

HOWO Freezer Truck

40CBM Capacity & Customized American CARRIER S850 unit

User's Manual



www.howotrucks.com/

Refrigerated Truck

OWNER'S MANUAL

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Preface

Thank you for purchasing CS TRUCKS products. For better using your ISUZU Freezer Truck, get the best operating performance, we strongly suggest that before the operation process you could read this manual instructions carefully, and to manipulate the program handily.

The manual detailed describes the performance of freezer truck, structure, usage, precautions and maintenance of such knowledge. While showing details of the truck, both pictures and description will together help you get better understanding of how to use truck. Before the operation, the skilled operator should carefully read the contents of the manual.

After master the truck performance characteristics, methods of operation and precautions, then could start to operate this refrigerator truck. In order to ensure the staff turnover after the operation, and properly use of the truck. This manual book must be properly kept, shall not be lost and damage.

----CS TRUCKS

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Chapter 1. General Description

CS TRUCKS Freezer Truck based on type II SINOTRUK HOWO 4x2 model truck chassis, refrigerator body length could up to 7 meters, mainly used to transport frozen or fresh goods, and the working aerial can be villages, downtowns, cities, and other areas of need.

*The vehicle designed to fully rely on the advantages of the original HOWO 4*2 LHD chassis, fully consider the product's convenience and reliability. The freezer body material is international standard, both internal and external use glass fiber reinforced plastics, in the middle use 80mm polyurethane foam, have good effect for warm preservation. Both door lock and hinge use stainless steel casting, which have good performance and long service life. The freezer truck equipped with English guidance control box for easy operation. Inside of body floor equipped 5mm thickness carbon steel plate. And can cover all customers' frozen or fresh goods transportation requirement.*

The HOWO 40CBM Freezer Truck equipped with 9m length refrigerator body and famous American brand CARRIER SURPA 850 independent refrigeration units, cabin control box, whole white painting. Therefore, the vehicle is an ideal Refrigerator Truck mainly used for frozen or fresh goods delivery.



(Preview for your HOWO Freezer Truck)

Chapter 2, Main Technical Data

Basic parameter:

Items		HOWO Freezer Truck
S I Z E	Outer Dimension (L×W×H) (mm)	9200×2550×3950
	Wheelbase (mm)	5600
Kerb Weight (kg)		12800
G E A R	Gearbox brand	HOWO
	Model	HW19710 10-shift gearbox
	Type	Manual
Cab capacity (includes driver)		2+1
E N G I N	Model	WEICHAI WP10.300E22
	Type	Six cylinder inline, four stroke, turbocharged Inter-cooling, diesel
	Rating Power (kW/HP)	220 / 300

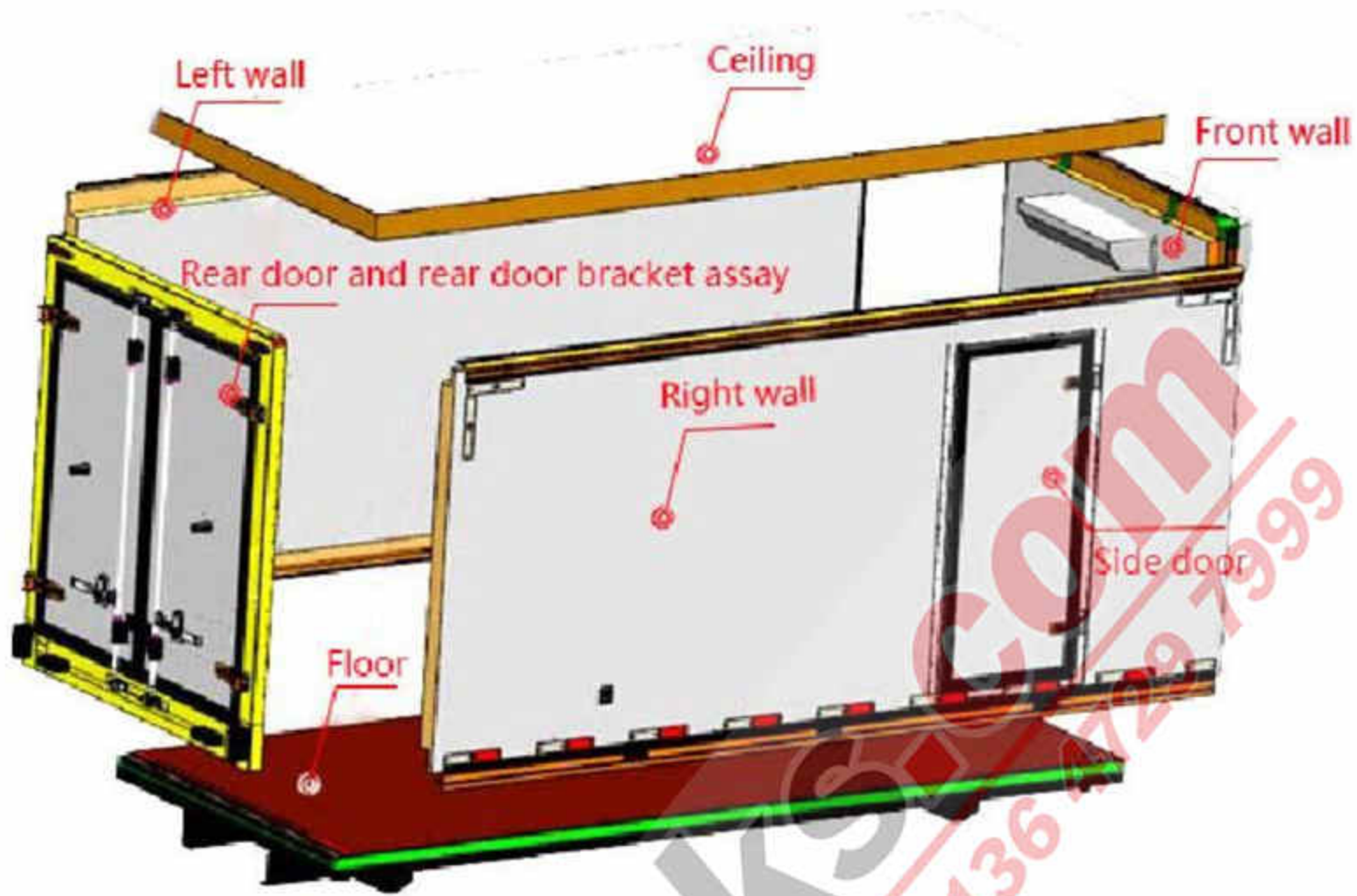
Note: We keep the right to revise the parameters on the list above.

Hook Loader Superstructure basic parameter list

Items		Parameter	
Refrigerator Body	Dimension (mm)	7000*2400*2400	
	Material	External	Glass Fiber Reinforced Plastics
		Middle	8mm Polyurethane Foam
		Internal	Glass Fiber Reinforced Plastics
	Door Lock material		Stainless Steel
	Door Hinge material		Stainless Steel
	Door	Rear	Double Open Hinged Door
Side		Double Open Hinged Door	
Refrigeration Units	Control Box	Manual Operation Box in Cabin	
	Operation	As Following	
Safety Assurance		Balance valve for safety	
Floor		Equipped with 5mm thickness carbon steel plate	

Chapter 3, Freezer Truck Structure Components

Overviews for HOWO 4*2 freezer truck:



Above picture show the freezer truck dimension for reference; the refrigerator body designed based on requirement, with length can be 9 meters. Both rear and side door for easy operation.

Left View: Refrigerator Units, Convenient side door



CARRIER S850 Refrigerator Units:
 Independent, and lowest temperature could be -18°C

Freezer Body:
 Length 7 meter

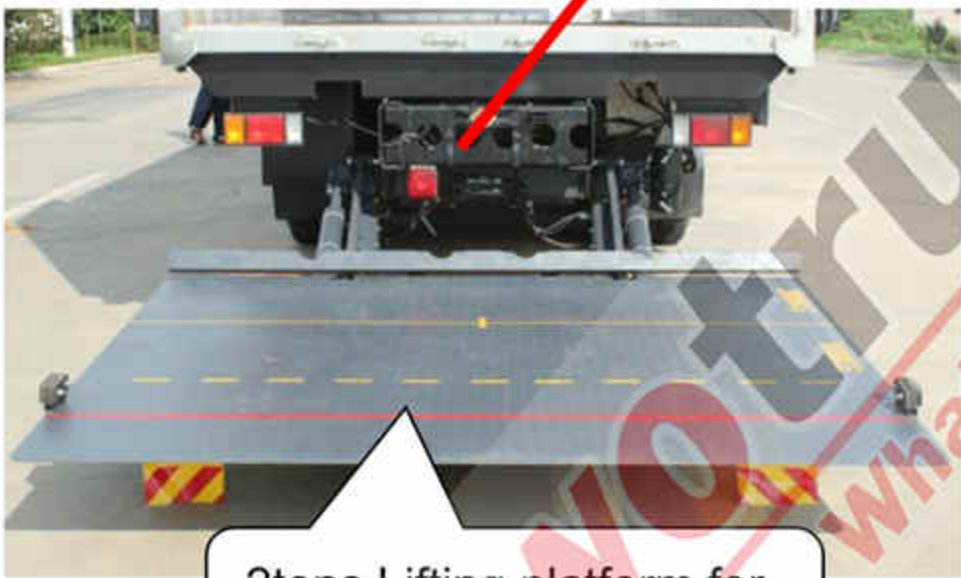
Rear View: Rear Door and inside body movable bulkhead



