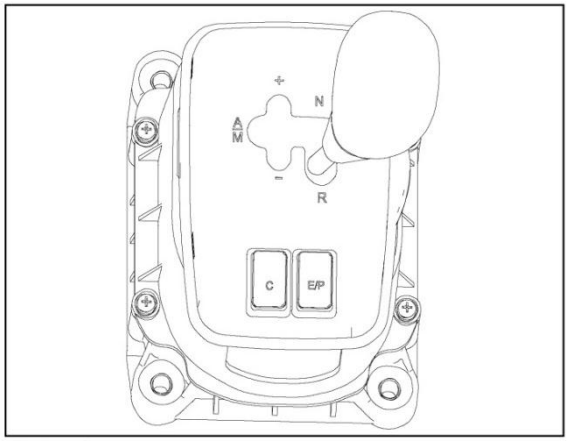
- When stop the vehicle, push the handle to the N (neutral) position, and the current gear of the instrument shows "N";

- Pull up the parking brake and release the brake pedal.

Turn off the power (turn the start switch key to LOCK position).

⚠Caution

Even if the ignition switch is turned off in gear, the AMT transmission will automatically pick up the neutral gear.



▶Reverse

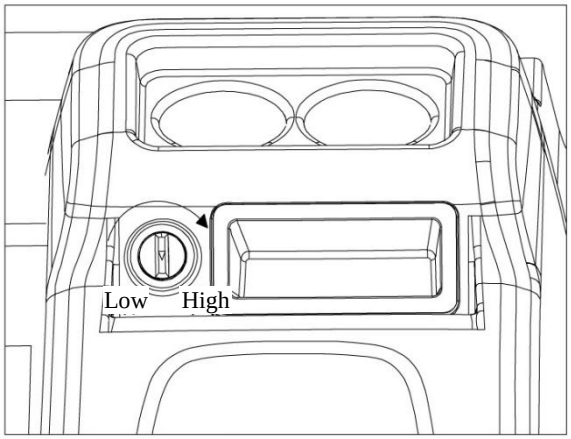
- When the vehicle stops, press the brake pedal.

- Push the handle to the R (reverse) position.

- Make sure that the "current gear area" on the instrument shows “R”, then step on the accelerator pedal to make the vehicle start smoothly.

⚠Caution

If the brake pedal is not pressed to hang the reverse gear, the system will delay for 3 seconds and then hang the reverse gear.



Separate heater switch

▶Turn the knob to control the independent heater to startup and shutdown.

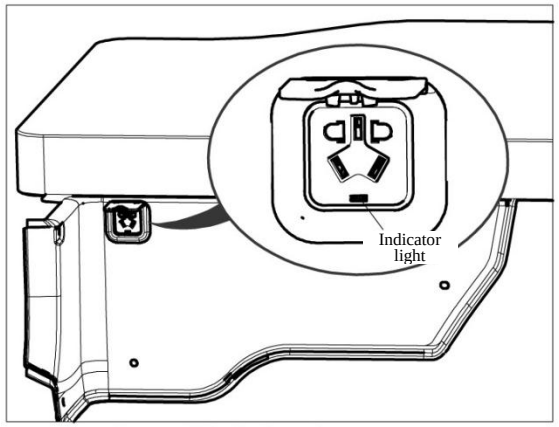
▶Adjust the angle of the knob to set the desired temperature. Rotating counterclockwise is to decrease the temperature and rotating clockwise is to increase the temperature.

▶For other detailed descriptions, please refer to the independent heater instruction documents (Operating Instruction Air Top2000 ST) attached with the vehicle.

⚠Caution

⊙ To avoid blockage or friction of hot air and combustion air fans, ensure that no article is placed on or against the heater before starting the heater.

⊙ After changing the setting of temperature control switch, it is necessary to delay for a certain period of time before performing.



220V Power supply socket

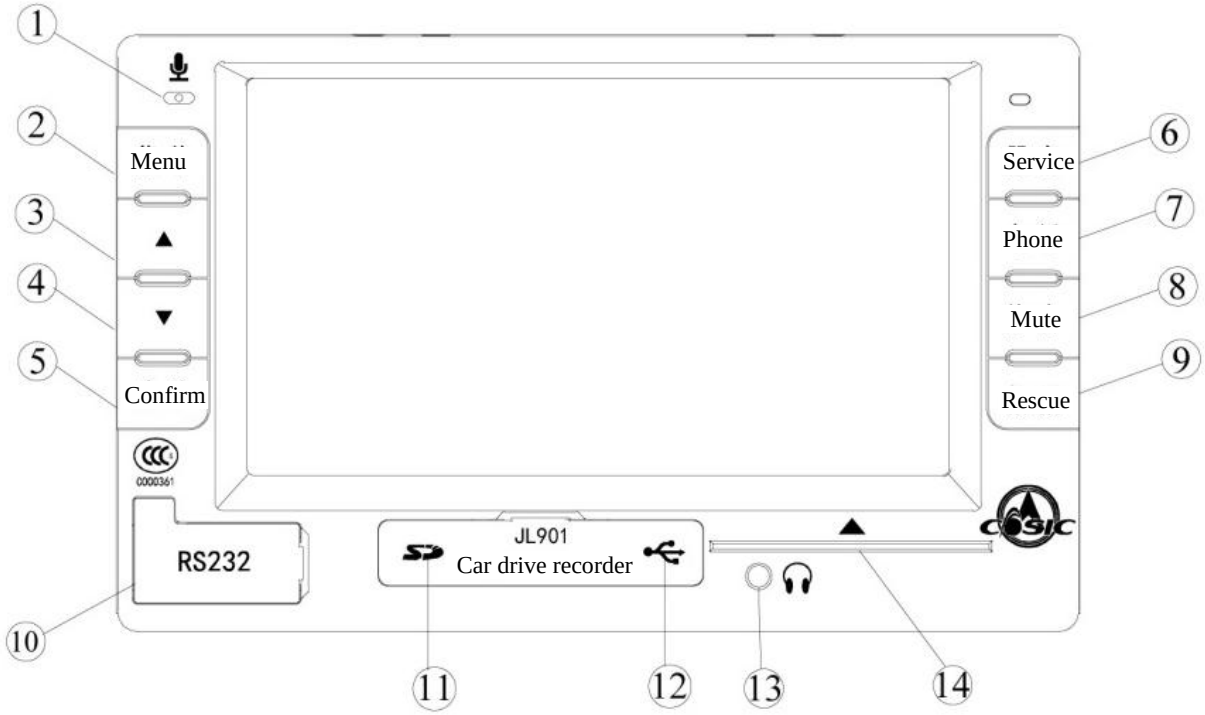
▶The 220V power supply outlet is located on the berth baffle at the lower right of the berth.

▶Open the cover plate of the power socket and insert the rated voltage 220V and rated power ⩽ 300W into it for use.

⚠Caution

When working normally, the indicator shows green. When not working, the indicator lights out. In the state of under-voltage /over-voltage / over-current / short-circuit / over-temperature protection, the indicator shows red.

On-board information service terminal



① Microphone; ② Menu key; ③ Up key; ④ Down key; ⑤ OK key; ⑤ Service key; ⑦ Telephone key; and ⑧ Mute key
⑨ Rescue key, ⑨ RS232 interface, ⑪ SD card interface, ⑫ USB card interface, ⑬ Headset interface, ⑭ Driver IC card

Note for key

① Microphone: Used when you need a voice dialogue (phone call).

② Menu: Enter "Travel Record" Function interface.

③ Up: Increase volume.

④ Down: Lower the volume.

⑤ OK: Enter the sub-interface. If the locomotive is running, the long press can enter the screen interface.

⑥ Service: Direct telephone communication with the background service center.

⑦ Telephone: Enter the vehicle communication interface.

⑧ Mute: The first time is mute, and the second time is the last volume value.

⑨ Rescue: Contact the rescue center, which is now defined as the service center.

Interface description

⑩ RS232 interface: Connect computer and thermal printer.

⑪ SD card interface: SD card slot.

⑫ USB card interface: compatible with devices under USB2.0.

⑬ Headphone Interface: When the interior environment is noisy, plugging in headphones can help you maintain high quality service.

⑭ Driver IC card: A special slot for driver driving record IC card.

On-board communication function

On-board communication	Content	Functions
	Address book	Address book (System defaults to rescue/service center, and it cannot be added).
	Voice call	Incoming and outgoing calls of the phone, this interface supports only outgoing calls from common emergency phones.
	Text message	Short message inbox: Short message voice playback, view and deletion.
	Call log	Missed, Received, Dialed, Deleted, Empty, Total Saved (200 items), List (20 items most recent).

Entertainment function of video and audio

Entertainment function of video and audio	Content	Functions
	Music Play	Support music formats: mp3, wma, wav, and voc.
	Video Play	The vehicle terminal selects the audio and video file and plays it through the local USB or SD card. Supported format: 3gp, rmvb, rm, mp4, etc..
	Radio	FM/AM radio, automatic search.
	Picture browsing	On-board terminal selects pictures and browse them through: USB, SD card. Supported format: bmp , jpg and png.

Driving recording function

Driving record	Content	Functions
	Record query	You can query total driving mileage, driving mileage of the day, driving time of the day, overtime driving record, driver registration record and other information.
	Parameter query	You can query the vehicle license number, terminal ID, unique code, speed pulse coefficient, sensor single circle pulse number, alarm speed, longest overtime stop time, continuous overtime driving time, overtime driving rest time and other information.
	Status query	You can query the vehicle loading status.
	Print	Print timeout driving records in the last 2 calendar days.
	Monitoring	Monitor playback (view the recording, photographing etc. involved in the monitoring according to the management authority).

⚠Caution

This specification only briefly introduces some functions of on-board service information terminal. For detailed operation instructions, please check the "Beidou Vehicle Recorder - JL901 Instructions for Use" on board.

ECAS System overview

▶ECAS is the English abbreviation for Electrically Controlled Air Suspension. It can improve the performance of the vehicle and promote the quality of the vehicle. Compared with the traditional leaf spring suspension, the electronically controlled air suspension has the following advantages:

- The stiffness of air suspension is variable. Compared with the traditional vehicle, it can absorb more energy from the vibration of the road surface, thus attenuating the body vibration, making the vehicle run more smoothly, and improving the rate of cargo perfection and the driver's comfort.

- It greatly shortens the hanging/unloading time of tractor, makes loading and unloading cargo easier, and improves work efficiency and efficiency especially for liquid tank truck.

- No matter what loading state the vehicle is in, the body can be kept in a constant horizontal position.

- Through the remote control, the height of the vehicle body can be adjusted conveniently to meet the needs of different working conditions.

- The working medium is air with low friction and noise.

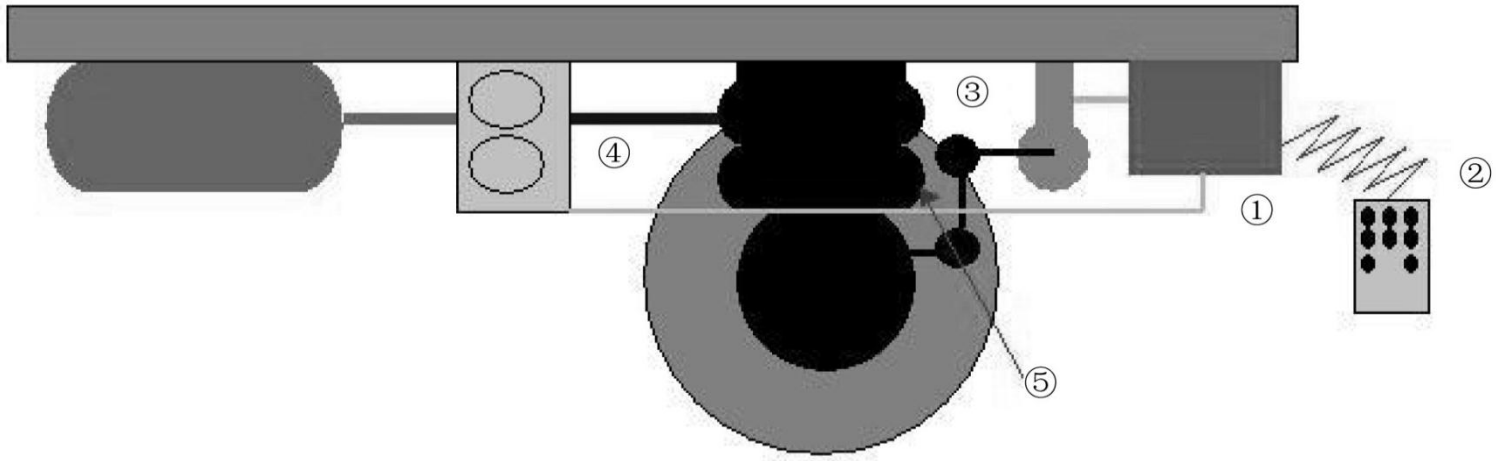
- It has the function of axle overload protection to protect vehicles and road surface.

▶The indicator lamp of ECAS system is displayed above the LCD screen of the instrument.

Icon	Name of alarm Lamp/indicator lamp	On
	ECAS height indicator	During the height adjustment, ECAS reminds drivers that the vehicle is not at any normal height.
	ECAS fault alarm	When ECAS system fails
	Indication of ECAS prompt axis	When the air suspension is lifted or lowered,
	Drive Help Instruction ECAS Floating Bridge	When Floating Bridge Driver Help Function Works
	Lifting indication of ECAS pontoon bridge	When the pontoon bridge is lifted

ECAS system consists of control unit (ECU), height sensor, remote control, solenoid valve, airbag, etc.

Schematic Diagram of ECAS System Composition

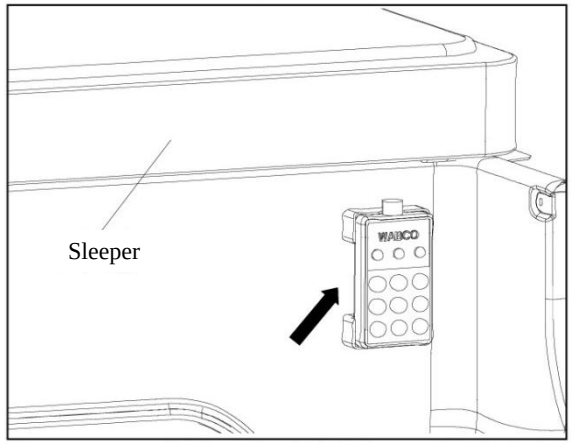


① Control unit, ② remote control, ③ Height sensor, ④ Solenoid valve, ⑤ Airbag

Operating Principle of ECAS System:

- The control unit ① continuously monitors the vehicle's height through the height sensor ③mounted on the rear axle. When the height needs to be adjusted, the control unit ① regulates the amount of compressed air in the air bag ⑤ by operating the solenoid valve ④. The instrument system sends a speed signal to the control unit of the ECAS system, indicating that the vehicle is in a running state. When driving, the ECAS system runs at normal altitude. Compared with the lifting operation at rest, the consumption of compressed air is reduced. The height of the vehicle can be changed by selecting the corresponding button on the remote control to realize the function of lifting axle.

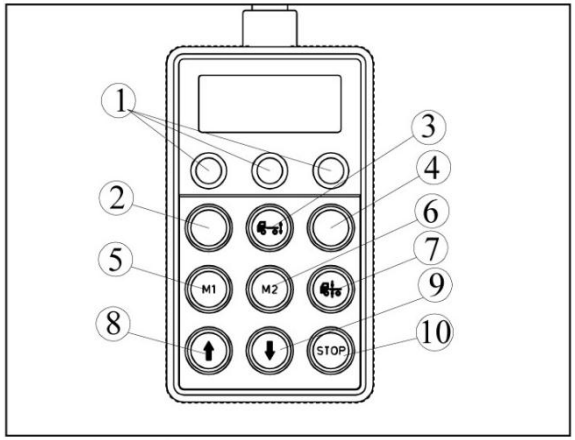
Remote control of ECAS system



▶The remote control of the ECAS system is stored on the panel under the driver's side berth.

▶Users can use the remote control to control the rise and fall of the vehicle and adjust the vehicle height to the desired height. When the lights on the remote control are ON, the vehicle can still be driven.

▶When a vehicle is running, the lights on the remote control should be completely extinguished and fixed on the bracket of the remote control to avoid mistakenly touching the button, which will lead to undesirable actions by users and even affect the driving safety.



▶Introduction of remote control

- The remote control has three lamps and nine buttons.

① Indicator lamp

② Not yet in use

③ Drive shaft selection button

④ Lifting shaft selection button

⑤ Memory height 1 (M1)

⑥ Memory height 2 (M2)

⑦ Normal height

⑧ Lift

⑨ Lower

⑩ Stop/Stand-by

- ① Indicator lamp

* Press Button ④ or ③. The indicator light above it is ON, indicating that the up/down function of the shaft is activated. Then press Button ④ or button ③, the indicator light above it is OFF, indicating that the up/down function of the shaft is closed.

- ②Not yet in use

- ③Drive shaft selection button

*After selecting this button, lift the driving axle to adjust the height of the vehicle.

- ④ Lifting shaft selection button

* After selecting this button, carry out the lifting operation of the lifting axle (only for vehicles equipped with the lifting axle).

- ⑤ Memory height 1 (M1)

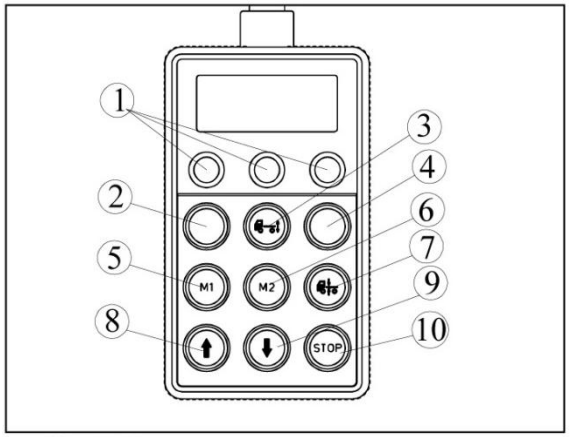
* Adjust the vehicle height to Memory Height 1. It should be combined with Button ③.

- ⑥ Memory height 2 (M2)

* Adjust the vehicle height to Memory Height 2. It should be combined with Button ③.

- ⑦ Normal height

* Press this button and the vehicle will return to its normal height.



- ⑧ Lift

* Carry out lifting operation. It should be combined with Button ③ or ④.

- ⑨ Lower

* Carry out lowering operation. It should be combined with Button ③ or ④.

- ⑩ Stop/Stand-by

* Red, press this button. The height adjustment operation sent from the control unit and the remote control are terminated. It is also used to start the Stand-by function, and combined with Button ⑤ or ⑥ to set Memory Height 1 or 2.

ECAS system function use

▶Use remote control to adjust the vehicle quickly.

▶Operating users can adjust the height of the system manually and quickly by using remote control. The cross-section area of the inlet and outlet of the solenoid valve of the system is relatively large, which can realize the rapid adjustment of the height. The operating methods are shown as follows:

- Press the button ③ on the remote control and the indicator light above the button is ON.

- Press the button ⑧ or ⑨ to adjust the vehicle height to the required height.

- Press the button ③ and the light above the button goes out.

⚠Caution

When the speed is lower than a certain limit (20km/h), the height of the vehicle can be adjusted within the limits of the mechanical structure. When the speed is higher than that, the system automatically restores the height of the vehicle to the normal height. However, before the vehicle is running and if the vehicle is not at the normal height, the user is advised to manually restore the vehicle height to the normal height.

▶Use of stand-by function

—The stand-by function can be used to achieve this requirement when the driver is not on site and the height of the vehicle needs to be adjusted rapidly during loading/unloading.

- The function is as follows: the ignition switch is closed, the key is pulled out, and the user can continuously adjust the height of the vehicle according to the need of work for up to 30 minutes.

- Functional activation methods:

* Press the button ⑩ on the remote control first, and keep it pressed.

* Close the ignition switch.

* Release Button ⑩.

* Adjust the height.

Set memory heights 1 (M1) and 2 (M2)

- For the commonly used height, the user can operate the remote control to make the system "remember" the two commonly used heights.

In operation, it can quickly adjust to the desired height of the user, thus eliminating the trouble of repeatedly adjusting the system.

- The operation of storing memory height is as follows:

* Press the button ③ and the light directly above it will be ON.

* Press the button ⑧ or ⑨ to adjust the vehicle height to the normal height.

* Hold down the button ⑩ and press the button ⑤ (M1) or ⑥ (M2)at the same time.

* Release the two buttons.

* Store the current height of the vehicle in the control unit of the system.

- The methods for quickly adjusting the vehicle height to the common height are shown as follows:

* Press the button ③ and the light directly above it will be ON.

* Press the button ⑤ (M1) or ⑥ (M2).

Lifting function of pontoon bridge

- According to the actual working conditions, under the premise of the driving axle is not full load, users can press the floating bridge lifting switch on the function switch panel  or use the remote control keys ④ and ⑧ to lift the floating bridge. At the moment, if the floating bridge lifting is successful, the floating bridge lifting indicator lights on the instrument. When lifting the floating bridge, the user presses the floating bridge lifting switch on the function switch panel or uses the remote control keys ④ and ⑨ to drop the floating bridge. Or when the driving axle load exceeds the set load, the floating axle falls automatically and the lifting indicator lights of the floating axle are extinguished.

Driving assistance function

- In order to solve the problem of insufficient starting driving force of 6×2, the air suspension system is equipped with driving assistance function. When the function switch panel is pressed to drive the help switch  , the drive help function is turned on, and the instrument driver helps the indicator light up. After the vehicle starts at a speed of more than 30 km/h, the driving help ends and the driving help lights go out; or the driving help switch is often driven by 5S to cancel the driving help function.

Precautions for air suspension

- When working under the chassis of a vehicle equipped with an air suspension, gaskets are usually used. The position of the pad should prevent the frame from falling.

- When the air pressure of the whole vehicle is too low, some functions of ECAS system may not be realized.

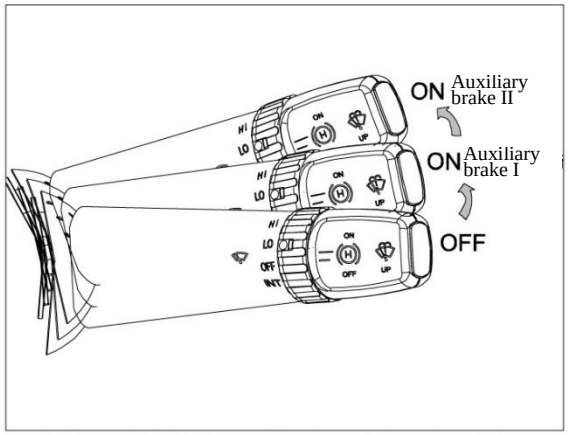
- Vehicles should be at the normal altitude. Except for special circumstances, vehicles should be driven at the normal altitude.

- Under special circumstances, the vehicle can be driven at the abnormal altitude for a short time, and it should be restored to the normal altitude immediately afterwards.

- All the indicator lights on the remote control should be extinguished and fixed on the remote control bracket.

- After the driver assistance is activated, the hoisting shaft control will not work until the control is completed or canceled.

Retarder operating switch



▶The retarder operating switch is located on the right handle of the combined switch.

▶Operate the retarder with two gears and close the handle in the middle position of the retarder.

▶Push one gear ahead of the handle to keep the speed of the retarder constant.

▶Push forward the handle continuously, which is the second gear of the retarder and the maximum deceleration gear. When the maximum brake stop is used, the brake lamp is on to remind the rear vehicle to pay attention.

▶The retarder braking is to convert the kinetic energy of the vehicle into thermal energy, which is carried away by the engine circulating coolant. When the cooling water temperature of the engine and the oil temperature of the retarder exceed the set value, the retarder prompts the driver in the form of an alarm and slowly withdraws from the braking.

⚠Caution

⊙ The acceleration pedal must be released before the retarder is activated.

⊙ If the ambient temperature is low and the retarder is used for the first time after starting, the braking effect will lag behind.

⊙ In order to better apply and play the role of hydraulic retarder, the downhill speed and engine speed can be reasonably selected in actual applications according to the factors of vehicle weight, slope and slope length so that the retarder does not alarm or quit work. Specifically, if the vehicle is heavy, long and steep, the gearbox needs to be shifted into a low gear so that the engine speed can be maintained at more than 1500 rpm so as to increase the heat discharged from the cooling system and maximize the braking force of the retarder.

⊙ For the type of vehicle matching retarder, the expansion box may appear exhaust phenomenon in the retarder operation. If it is found that the height of coolant drops, it is necessary to add coolant.

⊙ In order to give full play to the efficiency of retarder and improve its service life, antifreeze is used as engine cooling medium.

⚠Warning

⊙ The retarder handle is in any working gear, and the gearbox must ensure proper forward gear (no retarder is allowed to be used in idle sliding) so that the engine cooling system can take away the heat generated by braking.

⊙ The retarder should be used in a timely and safe road condition. It is forbidden to use the retarder when the road surface is wet and slippery, such as snow, ice, sand and a lot of water.

