



HOWO-T7H SERIES VEHICLE DRIVER'S MANUAL

English version: Page 01-24

中文版：第 25-50 页

TABLE OF CONTENTS

1

Introduction

- 1.1 Cabin Interior Overview.....01
- 1.2 Instrument Panel.....02
- 1.3 Detection Lamps And Alarm Lamps.....03
- 1.4 Rocker Switches And Buttons.....04

2

Operating Introduction

- 2.1 Engine Start.....06
- 2.2 Air Condition System.....07
- 2.3 Towing Preparation(Traction).....08
- 2.4 Transmission.....09
- 2.5 Engage Differential Lock.....14
- 2.6 Adjustment of left and right rear-view mirrors.....15
- 2.7 Adjustment of cruise control and exhaust brake.....15
- 2.8 Cabin overturn system.....16
- 2.9 Power Take-off.....17
- 2.10 Fifth Wheel.....17
- 2.11 Dump Truck Cargo Box.....19

3

Inspection Introduction

- 3.1 Cooling system.....20
- 3.2 Engine oil.....21
- 3.3 Air Dryer.....21
- 3.4 Clutch System.....22
- 3.5 Oil bath air filter.....23
- 3.6 Other Notes.....24

1. INTRODUCTION

1.1 CABIN INTERIOR OVERVIEW



1	door control
2	air vent
3	dashboard
4	rocker switch
5	A/C control panel
6	intelligent system / MP5 player
7	24V cigarette lighter
8	24V power socket

9	ashtray
10	transmission joystick
11	diagnostic interface
12	combination switch
13	horn switch
14	steering wheel
15	MCS knob
16	door lock

1.2 INSTRUMENT PANEL



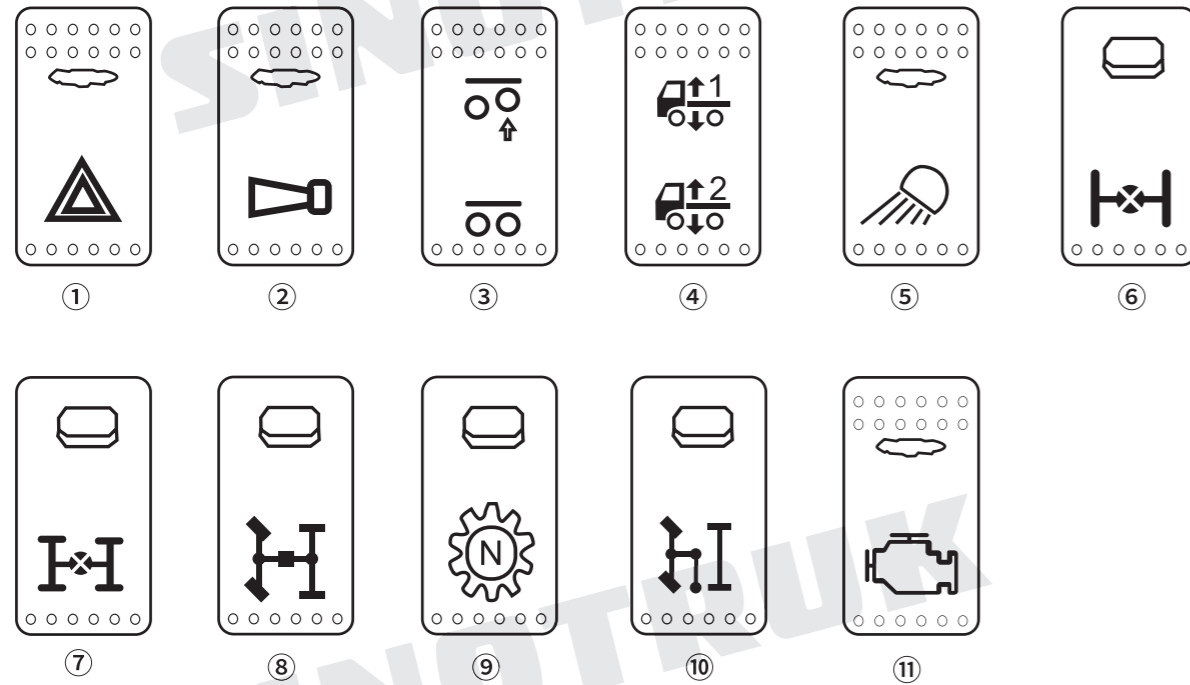
1	Detection and alarm light panel
2	barometer
3	driver display screen
4	fuel gauge/gas gauge
5	speedometer

6	button 1
7	turning indicator
8	water temperature gauge
9	voltmeter
10	button 2
11	engine tachometer

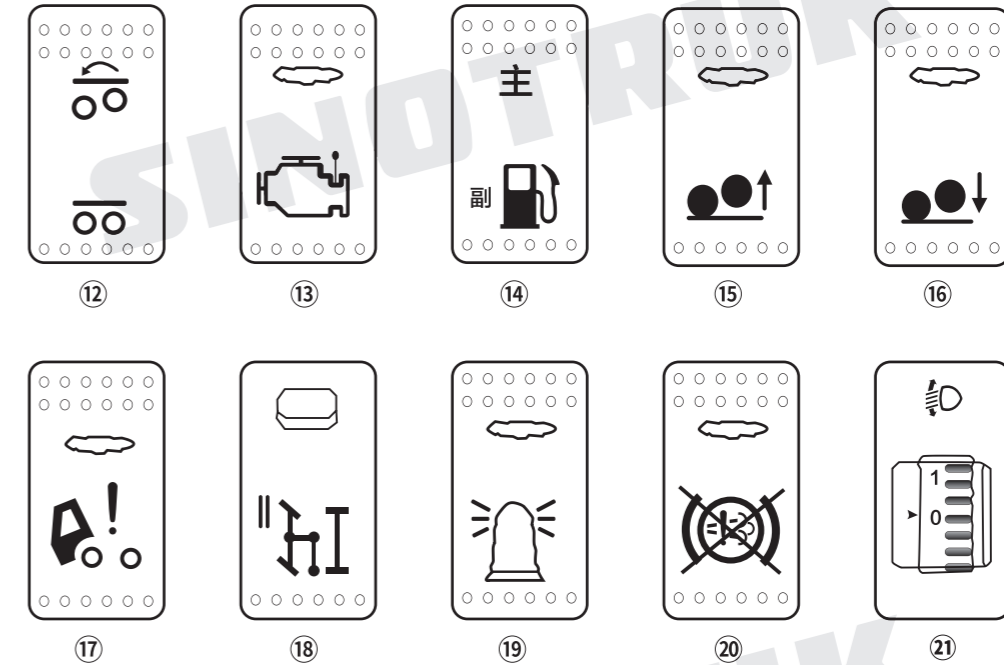
1.3 DETECTION LAMPS AND ALARM LAMPS

编号	描述	符号	颜色	编号	描述	符号	颜色
1	Seat belt indicator		red	19	Cab lock indicator		red
2	Power takeoff 1 indicator		red,yellow	20	Brake system fault indicator		red
3	ECAS fault warning lamp		red	21	Parking brake indicator		red
4	Trailer left turn indicator		green	22	Engine fault indicator		red,yellow
5	Exhaust exceeding alarm indicator		yellow	23	ABS fault indicator		yellow
6	Power takeoff 2 indicator		red,yellow	24	Vehicle overspeed indicator		yellow
7	Retarder alarm indicator		red,yellow	25	Rear fog lamp		yellow
8	Engine oil pressure indicator		red,yellow	26	Low beam lamp		green
9	ASR working indicator		yellow	27	High beam lamp		green
10	Cruise indicator		green	28	Front fog lamp		green
11	Position lamp		green	29	Daytime running lights		green
12	Lift axle indicator		green	30	Low gear indicator		green
13	Brake circuit 1		green	31	Trailer ABS indicator		yellow
14	Brake circuit 2		green	32	Low coolant level indicator		red
15	Left turn indicator in tractor vehicle		green	33	Low urea level indicator		yellow
16	Light turn indicator in tractor vehicle		green	34	High coolant temperature indicator		red
17	Low fuel level		yellow	35	Battery low (high) voltage alarm indicator		red
	Low LNG level		yellow	36	Engine overspeed indicator		red
	Low CNG level		yellow	37	Emergency parking indicator	STOP	red
18	Trailer right turn indicator		green	38	Central warning light		red,yellow

1.4 ROCKER SWITCHES AND BUTTONS



- ① **Emergency alarm switch:** press the switch, all turning lights will flash, and the turning light indicator on the instrument will flash at the same time.
- ② **Horn change-over switch:** after pressing the switch, press the horn button on the steering wheel, and the air horn will hoot.
- ③ **Middle / rear axle lifting airbag control switch:** Normally, it stays in the original position. Press it upward to automatically and continuously inflate to the highest position; Press down to automatically deflate to the lowest position, and do not let the switch stay in the middle.
- ④ **three height selection switch:** it is normal height when the switch is not operated. When it is placed in height 1, the frame increases by 25mm, and when it is placed in height 2, the frame decreases by 25mm.
- ⑤ **working light switch:** press the switch to turn on the working light behind the cab.
- ⑥ **wheel differential switch:** press the switch to connect the differential lock between wheels.
- ⑦ **axle differential switch:** press the switch to connect the differential lock between axles.
- ⑧ **all wheel drive switch:** press the switch to connect the front drive axle.
- ⑨ **Neutral switch of power takeoff:** To start the power takeoff of HW13710 / HW12710 transmission, it needs to press the neutral switch and power takeoff switch at the same time.
- ⑩ **power takeoff switch:** press the switch and the power takeoff is combined.
- ⑪ **engine diagnostic switch:** press the switch to read the flashing code of engine fault indicator on the instrument, and then look up the fault flashing code table to obtain the current faults of engine system.



