HOWO-TX SERIES VEHICLE DRIVER'S MANUAL

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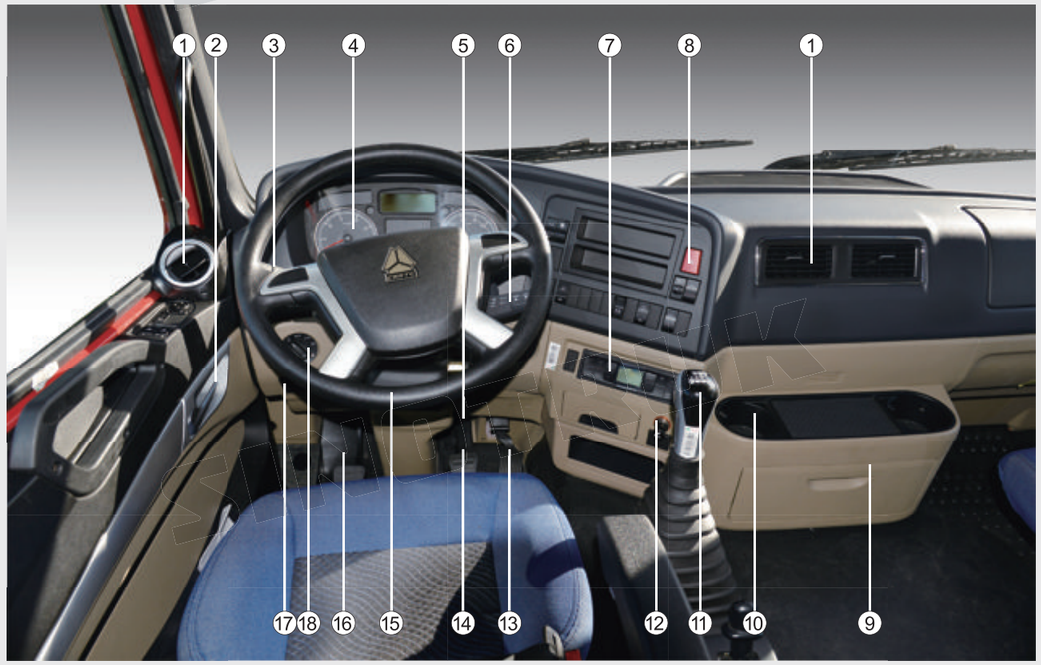
1. INTRODUCTION

1.1 CABIN INTERIOR OVERVIEW



1	Ventilation opening
2	Door handle
3	Left combination switch
4	Dashboard
5	Key switch
6	Right combination switch
7	Air conditioning control panel
8	Rocker switch
9	Storage box

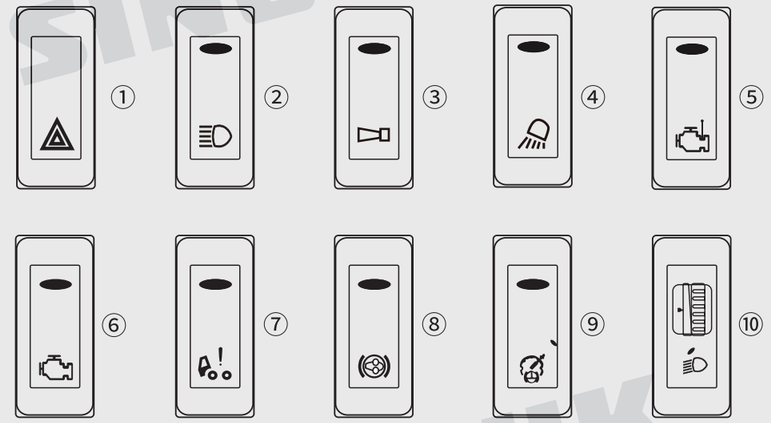
10	Water cup holder
11	Transmission joystick
12	24V cigarette lighter
13	Accelerator pedal
14	Brake Pedal
15	Steering wheel
16	Clutch pedal
17	Front hatch handle
18	Revolving light

1.2 INSTRUMENT PANEL

1	Detection and warning light panel
2	Barometer
3	Driver display
4	Fuel gauge
5	Speedometer
6	Button 1 (see "Driver display and detection light panel")

7	Turn indicator
8	Water temperature meter
9	Voltmeter
10	Button 2 (see "Driver display and detection light panel")
11	Engine tachometer

1.3 ROCKER SWITCHES AND BUTTONS



① Emergency alarm switch: Press the switch, all turn lights will flash and turning indicator lamp on instrument panel will also flash.

② Auxiliary high beam switch: If the high beam is on, press the switch to turn on the auxiliary high beam.

③ Horn change-over switch : If the switch do not work, press the horn button on steering wheel and the electric horn will honk; after pressing this switch, press the horn button on steering wheel and the air horn will work.

④ Working light switch: Press the switch to open working light behind cab.

⑤ Engine PTO switch: Press the switch and you can adjust engine speed by adjusting PTO knob. At this moment, the accelerator pedal will not function any more.

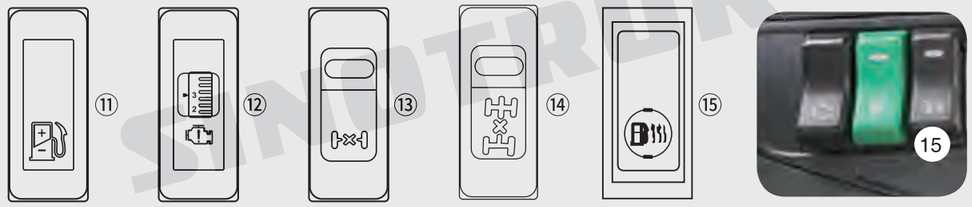
⑥ Engine diagnosis switch: Press the switch and read the flash code of engine fault on instrument panel; find the fault code table, and you will know what fault occur in the current engine system.

⑦ Cab tilting switch: Press the switch, keep lifting oil pump in lifting or declining state, and then press tilting button outside of cab to achieve electrical self-lifting or declining of cab.

⑧ Exhaust brake linkage isolating switch: Press the switch to cut off the exhaust brake linkage. Press switch when the road is slippery on rainy or snowy condition.

⑨ Intelligent brake request switch: The intelligent brake is in the default active state, and the indicator light of the switch is on. At this time, the driver steps on the brake pedal. If the exhaust brake conditions are met, the exhaust brake will work at the same time as the driving brake. Press the intelligent brake switch to turn off the intelligent brake function, and the indicator light of the switch goes off.

⑩ Headlamp light beam adjustment knobs: Manually adjust the light beam irradiation position of the headlamp position as per the vehicle loading. There are four gears and the light beam height lowers step by step from 0-gear to 3-gear.



⑪ **The fuel economy switch:** Press the switch, the maximum driving speed can be automatically determined according to the vehicle configuration, the engine runs more softly, so that the vehicle maximum driving under economic conditions.

⑫ **Engine speed mode knob:** Press the switch, the engine speed can be adjusted within a certain range. For details of operation instructions, see 2.11 Engine Speed Mode Knob.

⑬ **Inter-wheel differential lock switch:** Press the switch and the cross-wheel differential lock will be engaged. For details of operation instructions, see 2.5 differential lock operation.

⑭ **Inter-axle differential lock switch:** Press the switch and the cross-shaft differential lock will be engaged. For details of operation instructions, see 2.5 differential lock operation.

⑮ **Fuel heating switch :** Press the switch to activate the heating function of the crude fuel filter.

1.4 DETECTION LAMP AND ALARM LAMP

NO.	Description	Symbol	Colour	NO.	Description	Symbol	Colour
1	Left-turn working indicator lamp of main vehicle		Green	11	Air suspension alarm indicator lamp		Red、Yellow
2	Left-turn working indicator lamp of trailer		Green	12	Retarder alarm		Red、Yellow
3	Right-turn working indicator lamp of trailer		Green	13	Low-beam lamp		Green
4	Right-turn working indicator lamp of main vehicle		Green	14	Low coolant level		Red
5	Engine oil pressure indicator lamp		Red、Yellow	15	Daytime running lamp		Green
6	Fault Warning		Red、Yellow	16	Cab locking		Red
7	General failure of engine		Red、Yellow	17	Power take-off 1		Red、Yellow
8	Emergency stop	STOP	Red	18	Power take-off 2		Red、Yellow
9	Parking brake		Red	19	Low urea level		Yellow
10	Brake system failure		Red	20	ASR working indicator lamp		Yellow

NO.	Description	Symbol	Colour	NO.	Description	Symbol	Colour
21	Lift axle		Green	39	Air filter blockage		White
22	Front fog lamp		Green	40	Exhaust brake		White
23	Cruise		Green	41	Air intake pre-heat		White
24	High-beam lamp		Blue	42	Water in fuel		White
25	ABS fault lamp of tractor		Yellow	43	Retarder working lamp		White
26	ABS fault lamp of trailer		Yellow	44	Adaptive cruise control		White
27	Rear fog lamp		Yellow	45	Service indicator		Yellow
28	Sidelights		Green	46	ESC worked		Yellow
29	Excessive emission alarm		Yellow	47	Slope start		Yellow
30	Engine speed is too high		Red	48	Tire pressure alarm		Yellow
31	Safety belt		Red	49	ESC close		Yellow
32	Vehicle overspeed		Yellow	50	Adaptive front light		Yellow
33	Low gear		Green	51	Adaptive cruise control fault		Red
34	High coolant temperature		Red	52	Collision emergency warning status activated		Red
35	Status indication of brake air pressure circuit 1		Green	53	Fuel filter clogged		Red
36	Status indication of brake air pressure circuit 2		Green	54	DPF carbon deposition indicator lamp		Yellow
37	Low fuel quantity		Yellow	55	DPF active regeneration indicator		Yellow
	Indicator light - low CNG		Yellow	56	Front axle brake wear alarm		Yellow
	Indicator light - low LNG		Yellow	57	Rear axle brake wear alarm		Yellow
38	Battery charging, low (high) voltage alarm		Red				

1.5 AIR PRESSURE DISPLAY

♦ The barometer shows the pressure value of the circuit with low air pressure; High air pressure of circuit will show by the air pressure switch button under the panel. After 10 seconds, it will automatically switch the pressure value displayed as the lower pressure loop.

♦ ① is the rear axle pressure indicator lamp, Brake circuit I pressure condition

♦ ② is the front axle pressure indicator lamp. Brake circuit II pressure condition

♦ If the barometer pointer show in the red area ③ : the air pressure is too low

♦ The barometer pointer show in the yellow area ④ : the air pressure is normal

WARNING!

- If air pressure is too low (lower than 0.55MPa) and alarm lamp is on, Vehicle can only be started when alarm lamp is out and warning information disappears.
- After startup, test brake performance (service brake and parking brake) of vehicle on dry road surface with good adhesion!
- Ensure no foreign matter in the pedal manipulation area.

2. OPERATING INTRODUCTION

2.1 ENGINE START

1. At the first start, you need to reset the key switch to position 2 to restart if the engine is not started. Each starting time shall not exceed 15 seconds, and the interval between two starting shall not be less than 30 seconds.

2.It is not allowed for cold engine to run at high speed. It should stop engine immediately and to do service if the oil pressure is low.

3.After the engine is started, it should keep running in idle speed for 3-5 minutes and not hit the throttle. It can add load after the oil pressure and oil temperature in normal (especially in cold days). Otherwise, the supercharger bearings and seal rings will be worn out due to lack of oil.

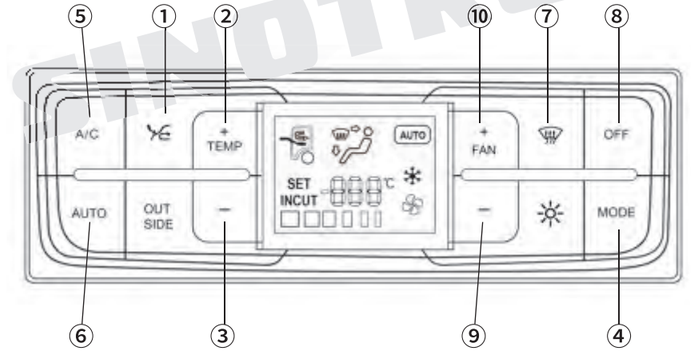
4.It should be running in idle speed for 3-5 minutes before engine off. The engine can be stalled after the speed of turbocharger is reduced. It should be especially careful that it cannot hit the throttle before engine stalled. Hitting throttle will accelerate engine speed and the turbocharge will be in high speeding status. After engine stalled. The oil pump stops supplying oil immediately, and the turbocharger rotor continues to run at high speed due to inertia, and the rotor shaft, bearings and seal rings would soon be burned due to lack of oil.

5.The turbocharger must be pre-lubricated before restarting the engine which has been stopped for a long time. This can be achieved by disassembling the oil inlet pipe of the turbocharger and pour little of clean engine oil. Otherwise it will cause early wear due to lack of oil.

6.It is strictly forbidden to cut off the circuit connection between the battery and the central control unit when the key switch and other input power with wake-up function are not turned off. Otherwise, not only the electronic control unit, harness and electronic and electrical components of each system of the whole vehicle may be damaged in hardware, but also the system data may be lost, resulting in the serious consequences that the vehicle cannot be used

7.When the fault is very serious, the serious fault alarm indicator "STOP" lights up, and the buzzer will keep alarming to alarm when the engine is working. At this time, you should stop and check it immediately, and it is only allowed to move forward after the troubleshooting! Otherwise, it may cause loss of life and property!