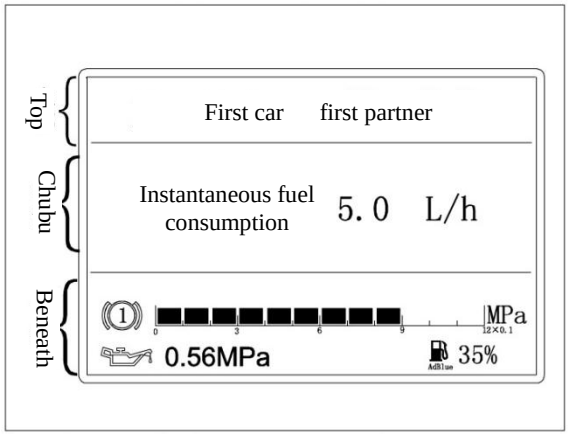
⊙ When the vehicle is idle, the retarder should be reasonably used, and the brake handle of the retarder should be pulled down step by step to prevent excessive braking from affecting driving safety.

⊙It is forbidden to use retarders when a tractor is driving in sharp bends.

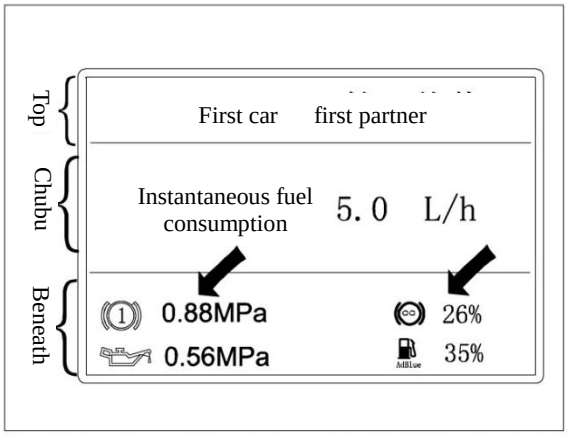
⊙ The retarder cannot be used as parking brake.

⊙ If the vehicle cannot "constant speed" and become faster, it must use the driving brake.

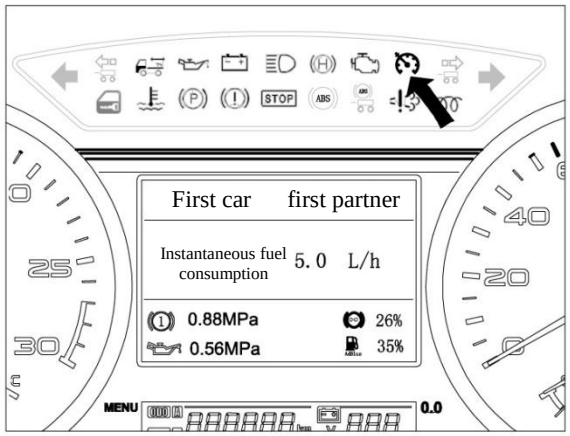
LCD display of instrument for retarder



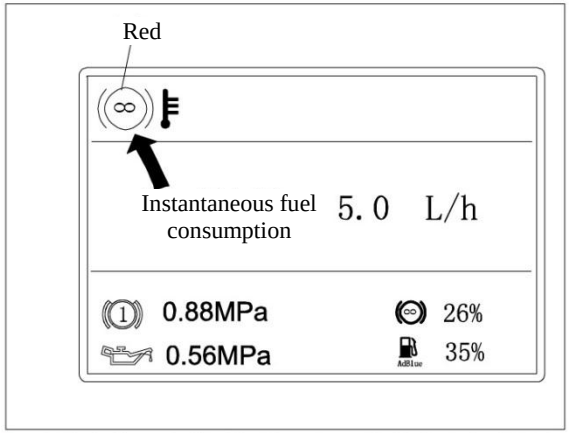
When the retarder is not enabled or exited, the display screen displays the interface.



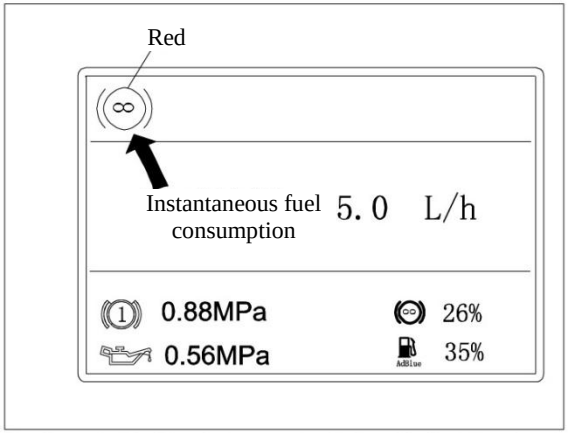
When the retarder is working, the pressure value and the torque value of the retarder are displayed.



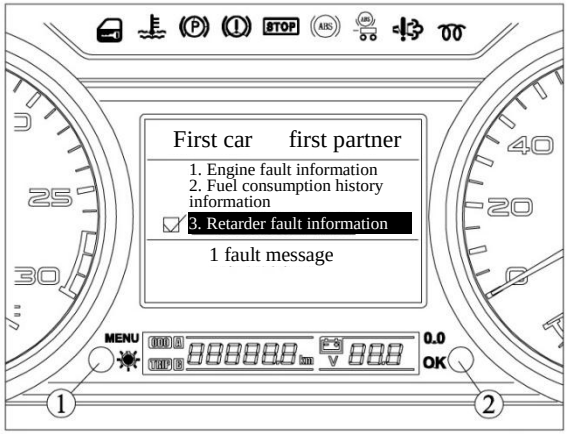
When using constant speed gear, light up the constant speed cruise indicator.



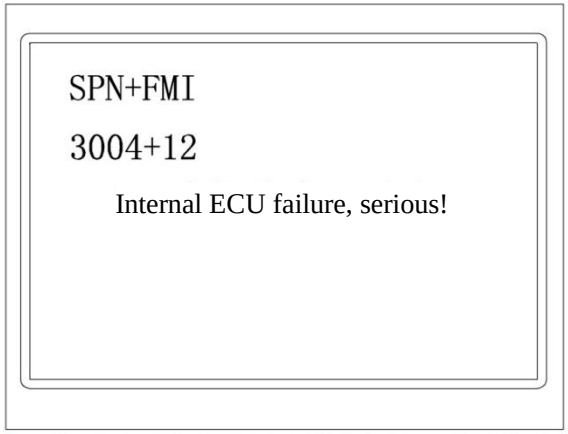
▶When the retarder is overheated, the alarm area on the LCD screen displays red alarm symbols.



▶When the retarder fails, the alarm area on the LCD screen displays red alarm symbols.

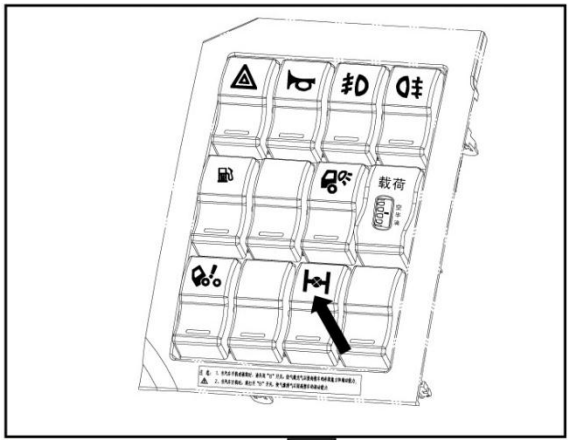


▶ You can enter the main menu interface by pressing Key 1 for a long time and carry out the UP and DOWN selection by pressing Key 1 for a short time. Select the "retarder fault information" and enter the menu item by pressing Key 2 for a short time to view the retarder fault code.



▶If there is a fault, the fault code and the fault text message will be displayed.

Use of inter-wheel differential lock (6 x 2 model)



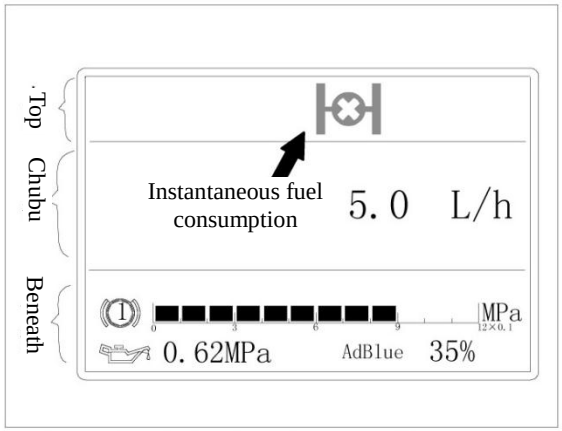
▶Inter-wheel differential lock switch

- Differential locks are used in wet road conditions (such as ice, sand and mud) to prevent slippage of driving wheels.

- The inter-wheel differential lock is used to lock the rear axle differential.

- The position of the wheel differential lock switch is on the functional switch panel in the middle of the instrument panel.

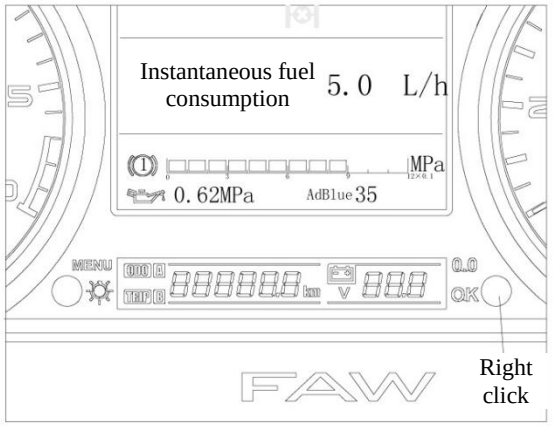
- When the vehicle is in the stop state or at the speed equivalent to walking, the inter-wheel differential lock is operated by pushing the inter-wheel differential lock.



- When the inter-wheel differential lock switch is turned on and the inter-wheel differential lock is working, the instrument LCD screen will display the inter-wheel differential lock work indication.

- When the wheel differential lock works, the instrument will also emit a buzzing sound to remind the driver to notice that the wheel differential lock is the OPEN state.

- After the vehicle passes the bad road, the differential lock shall be deactivated immediately, and the accelerator shall be released, and the clutch shall be depressed, and the differential lock switch shall be pressed back to the original position, and the differential lock function shall be deactivated after the switch indicator lamp is off.



⚠Caution

⊙ When the inter-wheel differential lock indicator is on, the vehicle must never turn.

⊙ The differential lock between the wheels is open. If the user does not need a voice reminder, stop the sound beep by tapping the right button of the meter.

Overturn mechanism of the cab

⚠Warning

⊙ Before the cab is turned over, the vehicle shall be parked on the horizontal surface, and the transmission shall be placed in neutral position, and the manual valve shall be pulled up, the door shall be closed, and the outer panel of front wall shall be open.

⊙ During the turnover and fall-back of the cab, no body can be allowed in the front and rear of the cab.

⊙ The cab must be turned continuously until the hydraulic cylinder is marked red before the overturn operation can be stopped and the engine compartment can be repaired.

In the process of cab overturn, the phenomenon of fast falling and self-falling will occur at a specific angle, which will not affect the safety and normal use. At the moment, do not start the engine or carry out any other operation.

⊙ After the cab falls back, it is necessary to confirm that the cab is locked. The vehicle can be driven only after confirming that the cab turnover alarm lamp is off.

⚠Caution

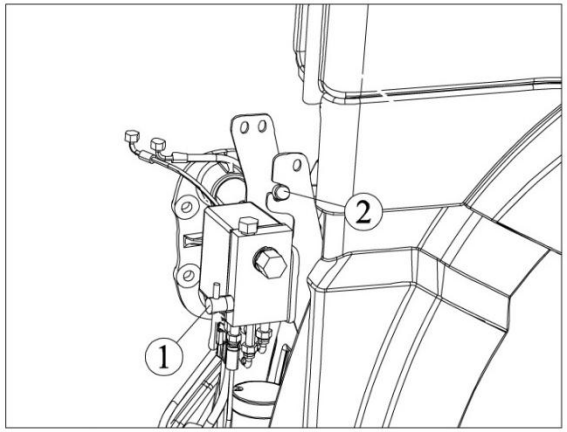
⊙ Before driving, the position of the reversing rod on the oil pump should be checked and confirmed.

⊙ Be sure to keep the environment clean during oil filling, so as to avoid dust, fiber, feather and other foreign matters into hydraulic oil.

⊙ The working medium of the overturn mechanism is No. 10 aviation hydraulic oil, and other types of oil shall not be mixed.

⊙ When washing vehicles or repairing engines, special attention should be paid to avoid damaging oil pipes and wires in the system. No water is allowed to enter the oil filling port of the oil pump.

⊙ The continuous operation of electric drive pump shall not exceed five times (although the protection circuit of motor is set internally, the excessive heat will reduce the service life of the motor).

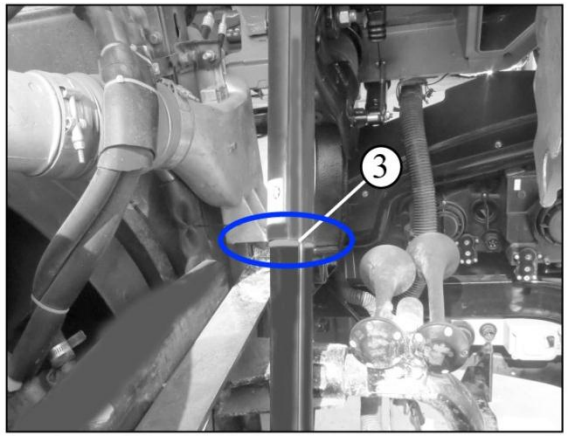


Electric cab front turning

▶Turn on the "cab flip switch" on the function switch inside the cab.

▶Open the front outer panel.

▶Turn the reversing rod① to the forward turnover gear and press the switch②. At this moment, the cab begins to roll forward;

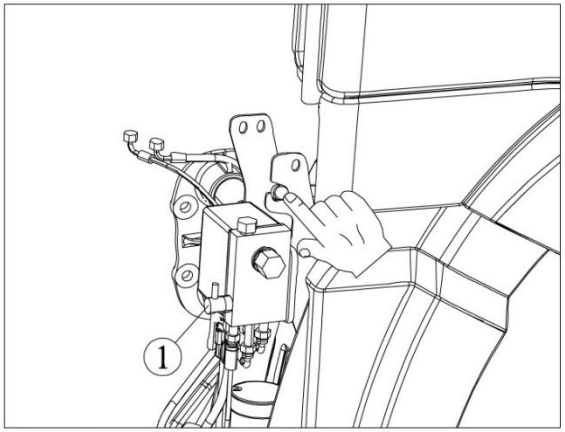


▶The cab stops turning over to loosen the switch, and the hydraulic cylinder stops working.

▶The switch② is normally open. The hydraulic cylinder work is step less. The switch can be released at any time to stop the cab at any position.

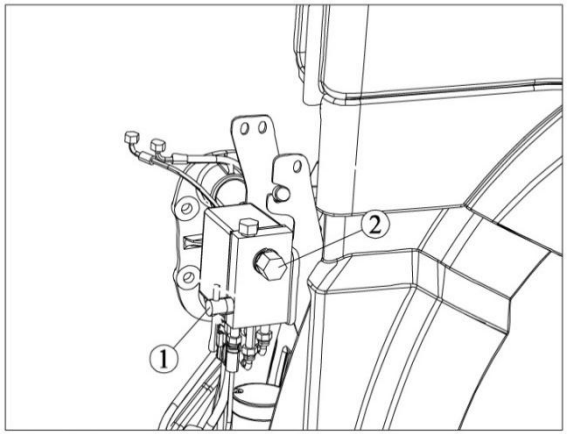
⚠Caution

The direction of operation of the change-over switch shall be subject to the identification on the manual/ electric oil pump.



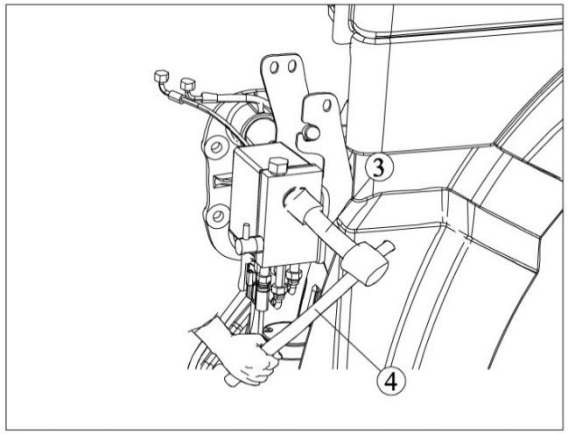
Electric cab fall- back

Turning the reversing rod① to the fall- back gear, and pressing the switch, the cab will start to fall back. After the cab falls to the lowest point, the lock tongue in the hydraulic lock fastens the lock plunger, and releasing the key, the hydraulic cylinder will stop working.



Manual front turning and fall-back of cab

▶Turn the reversing rod ① so that it is in an upward or downward position.



▶With the connecting sleeve ③ and the pressure bar ④ in the vehicle-mounted tool, insert the connecting sleeve into the hexagonal turning head ② of the manual pump, then insert the pressure bar into the hole on the sleeve, and shake it up and down to make the cab roll forward or fall back to the body accessories.

Simple inspection and maintenance

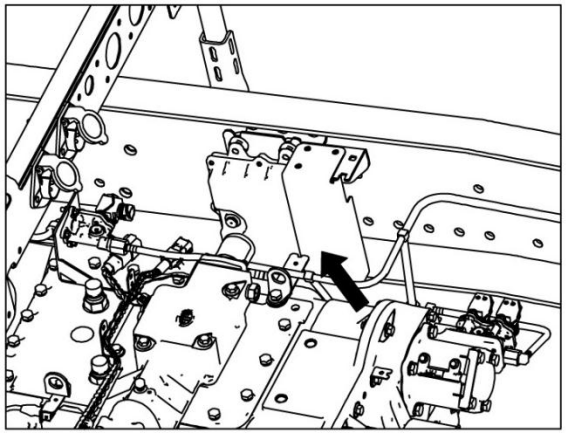
Electronic control system of AMT automatic transmission

▶It consists of three parts.

- Input part: consists of various sensors and switch signals that test the operation status of the engine.

- Control part: transmission control unit (TCU)

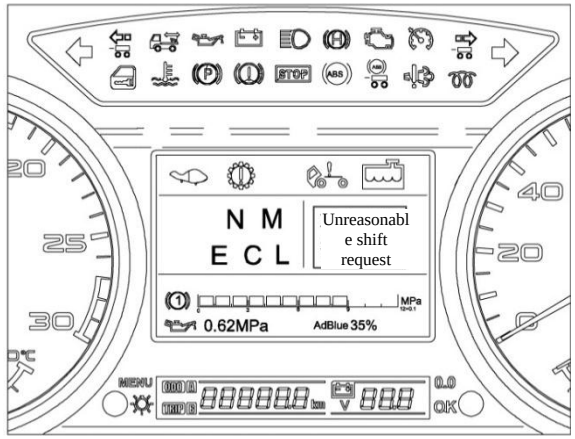
- Operative part: It is composed of shifting actuator, relays, valves and indicator lights, and it performs various functions under the control of TCU.



▶Transmission control unit (TCU)

- It is installed inside the right longitudinal beam of the frame.

- It is mainly responsible for the collection, processing, calculation and execution of information, and outputs the operation results as control instructions to the actuator. At the same time, it communicates with other vehicle controllers, displays some running states, and diagnoses the fault of the whole control system.



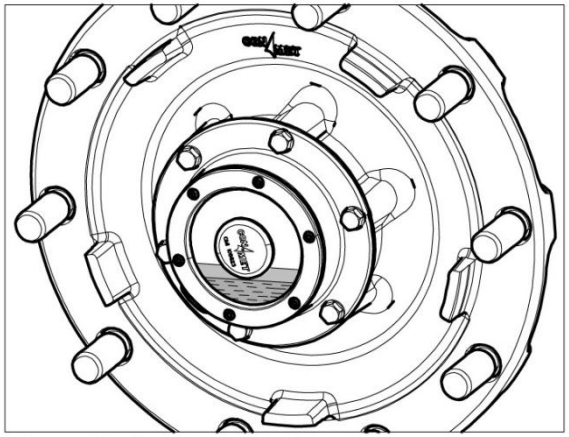
▶Explanation of instrument text tips

- In the text prompt area of the instrument, it will display a number of text contents according to the operation status of AMT system to prompt drivers. The contents and corresponding suggestions are listed in the attached table.



Inspection of drum-type brake friction plate

▶It can check the wear of brake disc and friction disc through rim hand holes preliminarily. If necessary, the tire should be removed and further checked to confirm the wear condition of the friction disc. When the wear thickness of one side friction disc is less than 4mm, it needs to be replaced.



Maintenance and servicing of the Kangmai wheel hub

▶Before driving, check whether there is oil leakage at the wheel hub cover (front axle) or the inside tire of the wheel (rear axle). Observe the color of the front axle lubricating oil. If it is white or like milk, change the oil at the service station.

▶When a vehicle travels every 12 months or 100,000 km, it need to be checked at the service station (whichever comes first).

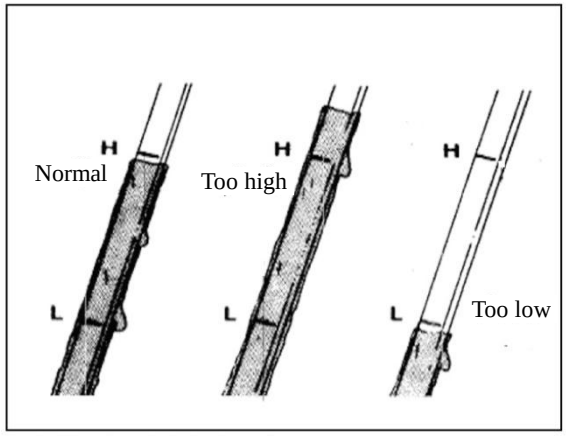
▶When a vehicle travels every 500,000 km, it needs maintenance at service station.

⚠Caution

⊙ Check or replace the brake shoe and brake drum without removing the wheel hub.

⊙ If the hub is to be removed, the hub oil seal must be replaced at the service station.

Lubricating oil



Engine oil change

▶When the vehicle runs (for 10,000-15,000 km), the oil quantity should be checked. When oil level is lower than the lower limit of the oil scale, it is necessary to fill the oil in time so that the oil level reaches the upper limit of the scale line.

⚠Warning

⊙ Due to the extension of the oil change cycle, engine must be checked and filled with oil in time according to the specified mileage to avoid engine fault due to insufficient oil.

⊙ It is forbidden to add other oil and its consequences will be borne by the user itself.

▶Oil change cycle:

- When driving a vehicle for 60,000 km or 12 months, or every 100,000 km or 12 months (CA6DM2 engine)

- When driving a vehicle for 60,000 km or 12 months (including new vehicle). (CA6DL engine)

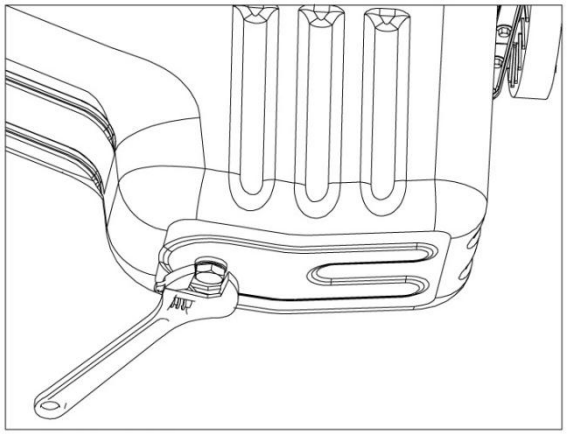
- When driving a new vehicle for 30,000 km or 12 months, or driving every 50,000 km or 12 months afterwards. (CA6DK1 engine)

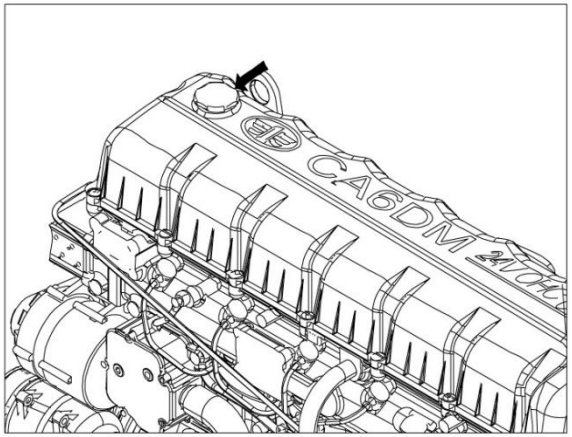
- Whenever driving 40,000 km or 12 months (including new vehicles). (CA6DM3 engine).

⚠Caution

⊙ The spin-on oil filter and the centrifugal oil filter should be replaced when oil is changed. Replace the oil filter assembly (for CA6DK1 engine).

⊙ For more than three months in a year, the interval of oil change will be reduced by half in gray areas, mountainous areas, cold areas (ambient temperature is lower than - 20℃), or when the average fuel consumption of the whole vehicle is higher than 50L/100km. Mileage and service time are subject to first arrival.





▶Oil change method:

- Park the vehicle on a flat surface and place sliding resistance block at the wheel.

- Under the state of hot vehicle (the oil temperature is about 80 ℃), unscrew the oil drain plug on the lower part of the oil pan (observe the oil heat, and do not get burned), and remove the impurities absorbed by the plug.

- Tighten the oil drain plug after the oil is drained.

- Turn over the cab and will see the oil filler opening. Add new lubricating oil so that the oil level reaches the upper limit of the oil scale.

- After the engine starts, idles for several minutes and stops for 30min, check the oil scale and the oil level shall be between the two marks.