- ⑫ **three mode selector switch:** when the switch is at 0 position, the ECAS control mode is proportional control. Press the lower part of the switch to activate the optimum traction mode. At this time, the load of the support axle (lifting axle) is transferred to the drive axle to make the drive axle load reach the standard load, so as to improve the driving force of the vehicle;
- Press the upper part of the switch (self reset), activate the drive help mode, and transfer the lifting axle load to the drive axle until the drive axle reaches the maximum load, so as to maximize the vehicle driving force. When the vehicle speed is not less than 30km / h, the drive help mode will automatically close and return to the proportional control mode; When the vehicle speed is less than 30km / h, after activating the drive help mode, long press the upper part of the switch for more than 5 seconds or turn off the main power switch to manually turn off the drive help mode. The optimum traction mode is not limited by vehicle speed.
- ⑬ **engine power take-off switch:** when the switch is pressed, the engine speed can be adjusted by the PTO knob. The accelerator pedal will not function at this time.
- ⑭ **main and auxiliary fuel tank change-over switch:** for vehicles equipped with two fuel tanks, press the main and auxiliary fuel tank change-over switch, and the fuel gauge displays the fuel volume of the auxiliary fuel tank.
- ⑮ **support shaft up switch:** press the switch to raise the support shaft.
- ⑯ **support shaft lowering switch:** press the switch to lower the support shaft.
- ⑰ **cab lifting switch:** press the switch, put the lifting oil pump in the rising or falling state, and press the lifting button outside the cab to realize the electric lifting or lowering of the cab.
- ⑱ **second power take-off switch:** when the transmission is equipped with a second power take-off, press the second power take-off switch and the second power take-off works.
- ⑲ **warning light switch:** press the switch to turn on the warning light on the top of the cab.
- ⑳ **exhaust brake linkage cut-off switch:** press the switch to cut off the exhaust brake linkage. Press this switch when the road is wet and slippery in rainy and snowy weather.
- ㉑ **headlamp beam adjustment knob:** the headlamp beam irradiation position can be adjusted manually according to the vehicle loading. It is divided into four gears, and the beam height decreases step by step from gear 0 to gear 3.

2. OPERATING INTRODUCTION

2.1 ENGINE START/STOP PROCEDURES

◆ At the first start, reset the key switch to position 2 to restart if the engine is stalled. Every start time shall not be more than 15s, the interval between two starts should not be less than 30s.

◆ It is not allowed for cold engine to run at high speed. Stop the engine immediately and carry out maintenance service if the oil pressure is low.

◆ Engine should keep idling speed for 3-5 minutes when being started. Load can be added after the oil pressure and oil temperature is normal (especially in cold days). Otherwise, the supercharger bearings and seal rings will be worn out due to lack of oil.

◆ Engine should run in idle speed for 3-5 minutes before the ignition is switched off. The engine can be stalled after the speed of turbocharger is reduced. Driver should be especially careful not to depress the throttle before stalling the engine. Hitting throttle will accelerate engine speed and the turbocharger will be in high speeding status. Once the engine is stalled, the oil pump stops supplying oil immediately, and the turbocharger impeller continues to run at high speed due to inertia. This action will cause the impeller shaft, bearings and seal rings to burn due to lack of oil.

◆ 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.

◆ 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, it will not only damage the electronic control unit, line pencil and electrical components of the whole vehicle in the hardware, but also make the system data lost.

◆ When the fault is very serious, the serious fault alarm indicator "STOP" lights up, and the buzzer will keep alarming when the engine is working. At this time, just slow down, park well in a safe place, stop and check it immediately. The truck is only allowed to move forward after troubleshooting! Otherwise, it may cause loss of life and property.



2.2 AIR CONDITION SYSTEM



WARNING !

- The refrigerant type is R134a and the filling amount is $775 \pm 25g$.
- Refrigerant and its volatile vapor are harmful to human health!
- In case of lubricating oil loss in the system, the lubricating oil specified by the compressor manufacturer shall be supplemented appropriately.
- The maintenance of air conditioning system and refrigerant filling shall be carried out by professional maintenance personnel.
- It is forbidden to flush the front wall of the cab when the air conditioning system is in the external circulation state.
- The air conditioner shall be operated once or twice a month to ensure reliable sealing and lubrication of the compressor.

Control panel

- ① Display screen ② Air volume adjusting key ③ Defrosting ④ Intake mode
- ⑤ OFF ⑥ AUTO ⑦ Air blowing mode ⑧ A/C Power button ⑨ Temperature setting

Display descriptions

- ⑩ Air volume mark ⑪ Air intake mark ⑫ Air blowing mark
- ⑬ Temperature setting and environment temperature ⑭ Air blower operation mark
- ⑮ A/C mark



◆ Adjustment range of temperature setting key: "LO", $18^{\circ}\text{C} \sim 29^{\circ}\text{C}$, "HI".

◆ If you want the vehicle to be cooler, it can be set in "LO", otherwise, it can be set in "HI".

◆ In general, the most suitable range is $22^{\circ}\text{C} \sim 26^{\circ}\text{C}$. The system can automatically adjust the air volume according to the set temperature, and it can be set separately. The air volume will be adjusted slowly.

Notes

◆ Please maintain the A/C system regularly.

◆ When the panel is dirty, use soft dry gently cloth to wipe the surface of the panel. Do not use wet cloth with water or dry hard object, it is easy to damage the panel surface, button and display screen.

◆ Do not touch the display screen with finger, oily or dry and hard objects; otherwise the screen will be damaged and show unclear display or incomplete stroke segment. If the failure of system is confirmed, please go to Sinotruk service station for professional maintenance.

2.3 TOWING PREPARATION (Traction)

The Propeller Shaft shall be disconnected before towing.



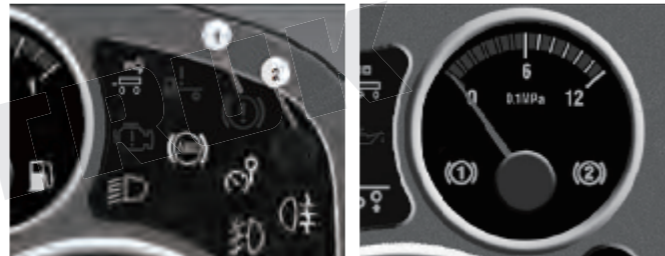
WARNING !

- The steering system will be damaged if the static truck is steered without hydraulic power assisted!
- The truck could be steered without hydraulic power assisted only under running state.
- When the engine stopped, due to the failure of hydraulic assist, it need more force to the steering wheel, so the towing vehicle should be slowly.
- If the air pressure of brake system is insufficient and the spring brake is activated, external compressed air can be introduced (At least 0.55MPa) or release by mechanical means. After that , the brake system of the vehicle will be disabled.

Energy storage spring brake chamber – emergency release

◆ When the air pressure of parking brake circuit is lower than 0.55Mpa and the air pressure that acts on the cylinder diaphragm is smaller than the spring force, the spring brake will take effect. The signal of "STOP", the fault lamp ① of brake system and the parking brake lamp ② will light up simultaneously.

◆ In case of emergency, or at the service station, the energy storage chamber of the spring brake could be released by pneumatic or mechanical means.



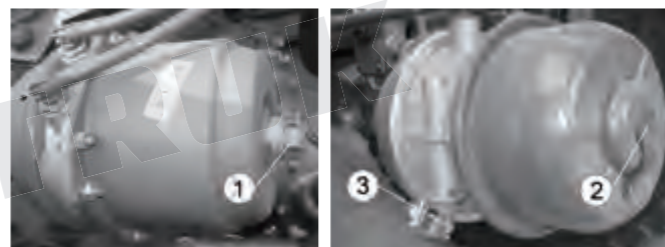
WARNING !

- Before releasing the energy storage spring brake chamber,make sure the truck could not be moved automatically!
- The Spring energy storage brake chamber can be temporarily released in emergency situation and maintance in service statation.
- After emergency release of the spring energy storage chamber, because the lack of air pressure of circuit I and circuit II is not enough to ensure effective braking, the vehicle will cause accidents.
- The truck should not be operated before all failure warnings disappear from the dash board.

Energy storage chamber-mechanical emergency release

◆ Diaphragm spring brake chamber: When the air pipeline which connect the brake air chamber leaks, it will cause the vehicle to brake. screwout the bolt ① to the releasing position, the brake will be released.

◆ Dual-diaphragm spring brake chamber: Open the rear cover ② of dual-diaphragm spring brake chamber and screwout the bolt ③ by hands after inserting into rear cover, then the parking brake will be released.



2.4 TRANSMISSION

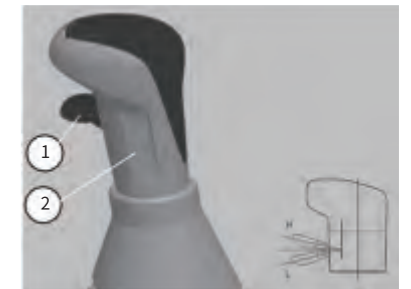
2.4.1 SINOTRUK MANUAL GEARBOX

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

∅ 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.

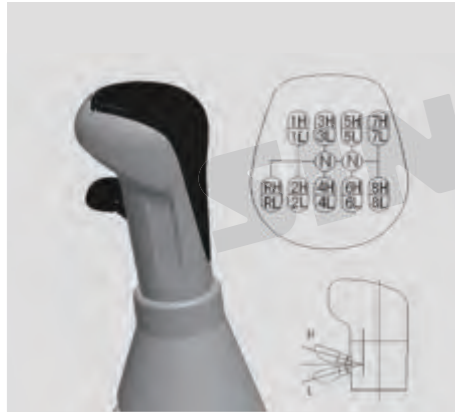


Shift between high gear and low gear

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.



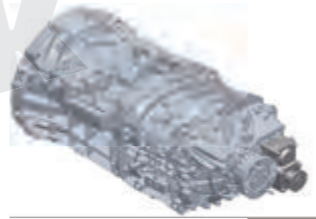
12 gears transmission: When the transmission is shifted from the low zone to the high zone (and vice versa), firstly the switch valve should be placed in the H (L) position and Depress the clutch pedal to the end. Then shift to neutral gear, consciously wait for a while and then shift to 7 gear (6 gear). 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.

2.4.2 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

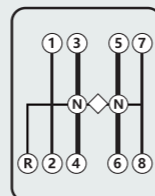
- synchronizer transmissions.
- For double H-shift, there is a spring-return neutral position (idle) in the 3/4 gear range (low) and 5/6 gear range (high).

Split gear, in the front of the transmission

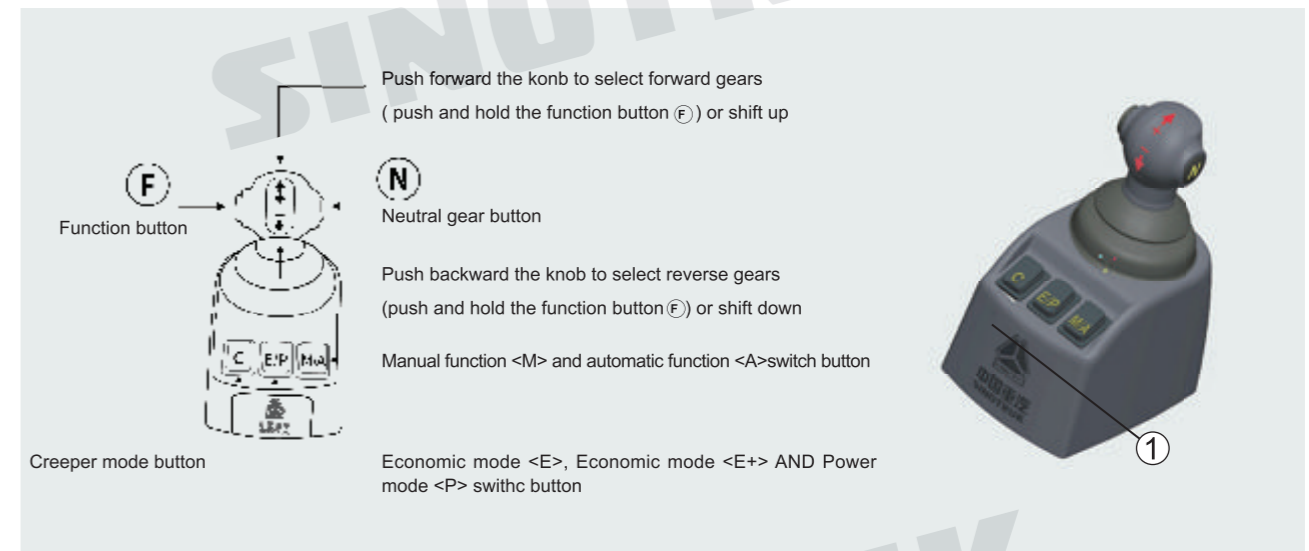
- synchronizer transmissions.
- Pneumatically shift by operating the preselector valve on the shift handle and then operate the clutch.