2.2 AIR CONDITION SYSTEMS



NO.	Key	Function	Directions
1	Internal / external circulation key	Switch internal and external circulation	Each time you press this key, the system will switch between internal / external circulation states once. Press this key in auto mode to switch the internal / external air working state, and the system will not exit auto mode. When the system is set to the internal circulation state, the system will automatically switch to the external circulation state for a period of time at regular intervals, and then return to the internal circulation.
2	+ TEMP Temperature increase	Press the key once to increase the set temperature by 0.5 ° C	In auto mode, press these keys to change the set temperature, and the system will not exit auto mode.
3	— Temperature reduction	Press the key once to reduce the set temperature by 0.5 ° C	
4	MODE MODE key	Change blowing mode	The system has 5 blowing modes, i.e. face blowing, foot blowing, foot blowing defrosting and defrosting (defrosting here only indicates the wind direction, not the opening or closing of the defrosting function). Press this key in auto mode to exit auto mode and enter face blowing mode. If the vehicle is equipped with parking air conditioner, wake up the control panel in the shutdown state, and press and hold the key for 3S to enter the parking air conditioner mode.
5	A / C A/C key	On / off air conditioning compressor	In the manual mode, the working state (suction / disconnection) of the compressor will be switched once every press. When AC is started, if the blower does not work, the system automatically sets the air volume to gear 2.
6	AUTO AUTO key	Switch to auto working mode	When the air conditioning system is turned off, press this key, and the air conditioning system will enter auto mode. When the air conditioning system is powered on, if the air conditioning system is currently in manual operation mode, press this key, and the air conditioning system will enter auto mode. In auto mode, press the temperature increase and decrease keys to change the set temperature, but the system does not exit auto mode. When the system is in auto mode and the set temperature is changed manually, press this key, the system will not exit auto mode and recalculate the set temperature according to the program. In the auto mode, press the mode, air volume increase and air volume decrease keys to exit the auto mode.
7	Defrost button	Switch to forced defrosting	Press this key in the non defrosting state to enter the defrosting mode. Press the defrosting key again to exit the defrosting mode and restore the working state before defrosting. The defrosting status automatically remembers the working mode and interface line set by the user last time. Temperature, AC, internal / external circulation and air volume adjustment do not exit the defrosting mode.
8	OFF OFF key	Off the system	When the air conditioner is turned on, press the off button to enter the off state, the display screen will close, and all actuators will close and stop working. When the air conditioner is off, press the defrost button to start the system and enter the defrost mode. When the air conditioner is in the off state, press the air volume increase button to start the operation and enter the manual mode. At the same time, the air volume is in the first gear, but the working states such as temperature, mode and internal and external circulation are set to enable the state set by the user last time. When the air conditioner is off, press the auto key to start the operation and enter the auto mode. If the off key is not used to turn off the air conditioner during the last flameout, when the ignition is again, the air conditioner will automatically enter the working mode and interface set by the user last time (manual mode, AC and air volume will not be restored; In case of auto mode, operate in auto mode).

NO.	Key	Function	Directions
9	— Air volume reduction key	Reduce air volume	Each time press the key, the air volume will be reduced by one gear to zero gear step by step. When it is reduced to gear 0, the compressor does not work and the air conditioning pattern is not displayed. In auto mode, when the air volume is changed manually, it will exit from auto mode.
10	+ FAN Air volume increase button	Increase air volume	Each time press the key, the air volume will be increased by one gear step by step to gear 4, and remain unchanged to the maximum gear. In auto mode, when the air volume is changed manually, it will exit from auto The fan can be turned on only when the engine is working. mode.

Self check and error repair function of air conditioning control system

♦ Self test conditions:

At the same time, press the auto key, water valve key and cycle key for 3 seconds, and then the control panel will enter the self inspection program.

♦ Self inspection contents:

After the automatic operation of each actuator, the fault information will be displayed.

♦ The actuator operates in the following order:

a) First, display the full screen (that is, display all the symbols to be displayed);

b) Blowing surface, internal circulation, first gear of wind speed, AC opening, water valve closing;

c) Blowing face and foot, external circulation, wind speed rising from first gear to third gear, AC closing, water valve opening;

d) Foot blowing, external circulation, wind speed up to the maximum gear, AC closed, water valve closed;

e) Display fault code;

f) Automatically exit the self-test program.

The display time of each item shall not be less than 1.5s, and the display speed shall be uniform and consistent for easy viewing Check.

♦ Automatic exit mode of forced self test:

After the automatic operation of each actuator, the fault information will be displayed.

a) Automatically exit after the end of display;

b) Press any key;

c) Power on status after self check exit.

00	Normal
01	Interior temperature sensor fault (short circuit, open circuit)
02	Outside temperature sensor fault (short circuit, open circuit)
03	Evaporator temperature sensor fault (short circuit, open circuit)
04	Heating and cooling actuator failure

♦ Fault code display mode:

a) In the self-test state, the temperature display bit will display the fault code. If there are multiple faults, the temperature display bit will display the fault code

The code is displayed at 1.5 second interval, and the interval time of single fault code is 1.5 second

The time of two failures is 3 seconds and so on. After the display, the system will exit automatically.

b) In the fault inquiry state (press the mode key and auto key at the same time), The temperature diaplay bit will show the fault code. In case of multiple faults, the code is displayed in cycles at the speed of 1.5 second interval

The interval time of single fault code is 1.5 seconds, the interval time of two faults is 3 seconds, and so on; Press the key to stop displaying the fault code.

2.3 TRACTION PREPARATION (TOWING)

Before towing, disconnect drive shaft and cut off power.

WARNING !

- Do not try to steer a static vehicle as this action may damage its steering system due to absence of hydraulic power assistance!
- Steering without hydraulic power assistance is allowed only when the vehicle is moving.
- Steering wheel requires larger force when engine is shut down as then hydraulic power assistance will fail. In this case, the vehicle shall be towed slowly.
- If the air pressure of the brake system is insufficient, the external compressed air (at least 0.55MPa) or mechanical means can be introduced to remove the braking of the spring energy storage brake chamber. Refer to "spring energy storage brake hamber". Note that the vehicle will not brake after that!

Spring Energy Storage Brake Chamber-Emergency Release

♦ When the air pressure of the parking brake circuit is lower than 0.55MPa, the pressure of the diaphragm acting on the brake air chamber is less than that of the energy storage spring, and the spring energy storage braking functions. The “STOP” lamp, brake system fault lamp ① and parking brake lamp ② are lighted at the same time.

♦ Spring energy storage chamber can be released pneumatically or mechanically under emergency or at the workshop.

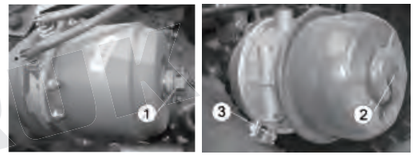
WARNING !

- Make sure the vehicle cannot move before release of spring energy storage brake chamber !
- Emergency release device of spring energy storage brake chamber can be used only for operation of the vehicle at the workshop or under emergency.
- Running of the vehicle after emergency release of spring energy storage chamber will cause accident as pressure of service brake circuit I and circuit II can hardly ensure braking effectively.
- Do not drive the vehicle before parking brake light on the driver's display screen disappears.

Spring energy storage brake chamber- emergency mechanical release

Diaphragm spring brake chamber

♦ When the air pipe of the connected spring energy storage brake chamber causes self-braking due to leakage, the brake can be released as long as the bolt ① at the rear end of the brake chamber is screwed out to the release position.



Dual diaphragm spring brake chamber

♦ Open the rear cover ② of the double diaphragm spring brake air chamber, insert it from the rear cover with bolt ③ and screw it out manually to release the brake.

2.4 TRANSMISSION

2.4.1 ZF16 Manual transmission

♦ ZF-Ecosplit The 16-gear transmission consists of a four-gear main box, a high-low gear part and a half-gear group part.

Four gears main box

-ZF Ecosplit series transmissions are synchronizer transmissions.

-Manual shift (rotary shaft control).

- Double H-shift,

- Servo shift

High and low gear, at the rear end of the transmission

- synchronizer transmissions.

- For double H-shift, there is a spring-return neutral position (idle) in the 3/4 gear range (low) and 5/6 gear range (high)(pneumatic).

Spilit gear, in the front of the transmission

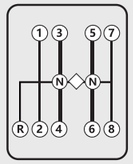
- synchronizer transmissions.

- Pneumatically shift by operating the preselector valve on the shift handle and then operate the clutch.

♦ **Transmission gear diagram**

◇ Automatic switching **R** Reverse **N** Neutral

1 ～ 4 Low gear 5 ～ 8 High gear



2.4.2 SINOTRUK MANUAL GEARBOX

Ø without synchronizer: HW13710 (C) (L) / HW19710 (C) (L) / HW19712 (C) (L) / HW20716 (C) (L), etc

Ø with synchronizer: HW19709XST / HW25712XSC (C) (L) shift:

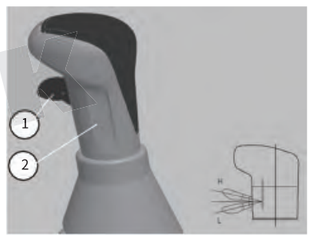
The steps are as follows:

1.When shifting gears, the clutch pedal should be fully depressed.

2.Shift from high gear to 1 and 2 gears during driving, “twice cluth operations” shall be used for shifting.

3.The vehicle should be standstill when shifting reverse gear, Otherwise the sliding sleeve is easy to be damaged.

4.The switch valve ① have high and low gears and it is located on shift handle ② .

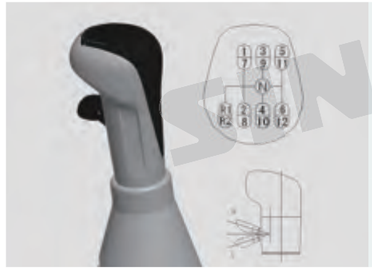


WARNING !

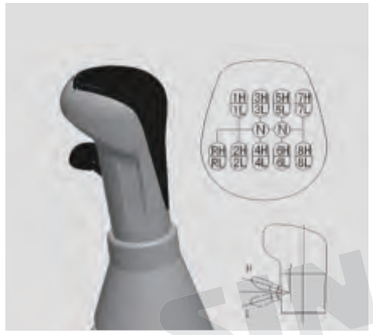
- When shifting gears, the clutch should be completely disengaged, and the gear lever should be in place.
- The switch valve shall be placed in the low gear position when the vehicle parking.
- The vehicle parking could be released until the air pressure reach the starting air pressure and move.
- You can’t shift to any gear in advance Unless the current speed is within the allowable range.
- Skipping shift gear is not allowed when shifting gear from low gear position to high gear position.
- When the vehicle is going downhill, it is prohibited to change gear zone between high and low.

Shift between high gear and low gear

10 gears transmission: When the transmission is shifted from the low zone to the high zone (and vice versa), firstly the handle valve should be placed in the H (L) position and Depress the clutch pedal to the end. Then shift to neutral gear, consciously wait for a while and then shift in 6 gear (5 gear). Skipping shift gear is not allowed and it will affect the synchronizer life. When the gearbox is in gear, if you operate the H(L) switch valve ,the high and low zone will not be changed. The high-low zone only can be changed when the transmission is in nature gear.

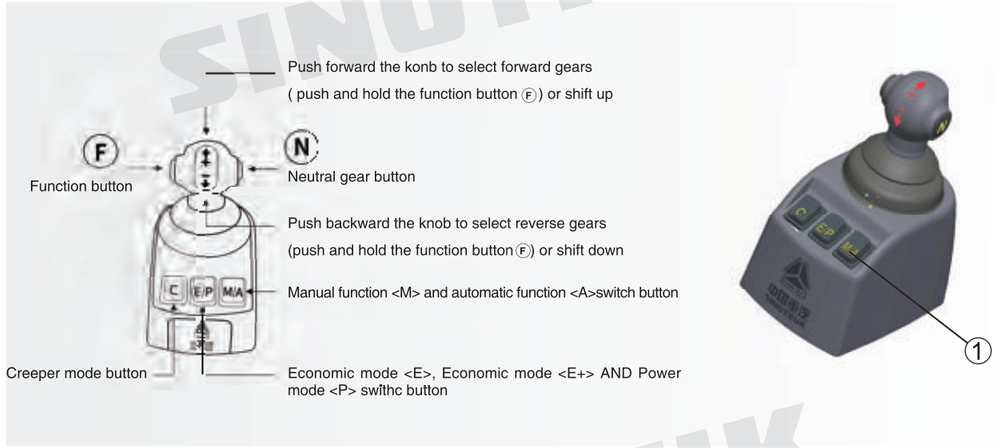


12 gears transmission: When the transmission is shifted from the low zone to the high zone (and vice versa), firstly the switch valve should be placed in the H (L) position and Depress the clutch pedal to the end. Then shift to neutral gear, consciously wait for a while and then shift to 7 gear (6 gear). Skipping shift gear is not allowed and it will affect the synchronizer life. When the gearbox is in gear, if you operate the H(L) switch valve ,the high and low zone will not be changed. The high-low zone only can be changed when the transmission is in nature gear.



16 gears transmission: When the 16-speed transmission is shifted between split gears (half gears), first switch the valve which on the shift handle (as shown in the figure). The Steps to change from 1L to 1H: Firstly switch the valve from L to H position, then depress the clutch pedal to the end, release the clutch pedal, and the gear shifting is completed (The handle does not move during this process); The Steps to change from 1H to 2L: Firstly switch the valve from H to L position, then depress the clutch pedal, return the handle to neutral, and then shift handle to the 2nd gear position. After hooking up, release the clutch pedal and the shift process is finished. And so on, until the shift to 8H, the same operation for downshift. If you step on the clutch pedal first, then release it, and then switch the switch on the handle, the gear will not switch. If you step on the clutch pedal first, then release it, and then switch the switch on the handle, the gear will not switch.

