

Operator's Manual

40XR / 50XR

Direct Drive Truck Refrigeration Units



40 XR

50 XR

62-12201





Operator Manual
for
40XR / 50XR
Truck Refrigeration Units

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1. Introduction

This guide has been prepared for the operator of this Carrier Transicold 40XR/50XR diesel truck refrigeration unit. It contains basic instructions for the daily operation of the refrigeration unit as well as safety information, troubleshooting tips, and other information that will help you to deliver the load in the best possible condition. Please take the time to read this booklet and refer to it when you have a question about the operation of your Carrier Transicold unit.

Your refrigeration unit has been engineered to provide long, trouble-free performance when it is properly operated and maintained. The checks outlined in this guide will help to minimize over-the-road problems. In addition, a comprehensive maintenance program will help to ensure the unit continues to operate reliably. Such a maintenance program will also help to control operating costs, increase the unit's working life, and improve performance.

This guide is intended to be an introduction to your unit and to provide general assistance when needed. More comprehensive information can be found in the operation and service manual (62-12202).

When having your unit serviced, be sure to specify genuine Carrier Transicold replacement parts for the highest quality and best reliability.

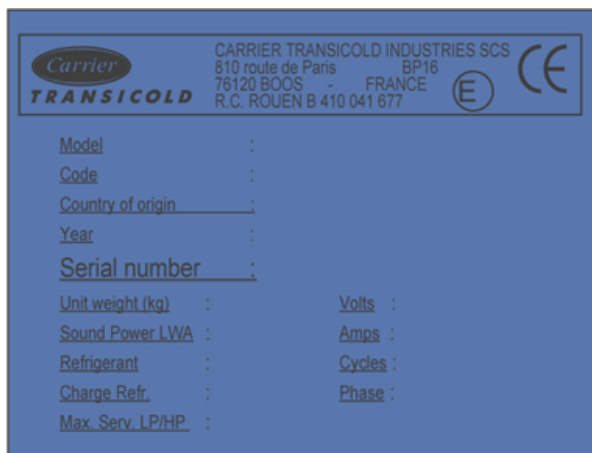
At Carrier Transicold, we are continually working to improve the products that we build for our customers. As a result, unit specifications may change without notice.

2. Unit Identification

2.1 Nameplate

Each unit is identified by a nameplate attached to the frame. This nameplate identifies the complete model number of the unit, the unit serial number, the refrigerant charge and quantity, and the date the unit was placed in service.

If a problem occurs, please refer to the information on this plate, and make a note of the model and serial numbers before calling for assistance. This information will be needed when you contact a technician for assistance.



Nameplate

2.2 Noise Level

The noise level sticker indicates the noise level in Lwa (sound power level).

Unit	Sound Power level LWA (dBA)
40XR	83
50XR	83

3. Safety

Your Carrier Transicold refrigeration unit has been designed with the safety of the operator in mind. During normal operation, all moving parts are fully guarded to help prevent injury. During all pre-trip inspections, daily inspections, and problem troubleshooting you may be exposed to moving parts. Please stay clear of all moving parts when the unit is in operation and when the unit main power switch is in the RUN position.



Unit may start automatically at any time even if the switch is in the OFF position. Use proper lockout/tagout procedures before inspection or servicing. All unit inspection/servicing by properly trained personnel only.



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

3.1 Refrigerants

The refrigerant contained in the refrigeration system can cause frostbite, severe burns, or blindness when in direct contact with the skin or eyes. For this reason and because of legislation regarding the handling of refrigerants during system service, we recommend that whenever this unit requires service of the refrigeration system, you contact your nearest Carrier Transicold authorized repair facility for service.

3.2 Battery

This unit utilizes a lead-acid type battery. A lead-acid battery normally vents small amounts of flammable hydrogen gas. Do not smoke when checking the battery. A battery explosion can cause serious physical harm and/or blindness.

4. Pretrip Inspection

Perform a Pretrip inspection before picking up any load. This inspection is essential in order to anticipate and help minimize the possibility of over-the-road problems. These checks take only a few minutes.