◆ Transmission gear diagram

◇ Automatic switching R Reverse N Neutral
1 ~ 4 Low gear 5 ~ 8 High gear



2.4.3 SINOTRUK Second generation AMT Driving function and mode



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

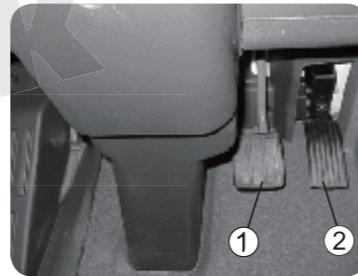
- ◆ The driver can realize switching between manual and automatic by button ① on the handle.
- ◆ The display screen on instrument panel displays the current working mode of transmission at real time.
- ◆ The default operation mode of system is automatic mode. The driver can finish switching of A/M pattern during starting and travelling.

Vehicle starting

- ◆ Select the appropriate starting gear position (The control system has the limitation of the highest starting position. If the highest starting gear of HW20716A(C) L is 8, it is recommended to start at gear 1~4)
- ◆ Slightly step on the accelerator pedal ① and the vehicle will start.
- ◆ Release parking brake.
 - When it is required to start under medium-idle mode, please keep at current neutral gear, press ② (C button) and switch to starting gear; then step on the pedal, release the parking brake and start travelling. The vehicle can only travel at 1-4 gears under this mode. If mode C is not required, please press ② to exit.
 - When you need to start in high idle mode, keep the current gear position at neutral gear, and then press ② (C key) for more than 5s to enter high rotate speed start mode. The buzzer will continue to ring and the crawling indicator lamp on the instrument panel will flicker. Then engage the starting gear, step on the accelerator pedal to the end, and then drive. If the mode is exited, press C key again, or switch the Gear position to the gear other than gear 1, neutral gear, R1, or the vehicle speed is greater than 5km/h after the start.

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, the brake pedal is released.
- ◆ 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.



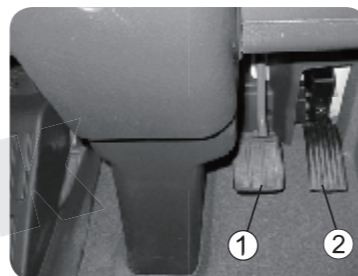
Automatic mode operation

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. In the process of driving, AMT will automatically shift up/down according to the current engine rotate speed and other information.

Acceleration

- ◆ To maximize vehicle acceleration, follow the following steps:
 - Switch to mode P;
 - Floor the accelerator pedal ②;
 - The control system will maintain the current gear position or select a lower gear position to operate;
 - The vehicle 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 travelling 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 environment of the vehicle meets the gear shifting requirements, the handle operation in automatic mode can realize the gear shifting, but the running mode will not be switched to manual mode.



Manual mode operation

- ◆ Any gear shifting action in manual mode is operated by the driver, and the clutch is automatically controlled by the system.
- ◆ Gear shifting cannot be realized unless the vehicle travelling environment 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 flashing.

Shift down

- ◆ 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 flashing.

2.5 ENGAGE DIFFERENTIAL LOCK

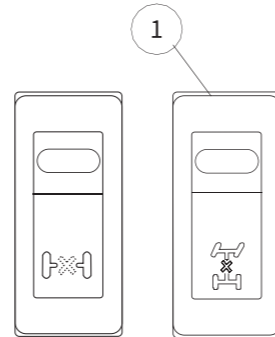
◆ **Operation principle of the engagement of differential lock:** Firstly engage the inter-axle differential lock and then engage the inter-wheel differential lock.

Inter-axle differential lock

◆ **Inter-axle differential lock:** Used for locking the first and second drive axles.

◆ **Engagement of inter-axle differential lock**

1. Release the throttle pedal (deceleration).
2. Push the lower part of inter-axle differential lock switch ①, When the inter-axle differential lock engages, the inter-axle differential lock indicator lamp of instrument panel will be on.



◆ **Disengage the differential lock**

1. Release the throttle pedal and depress the clutch pedal.
2. Press the upper part of the inter-axle differential switch ①, after the inter-axle differential lock is released, the inter-axle differential indicator on the dashboard will be off.



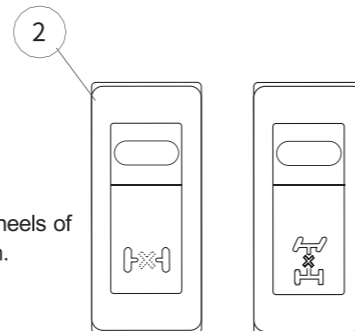
WARNING !

- The differential lock can only be engaged when the vehicle is stopped or when driving straight at a low speed (equivalent to a walking speed).
- When the inter-axle differential lock indicator is on, the vehicle can not turn left or right and drive at high speed.

Differential lock between wheels

◆ **Engagement of differential lock between wheels:**

1. Engage the differential lock between shafts.
2. Release the accelerator pedal (decelerate).
3. Press the lower part of the wheel difference switch ②, the differential lock between the wheels of the rear axle is engaged, and the indicator light of the differential lock between the wheels is on.
4. Carefully step on the accelerator pedal and accelerate slowly.



◆ **Disengage the differential lock**

1. Release the accelerator pedal and depress the clutch pedal.
2. Press the upper part of the wheel difference switch ②, when the inter-wheel differential lock is released, the inter-wheel differential indicator on the dashboard will be off.



WARNING !

- The differential lock can only be engaged when the vehicle is stopped or when driving straight at a low speed (equivalent to a walking speed).
- When differential lock between wheels indicator is on, the vehicle can not turn left or right and drive at high speed.

2.6 ADJUSTMENT OF LEFT AND RIGHT REAR-VIEW MIRRORS



WARNING !

- The rear-view mirror can be adjusted only when the key switch is on.
- Ensure that the driver's seat is in a comfortable driving position.
- In order to prevent the motor from overheating due to the frequent action of the switch, the control system protects the motor from overheating.
- Do not adjust the rear-view mirror while driving.

◆ Check the setting of the rear-view mirror, adjust it as necessary, and clean it if necessary.

Rear-view mirror control switch

◆ The rear-view mirror control knob ① is located on the plane of the driver's door switch panel and can be rotated for 5 gears.

- A left wide-angle mirror gear B left rear-view mirror gear C rear-view mirror defrosting gear
D right rear-view mirror gear E right wide-angle mirror gear



◆ Select the rear-view mirror (wide-angle mirror) or rear-view mirror defrost to be controlled through the above five gears.

◆ During adjustment, mark F on knob ① shall be aligned with the adjusted gear.

2.7 ADJUSTMENT OF CRUISE CONTROL AND EXHAUST BRAKE

Right combination switch

The right combination switch is located on the right side of the steering column and includes five function switches:

- Set plus button (RES / +) ① : press to increase vehicle speed or engine speed.
- Set minus button (SET / -) ② : press to reduce the vehicle speed or engine speed.
- Recovery gear (MEM): move the handle forward to recover the previously stored vehicle speed or engine speed.
- Off: back shift the handle.
- Exhaust brake switch: press down the handle to start the exhaust brake.



Setting of cruise control:

- ◆ The driver can set the cruise control speed by pressing the setting keys (RES / +, SET / -) at the end of the handle to make the vehicle enter the cruise mode; When the driver releases the accelerator pedal, the vehicle will drive at the set cruise speed. During cruise, the driver can change the cruise target speed by pressing the set plus button (RES / +) ① or the set minus button (SET / -) ②.
- ◆ When any of the above conditions is not met or the driver turns the handle back to cancel (OFF), the cruise mode will exit automatically.
- ◆ When the conditions are met again, the driver can turn the handle forward to resume gear (MEM) to re-enter the cruise state, and the cruise target speed is the cruise speed set last time.

Conditions for cruise control:

- ◆ The cruise control function enables the vehicle to drive at a constant speed without the driver stepping on the accelerator. This function shall meet the following conditions at the same time:
 - The vehicle speed is over 30km / h;
 - The engine is not in external torque control mode;
 - The transmission is in a non neutral state;
 - The clutch pedal is not stepped;
 - The brake pedal is not stepped.

Exhaust brake:

- ◆ Move the right combination switch handle downward. When the following conditions are met, the vehicle will realize exhaust brake:
 - The accelerator pedal is not stepped;
 - The engine speed is above 800rpm.

2.8 CABIN OVERTURN SYSTEM



◆ Cab manual / electric overturn lifting system

- ① Hydraulic manual oil pump
- ② Reversing lever
- ③ Oil plug
- ④ Crowbar
- ⑤ Electric switch
- ⑥ Conversion tool
- ⑦ Cab lift rocker switch

◆ Preparation before overturn

- Park the vehicle on a flat and solid ground without affecting the passage of other vehicles.
- Apply the parking brake.
- Place the shift lever in neutral.
- Turn off the engine.
- Fix loose objects in the cab.
- Make sure the storage bin is empty.
- Close the driver's door.


WARNING !

- The reversing lever ② can be pulled only when the cab is overturned; In other cases (including driving, oil filling, etc.), keep the reversing lever pointing to the "↓" position.
- To ensure safety, there shall be no obstacles in the turnover area in front of the cab.
- When the cab is overturned, personnel shall not enter between the cab and the chassis.
- The cab shall be turned in place before any operation.
- The continuous operation of the electric pump shall not exceed three times (which will cause the motor to overheat and stop working).
- Since the oil cylinder has the characteristic of automatic falling back at the falling end point, when the locking pin is 40 ~ 150mm away from the locking hook, the cab will fall back automatically.