2.4.3 SINOTRUK Second Generation AMT Transmission



Auto-function (A function)

♦ Automatic function is the default operating function of the control system.

♦ Under the automatic function, the driver only needs to choose the starting gear through the shift handle. Start gear includes forward gear, reverse gear or neutral gear. The transmission control system will automatically select the most appropriate gear according to the current vehicle condition. The driver can also interfere with the shift through the handle under the automatic function.

Manual-function (M function)

♦ Gear shifting time of manual function is sent by the driver. The gear position number of gear shifts can be determined by the driver or by AMT system. The operation method is the same as the manual intervention of the automatic mode.

A/M mode selection

♦ The driver can realize switching between manual and automatic by button ① on the handle.

♦ The display screen on instrument panel displays the current working mode of transmission at real time.

♦ The default operation mode of system is automatic mode. The driver can finish switching of A/M pattern during starting and running.

Vehicle starting

♦ Select the appropriate starting gear position (The control system only allows to start from gear 1~8, it is recommended to start at gear 1~4)

♦ Slightly step on the accelerator pedal and the vehicle will start.

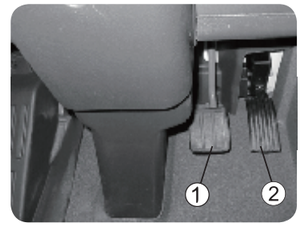
♦ Release parking brake.

- When it is required to start under medium-idle mode, please keep at current neutral gear and then switch to starting gear; step on the pedal, release the parking brake and start running. During this mode,the vehicle can only run at 1-4 gears under this mode. If mode C is not required, please press C button to exit.

- When you need to start in high idle mode, keep the current gear position at neutral gear, and then press C button for more than 5s . Then engage the starting gear, step on the accelerator pedal to the end, and then start running. After the vehicle starts normally, the high idle mode is automatic, no need to press the C button again.

Creeping mode

♦ The AMT system provides a creep mode that allows the vehicle to slow down in certain conditions.



♦ The driver switches to M mode by double-clicking the M/A button on the handle, and then presses on the brake pedal to hang the starting gear. After successfully hanging the gear, release the brake pedal and the vehicle moves slowly; In the creep process, the gear can be lifted manually (up to 5 gears);You can step on the accelerator pedal to accelerate during creep. Release the accelerator pedal to continue creep mode; You can also step on the brake pedal to slow down or stop, release the brake pedal to continue the creep mode.

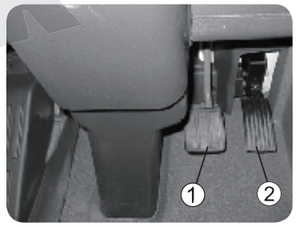
♦ The creep mode supports 1-5 gear and R1 gear. The driver can choose gear by himself according to the working condition. Stepping on the accelerator pedal and switching gears will not exit the creep mode, Simply manually switching to A mode can exit creep mode.

Automatic mode operation during driving

Up-shift and down-shift

♦ In the process of driving, the accelerator pedal ② affects the engine speed, torque and the speed of the whole vehicle. AMT will automatically based on the current engine speed and other information. When step on the accelerator pedal, the vehicle will slow down, and the control system will select the most proper gear for the vehicle running.

Acceleration



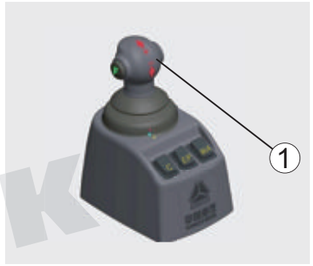
♦ To maximize vehicle acceleration, follow the following steps:

- Switch to mode P;
- Step the accelerator pedal ② ;
- The control system will maintain the current gear position or select a lower gear position to operate;
- The vehicle will obtain enough power and the speed will increase rapidly.

Decelerate

♦ Step on the brake pedal ① or release the accelerator pedal ② , and the vehicle will slow down.

Manual gear shifting under automatic mode



♦ When the vehicle is running under automatic mode, the driver can intervene in automatic mode by handle operation. Push the handle ① forward to shift up and push the handle ① downward to shift down.

♦ Only if the running condition of the vehicle meets the gear shifting requirements, the handle operation in automatic mode can realize the gear shifting.In automatic mode, the handle action can affect the operation in automatic mode, but it will not release the automatic mode and switch the transmission operation mode to manual mode.

Manual mode operation during driving

♦ Any gear shifting action in manual mode is operated by the driver, but the clutch is automatically controlled by the system.

♦ Gear shifting cannot be realized unless the vehicle running condition meets the demand of gear shifting. If the current engine speed cannot reach the speed required by target gear, the control system will switch to a suitable gear but not the target gear necessarily according to current speed; if the control system does not allow to shift gears at current operating environment, a warning sound will be sent out to indicate that the gear shifting request of driver is refused.

Up-shift operation

♦ If there is no special situation when in gear shifting, do not change the current accelerator pedal position.

♦ When the driver pushes the handle forward, the request of up-shifting at least one gear will be sent out if the function button ① (round button F at left side of handle) is not pressed; the request of up-shifting one gear will be sent out if the function button is pressed. It indicates that gear shifting succeeds if the target gear lamp on display screen stops ashing.

♦ Only when the vehicle's operating environment meets the shift requirements can the shift be realized. If the current operating environment does not allow the shift, the vehicle will send out a warning sound to remind that the gear cannot be shifted up.

Down-shift operation

♦ If there is no special situation when in gear shifting, do not change the current accelerator pedal position.

♦ When the driver pushes the handle backward, the request of down-shifting at least one gear will be sent out if the function button ① (round button F at left side of handle) is not pressed; the request of down-shifting one gear will be sent out if the function button is pressed. It indicates that gear shifting succeeds if the target gear lamp on display screen stops ashing.

♦ Only when the vehicle's operating environment meets the shift requirements can the shift be realized.

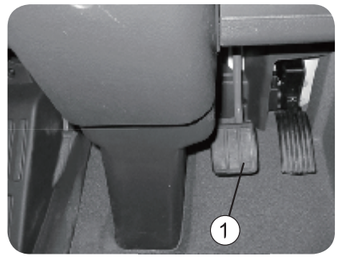
Engage from the neutral gear to a proper gear position

♦ When the vehicle is sliding and the transmission is in a neutral gear position, the transmission may be directly engaged in a proper gear position through the Gear shifting handle.

♦ If pushing the handle forward, AMT will switch to the higher gear position that is allowed under the current vehicle operating conditions. When the instrument display screen shows the target gear position and stops flickering, the gear shifting is completed.

♦ If pushing the handle downward, AMT will switch to the lower gear position that is allowed under the current vehicle operating conditions. When the instrument display screen shows the target gear position and stops flickering, the gear shifting is completed.

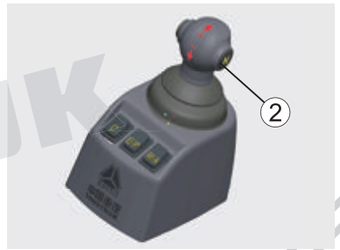
Deceleration and Stop



♦ When it is necessary to decelerate and stop, step on the brake pedal ① . The control system automatically shifts down when the brake pedal is released. After the vehicle is stopped stably, apply the parking brake.

♦ After the vehicle stops, the vehicle is still in the gear position, and will automatically return to neutral gear without any other action within 90s.

Switch to neutral-gear



♦ If it is required to park for a long time, please switch the transmission to neutral position to protect the clutch. Press the neutral-gear button ② (round button F at left side of handle), and it indicates the vehicle returns to neutral position if the display screen shows neutral-gear symbol N.

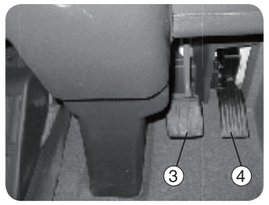
Switch to reverse gear

♦ The vehicle can only be switched from neutral gear to reverse gear at stoppage state. Operation steps:

- Firstly switch the transmission to neutral position.

- Press the function button ① (round button F at left side of handle) and push the handle ② backward. It indicates that gear shifting succeeds if the target gear lamp on display screen stops flashing. Push the handle ② once to gear 1; if other gears are required to reverse, the gear shifting method is the same as that of manual gear shifting.

- Release the brake pedal ③ , brake the vehicle and slightly step on the accelerator pedal ④ to start reversing.



Creeper gear mode (C)

♦ The system is equipped with a creeper gear mode to meet the low-speed running requirements of the vehicle under certain special conditions.

♦ Press the handle key ① to start the creeper gear mode and then press Key ① to cancel the creeper gear mode.

♦ In the creeper gear mode (C), the starting gear position is set as gear 1. It can be switched between gear 1~4 through the handle.

♦ The vehicle can only be switched between 1~4 gear position in either the manual mode or the automatic mode during the vehicle running. That is, the highest gear position in creeper gear mode is limited to gear 4. If the gear is higher than 4 gear during driving, the control system will not allow to enter the creeper mode.

2.5 DIFFERENTIAL LOCK OPERATION

When driving into bad road or abby pavement, to prevent single tire of rear axle from slipping, differential lock can be used for a short time. When engaging differential lock, vehicle shall be stopped or go straight slowly.

1. Differential lock can only be engaged when vehicle is stopped or drives in a straight line at low speed !

2. Engagement of cross-wheel differential lock - 4×2, 6×2 vehicle.

♦ Release accelerator pedal (deceleration), Reduce to a stop or walking speed.

♦ Press the lower part of cross-wheel differential lock switch ① .

♦ Rear axle inter wheel differential lock engages.

♦ The indicator lamp of inter-wheel differential lock is on.

♦ Carefully step on the accelerator pedal and accelerate slowly.

Disengagement of differential lock

♦ Loosen accelerator pedal and step on the clutch pedal.

♦ The upper wheel differential switch ① is pushed.

- When the inter-wheel differential lock is disengaged, the instrument panel inter-wheel differential indicator lamp goes out.

3.Interwheel differential lock-6×4, 6×6, 8×4 vehicles

♦ **Operation rule for differential lock:** First of all, connect interaxle differential lock and then connect interwheel differential lock.

- Engage interaxle differential lock （refer to engagement of interaxle differential lock for specific operation）

- Release accelerator pedal to deceleration and Reduce to a stop or walking speed

- Press the lower part of cross-wheel differential lock switch ①

♦ Rear axle inter wheel differential lock engages.

♦ The indicator lamp of inter-wheel differential lock is on.

♦ Carefully step on the accelerator pedal and accelerate slowly.

Disengagement of differential lock

♦ Loosen accelerator pedal and step on the clutch pedal.

♦ The upper wheel differential switch ① is pushed.

♦ When the inter-wheel differential lock is disengaged, the instrument panel inter-wheel differential indicator lamp goes out.

4.Differential speed lock between axles

♦ Differential speed lock between axles: Lock the inter-axle differential between the first and the second driving axle.

Engagement of inter-axle differential lock

♦ Release accelerator pedal (deceleration), Reduce to a stop or walking speed.

♦ Press the lower part of axle differential switch ② .

♦ After it is engaged, the instrument panel inter-axle differential lock indicator lamp is on.

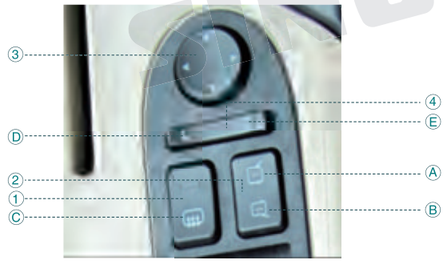
Disengagement of differential lock

♦ Release accelerator pedal and step on the clutch pedal to reset the inter-axle differential lock switch ② .

♦ When the inter-axle differential lock is disengaged, the instrument panel inter-axle differential indicator lamp goes out.

2.6 ADJUSTMENT OF REAR-VIEW MIRROR

♦ **Adjustment of rear-view mirror**



♦ Check the rearview mirror Settings and adjust as needed.

♦ Clean the rearview mirror if necessary.

♦ Select the type of mirror (rear-view mirror and wide-angle mirror) rocker switch ② .

♦ Select the left and right mirrors by the rocker switch ④ .

♦ The rearview mirror control button ③ can be adjusted in different directions of front, rear, left and right.

WARNING !

- Rearview mirror can only be adjusted when key switch is at ON position.
- Ensure the driver seat is in a comfortable driving position.
- The control system can offer overheat protection to motors in order to prevent overheating due to frequent action of switches. After the rearview mirror motor starts and stops operation for 10 times within 5 seconds, the rearview mirror will no longer correspond to any operation command within 3 minutes.
- Do not to adjust rearview mirror during operation!

2.7 OPERATION OF PTO

♦ PTO controlled by clutch, It can be operated when vehicle is both running and stationary.

♦ Engagement/ disengagement

- PTO engagement and disengagement are only allowed when the clutch is fully disengaged.
- Clutch disengagement must be made at engine idle speed.
- Tooth breaking may occur if PTO engagement is made when the countershaft is not stationary.

♦ **Parking**

- Engage low gear(1-4 gear).
- lift handbrake.

♦ **For safety:**

- Engage forward gear when vehicle is stopped uphill.
- Engage reverse gear when vehicle is stopped on slope.
- For safety, please put blocks behind the wheels if vehicle is fully laden.

WARNING !

- Service lift differs for different operation methods, and may be shortened because of short synchronizing time. Therefore please use 1 gear for vehicle start.
- Tooth breaking noise is not allowed during engagement and disengagement of reverse gear. If necessary, please extend the time needed for clutch disengagement or check the clutch is completely separated or not.
- Slowly engage the clutch until PTO connect properly.
- Gear shift is not allowed when PTO is working.