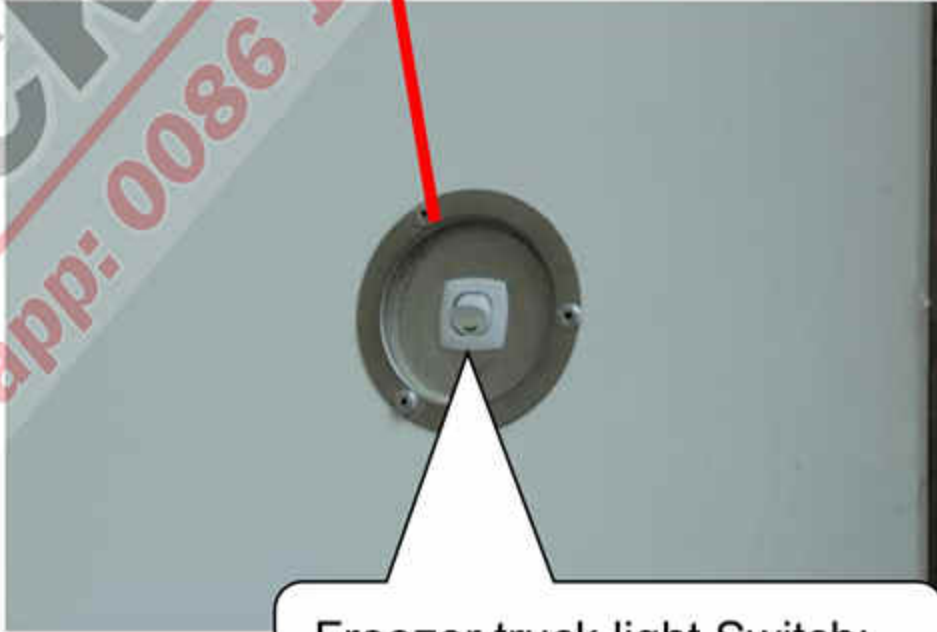
Rear Door, with whole stainless steel casting parts

Lifting platform control box 2

Lifting platform control box 1



2tons Lifting platform for convenient loading



Freezer truck light Switch: Inside of the body



Control Box in Cabin for easy operation

Right View: Refrigerator Body and external power source

Climb Ladder



(Socket)

Tool Box



Refrigerated Unit working model one:
 External power source, which can make the freezer truck working without fuel

Refrigerated Unit working model two:
 Fuel pump, transfer fuel to the refrigerated unit engine and make freezer truck working

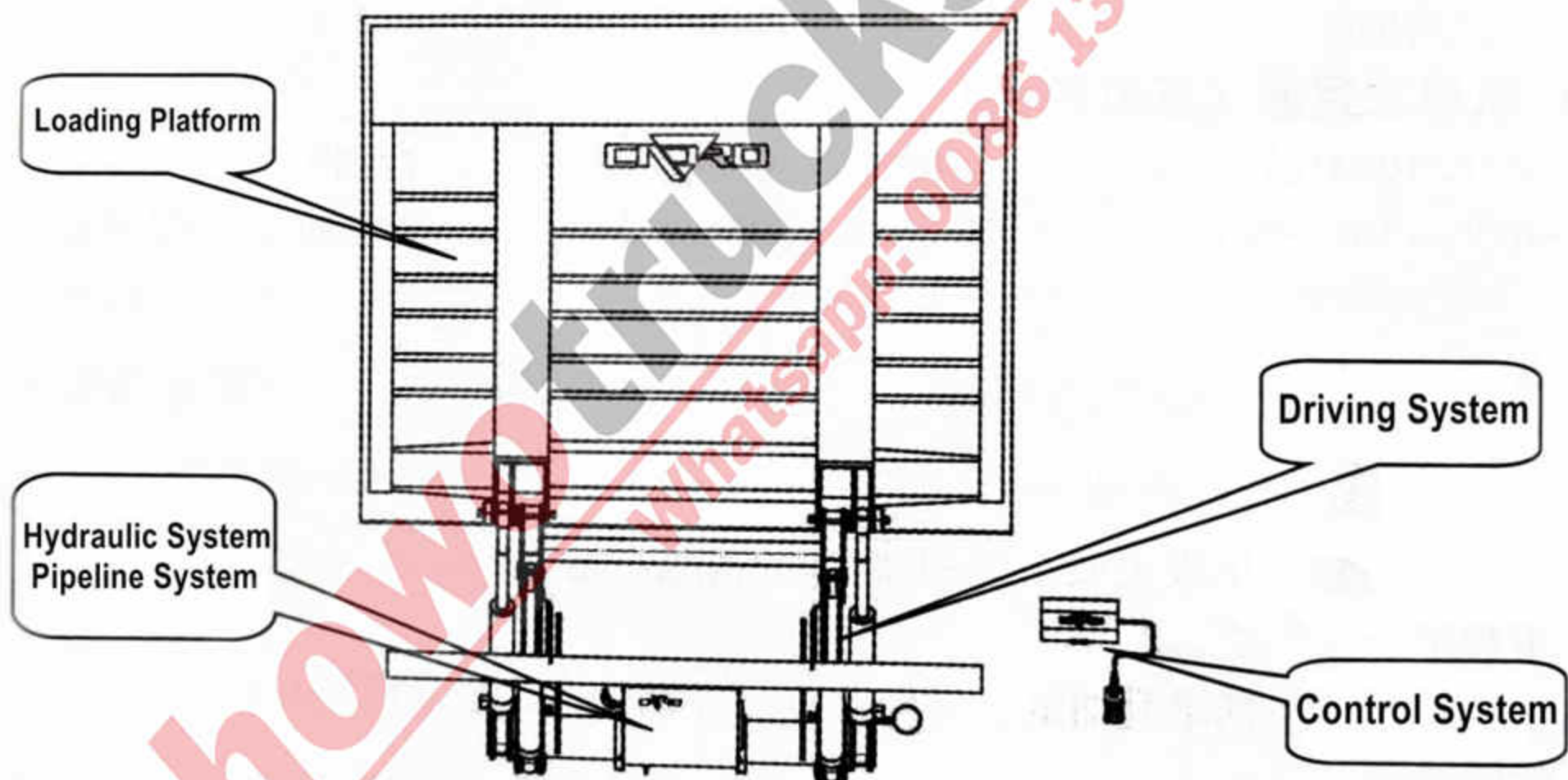


Chapter 4, Rear Lifting Platform

The freezer truck equipped with rear lifting platform, with model CD-PP20/GA, and lifting capacity is 2tons, which mainly used for seafood loading and unloading.

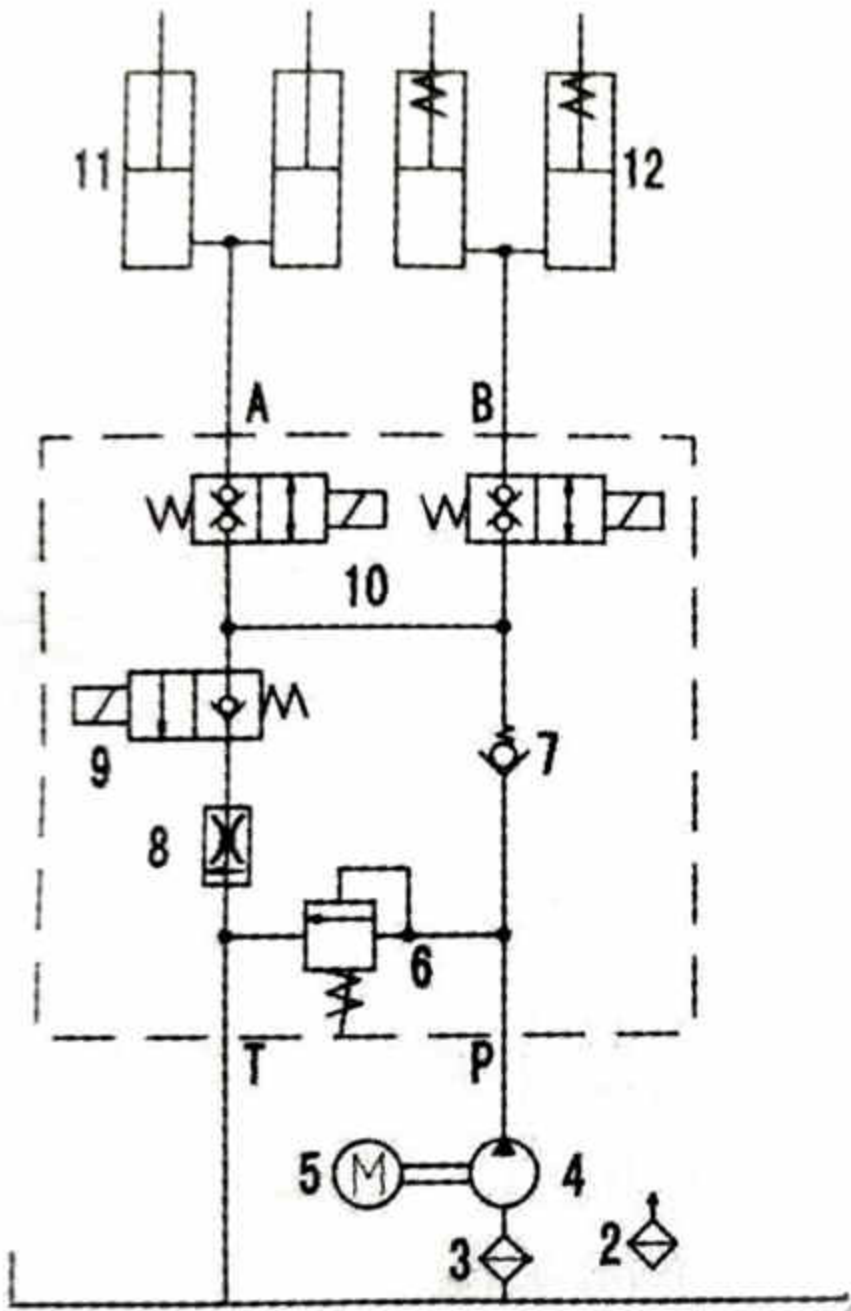
i , What is the main component for Lifting Platform?