▶Oil quantity

- Change only oil: (34.5-25) L; change oil and oil filter at the same time: (38.5～39)L. (CA6DM engine)

- Change only oil: (24.5-25) L; change oil and oil filter at the same time: (26.5～27)L. (CA6DL engine)

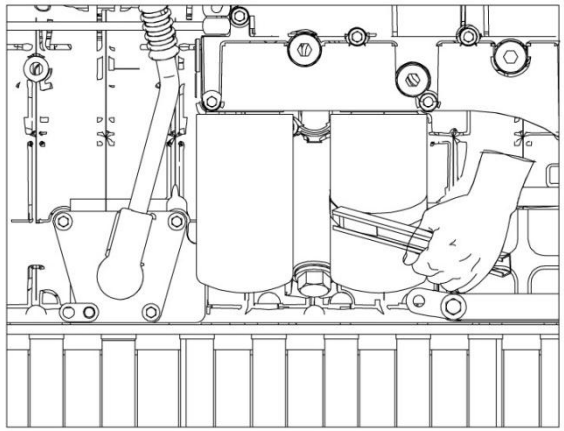
- In case of changing only engine oil: about 24L.

At the same time change the oil and oil filter: about 24.5L. (CA6DK1 engine)

▶Oil

- Release long-acting super diesel engine oil, (viscosity grade: 10W-40), which is suitable for ambient temperature (-25-40) ℃ . (CA6DM2, CA6DL2 and CA6DK1 engines)

- Mobil Black Overlord MX Extra CI-4/10W-40 is suitable for ambient temperature (-25～40) ℃. (CA6DM3 engine)



⚠Warning

⊙ As oil viscosity is greatly influenced by temperature, the oil with the proper viscosity should be selected according to the ambient temperature.

⊙ The short-term ambient temperature is lower than applicable the temperature range of oil, which will affect the starting performance, but will not cause harm.

However, if unsuitable oil is used for a long time, the engine wear will be accelerated.

Replace the Spin-On Oil Filters

▶Change cycle:

- Change the spin-on oil filter when maintaining oil every time.

▶Change method:

- Remove the oil filter with special tool counterclockwise.

- The filter mounting surface must be flat and smooth without dirt.

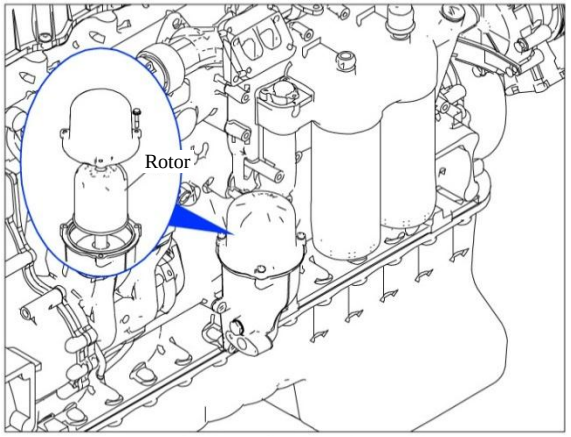
- Apply engine oil to the surface of the filter seal during installation.

- Tighten the oil filter clockwise until the rubber seal pad contacts the base face and tightenone turn.

⚠Warning

⊙When you purchase a spin-on oil filter assembly, you must purchase the same type of oil filter assembly produced by the original manufacturer.

⊙ Unqualified products will cause abnormal wear and damage to the engine, and the consequences will be borne by the user.



Replace the centrifugal oil filter

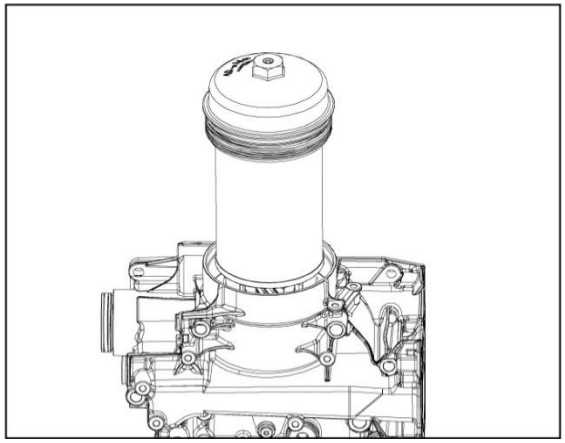
▶Change cycle:

- Change the centrifugal oil filter when maintaining oil every time (there is no need to change when the new vehicle is first maintained). Change method:

- Unscrew the three bolts on the centrifugal oil filter cover and remove the centrifugal oil filter cap.

- Replace with the new rotor.

- After reinstallation, make sure the tightening torque is (6~12)Nm.



Replace the oil filter (CA6DK1 engine)

▶Change cycle:

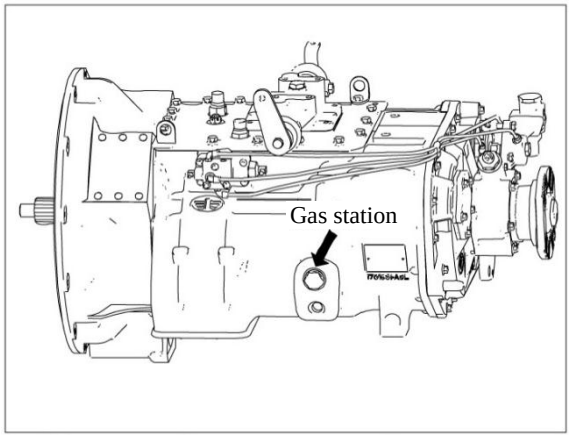
- Change the oil filter element when maintaining oil every time.

▶Change method:

- Rotate the oil filter cover counterclockwise, and the oil filter element will be brought out with the oil filter cover.

- Remove the oil filter element from the oil filter cover and replace the new oil filter element.

- Tighten the oil filter cap clockwise with the tightening moment of (40 + 10) Nm.



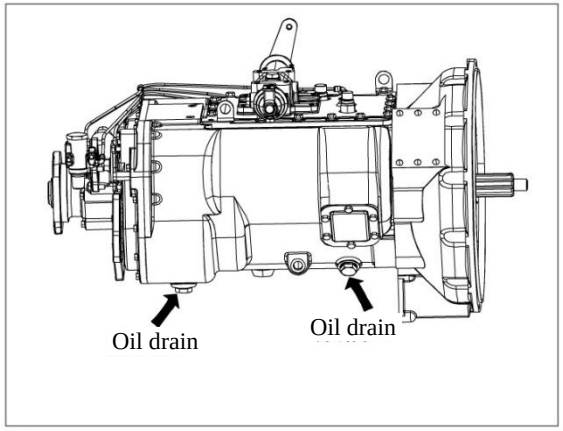
Change the lubricating oil of transmission

▶Oil change cycle

- When driving a vehicle for 60,000 km or 12 months (matched with the model of CA6DM3) or a new vehicle for 40,000 km, replace the lubricant (12 gears) every 100,000 km or 12 months.

- When a vehicle travels every 10,000 km, the oil level and leakage of the lubricating oil should be checked and supplemented at any time. When driving a new vehicle for 50,000 km, replace the lubricating oil (10 gears).

▶When changing oil, you must first exhaust the lubricating oil in the transmission, and then fill new lubricating oil.



▶Oil quantity:

CA12TA210M3	About 15.6L
CA12TAX210M3	About 18L
CA12TAX230M3	About 15.6L
CA10TA160M CA10TAX160M	13L About 13.5L with PTO
CA10TA190M CA10TAX190M	

- When the oil is filled until the oil filling hole overflows.

▶Oil:

- Shell: SPIRAX S3 AD 80W/90.

(12-gear for long oil change)

- 80W/90 GL-5 or 85W/90 GL-5 heavy duty vehicle gear oil.

(10-gear for long oil change)

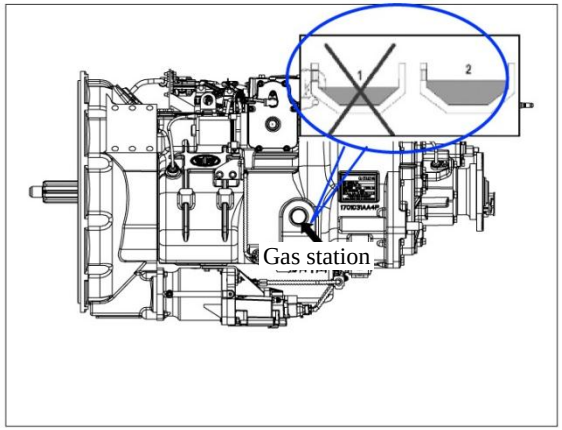
⚠Caution

⊙ The lubricating oil shall be replaced when the vehicle has been just stopped (the vehicle is hot).

⊙ Be careful not to be scalded by hot oil.

⊙ Clean up the adsorbed impurities on the oil drain plug.

⊙ Dredge ventilation plugs.



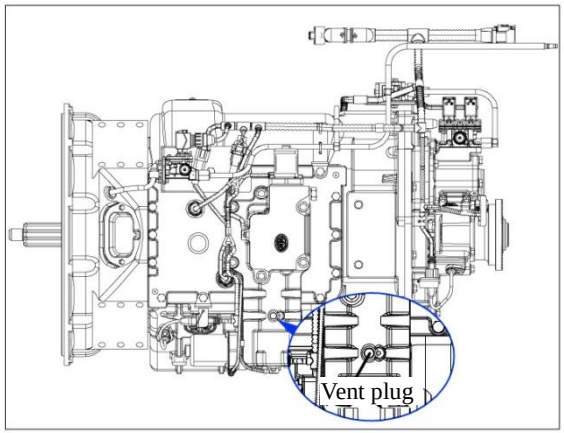
Replace lubricating oil for 12-gear automatic transmission

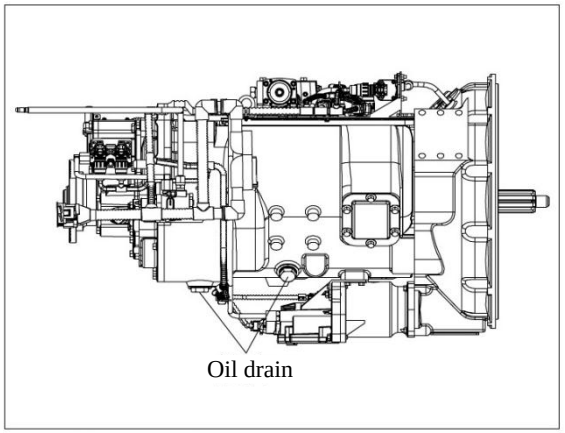
▶When a vehicle travels every 10,000 km, the oil level and leakage of the lubricating oil should be checked and supplemented at any time. Check whether the upper ventilation plug of the selected shift actuator assembly is unobstructed. If there is a blockage, it needs to be replaced.

▶Check of oil Level height

- Check the oil level by filling holes on the side of the shell.

- The oil level should be leveled with the filling port until the oil level overflows at the filling port.





⚠Caution

⊙ When checking the oil level, park the vehicle on the horizontal road surface. After the engine is out of flameout, it should wait for the oil level to be stable and the transmission temperature to be lowered to the normal temperature before proceeding.

⊙ Fill the same type of lubricant as the original to avoid chemical reaction.

⊙ Check whether the upper ventilation plug of the selected shift actuator assembly is unobstructed. If there is a blockage, it needs to be replaced.

▶Change the lubricating oil

- The lubricating oil in the transmission must be drained before changing oil, and then new lubricating oil is added.

- Fill new lubricants until the oil spills at the transmission filling port.

- The lubricating oil should be replaced when a vehicle travels every 50,000 km. Oil quantity

- about 15.8L.

▶Oil

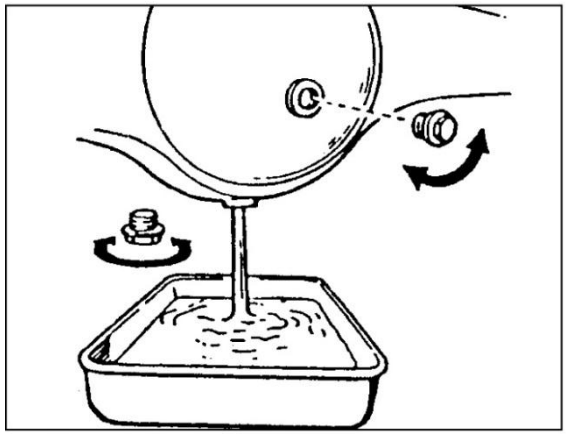
- Shell: SPIRAX S3 AD 80W/90.

⚠Caution

⊙ The lubricating oil shall be replaced when the vehicle has been just stopped (the vehicle is hot).

⊙ Be careful not to be scalded by hot oil.

⊙ When replacing the lubricating oil, clear the impurities adsorbed on the two oil discharging plugs.



Change the lubricating oil of drive axle

▶Oil change cycle

- When driving a new vehicle for 60,000 km (matched with the model of CA6DM3) or driving for every 100,000 km or 12 months afterwards. (R13T457 axle)

- When a new vehicle travels 50,000km.

When a vehicle travels every 50,000 km or 12 months afterwards. (R13D457 axle)

▶The whole vehicle is parked on the horizontal road until the oil is released from the oil face.

▶Oil quantity (R13T457, R13D457 axle)

- The main reducer of the middle axle is about 20L. Inter-axle differential of middle axle is about 0.8L. The capacity of the rear axle is about 15 L.

▶Oil

1700801-54W-C00.

Fueling capacity (R13T457-13 punching capacity)

- The whole vehicle is parked on the horizontal road until the oil is released from the oil face.

- Middle axle: about 21L.

- Rear axle: about 19L.

- Fill fuel 1L on each side of Comer wheel.

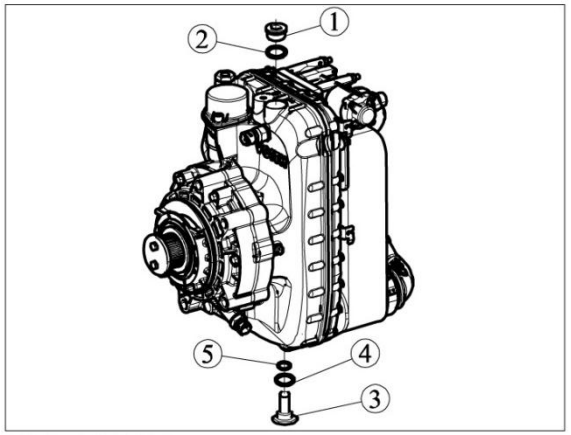
⚠Warning

⊙ The lubricating oil shall be replaced when the vehicle has been just stopped (the vehicle is hot).

⊙ Be careful not to be scalded by hot oil.

⊙ Clean up the adsorbed impurities on the oil drain plug.

Change the lubricating oil of retarder



① Fueling plug

② Sealing gasket (must be replaced)

③ Oil releasing plug

④ Sealing gasket (must be replaced)

⑤ O-ring (must be replaced)

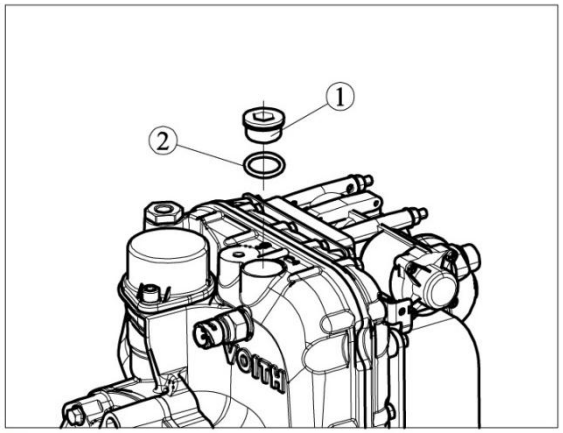
▶Replacement cycle:

- For road vehicles, the oil change cycle of a retarder is 60,000 km/time.

▶Oil

- Voith hydraulic retarder must be used.

- Fully synthetic oil VR Fluid S. Oil quantity: about 6.4L (that is, 1 barrel).



▶Oil change method:

▶Prerequisites for oil change

- The vehicle is parked in a horizontal position, the retarder has been closed and the ignition switch has been closed.

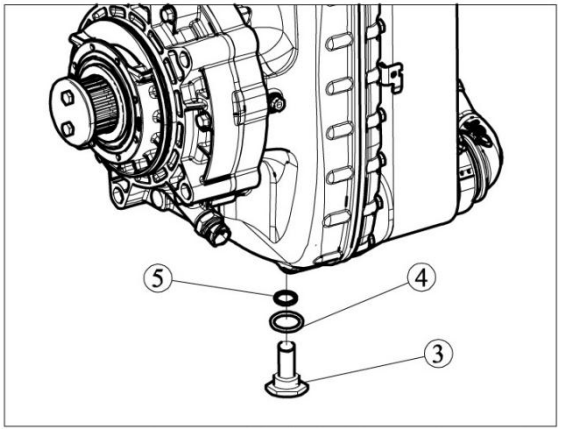
▶Oil drainage

- There is a container under the retarder.

- Unscrew (unscrew) screw plug with sealing gasket

⚠Caution

For retarder oil standards and purchase details, please consult Voith after-sales service telephone: 021-24087580.



- Turn down (screw down) the drain screw plug ③ together with the sealing gasket ④ and O-ring ⑤.

⚠Caution

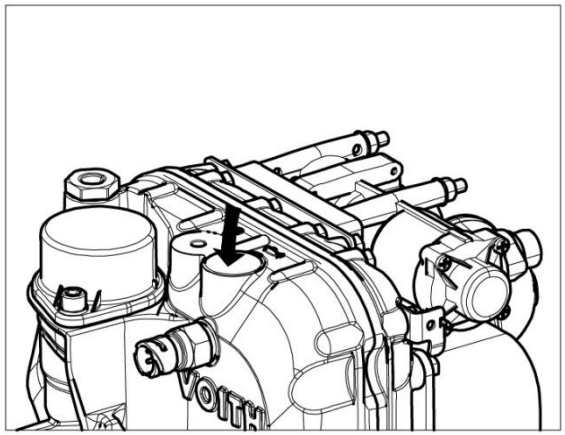
If there is water (emulsified) or particulates (debris) in the oil, please consult Voith Service Tel: 021–24087580.

- Discharge oil into the container and analyze it.

Note: If there is water (emulsification) or particulate (debris) in the oil, please consult Voith after-sales service telephone: 021-24087580.

- The new O-ring ⑤ is coated with silicon-free and non-corrosive grease and then mounted on the screw plug ③.

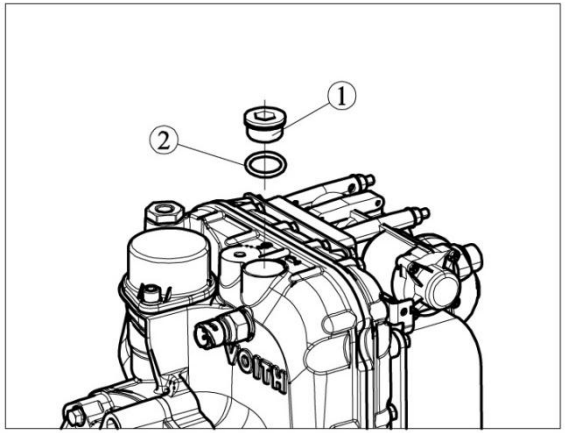
- The new seal pad ④ is coated with silicon-free and non-corrosive grease.



▶Refuel

Fill fuel (see the arrow in the figure) slowly (for 4 min) through the filling hole of screw plug 1 to ensure that the retarder can exhaust through the filling hole.

- Apply silicon-free and non-corrosive grease on Gasket 2.



- Turn in Screw Plug 1 together with Sealing Gasket 2 and tighten them to 130 NM.

Fault alarm and analysis

Table 1 Explanation of instrument text tips

S/N	Text prompt content	Recommended measures
1	Over-temperature parking of transmission to cool down	1. Please stop the vehicle and wait for the oil temperature of the gearbox to decrease before driving.
2	On-line detection of shifting system	1. Information hints indicate that professionals are conducting online testing. After the detection is completed, the key door can be re-energized for normal shift operation.
3	Shifting system is self-checking	1. The message indicates that the gearbox is self-checking. After the self-checking is completed, the normal shift operation can be carried out.
4	Self-checking fault of shift system	2. Please re-energize the key door. If the prompt is successful, it need not be processed. 3. The key door is still self-checked and fails many times to start the engine. If it can not start, this means it is not in neutral, please contact the service station. If you can start the engine, you can try to shift to the service station as soon as possible for maintenance.
5	Successful self-checking of shift system	1. Information prompt, please operate the vehicle normally.
6	Air pressure is not sufficient in the gear shifting system.	1. Start the engine and inflate it. 2. Long-term inflation is still prompted, please check the airway sealing.
7	Parking maintenance shifting system	1. Please stop as soon as possible and contact the service station personnel for maintenance.
8	Maintain the shifting system as soon as possible.	1. Please go to the service station as soon as possible for repair.
9	Please switch to the manual mode.	1. If the vehicle is unable to operate in automatic mode due to malfunctions, please go to the service station for repair.
10	Synchronization fault of shifting system	1. To shift the handle back to the neutral position, please re-mount the D gear. 2. If there are multiple prompts, please go to the service station for maintenance.
11	fault of main box gear selection	1. To shift the handle back to the neutral position, please re-mount the D gear. 2. If there are multiple prompts, please go to the service station for maintenance.
12	fault of main box gear selection	1. To shift the handle back to the neutral position, please re-mount the D gear. 2. If there are multiple prompts, please go to the service station for maintenance.
13	fault of auxiliary box gear selection	1. To shift the handle back to the neutral position, please re-mount the D gear. 2. If there are multiple reminders, and if the ambient temperature is below 0 C, drive in Gear 6 and below. When the oil temperature of the gearbox rises, if there are still prompts, please go to the service station for maintenance.
14	The clutch disengagement is not in place.	1. To shift the handle back to the neutral position, please re-mount the D gear. 2. If there are multiple prompts, clutch self-learning will be carried out. After successful learning, if you still prompt, please go to the service station for maintenance.

S/N	Text prompt content	Recommended measures
15	The clutch engagement is incomplete.	1. To shift the handle back to the neutral position, please re-mount the D gear. 2. If there are multiple prompts, clutch self-learning will be carried out. After successful learning, if you still prompt, please go to the service station for maintenance.
16	Please loosen the hand brake.	1. If there is information prompt, the driver will hang in the starting block and step on the accelerator to prompt this information.
17	Please step on the brake pedal and hang the reverse gear.	1. If there is information prompt, the brakes need to be pressed when the gear is reversed. If the reverse gear is not braked, the reverse gear will be put in 3 seconds later.
18	Please hang up the reverse gear after parking.	1. If there is information prompt, when the vehicle is in reverse gear, it needs to be completely stationary.
19	Please return the handle to the neutral position.	1. If there is information prompt, when the key door is powered on and the engine is not started, the handle is not in neutral position to prompt this information.
20	Note: The current handle is in the neutral position.	1. If there is information prompt, and when the vehicle is running, it prompts this information when the handle is in the neutral position.
21	Clutch and separation points are in learning.	1. If there is information prompt, it means that the clutch is self-learning, please do not do other operations.
22	Clutch and separation points are successful in learning.	If there is a message indicating that the clutch is successful in self-learning and the key door is closed, please re-energize after 5 seconds.
23	Clutch and separation points fail in learning.	1. Please restart self-learning. 2. If you fail many times, please contact the service station.
24	Clutch friction points are learning.	1. If there is information prompt, it means that the clutch is self-learning, please do not do other operations.
25	Clutch friction points are successful in learning.	If there is a message indicating that the clutch is successful in self-learning and the key door is closed, please re-energize after 5 seconds.
26	Clutch friction points fail in learning.	1. Please restart self-learning. 2. If you lift the gearbox, please check whether the transmission shaft is properly installed. 3. If you fail many times, please contact the service station.
27	The neutral point of the main box needs learning.	1. Please start the main box for self-learning.
28	The neutral point of the main box is learning.	1. If there is information prompt, it means self-learning, please do not do other operations.
29	The neutral point of the main box learns successfully.	If there is a message indicating that it is successful in self-learning and the key door is closed, please re-energize after 5 seconds.
30	The neutral point of the main box fails to learn.	1. Please restart self-learning. 2. If you fail many times, please contact the service station.
31	The gear selection point of the main box needs learning.	1. Please start the main box for self-learning.

S/N	Text prompt content	Recommended measures
32	The gear selection point of the main box is learning.	1. If there is information prompt, it means self-learning, please do not do other operations.
33	The gear selection point of the main box learns successfully.	If there is a message indicating that it is successful in self-learning and the key door is closed, please re-energize after 5 seconds.
34	The gear selection point of the main box fails to learn.	1. Please restart self-learning. 2. If you fail many times, please contact the service station.
35	The auxiliary box location needs to learn.	1. Please start the auxiliary box for self-learning.
36	The auxiliary box position is learning.	1. If there is information prompt, it means self-learning, please do not do other operations.
37	The auxiliary box position learns successfully.	If there is a message indicating that it is successful in self-learning and the key door is closed, please re-energize after 5 seconds.
38	The auxiliary box position fails to learn.	1. Please restart self-learning. 2. If you fail many times, please contact the service station.
39	Failure of clutch slow exhaust valve	1. This valve is out of order, and the clutch fast exhaust valve is out of order but can operate. 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray. Visually check whether there is any damage on wiring harness. 5. Please go to the service station for maintenance.
40	Fault of clutch fast exhaust valve	1. This valve is out of order, and the clutch slow exhaust valve is out of order but can operate. 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray. Visually check whether there is any damage on wiring harness. 5. Please go to the service station for maintenance.
41	Fault of clutch slow intake valve	1. This valve is out of order, and the clutch fast intake valve is out of order but can operate. 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray. Visually check whether there is any damage on wiring harness. 5. Please go to the service station for maintenance.
42	Fault of clutch fast intake valve	1. This valve is out of order, and the clutch slow intake valve is out of order but can operate. 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray. 4. It is necessary to visualize whether the wiring harness is damaged or not.