2.8 DUMP TRUCK CARGO BOX

Lifting operation :

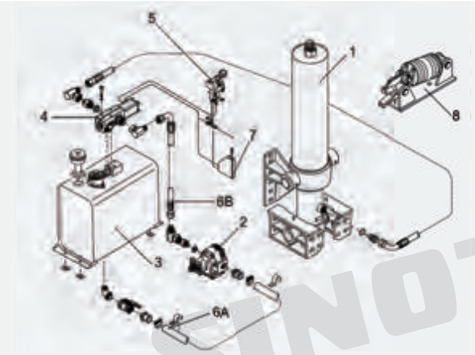
1. Open the rear door lock
2. Start the engine and wait for 5 seconds
3. Step on the clutch
4. Engage the power take-off
5. Place the air control valve ② in the "up" position
6. Release the clutch
7. When the cylinder reaches the maximum stroke (or when the limit valve is active), put the air control valve in "neutral".

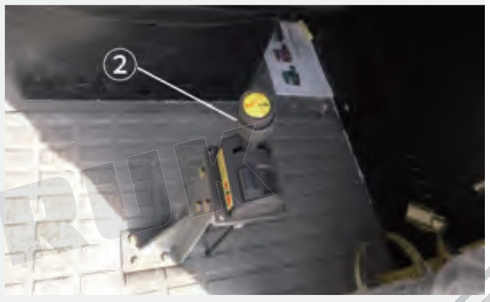
NOTE: During the lifting process, the maximum engine speed must not exceed 1750r/min. The engine speed is too high and the oil pump is insufficiently supplied, which may cause damage to the oil cylinder and the oil pump. When approaching the maximum lift angle, the engine throttle should be gradually reduced.

Drop operation:

1. Hydraulic lift valve and air control valve can control and adjust the descent speed of the car body
2. Step on the clutch and wait for 5 seconds
3. Disengage the power take-off
4. Disengage the gear
5. Place the air control valve in the down position
6. Release the clutch

NOTE: Wait for about 30 seconds after the dump body is completely lowered, and then put the air control valve in the "neutral" position. When the air control valve is in the “down” position, do not drive the vehicle to avoid causing all hydraulic oil to flow from the cylinder back to the oil tank, thereby causing “cavitation” in the hydraulic system.





2.9 EXHAUST BRAKE OPERATION

♦ Exhaust brake can make the vehicle continuously slow down or stabilize the speed. The exhaust brake can be used to decelerate ahead of time on long slope, car-meeting or passing a poor road section.

♦ The driver presses the rocker switch ① , when the following conditions are met, the vehicle will realize engine exhaust braking:

- Clutch is not pushed;
- Release the accelerator pedal;
- Non-neutral state;
- Engine rotate speed over 800rpm.

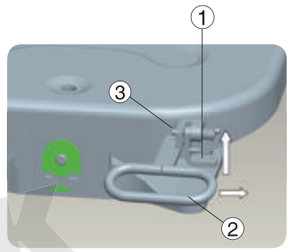
WARNING !

- Be careful to use engine exhaust brake on wet, dirty or frozen road, vehicle may slip and slide!
- When vehicle drives on a long slope, as transmission neutral position can not play an auxiliary brake role, exhaust brake shall be used.
- The exhaust brake falls into auxiliary braking other than vehicle parking device. It fails to replace the driving brake system of the vehicle and the driving brake (namely foot brake) shall be used for the vehicle completely stopping.

2.10 FIFTH WHEEL/SADDLE

Fifth-wheel opening operation

♦ As shown in the figure: rotate the pull bolt positioning block ① up to the horizontal position, and at the same time, rotate the handle ② forward to clamp its quadrilateral slot on the front side of the rectangular slot of the saddle plate.



Check after connection of the trailer

♦ Ensure that the bolt positioning stop ① is back to the shown state and the warning hole ③ is near the outside of the saddle plate, when the saddle is securely locked.

♦ If the positioning stopper ① does not fall to the locking position, or the warning hole ③ is far from the outside of the saddle plate, check whether the saddle is locked.

Connection of the semi-trailer

♦ Park Semitrailer to prevent sliding.

♦ Lift the saddle handle ① up, make the handle into the upper long hole and then pull it out, until the positioning slot on the handle rod is stuck on the saddle housing. At this time, the saddle is in the opening state ready for coupling.

♦ Reverse docking. When the traction pin enters the saddle interface, the lock hook and the lock block will automatically lock the traction pin and complete the docking. At this time, the handle will automatically return to its position, indicating that the docking is correct.

♦ Connect the brake line and electrical connector between the semi-trailer and tractor.

- Connect the compressed air pipeline, pay attention to the pipeline and wire should not be strained, friction and winding in the process of running.

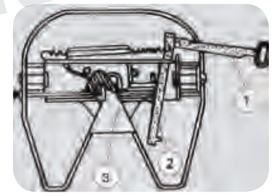
♦ First connect the control line connector (yellow) and then the gas supply line connector (red).

♦ Check whether the function is normal.

Disconnection of the semi-trailer

1. Check the road condition to prevent the semi-trailer from sliding.

2. Raise the semi-trailer leg (note the road load capacity) until it can support the load removed from the saddle, or use an air suspension to raise the semi-trailer, raise the semi-trailer leg, then lower the semi-trailer until the semi-trailer is fully supported by the leg.



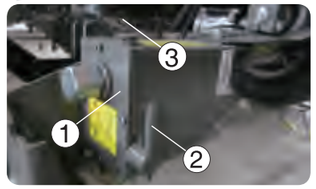
3. Before disconnecting the tractor, semi-trailer or full-trailer should disconnect the brake air supply pipe joint (red) and then the brake control pipe (yellow) in strict order, otherwise the brake of the trailer will be relieved.

4. Pull the saddle handle ① out until it gets stuck on the saddle housing. At this point, the block ② is detached from the lock hook ③ . Move the tractor forward, the lock hook ③ rotates, and release the pull pin.

2.11 CABIN ELECTRIC TILTING

① Hydraulic hand oil pump ② reversing valve

③ Oil plug ④ Cab lifting tilt switch



Preparation before tilting cab

♦ Park your vehicle on a at surface that does not interfere with other vehicles.

♦ Engage parking brake.

♦ Put the gear lever in neutral.

♦ Turn off engine.

♦ Secure loose objects in the cab.

♦ Make sure storage bins are empty.

♦ Open cab front cover.

Cab tilt operation

♦ Press the tilt switch ④ (only for electric lifting), and close the door.

♦ Turn the reversing valve ② of the hydraulic manual oil pump to the overturning position of the cab, shake the oil pump ① with the lever (or press the switch ⑤ / only for electric lifting) for tilting operation.

Cab back down

♦ Turn the reversing valve of the hydraulic manual oil pump to the back down position of the cab, shake the hand pump (or press the switch ⑤ / only for electric lifting) to turn the cab back.

♦ The rubber bellows connected to the upper inlet should be tightly fitted to the lower inlet when the cab falls to prevent dust from entering.

♦ Turn off the tilt switch in the cab (only for electric lift).

♦ Close cab front mask.

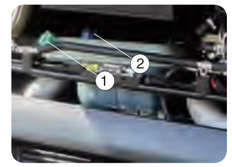
♦ Finally, check the lock signal light on the instrument panel. If the cab is not locked, the Lock signal light will be on.

3.CHECK INTRODUCTION

3.1 COOLING SYSTEM: CHECK DAILY

♦ The vehicle is parked on the level road with the front mask open.

♦ Observe the liquid level of the expansion tank. The height of the coolant liquid level should be located between the high and low marks on the side of the expansion tank.



Refill coolant (if necessary)

① liquid filling cover ② pressure limiting valve cover

♦ Slowly unscrew the refueling cap counterclockwise to release the cooling system pressure and remove the refueling cap.

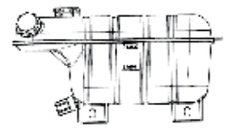
♦ Turn the warm air temperature regulating button switch to the maximum warm air position.

♦ Fill the coolant (see engine maintenance section for coolant type) to MAX

♦ Close the refueling cap and screw it tight.

♦ Start engine idle for 4 minutes.

♦ Check coolant level and replenish coolant if necessary.



3.2 ENGINE OIL: CHECK DAILY

Before starting engine, check engine oil daily.

Engine oil

♦ Park the truck on a level road and turn off the engine for 20 minutes before checking the oil level .

♦ Open the front cover, pull out the oil ruler ① , wipe the oil ruler with a clean lint-free cloth, insert the oil ruler back into the oil ruler tube, and pull out the oil ruler again.

♦ The oil level of the machine should be between the maximum and minimum mark of the dipstick and not lower than the minimum scale. Multiple checks to determine the low oil level should be filled with oil if lower than minimum.

WARNING ! - Do not fill oil above the maximum scale. Too much oil can damage the diesel engine !

Refill the engine oil

1. Turn off the key switch. 2. Tilt cab.
3. Unscrew the refueling cap ② . 4. Fill the oil.
5. Tighten the refueling cover ② .

3.3 AIR DRYER: CHECK MONTHLY

♦ Check the air dryer once a month to see if it is working properly and effectively(or according to the local climate condition,vehicle usage and running condition to check regularly). Open the water discharge valve of the air storage cylinder to check.

WARNING !

- Protect your eyes and hands when operating the drain valve.
- Check and remove moisture in the air container of brake system.

♦ When truck parked, pull the pull ring ① of the manual water drain valve at the lower part of the air storage tank laterally, the water condensed in the air storage tank can be eliminated.

♦ It is recommended to check the air storage cylinder farthest from the air dryer every day. If there is oil and water mixture discharged from the water discharge valve, it means that the air dryer is invalid. The upper drying tank of the air dryer should be changed immediately.

♦ Replace the drying tank on top of the air dryer at least every 2 years (recommended before winter).

Tire inflation

♦ The tire can be in ated through an in atable joint installed in the air dryer (or air storage tank), step asfollowed:

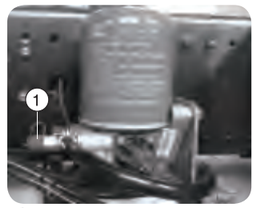
1.Remove the dust cap ① of the in atable joint.

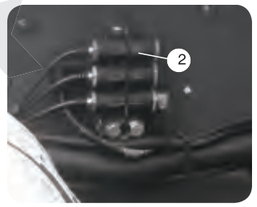
2.One end of the tire in ating hose is connected to the valve mouth of the tire.

3.Screw the other end of the tire in ating hose to the in ating connector on the air dryer.

4.Speed up the engine.

5.Check tire pressure and adjust it as needed.





Auxiliary air module

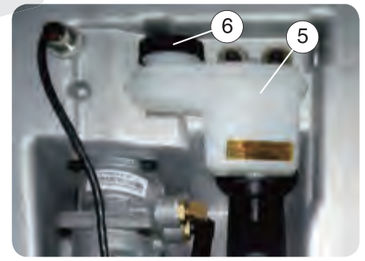
♦ The auxiliary air module is installed at the frame (generally located inside the longitudinal) unscrew the ② or any blockage shown in the figure, and the quick plug is equipped to take air.

3.4 CLUTCH: CHECK MONTHLY

Check the level of brake fluid

♦ The vehicle should be parked on the level road, open the front mask of the cab, and check the brake uid level in the clutch oil tank ⑤ . The level should be between the MAX and MIN mark.

♦ If necessary, unscrew the tank cap ⑥ and add DOT3/DOT4 brake uid.



WARNING !

- If the oil level in the tank drops below the MIN mark, the clutch control device will not work properly.

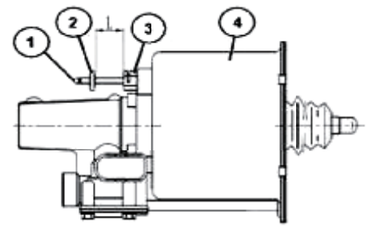
Check the clutch system cable

♦ Check whether there is leakage of air and fluid in the clutch system cable.

Check wear indicator

♦ Check the wear indicator ② to determine whether the clutch driven plate needs to be replaced.

♦ Clutch wear indicator is located in the clutch power cylinder ④ above the valve body, by observing the indicator plate ② position can know whether the clutch driven plate is worn to the limit, so as to replace the driven plate in time. The clutch wear indicator is used to match the model of the pull clutch.



♦ With the wear of the clutch disc, the gap L between the measuring rod seat ③ and the indicator plate ② will gradually increase. When L=23mm, the driven plate needs to be replaced.

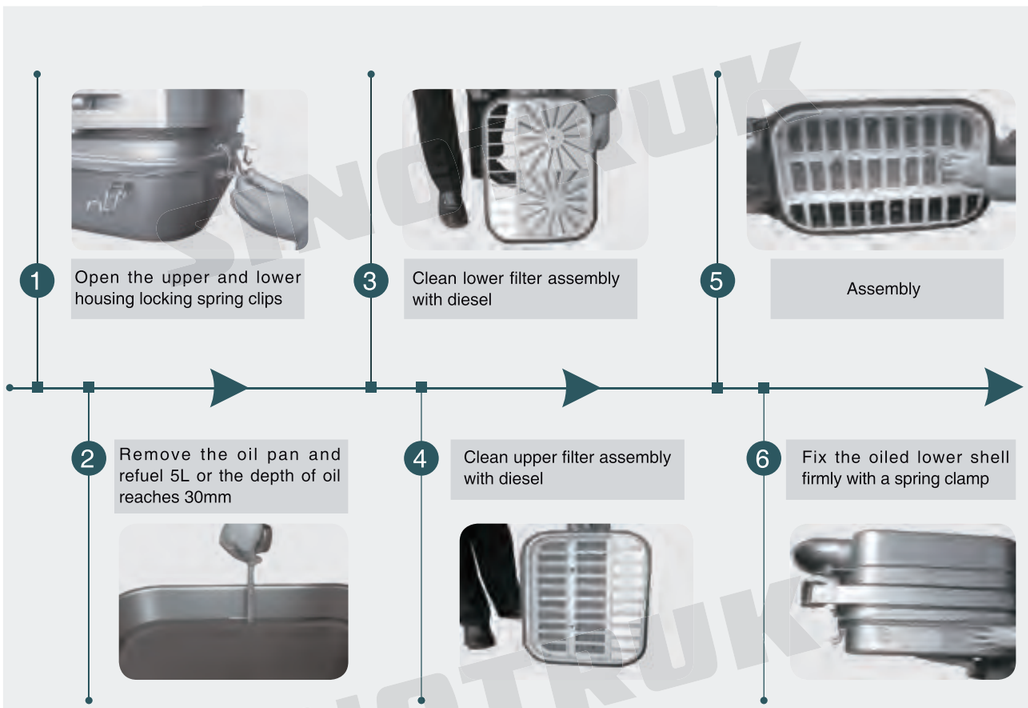
♦ After the initial installation of the clutch power booster cylinder ④ or the replacement of the clutch driven plate, the indicator plate ② shall be pushed along the measuring rod ① to contact the measuring rod seat ③ , this is initialization. Do not move the indicator ② during normal use of the vehicle.