- Platform.
- Drive system (Including lifting cylinder, close cylinder, steel bracket, lifting arm, etc.)
- Pipeline system
- Control system
- Hydraulic system (Motor, oil pump, hydraulic control valves, hydraulic oil tank, etc.)
-



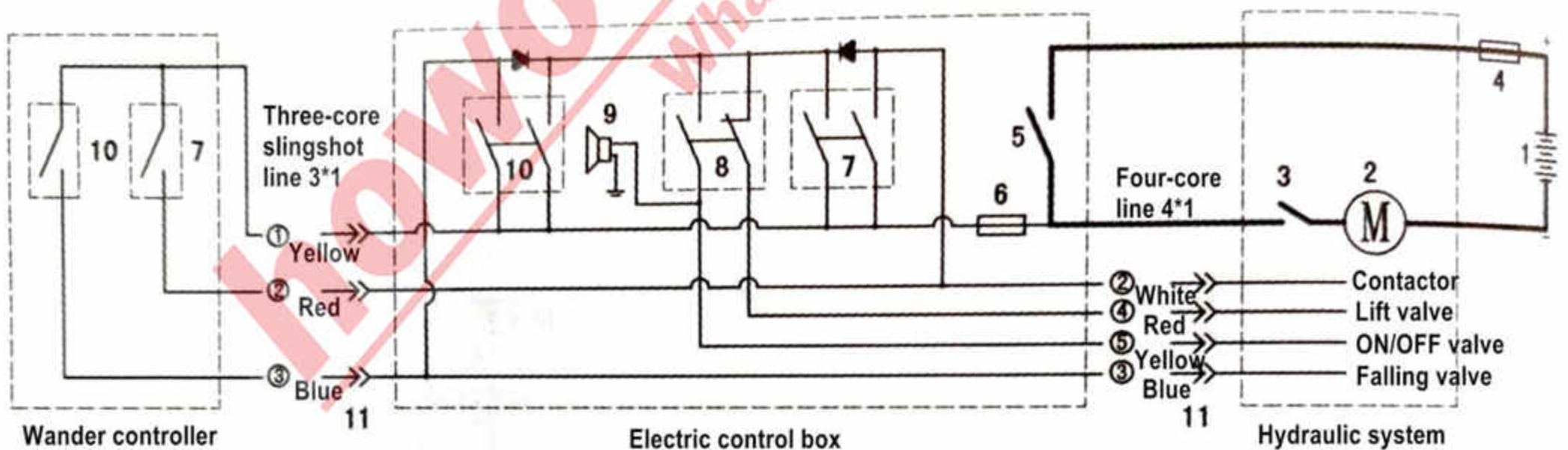
ii, What is the platform working principle?

1. Hydraulic system working principle.



- 1- Hydraulic oil tank
- 2- Air filter
- 3- Oil filter
- 4- Hydraulic oil pump
- 5- Electric motor
- 6- Overflow valve
- 7- Single-way valve
- 8- Pressure compensated flow valve
- 9- Lowering valve
- 10- Double-way valve
- 11- Lifting cylinder
- 12- Closing cylinder

2. Electric system working principle

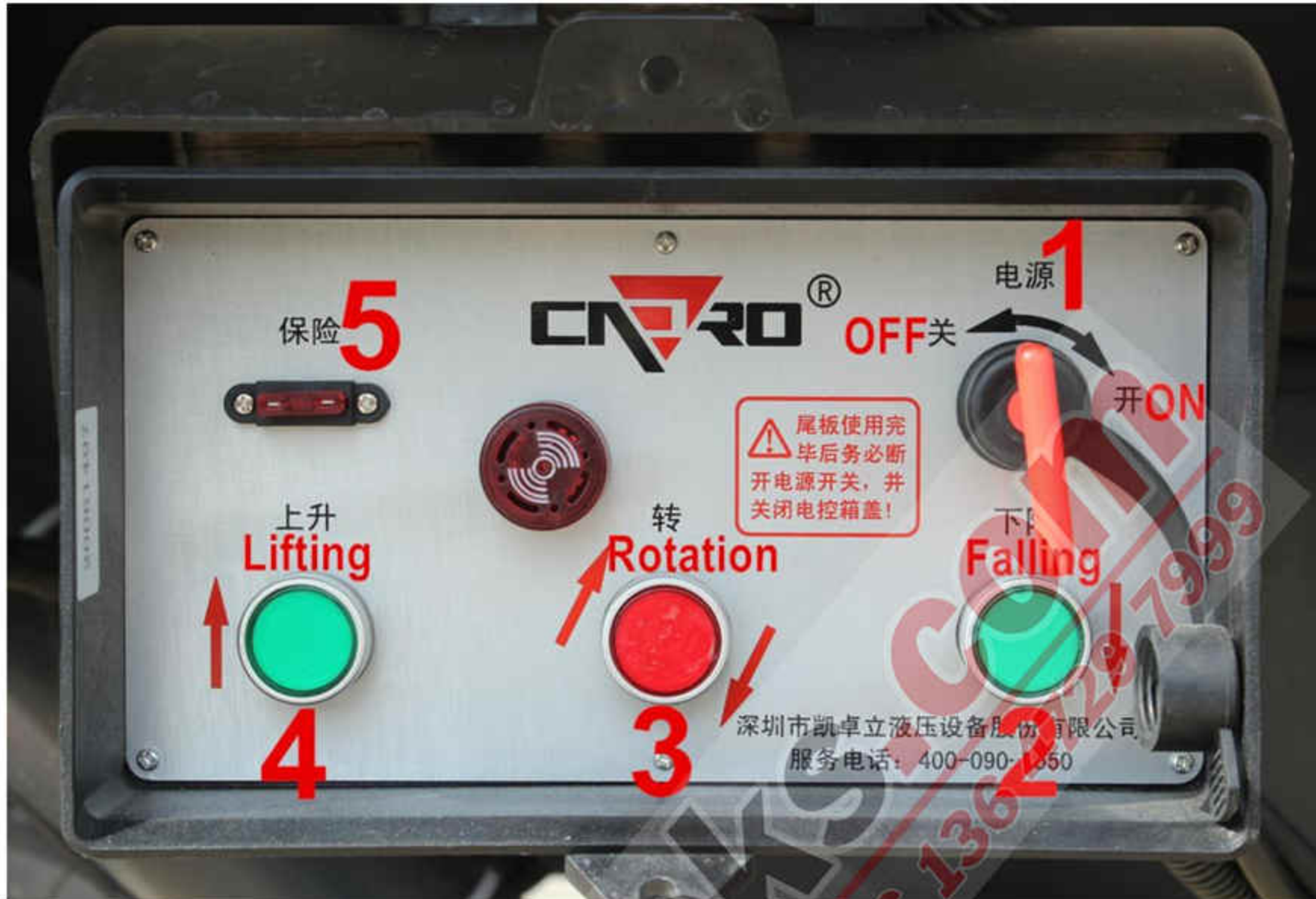


- | | | | |
|-------------------|------------------------|----------------------|-------------------|
| 1-Chassis battery | 2-Direct current motor | 3-Contactor switch | 4-Main fuse |
| 5-Main switch | 6-Safety level | 7-Lifting button | 8-Rotation button |
| 9-Alarm | 10-Falling button | 11-Connecting socket | |



iii, How to operate rear lifting platform?. (Very Important)

1. Figure out all function of each button before any operation.



- Electric button 1: ON → Whole system start work
OFF → Whole system stop work
- Falling button 2: press to make platform falling down
- Rotation button 3: press to make platform rotation, pressed 3 together with 4 or 2 can make platform working as below:
4 & 3 pressed together → clockwise rotation for lifting up
2 & 3 pressed together → counterclockwise rotation for falling down
- Lifting button 4: press to make platform lifting up
- Fuse 5: for safety working