S/N	Text prompt content	Recommended measures
		5. Please go to the service station for maintenance.
43	Fault of high gear valve in auxiliary box	1. It can not drive in Gear 7 or above. 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray. 4. Visually check whether there is any damage on wiring harness or valve body. 5. Please go to the service station for maintenance.
44	Fault of low gear valve in auxiliary box	1. If the auxiliary box is not in a low gear, it can not drive. 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray. 4. Visually check whether there is any damage on wiring harness or valve body. 5. Please go to the service station for maintenance.
45	Fault of shift handle	1. It can not drive; 2. Please check whether the connector is loose or damaged. 3. When plug-in connectors are inserted and pulled out many times, the connectors may be oxidized and corroded due to salt spray, or the terminals may be deformed. 4. Visual inspection is carried out to check whether the wiring harness and handle are damaged. 5. Please go to the service station for maintenance.
46	Shift motor fault	1. It can not drive; 2. Please check whether the connector is loose or damaged. 3. When plug-in connectors are inserted and pulled out many times, the connectors may be oxidized and corroded due to salt spray, or the terminals may be deformed. 4. Visual inspection is carried out to check whether the wiring harness and motor are damaged. 5. Please go to the service station for maintenance.
47	Fault of gear selection motor	1. It can not drive; 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray. 4. Visually check whether there is any damage on wiring harness or motor; 5. Please go to the service station for maintenance.
48	Fault of vehicle speed sensor	1. It can operate; 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray. 4. Visually check whether there is any damage on wiring harness or sensor.

S/N	Text prompt content	Recommended measures
		5. Please go to the service station for maintenance.
49	Fault of input shaft sensor	1. It can be driven, and the fault rate of hanging start gears is high, and the impact is relatively heavy. 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray. 4. Visually check whether there is any damage on wiring harness or sensor. 5. Please go to the service station for maintenance.
50	Fault of clutch position sensor	1. It cannot be driven. 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray. 4. Visually check whether there is any damage on wiring harness; 5. Please go to the service station for maintenance.
51	Fault of shift position sensor	1. It cannot be driven. 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray. 4. Visually check whether there is any damage on wiring harness or sensor. 5. Please go to the service station for maintenance.
52	Fault of gear selection position sensor	1. It cannot be driven. 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray. 4. Visually check whether there is any damage on wiring harness or sensor. 5. Please go to the service station for maintenance.
53	Fault of auxiliary box position sensor	1. It can operate; 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray. 4. Visually check whether there is any damage on wiring harness or sensor. 5. Please go to the service station for maintenance.
54	The battery voltage is too low	Please charge the battery.
55	The battery voltage is too high.	Please replace the battery or repair it at the service station, otherwise it will burn TCU.
56	fault of air pressure sensor	1. It can operate; 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray.

S/N	Text prompt content	Recommended measures
		4. Visually check whether there is any damage on wiring harness; 5. Please go to the service station for maintenance.
57	Temperature sensor fault	1. It can operate; 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray. 4. Visually check whether there is any damage on wiring harness; 5. Please go to the service station for maintenance.
58	Slope sensor failure	1. Able to drive; 2. Please check if the connector is loose or damaged. 3. Insert and remove the connector several times, the connector may be oxidized and corroded due to salt spray, etc., or the terminal may be deformed; 4. Visually inspect the harness for damage; 5. Please go to the service station for maintenance.
59	Interruption of Engine Communication	1. You can not drive it, please contact the service station personnel for maintenance.
60	Fault of accelerator panel signal	1. You can drive it, please contact the service station personnel for maintenance.
61	ABS Communication Interruption	1. You can drive it, please contact the service station personnel for maintenance.
62	Please check wiring harnesses.	1. You can drive it, please contact the service station personnel for maintenance.
63	ABS signal failure	1. You can drive it, please contact the service station personnel for maintenance.
64	Fault of intermediate axle brake valve	1. It can operate; 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray. 4. Visually check whether there is any damage on wiring harness or valve body. 5. Please go to the service station for maintenance.
65	Please release the brake pedal.	1 see brake light switch signal fault
66	Auxiliary opening of slope start	1. The tip information indicates that the auxiliary function of ramp start is ON.
67	Transmission oil temperature is too low.	1. Tips: Vehicles need to drive in low gear areas.
68	Handle communication is interrupted.	1. It can not drive; 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray. 4. Visually check whether there is any damage on wiring harness or handle.

S/N	Text prompt content	Recommended measures
		5. Please go to the service station for maintenance.
69	Fault Of Ramp Start Valve	1. It can operate; 2. Please check whether the connector is loose or damaged. 3. If inserted many times, the plug-in may be oxidized and corroded or the terminal may be deformed due to the salt spray. 4. Visually check whether there is any damage on wiring harness or valve body. 5. Please go to the service station for maintenance.
70	Brake switch signal fault.	1. It can operate; 2. Please go to the service station for maintenance.
71	Signal fault of key door	1. Please go to the service station for maintenance.

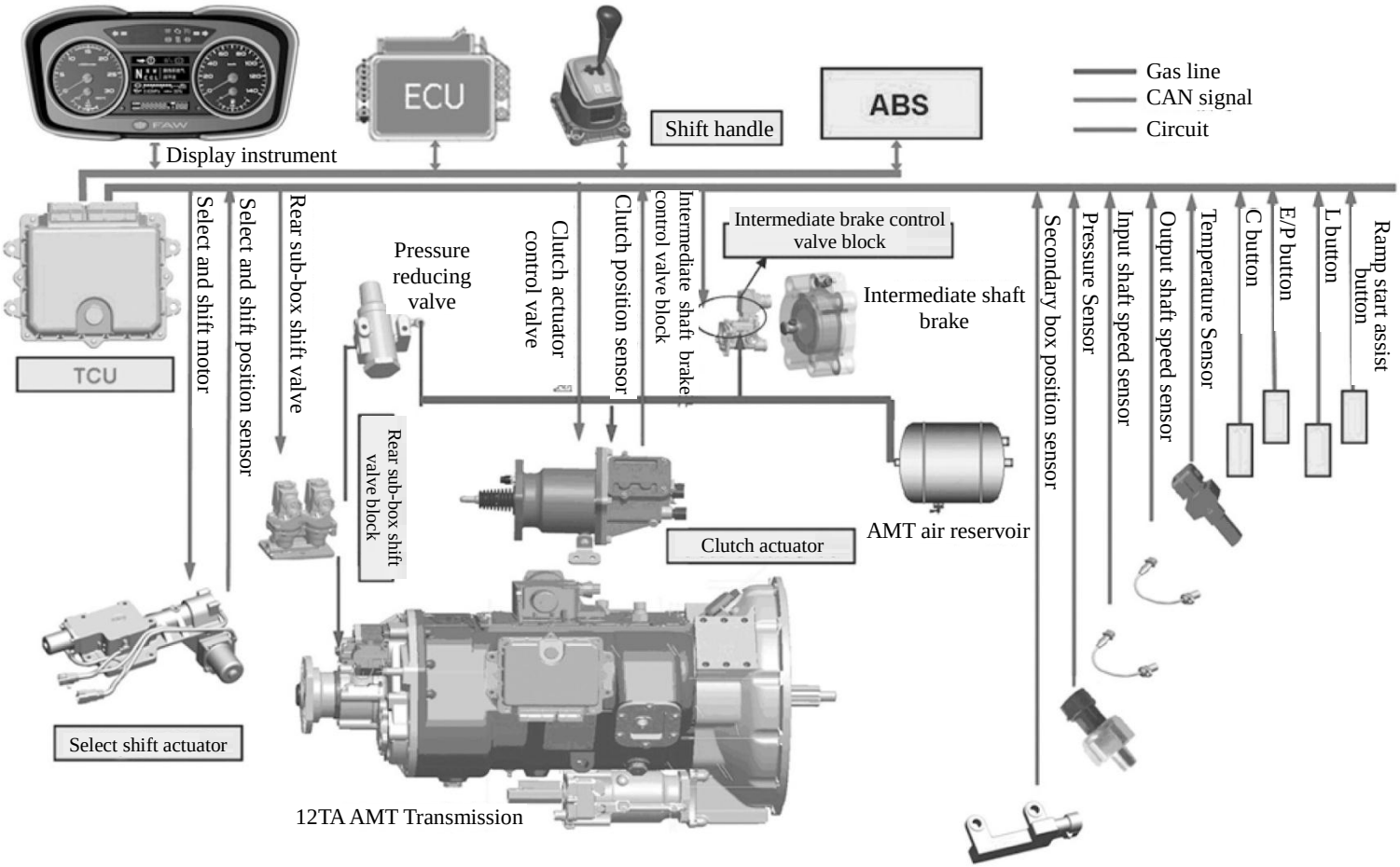
Table 2 Fault alarm explanation and cause analysis of gearbox

S/N	Gearbox alarm lamp	TCU Defines fault items	Possible fault causes
1	Off	None	-
2	Yellow (fast flash)	Failure of clutch slow exhaust valve	1. fault of wiring harness or connector connecting clutch slow exhaust valve;
			2. Fault of clutch slow exhaust valve;
		Fault of clutch fast exhaust valve	1. fault of wiring harness or connector connecting clutch fast exhaust valve;
			2. Fault of clutch fast exhaust valve;
		Fault of clutch slow intake valve	1. fault of wiring harness or connector connecting clutch slow intake valve;
			2. Fault of clutch slow intake valve;
		Fault of clutch fast intake valve	1. fault of wiring harness or connector connecting clutch fast intake valve;
			2. Fault of clutch fast intake valve;
		fault of high gear valve in auxiliary box	1. fault of wiring harness or connector connecting high stop valve of auxiliary box;
			2. fault of high stop valve in auxiliary box
		fault of low gear valve in auxiliary box	1. fault of wiring harness or connector connecting low stop valve of auxiliary box;
			2. fault of low stop valve in auxiliary box
		fault of shift handle	1. Faults in wiring harness or socket of shift handle;
			2. Shift handle malfunction.
		Shift motor fault	1. fault of wiring harness or connector connecting shift motor;
			2. Shift motor malfunction.
		Fault of gear selection motor	1. fault of wiring harness or connector connecting gear selection motor;
			2. fault of gear selection motor.
3	Red	Parking maintenance shifting system	1. Fault of clutch position sensor;
			2 Gear selection sensor fault
			3. Fault of gear selection motor or shift motor;
			4. Clutch fast exhaust or fast intake valve fault;
			5. Fault of clutch slow intake or slow intake valve;
			6. Fault of output shaft speed sensor.
		Fault of output shaft sensor	1. Fault of output shaft sensor harness or connector.
			2. Fault of output shaft sensor.
		Fault of input shaft sensor	1. Fault of input shaft speed sensor harness or connector.
			2. Fault of input shaft speed sensor.

S/N	Gearbox alarm lamp	TCU Defines fault items	Possible fault causes
		Fault of clutch position sensor	1. Fault of the wiring harness or connector of the clutch position sensor;
			2. Fault of clutch position sensor;
		Fault of shift position sensor	1. Fault of wiring harness or connector of shift position sensor;
			2 Fault of shift position sensor
		Fault of gear selection position sensor	1. Fault of the wiring harness or connector of the selective position sensor;
			2 Fault of gear selection position sensor
		Fault of auxiliary box position sensor	1. Fault of wiring harness or socket of position sensor of auxiliary box;
			2 Fault of auxiliary box position sensor
		fault of air pressure sensor	1. Fault of barometric sensor wiring harness or connector;
			2 fault of air pressure sensor
		Gearbox temperature sensor fault	1. Faults of wire harness or plug-in of temperature sensor;
			2 Temperature sensor fault
		Fault of acceleration sensor	1. Faults of wire harness or plug-in of acceleration sensor
			2 Fault of acceleration sensor
4	Yellow (slow flash)	On-line detection of shifting system	1. The system is being tested off-line.
			2. Connect the diagnostic instrument for diagnostic operations.
		Air pressure is not sufficient in the gear shifting system.	1. The pressure of AMT cylinder is insufficient.
		Synchronization fault of shifting system	1. If the gear lifting fails, it may be the fault of the intermediate axle brake.
			2. If it fails to gear down, it may be an engine fault.
		fault of main box gear selection	1. Fault of main box body of gearbox;
			2. Mechanical fault of gear-shifting actuator;
			3. The temperature of gearbox is too low.
		fault of main box gear selection	1. Fault of main box body of gearbox;
			2. Mechanical fault of gear-shifting actuator;
			3. The temperature of gearbox is too low.
		fault of auxiliary box gear selection	1. The airway of the auxiliary box actuator is not smooth;
			2. fault of the auxiliary box actuator mechanism;

S/N	Gearbox alarm lamp	TCU Defines fault items	Possible fault causes
			3. The temperature of gearbox is too low.
		The clutch disengagement is not in place.	1. Clutch actuator air intake is not smooth;
			2. fault of clutch actuator mechanism;
			3. Insufficient assembly of clutch assembly;
			4. The performance of clutch intake solenoid valve decreases.
		The clutch engagement is incomplete.	1. Clutch actuator air exhaust is not smooth;
			2. fault of clutch actuator mechanism;
			3. The performance of clutch exhaust solenoid valve decreases.

12TA-AMT Electrical control system operation schematic diagram

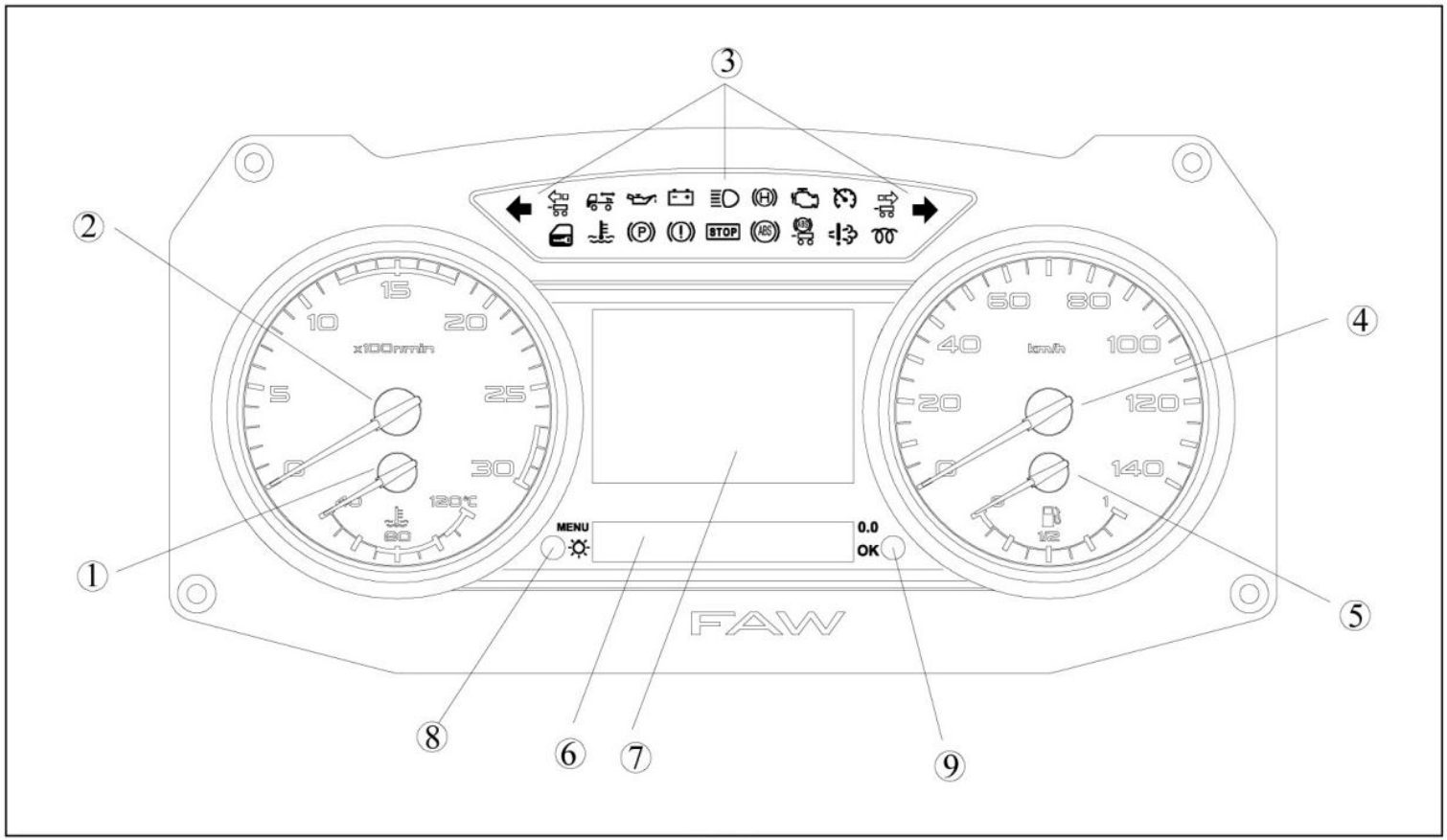


J6 China V series

This section only lists the changes of State V and Duo IV. The other parts of the operation instructions are detailed in the previous Duo IV.

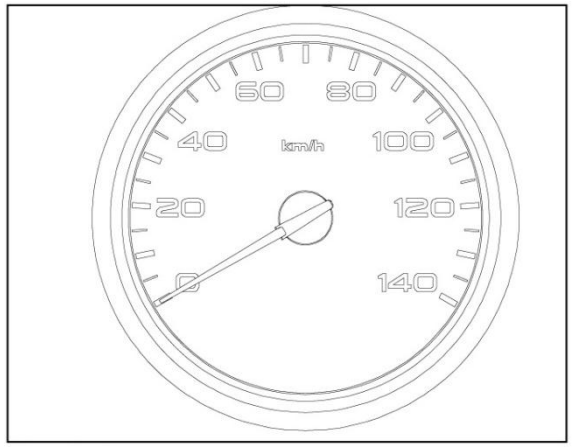
Instrument and alarm lamp

Instrument diagram



Instrument

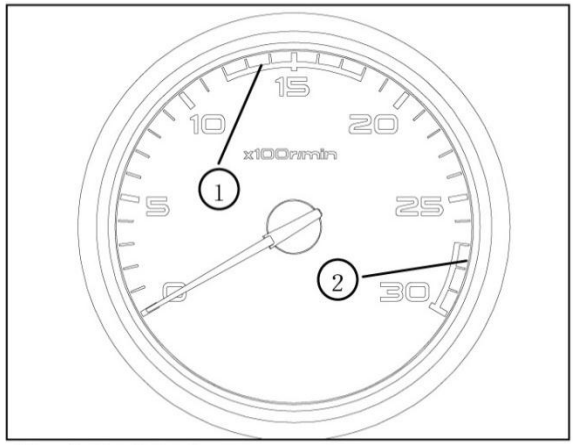
①Water thermometer ②Engine tachometer ③Indicator and alarm lamp ④Speedometer ⑤Fuel gauge ⑥Secondary LCD ⑦Main LCD ⑧Button 1 ⑨Button 2



Speedometer

▶Indicate the speed of the vehicle.

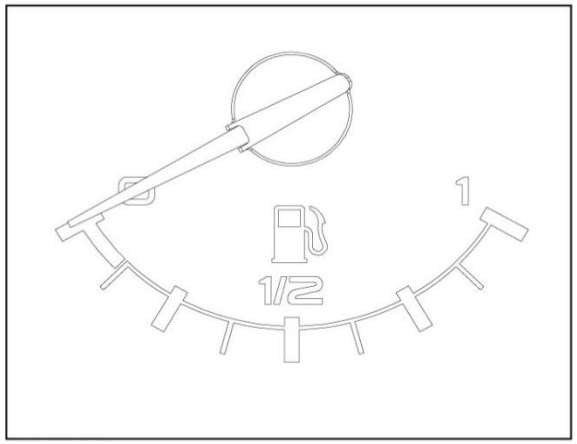
- The driving mileage is displayed on the LCD screen.



Engine tachometer

▶The engine tachometer is better to control the engine speed in the green zone ①, where the best comprehensive performance of the engine can be obtained.

▶The engine speed exceeds the red range ②, which means that the engine speed exceeds the limit. Long-time over-speed operation can cause damage to the engine.



Fuel gauge

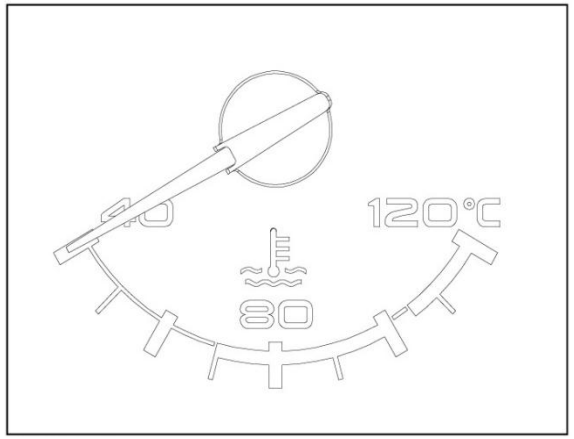
▶Indicates the amount of fuel in the fuel tank.

0: Indicates that the fuel tank is empty. alarm lamp

1: Indicates the fuel tank is full.

⚠Caution

When the pointer is close to the red range, the fuel shall be supplemented in time. Otherwise, the oil supply system will allow the air to enter and an exhaust is required again when starting again.



Water thermometer

▶ The water thermometer indicates the coolant temperature of the engine.

▶ After each cold start of the engine, the preheating shall be carried out at low speed.

▶ When the temperature of the coolant reaches more than 50℃, start driving. During driving, the normal temperature range of the coolant is (75 ~ 95) ℃.

▶ If the pointer exceeds 105℃, the warning lamp will be on, indicating that the engine is overheated at this time, and the vehicle shall be parked at a safe place and run at a speed slightly higher than idle speed in order to cool the engine.

▶ After the pointer returns to the normal operating position, stop the engine for the following checks:

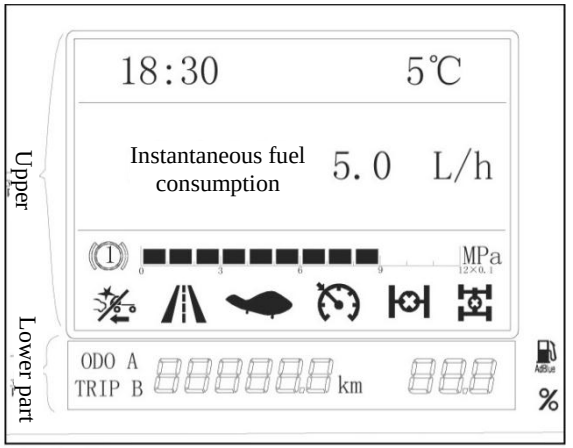
- Check the radiator and the hoses for leaks.

- Check the amount of coolant and add if the coolant is insufficient.

- Check whether there are sundries on the front of the radiator.

⚠Caution

Do not stop the engine immediately after stopping, otherwise the engine cylinder block temperature will rise sharply and cause the engine to be sintered.

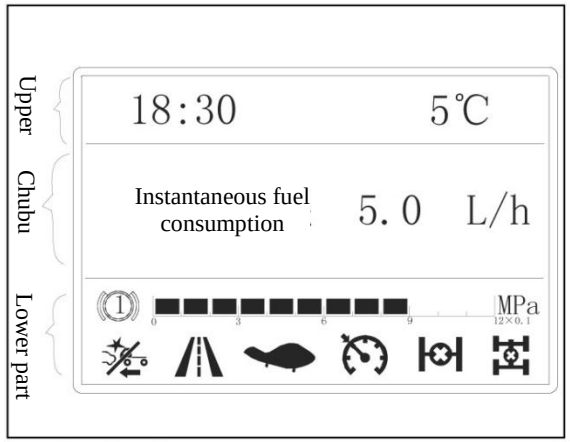


LCD screen

▶ A LCD screen includes a main LCD screen and a secondary LCD screen.

- The upper part is the main LCD screen.

- The lower part is the auxiliary LCD screen



Main LCD screen

▶The main LCD is divided into three areas.

- Upper part: When there is no alarm, it shows "time and outside temperature", if the temperature is less than 4 C, the sign of ice sign (snowflake) lights up; when there is an alarm, yellow alarm is displayed on the left side and red alarm is displayed on the right side.

- Central part: Traffic information display, including instantaneous fuel consumption, average fuel consumption, fuel consumption, oil pressure, battery voltage, alarm information AMT gear information. Press Button 1 to switch between the instantaneous fuel consumption, fuel consumption, average fuel consumption, oil pressure and battery voltage. The gear information is displayed when AMT information is detected.

* When the engine is running normally, the oil pressure indication range is 0.22MPa~0.65MPa. If the pressure value is less than 0.07 MPa, the oil pressure interface and the alarm sign of too low appear, the engine should be shut down immediately to find out the cause of the fault.

* The battery voltage range is 16V~32V. Normal voltage shall be between 24-28V. Under 22V or above 30V, the battery voltage alarm interface appears, indicating that there is a fault in the charging system, which should be checked and repaired in time.