Inspect battery cables for signs of wear, abrasion or damage at every pre trip inspection and replace if necessary. Also check battery cable routing to ensure that clamps are secure and that cables are not pinched or chafing against any components.

Place the unit's main switch in the STOP (0) position.

- 1. Belts:** Check the belt tension by using an electronic belt tensioner. Properly adjusted belts give long lasting and efficient service. Too much tension shortens belt and bearing life, and too little tension causes slippage and excessive belt wear. It is also important to keep belts and sheaves free of any foreign material which may cause the belts to slip.
- 2. Battery:** On units equipped with serviceable batteries, check the level of the electrolyte in each of the cells. If the level is low, add distilled water to the correct level. However, most units are equipped with low- or no-maintenance batteries, which must be inspected to ensure that the connections are clean and tight. The battery hold-down must also be checked to ensure it is tight enough to keep the battery in place.
- 3. General Unit:** Visually inspect the entire unit for leaks, loose bolts, frayed, loose, or broken wires, etc. The radiator and condenser coils of the unit must be free of dirt, bugs, cardboard, or any other debris that may obstruct airflow across the coils. The evaporator (located inside the body) must also be free of debris, especially stretch wrap, which is often used during transport to prevent cargo shifting.
- 4. Truck Body:** Inspect the truck body prior to loading. Check the door and vent seals for damage and wear. Inspect the entire interior and exterior of the body for damage, and check for damage to the inner and outer skins of the body. Damage to the insulation may compromise the unit's ability to maintain the product temperature by increasing the amount of heat gain across the truck body.

5. Operation

5.1 Cab Command Description

Cab Command simplifies all control operations. From the driver seat, the operator can carry out all the control operations, including shutdown, automatic start-up, setpoint and defrost adjustments, and more.



- | | |
|-----------------------------|--------------------------|
| 1. Unit Operating Data LED* | 6. - key |
| 2. ON key | 7. Manual Defrost key |
| 3. OFF key | 8. Road Operation key |
| 4. + key | 9. Standby Operation key |
| 5. SET key | 10. Display |

*Green = Normal Cycling (left half);
Red = Alarm (right half)

NOTE

If Cab Command is built into the vehicle control panel, the command unit must be located as far as possible from the heating ducts. Maximum temperature of exposure is 158°F (70°C)

5.2 Operation Principle

After starting up the refrigeration unit by pressing the ON key, unit start-up and shutdown are automatic.

5.2.1 Road Mode

An open-type compressor is driven by the engine of the vehicle. The vehicle battery (alternator) powers the evaporator and condenser fans. The unit automatically shuts down when the engine is switched off with the ignition key.

5.2.2 Standby Mode

A standby compressor is energized, and a transformer is used to power the evaporator and condenser fans. The power network connection is detected by the Cab Command, which automatically starts up the unit in Standby mode.

If the ignition key is switched ON while the unit is connected to the power network or vice-versa, the Cab Command triggers a visual alarm in the form of a flashing red alarm light and readout.

In all cases, the unit can be completely shut down manually by pressing the OFF key on the Cab Command.

5.2.3 Temperature Control

As soon as the setpoint temperature has been reached, temperature control is obtained by the start-up and shutdown of the compressor.

The condenser and evaporator fan(s) cut out during regulation. When transporting fragile loads such as fresh meat, vegetables and cheese, it is possible to program the microprocessor to obtain continuous ventilation by the evaporator during regulation.

5.2.4 Defrost

- Defrost operation is fully automatic but can be manually controlled by pressing the MANUAL DEFROST key (if enabled by the defrost thermostat).
- Defrost cycles are fully controlled by the integrated microprocessor.
- During the defrost cycle, the evaporator fan(s) shut down.
- The condenser fan is controlled by the microprocessor.
- Defrost cycle termination is controlled by a defrost thermostat.
- During the defrost cycle, the Cab Command display indicates "dF."

5.2.5 Heating

- Heating is provided by a hot gas system.
- The evaporator fan(s) and condenser fan are controlled by the microprocessor.