NOTE: please turn off the electric after working, and cover the control box

2. Turn the Electric button 1 to ON position, and whole system ready for working.

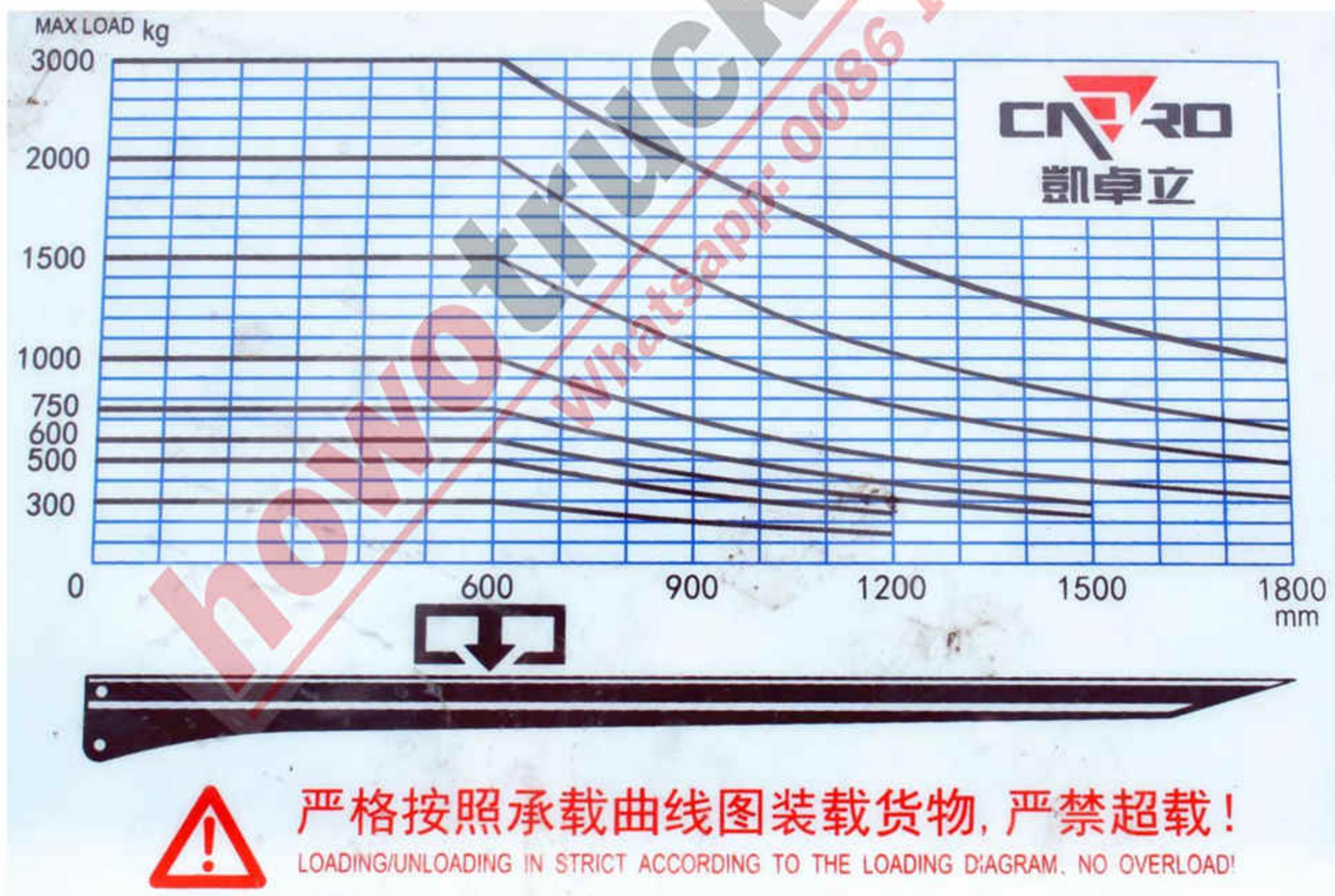
3. Open Door operation—Platform falling down operation

Press Rotation button 3, and at same time press Falling button 2, platform counterclockwise rotation to fall down, Or just press Falling button 2 to make the platform down to horizontal position and ready for loading. Then release Falling button 2 firstly, then release Rotation button 3.

4. Close Door operation—Platform Lifting up operation

Press Rotation button 3, and at same time press Lifting button 4, platform clockwise rotation to lift up, Or just press Lifting button 4 to make the platform lifting to vertical position and ready for driving. Then release Lifting button 2 firstly, then release Rotation button 3.

NOTE: Please note that the rotation and lifting/falling should do coordination work; make sure the platform does not touch others during lifting up or falling down.



(Recommend loading capacity for the platform)

Chapter 5, Freezer Truck Working Principles

The operator should fully understand Whole Structure and Working Principle for SINOTRUK HOWO 40cbm Freezer Truck before any operation. Only trained person can operate this vehicle properly and to prevent unnecessary accidents and equipment damage.

i ,How are the Freezer Truck working?

The HOWO heavy duty 4x2 Freezer Truck installed independent American Carrier Supra 850 refrigerated unit, operate the Control Box in cabin to control the refrigerated unit working, also can use the control box to adjust the temperature in freezer body. Then can be used for frozen and fresh goods transportation. And rear lifting platform can make loading and unloading more convenient.

ii ,What is the main component for truck?

The freezer truck is refitted based on the HOWO LHD 4x2 truck chassis. The refit part includes Refrigerator Units, Freezer Body and Operation System.

- Refrigerator Units: Famous Carrier brand, which is used to adjust temperature of the body.
- Freezer Body: 7 meters long body, with middle movable bulkhead, rear hinged door and side door for easy operation.
- Operation system: Control box inside of cabin for easy operation

iii, How to operate freezer trucks?. (Very Important)

As for usage, regular maintenance and troubleshooting, Please kindly refer to the attached specified Manual.

NOTE: Please turn off the battery switch if not use for long time.



5. Starting the Unit

5.1 Starting the Unit - Road Operation



Under no circumstances should ether or any other starting aids be used to start the engine.



1. Place the I/O switch in the I position.
2. If the unit has been used previously in the Electric mode, press the Road/Electric key to enable Road mode.



Under normal circumstances this is all that is required to start the unit.

- The Road mode icon will be displayed and the message "ROAD" is displayed.
- The unit will perform a complete diagnostic check on the micro-processor controller, pre-heat for the required amount of time based on the engine temperature and start automatically.

5.2 Starting the Unit - Standby Operation

WARNING

Make sure the power plug is clean and dry before connecting to any power source.

WARNING

Do not attempt to connect or remove power plug or perform service and/or maintenance before ensuring the unit I/O switch is in the "O" position.



1. Place the I/O switch in the O position.
2. Connect the unit to the appropriate power source. (See table in [Standby Operation Guidelines](#) Section)
3. Place the I/O switch in the I position.
4. Press the Road/Electric key to enable Electric mode.

5.3 Starting the Unit - Standby Operation (Electric mode)



1. The Electric mode icon is illuminated and the message "ELEC" is displayed.
2. If Electric mode is initiated but no power is available, "NO POWER" is displayed.
3. The microprocessor will perform a self-test, and then setpoint and box temperature will be displayed.

6. Pre-Trip

Pre-Trip is a test sequence that the operator may initiate to check unit operation. When Pre-Trip is enabled, the unit will enter a test sequence to operate the unit in various operating modes.



1. Start and run the unit.
2. Press the Function key. "Pre-Trip N" will be enabled. Press the = (Enter) key.
3. Press the up or down arrow until "Pre-Trip Y" is displayed. Press the = (Enter) key to start the Pre-Trip.



The screen will display the status of the Pre-Trip test ("Test 1," "Test 2," etc.).

NOTE

If the conditions for Pre-Trip are not met, the unit will not enter Pre-Trip and the display will return to its default display

7. Changing Setpoint

Setpoints of -22°F to $+95^{\circ}\text{F}$ (-30°C to $+30^{\circ}\text{C}$) may be entered via the keypad.



1. With the default screen showing on the display, press the up or down arrow keys to bring the setpoint to the desired reading. The display will flash to indicate that the reading being displayed is a non-entered value.
2. Press the = (Enter) key to activate the new setting. If the = (Enter) key is not pressed after five seconds, the message "NO SP CHG" is displayed for 10 seconds and all LEDs and icons flash. The display will revert to the previous active setting.

NOTE

The microprocessor retains the last entered setpoint in memory even if the unit is shut down or a power failure occurs.

NOTE

You cannot change a setpoint when in Pre-Trip or when viewing Unit Data or Functional Parameters

8. Start/Stop Operation

- Auto-Start/Stop is provided to permit stopping / restarting the diesel-driven compressor as required. This gives the microprocessor automatic control of starting and stopping the diesel engine.
- The main function of Auto-Start/Stop is to turn off the refrigeration system near the setpoint to provide a fuel efficient temperature control system and then restart the engine when needed.
- Start/Stop operation is normally used for frozen loads.

1 (Icon illuminated when Auto Start/Stop mode active)



1. After start-up, check that the Auto Start/Stop mode Icon is illuminated. If it is illuminated, the unit is already in the Auto Start/Stop mode.
2. If it is not illuminated, press the Auto Start/Stop - Continuous key to toggle the unit into Auto Start/Stop mode. The message "S/S ON" is displayed.