3.5 OIL-BATH TYPE AIR CLEANER

WARNING !

- Oil should be filled with the same as engine oil before vehicle used!
- When filling the oil, the oil depth shall not exceed 30mm or the filling amount shall be 5L, and shall not be excessive.
- When shaking the pan and the oil is not easy to ow, clean the filter and replace the oil.

Disassembly, inspection and cleaning steps:



3.6 OTHER NOTES

♦ Please do not slide in neutral when the vehicle is downhill. When taking braking deceleration better use exhaust brake at the same time. When the vehicle is loaded, exhaust brake can also be operated to assist vehicle deceleration.

♦ When parking for a long time, it should turn off the engine and should turn off the main power switch and use parking brake at the same time, to avoid accidents.

♦ Unauthorized modification and installation of all kinds of equipment are prohibited, especially the electronic, braking, steering and other safety related systems, otherwise it may affect the life and safety performance of the vehicle, resulting in accidents, fire, damage to the vehicle, our company will not be responsible for the consequences. Disassembly or replacement of the engine ECU is strictly prohibited, otherwise the vehicle may be damaged.

♦ Open the front cover before tilting the cab.

♦ Cut off the main power switch and unplug the plug of electrical components (BCU, instrument, engine ECU, ABS control unit) when welding work is performed in or near the vehicle.

♦ Do not flush the engine with water because this can short-circuit the engine electrical system and damage the ECU.

♦ The cooling system uses the antifreeze and antirust coolant. It is not allowed to mix the coolant of different grades/type. If different grades of coolant are applied, the engine cooling system components need to be thoroughly cleaned.

♦ The moisture condensed in the air cylinder should be discharged in time to prevent freezing. And pay attention to check the working condition of the air dryer. Under normal working condition, the using life of the desiccant in the dryer is two years. If it is found that there is polluted water discharged from the air storage cylinder, the desiccant has failed, and the desiccant should be replaced immediately.

♦ Check the level and specific gravity of battery electrolyte every three months. The electrolyte level should be 10-15mm higher than the battery lead plate, Specific gravity is above 1.24g/cm³. If the vehicle is not used for a long time, and the temperature is low, it is best to remove the battery and put it into a warmer room. Every time the vehicle travels 5000km, it should check whether the clamp between the electrode pile and the wire of the battery is loose and whether the battery works normally.

♦ Keep good driving habits, avoid long time or sudden braking of the vehicle, otherwise it will have bad affect to the using life and fuel economy of the vehicle.

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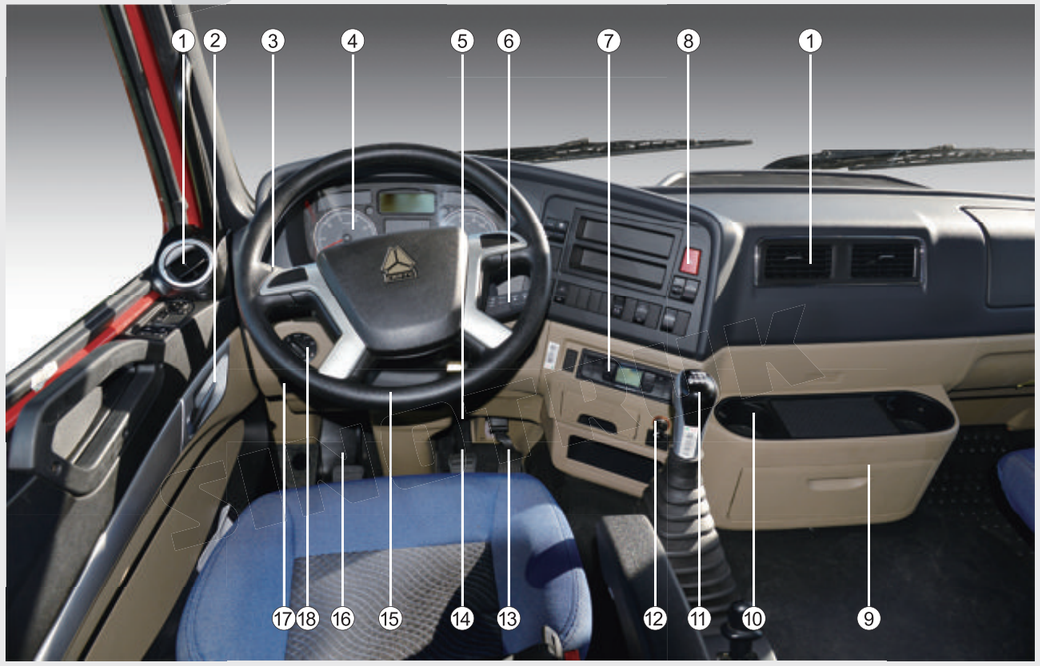
1. 基础介绍

1.1 驾驶室概览



1	通风口
2	车门把手
3	左组合开关
4	仪表板
5	钥匙开关
6	右组合开关
7	空调控制面板
8	翘板开关
9	储物盒

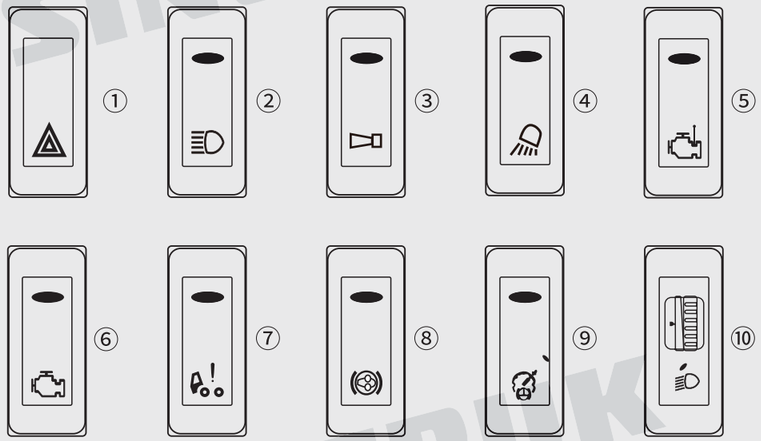
10	水杯架
11	变速器操纵手柄
12	24V 点烟器
13	加速踏板
14	制动踏板
15	方向盘
16	离合器踏板
17	前舱盖拉手
18	旋转灯

1.2 仪表板

1	检测与报警面板
2	气压表
3	驾驶员显示屏
4	燃油表
5	车速表
6	按键 1

7	转向指示灯
8	发动机冷却液温度表
9	电压表
10	按键 2
11	发动机转速表

1.3 翘板开关和按钮



① 危急报警开关：按下开关，所有转向灯都会闪烁，仪表上的转向指示灯同时闪烁。

② 辅助远光灯开关：当远光灯打开时，按下该开关，打开辅助远光灯。

③ 喇叭转换开关：开关不工作时，按方向盘上的喇叭按键，电喇叭鸣响；按下开关后，按方向盘上的喇叭按键，气喇叭鸣响。

④ 工作灯开关：按下开关，打开驾驶室后面的工作灯。

⑤ 发动机取力开关：按下开关时，可以通过调节 PTO 旋钮调节发动机转速。此时油门踏板将不起作用。

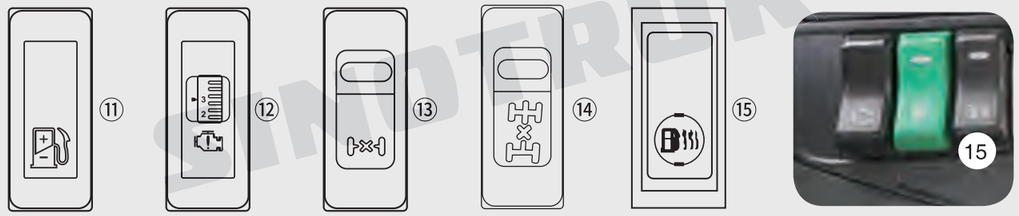
⑥ 发动机诊断开关：按下开关，可读取仪表上的发动机故障指示灯闪码，然后查找故障闪码表，可知道目前发动机系统存在的故障。

⑦ 驾驶室翻转开关：按下开关，将举升油泵置于上升或下降状态，按下驾驶室外部的举升按钮，实现驾驶室电动举升或下降。

⑧ 排气制动开关：按下开关，当排气制动条件满足时，车辆实现排气制动功能。

⑨ 智能制动请求开关：默认智能制动处于激活状态，开关上工作指示灯点亮。此时司机踩下制动踏板，若排气制动条件满足，则排气制动会与行车制动同时工作。按下智能制动开关，关闭智能制动功能，开关上工作指示灯熄灭。

⑩ 大灯光束调节旋钮：将位置灯和近光灯点亮，然后通过调节此旋钮对近光灯的光束进行上下调节。



⑪ 节油开关：按下开关，可以根据车辆配置自动确定最高行驶车速，发动机运行更为柔和，使车辆最大限度地行驶在经济条件下。

⑫ 发动机转速模式旋钮：按下开关，可在一定范围内对发动机转速进行调整。操作使用说明详见 **2.11** 发动机转速模式旋钮 。

⑬ 轮间差速开关：按下开关，轮间差速锁结合。 操作使用说明详见 **2.5** 差速锁操作。

⑭ 轴间差速开关：按下开关，轴间差速锁结合。操作使用说明详见 **2.5** 差速锁操作。

⑮ 燃油加热开关：按下此开关激活燃油粗滤器加热功能。

1.4 检测灯和报警灯

编号	描述	符号	颜色	编号	描述	符号	颜色
1	主车左转向指示		绿	11	空气悬架		红、黄
2	挂车左转向		绿	12	缓速器报警		红、黄
3	挂车右转向		绿	13	近光灯		绿
4	主车右转向指示		绿	14	低冷却液液位		红
5	机油压力报警		红、黄	15	昼间行驶灯		绿
6	故障警示符		红、黄	16	驾驶室锁止		红
7	发动机故障报警灯		红、黄	17	取力器 1		红、黄
8	紧急停车	STOP	红	18	取力器 2		红、黄
9	驻车制动	(P)	红	19	低尿素液位	NOx	黄
10	制动系统故障	(!)	红	20	ASR 工作指示	(ASR)	黄

编号	描述	符号	颜色	编号	描述	符号	颜色
21	提升桥		绿	39	空滤器堵塞		白
22	前雾灯		绿	40	排气制动		白
23	巡航		绿	41	进气预热		白
24	远光灯		蓝	42	燃油进水		白
25	主车 ABS 报警		黄	43	缓速器工作		白
26	挂车 ABS 报警		黄	44	自适应巡航		白
27	后雾灯		黄	45	保养提示		黄
28	位置灯		绿	46	ESC 有效		黄
29	排放超标报警		黄	47	坡起		黄
30	发动机超速		红	48	胎压报警		黄
31	安全带故障		红	49	ESC 关闭		黄
32	车辆超速		黄	50	自适应前照灯		黄
33	低挡		绿	51	自适应巡航系统故障		红
34	冷却液温度高		红	52	碰撞紧急预警状态激活		红
35	气压指示 1		绿	53	燃油滤清器堵塞		红
36	气压指示 2		绿	54	DPF 积碳指示灯		黄
37	燃油低		黄	55	DPF 主动再生指示灯		黄
	低 CNG		黄	56	前轴制动器磨损报警		黄
	低 LNG		黄	57	后桥制动器磨损报警		黄
38	低（高）电压报警		红				

1.5 气压显示

♦在通常情况下，气压表显示气压较低回路的压力值。通过仪表板下方的气压切换按键可以显示另一气压较高回路的气压值。10 秒钟之后，会自动切换显示为气压较低回路的压力值。

气压表上①表示后桥，制动回路 I 压力情况；

气压表上②表示前桥，制动回路 II 压力情况；

气压表指针位于红色区域③：气压太低，气压报警指示灯会点亮；

气压表的指针位于白色区域④：气压正常。

注意！

- 如果气压过低（低于 0.55MPa）报警灯点亮。应等到警报灯熄灭且显示警示信息消失之后，车辆方可起步。
- 起步后，在路况良好的干燥路面上尽快测试一下制动功能（行车制动和驻车制动）！
- 确保踏板操纵区域内无异物。

2. 操作介绍

2.1 发动机起动

1. 第一次起动时，发动机未发动，需重新将钥匙起动开关置于 2 挡，重新起动。 每次起动时间不大于 15 秒，两次起动时间间隔不少于 30 秒。

2. 不得使冷发动机以高速运转！如果发动机起动后机油压力表无显示，应立即熄火检修。

3. 发动机起动时应怠速运转 3 ～ 5 分钟，不能猛轰油门，待机油压力和油温正常后方可施加负荷 (特别是冷天启动），否则易使增压器轴承、密封环因缺油而早期磨损。