5.2.6 Control Components by Cab Command

- Automatic selection of road or standby operation
- Unit start
- Shutdown
- Selection of Road or Standby operation
- Manual defrost
- Thermostat control
- Error messages in the event of unit malfunction
- Programming for customization of unit operation

5.3 Road Mode



1. Start the vehicle engine.
2. Press the ON key (1) to start the unit.
Start-up time is delayed for 40 seconds. Compartment temperature is then displayed.
3. Press the SET key (2) to check that setpoint meets your requirements. Adjust if necessary. Refer to Section 5.6 (Changing the Setpoint).

5.4 Standby Mode



CAUTION

For safe and reliable operation in Standby mode, it is important to consider the following guidelines:

- ALWAYS check that the unit is OFF from the cab command before connecting or disconnecting it from the power source.
- The extension cable and fuse used for network connection must comply with the legislation currently applicable on the site of use (minimum H07 RNF CEI 245-4) and with the unit specifications as described in the table here after.
- The unit connection cable must be fitted with a ground connection. The cable must be connected to earth.
- On the 240V supply, the unit **MUST BE CONNECTED** to a high sensibility (30 mA) differential protection.
- Operations on the 240V supply for the unit must only be carried out by authorized personnel.
- The user is liable for ensuring that the above measures are taken.

Table 1 - Standby Guideline Chart

Maximum amperage for operation equipment		
Operating voltage	40XR	Standardized extension cable
		H.07.RNF
230/1/50Hz / 12VDC	17.2 A	0.118 x 0.157 inch ² (3 x 4 mm ²)
230/1/50Hz / 24VDC	16.2 A	0.118 x 0.157 inch ² (3 x 4 mm ²)
230/3/60Hz / 12VDC	16.6 A	0.157 x 0.157 inch ² (4 x 4 mm ²)
230/3/60Hz / 24VDC	16.6 A	0.157 x 0.157 inch ² (4 x 4 mm ²)
400/3/50Hz 12VDC	6.4 A	0.157 x 0.10 inch ² (4 x 2.5 mm ²)
400/3/50Hz 24VDC	6.6 A	0.157 x 0.10 inch ² (4 x 2.5 mm ²)
Operating voltage	50XR	Standardized extension cable
		H.07.RNF
230/1/50Hz / 12VDC	17.2 A	0.118 x 0.157 inch ² (3 x 4 mm ²)
230/1/50Hz / 24VDC	16.2 A	0.118 x 0.157 inch ² (3 x 4 mm ²)
230/3/60Hz / 12VDC	13.6 A	0.157 x 0.157 inch ² (4 x 4 mm ²)
230/3/60Hz / 24VDC	14 A	0.157 x 0.157 inch ² (4 x 4 mm ²)
400/3/50Hz 12VDC	8 A	0.157 x 0.10 inch ² (4 x 2.5 mm ²)
400/3/50Hz 24VDC	8.2 A	0.157 x 0.10 inch ² (4 x 2.5 mm ²)

5.4.1 Starting Unit in Standby Mode

NOTICE

- Ensure that the type of current corresponds to the specifications indicated in Table 1 - Standby Guideline Chart
- Ensure the power network is properly connected to the unit.



1. Press the ON key to start the unit.
Start-up time is delayed for 10 seconds. Compartment temperature is then displayed.
2. Press the SET key (2) to check that setpoint meets your requirements. Adjust if necessary. Refer to Section 5.6 (Changing the Setpoint).

NOTE

In the event of difficulty on start-up, check that:

- Network supply is OK
- Temperature set on Cab Command has not been affected

5.5 Stopping the Unit

NOTICE

- For short stops such as deliveries, simply switch OFF the vehicle ignition.
- For longer stops, follow instructions below.



Press the OFF key (1) **to stop the unit.**

NOTE

For Standby Units ONLY: The stopping sequence is delayed by a maximum of 120 seconds until all conditions are optimum for the compressor to start.

5.6 Changing the Setpoint

NOTE

If, when the settings are adjusted, no key is pressed within five seconds, the system returns to compartment temperature display. All changes made are saved.



1. Press the **SET** key (2) to display setpoint temperature.
2. Press the **+** key (1) or **-** key (3) to adjust the temperature.
3. Press the **SET** key (2) to validate the change and return to compartment temperature display.