Whenever the unit starts in Auto Start/Stop, it will run until:

- It has run for the predetermined minimum run time
- The engine coolant temperature is above 122°F (50°C)
- The box temperature is at setpoint

8. Start/Stop Operation (continued)

The controller will not shut off the engine if the battery voltage is not sufficient to restart it. Battery voltage above approximately 13.4 volts is required for shutdown. This varies depending on ambient. The control system will calculate the equivalent voltage based on ambient.

The controller will restart the engine if any of the following criteria have been met:

- Box temperature has changed by the selected override temperature **DURING** minimum off time
- Box temperature has moved away from setpoint by selected restart temperature **AFTER** minimum off time
- The battery voltage drops below 12.2 VDC (Refer to **Unit Data** section) or the selected voltage in configurations
- The engine coolant temperature drops below 34°F (1°C)

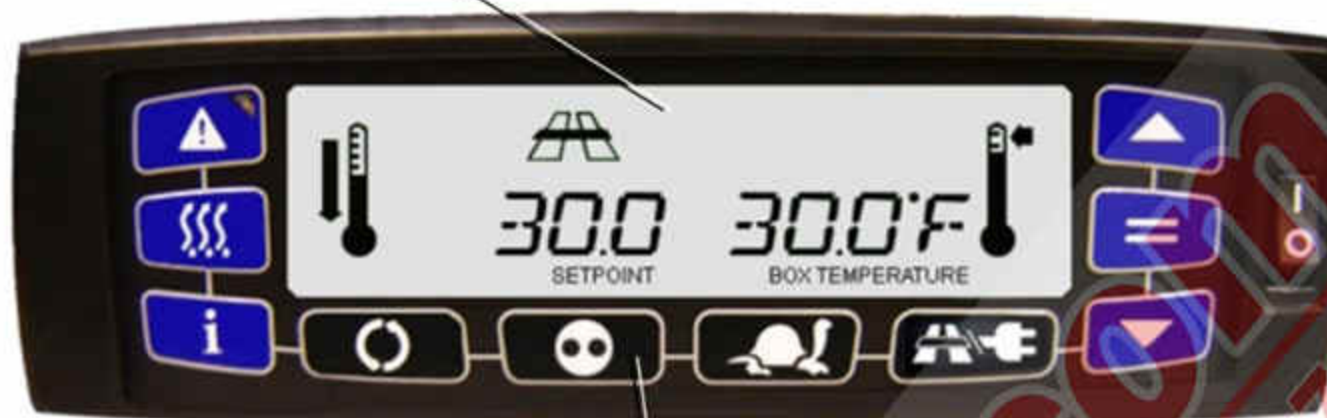
NOTE

Auto Start-Stop operation may be tied to the setpoint ranges for frozen and perishable loads and the Auto Start/Stop - Continuous key may be locked out.

9. Continuous Run Operation

In the Continuous Run mode, the diesel engine will run continuously providing constant air flow and temperature control to the product. Continuous Run operation is normally used for perishable loads.

1 (Icon turned off when Continuous Run mode active)



- After start up, check to see that the Auto Start/Stop mode icon is not illuminated. If it is not illuminated, the unit is already in Continuous Run mode.
- If it is illuminated, press the Auto Start/Stop - Continuous key to toggle the unit into Continuous Run mode (unit will operate continuously after starting). The message "CONT ON" is displayed.

NOTE

Continuous Operation may be tied to the setpoint ranges for frozen and perishable loads and the Auto Start/Stop - Continuous key may be locked out.

NOTE

The unit will remain in low speed for 10 minutes after engine start-up when the Continuous Run setpoint is below 10°F (-12°C).

10. Manual Defrost

Defrost is an independent cycle overriding cooling and heating function to de-ice the evaporator as required.



1. Check that box temperature on the display is 40°F (4.4°C) or lower.
2. Press the Defrost key to initiate Manual Defrost.



If defrost is initiated successfully, the Defrost icon remains and “dF” is displayed in the Box Temperature area for 10 seconds without box temp and other icons. Then, the default display returns while the Defrost icon and “dF” display remains for the duration of the defrost.

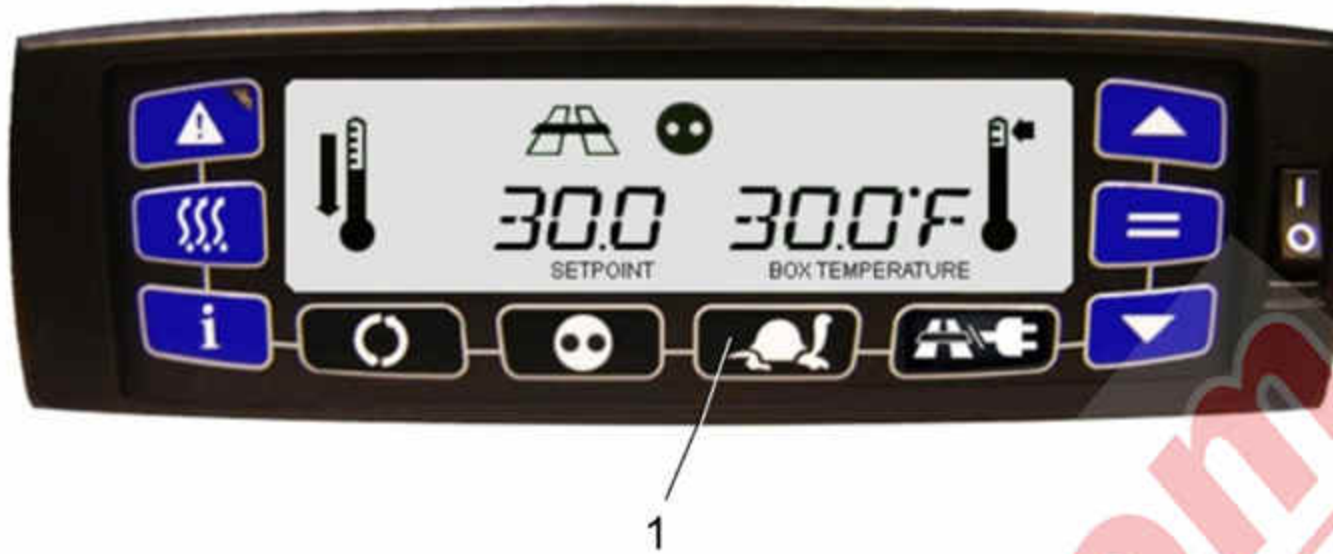
If defrost does not initiate, the Defrost icon turns off and “no dF” is displayed in the Box Temperature area for 10 seconds without box temp and other icons. Then, the default display returns along with a display of box temperature.

Defrost may be terminated in any of three ways:

- Timer initiation
- Air switch initiation
- Manually

11. City Speed

The City Speed key enables the City Speed mode of operation, in which the unit will operate in medium speed.



1. Press the City Speed key to toggle between low speed only and normal operating mode.
 - The City Speed mode (Turtle) Icon is illuminated and the message "CITY ON" is displayed (or if City Speed disabled, the icon turns off and "CITY OFF" is displayed) in the setpoint area without setpoint or box temperature displayed for 10 seconds.
 - If the City Speed Functional Parameter is locked OR all functional parameters are locked, "FN LOCKED" is displayed for 10 seconds and display the appropriate value that is locked in. Then, the display will return to its default state.

City Speed Mode Icon



CITY ON Indicator

When City Speed is enabled, the City Speed mode (Turtle) Icon is illuminated and the message "CITY" is displayed in setpoint while "ON" is displayed in box temperature.

When City Speed is disabled, the City Speed mode (Turtle) Icon turns off and the message "CITY" is displayed in setpoint while "OFF" is displayed in box temperature

12. Function Change

The Functional Parameters control selected operating features of the unit. When multiple choices are available, the display will show the function description on the left side with the corresponding function choice on the right side.

Refer to the **Functional Parameters** table for a list of all parameters.

NOTE

Function changes will change the operation of the unit.