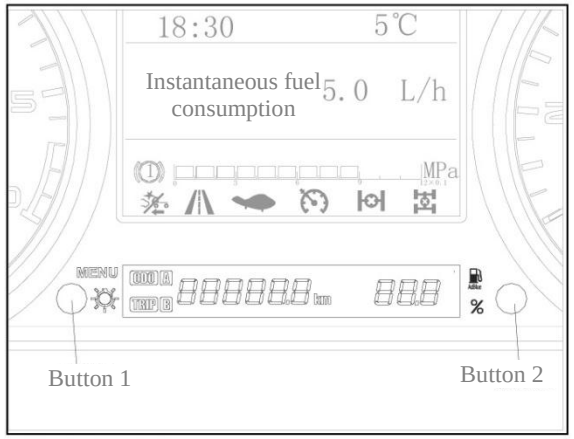
* Lower part: The status bar shows the braking pressure of the front brake circuit and the rear alarm brake circuit. If there is a work report indicator, it shows a smaller brake lamp. Air pressure and work indicator symbol.

⚠Caution

⊙The brake pressure should be maintained in the range of (0.7-0.9) MPa during driving.

⊙ Stop the vehicle immediately and check if it is less than 0.55MPa (i.e. the brake system fault alarm lamp is on).

⊙ The barometer displays the fault, please check whether the air pressure sensor needs to be replaced.



Auxiliary LCD screen

▶The secondary LCD screen is divided into two areas: left and right.

- Left side: Displays the subtotal mileage, total mileage. Press key 2 to realize mileage switchover; when displaying the subtotal mileage, long press key 2 to clear the mileage.

- On the right side: the value indicates the urea level.

0% ~ 10%: indicates that the urea tank is empty.

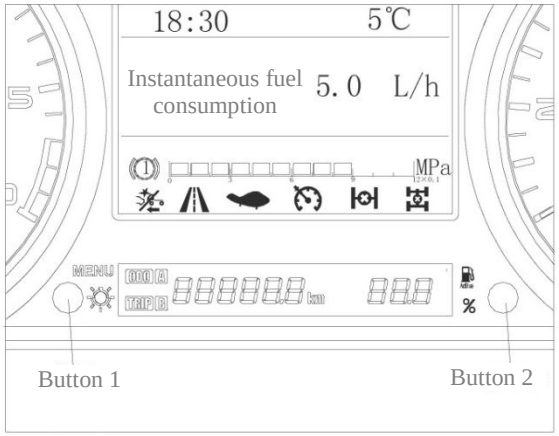
90% -100%: indicates that the urea tank is full.

⚠Caution

⊙ When the liquid level of urea is lower than 15%, the liquid level alarm lamp of urea shall be on, and the urea shall be supplemented in time.

⊙ When the liquid level of urea is lower than 10%, the emission fault alarm lamp is on.

⊙ If the urea liquid level continues to decrease and the engine limits the torque, urea should be supplemented in time, and the engine torque limit shall be relieved.



Main menu

▶The LCD operation menu can only be used when parking. The selection of the items on the LCD can be realized by pressing key 1 and key 2.

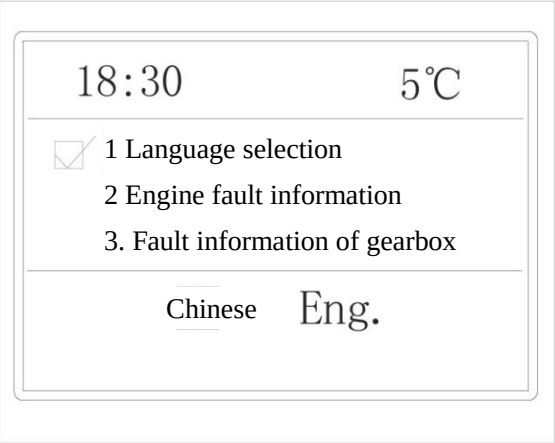
Long press the button: the pressing time is longer than 1.5s.

Short press the button: the pressing time is between 50ms and 1.5s.

Long press 1 to enter the main menu interface, short press 1 to select up and down, short press button 2 to enter submenu or select.

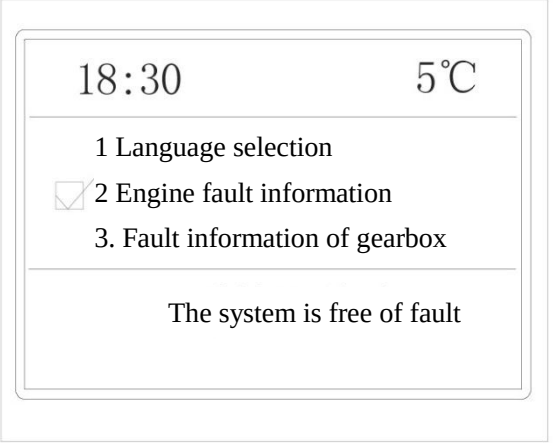
▶Select a key to carry out up and down selection, and short press Button 2 to enter the submenu or select.

▶The main menu is divided into two areas. The upper part is the menu item display area, and the lower part is the auxiliary area.



- Language selection

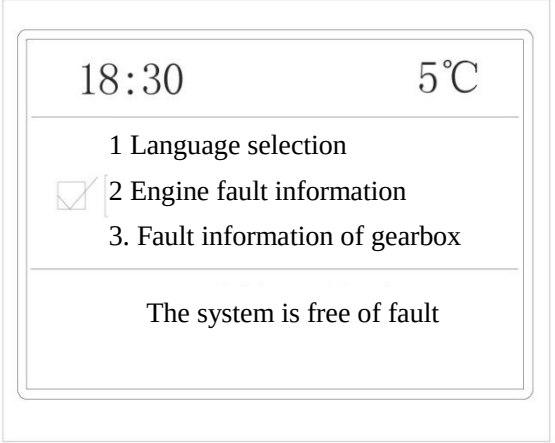
* In the English language, press the right key to switch between Chinese and English languages.



- Engine fault information

* Indicates the fault information that is present on the current engine.

* If there is a fault, the fault code and the fault text message will be displayed.

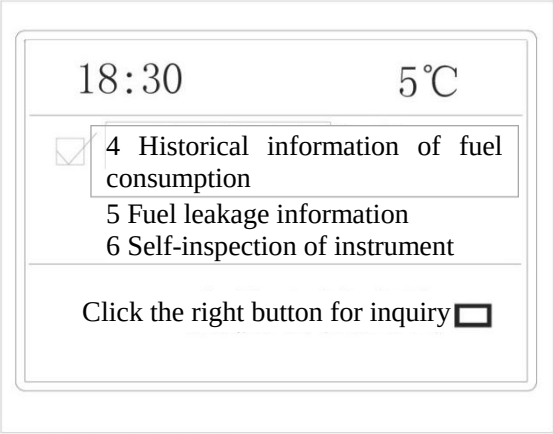


Instrument and

- Fault information of gearbox

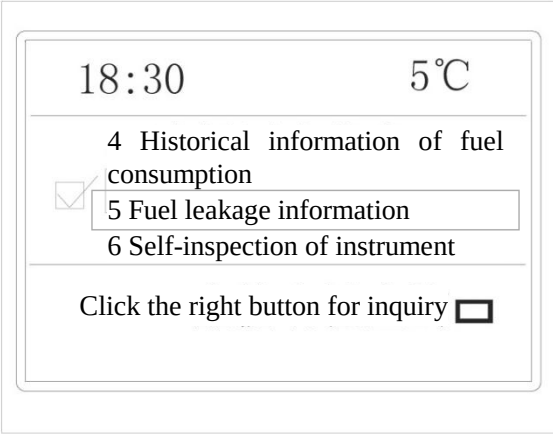
* The whole vehicle is equipped with the AMT and the instrument detects the AMT information before displaying the item.

* Indicates the fault or prompt information that is present on the current engine.



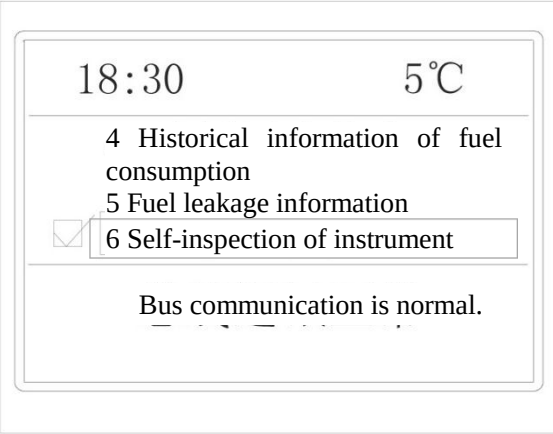
- Historical information of fuel consumption

* Query the historical fuel consumption information through menu, record the total mileage and fuel consumption before clearing.



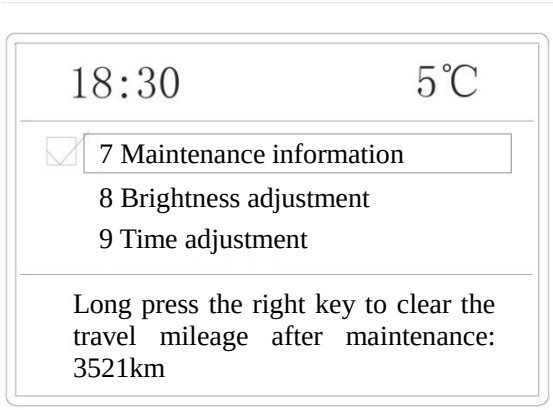
- Fuel leakage information

* Query the history information of the fuel theft through the menu, and record the total mileage of the time.



- Self-inspection of instrument

* Detect the current network status.

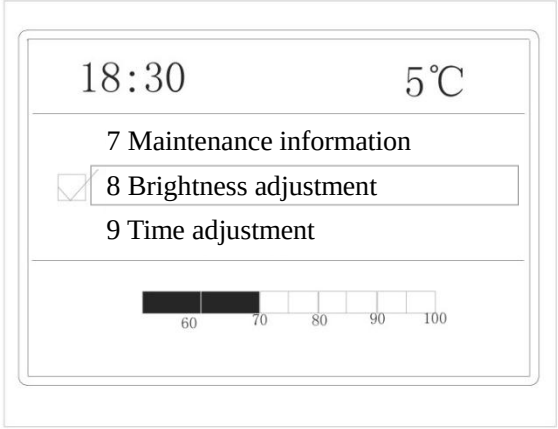


- Maintenance information

* Press the right button to switch in the interface of "clearance of vehicle maintenance information, setting of vehicle maintenance reminder mileage, clearance of urea pump filter maintenance information and setting of urea pump filter maintenance reminder information".

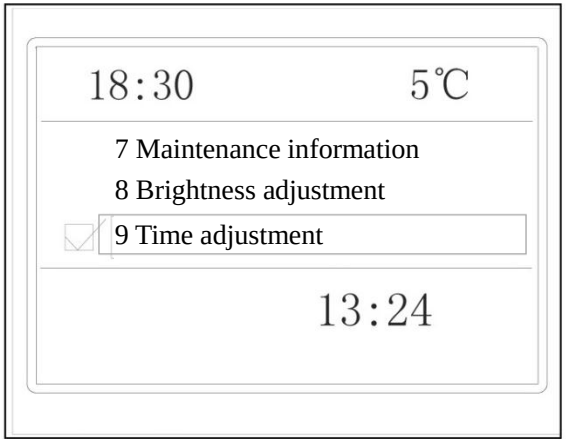
* Clear up the vehicle maintenance information and urea pump filter core maintenance information by pressing the right button for a long time, and record the mileage to the next maintenance time.

* In the interface of "vehicle maintenance reminder mileage setting, urea pump filter maintenance reminder information setting", set the distance from the next maintenance reminder mileage, click on the right key to adjust the selected number, and long press the right key to switch to the next one to complete the setting.



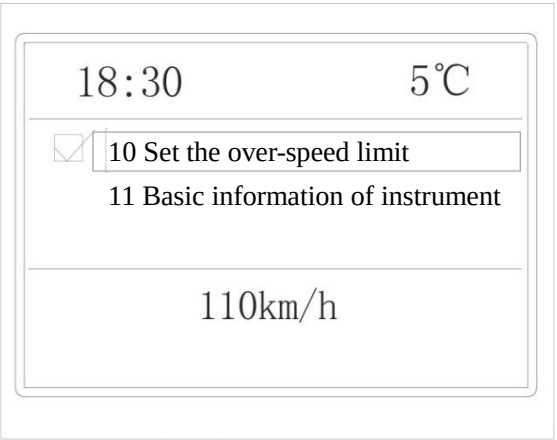
- Brightness adjustment

* Adjust the brightness of the LCD. By short pressing the right key to increase the brightness, the minimum brightness will automatically return when the brightness reaches the maximum.



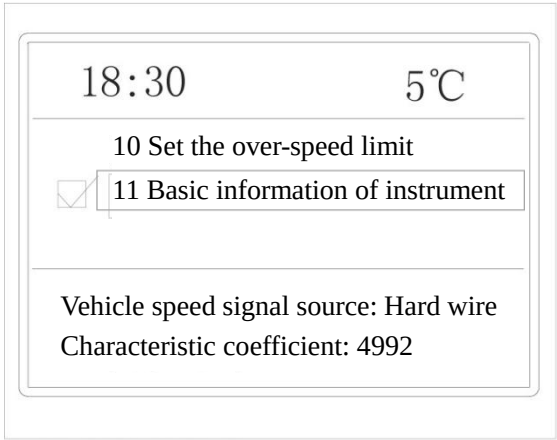
- Time adjustment

* Adjust the time. By default, select "Time" and press the right button + 1 to adjust the cycle, ranging from 0 to 23 according to 12 - > 13 - >. -> After adjusting the hourly data of 23 - > 1 sequence change, press the right key to confirm and switch to "Minute", press the right key + 1 to adjust in a circle ranging from 0 to 59, and press the right key to confirm for a long time.



- Set the over-speed limit

* When the set over-speed limit is reached, the instrument beeps.



- Basic information of instrument

* Check the basic information of the instrument. Including speed signal source, characteristic coefficient, software version and part number.

Instructions for warning lamp and indicator lamp

Icon	Name of alarm Lamp/indicator lamp	On
	STOP fault alarm lamp	In case of fault of coolant level, brake system, oil pressure, cab turnover, coolant temperature
	Brake system fault alarm lamp	When the air pressure of reservoir is insufficient
	Auxiliary brake indicator lamp	When the engine brake system or exhaust brake system is working
	Indicator lamp for parking brake	When parking brake is used
	Coolant temperature alarm lamp	When the engine is overheated
	Unclosed door alarm lamp	When the door is not closed
	ABS main vehicle alarm lamp	In case of the main vehicle ABS fault
	ABS trailer alarm lamp	In case of the trailer ABS fault
	Emission fault alarm lamp	In case of emission system fault

Icon	Name of alarm Lamp/indicator lamp	On
	Engine preheating indicator lamp	When the engine preheating device is operating
	Headlamp high beam indicator lamp	When the headlamp high beam is on
	Left turn indicator lamp	In case of left turn
	Right turn indicator lamp	When turns right
	Indicator lamp for electrical charging	When the battery system fails
	Oil pressure alarm lamp	When the oil pressure is too low
	Trailer connection alarm lamp	When the trailer is not connected or unlocked
	Engine fault alarm lamp	When the engine electronic fuel injection system fails
	Cruise operation indicator lamp	When the cruise control is working
	Trailer left turn indicator lamp	When the trailer turns left

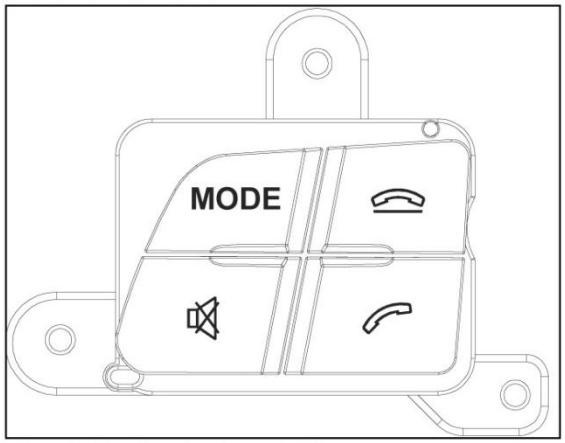
Icon	Name of alarm Lamp/indicator lamp	On
	Trailer right turn indicator lamp	When the trailer turns right
	Dynamometer indicator	When the dynamometer is in operation,
	Inter-wheel differential lock indicator lamp	When the inter-wheel differential lock is engaged
	Axle-to-axle differential lock indicator lamp	When the axle-to-axle differential lock is engaged
	Coolant level alarm lamp	When the coolant level is too low
	Lamp fault alarm lamp	When brake light is broken
	Cab turnover alarm lamp	When the cab is in turnover or the lock is not in place
	Air filter plugging warning lamp	When the air filter is plugged
	Fuel filter plugging alarm lamp	When the fuel filter is plugged
	Urea liquid level warning lamp	When the liquid level of urea is too low

Icon	Name of alarm Lamp/indicator lamp	On
	Low speed indicator	When the transmission is in a low gear position,
	ASR alarm lamp	When ASR works
	Brake fluid level alarm lamp	When the brake fluid level of urea is too low
	Gearbox fault alarm lamp	When the gearbox fails
	Gearbox oil temperature alarm lamp	When the transmission oil temperature is too high
 Yellow	Retarder Operating Instruction	When the retarder works
 Red	Retarder fault alarm	Retarder fault or over-temperature protection
	ECAS height indicator	During the ECAS height adjustment
	ECAS fault alarm	When ECAS system fails
	Indication of ECAS prompt axis	ECAS Lifting Shaft and Operating Indicator Lamp

Icon	Name of alarm Lamp/indicator lamp	On
	Drive Help Instruction ECAS Floating Bridge	When Floating Bridge Driver Help Function Works
	Lifting indication of ECAS pontoon bridge	When the pontoon bridge is lifted
	Alarm light that seatbelt is not buckled up	Seatbelt not buckled up
	Brake lamp fault alarm	When brake lamp fails
 Red	LDW system alarm	When the vehicle deviates from the lane line and the LDW system gives an alarm
 White	Standby of LDW system	When the LDW system is ON
	LDW system fault	When LDW system fails
	LDW system shuts down	When the LDW system shuts down
	LDW system detects the lane line	When the LDW system detects the lane line
 White	Standby of FCW system	When the FCW system is ON

Icon	Name of alarm Lamp/indicator lamp	On
 Red	FCW system alarm	When the vehicle is close to the obstacle in front of it and the LDW system gives an alarm,
	FCW system fault	When FCW system fails
	FCW system shuts down	When the FCW system shuts down
	Low fuel alarm	When the fuel is too low

Switches Buttons Handles



Multi-function steering wheel switch

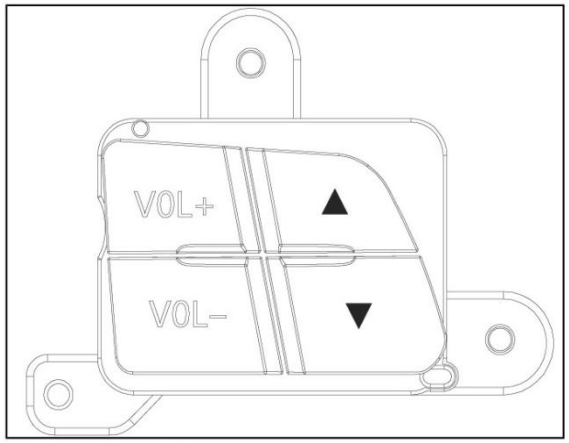
▶Right control switch

- Click the button **MODE** to switch between the radio and the music.

- Click the (mute) button to switch between the mute and the last volume value.

- Click the button to terminate the ongoing call.

- Click the button to jump to the dialing interface and answer calls.



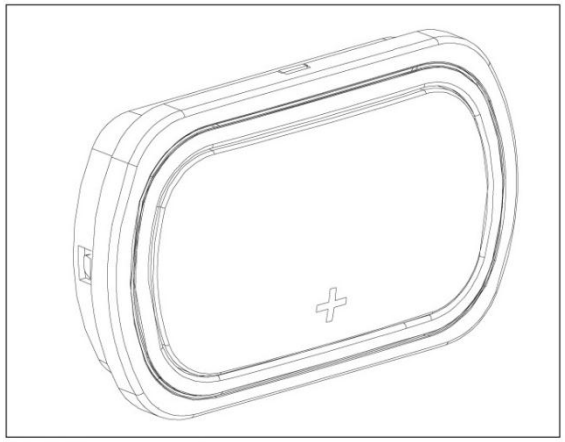
▶Left side control switch

- Click the button VOL+ (volume up) to increase the volume.

- Click the button VOL− (volume down) to reduce the volume.

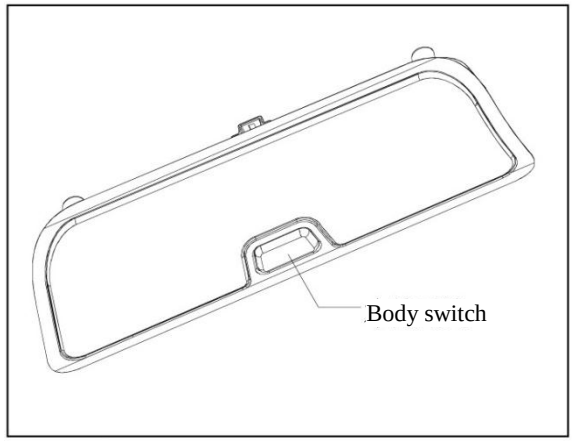
- Click the ▼ (reverse search) button to search backwards in radio mode.

- Click the ▲ (reverse search) button to search backwards in radio mode.



Sleeper light switch Buttons

- Realize the sleeping lamp according to the middle position of the lower part of the lampshade.



Indoor lighting switch

▶Indoor lighting is controlled by the body switch and the indoor lighting switch (self-reset) located on the dashboard. In addition, it has the functions of intelligent control and power saving controls.

▶Body switch control

- When the left/right indoor lighting is OFF, the left/right indoor lamp is ON if the body switch is pressed.

- When the left/right indoor lighting is ON, the left/right indoor lamp lights out gradually if the body switch is pressed.

▶Control of indoor lighting switch

- When any or many lamps of left door alarm lamp, right door alarm lamp, left indoor lamp and right indoor lamp are ON to trigger the indoor lamp switch and all lamps extinguish immediately. Trigger the indoor light switch again and light up them all.

- When any door opens, the operation of the indoor light switch is invalid (the operation door alarm light body switch is invalid), and the operation of the left/right indoor light body switch is effective.

- In the extinguishing process, if the indoor light switch is triggered, the indoor light will continue to extinguish.

▶Power saving control

- If the change of ignition switch causes the indoor lamp to light up, if the ignition switch lasts longer than (15±1.5) min, and there is no indoor lamp switch action during this process, the left and right indoor lamp will be gradually extinguished.

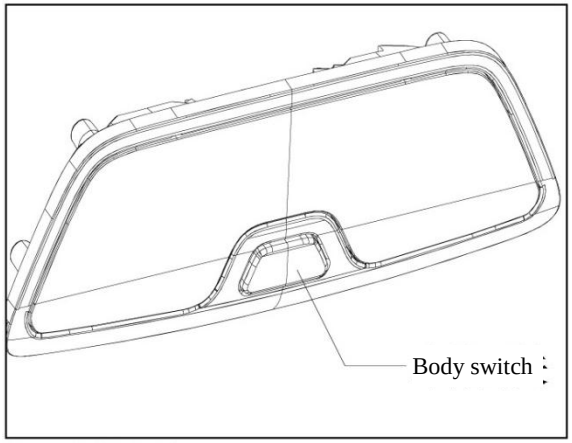
▶Priority

- When doors on both sides are closed, the priority of indoor light switch control and left/right indoor light body switch control is the priority of post-trigger. When one door at least is opened, the operation of the indoor light switch is invalid, and the operation of the left/right indoor light body switch is effective.

- The priority of indoor light switch control and left/right indoor lighting body switch control is higher than that of intelligent control function.

⚠Caution

The fading time, from lighting to extinction time (1.5s ±0.5) s; frequency (100 ±10) Hz.



Door open alarm light

▶The door open alarm light can be controlled by the body switch and the door respectively.

▶Body switch control

Door status: The doors on both the driver side and the copilot side are closed.

- When the door opening alarm lamp is OFF and the door opening alarm lamp body switch is pressed, the left and right door opening alarm lamp is lighted at the same time.

- When the door opening alarm lamp is ON and the door opening alarm lamp body switch is pressed again, the left and right door opening alarm lamp is extinguished at the same time.

▶Door control

- The door state changes from Closed to Open, and the alarm light of the corresponding door side is ON.

- If the door state changes from Open to Closed, the alarm light of door open will be delayed for (10±1)s and then extinguish gradually.

▶Intelligent control

- The door opening alarm lamp is OFF, the ignition switch is changed from non-OFF (ACC/ON) to OFF, and the left and right door opening alarm lamp is ON at the same time.