5.7 Changing Display Brightness



Press and hold the **+** key (1) or **-** key (2) for three seconds to either increase (+) or decrease (-) display brightness.

5.8 Changing Defrost Parameters

NOTE

If, when the settings are adjusted, no key is pressed within five seconds, the system returns to compartment temperature display. All changes made are saved.



1. Press the **OFF** key (2) to stop the unit.
2. Press and hold together the **Manual Defrost** key (6) and the **ON** key (1) to access defrost parameters.
The currently selected parameter is displayed.
3. Press the **+** key (3) or **-** key (5) to select the desired parameter.
4. Press the **SET** key (4) to validate the change.

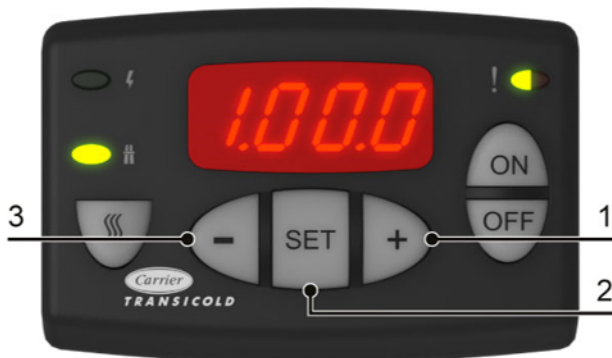
Table 2 - Available Defrost Parameters

Available selections	Description
0	Inhibit defrost function
0.5 / 0.6 / 0.7 / 0.8 / 0.9	Decrease time interval between two automatic defrost cycles in relation to calculated time
AUT (coefficient 1)	Microprocessor-optimized automatic defrost according to type of cargo transported (variable intervals)
1.1 / 1.2 / 1.3 / 1.4 / 1.5	Increase time interval between two automatic defrost cycles in relation to calculated time
0H / 1H / 2H / 3H / 4H / 5H / 6H	Fixed defrost interval in hours

5.9 Display Unit Data

NOTE

If, when the settings are adjusted, no key is pressed within five seconds, the system returns to compartment temperature display. All changes made are saved.



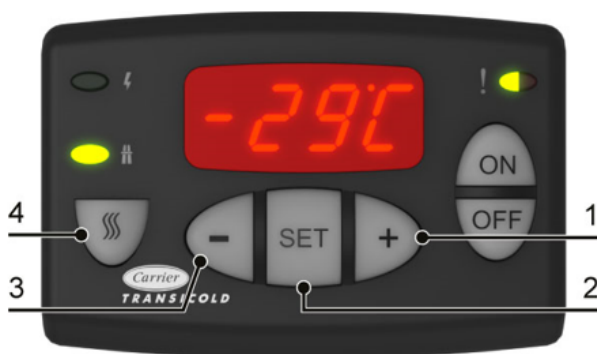
1. Hold the SET key (2) for five seconds to access unit data.
2. Press the SET key (2) again to scroll through the list.
3. Press the + key (1) or - key (3) on unit data to see additional information (if any).

Order	Display	Description
1	AXXX	Active alarms
	PXXX	Inactive alarms  Refer to Section 6.2 (Alarm List)
2	X.YY.Z	Software version Cab command version
3	XXXX	Road hour meter
4	XXXX	Standby hour meter

5.10 Set User Function

NOTE

If, when the settings are adjusted, no key is pressed within five seconds, the system returns to compartment temperature display. All changes made are saved.



1. On default display, press **DEFROST** (4), **+** (1) and **-** (3) keys together to access functional parameters.
2. Press the **+** key (1) or **-** key (3) on desired function to change its value.
3. Press the **SET** key (2) to scroll through the list and validate changes.