- ◆ When the cab falls, the rubber bellows ⑨ shall closely fit with the lower air inlet to prevent dust from entering,
- ◆ Finally, check the instrument panel locking signal lamp. If the cab is not locked correctly, the locking signal lamp will be on.
- ◆ Close the rocker switch ⑦ in the cab (only for electric lifting).
- ◆ Close the front cover.

2.9 POWER TAKE-OFF


WARNING !

- Power take-off can only be used in low gear section.

Engagement of the Power take-off

- ◆ Depress the clutch pedal, press the power take-off switch ①, combined with the power take-off, the indicator light ② on the instrument panel will light up, put in the low gear, and release the clutch pedal.

Disengagement of the Power take-off

- ◆ Depress the clutch pedal and reset the power take-off switch ①, After about 3s, release the clutch pedal to disconnect the power take-off. At the same time, the indicator light ② on the dashboard will go off.



2.10 FIFTH WHEEL

Semitrailer connection

1. Secure the semi-trailer to prevent it from sliding.
2. Lift the saddle handle ① upwards, make the handle enter the upper long hole and then pull it out until the positioning groove on the handle bar catches the saddle shell, at this time the saddle is in an open state ready to be combined.
3. Reversing docking, when the towing pin enters the saddle interface, the lock hook and wedge block will automatically lock the towing pin to complete the docking. At this time, the handle should automatically return to the position to achieve correct docking position.


WARNING !

- Please be sure to check whether the lock handle is correctly locked after semitrailer is connected to the tractor.

Brake and electrical connections

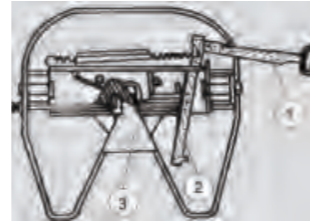
◆ Brake pipeline connection steps:

1. Connect the compressed air pipeline, pay attention to the pipeline that it can not be tightened, rubbed and twisted.
2. Firstly connect the brake control line connector (yellow) and then connect the brake air supply line connector (red).
3. Check its function.
4. Raise the outriggers of the semi-trailer to the driving position.



Semitrailer disconnection

1. Check the road conditions to prevent the semi-trailer from sliding.
2. Erect the semi-trailer outrigger (pay attention to the road load capacity) until it bears the load removed from the saddle, or raise the semi-trailer with air suspension, erect the semi-trailer outrigger, and then lower the semi-trailer until the semi-trailer is completely carried by the outrigger.
3. Before disengaging the tractor, the semi-trailer or full-trailer should strictly follow the sequence and disengage the brake air supply connector firstly (red) and then disconnect the brake control pipe (yellow), otherwise the trailer brake will be released.
4. Pull out the saddle handle ① until its positioning slot is stuck on the saddle shell, at this time the wedge block ② is disengaged from the lock hook ③. Drive the tractor forward, turn the lock hook ③, release the traction pin, and complete the disengagement action.



WARNING !

- If the trailer is not connected for a long time, the saddle handle ① should be reset.
- Be sure to disconnect the brake connectors in the correct order. Otherwise, the semi-trailer will release the brake which may cause the vehicle slip.
- After disconnecting, use the connector cover to protect the connector from contamination.

Fifth wheel opening

◆ **As shown in the Figure:** Rotate the pull bolt stop ① to the horizontal position, and at the same time push the handle ② forward, and lock the quadrilateral slot on the front side of the rectangular slot of the saddle board.

Inspection after the coupling of trailer

1. Make sure that the locking bolt ① has returned to the state shown in the figure, and the warning hole ③ is located near the outer side of the saddle plate, at this time the saddle is locked firmly.
2. If the bolt stop ① does not fall to the locked position, or the warning hole ③ is far from the outside of the saddle plate, check whether the saddle is locked in place.



WARNING !

- Always operate as the requirements above.

Maintenance of the Fifth wheel

◆ Before joining the tractor and semi-trailer, be sure to clean the upper surface of the traction seat and the lubricating oil groove ①, and make sure to fill the oil groove ① with heavy-duty grease (such as 2# lithium-based grease) and evenly coat the upper surface of the traction seat.

◆ Every 5000km, remove the grease on the upper surface of the traction seat and the lock jaw ③ and the wearing ring ②. After cleaning, use new heavy-duty grease to evenly coat the upper surface of the traction seat and the lock jaw ③, wearing ring ② and the mating surface of the traction pin.

◆ Every 5000km, adjust and check the following points.

◆ In order to compensate for the wear of the traction pin and the lock jaw ③ and prevent the locking bar from being too tight when combined so that the handle cannot be pulled out. When the tractor is combined with a semi-trailer, unscrew the adjusting bolt ⑤, and then screw it in clockwise until the adjusting bolt ⑤ is in contact with the locking bar ④, then turn the adjusting bolt ⑤ out of the counterclockwise half a turn, and then tighten the adjusting bolt on the nut.



2.11 DUMP TRUCK CARGO BOX

Lifting operation :

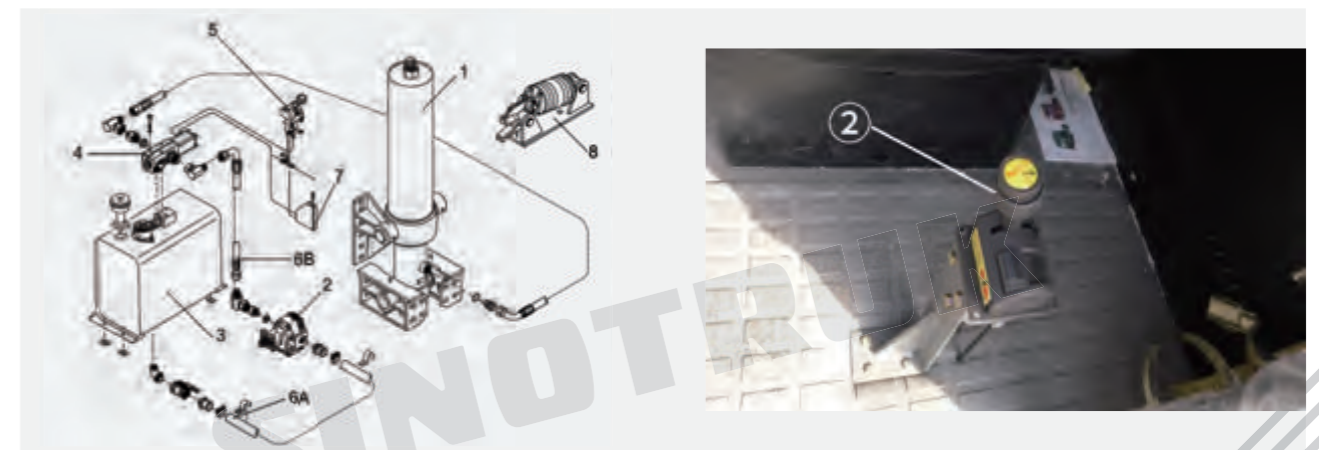
1. Open the rear door lock
2. Start the engine and wait for 5 seconds
3. Step on the clutch
4. Engage the power take-off
5. Place the air control valve ② in the "up" position
6. Release the clutch
7. When the cylinder reaches the maximum stroke (or when the limit valve is active), put the air control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



3. INSPECTION INTRODUCTION

3.1 COOLING SYSTEM: DAILY CHECK

Coolant level check

- ◆ the vehicle shall be parked on a level road, and then open the front cover.
- ◆ observe the liquid level of the expansion tank. The coolant level shall be between the high and low marks on the side of the expansion tank.



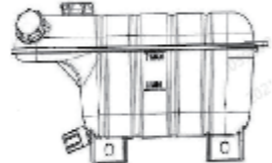
WARNING !

- The coolant is toxic, so avoid inhaling the body during use, storage and preparation.
- Do not open the filling cap immediately after the engine stops running to avoid scalding by the internal high temperature and pressure gas.
- If the coolant is greatly reduced during the use of the vehicle, causing the entire system to overheat, do not fill the coolant immediately at this time, or the sudden temperature change will damage the engine.
- Even if there is no anti-freezing requirement in the area where the vehicle is used (the temperature is above freezing all the year round), it is not allowed to use water instead of coolant.

Fill the coolant

① Filling cap ② Pressure limiting valve

1. slowly turn the filling cap ① counterclockwise for half a turn, release the pressure of the cooling system, and then remove the filling cap.
2. turn the heating temperature adjustment button switch to the maximum heating position.
3. fill the coolant to max.
4. put on the filling cap and tighten it.
5. run the engine for a period of time.
6. check the coolant level and replenish coolant if necessary.



WARNING !

- Once the pressure limiting valve is damaged, it shall be replaced as soon as possible; The pressure limiting valve shall be replaced when the vehicle runs for 500000 km or 3 years (whichever comes first).
- The coolant is toxic. Avoid inhaling it into human body during use, storage and preparation.
- It is not allowed to open the filling cap immediately after the engine stops running to avoid being scalded by internal high-temperature and pressure gas.
- If the coolant is greatly reduced during the use of the vehicle, resulting in overheating of the whole system, do not fill the coolant immediately, otherwise the sudden change of coolant temperature will damage the engine.
- Even if there is no antifreeze requirement in the area where the vehicle is used (the temperature is above the freezing point all year round), it is not allowed to use water instead of coolant.

Empty the coolant

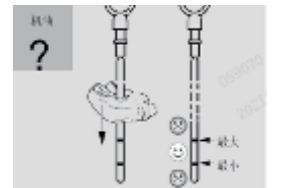
Unscrew the drain plug at the radiator ① to vent the coolant of the whole vehicle.



3.2 ENGINE OIL: DAILY CHECK

Engine oil level check

- ◆ Park the truck on a level road, turn off the engine for 10 minutes before checking the oil level.
- ◆ P open the front cover, pull out the oil dipstick ①, wipe the oil dipstick with a clean lint free cloth, insert the oil dipstick back into the oil dipstick tube, pull out the oil dipstick again, and check that the oil level should be between the maximum and minimum marks of the oil dipstick and not lower than the minimum scale. When the oil level is determined to be low through multiple inspections, fill the oil.



WARNING !

- Adding oil must not exceed the maximum scale line, too much oil will damage the engine.
- Only use engine oil certified by Sinotruk.
- Do not overfill the engine oil.

Fill engine oil

1. Turn off the key switch
2. Open the front cover
3. Unscrew the fuel filler cap ①
4. Add oil
5. Tighten the fuel filler cap ①



3.3 AIR DRYER: MONTHLY CHECK

- ◆ Check the air dryer every month to find whether it is working properly and effectively or according to the local weather conditions ,vehicle usage and driving conditions, check it more frequently. It can be checked by opening the drain valve of the air tank.



WARNING !

- When operating the drain valve, take care to protect your eyes and hands.
- Pay attention to check and remove the water in the air tank.