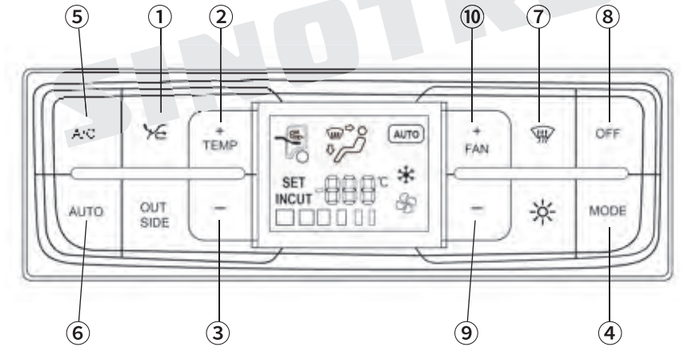
4. 发动机熄火时，应怠速运转 3 ～ 5 分钟，待增压器转速降低后方可熄火。特别应注意熄火前不要猛轰油门。因为猛轰油门会因发动机转速骤然提高而使增压器达到较高的转速，此时突然熄火，机油泵立即停止供油，增压器转子却因惯性还在继续高速运转，转子轴、轴承和密封环因缺油将很快烧损。

5. 长期停机的发动机重新起动前，一定要先将增压器预润滑。可通过拆卸增压器进油管，从进油口倒入适量干净润滑油来实现，否则初次起动会因缺油而早期磨损。

6. 严禁在未关闭钥匙起动开关或其它带有唤醒功能的输入电源时，切断电瓶和中央控制单元之间的电路连接！否则不仅可能在硬件上损坏整车各系统的电控单元、线束和电子电器元器件，更有可能导致系统数据丢失，造成车辆无法使用的严重后果！

7. 当所出现的故障性质很严重时，严重故障报警指示灯“STOP”灯亮，在发动机工作时蜂鸣器将会持续报警。此时应立即停车检查，在排除故障后才允许继续前行！否则可能会发生生命财产损失！

2.2 空调系统



序号	按键	功能	说明
1	内 / 外循环按键	切换内外循环	每按该键一次，系统在内 / 外循环状态间切换一次。 在 AUTO 模式下按该键，切换内 / 外气工作状态，系统不退出 AUTO 模式。 系统设定于内循环状态时，每隔一定时间，系统会自动转至外循环状态一段时间，然后再回到内循环。
2	+ TEMP 温度增加	按键一次增加设定温度 0.5° C	在 AUTO 模式下按这组键，改变设定温度，系统不退出 AUTO 模式。
3	温度减小	按键一次减少设定温度 0.5° C	
4	MODE MODE 按键	改变吹风模式	系统共设 5 个吹风模式，即吹脸、吹脸吹脚、吹脚、吹脚除霜、除霜（此处除霜仅指出风方向，不表示除霜功能的开启或关闭）。 在 AUTO 模式下按下此键系统退出 AUTO 模式，进入吹脸模式。 如车辆选装驻车空调，停机状态下，唤醒控制面板，长按该键 3s 后进入驻车空调模式。
5	A / C AC 按键	开 / 关空调压缩机	手动模式下，每按一次，压缩机的工作状态（吸 / 断）切换一次。 AC 启动时如果鼓风机没有工作，则系统自动设定风量为 2 挡。
6	AUTO AUTO 按键	切换成 AUTO 工作模式	在空调系统关机时，按下此键，空调系统进入 AUTO 模式。 在空调系统开机时，若空调系统当前为手动工作模式，按下此键，空调系统进入 AUTO 模式。 在 AUTO 模式下按温度增加、减少键，可以改变设定温度，但系统不退出 AUTO 模式。 系统已经处于 AUTO 模式且设定温度被手动改变时，按下此键，系统不退出 AUTO 模式并按程序重新计算设定温度。 在 AUTO 模式下按 MODE、风量增加、风量减少键，退出 AUTO 模式。
7	除霜按键	切换成强制除霜	在非除霜状态下按下此键，空调进入除霜模式，再次按下除霜键退出除霜模式，并恢复除霜前的工作状态。 除霜状态自动记忆用户上次设定的工作方式和界面行。温度、AC、内 / 外循环、风量调节不退出除霜模式。
8	OFF OFF 按键	关闭系统	空调开机状态，按 OFF 按键，进入 OFF 状态，显示屏关闭，同时所有执行机构均关闭，停止工作。 空调在 OFF 状态时，按除霜按键系统开启工作，进入除霜模式。 空调在 OFF 状态时，按风量增加按键时，开启工作，进入手动模式，同时风量为一挡，但设定温度、模式、内外循环等工作状态启用用户上次设定的状态。 空调在 OFF 状态时，按 AUTO 按键，开启工作，进入 AUTO 模式。若上次熄火时没有用 OFF 键关空调，当再次点火时，空调自动进入用户上次设定的工作方式和界面工作（手动模式，AC 和风量不恢复；若为 AUTO 模式，则按 AUTO 模式运行）。

序号	按键	功能	说明
9	减小风量按键	减小风量	每按一次，风量逐级减一挡至 0 挡。降至 0 挡时，压缩机不工作，空调图案不显示。 在 AUTO 模式下，手动改变风量时，将从 AUTO 模式退出。
10	+ FAN 风量增加按键	增加风量	每按一次，风量逐级增一挡至 4 挡，到最大挡保持不变。 AUTO 模式下，手动改变风量时，将从 AUTO 模式退出。 风扇在发动机工作的前提下方可开启。

调空调控制系统自检及错误修补功能

◆自检条件：

同时按下 AUTO 键、水阀键、循环键 3 秒后控制面板进入自检程序。

◆自检内容：

自动运行一遍各个执行机构后显示故障信息。

◆执行机构运行按以下顺序：

a）先显示全屏（即显示所有需显示的符号）；

b）吹面、内循环、风速一挡、AC 开启、水阀关闭；

c）吹面吹脚、外循环、风速从一挡升到三挡、AC 关闭、水阀开启；

d）吹脚、外循环、风速升到最大挡、AC 关闭、水阀关闭；

e）显示故障码；

f）自动退出自检程序。

每项内容的显示时间不低于 1.5S，要求显示速度均匀一致，便于观察。

强制自检自动退出方式：

a) 显示结束后自动退出；

b) 按任意键；

c) 自检退出后开机状态。

故障码显示方式：

a）在自检状态下，温度显示位将显示故障代码，若为多个故障，其代码以 1.5 秒间隔的速度循环显示、单个故障码间隔时间为 1.5 秒、2 个故障时间为 3 秒依次类推。显示结束后系统自动退出。

b）在故障查询状态下（同时按下 MODE 键、AUTO 键），温度显示位将显示故障代码，若为多个故障，其代码以 1.5 秒间隔的速度循环显示、单个故障码间隔时间为 1.5 秒、2 个故障时间为 3 秒依次类推；释放按键将停止显示故障代码。

00	正常
01	车内温度传感器故障（短路、断路）
02	车外温度传感器故障（短路、断路）
03	蒸发器温度传感器故障（短路、断路）
04	冷暖执行器故障

2.3 牵引准备（拖车）

牵引前，断开传动轴。

注意！

- 无液压助力时，尝试对静止车辆进行转向会导致转向系统损坏！
- 只有在车辆移动时，可以在无液压助力情况下转向。
- 如果发动机停止，由于液压助力失效，需要在方向盘上施加更大的力，应缓慢牵引车辆。
- 如果制动系统气压不足而且弹簧制动启动，可以引入外部压缩空气（至少 0.55MPa）或机械手段解除，应注意此后车辆无制动！

弹簧储能制动气室－紧急解除

♦当驻车制动回路气压低于 0.55MPa 时，作用于制动气室膜片压力小于储能弹簧力，弹簧储能制动起作用。 同时“STOP”、制动系统故障灯①和驻车制动灯②同时点亮。

♦紧急情况时或在维修站可以通过对弹簧储能制动气室进行气动或机械手段解除。

注意！

- 解除弹簧储能制动气室之前，确保汽车不能自行移动！
- 在紧急情况或服务站维修时，方可对弹簧储能制动气室紧急解除。
- 紧急解除弹簧储能气室之后，因为行车制动回路 I 和回路 II 气压不足以保证有效的制动，车辆行驶过程中容易造成事故。
- 在驻车制动信号灯熄灭之前切勿开动汽车。

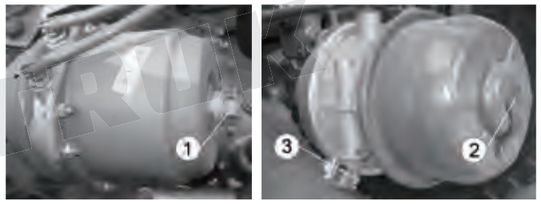
弹簧储能制动气室－机械紧急解除

♦膜片弹簧制动气室

当连接弹簧储能制动气室气管路因泄漏而造成自行制动时，只要将制动气室后端的螺栓①拧出到解除位置，即可解除制动。

♦双膜片弹簧制动气室

打开双膜片弹簧制动气室后端盖②，用螺栓③从后端盖插入后手动拧出，即可解除制动。



2.4 变速箱

2.4.1 ZF16 手动挡

♦ ZF-Ecosplit 16 挡变速器由四挡主箱、高低挡部分和半挡组部分组成。

四挡主箱

- 同步器式，倒挡结合套式。
- 手动换挡（旋转轴控制式）。
- 双 H 挡位。
- 伺服换挡。

高低挡，在变速器后端

- 同步器换挡。
- 双 H 挡位；换挡手柄在 3/4 和 5/6 挡位置间移动时，自动切换（气动）。

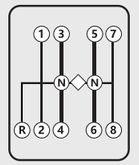
半挡组，在变速器的前端

- 同步器换挡。
- 通过操作换挡手柄上的预选阀气动换挡，然后操作离合器。

♦ 挡位说明（双 H 挡位）

◇ 自动切换间　　R 倒挡　　N 空挡

1 ～ 4 低挡区　　5 ～ 8 高挡区



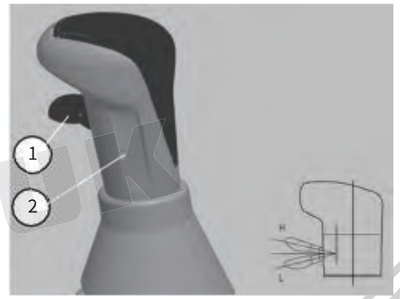
2.4.2 中国重汽手动挡变速箱

Ø 不带同步器：HW13710(C)(L)/ HW19710(C)(L)/ HW19712(C)(L)/ HW20716(C)(L) 等

Ø 带同步器：HW19709XST/HW25712XST(C)(L) 换挡：

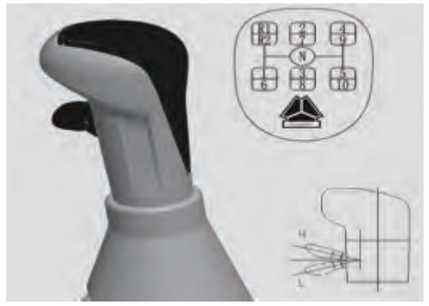
步骤如下：

1. 换挡时，应将离合器踏板踩到底。
2. 车辆在行驶中由高挡换入 1 挡、2 挡时，应使用“两脚离合器法”换挡。
3. 换倒挡时应停车进行，否则易损坏啮合套。
4. 开关阀①位于换挡手柄②上，有高低两个挡位。



注意！

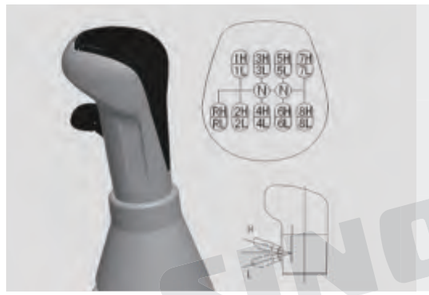
- 换挡时，离合器应彻底分离，变速杆应挂挡到位。
- 停车时，开关阀应置于低挡位置。
- 车辆应在气压上升至起步气压时，方可解除驻车制动，挂挡起步。
- 除非当前车速处于您想挂入挡允许的范围内，否则不得提前向下换到任何一挡。
- 当变速器从低挡区向高挡区（反之亦然）换挡时，不得跳挡操作。
- 车辆下坡时，禁止变换高、低挡位区。



高低挡之间的转换

10 挡变速箱：变速器当从低挡区向高挡区（反之亦然） 换挡时，应先将手柄阀置于 H （L）位置 , 将离合器踏板踩到底，然后摘到空挡，有意识稍等片刻，再挂 6 挡（5 挡），不要进行跳挡操作，否则将影响副箱同步器的使用寿命。当手柄在挡位上时，进行手柄阀 H-L 切换，高低挡并不切换，只有位于空挡位置时方可进行切换。

12 挡变速器：当从低挡区向高挡区（反之亦然）换挡时，应先将手柄阀置于 H （L）位置 , 将离合器踏板踩到底，然后摘到空挡，有意识稍等片刻，再挂 7 挡（6 挡），不要进行跳挡操作，否则将影响副箱同步器的使用寿命。当手柄在挡位上时，进行手柄阀 H-L 切换，高低挡并不切换，只有位于空挡位置时方可进行切换。