Function	Available selection		
Minimum setpoint lock value	-29°C (-20°F)*	-20°C (-4°F)	0°C (32°F)
Minimum setpoint lock value	+20°C (68°F)*	+30°C (86°F)	/
Differential parameter	diF.1 (1°C/1.8°F)*	diF.2 (2°C/3.6°F)	diF.3 (3°C/5.4°F)
Evaporator fan continuous run (status during regulation/null mode)	F.OFF*	F. On	/

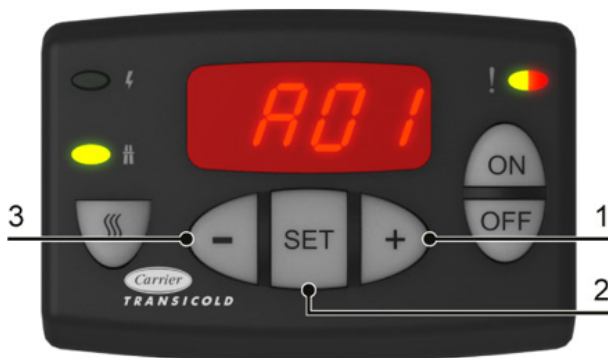
*Indicates factory setting

6. Alarm List

6.1 Display Alarm List

NOTE

If, when the settings are adjusted, no key is pressed within five seconds, the system returns to compartment temperature display.



1. Hold the SET key (2) for five seconds to access the alarm list.
2. Press the SET key (2) again to modify the alarm.
3. Press the + key (1) or - key (3) to scroll through the list. **AXX** =
Current malfunctions
PXX = Past malfunctions

6.2 Alarm List

NOTE

Alarms may not be applicable to all units. Alarms are dependent on unit configuration.

Alarm Severity	
	The unit can run without risk. Go to an authorized Carrier Transicold service center for maintenance.
	The truck can still operate, but the unit is automatically switched OFF. Go to authorized Carrier Transicold service center to check functioning.
	Shut down the unit immediately and contact an authorized Carrier Transicold service center.

MALFUNCTION - Red LED Flashes		
Severity	Code	Description
	A00	No malfunction. Unit in operation
	A01	Low pressure switch open
	A02	High pressure switch open
	A03	Standby compressor overheated
	A04	Clutch compressor fault
	A05	Contacteur fault
	A06	Condenser fan motor blown fuse

MALFUNCTION - Red LED flashes		
Severity	Code	Description
	A07	Evaporator fan motor 1 blown fuse
	A08	Hot water solenoid fault
	A09	Hot Gas Valve fault (HGS1) fault
	A10	Liquid injection valve fault
	A11	Hot gas valve (HGS2) fault
	A12	High temperature alarm
	A13	Low temperature alarm
	A14	Defrost alarm > 45 minutes
	A15	Setpoint adjusted out of the range -29° C / +30°C
	A16	Drain water resistor fault
	A17	Thermal breakdown standby transformer or diode bridge protection fault
	A18	Electrical heating relay fault
	A19	Liquid solenoid valve fault
	A21	No power for standby (<i>could start in Diesel mode if set</i>)
	A22	Condenser fan motor relay board fault
	A23	Open circuit hot water solenoid

ALARMS - Red LED flashes		
Severity	Code	Description
	A24	Open circuit defrost valve (HGS1)
	A25	Open circuit injection valve
	A26	Open circuit defrost valve (HGS2)
	A27	Open circuit drain water resistor (DWR1)
	A28	Open circuit electrical heating relay (EHR)
	A29	Open circuit liquid injection valve (LV)*

6.2.1 Direct Access

Direct display alarm messages are displayed in place of temperature read-outs as soon as the malfunction is detected and remain displayed as long as the malfunction persists. The unit will not run until the malfunction disappears or has been corrected.

Direct Access Alarms		
	EE	Malfunction: Evaporator temperature probe (open circuit)
	bAt	Battery voltage low
		Twin power supply (Road and Standby)
	Err	Programming mistake of maximum setpoint by user
	---	Setpoint out of the Minimum / Maximum setpoint lock value range set in user function, but in the range -29°C (-20°F) / +30°C (86°F)
	E2P	Wrong function setting / Loss of data
	init	Micro not starting - Stays in BOOT (init phase)
	SE	Maintenance needed
	door	Door open (optional): • Stop the unit on single temperature • Stop the compartment on multi-temperature

7. Maintenance Schedule

A comprehensive maintenance program will help to ensure that the unit continues to operate reliably. Such a maintenance program will also help to control operating costs, increase the unit's working life, and improve performance.