- ◆ When the vehicle stops, Press the side of the valve cone ① on the drain valve and drain the condensation.

- ◆ It is recommended to check the air reservoir furthest from the air dryer every day. If there is a mixture of oil and water at the drain valve, it indicates that the air dryer is invalid, and the granulate cartridge on the upper part of the air dryer should be replaced immediately.

- ◆ The granulate cartridge must be replaced at least every two years (recommended before winter).



Tire Air Refill

The tires can be inflated through the inflation connector installed on the air dryer (or air reservoir), the steps are as follows:

1. Remove the dust cap ① of the inflation connector.
2. One end of the tire inflation hose is connected to the tire valve.
3. Screw the other end of the tire inflation hose to the inflation connector on the air dryer.
4. Speed up the engine.
5. Check tire pressure and adjust as needed.



Auxiliary air module

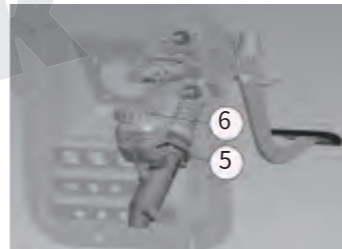
◆ The auxiliary air module is installed on the frame (usually located on the inner side of the longitudinal beam), unscrew the position ② or any blockage shown in the figure, and install the quick connector to get air.

3.4 CLUTCH SYSTEM: MONTHLY CHECK

Check the brake fluid level:

◆ The vehicle should be parked on a level road, open the front cover of the cab, and check the brake fluid level in the clutch oil tank ⑤. The fluid level should be between the MAX and MIN marks.

◆ If necessary, unscrew the oil storage tank cap ⑥ and add DOT3/DOT4 brake fluid.



- If the oil level drops below the MIN mark, the clutch operating device will not work normally.

Check the clutch system pipeline:

◆ Check the clutch system pipeline for air leakage.

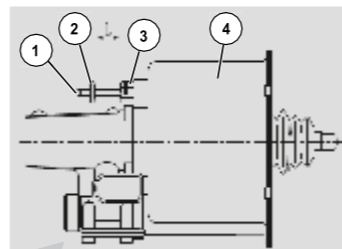
Check wear indicator:

◆ Check the wear indicator ② to determine whether the clutch driven disc needs to be replaced.

◆ The clutch wear indicator is located above the valve body of the clutch booster cylinder ④. By observing the position of the indicator plate ②, you can know whether the clutch driven disc is worn to the limit, so as to replace the driven disc in time. The clutch wear indicator is used to match models with pull clutches.

◆ As the clutch driven disc wears, the gap L between the measuring rod seat ③ and the indicator plate ② will gradually increase. For HW12706T and HW12710C transmissions, when L=20mm, the driven disk needs to be replaced; for other transmissions, when L=23mm, the driven disk needs to be replaced.

◆ After the first installation of the clutch booster cylinder ④ or the replacement of the clutch driven disc, the indicator plate ② needs to be pushed along the measuring rod ① to contact with the measuring rod seat ③ to initialize. Do not move the indicator ② during normal use of the vehicle.



3.5 OIL BATH AIR FILTER



- The filter is not filled with engine oil after leave the factory!
- Before using the truck, the oil type should be same as the engine oil type!
- Fill the filter with engine oil up to 30 mm or 5L, Do not overfill!
- If the engine oil cannot flow easily when swinging the bottom case, the filter element shall be cleaned and the oil shall be replaced. Under extremely bad conditions, the filter shall be inspected on daily. In normal conditions, the filter can work 80 to 150 hours, And the filter element doesn't need to be replaced!
- The linking hook must be checked on daily to ensure that they are tightly fastened!



Steps of disassembling, filling and cleaning



3.6 OTHER NOTES

- ◆ When the vehicle is going downhill, do not skid in neutral gear. When braking, use the exhaust brake to decelerate at the same time as possible. When the vehicle is heavily loaded, you can use engine brake to assist the vehicle in deceleration.
- ◆ When parking for a long time, turn off the engine to avoid accidents, turn off the main power switch and apply the parking brake.
- ◆ Unauthorized modification and installation of various equipment, especially electronics, braking, steering and other related safety systems are prohibited, otherwise it may affect the life and safety performance of the vehicle, causing accidents, fires, and damage to the vehicle. SINOTRUK will not be responsible for the consequences. It is strictly prohibited to disassemble or replace the engine ECU, otherwise the vehicle may be damaged.
- ◆ Open the front cover before tilt the cab.
- ◆ When welding work in or near the vehicle, the main power switch must be cut off and the electrical components (NANOBCU, instrument, engine ECU, ABS control unit) plugs should be unplugged.
- ◆ It is forbidden to flush the engine with water, as it will cause the engine electrical system breaking and damage the ECU.
- ◆ The cooling system uses anti-freeze and anti-rust coolant, and it is not allowed to mix different brands of coolant. If you change a different brand of coolant, you need to thoroughly clean the engine cooling system components.
- ◆ The moisture condensed in the air tank should be released in time to prevent freezing. And pay attention to check the working condition of the air dryer. Under normal circumstances, the service life of the desiccant in the dryer is two years. If water and dirt are discharged from the air tank, it indicates that the desiccant has expired, and the granulate cartridge should be replaced immediately.
- ◆ If the vehicle is parked for a long time and the temperature is low, it is best to remove the battery and put it in a warmer room. Every 5000Km, check whether the battery electrode pile and wire connection clip are loose and whether the battery working condition is normal.
- ◆ Keep good driving habits and avoid prolonged or sudden braking of the vehicle, otherwise it will affect the vehicle's life and fuel economy of the vehicle.



HOWO-T7H 车辆驾驶员手册

English version: Page 01-24

中文版: 第 25-50 页 

目录

1

1、基础介绍

1.1 驾驶室概览	27
1.2 仪表	28
1.3 检测灯和报警灯	29
1.4 翘板开关和按钮	30

2

2、操作介绍

2.1 发动机启动	32
2.2 空调系统	33
2.3 牵引准备(拖车)	34
2.4 变速箱	35
2.5 差速锁	40
2.6 左右后视镜的调整	41
2.7 定速巡航和排气制动的调整	41
2.8 驾驶室翻转机构	42
2.9 取力器	43
2.10 鞍座	43
2.11 自卸车货箱	45

3

3、检查介绍

3.1 冷却系统	46
3.2 发动机机油	47
3.3 空气干燥器	47
3.4 离合器	48
3.5 油浴式空气滤清器	49
3.6 其他注意事项	50

1. 基础介绍

1.1 驾驶室概览



1	门控操作面板
2	通风口
3	仪表板
4	翘板开关
5	空调控制面板
6	智能通 /MP5 播放器
7	24V 点烟器
8	24V 电源插座

9	烟灰盒
10	变速器操纵手柄
11	诊断接口
12	组合开关
13	喇叭开关
14	方向盘
15	MCS 旋钮
16	车门锁

1.2 仪表板



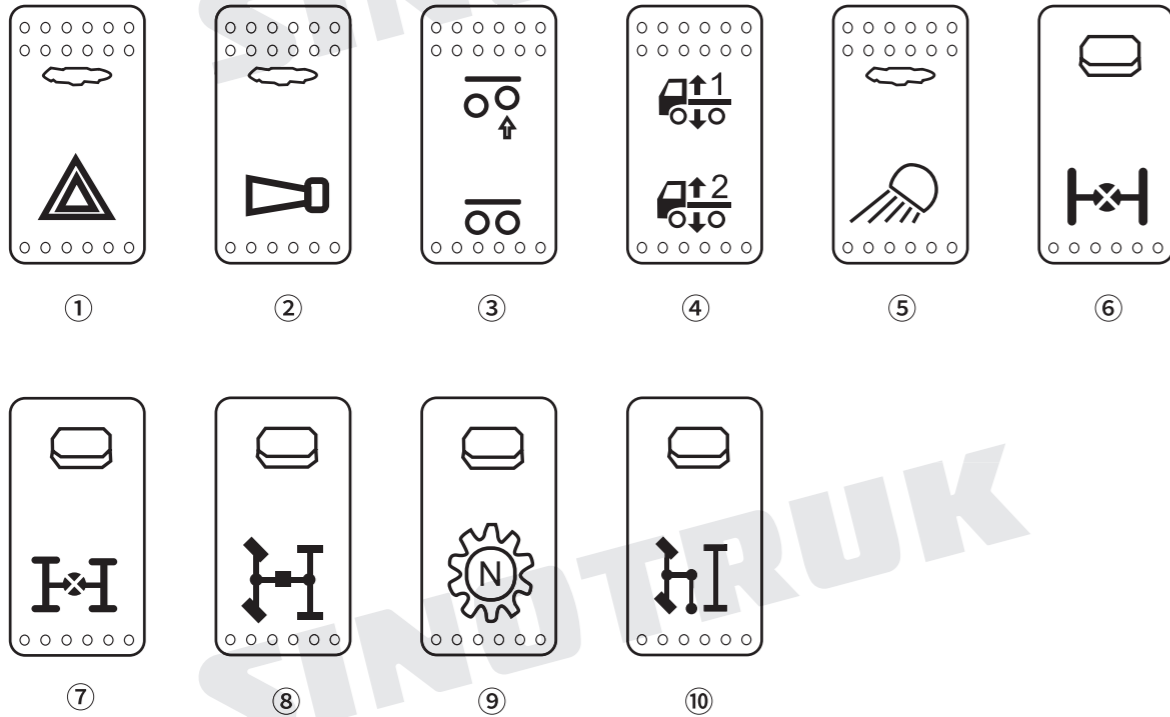
1	检测与报警灯面板
2	气压表
3	驾驶员显示屏
4	燃油表 / 燃气表
5	车速表