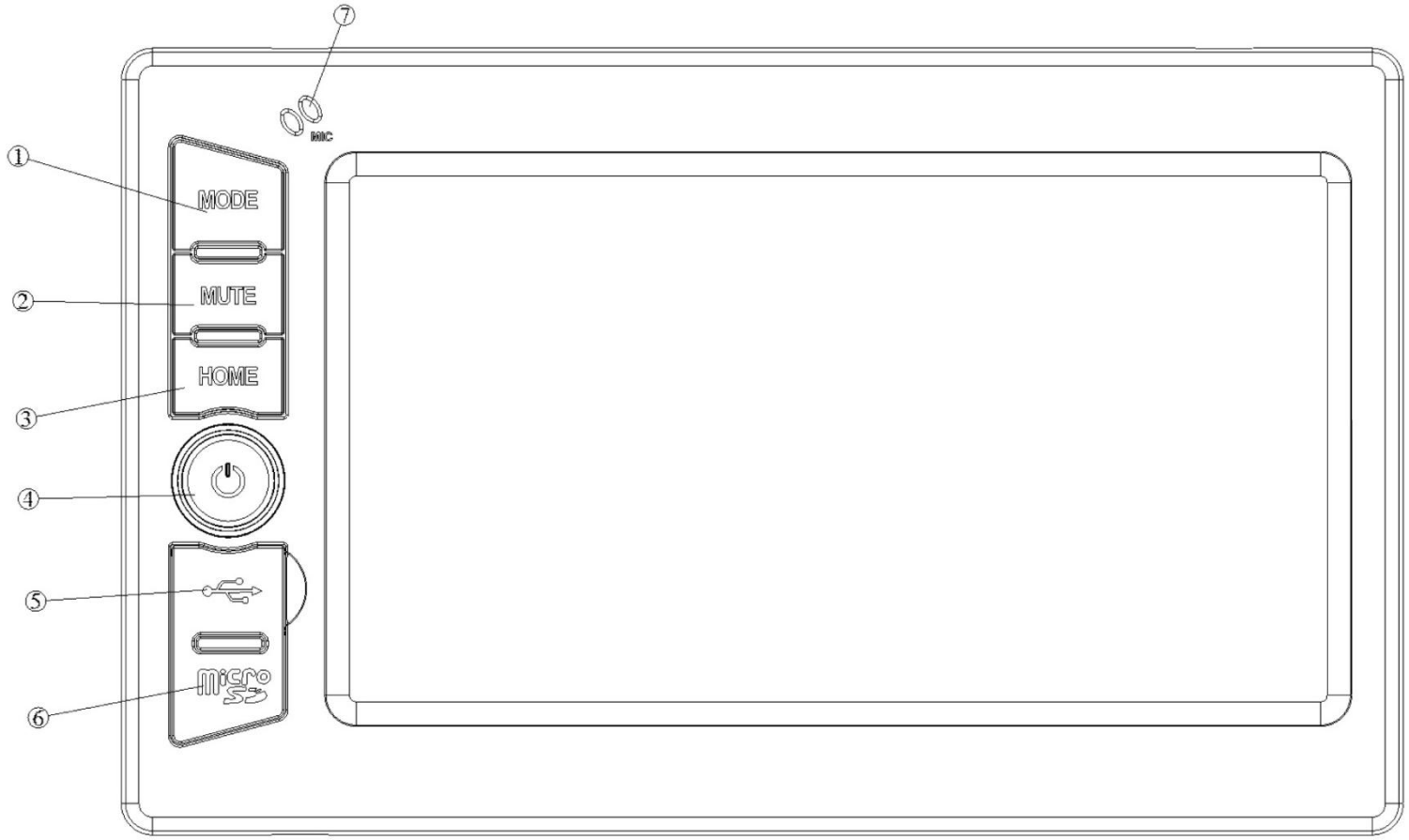
- When any of the following conditions are satisfied, the door open alarm lamps extinguish immediately:

* The ignition switch is changed from OFF to non-OFF.

* The main body switch and the indoor light switch of the door opening alarm lamp are not pressed, and the remote control locking signal is effective.

* Open the door before closing.

On-board information service terminal



① Key ② Mute button ③ Main menu button ④ Power button ⑤ USB interface ⑥ SD card interface ⑦Mike

▶Note for key

① Mode key: switch between radio/music/video/Bluetooth phone/mobile phone interconnection modes

② Mute key: The first time is mute, and the second time is the last volume value.

③ Main menu key: Enter the "main menu" interface.

④ Power key: Short press to close the screen, long press to restart it. Rotate left and right to adjust the volume.

⑦Microphone: Used when you need a voice dialogue (phone call).

▶Interface description

⑤ USB card interface: compatible with devices under USB2.0.

⑥SD card interface: SD card slot.

⚠Caution

When external mobile storage media such as U disk, TF card or mobile hard disk are used, inferior or damaged products may make the system unrecognizable or cause system damage and can not be used. In order to avoid unnecessary economic losses, please use the mobile storage equipment purchased through regular channels.

▶Entertainment function of video and audio Terminal

	Content	Features
Media entertainment	Play Music	Support music formats: mp3, wma, wav, etc.
	Video playback	The car terminal selects the audio and video files and plays them through the local USB and SD card. Supported formats: 3gp, rmvb, rm, mp4, etc.
	Radio	FM/AM radio, automatic search.
	Mobile internet	The car terminal is connected to the mobile phone using a USB data cable, and the application in the mobile phone can be controlled by the vehicle terminal.
	Picture Viewer	The car terminal selects pictures and browses through: USB, SD card. Supported formats: bmp, jpg, png format.

⚠Caution

Some mobile phones can not support the function of mobile phone interconnection. The model of mobile phone which can support the function of mobile phone interconnection is detailed in the manual of vehicle information service terminal.

▶Bluetooth phone function

	Content	Functions
Bluetooth phone	Address book	The address book in the mobile phone can be imported into the vehicle terminal.
	Bluetooth call	After the connection with Bluetooth, the in-out and out-out of the telephone can be realized through the on-board terminal.
	Call log	Missed, Received, Dialed, Deleted, Empty, List.
	Bluetooth connection	Bluetooth connection through mobile query.

▶Driving record query function

	Content	Functions
Driving record	Record query	You can query total driving mileage, driving mileage of the day, driving time of the day, overtime driving record, driver registration record and other information.
	Parameter query	You can query the vehicle license number, terminal ID, unique code, overtime stop time, continuous overtime driving time, overtime driving rest time and other information.

⚠Caution

This manual only briefly introduces some functions of on-board service information terminal. For detailed operation instructions, please consult the manual of On-board Information Service terminal.

▶Common faults and solutions of vehicle information service terminal

- No response at boot-up

Fault diagnosis	Solutions
Batteries are under-charged	Replace
Chip fuse blows	Replace chip fuses with specified amperage
Connecting to mobile devices (e.g. U-disk)	Remove the U disk
The internal insurance has fused.	Replace

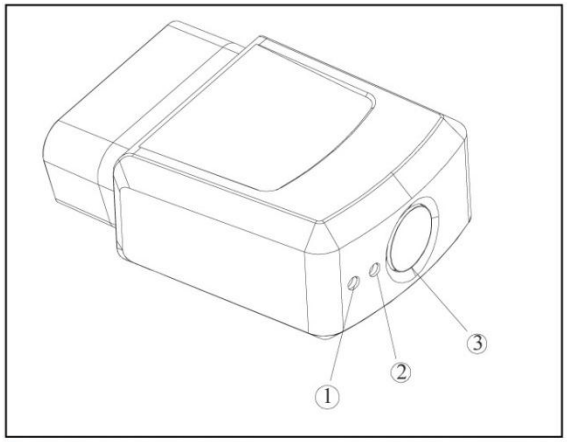
- No sound

Fault diagnosis	Solutions
The mute key is pressed and silent.	Deactivate the mute state.
The volume is too low.	Adjust the volume to the right size
Poor connection of interior speakers	Reconnect speakers

- Mobile phone does not respond to the interconnection.

Fault diagnosis	Solutions
Poor connection of data cables.	Reconnect data cables.
USB debugging mode for unopened mobile phone	Open the debugging mode
No Mobile Assistant	Download the Mobile Assistant
Bluetooth not connected	Connect Bluetooth

Fast plug-in vehicle data terminal



▶By downloading APP client of mobile phone and logging in the easy-to-repair function interface of Jiefang truck, the basic information of vehicle engine and engine fault diagnosis can be queried.

① Communication indicator (green)

② Power Indicator Lamp (Red)

③ Power button

- Basic information of engine

* Vehicle VIN Code, Engine EIN Code, Engine Controller Model, Engine Controller Software Version Number, Engine Controller Customer Production Document Number, and Engine Control Unit Assembly Number.

- Engine fault diagnosis

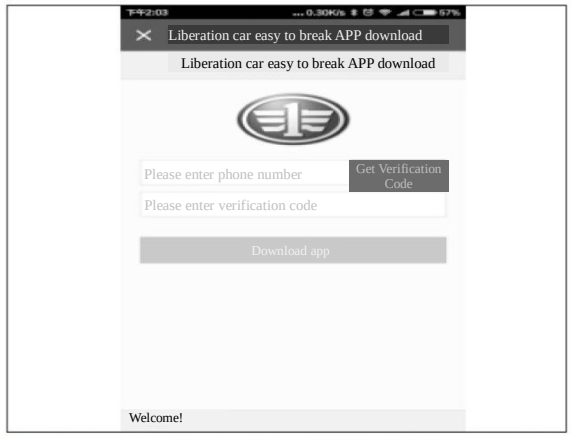
* Fault code reading, fault content description, maintenance guidance, freezing frame information (this information is only used in the Fourth Autonomous Electronic Control System).



▶Please open the mobile network first, and then use the mobile phone with any scanning software (such as We Chat Sweep) to scan the fuselage with two-dimensional code to log in and download the website.

⚠Caution

The user uses the browser scan function to scan the body's own QR code, which can automatically enter the download interface. If the user uses the WeChat sweep, they need to click in the browser to open the download interface. Because the WeChat interface cannot download other software.



▶Enter the user's mobile phone number, click "Get the authentication code", enter the SMS authentication code, and then click "Download APP".

▶If you are using an Android mobile phone, please click to download the "Android version" software.

▶If you are using an Apple mobile phone, please click to download the "IOS version" software.



▶Instructions for the use of “Vehicle Easy Repair Software”

- Insert the fast plug-in vehicle data terminal (hereinafter referred to as "data terminal") into the OBD diagnostic interface of the vehicle, and press the boot button to confirm that the power lamp is on.

- Open the mobile WIFI to set the search SSID and connect the SSID name marked on the back of the data terminal.

- Click on the icon of mobile phone truck software to enter the software interface of easy-to-repair vehicle for operation.

- If there are other operational problems, please click on the "Help Manual" in the vehicle repair software.

⚠Caution

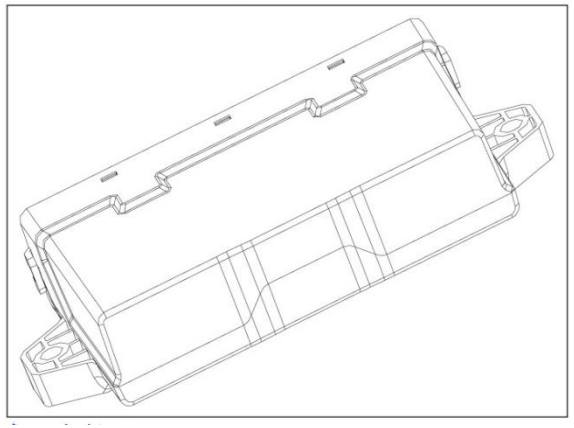
⊙ Please unplug or close the data terminal when the vehicle stalls.

⊙ If the mobile phone is disconnected from the data terminal for 30 minutes, the terminal automatically closes, and the switch power supply needs to be pressed to restart.

Common faults and solutions of fast plug-in vehicle data terminal

Fault diagnosis	Solutions
No connection with mobile phone	"Click on the switch button, restart the terminal, and then establish a connection between the mobile phone and the terminal. can only be connected with one mobile phone at a time. If other mobile phones have been connected to the terminal, they need to be restarted and disconnected.
Unable to boot	"Insert the data terminal into the diagnostic interface completely, click on the boot button, and observe whether the red light is on. If it is on, it indicates that the connection is successful. If the vehicle battery is confirmed to be electrified, the diagnostic interface is fully plugged in, and the red light can not be turned on after many attempts to turn on, so it needs to be repaired back to the factory.“
If failing to detect, the system will prompt the "Network Connection failed".	If the mobile phone does not have the WIFI hotspot established by the terminal device, it will prompt "network connection failure" in the process of system detection. At the moment, the WIFI connection status or whether the terminal is too far away from the mobile phone should be detected.
There is a prompt "Please set the ignition switch to ON gear" on the interface.	If the vehicle ignition switch has not been set to the ON gear, there will be a prompt "Please set the ignition switch to ON gear” during the diagnosis process.
There is a prompt "Reading fault" shown on the interface.	When the system is tested and if the electronic control system of the vehicle is not within the scope of detection, it will prompt "reading fault" in the process of system detection. The support model of this system is Jiefang J6 Pilot Version.
Basic information and fault diagnosis	If the vehicle ignition switch has not been set to the ON gear, there will be a prompt "Please set the ignition switch to ON gear” during the diagnosis process.
Overtime or negative response of electronic control system during the diagnosis process.	In the process of diagnosis, the electronic control system responds to the overtime or negative noise. It should be prompted that "data detection is completed", and then the re-detection process can be executed.

Fleet management module



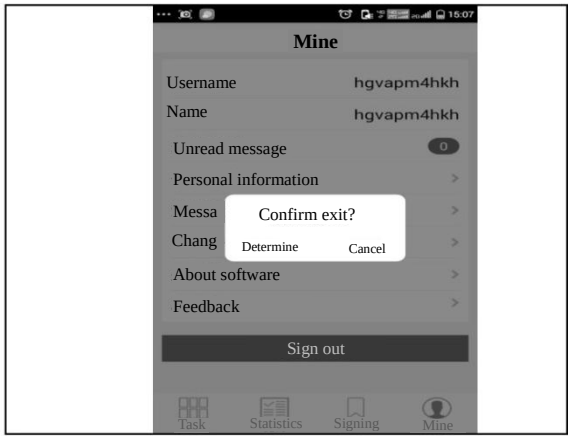
▶Functions

- Through the mobile APP client to login to the fleet management system, drivers and users can check the completion of tasks, their driving behavior information, tasks and various early warning and alarm information of vehicles, and complete the registration and refund operations.



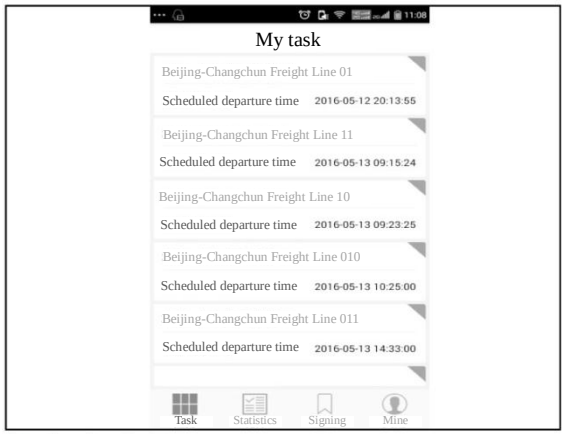
▶Log in

- Click on the "Driver APP" software icon on the mobile desktop to start the driver APP of the Liberation Fleet Management System and enter the login interface. In the login page, you can enter the correct mobile phone number, password and authentication code, and login to the Liberation Fleet Management System.



▶Logout

- After logging into the fleet management system, the driver clicks the button on the menu below to enter the personal center page. Click on the [logout] button, and you can choose to log out or logout of APP. Return to the login interface after logout.



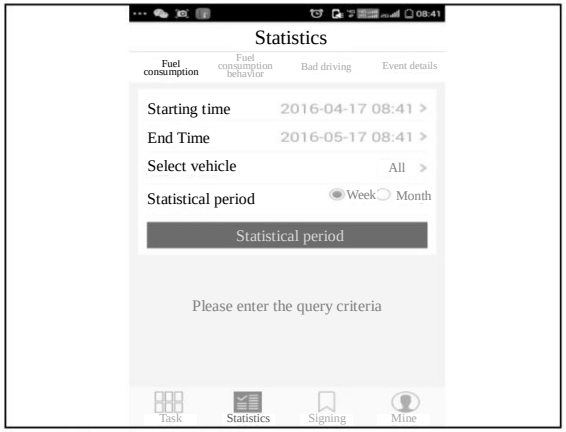
▶Task query

- Click on the "Task" button below to enter the "My Task" page, showing the current driver's task and liner list.

- In the list, if you click on a task at will, the detailed information of the task execution, including the basic information of the task and the actual implementation of the liner, will be displayed.



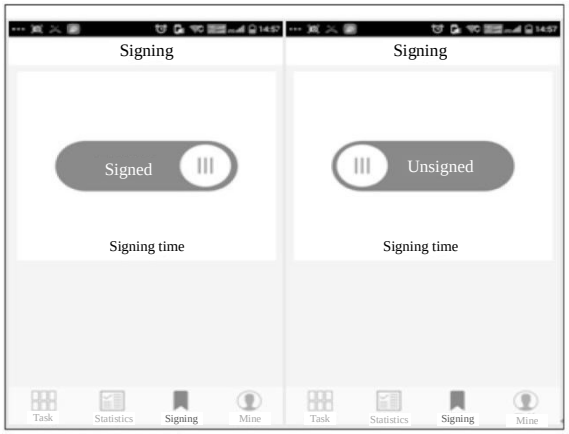
- Click the button in the upper right corner to switch to the map interface to show the implementation of the task. It can display the current real-time location of the vehicle and the actual arrival time of each site at the same time as displaying the route.



▶Fleet management

- Click the Statistics button of the menu below to enter the "Statistics" page. Click the "Fuel Consumption", "Fuel Consumption Behavior", "Bad Driving", "Event Details" button of the menu above to enter the corresponding query page.

- Select the query conditions: start time, end time, vehicle, statistical classification / cycle. Click the [query] button, and display the statistical results.



Sign-in/Sign-out

- Log in and connect to Wi-Fi of fleet management module.

(The default Wi-Fi name and password are the last 6 digits of the vehicle VIN code). Click the button on the menu below to enter the "Sign-in" page. Slide the login button to complete the Sign-in and Sign-out.

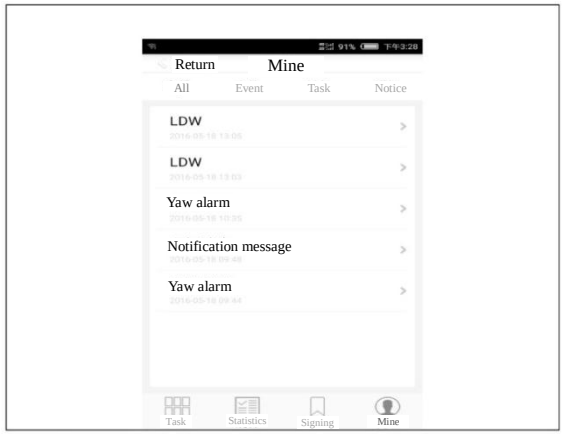


Personal information

- After logging in, click on the menu below [My] button to enter the "My" page.

* It indicates the personal information of the current logged-in driver.

* Click the [return] button on the top left to return to the "My" interface.



View message

- The number of unread messages is shown on the right side of Menu [Unread Message] button. Click it to enter the message display page. Click the menu at the above of the page. Click on the "All" button to view all the messages, click the "Event" button on the menu above to view the driving incident alarm message, click the "Task" button on the menu above to view the task warning alarm message, and click the "Notification" button on the menu above to view the notification message.

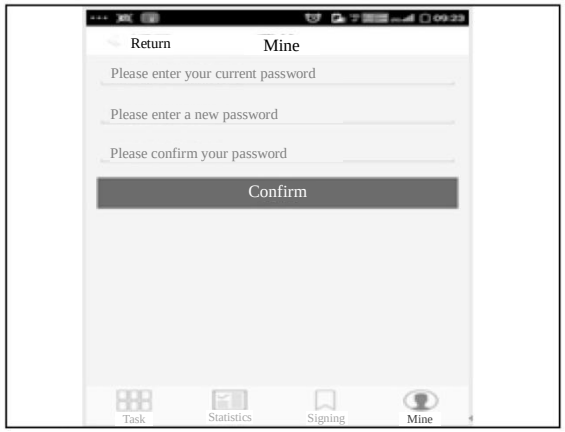
- Click the button on the top left to return to the "My" interface.



Alarm message settings

- Click on the menu button [Message Setting] to enter the message display settings page. In this page, you can set the switch of driving event alarm message and task early warning message. Only when the switch is ON and if the corresponding alarm is triggered, will APP receive the alarm message.

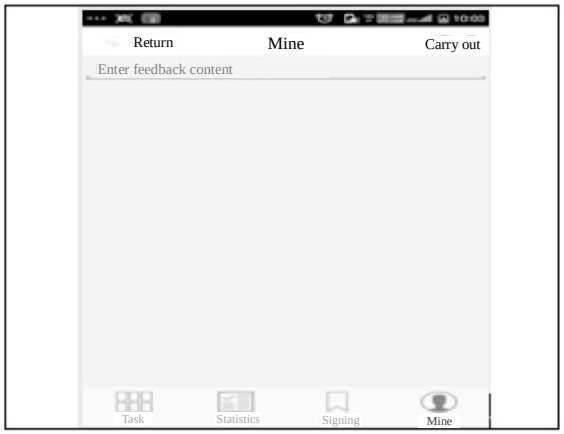
- Click the button on the top left to return to the "My" interface.



Modify the password

- Click the menu button [Modify the password] to enter the password modification page. Enter the original password, the new password, and confirm the new password. Click the "Confirm" button to complete the password modification.

- Click the button on the top left to return to the "My" interface.



Fleet management

- Click on the menu [Feedback] button to enter the Feedback Interface page.

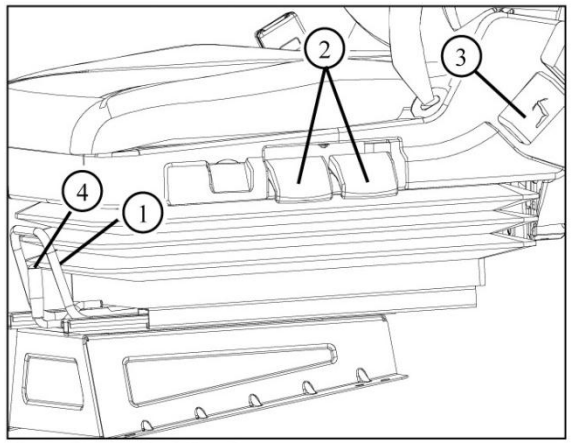
Enter the content and click the button on the top right to send the feedback message.

- Click on the menu [Return], and return to "My" interface.

⚠Caution

Jiefang Fleet Management System Driver APP supports Android 4.0 and above and IOS 5.0 and above.

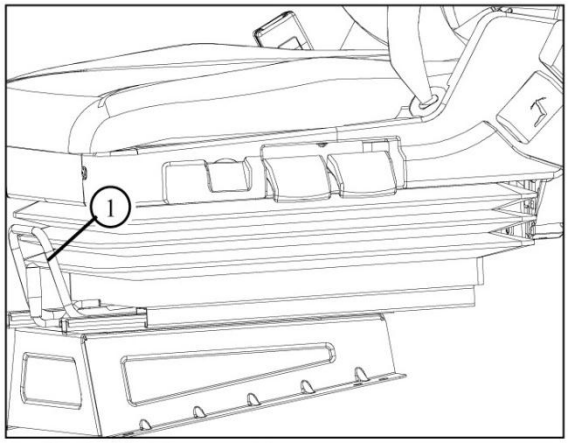
Driver's seat



Driver's seat (standard configuration)

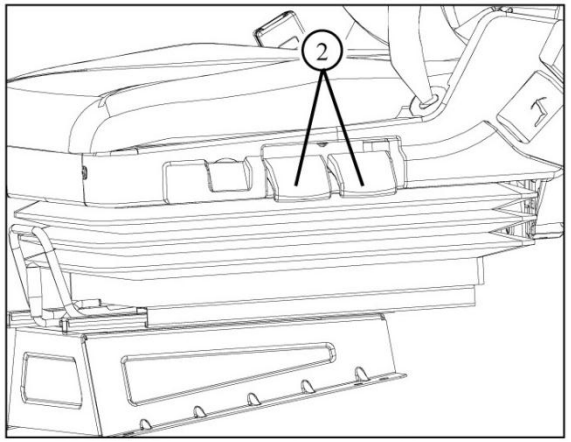
▶There are four functions:

- ①Front and rear adjustment of seat
- ②Height adjustment of front and rear of seat cushion.
- ③Seat back angle adjustment
- ④Seat vibration reduction lock



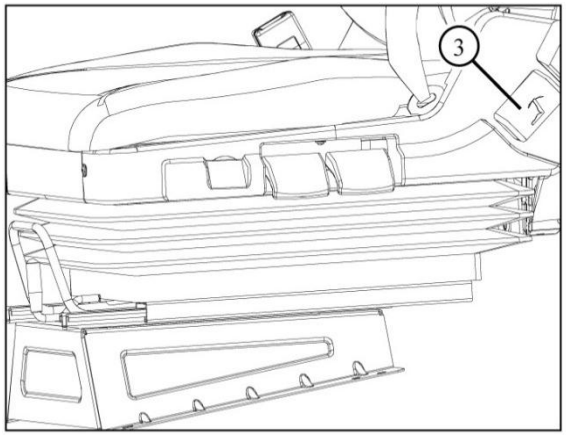
▶①Front and rear adjustment of seat

- When adjusting the front and rear positions of the seat, pull the front and rear adjusting handle upward, adjust the seat to the desired position by the force of the body, then release the handle and lock the seat.