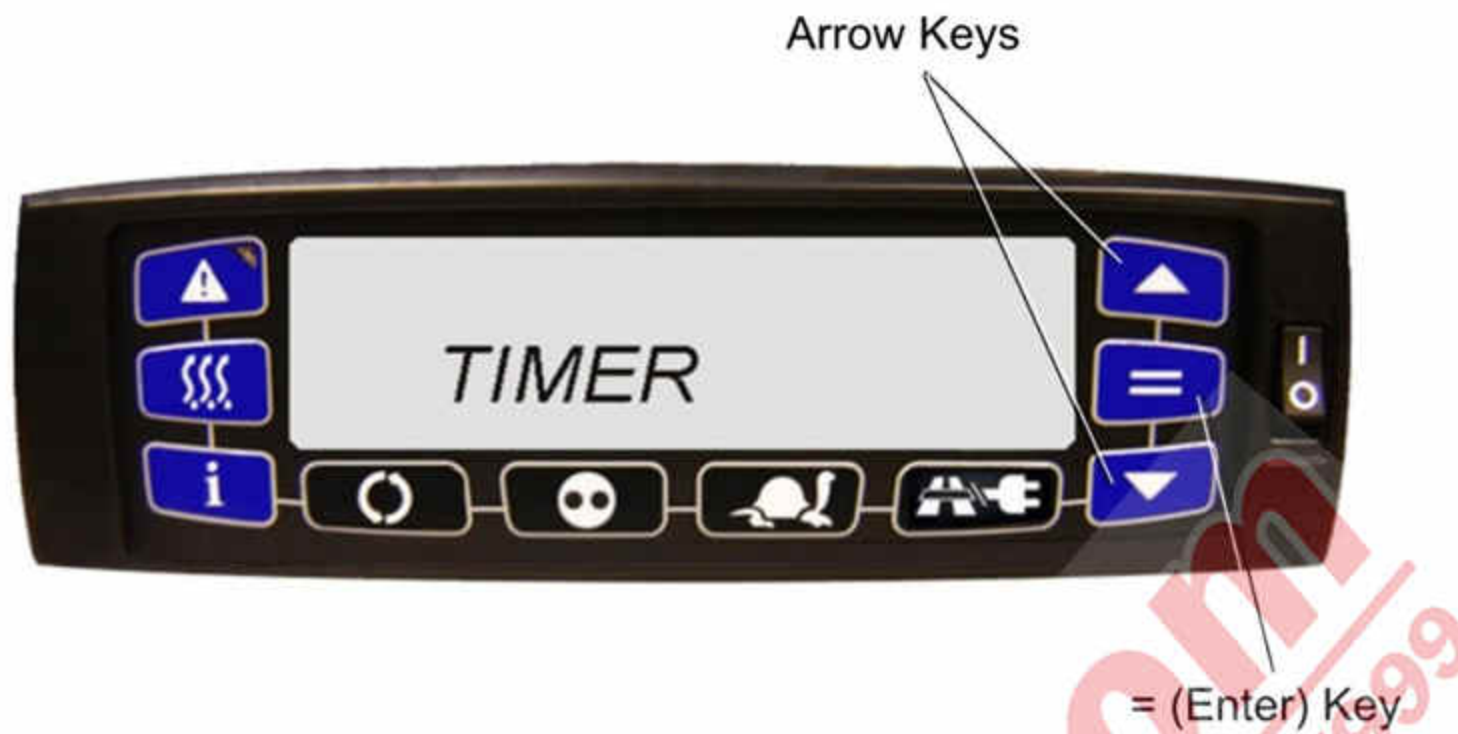
NOTE

Functions may be locked to prevent unintended changes.



1. With the system powered up, place the I/O switch in the I position.
2. Press the Function key.

12. Function Change (continued)



3. Press the up or down arrow keys to scroll through the function sub-menus list.
4. Press the = (Enter) key when the submenu requested is displayed. The submenus are TIMER, TEMP, SETTING, SS PARAM, MODE, OTHER.
5. Press the up or down arrow keys to scroll through the functions in a sub-menu.
6. Press the = (Enter) key while the function is being displayed to change the value.
7. Press the up or down arrow keys to change the value. Then, press the = (Enter) key to lock in the change.

12. Function Change (continued)

Functional Parameters

Parameter	Description	Range
Timer		
SLEEP	Enable or disable Sleep mode	0 - Off 1 - On Default: Off
SLEEPWAKE	Set a wake-up time - when Sleep mode will wake up, ranging from one hour to eight days from current time. (Only if Wake Up is ON)	0 - Off 1 - On Default: Off
Temp		
RSTR	Restart temperature for perishable setpoints in S/S	32.5° to 50°F in 0.5° increments (0.3° to 10°C) in 0.1° increments Default: is 39°F (4°C)
PROBE RAT or SAT	Indicates the primary sensor that is used for performing temperature control in the system	0 - Return Air 1 - Supply Air Default: Return Air
Setting		
TEMP	Determines temperature units on display	0 - Fahrenheit °F 1 - Celsius °C Default: Fahrenheit This parameter is also defaulted to "locked" for NAO Region models.
PRESS	Determines pressure units on display	0 - Psig 1 - Bars Default: Psig This parameter is also defaulted to "locked" for all NAO Region models.
DATE	Determines date format on display	0 - MM/DD/YYYY 1 - DD/MM/YYYY Default: MM/DD/YYYY

Functional Parameters (Continued)

BRIGHT	Determines brightness on display	Setting is 0 to 100.
SS Parameter		
MIN RT	Minimum run time for perishable setpoints in Start/Stop mode	4 to 60 minutes, with 1 minute intervals Default: 4 minutes
MIN OFF	Minimum off time for perishable setpoints in Start/Stop mode	10 to 90 minutes, with 1 minute intervals Default: 10 minutes
OVER	Defines how far away the active temperature must be away from the setpoint before the minimum off time can be overridden in Start/Stop mode for perishable setpoints	36° to 50°F in 0.5° increments 2° to 10°C in 0.1° increments. Default: 39°F (4°C)
MAX OFF	Maximum off time for perishable setpoints during Start/Stop mode	0 - Off 1 - 10 to 255 minutes, with 1 minute intervals Default: Off
Mode		
LS CON	Determines the low speed delay adjustment for Continuous	0 - Off 1 - 0 to 255 minutes, with 1 minute intervals Default: 1 minute
LS SS	Determines the low speed delay adjustment for Start/Stop mode	0 - Off 1 - 0 to 255 minutes, with 1 minute intervals Default: 1 minute
CITY	Disable high speed in the speed control overrides	0 - Off 1 - On Default: Off Only applies to EMEAR Region

Functional Parameters (Continued)

Other		
DEFR	The time interval between defrost cycles	0 - 1.5 hours 1 - 3 hours 2 - 6 hours 3 - 12 hours Default: 6 Hours
SWT DSL	Switch to Diesel: When this functional parameter indicates No, the No Power configuration parameter is overridden and the system can be shut down.	0 - No 1 - Yes Default: No
FRESHNO	Fresh Protect: Used for supply air control.	0 - OFF 1 - A 2 - B 3 - C (Default) 4 - D 5 - E
TRANGE	Out-of-range temperature tolerance selection.	0 - Off 1 - 2°C (NDTP Display A) 2 - 3°C (NDTP Display B) 3 - 4°C (NDTP Display C) Default: 4°C
OVR DOOR	Indicates if the door switch alarm should override the shutdown of the unit. If the Override Door switch Shutdown functional parameter = Yes, the door switch alarm controller response is alarm only regardless of the configuration parameter. Low speed Alarm only could still be applicable.	0 - No 1 - Yes Default: No

Functional Parameters (Continued)

OVR SWITCH	Indicates if the remote switch 1 alarm should override the shutdown of the unit. If the Override Remote Switch 1 Shutdown functional parameter = Yes, the remote switch 1 alarm controller response is alarm only regardless of the configuration parameter. Low speed Alarm only could still be applicable.	0 - No 1 - Yes Default: No
	Airflow function. Normal Air = no effect High Air = SPEED = HIGH in Perishable Range.	0 - Normal Air 1 - High Air Default: Normal Air
	Start/stop shut down offset for frozen	0°F to 1.1°F 0°C to 0.6°C Default: 0
	Display alarm description in alarm list	0 - No 1 - Yes Default: Yes
	Top Freeze Protection: If Yes, use supply air temperature as active probe If No, use selected probe in Temp Control setting This can only be turned on when $0 \leq \text{setpoint} \leq 18.4 \text{ } ^\circ\text{C}$. It will be automatically turned to NO if system is set outside of these conditions or if the SAT probe is bad.	0 - No 1 - Yes Default: No

13. Unit Data

The Unit Data key is used to display the unit operating data. This key, in conjunction with the Arrow keys and = (Enter) key, will allow the user to display the unit's operating data values (hour meters, battery voltage, etc.). Once inside the Unit Data submenus, if no keys are pressed for five seconds the display will return to the default display.

NOTE

For all temperature unit data, the values are in °C or °F depending on the configuration and the °C or °F indicator will be displayed appropriately. Pressures are displayed with a P or B to signify psig or bars.



Unit Data Key

1. Pressing the Unit Data key will bring up the Unit Data submenu. Use the up and down arrow keys to cycle through the submenu items.

The submenus are: SENSORS, METERS, SYSTEM, ENGINE, INFO.



2. When a submenu item is displayed, press the = (Enter) key to enter that submenu and then use the Arrow keys to cycle through the items.

13. Unit Data (continued)



1. The display will show the description of the input on the left side with the actual data on the right side. If the Arrow key is held for one second, the list will scroll at a rate of one item every 0.5 seconds. Once the end of the list is reached, the list will scroll back to the first entry.
2. Press the = (Enter) key at any time to exit and return to the default display.

13.1 Lock or Unlock the Unit Data Screen:

To lock or unlock the display, hold the = (Enter) key for five seconds.

13. Unit Data (continued)

The following is a list of definitions for the acronyms used in the display.