6	按键 1
7	转向指示灯
8	水温表
9	电压表
10	按键 2
11	发动机转速表

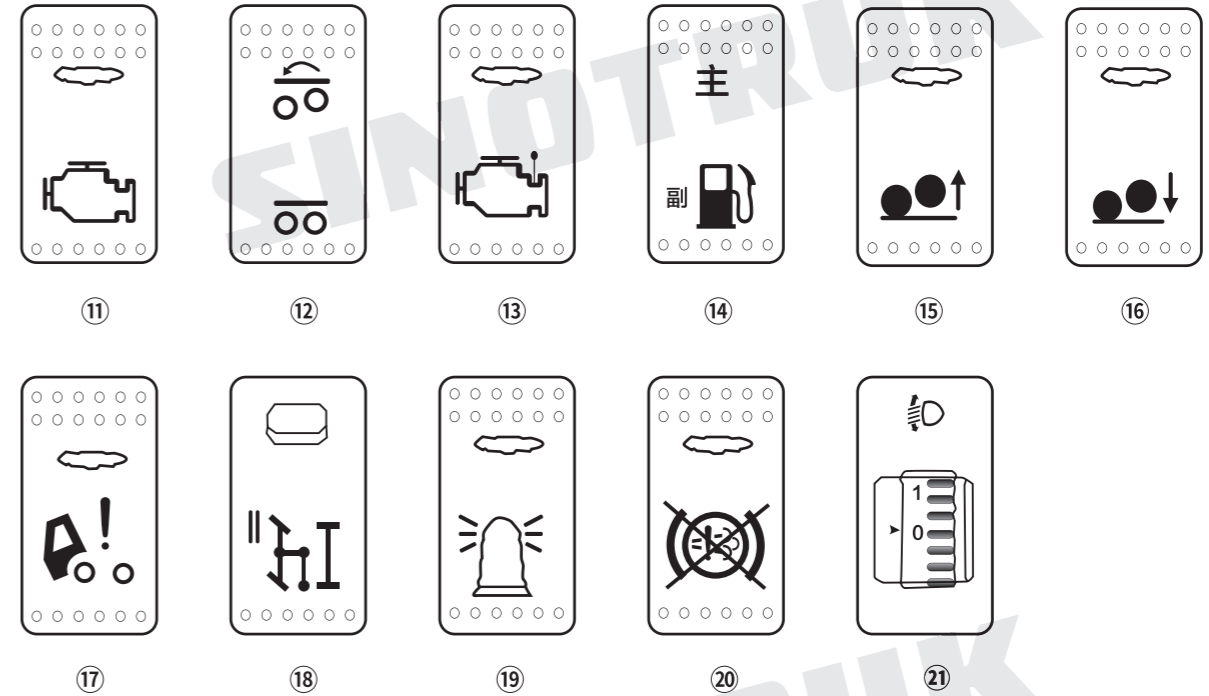
1.3 检测灯和报警灯

编号	描述	符号	颜色	编号	描述	符号	颜色
1	安全带指示灯		红	19	驾驶室锁止指示灯		红
2	取力器 1 指示灯		红、黄	20	制动系统故障指示灯		红
3	ECAS 故障报警灯		红	21	驻车制动指示灯		红
4	挂车左转向工作指示灯		绿	22	发动机故障指示灯		红、黄
5	排气超标报警指示灯		黄	23	ABS 故障指示灯		黄
6	取力器 2 指示灯		红、黄	24	车辆超速指示灯		黄
7	缓速器报警指示灯		红、黄	25	后雾灯		黄
8	发动机机油压力指示灯		红、黄	26	近光灯		绿
9	ASR 工作指示灯		黄	27	远光灯		绿
10	巡航指示灯		绿	28	前雾灯		绿
11	位置灯		绿	29	昼间行驶灯		绿
12	提升桥指示灯		绿	30	低档指示灯		绿
13	制动气压回路 1 指示灯		绿	31	挂车 ABS 指示灯		黄
14	制动气压回路 2 指示灯		绿	32	冷却液位低指示灯		红
15	主车左转向工作指示灯		绿	33	尿素液位低指示灯		黄
16	主车右转向工作指示灯		绿	34	冷却液温度高指示灯		红
17	燃油低指示灯		黄	35	蓄电池低(高)电压报警指示灯		红
	LNG 低指示灯		黄	36	发动机转速过高指示灯		红
	CNG 低指示灯		黄	37	紧急停车指示灯	STOP	红
18	挂车右转向工作指示灯		绿	38	故障警示符		红、黄

1.4 翘板开关和按钮



- ① **危急报警开关:** 按下开关, 所有转向灯均闪烁, 仪表上的转向指示灯同时闪烁。
- ② **喇叭转换开关:** 按下开关后, 按压方向盘上的喇叭按键, 气喇叭鸣响。
- ③ **中/后桥提升气囊控制开关:** 平时为正常位置, 向上按一下, 自动持续充气至最高位置; 向下按一下自动放气至最低位置, 不可停留在中间某位置。
- ④ **三高度选择开关:** 不操作开关时为正常高度, 当置于高度 1 挡位时车架升高 25mm, 当置于高度 2 时车架降低 25mm。
- ⑤ **工作灯开关:** 按下开关, 打开驾驶室后面的工作灯。
- ⑥ **轮差开关:** 按下开关, 轮间差速锁结合。
- ⑦ **轴差开关:** 按下开关, 轴间差速锁结合。
- ⑧ **全轮驱动开关:** 按下开关, 前驱动桥结合。
- ⑨ **取力器空挡开关:** HW13710/HW12710 变速器取力, 需要同时按下取力器空挡开关和取力器开关。
- ⑩ **取力器开关:** 按下开关, 取力器结合。



- ⑪ **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, 获取目前发动机系统存在的故障。
- ⑫ **三模式选择开关:** 开关处于 0 时, ECAS 控制模式为比例控制; 按动开关下部, 激活最佳牵引模式。这时支撑桥 (提升桥) 载荷向驱动桥转移, 使驱动桥载荷达到标准载荷, 从而提高车辆驱动力; 按动开关上部 (自复位), 激活驱动帮助模式, 提升桥载荷向驱动桥转移, 直至驱动桥达到最大载荷, 从而使车辆驱动力达到最大。车速不小于 30km/h 时, 驱动帮助模式自动关闭, 恢复为比例控制模式; 车速小于 30km/h 时, 激活驱动帮助模式后, 长按开关上部 5s 以上或关闭电源总开关, 可手动关闭驱动帮助模式。最佳牵引模式不受车速限制。
- ⑬ **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。
- ⑭ **主副油箱转换开关:** 对于装配两个燃油箱的车辆, 按下主副油箱转换开关, 燃油表显示副油箱的燃油量。
- ⑮ **支撑轴上升开关:** 按下开关, 支撑轴上升。
- ⑯ **支撑轴下降开关:** 按下开关, 支撑轴下降。
- ⑰ **驾驶室举升开关:** 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。
- ⑱ **第二取力器开关:** 当变速器装有第二取力器时, 按下第二取力器开关, 第二取力器工作。
- ⑲ **警示灯开关:** 按下开关, 驾驶室顶部的警示灯点亮。
- ⑳ **排气制动联动切断开关:** 按下开关, 切断排气制动联动。雨雪天气路面湿滑时, 应按下此开关。
- ㉑ **前照灯光束调节旋钮:** 可根据车辆装载情况, 对前照灯光束照射位置进行手动调整。共分为四挡, 从 0 挡至 3 挡光束高度逐级降低。

2. 操作介绍

2.1 发动机起动

◆ 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。

◆ 发动机不得在冷车状态下高速运转！如果发动机起动后机油压力表无显示，应立即熄火检修。

◆ 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。

◆ 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。特别注意熄火前不要猛轰油门。因为猛轰油门会使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。

◆ 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。

◆ 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！

◆ 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



注意！

- 制冷剂为 R134a，加注量为 775±25 克。
- 制冷剂及其挥发蒸汽对人体健康有害！
- 系统出现润滑油损失时，应适量补充压缩机制造商指定润滑油。
- 应由专业维修人员进行空调系统维修和制冷剂充注作业。
- 严禁在空调系统处于外循环状态时冲洗驾驶室前围。
- 应每月运行空调 1~2 次，以保证压缩机可靠密封和润滑。

控制器总成面板

- ① 显示屏 ② 风力调节键 ③ 除霜按键 ④ 进风方式选择键 ⑤ 关机键
⑥ 自动键 ⑦ 出风模式选择键 ⑧ 空调开机键 ⑨ 温度设置键

显示屏显示内容

- ⑩ 风力级数标识 ⑪ 进风方式标识 ⑫ 出风状态标识
⑬ 设置温度与环境温度显示 ⑭ 吹风标识 ⑮ 制冷标识空调使用说明



◆ 调节温度设置键调整范围：“LO”、18°C~29°C、“HI”。

◆ 如果期望车内更凉爽，可设置在“LO”，反之，可设置在“HI”。

◆ 一般情况下，设置在 22°C~26°C 范围较合适。系统可以根据设置温度自动调节风量，也可以单独设置您所需要的风量。风量会缓慢调整。

使用注意事项

◆ 暖风系统应定期进行维护与保养。

◆ 面板脏污时，可用柔软的干布轻轻擦拭面板表面，不可用带水湿布或干硬物品，否则易损坏面板、按键或显示屏。

◆ 不要用手指、油性物或干硬物品接触显示屏，否则会导致显示不清晰或损坏。

2.3 牵引准备 (拖车)

牵引前，断开传动轴。



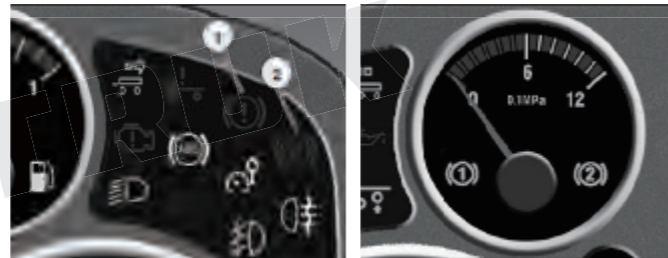
注意!

- 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。

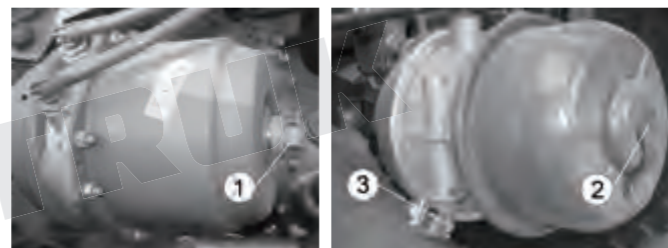
弹簧储能制动气室—机械紧急解除

◆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

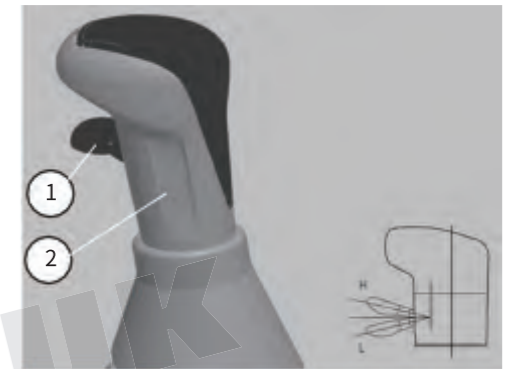
2.4.1 中国重汽手动挡变速箱

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

∅ 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. 车辆在行驶中由高档换入 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。



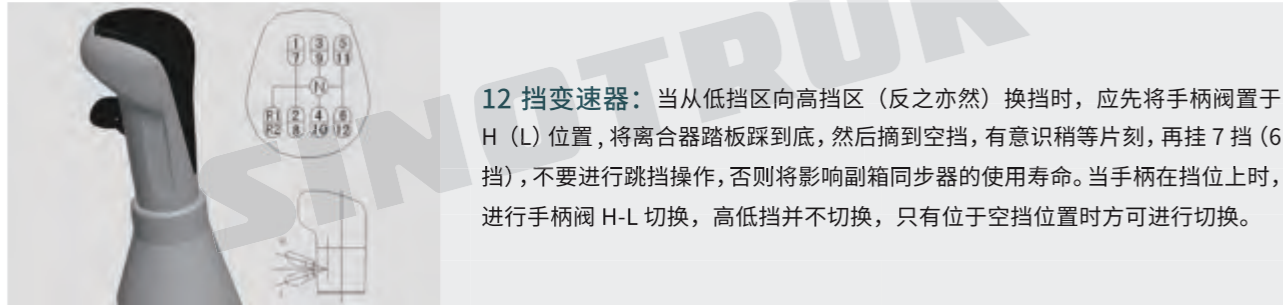
注意!