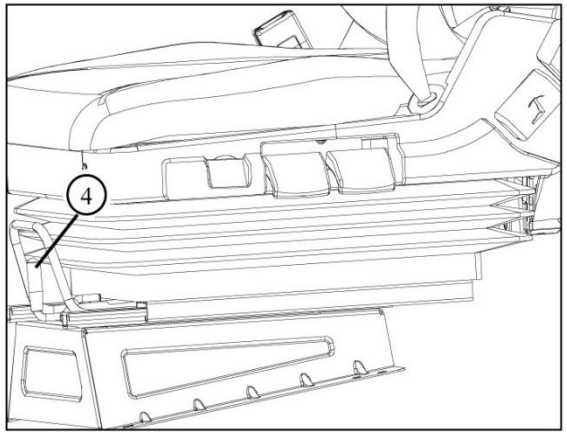
▶②Height adjustment of front and rear of seat cushion.

- When adjusting the front height of the seat cushion, lift the front height adjustment handle upward, change the front height of the seat cushion by the body pressure, then release the handle and lock the seat; if you want to adjust the rear height of the seat cushion, lift the rear handle and operate as the above.



▶③ Seat back angle adjustment

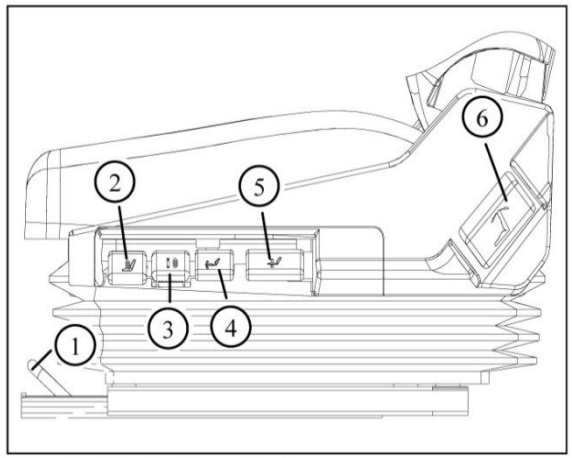
- Pull the angle adjustment handle forward, adjust the seat back to the appropriate angle with the force of the back of the body, then release the handle and lock the seat back.



▶④ Seat cushion stiffness locking handle

- Normally, the handle is adjusted in the vertical position and the vibration absorption system works normally.

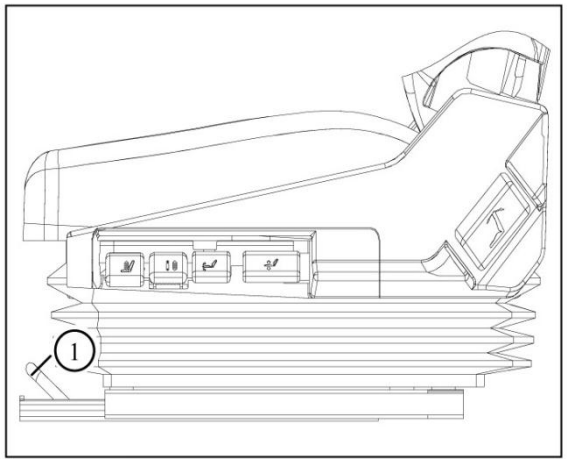
- In the case of poor road conditions, pull the adjusting handle downward to suspend the anti-vibration system and turn into the fixed seat.



Driver's seat (high configuration)

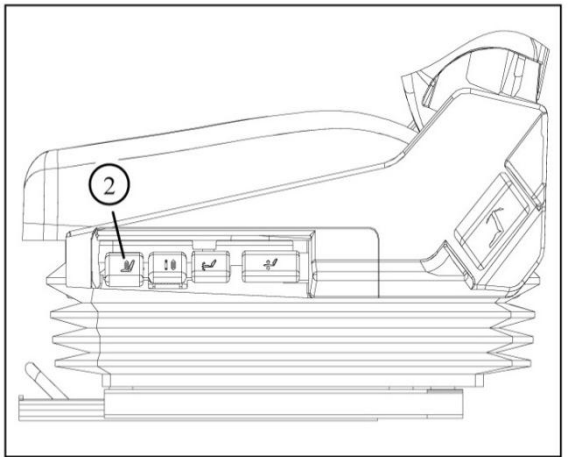
▶There are six functions:

- ①Front and rear adjustment of the seat.
- ②Seat quick deflation adjustment
- ③Damping adjustment of shock absorber
- ④Adjustment of cushion angle
- ⑤Adjustment of seat height
- ⑥Backrest angle adjustment.



▶① Front and rear adjustment of the seat.

- When adjusting the front and rear positions of the seat, pull the front and rear adjusting handle upward, adjust the seat to the desired position by the force of the body, then release the handle and lock the seat.

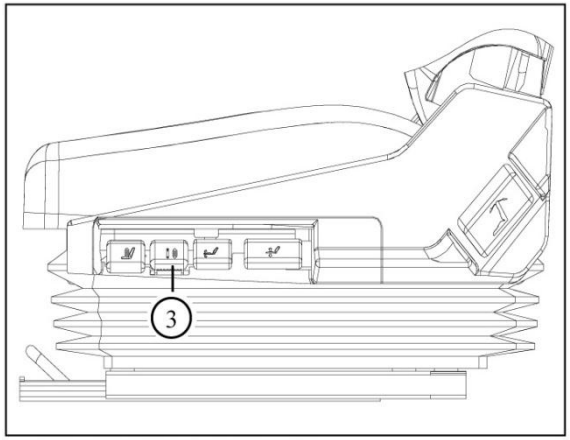


▶②Seat quick deflation adjustment

- Press the quick deflation handle to deflate the seat quickly.

- After stopping the car, the driver can use this button to deflate the seat quickly and get off easily.

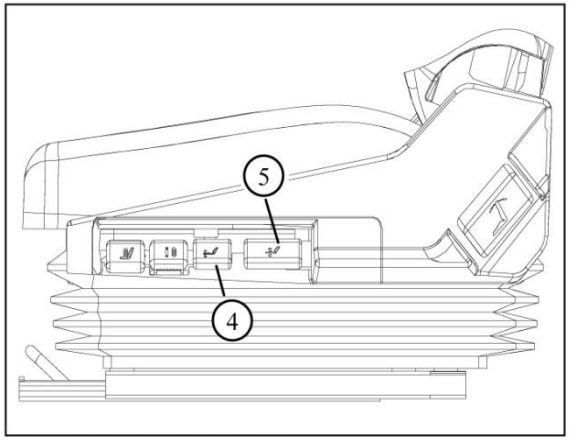
When getting on again, the driver can adjust the seat quick deflation handle and set the seat to the required height again.



▶③ Damping adjustment of shock absorber

- Adjust the damp of the damper by adjusting up and down the damper and the damp adjusting handle. Increase the damp of the damper when applying the downward pressure.

- In the case of poor road condition, adjust the handle under pressure, increase the damp of the shock absorber, and reduce the vibration of the seat.

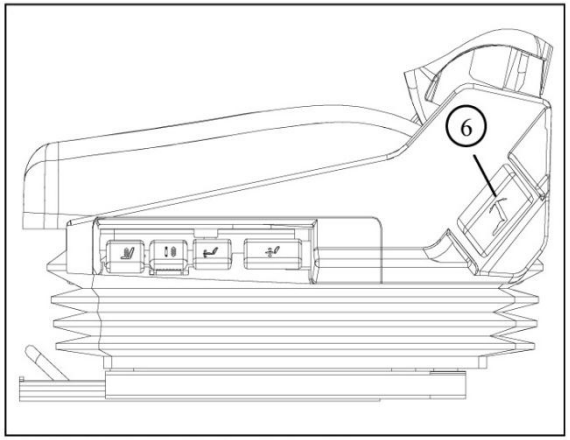


▶④ Adjustment of cushion angle

- When adjusting the cushion angle, raise the cushion angle to adjust the handle, change the cushion angle depending on the body pressure, then release the handle and lock the seat.

▶⑤ Adjustment of seat height

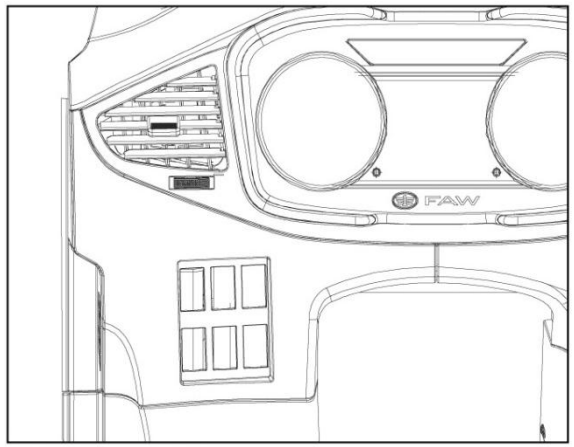
- When adjusting the overall height of the seat cushion, adjust the height adjustment handle (click) upward and downward, fill and deflate the air bag under the seat to automatically adjust the height position of the seat.



▶⑥ Seat back angle adjustment

Pull the angle adjustment handle forward, adjust the seat back to the appropriate angle with the force of the back of the body, then release the handle and lock the seat back.

Ventilation and air conditioning unit



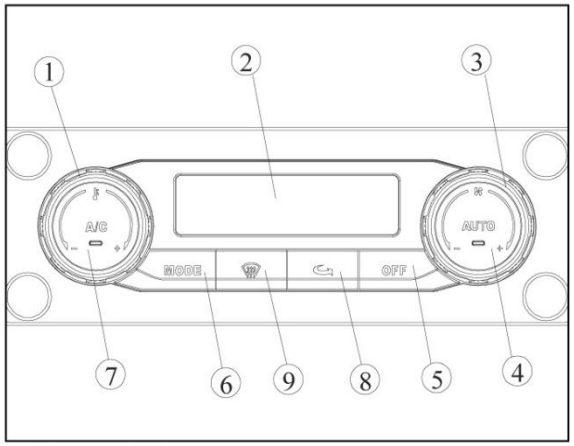
Cab ventilation

▶Forced ventilation

- With the fan, the outdoor fresh air is forced into the chamber, and blown to the required position through the ventilation grille at the instrument panel and the air outlet, thus the ventilation of indoor ventilation is realized.

- Adjust the horizontal and vertical blades of the ventilation grid to adjust the wind direction.

- Adjust the dial wheel under the grille so as to adjust the air volume or close completely.



Air conditioning device

▶The air conditioning (warm air, cold air) device is under the middle of the dashboard.

- ①Temperature setting knob
- ②Temperature, state and air flow display zone
- ③Air volume setting knob
- ④Automatic control button
- ⑤System close button
- ⑥Outflow mode conversion button
- ⑦Air conditioner switch
- ⑧Inner and outer air conversion button
- ⑨Defrost button

▶Temperature setting knob①

- Turn the button clockwise so that the temperature increases gradually, and vice versa. It can be rotated with 360 degrees.

▶Temperature, state and air flow display zone ②

- Temperature display

* The display range of temperature in the car is - 40 - 8℃. The display range of temperature is set as LO, 18-29℃ and HI. LO is in a forced refrigeration state, and HI is in a forced heating state.

* When the temperature is set, the LCD screen displays "Set" and sets the temperature value. After the temperature is set, the temperature in the vehicle will be restored in about 5 seconds.

 Screen display for temperature setting

 Usually it shows the temperature inside the vehicle.

- Status Display

 Automatic control status

 Compressor operation

 Air supply outlet and internal/external air conversion mark.

 It represents the level of blowing rate, and the adjustment range is 1-13.

Functional button description

This system adopts the principle of automatic control, manual priority, one-button control and rear key priority.

▶Automatic control

- After the "AUTO" key is pressed, the system resumes its previous operation mode and begins to control itself. LCD displays "AUTO".

- When the temperature in the vehicle is higher than the set temperature and the temperature difference is greater than 1℃, the compressor is turned on, the air conditioning begins to refrigerate, and the LCD screen displays. Refrigeration, LCD display .

- When the temperature in the vehicle is lower than the set temperature and the temperature difference is greater than 1℃, the compressor is forbidden to open and the LCD screen is not displayed .

- When the difference between temperature in the vehicle and the set temperature is less than 1℃, the system keeps in the above state. At 1 ℃, the system keeps in a state.

- When the temperature is set to LO, the system is in a forced refrigeration state. When the temperature is set to HI, the system is in a forced heating state.

▶Manual controls

The functions of knobs and keys can be chosen manually through manual controls while other functions can remain an automatic state. The display screen does not display "AUTO".

- Temperature setting knob ①: (1) Rotate the setting temperature clockwise until it reaches HI gradually. Conversely, set the temperature down until LO is reached.

- Air volume setting knob ③: Clockwise rotate the knob to increase the air volume gradually, and vice versa.

- Air outlet mode conversion button ⑥: Press the MODE key, The air outlet mode circulates in the order of blowing surface → blowing surface / blowing foot → blowing foot → blowing foot for defrosting . If the initial state is defrosting, it will exit the defrosting state. The LCD screen will display the corresponding pattern of each outlet mode.

⚠Caution

⊙ Under normal environmental conditions, it is more appropriate to set the temperature in the range of (22-26) ℃.

⊙ When the temperature is set on the LO or HI gear, the system will operate in a full refrigeration or heating mode, which can realize cooling, heating and defrosting more quickly.

- Internal and external air conversion button ⑧: Press the button to change the air conditioning between the internal air extraction mode  and external air extraction mode , and the LCD screen displays the corresponding pattern.

- Defrosting button ⑨: If the system is in a non-defrosting state after pressing, it will enter a defrosting state. The air outlet mode is automatically converted to the defrosting mode, and the air intake mode is converted to the external air intake mode. If the system is in a defrosting state, it exits the state and returns to the memory state.

- Air conditioning switch ⑦: After pressing, the system enters the refrigeration mode, and the LCD screen displays . Press it again, and it exits the refrigeration mode.

Caution

⊙ When it is necessary to melt the ice and snow on the outside of windshield glass, the internal and external air transfer knob should be placed in position.

⊙ When it is necessary to melt the ice and snow on the inside of windshield glass, the internal and external air transfer knob should be placed in position.

⊙ When heavy rain causes humidity increase in the cab and fogging on the inside of windshield glass, the A/C switch should be turned on and the compressor should be started to dehumidify the cab air.

In case of heavy rain or much dust in the outside of the cab, the internal and external gas conversion keys shall be placed in the  state.

⚠Caution

⊙ When using the heater for defrosting, the engine coolant temperature should be above 60 ℃.

⊙ During working at continuous low-speed and large load (such as climbing), the vehicle can stop using the cool air in order to avoid excessive cooling water temperature of the engine.

⊙ In parking, the fan switch should be placed in the OFF position, and the internal and external air switch button should be placed in the position to prevent indoor dust.

⊙ Under idle conditions, air conditioning should not be used for more than 30 minutes.

⊙ In order to prevent dust from entering the cab, the external air filter should be maintained regularly. Under normal environment, it is recommended to clean the filter element every 5 000 km and replace it every 30 000 km. In the environment of poor air quality, the period of filter element cleaning and replacement shall be properly shortened.

⚠Caution

⊙ If the air conditioner is used for a long time under the internal air circulation , the air exchange switch button should be placed in the external air position to introduce fresh air in order to keep the indoor air fresh.

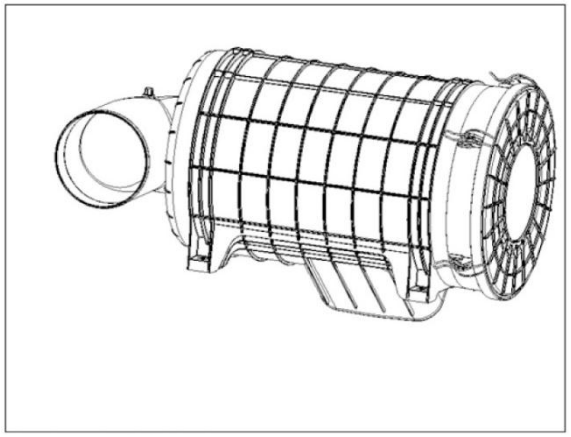
⊙ The refrigerant of air conditioning system must use HFC-134a. Carry out regular filling according to the air conditioning use and maintenance warning label. The designated refrigeration oil must be used in the air conditioning system (See the label on compressor body).

⊙ The specified brand engine coolant should be used, with no water being added, to prevent the heater core from corrosion.

⊙ If the air conditioning device is closed, any knob or key except the temperature setting knob can be operated to start the air conditioning device.

⊙ When the A/C switch is pressed into the refrigeration mode such as the flicker of LCD display, it indicates that the air conditioning system lacks refrigerant or has excessive refrigerant. So it is necessary to repair at the service station or the professional air conditioning repair shop.

Simple inspection and maintenance



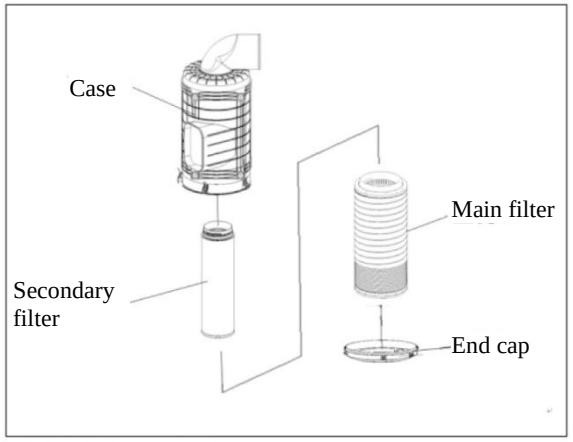
Air filter

▶The air filter core must be maintained in time so as not to cause problems such as blockage of the filter core, decrease of engine power and increase of fuel consumption. If the filter core is damaged, it will cause engine wear and tear.

⚠Warning

⊙When the user uses the filter element, the filter element manufactured by the original manufacturer shall be used, and the filter element that has passed the test by the FAW Technical Center and provides the test report may also be used.

⊙ Never use non-conforming filter element, otherwise the abnormal wear of the engine will be generated.



Air filter

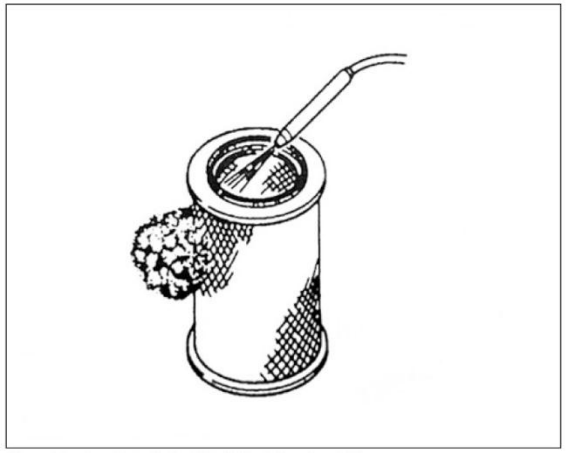
▶Maintenance of primary filter element:

- In a general area, the filter element is maintained once every 20,000 km. If you often drive in windy or dusty areas, the maintenance mileage of the filter element should be shortened appropriately.

- When the filter element is maintained four times or used for one year, a new filter element must be replaced.

▶Maintenance of secondary filter element:

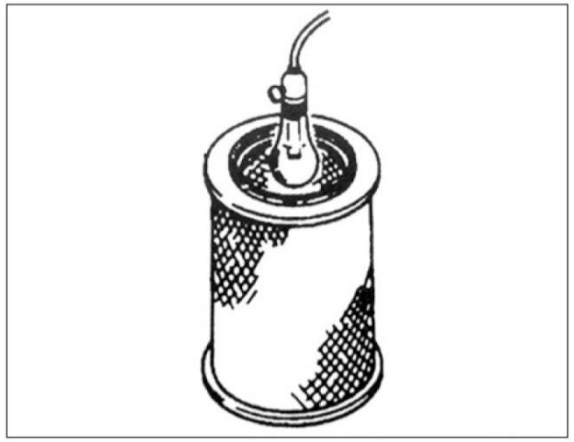
The filter element should be replaced when a vehicle travels every 100,000 km or for one year.



▶Air filter maintenance steps:

- Loosen the snap ring of the end cap of the air filter, remove the lower cover, and remove the dust from the end cover, and wipe the end cover with a rag. Dust in the end cap is poured out and the end cap is wiped clean with a rag.

- Gently pull out the filter element, blow (400-600) kPa dry clean compressed air from the inside of the filter element, and blow the filter element clean and clean the sealed end face.



- Before assembly, check whether the sealing ring of the end face of filter element is in good condition, and check whether the filter paper is damaged. If there is any damage, replace the new filter element.

- Press the filter element into the housing to the correct position and install the end cover.

- Thoroughly inspect the tightness of the connection line between the air filter outlet and the air inlet of the engine supercharger.

Suspension maintenance

▶Tighten the bolt nuts of key components.

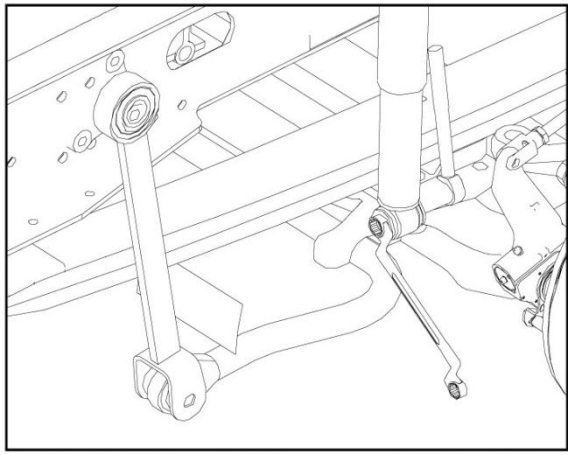
▶Carry out regular maintenance every 30,000 km or every six months (2500 km for the first time).

⚠Caution

⊙ Before tightening the bolts and nuts, ensure that the threads themselves and the connected surfaces are clean.

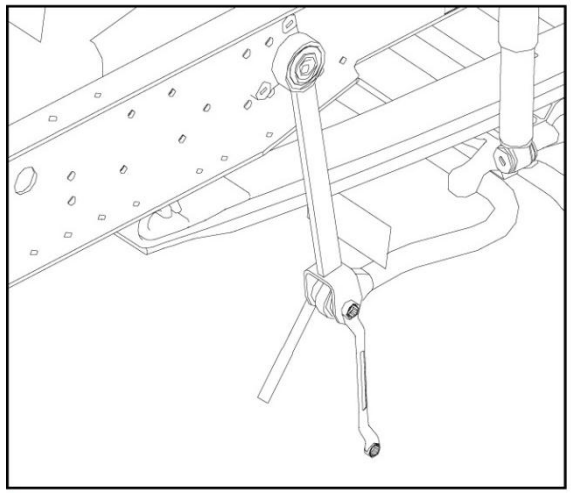
Before tightening, the bolt thread should be coated with gear oil as required, and the gear oil grade is 80W/90 GL5.

⊙ Each bolt and nut should be evenly tightened to the specified torque.



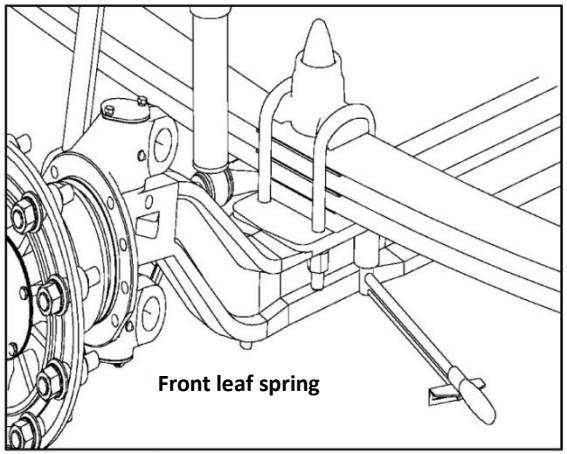
▶Check and tighten the bolt and nut connected under the shock absorber, and the tightening torque value is shown in the table below.

Thread specifications	Tightening torque (Nm)
M16×1.5	260±50



▶Check and tighten the horizontal stabilizer bar bolts and nuts, and the tightening torque value is shown in the table below.

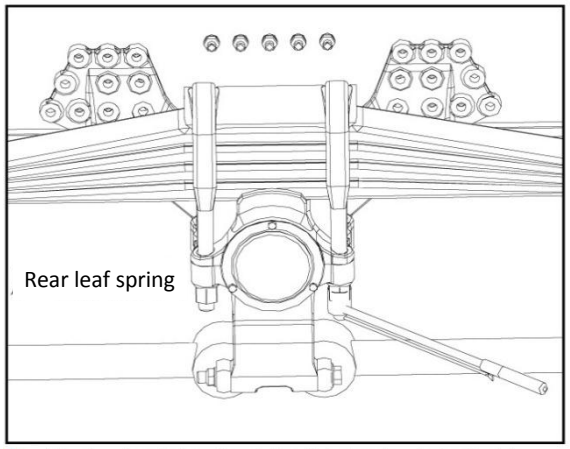
Thread specifications	Tightening torque (Nm)
M20×1.5	400±80



▶Tightening of leaf spring U-bolt

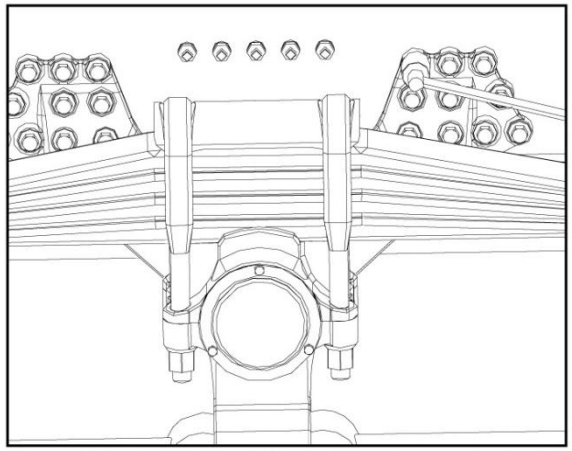
- Uniform tightening the front leaf spring (in the direction of travel of the vehicle) U-bolt and nut, and the tightening torque value is shown in the table below.