NOTICE

Regular maintenance includes a quick overview of the unit from a safety perspective. The service technician must pay particular attention, but not exclusively to:

- Nuts and bolts (tightening or replacing if necessary)
- Electrical wiring and harnesses
- Fuel line routing (repairing or replacing if necessary)
- Doors, skins, grilles, and panel conditions (repairing or replacing if necessary)

All maintenance services must be done by a factory-trained service technician.

Table 3 - Maintenance Schedule

Service Type	Service frequency	
	Service A	Service B
1000	X	
2000	X	X
3000	X	
4000	X	X
5000	X	
6000	X	X
7000	X	

8. Product Loading

NOTICE

This unit is not designed to carry special loads that emit corrosive gas. These kinds of products can impact unit performance and seriously reduce component lifetime. Please contact your Carrier Transicold dealer if such products need to be transported.

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.

8.1 Pallets

The use of pallets is highly recommended. Pallets help to 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 as this cuts off the airflow.

8.2 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, such as meats and frozen goods, 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.

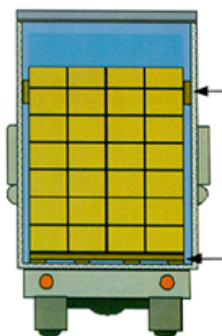
8.3 Before Loading

- 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.

8.4 During Loading

Loading must be done with the unit stopped. It is recommended that doors be opened as little as possible to avoid intake of hot air and humidity.

- Select temperature by means of the thermostat according to the transported goods.
- Check the internal temperature of the goods being loaded (using a probe thermometer).
- Take care not to obstruct air intakes on the evaporator section and ventilation ducts.



- Leave a free space of approximately 3" between load and front wall.
 - Leave a free space of approximately 8" between the top of the load and the roof.
 - Load product on pallets to provide free air return to unit and improvement product protection.
- Before closing doors, check your load once more and make sure no one is shut inside the compartment.
 - Do not forget to close the doors.



CAUTION

Never leave your unit for more than a month without running.

NOTICE

- For stationary utilization, we recommend placing the trailer in the shade
- Open cooling box doors in case of extended stop

8.5 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 pre-emptive of the setpoint required by the shipper or receiver. More detailed information can be obtained from your Carrier Transicold dealer.

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

* 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.

9. Emergency Road Service

At Carrier Transicold, we are working hard to provide complete service when and where you need it. That means a worldwide network of dealers that offer 24-hour emergency service. These service centers are manned by factory trained service personnel and backed by extensive parts inventories that will assure you of prompt repair.

If you experience a problem with your unit during transit, follow your company's emergency procedure or contact the nearest Carrier Transicold service center. Consult the Shortstop Service Centers directory or visit www.trucktrailer.carrier.com and click on "Dealer Locator" to locate the service center nearest you. The Shortstop directory may be obtained from your Carrier Transicold dealer.

You can also download the Carrier Transicold North America Truck/Trailer Dealer Locator App to your smart phone. The Dealer Locator App provides:

- Location information for every Carrier Transicold dealer in North America
- The nearest dealer from your present location
- Dealer look-up capability
- Dealer services (Trailer, Truck, APU, Mobile Support, etc.)
- Addresses
- Maps to easily find dealers
- Directions and navigation to the dealerships
- Phone number and 24-hour emergency hot-lines where available
- Auto dialing
- Hours of operation
- Link to dealer website
- Ability to add dealers to Contacts

To download the Carrier Transicold North America Truck/Trailer Dealer Locator App, scan this QR code, or go directly to your App store.

If you are unable to reach a service center, call our 24-hour Action Line: (800) 448-1661.

We will do everything we can to get your problem taken care of by an authorized CTD dealer and get you back on the road.



 **WARNING:** Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information, go to www.P65warnings.ca.gov/diesel



North America
Carrier Transicold
700 Olympic Drive
Athens, GA 30601 USA

Central America and Mexico
Carrier Transicold
Ejercito Nacional 253-A Piso 5
Colonia Anahuac 11320 Mexico D.F.