- 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，否则不得提前向下换到任何一挡。
- 当变速器从低挡区向高档区（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。

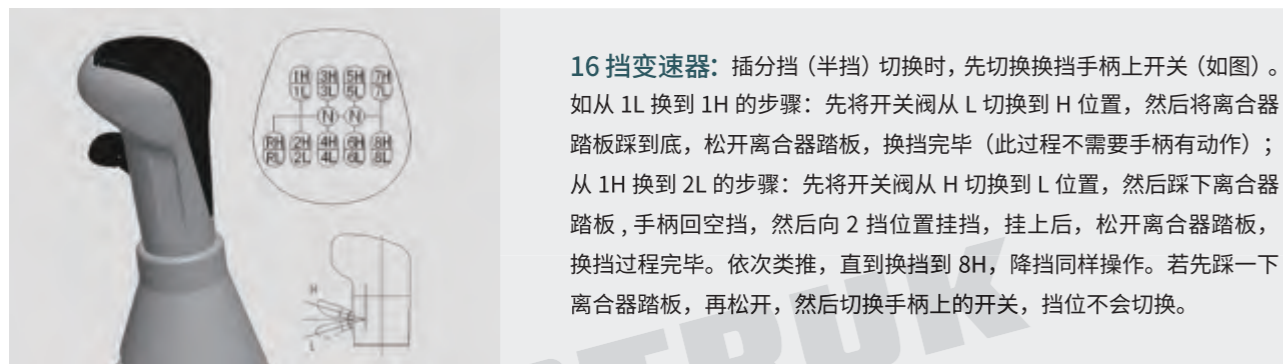
高低挡之间的转换

10 挡变速箱：变速器当从低挡区向高档区（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 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。

2.4.2 ZF 手动挡变速器

◆ 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）。

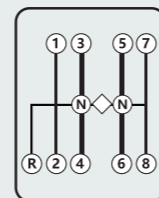


半挡组，在变速器的前端

- 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



2.4.3 中国重汽第二代手自一体变速器



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

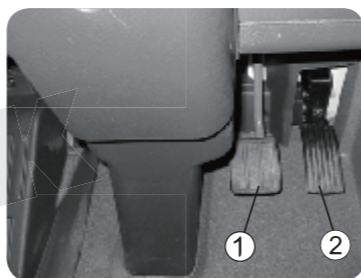
- ◆ 驾驶员可以通过手柄上的按键①实现手动与自动功能的切换。
- ◆ 仪表盘上的显示屏会实时显示变速器当前的工作模式。
- ◆ 系统默认的操作模式为自动功能。驾驶员可在起步、行车过程中随时进行 A/M 功能的切换。

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，车辆启动。
- ◆ 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慢行驶。
- ◆ 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。



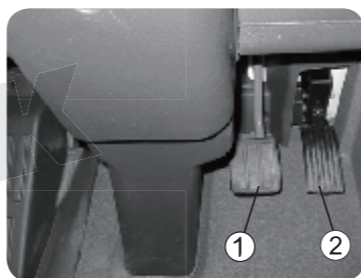
行车过程自动模式下的操作

升挡和降挡

- ◆ 行车过程中，油门踏板②影响发动机转速、扭矩和整车的速度。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会影响自动模式运行，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。

2.5 差速锁

◆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。

轴间差速锁

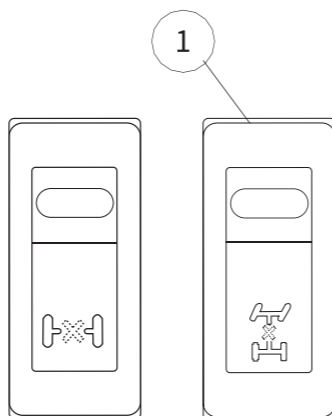
◆轴间差速锁：用来锁止第一和第二驱动桥的轴间差速器。

◆轴间差速锁的啮合

1. 松开油门踏板（减速）。
2. 按轴间差速开关①下部，轴间差速器接合后，仪表板轴间差速锁指示灯点亮。

◆轴间差速锁的脱开

1. 松开油门踏板，踩下离合器踏板。
2. 按轴间差速开关①上部，轴间差速锁脱开后，仪表板轴间差速指示灯熄灭。



注意！

- 在车辆处于停止状态，或低速（相当于人步行的速度）下直线行驶时，才能接合差速锁。
- 当轴间差速锁指示灯点亮时，车辆不能转弯和高速行驶。

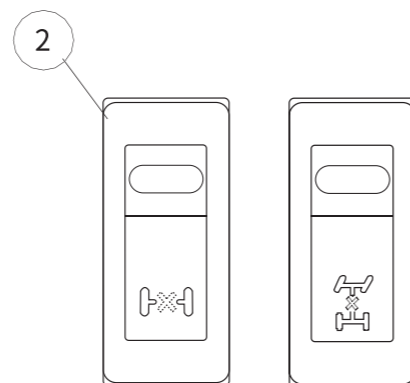
轮间差速锁

◆轮间差速锁的啮合：

1. 接合轴间差速锁（见轴间差速锁的结合）
2. 松开油门踏板（减速）
3. 按轮差开关②的下部，后桥轮间差速锁啮合，轮间差速锁指示灯点亮。
4. 小心踩油门踏板，缓慢加速。

◆轮间差速锁的脱开：

1. 松开油门踏板，踩下离合器踏板，
2. 按轮差开关②的上部，当轮间差速锁脱开后，仪表板轮间差速指示灯熄灭。



注意！

- 只有在车辆处于停止状态，或低速（相当于人步行的速度）下直线行驶时，才能接合差速锁。
- 当轮间差速锁指示灯点亮时，车辆不能转弯和高速行驶。

2.6 左右后视镜的调整



注意！

- 只有在钥匙开关在 ON 挡时，方可调整后视镜。
- 确保驾驶员座位位于舒适的驾乘位置。
- 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。
- 在行车过程中不得调整后视镜。



◆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。

后视镜控制开关

◆后视镜控制旋钮①位于驾驶员侧车门开关面板平面上，可以旋转 5 个档位。

A 左侧广角镜档位 B 左侧后视镜档位 C 后视镜降霜档位 D 右侧后视镜档位 E 右侧广角镜档位

◆通过上述 5 个档位选择需要控制的后视镜（广角镜）或后视镜除霜。

◆调整时，旋钮①上的标记 F 应对准所调档位。

2.7 定速巡航和排气制动的调整

右组合开关

右组合开关位于转向柱右侧，包括 5 个功能开关：

- 设定加按键（RES/+）①：按压，提高车速或发动机转速。
- 设定减按键（SET/-）②：按压，降低车速或发动机转速。
- 恢复挡（MEM）：前拨手柄，恢复先前储存的车速或发动机转速。
- 取消挡（OFF）：后拨手柄。
- 排气制动开关：下按手柄，启动排气制动。



定速巡航的设置：

◆驾驶员可以通过按压手柄末端的设定按键（RES/+、SET/-）设定巡航车速，使车辆进入巡航模式；当驾驶员松开油门踏板后，车辆会按照设定巡航车速行驶。在巡航过程中，驾驶员可以通过按压设定加按键（RES/+）①或设定减按键（SET/-）②改变巡航目标车速值。

◆当前述任一条件不满足或驾驶员将手柄后拨取消挡（OFF）时，巡航模式将自动退出。

◆当条件再次满足时，驾驶员可以将手柄前拨至恢复挡（MEM）使车辆重新进入巡航状态，巡航目标车速为上次设定的巡航车速。

定速巡航的条件：

◆车辆定速巡航功能可以使车辆在驾驶员不踩油门的情况下，按照恒定的车速行驶。该功能需同时满足以下条件：

- 车速大于 30km/h；
- 发动机未处于外部扭矩控制模式；
- 变速箱处于非空挡状态；
- 离合器踏板未踩下；
- 制动踏板未踩下。

排气制动:

- ◆ 往下拨动右组合开关手柄, 当下述条件均满足时, 车辆将实现排气制动:
 - 未踩下油门踏板;
 - 发动机转速在 800RPM 以上。

2.8 驾驶室翻转机构



◆ 驾驶室手动 / 电动翻转举升系统

- ① 液压手动油泵
- ② 换向杆
- ③ 油塞
- ④ 撬棒
- ⑤ 电动开关
- ⑥ 转换工具
- ⑦ 驾驶室举升翘板开关

◆ 翻转前的准备

- 将车辆停在平坦坚实的地面上, 不得影响其它车辆通行。
- 实施驻车制动。
- 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。
- 关闭驾驶室门。



注意!

- 只有在进行驾驶室翻转操作时, 方可扳动换向杆②; 其它情况下 (包括行车、注油等) 均应保持换向杆指向 “↓” 位置。
- 为确保安全, 驾驶室前方的翻转区不得有障碍物。
- 驾驶室翻转时, 人员不得进入驾驶室和底盘之间。
- 驾驶室应翻转到位, 方可进行驾驶室翻转后的作业。
- 使用电动泵连续操作不得超过三次 (会导致电机过热而停止工作)。
- 由于油缸在回落终点处具备自动回落的特性, 当锁销距锁钩 40~150mm, 驾驶室会自动回落。

- ◆ 驾驶室下落时, 橡胶波纹管⑨应与下进气道紧密贴合到位, 防止进入灰尘,
- ◆ 最后, 检查仪表盘上锁止信号灯, 若驾驶室未正确锁止, 锁止信号灯即点亮。
- ◆ 关闭驾驶室内翘板开关⑦ (仅用于电动举升)。
- ◆ 关闭前面罩。

2.9 取力器



注意!