16 挡变速器：插分挡（半挡）切换时，先切换换挡手柄上开关（如图）。如从 1L 换到 1H 的步骤：先将开关阀从 L 切换到 H 位置，然后将离合器踏板踩到底，松开离合器踏板，换挡完毕（此过程不需要手柄有动作）；从 1H 换到 2L 的步骤：先将开关阀从 H 切换到 L 位置，然后踩下离合器踏板 , 手柄回空挡，然后向 2 挡位置挂挡，挂上后，松开离合器踏板，换挡过程完毕。依次类推，直到换挡到 8H，降挡同样操作。若先踩一下离合器踏板，再松开，然后切换手柄上的开关，挡位不会切换。

2.4.3 中国重汽第二代手自一体变速箱

自动功能 (A 功能)

♦自动功能为控制系统默认的操作功能。

♦自动功能下，驾驶员只需要通过换挡手柄选择起步挡位。起步挡位包括前进挡、倒挡或空挡。行车过程中变速器控制系统会根据当前车况自动选择最合适的挡位。驾驶员也可以在自动功能下通过手柄干预换挡操作。

手动功能 (M 功能)

♦手动功能下任何换挡请求都应由驾驶员发出，驾驶员决定换挡时机，但离合器由系统控制自动完成相关动作。

A/M 功能选择

♦驾驶员可以通过手柄上的按键①实现手动与自动功能的切换。

♦仪表盘上的显示屏会实时显示变速器当前的工作模式。

♦系统默认的操作模式为自动功能。驾驶员可在起步、行车过程中随时进行 A/M 功能的切换。

车辆起步

♦选择合适起步挡位（控制系统只允许在挂 1 ～ 8 挡起步，推荐在 1 ～ 4 挡起步）。

♦轻踩油门踏板，车辆起动。

♦松开驻车制动器。

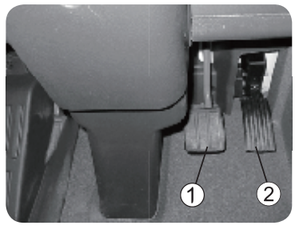
- 当需要挂中怠速模式起步时，请保持当前挡位为空挡，然后，再挂入起步挡，踩油门，松开驻车制动器，然后行车。在此模式下，只能运行在 1 ～ 4 挡。当不需要 C 模式时，请再按下 C 键，即可退出。
- 当需要挂高怠速模式起步时，请保持当前挡位为空挡，然后持续按下 C 键 5 秒以上，再挂入起步挡，踩油门到底，然后行车。车辆正常起步后高怠速模式自动，无需再按下 C 键。

蠕行模式

♦ AMT 系统提供了蠕行模式，可使车辆在某些特定工况下缓速行驶。

♦驾驶员通过双击柄上的 M/A 按键，切换至 M 模式，踩制动踏板挂起步挡，挂挡成功后松开制动踏板，车辆缓慢移动；蠕行过程中可以手动升挡（最高升到 5 挡）；蠕行过程中可以踩油门踏板加速，松开油门踏板继续蠕行模式；也可以踩制动踏板减速或停车，松开制动踏板继续蠕行模式。

♦蠕行模式支持 1-5 挡及 R1 挡，驾驶员可根据工况自行选择挡位，踩油门踏板及切换挡位不会退出蠕行模式，仅手动切换到 A 模式可以退出蠕行模式。



行车过程自动模式下的操作

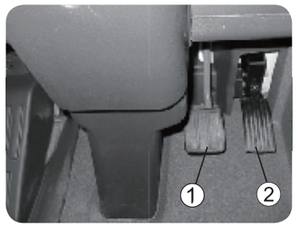
升挡和降挡

♦行车过程中，油门踏板②影响发动机转速、扭距和整车的速度。AMT 会自动根据当前发动机转速等信息计算并挂入合适的挡位。踩制动踏板后车辆会降速，控制系统会自动选择适合车辆运行的最佳挡位。

加速

♦要使车辆获取最大限度的加速能力，可以将油门踏板②踩到底。驾驶员可按如下步骤操作：

- 切换到 P 模式。
- 将油门踏板②踩到底。
- 控制系统将保持当前挡位或选择一个较低的挡位运行。
- 此后车辆获得足够动力，车速会迅速提高。



减速

♦要使车辆减速，踩下制动踏板①或者松开油门踏板②，车辆就会降速。

自动模式下的手动换挡

♦行车辆运行在自动模式时，驾驶员可以通过手柄操作对自动模式进行干预。在自动模式下向前推手柄①将升挡，向后推手柄①将降挡。

♦只有车辆的运行环境满足换挡需求 , 自动模式下手柄动作才能实现换挡。自动模式下手柄动作能影响自动模式运行 , 但是并不会解除自动模式 , 不会将变速器运行模式切换到手动模式。

行车过程手动模式下的操作

♦ 要手动模式下任何换挡动作都应由驾驶员发出，但离合器由系统控制自动完成相关动作。

♦只有车辆的运行环境满足换挡要求才能实现换挡。如果当前发动机转速达不到目标挡位所需转速，控制系统会根据当前转速切换到一个合适的挡位而不一定是目标挡位；若当前运行环境控制系统不允许换挡，会发出警告声音表明驾驶员的换挡请求被拒绝。

升挡操作

♦根据当前的交通环境 , 换挡时如果没有特殊情况请不要改变当前油门踏板位置。

♦驾驶员向前推手柄时 , 不按下功能键① (手柄左侧圆按键 F) 时发出至少升一个挡位的换挡请求，按下功能键时发出升一个挡位的换挡请求。显示屏上目标挡位停止闪烁时表明换挡成功。

♦只有车辆的运行环境满足换挡要求才能实现换挡，若当前运行环境不允许换挡，车辆会发出警告声音提示无法升挡。

减挡操作

♦行根据当前的交通环境 , 换挡时如果没有特殊情况请不要改变当前油门踏板位置。

♦驾驶员向后推动手柄时 , 不按下功能键① (手柄左侧圆按键 F) 时发出至少降一个挡位的换挡请求，按下功能键时会发出降一个挡位的降挡请求。驾驶员显示屏上目标挡位停止闪烁时表明换挡成功。

♦只有车辆的运行环境满足换挡要求才能实现换挡。

从空挡挂合适挡位

♦要当车辆行驶中，变速箱处于空挡位置，通过换挡手柄可以换到合适的挡位。

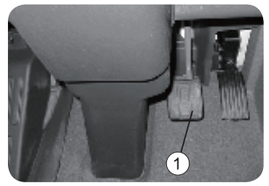
♦**换到更高的最佳的挡位：**向前推动手柄，当驾驶员显示屏显示目标挡位并且停止闪烁时，换挡过程完成。

♦**换到更低的最佳的挡位：**向后推动手柄，当驾驶员显示屏显示目标挡位并且停止闪烁时，换挡过程完成。

减速停车

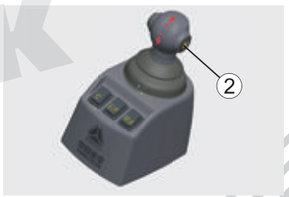
♦停车时请踩下制动踏板①。制动完毕松开制动踏板时控制系统会自动降挡。车辆停稳后拉下手制动。

♦停车后车辆仍然在挡位上，停留 90 秒如果没有其他动作会自动回空挡，踩制动停车后拉下手制动。



挂空挡

♦若需要长时间停车，请把变速器切换到空挡位置以保护离合器。按下空挡按键② (手柄右侧圆按键 N)，显示屏显示空挡符号 N 时表示回到空挡。



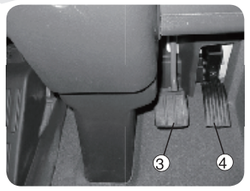
挂倒挡

♦车辆只能在车辆停止状态下从空挡切换到倒挡。需要倒车时请按以下步骤操作：

- 先将变速器切换到空挡。

- 按下功能键① (手柄左侧圆按钮) 并且往后推动手柄②。显示屏上目标挡位停止闪烁时表明换挡成功。向后推一次手柄②为倒 1 挡，若需要其他挡位倒车，换挡操作方式与手动换挡方式相同。

- 松开制动踏板③和手刹，并轻踩油门踏板④开始倒车。



爬挡模式（C）

♦系统提供爬挡模式来满足 AMT 系统在一些特殊工况下低速行驶的需要。

♦按动手柄上的按键 C 启动爬挡模式，再次按动手柄上的按键 C 会取消爬挡模式。

♦爬挡模式（C）设置起步挡位 (在停车时从空挡挂起步挡) 为 1 挡，起步挡位可以通过手柄操作在 1 ～ 4 挡之间切换。

♦车辆行驶过程中，不论在在手动模式还是自动模式下，只能在 1 ～ 4 挡位之间切换，即爬挡模式下最高挡位被限定为 4 挡。若行驶中挡位高于 4 挡，则控制系统不允许进入爬挡模式。

2.5 差速锁操作

在驶入坏路或不结实路面前，为防止后轮单个轮胎打滑，可以在短时间地使用差速锁。

接合差速锁时，车辆应静止或缓慢直行。

1. 只有在车辆直线行驶时，才能使用轮间差速锁！

2. 轮间差速锁啮合－ 4x2，6x2 车辆

♦松开油门踏板，减速至车辆停止或相当于人步行的速度，

♦按下轮差开关① ，

♦后桥轮间差速锁啮合，

♦轮间差速锁指示灯点亮，

♦小心踩油门踏板然后缓慢加速 。

差速锁的脱开

♦放开油门，踩下离合器，

♦将轮差开关①复位

- 当轮间差速锁脱开后，仪表板轮间差速指示灯熄灭。

3. 轮间差速锁－ 6x4 ，6x6 和 8x4 等车辆

♦**差速锁啮合的操作原则：**先接合轴间差速锁，再接合轮间差速锁。

- 接合轴间差速锁（具体操作见轴间差速锁的结合）

- 松开油门踏板，减速至车辆停止或相当于人步行的速度

- 按下轮差开关①

♦后桥轮间差速锁啮合。

♦轮间差速锁指示灯点亮。

♦小心踩油门踏板然后慢慢加速。

差速锁的脱开

♦放开油门，踩下离合器，

♦ 将轮差开关①复位，

♦ 当轮间差速锁脱开后，仪表板轮间差速指示灯熄灭。

4. 轴间差速锁

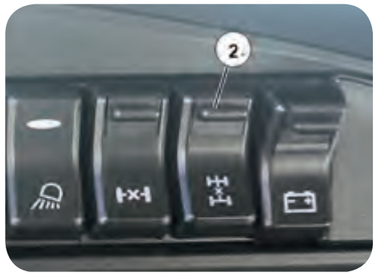
♦**轴间差速锁：**用来锁住第一和第二驱动桥间的轴间差速器。

轴间差速锁的啮合

♦松开油门踏板，减速至车辆停止或相当于人步行的速度，

♦按下轴间差速开关② ，

♦当轴间差速器接合后，仪表板轴间差速锁指示灯点亮。



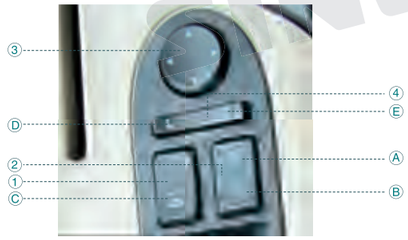
差速锁的脱开

♦放开油门，踩下离合器将轴间差速开关②复位，

♦当轴间差速锁脱开后，仪表板轴间差速指示灯熄灭。

2.6 左右后视镜的调整

♦后视镜的调整



♦检查后视镜的设置，并根据需要进行调整。

♦必要时清洁后视镜。

♦通过翘板开关②选择需要调整镜子的类型（后视镜和广角镜）。

♦通过翘板开关④选择左右侧的镜子。

♦后视镜控制按钮③可以进行前、后、左、右不同方位调整。

注意！

- 钥匙开关位于 ON 挡时，方可调整后视镜。
- 确保驾驶员座椅处于舒适的驾乘位置。
- 为了防止开关频繁的动作导致电机过热，控制系统对电机进行过热保护！后视镜电机在 5 秒内连续起动、停止操作 10 次后，在 3 分钟内，该后视镜不再响应任何操作命令。
- 在行车过程中不得调整后视镜。

2.7 取力器的操作

♦离合器控制取力器，在车辆静止或行驶时使用。

♦结合 / 脱开

- 取力器只能离合器分离状态下才允许结合或脱开，
- 脱开离合器必须在发动机怠速转速时完成，
- 在变速器副轴静止时才能结合取力器，否则取力器会有打齿现象。

♦ 停车

- 变速器挂入低挡区（1-4 挡）。
- 启用驻车制动器。

为了增加安全性，挂入一个相应的挡位：

- 车辆停在上坡：挂入前进挡！
- 车辆停在下坡：挂入倒挡！
- 负载车辆，为了确保安全，应附加车轮固定装置。

注意！

- 副轴停止转动所需时间可能随操作模式有所不同，可以通过短暂启用同步器来缩短时间，最好选用 1 挡。
- 结合或脱开取力器，结合取力器时不允许有打齿声，必要时请延长挂结合取力器前的等待时间，或者检查离合器是否能彻底分离。
- 缓慢结合离合器至正常运行转速。
- 取力器工作状态下不允许换挡。

2.8 自卸车货箱

举升操作：

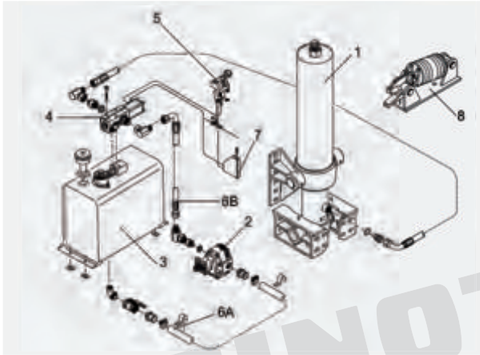
1. 打开后门锁
2. 启动发动机，等待 5 秒钟
3. 踩离合器
4. 接合取力器
5. 将气控阀置②于“上升”位置
6. 松开离合器
7. 当油缸达到最大行程（或限位阀起作用时），将气控阀置于“空档”。