Unit Data Codes

Data	Definition
Sensors	
AMB	Ambient Air Temperature (entering condenser)
RAT	Return Air Temperature (entering evaporator)
RRAT	Redundant Return Air Temperature (entering evaporator)
SAT	Supply Air Temperature (leaving evaporator)
DL-T	Delta-T. Supply air temperature minus return air temperature (negative value indicates cooling and a positive value indicates heating).
DTS	Defrost Termination Temperature
RS1*	Remote Sensor 1
RS2*	Remote Sensor 2
RS3*	Remote Sensor 3
Meters	
SBY	Electric Hour Meter
SON	Switch On Hour Meter
HS	High Speed Cycle Counter
STRT	Start Cycle Counter
ENG	Engine Hour Meter
MENG**	Maintenance Engine Hour Meter
MSBY**	Maintenance Standby Hour Meter
MSON**	Maintenance Switch On Hour Meter

Unit Data Codes (Continued)

Data	Definition
System	
CDT	Compressor Discharge Temperature (leaving the compressor)
CDP	Compressor Discharge Pressure (leaving the compressor)
CSP	Compressor Suction Pressure (entering the compressor)
CST	Compressor Suction Temperature (entering the compressor)
%SMV	Percentage of SMV Valve Opening***
Engine	
ENCT	Engine Coolant Temperature
RPM	Diesel Engine Speed
BATT	Battery Volts
DCS	DC Current Sensor displayed in amps
FLS	Fuel Level Percentage. Displayed only if the fuel level sensor is installed.
Info	
MM/DD/YY	Current Date and Time that the system is using
HH:MM	Hours and Minutes using a 24 hour clock
SER1****	Characters 1-4 of Serial Number
SER2****	Characters 5-8 of Serial Number
SER3****	Characters 9-11 of Serial Number
MOD1	Characters 1-4 of Model Number
MOD2	Characters 5-8 of Model Number
MOD3	Characters 9-12 of Model Number
SWXXXXXX	Software Revision of the Unit

* Only visible if turned on in the configuration.

** Only if activated.

*** Sensor not active. Value is always 32°F (0°C).

**** For unit with serial number: SER1 = ABC9, SER2 = 8765, SER3 = 432.

14. Alarm Buzzer and Reset

Alarm Key



14.1 Alarm Buzzer Silence

When an alarm occurs, the warning buzzer will sound alerting the operator that an alarm has occurred.

Press and hold the Alarm key for five to seven seconds to silence the warning buzzer. The fault light remains illuminated until the alarm is cleared.

14.2 Alarm Reset

1. Press and hold the Alarm key to show the alarms codes from latest alarm to first alarm.
2. Press the Up and Down Arrow keys to scroll through the alarm code list until "ALARM RST" is displayed.
3. While "ALARM RST" is displayed, press the = (Enter) key to clear the alarm list. "ALARM CLR" will be displayed for 10 seconds. The unit will restart if the alarm condition has been corrected and the unit is in Auto Start/Stop.

14.3 Alternate Alarm Reset

1. Place the I/O switch in "O" position.
2. The unit can be restarted after the alarm condition is corrected.

14.4 Inactive Alarms

1. Press the Alarm key and Up Arrow key at the same time and hold together for five seconds. This will display the inactive alarm list.
2. If there are no inactive alarms, "NO ALARMS" is displayed. If there are active alarms, scrolling is the same as with active alarms. When the end of the list is reached, display will show "ALARM RST" and "ALARM CLR" as with active alarms.

14.5 Verifying No Active Alarms

Press the Alarm key. If the message displayed is "STATEOK", there are no active alarms.

15. Stopping the Unit



1. To stop the unit, from any operating mode, place the I/O switch in the O position.
2. The diesel engine/electric motor will stop and the microprocessor controller will turn off.

16. Product Loading

16.1 Before Loading

- Pre-cool the body. This will remove much of the heat from the inside of the body and give the product better protection when it is loaded.
- Place the unit in a defrost cycle immediately before loading. This will remove moisture accumulated on the evaporator coil.

16.2 During Loading

- Turn the unit off!
- Check product temperature during loading.
- Ensure that the air return and supply opening remain unobstructed.
- Leave approximately 4 to 5 inches (10.2 to 12.7 cm) between the load and the front wall for air return to the unit.
- Leave at least 10 to 12 inches (25.4 to 30.5 cm) between the top of the load and the ceiling to ensure that there is nothing to prevent airflow to the rear of the body.
- Load product on pallets to provide free air return to unit and improve product protection.

Proper air circulation in the truck body - air that can move around and through the load - is a critical element in maintaining product quality during transport. If air cannot circulate completely around the load, hot spots or top-freeze can occur.

Pallets

The use of pallets is highly recommended. Pallets help protect the product from heat that passes through the floor of the trailer when loaded so air can flow freely through them to return to the evaporator. When using pallets, it is important to refrain from stacking extra boxes on the floor at the rear of the trailer. This will cut off the airflow.

Product Stacking

Product stacking is another important factor in protecting the product. Stack products that generate heat - fruits and vegetables, for example - so the air can flow through the product to remove the heat. This is called "air stacking" the product. Stack products that do not create heat - meats and frozen products - tightly in the center of the trailer. Keep all products away from the side walls of the body, to allow air flow between the body and the load. This prevents heat filtering through the walls from affecting the product.

It is important to check the temperature of the product being loaded to ensure that it is at the correct temperature for transport. The refrigeration unit is designed to maintain the temperature of the product at the temperature at which it was loaded. It was not designed to cool warm product.

17. Recommended Transport Temperatures

Below are some general recommendations on product transport temperatures and operating modes for the unit. These are included for reference only and should not be considered preemptive of the setpoint required by the shipper or receiver.

More detailed information can be obtained from your Carrier Transicold dealer.

Product Transport Temperatures

Product	Setpoint Range		Operating Mode*
	°F	°C	
Bananas	56 to 58	13 to 14	Continuous
Fresh fruits and vegetables	33 to 38	0.5 to 3	Continuous
Fresh meats and seafood	28 to 32	-2 to 0	Auto-Start/Stop or Continuous
Dairy Products	33 to 38	0.5 to 3	Auto-Start/Stop or Continuous
Ice	15 to 20	-10 to -7	Auto-Start/Stop**
Frozen fruits and vegetables	-10 to 0	-23 to -18	Auto-Start/Stop**
Frozen meats and seafood	-10 to 0	-23 to -18	Auto-Start/Stop**
Ice Cream	-20 to -15	-29 to -26	Auto-Start/Stop**

* During delivery cycles that include frequent stops and door openings, we recommend that the unit always be operated in the continuous run mode to help ensure product quality. If it is possible, turn off the unit during the time the body doors are open to help preserve the product temperature.

**Variations may be necessary for very high or very low ambient temperatures.

18. Troubleshooting

Everything possible has been done to ensure that your unit is the most reliable, trouble-free equipment available today. If, however, problems occur, the following section may be of assistance.

If the problem you are experiencing is not listed, please contact your Carrier Transicold dealer for assistance.

General Problems

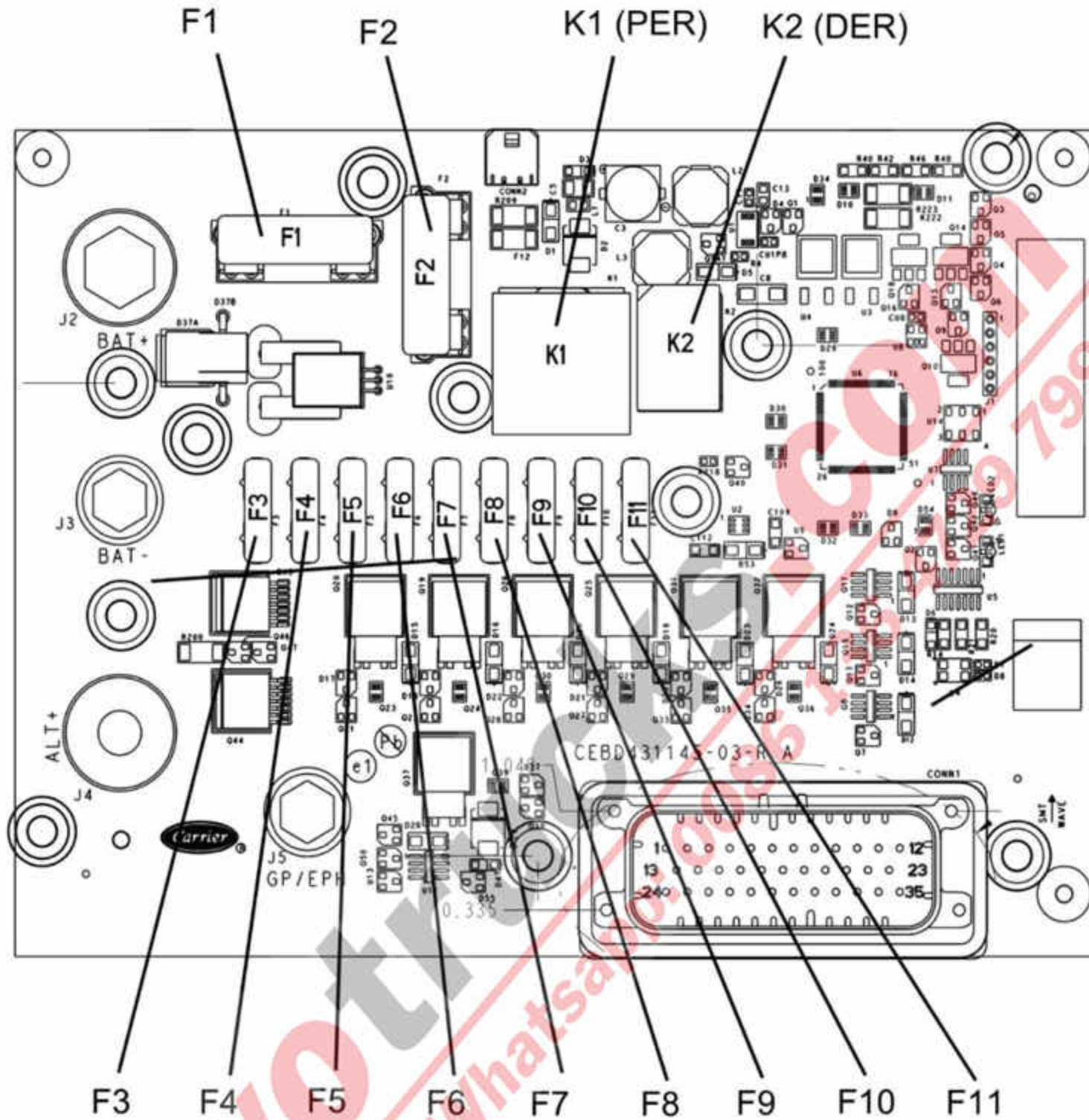
Starter Motor will not crank or low cranking speed	Battery insufficiently charged
	Battery terminal post dirty or defective
	Bad electrical connections at starter
	Starter motor malfunctions
	Starter motor solenoid defective
	Open starting circuit
	Incorrect grade of lubricating oil
Starter Motor cranks but engine fails to start	No fuel in tank
	Air in fuel system
	Water in fuel system
	Plugged fuel filters
	Plugged fuel lines to injector(s)
	Fuel control operation erratic
	Glow plug(s) defective
Starter cranks, engages, but dies after a few seconds	Fuel pump (FP) malfunction
	Engine lube oil too heavy
	Voltage drop in starter cable(s)