- 只有低挡段才能使用取力器

取力器接合

- ◆ 踩下离合器踏板, 按下取力器开关①, 结合取力器, 仪表盘上指示灯②点亮, 挂入低档位, 松开离合器踏板。



取力器脱开

- ◆ 踩下离合器踏板, 取力器开关①复位, 大约 3s 后, 松开离合器踏板即断开取力器。同时, 仪表盘上指示灯②熄灭。

2.10 鞍座

半挂车连接

1. 固定半挂车防止其滑行。
2. 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结合的张口状态。
3. 倒车对接, 当牵引销进入鞍座接口后, 锁钩及楔座块便自动将牵引锁锁住, 完成对接, 此时手柄应自动退回位, 实现正确对接。



注意!

- 当牵引车挂接半挂车后, 务必检查锁止手柄是否正确锁止。

制动和电气管路的连接

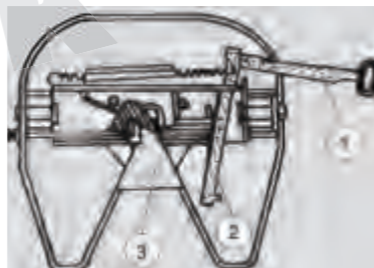
◆ 制动管路连接步骤:

1. 连接压缩空气管路, 注意管路不能被拉紧、摩擦和缠绕。
2. 首先连接制动控制管路接头 (黄色), 然后连接制动供气管路接头 (红色)。
3. 检查其功能。
4. 将半挂车的支腿提至行车位置。



半挂车的脱开

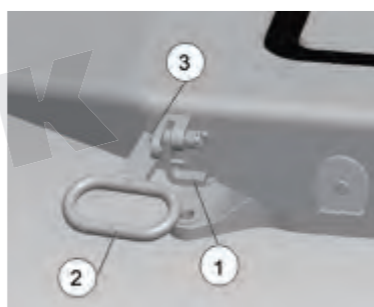
1. 检查路况，防止半挂车滑行。
2. 支起半挂车支腿（注意路面负载能力），直至其承受鞍座上卸下的载荷，或使用空气悬架升高半挂车，支起半挂车支腿，然后降低半挂车，直至半挂车完全由支腿承载。
3. 半挂车或全挂车在脱开牵引车之前，应严格按顺序，先脱开制动供气管路接头（红色），然后再脱开制动控制管路（黄色），否则挂车制动会解除。
4. 将鞍座手柄①拉出，直至其定位槽卡住鞍座壳体，此时锁块②即与锁钩③脱开，向前开动牵引车，锁钩③转动，松开牵引销，完成脱开动作。


注意!

- 若较长时间不接挂车，应将鞍座手柄①复位。
- 务必按正确的顺序断开制动接头。否则半挂车将解除制动，可能导致溜车。
- 断开后用接头盖保护接头免受污染。

鞍座打开操作

◆ 向上旋转拉栓定位挡①至水平位置，同时向前推动手柄②，将其四边卡槽卡在鞍座板矩形槽前侧。



挂上挂车后检查

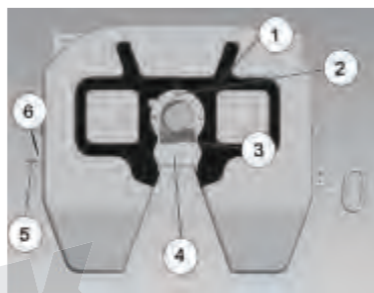
1. 确保拉栓定位挡①已经回位到图示状态，并且警示孔③位于鞍座板外侧附近，此时鞍座锁合牢靠。
2. 若拉栓定位挡①未下落至锁定位置，或警示孔③离鞍座板外侧较远，应检查鞍座是否锁止到位。


注意!

- 应按操作规范进行操作，鞍座未正确挂接会导致车辆运行事故。

维护保养

- ◆ 牵引车与半挂车接合前，务必清洁牵引座上表面及润滑油槽①，并确保使用重载润滑脂（如 2# 锂基润滑脂）注满润滑油槽①且均匀涂抹牵引座上表面。
- ◆ 每行驶 5000km，清除牵引座上表面及锁钩③、马蹄口②上的润滑脂，清洁后使用新重载润滑脂均匀涂抹牵引座上表面及锁钩③、马蹄口②与牵引销配合表面。
- ◆ 每行驶 5000km，对下述各处进行调整与检查。
- ◆ 为了补偿牵引销及锁钩③的磨损及防止在结合时销块过紧，使手柄无法拉出。牵引车与半挂车结合的情况下，将调整螺栓⑤旋出，再顺时针旋入，直至调整螺栓⑤与销块④接触，然后逆时针将调整螺栓⑤旋出半圈，再锁紧调整螺栓上的螺母。



2.11 自卸车货箱

举升操作:

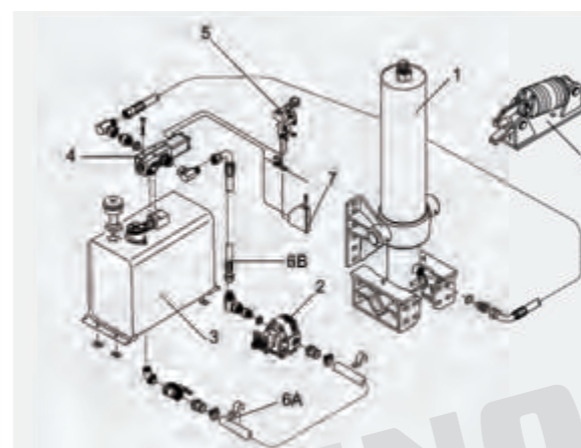
1. 打开后门锁
2. 启动发动机，等待 5 秒钟
3. 踩离合器
4. 接合取力器
5. 将气控阀置②于“上升”位置
6. 松开离合器
7. 当油缸达到最大行程（或限位阀起作用时），将气控阀置于“空档”。

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箱体下降速度
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: 箱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。



3. 检查介绍

3.1 冷却系统：每天检查

检查冷却液液位

- ◆ 车辆应停放在水平路面上，打开前面罩。
- ◆ 观察膨胀水箱液面，冷却液液面高度应位于膨胀水箱侧面高低位标识之间。



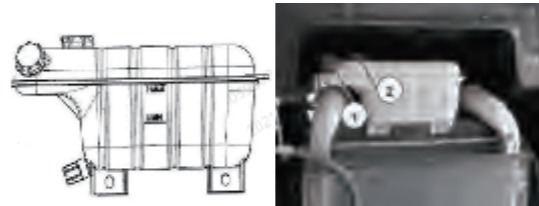
注意!

- 冷却液有毒，在使用、保管和配制时避免吸入人体。
- 不得在发动机停止运转后立即打开加液盖，以免被内部高温压力气体烫伤。
- 车辆使用过程中如果冷却液大量减少，造成整个系统过热，此时不得立即加注冷却液，否则温度骤变会损坏发动机。
- 车辆使用地区即使没有防冻要求（气温常年在冰点以上），也不允许用水代替冷却液使用。

加注冷却液

①加液盖 ②限压阀

1. 将加液盖①逆时针慢慢转动半圈，释放冷却系统压力后，取下加液盖。
2. 将暖风温度调节按钮开关转到最大暖风位置。
3. 将冷却液加注至 MAX 处。
4. 盖上加液盖，将其拧紧。
5. 使发动机运行一段时间。
6. 检查冷却液位，必要时补充冷却液。



注意!

- 限压阀一旦发现损坏，应尽快予以更换；车辆运行 50 万公里或者 3 年（先到为准）应更换新的限压阀。
- 冷却液有毒，在使用、保管和配制时避免吸入人体。
- 不允许在发动机停止运转后立即打开加液盖，以免被内部高温压力气体烫伤。
- 车辆使用过程中如果冷却液大量减少，造成整个系统过热，此时不得立即加注冷却液，否则冷却液温度骤变会损坏发动机。
- 车辆使用地区即使没有防冻要求（气温常年在冰点以上），也不允许用水代替冷却液使用。

放空冷却液

拧下散热器①处的放水螺塞，可放空整车冷却液；



3.2 发动机机油：每天检查

检查发动机机油液位

- ◆ 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，检查机油液面应位于油尺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!
- 只能使用中国重汽认证的发动机机油。
- 机油加注不能过量!

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

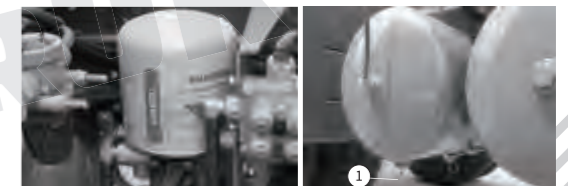
- ◆ 每月检查一次空气干燥器是否工作正常及有效（或根据当地气候条件、车辆使用和行车状况进行更频繁的检查）。打开贮气筒的放水阀即可检。



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。

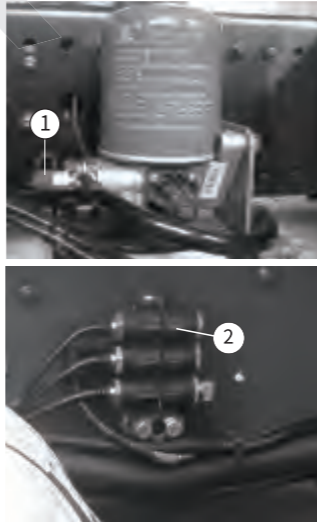
- ◆ 汽车停止，侧向拉动贮气筒下部的自动放水阀拉环①即可排除凝聚在贮气筒中的水份。
- ◆ 建议每天检查距离空气干燥器最远的贮气筒，如果放水阀处有油水混合物排出，说明空气干燥器失效，应立即更换空气干燥器上部的干燥罐。
- ◆ 空气干燥器上部的干燥罐至少每 2 年更换一次（推荐入冬之前更换）。



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

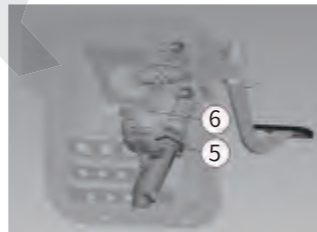
◆辅助用气模块安装于车架处（一般位于纵梁内侧），拧开图示②处或任一堵塞，配上快插接头即可取气。

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。



- 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。

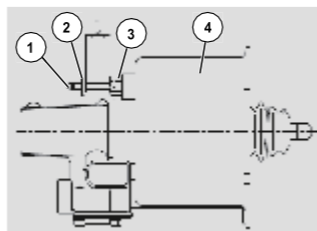
检查磨损指示器

◆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！

- 新车出厂后未加注机油！
- 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。在特别恶劣的使用条件下，应每天检查。在一般情况下可连续使用 80 ~ 150 小时。滤芯可长期使用，不需要更换！
- 每天收车时需检查壳体与底壳连接螺栓或拉钩是否松动，按需紧固！



拆检、加油及清洗



3.6 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（NANOBCU、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断路并损坏 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。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。