Thread specifications	Tightening torque (Nm)
M20×1.5	500±50



▶Uniformly tighten U-shaped bolts and nuts for balanced suspension leaf springs. The torque values are shown in the table below.

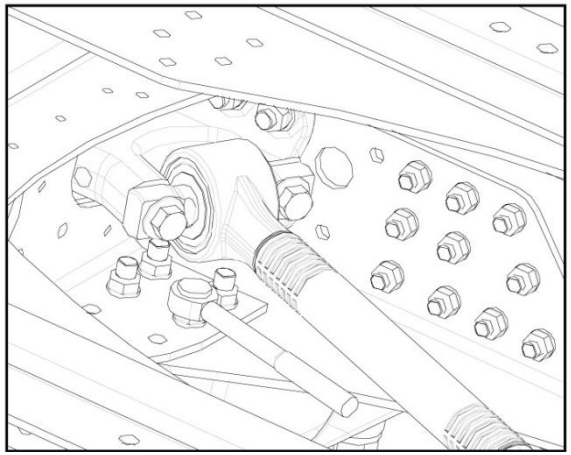
Thread specifications	Tightening torque (Nm)
M27×2	800±100



▶ Tightening of balance suspension frame bolt (Frame Web)

- Check and tighten the fixed bolt and nut of the balance suspension frame, and the tightening torque value is shown in the table below.

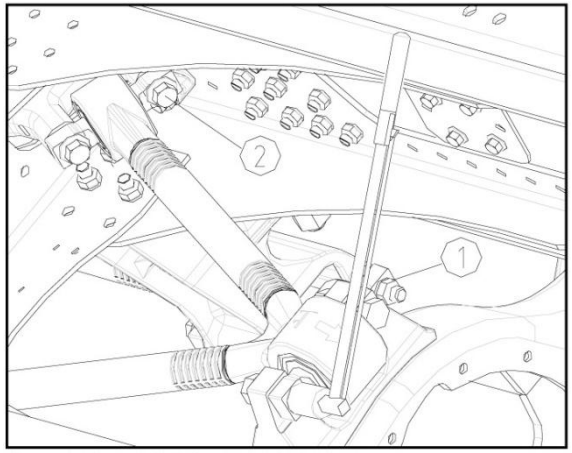
Thread specifications	Tightening torque (Nm)
M16×1.5	260±50



▶ Tightening of balance suspension frame bolt (Frame wing)

- Check and tighten the fixed bolt and nut of the balance suspension frame, and the tightening torque value is shown in the table below.

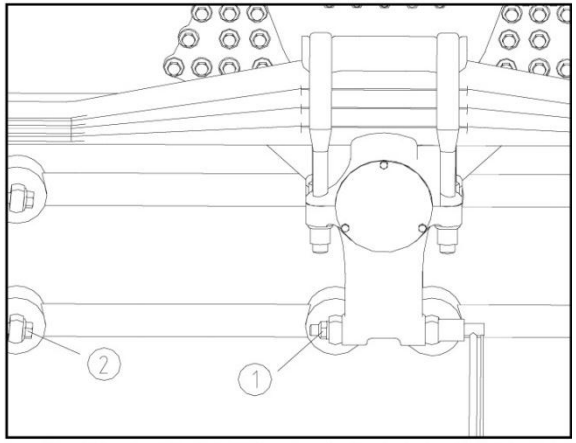
Thread specifications	Tightening torque (Nm)
M18×1.5	430±80



▶ Reaction rod bolt tightening

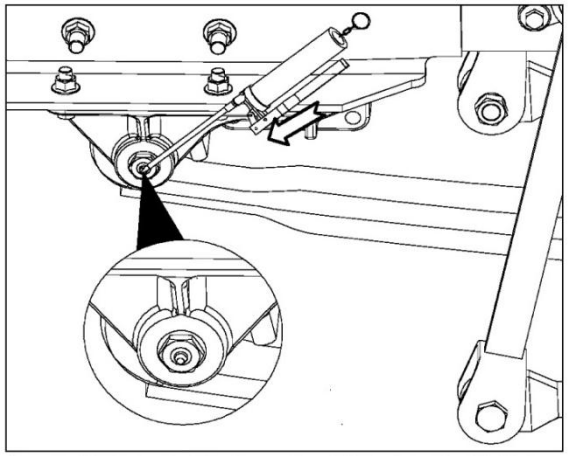
- Check and tighten the standard type of reaction rod bolts and nuts, and the tightening torque value is shown in the table below.

Thread specifications	Tightening torque (Nm)
M24×1.5 (large end ①)	1000±150
M20×1.5 (small end ②)	600±100

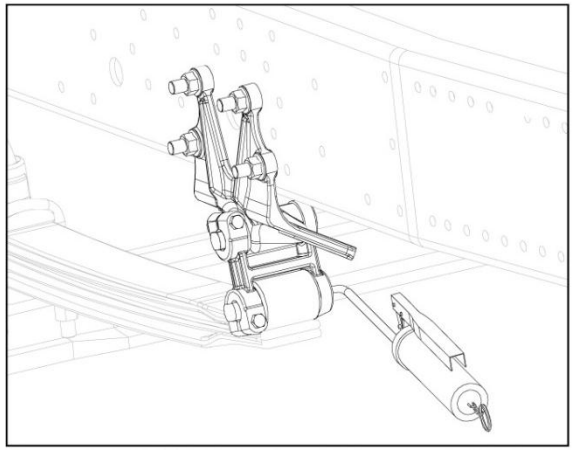


▶Check and tighten the lower reaction bar bolt and nut, and the tightening torque values are shown in the table below.

Thread specifications	Tightening torque (Nm)
M20×1.5 (① in the figure)	600±100
M20×1.5 (② in the figure)	600±100

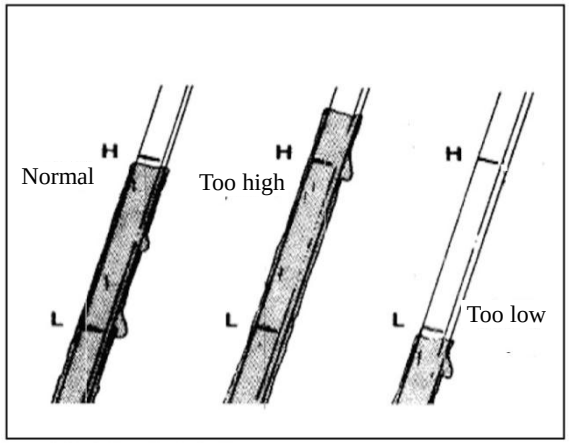


▶Apply grease to the front bracket pin of the front leaf spring.



▶Apply grease to the rear bracket pin an ring pins of the front leaf spring.

Lubricating oil



Engine oil change

▶When the vehicle runs (for 10,000-15,000 km), the oil quantity should be checked. When oil level is lower than the lower limit of the oil scale, it is necessary to fill the oil in time so that the oil level reaches the upper limit of the scale line.

⚠Warning

⊙Due to the extension of the oil change cycle, engine must be checked and filled with oil in time according to the specified mileage to avoid engine fault due to insufficient oil.

⊙ It is forbidden to add other oil and its consequences will be borne by the user itself.

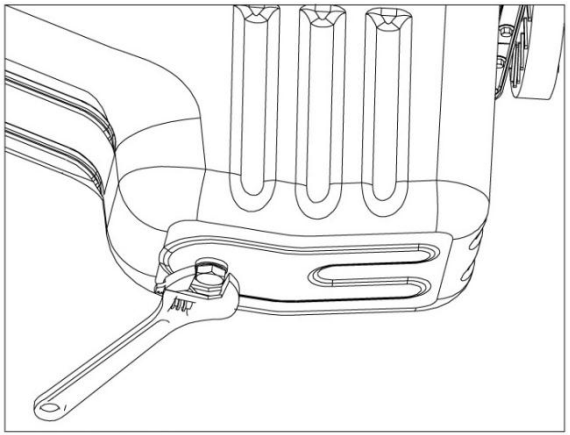
▶Oil change cycle:

- When driving a vehicle for 60,000 km or 12 months, or every 100,000 km or 12 months (CA6DM2 engine) - Whenever driving 40,000 km or 12 months (including new vehicles); (CA6DM3 engine)

⚠Caution

⊙At the same time of changing the oil, the rotary oil filter and centrifugal oil filter should be replaced.

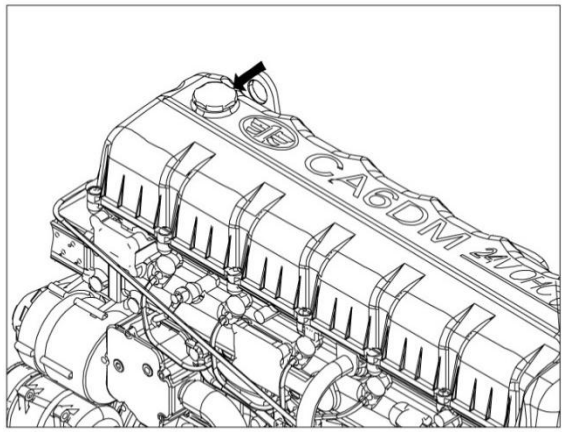
⊙ For more than three months in a year, the interval of oil change will be reduced by half in gray areas, mountainous areas, cold areas (ambient temperature is lower than - 20℃), or when the average fuel consumption of the whole vehicle is higher than 50L/100km. Mileage and usage time will prevail.



- Park the vehicle on a flat surface and place sliding resistance block at the wheel.

- Under the state of hot vehicle (the oil temperature is about 65℃), unscrew the oil drain plug on the lower part of the oil pan (observe the oil heat, and do not get burned), and remove the impurities absorbed by the plug.

- Tighten the oil drain plug after the oil is drained.



- Turn over the cab and will see the oil filler opening. Add new lubricating oil so that the oil level reaches the upper limit of the oil scale.

- After the engine starts, idles for several minutes and stops for 30min, check the oil scale and the oil level shall be between the two marks.

▶Oil quantity

- Replace oil only: (34. 5 ~ 35) L.

- At the same time change the oil and oil filter: (38.5～39)L.

▶Oil (CA6DM2 engine)

- Release long-acting super diesel engine oil, (viscosity grade: 10W-40), which is suitable for ambient temperature (-25-40)℃.

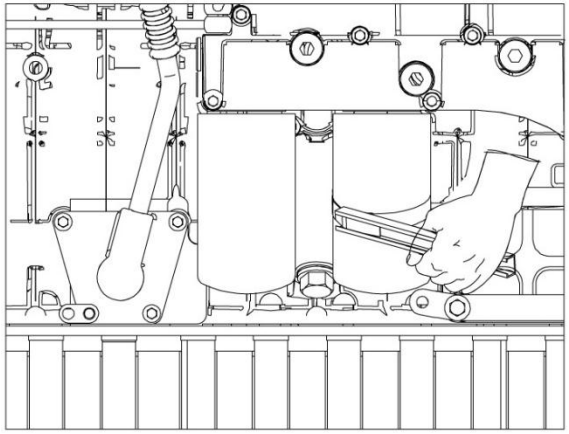
▶Oil (CA6DM3 engine)

- Mobil Black Overlord MX Extra CI-4/10W-40 is suitable for ambient temperature (-25～40) ℃. 40℃

⚠Warning

⊙ As oil viscosity is greatly influenced by temperature, the oil with the proper viscosity should be selected according to the ambient temperature.

⊙ The short-term ambient temperature is lower than applicable the temperature range of oil, which will affect the starting performance, but will not cause harm. However, if unsuitable oil is used for a long time, the engine wear will be accelerated.



Replace the Spin-On Oil Filters

▶Change cycle:

- When a new vehicle travels 60,000km or for 12 months.

- Afterwards, when a new vehicle travels every 100,000 km or 12 months.

- When it is used for more than three months in a year in the grey areas, mountainous areas, and cold regions (ambient temperatures below -20℃), the oil change interval will be halved.

▶Change method:

- Remove the oil filter with special tool counterclockwise.

- The filter mounting surface must be flat and smooth without dirt.

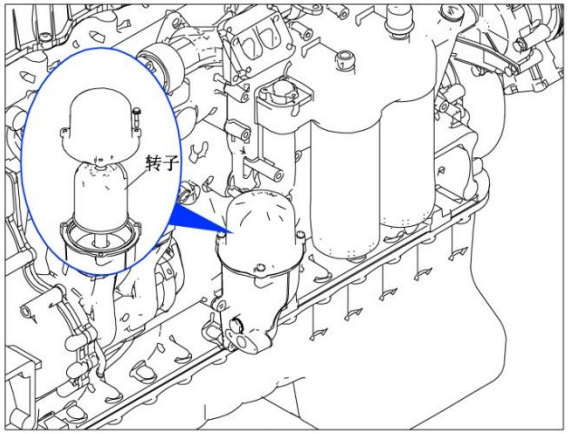
- Apply engine oil to the surface of the filter seal during installation.

- Tighten the oil filter clockwise until the rubber seal pad contacts the base face and tighten one turn.

⚠Warning

⊙When a user purchases the spin-on oil filter assembly, the same type of oil filter assembly produced by the original factory must be purchased.

⊙Unqualified products will cause abnormal wear to the engine and damage to parts. Its consequences will be borne by the user.



Replace the centrifugal oil filter

▶Change cycle:

- When a new vehicle travels 60,000km or for 12 months.

- Afterwards, when a new vehicle travels every 100,000 km or 12 months.

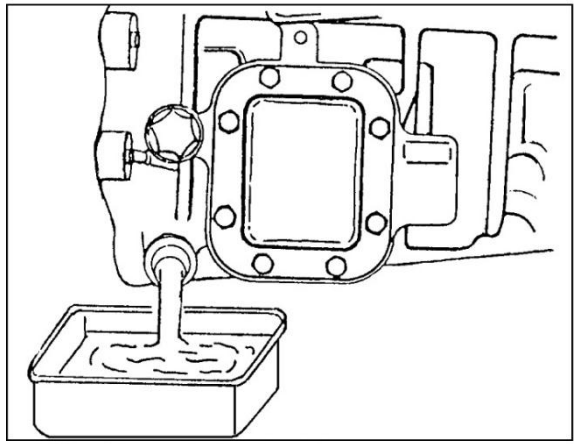
- When it is used for more than three months in a year in the grey areas, mountainous areas, and cold regions (ambient temperatures below -20℃), the oil change interval will be halved.

▶Change method:

- Unscrew the three bolts on the centrifugal oil filter cover and remove the centrifugal oil filter cap.

- Replace with the new rotor.

- After reinstallation, make sure the tightening torque is (6~12) Nm.



Change the lubricating oil of transmission

▶When a vehicle travels every 10,000 km, the oil level and leakage of the lubricating oil should be checked and supplemented at any time.

▶Oil change cycle:

- When driving a vehicle for 60,000 km or 12 months (matched with the model of CA6DM3) or a new vehicle for 40,000 km, replace the lubricant (12 gears) every 100,000 km or 12 months.

▶The lubricating oil in the transmission must be drained before changing oil, and then new lubricating oil is added.

▶Oil quantity:

When the oil is filled until the oil filling hole overflows.

Transmission	Reference value of oil quantity
CA12TA210M3	About 15.6L
CA12TAX210M3	About 18L
CA12TAX230M3	About 15.6L

▶Oil:

- 1700801-54W-C00.

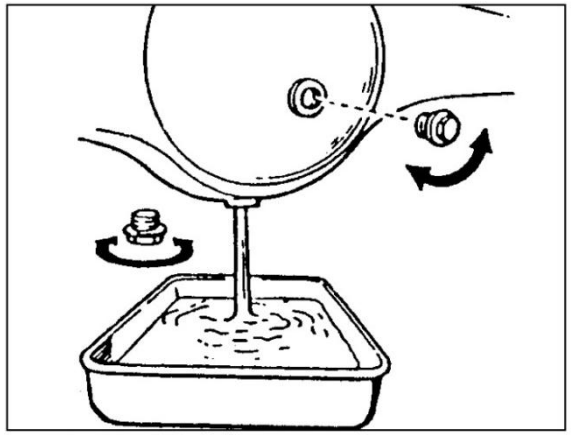
⚠Caution

⊙ The lubricating oil shall be replaced when the vehicle has been just stopped (the vehicle is hot).

⊙ Be careful not to be scalded by hot oil.

⊙ Clean up the adsorbed impurities on the oil drain plug.

⊙ Dredge ventilation plugs.



Change the lubricating oil of drive axle

▶Oil change cycle

- When driving a vehicle for 60,000 km or 12 months (matched with the model of CA6DM3) or a new vehicle for 40,000 km, replace the lubricant (12 gears) every 100,000 km or 12 months.

- Afterwards, when a new vehicle travels every 100,000 km or 12 months.

▶ Fueling capacity (R13T457-13 punching capacity)

The whole vehicle is parked on the horizontal road until the oil is released from the oil face.

- Middle axle: about 21L.

- Rear axle: about 19L.

- Fill fuel 1L on each side of Comer wheel.

▶Oil

- 1700801-54W-C00.

⚠Caution

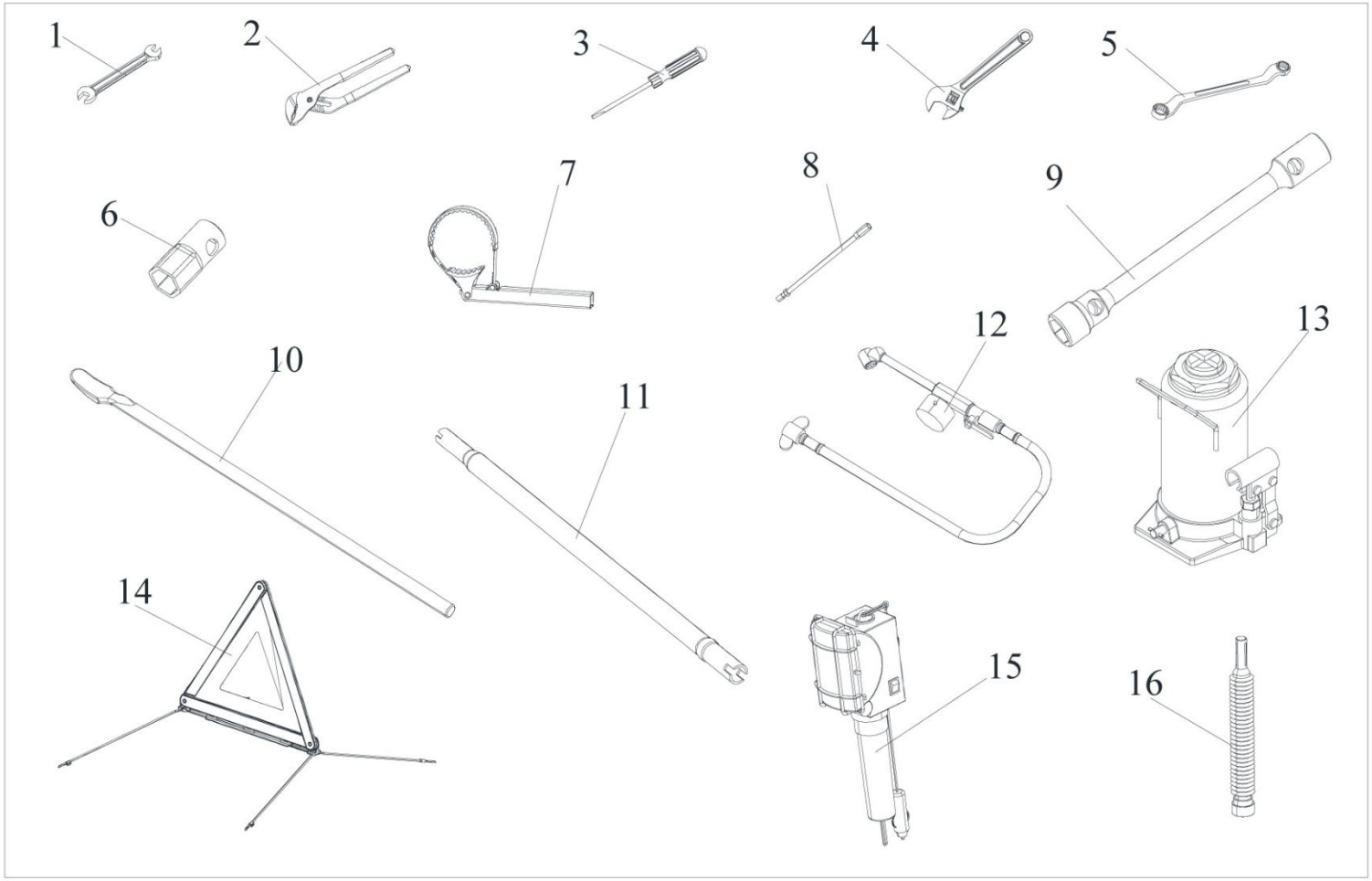
⊙The lubricating oil shall be replaced when the vehicle has been just stopped (the vehicle is hot).

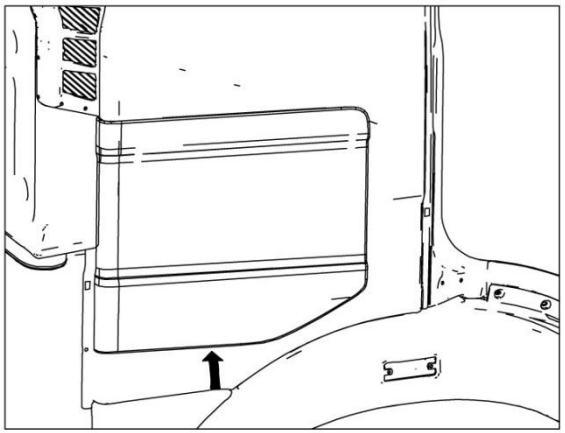
⊙Be careful not to be scalded by hot oil.

⊙Clean up the adsorbed impurities on the oil drain plug.

On-board tools

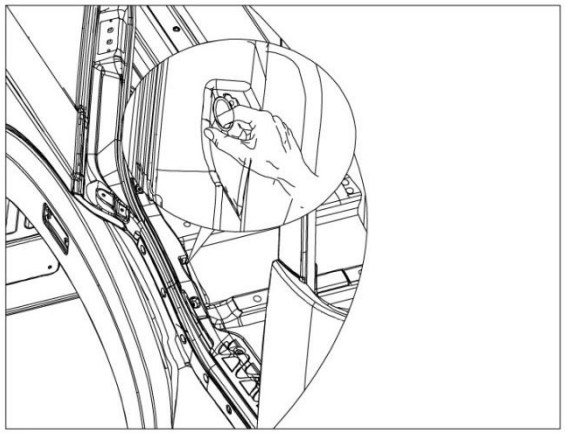
S/N	Name	Quantity		S/N	Name	Quantity
1	8×10 double-ended wrench	1		9	30×33 wheel socket wrench	1
	11×13 double-ended wrench	1		10	Pry bar and wrenching bar	1
	16×18 double-ended wrench	1		11	Multi-function sleeve	1
	21×24 double-ended wrench	1		12	Tire inflation unit assembly	1
2	Multi-function boosting pliers assembly	1		13	20t manual vertical hydraulic jack assembly	1
3	Dual-purpose screwdriver assembly	1		14	Warning triangle assembly	1
4	Adjustable wrench assembly	1		15	On-board tool lamp	1
5	13×16 double offset ring spanner	1		16	Urea filling tube	1
	18×21 double offset ring spanner	1				
6	30 Sleeve wrench for U-shaped bolt of leaf spring	1				
	41 Sleeve wrench for U-shaped bolt of leaf spring	1				
7	Screw-on type filter wrench	1				
8	Inflating valve extension rod assembly	1				


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Toolkit

▶The toolkit is placed in the toolbox on the right side of the cab, outside and behind the cab.



▶The opening handle of the toolbox is located at the intersection of the right door of the cab and the floor.

- Pull the handle and open the toolbox slowly under the action of the lifting cylinder.

▶The multi-purpose sleeve is placed at the end of the toolbox, close to the guard plate.

▶The toolkit is placed in the toolbox on the right side of the cab, outside and behind the cab. The toolkit is placed in the toolbox on the right side of the cab, outside and behind the cab.

▶The jack is stored in the rear toolbox on the right side of the cab.

⚠Caution

⊙The jack must be used on the hard support surface, and must be supported on the plane position of the supporting point of the vehicle. The maximum inclination angle shall not exceed 6 ° to avoid violent vibration or sliding of the jack, and shall not be used under overload conditions.

⊙When the vehicle is lifted, a stable entity with the same height shall be inserted into the corresponding part of the vehicle, otherwise the personnel can not work under the vehicle.

⊙When the jack needs to be unloaded, just slightly open the oil return valve to make it fall slowly, otherwise it will drop too fast and the jack will easily slip or be damaged, leading to a sharp drop of the vehicle and causing danger.