General Problems (Continued)

Engine stops after several rotations	Fuel supply restricted
	No fuel in tank
	Leak in fuel system
	Faulty fuel control operation
	Fuel filter restricted
	Injector nozzle(s) defective
	Injection pump defective
	Air cleaner or hose restricted
	Safety device open
	Fuel pump (FP) malfunction
Starter motor turns but pinion does not engage.	Pinion or ring gear obstructed or worn
Starter motor does not disengage after switch was depressed.	Starter motor solenoid defective
Pinion does not disengage after engine is running.	Defective starter
No power to starter motor solenoid (SS)	Battery defective
	Loose electrical connections

19. Fuse and Relay Locations

The fuses and relays that protect the unit are located on the TPC board in the control box on the roadside of the unit. They are accessible by loosening the screws that hold the control panel closed.



19. Fuse and Relay Locations (continued)

Fuse Identification

Fuse		Designation
Fuses on TPC Board		
F1	80 Amps	Main Fuse
F2	30 Amps	PER Relay
F3	5 Amps	12V Options
F4	5 Amps	Stepper Motor
F5	5 Amps	ENCU (12-00702)
F6	4 Amps	MCA Logic Power
F7	20 Amps	Fuel Heater
F8	5 Amps	Option (not used)
F9	5 Amps	Automatic Phase Reversal
F10	7.5 Amps	Evap Fan Relays
F11	20 Amps	Fuel Pump Fuse
Fuses Outside TPC Board		
F20	50 Amps	Condenser Fans
F21	40 Amps	Condenser Fans
F22	30 Amps	Evaporator Fans
F23	30 Amps	Evaporator Fans
F24	30 Amps	Evaporator Fans

Relay Identification

Relay	Designation
K1 (PER)	Power Enable Relay (on TPC)
K2 (DER)	Diesel / Electric Relay (on TPC)

20. Unit Maintenance

For the most reliable operation and for maximum life, your unit requires regular maintenance. This includes oil and filter changes, fuel and air filter replacement, and coolant system maintenance. Perform maintenance according to the following schedule (in hours):

Maintenance Intervals

Service	Hours
Initial Service	1000
Service A	2000
Service B	4000

20.1 Engine Oils

The oils recommended for use in your refrigeration unit must comply with the American Petroleum Institute's (API) SG/CD rating. The use of any oil that does not meet this rating may affect the warranty on the engine in the unit. The use of oil of the proper weight (viscosity) is also essential.

Oil Viscosity

Outdoor Temperature	Recommended Oils
Below 32°F or 0°C	10W30, 5W40 (synthetic)
Above 32°F or 0°C	10W30, 5W40 (synthetic), 15W40



*10W30 & 5W40 (synthetic) are recommended for ALL climates

**15W40 is NOT recommended for climates < 32°F (0°C)

20.2 Unit Maintenance Schedule

Maintenance Schedule

	Initial	Check Up	Service A	Service B
Before running				
Report any sign of damage on vehicle/ body/ refrigeration unit.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check coolant level; report strength.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Write down hour meter diesel and standby.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visually check the tightness of fixing bolts/screws, frame, metalworks including remote evaporators and heater bracket when applied.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check software revision. Write it down.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check exhaust system security and visually check for signs of corrosion, including sections where exhaust insulation is installed (silent-city units).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visually check vibrasorber LP/HP and fixations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visually check - shaftseal + oil level in compressor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check routing of electrical wires, harnesses, fuel lines (repair or replace if needed), cab command routine, plug from standby module, check oil tubes routing and security Check battery security, lubricate terminals against corrosion, check battery cables routine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check fuel tank straps integrity, fixing bolts, cap. Drain water from fuel tank if applicable.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Maintenance Schedule (Continued)

	Initial	Check Up	Service A	Service B
Connect gauges and start the engine				
Check operator panel, display, light, switches (including evaporator door switch, undermount safety switch)	○	○	○	○
Check all sensors, transducers consistency between each others			○	○
Check glow plug operation, connections, secure the wire	○	○	○	○
Perform pull down test	○	○	○	○
Check on sight glass refrigerant flow and cleanliness	○	○	○	○
Check coolant system temperature, thermostat, leaks	○	○	○	○
Initiate manual defrost and confirm termination; check defrost drain pipes and water evacuation	○	○	○	○
Check the engine high / low speed and adjust if required			○	○
In heat mode, check hot gas functionality. Check heater bars.			○	○
Check battery state of charge		○	○	○
Check alternator charge output			○	○

Maintenance Schedule (Continued)

	Initial	Check Up	Service A	Service B
Stop the engine. Lock out tag out.				
Check fuel pump filter, clean if necessary, replace bowl gasket		○	○	
Check oil level and refill if required. Check for oil leak		○		
Drain and refill oil			○	○
Replace oil filter and bypass filters, fuel filter, air filter			○	○
Check air filter element. Replace if necessary		○		
Check all belts (wear + tension)	○	○	○	
Check clutch and connections, pulleys, standby motor, alternator, (noise test). Hand test				○
Replace all belts				○
Check operation of evaporator fan / turbine (bearing/noise)			○	○
Check evaporator fan brushes - Clean if necessary (if applicable)				○
Check high and low voltage wiring, and connections into control box, corrosion, chafing and signs of heat build up	○	○	○	○
Visually check cleanliness of condenser and clean if necessary	○	○	○	○
Visually check cleanliness of evaporator and clean if necessary	○	○	○	○
Check air switch calibration				○
Check alternator brushes			○	○
Check and lubricate all linkages, hinges and lock mechanisms				○
Grease serviceable bearings				○

Maintenance Schedule (Continued)

	Initial	Check Up	Service A	Service B
Remove lock-out/tag-out. Start the unit on standby.				
Check date and time in micro.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check and confirm all current product upgrades have been completed	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Replace maintenance sticker & clean unit of marks made during service	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Every two years				
Replace coolant and coolant bottle cap				
Check valve clearance of diesel engine and adjust if necessary (Refer to engine technical manual)				

These maintenance schedules are based on the use of the approved oils and filters and regular Pre-Trip inspections of the unit. Failure to follow the recommended maintenance schedule may affect the life and reliability of the refrigeration unit.

All units are shipped with Extended Life coolant. Replace coolant every two years.

21. Standby Operation Guidelines

For safe, reliable operation in Standby mode, it is important to follow a few guidelines:

- Never plug the unit into the power source with the main switch in the RUN (I) position. The main switch must always be in the STOP (O) position when connecting the unit to the power source.
- The circuit breaker and extension cable used for Standby operation must conform to the following specifications:

Circuit Breaker and Extension Cable Specifications

Operating Voltage	FLA Rating*	Circuit Breaker Capacity	Cable Requirement
208/230 V 60 hz 3 phase	20-35 Amp*	50 A	8/3 with ground up to 50 ft / 15.25 m
460 V 60 hz 3 phase	10-25 Amp*	30 A	10/3 with ground up to 75 ft / 23 m

- When multiple units are in use, each unit must be operated on its own electrical circuit. Never operate more than one unit on a circuit breaker.

NOTE

This information is provided as a guideline only.

Contact a licensed electrician when preparing a circuit for operation of the refrigeration unit. A licensed electrician is familiar with all local ordinances and special requirements for your area and can ensure that the circuits are properly designed and installed, and that connections are correct.