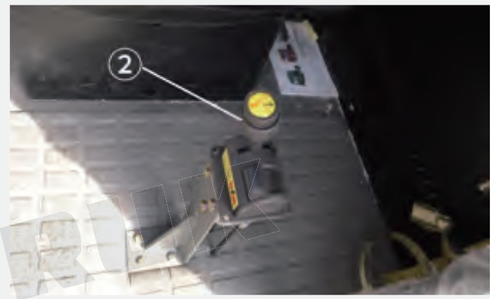
注意： 举升过程中，发动机最大转速不得超过 1750r/min，发动机转速过高，油泵供油不足，会引起油缸和油泵损坏。当接近最大举升角时，应逐渐减小发动机油门。

下降操作：

1. 液压举升阀和气控阀可以控制和调整厢体下降速度
2. 踩离合器等待 5 秒
3. 脱开取力器
4. 脱开档位
5. 将气控阀置于下降位置
6. 松开离合

注意： 厢体完全下落后等待大约 30 秒后，再将气控阀置于“空档”位置。在气控阀处于“下降”位置时，切勿开动车辆以免引起液压油全部从油缸中流回邮箱，从而造成液压系统中产生“气蚀”现象而损害系统部件。





2.9 排气制动操作

♦ 排气制动可使车辆持续减速或稳定车速。下长坡路况、会车或通过较差路段等可用排气制动提前减速。

♦ 驾驶员按下翘板开关①，当下述条件均满足时，车辆将实现发动机排气制动：

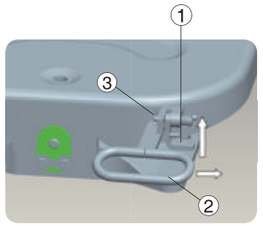
- 未踩下离合器
- 油门踏板松开
- 非空挡
- 发动机转速在 800rpm 以上

注意！

- 在潮湿、脏污或结冰的道路上慎用发动机排气制动，车辆有发生驱动打滑和滑移的危险！
- 下长坡时，应在变速器挡位上使用排气制动，空挡起不到制动作用。
- 排气制动是一种辅助制动装置，不是汽车停车装置，它不能替代汽车的行车制动系统，要使汽车完全停车仍应使用行车制动，即脚刹车。

2.10 鞍座

鞍座打开操作



♦如图示：向上旋转拉栓定位挡①到水平位置，同时向前旋转手柄②，将其四边形卡槽卡在鞍座板矩形槽前侧边。

挂上挂车后检查

♦确保拉栓定位挡①已经回位到图示状态，并且警示孔③在鞍座板外侧附近，此时鞍座锁合牢靠。

♦如果拉栓定位挡①未下落至锁定位置，或警示孔③离鞍座板外侧较远，应检查鞍座是否锁止。

连接半挂车

♦固定半挂车防止滑行。

♦将鞍座手柄①向上提起，使手柄进入上部长孔中再向外拉出，直至手柄杆上的定位槽卡住鞍座壳体，此时鞍座便处于准备耦合的张口状态。

♦倒车对接，当牵引销进入鞍座接口后，锁钩及锲座块便自动将牵引销锁住，完成对接，此时手柄也自动退回位，表示对接正确。

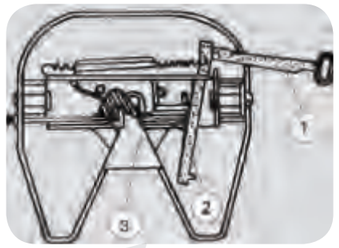
♦连接半挂车与牵引车之间的制动管路及电气接头。

- 连接压缩空气管路，注意行驶过程中管路、电线不能被拉紧、摩擦和缠绕。

♦首先连接控制管路接头（黄色），然后连接供气管路接头（红色）。

♦检查功能是否正常。

半挂车的脱开



1. 检查路况，防止半挂车滑行。

2. 支起半挂车支腿（注意路面负载能力），直至其承受鞍座上卸下的载荷，或使用空气悬架升高半挂车，支起半挂车支腿，然后降低半挂车，直至半挂车完全由支腿承载。

3. 半挂车或全挂车在脱开牵引车之前，应严格按顺序，先脱开制动供气管路接头（红色），然后再脱开制动控制管路（黄色），否则挂车制动会解除。

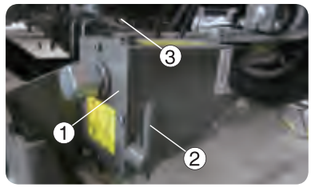
4. 将鞍座手柄①拉出，直至其定位槽卡住鞍座壳体，此时锲块②即与锁钩③脱开，向前开动牵引车，锁钩③转动，松开牵引销，完成脱开动作。

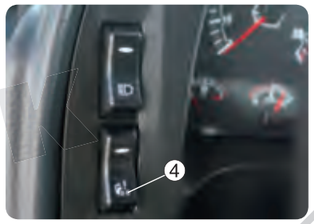
2.11 驾驶室电动举升

① 液压手动油泵　② 换向阀

③ 油塞　④ 驾驶室举升翘板开关

翻转前的准备





♦将车辆停在平坦的地面上，不影响其它车辆的通行。

♦使用驻车制动。

♦将变速杆置于空挡。

♦关闭发动机。

♦固定好驾驶室内的松动物体。

♦确保储物箱已清空。

♦打开驾驶室前面罩。

驾驶室翻转操作

♦按下翘板开关④（仅用于电动举升），并关好车门。

♦将液压手动油泵的换向阀②扳至驾驶室翻转位置，用撬棒摇动油泵①（或按下开关⑤ / 仅用于电动举升）进行翻转操作。

驾驶室回位

♦将液压手动油泵的换向阀扳至驾驶室回落位置，摇动手摇泵（或按下开关⑤ / 仅用于电动举升）使驾驶室翻回。

♦驾驶室落下时，与上进气道连接的橡胶波纹管应与下进气道紧密贴合到位，防止进入灰尘。

♦关闭驾驶室内翘板开关④（仅用于电动举升）。

♦关闭驾驶室前面罩。

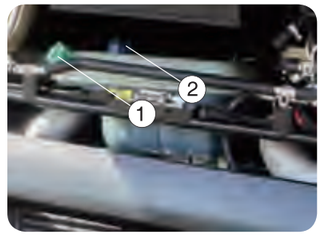
♦最后，检查仪表板上的锁止信号灯，若驾驶室未锁住，锁止信号灯即点亮。

3. 检查介绍

3.1 冷却系统：每天检查

♦车辆停放在水平路面上，开启前面罩。

♦观察膨胀水箱的液面 , 冷却液液面高度应位于膨胀水箱侧面高低位标识之间。



加注冷却液（必要时）

①加液盖 ②限压阀盖

♦逆时针方向缓慢拧开加液盖，释放冷却系统压力，取下加液盖。

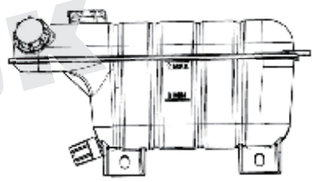
♦将暖风温度调节按钮开关转到最大暖风位置。

♦将冷却液（冷却液型号请见发动机保养部分）加注至 MAX 处。

♦盖上加液盖，将其拧紧。

♦起动发动机怠速运行 4 分钟。

♦检查冷却液位，必要时再补充冷却液。



3.2 发动机机油：每天检查

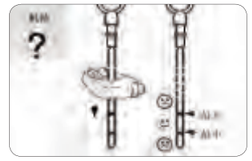
起动发动机前，每天检查。

发动机机油

♦汽车停放在水平路面上，关闭发动机 20 分钟后方可检查机油液位。

♦打开前面罩，拔出机油尺① , 用干净的无绒布擦拭机油尺，将机油尺插回机油尺管内，再次拔出机油尺。

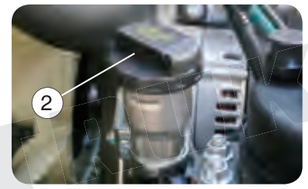
♦机油液面应在油尺的最大和最小标记之间，不得低于最小刻度。多次检查确定机油液位偏低时应加注机油。



注意！ - 切勿加注机油超过最大刻度。加注过多的机油会损坏柴油机！

加注发动机机油

1. 关闭钥匙开关
2. 翻转驾驶室
3. 拧开加油口盖②
4. 加注机油
5. 拧紧加油口盖②



3.3 空气干燥器：每月检查

♦每月检查一次空气干燥器是否工作正常及有效（或根据当地气候条件、车辆使用和行车状况进行更频繁的检查）。打开贮气筒的放水阀即可检。

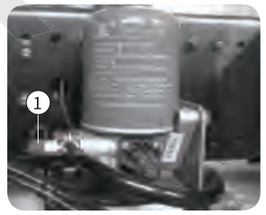
注意！
- 操作放水阀时，注意保护好眼睛和手。
- 注意检查排除制动系贮气筒中的水分。

♦汽车停止，侧向拉动贮气筒下部的手动放水阀拉环①即可排除凝聚在贮气筒中的水份。

♦建议每天检查距离空气干燥器最远的贮气筒，如果放水阀处有油水混合物排出，说明空气干燥器失效，应立即更换空气干燥器上部的干燥罐。

♦空气干燥器上部的干燥罐至少每 2 年更换一次（推荐入冬之前更换）。

轮胎充气



♦可以通过安装在空气干燥器（或贮气筒）上的充气接头对轮胎充气，步骤如下：

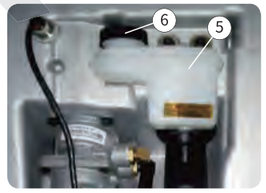
1. 取下充气接头的防尘帽①。
2. 轮胎充气软管一端连接轮胎的气门嘴。
3. 将轮胎充气软管另一端拧在空气干燥器上的充气接头上。
4. 加速运转发动机。
5. 检查轮胎压力，按需调整。

辅助用气模块

♦辅助用气模块安装于车架处（一般位于纵梁内侧），拧开图示②处或任一堵塞，配上快插接头即可取气。

3.4 离合器： 每月检查

检查制动液液面高度



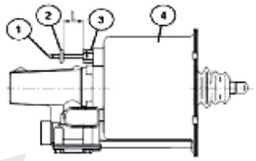
♦车辆应停放在水平路面上，打开驾驶室前面罩，检查离合器储油罐⑤中的制动液液面高度，液面应在 MAX 和 MIN 标记之间。

♦如有必要，拧下储油罐盖⑥，添加 DOT3/DOT4 制动液。

注意！

- 若油罐中的油面下降到 MIN 标记以下时，离合器操纵装置将不能正常工作。

检查离合器系统管路



♦检查离合器系统管路是否有漏气漏液情况。

检查磨损指示器

♦检查磨损指示器②，判断离合器从动盘是否需要更换。

♦离合器磨损指示器位于离合器助力缸④阀体上方，通过观察指示片②位置可了解离合器从动盘是否磨损到极限，以便及时更换从动盘。离合器磨损指示器用于匹配拉式离合器的车型。

♦随着离合器从动盘磨损，测量杆座③与指示片②间隙 L 会逐渐变大。HW12706T、HW12710C 变速器， 当 L=20mm 时，需更换从动盘；其它变速器，当 L=23mm 时， 需更换从动盘。

♦初次安装离合器助力缸④或更换离合器从动盘后，需将指示片②沿测量杆①推到与测量杆座③接触，即初始化。车辆正常使用中不要移动指示片②。

3.5 油浴式空气滤清器

注意！

- 车辆投入运营前应加注机油，机油型号应与发动机机油相同！
- 加注机油时，油深不得超过 30mm 或加油量 5L, 不得过量！
- 当晃动底壳，机油不易流动时，需清洗滤芯、更换机油。

拆卸、检查、清洗步骤

3.6 其他注意事项

♦当车辆下坡时，不要空挡滑行，在采取制动时尽可能同时排气制动减速，在车辆重载时也可以打开排气门制动辅助车辆减速。

♦当长时间停车时，关闭发动机同时为避免事故，应关闭主电源开关并采用驻车制动。

♦禁止未经授权的修改和安装各种设备，特别是电子、刹车、转向和其他相关安全的系统，否则它可能影响车辆的寿命和安全性能，导致事故、火灾、损坏车辆，我们公司将不负责后果。严格禁止拆卸或更换发动机 ECU，否则车辆可能损坏。

♦翻转驾驶室前应打开前面罩。

♦当在车辆内或车辆附近进行焊接工作时，需切断主电源开关并拔下电器元件（BCU、仪表、发动机 ECU、ABS 控制单元）插接件。

♦禁止用水冲洗发动机，因为会导致发动机电器系统短路并损坏 ECU。

♦冷却系用的是防冻和防锈的冷却液，不允许不同牌号的冷却液混用。如更换不同牌号冷却液，需彻底清洗发动机冷却系统部件。

♦应及时放掉凝聚在储气筒中的水分，防止结冰。并注意检查空气干燥器的工作情况。正常情况下，干燥器中的干燥剂使用寿命为两年。若发现储气筒中有水污排出时，说明干燥剂已经失效，应立即更换干燥剂。

♦每三个月检查蓄电池电解液的液面和比重。液面应高于极板 10 — 15mm，比重在 1.24g/cm^3 以上。若较长时间不使用车辆，且气温又较低时，最好将蓄电池取下并放入较温暖的室内。车辆每行驶 5000km，应检查蓄电池电极桩与导线连接夹子是否松动以及蓄电池工况是否正常。

♦保持好的驾驶习惯，避免长时间或突然制动车辆，否则会影响车辆的使用寿命和燃油经济性。