

Carrier  
Transicold

Truck  
Refrigeration

30S



Operator's  
Manual

62-10042 Rev B



**TRANSICOLD**

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# **OPERATOR'S MANUAL**

## **TRUCK REFRIGERATION UNIT**

# **30s**

Carrier Refrigeration Operations  
Carrier Transicold, Carrier Corporation,  
P.O. Box 4805, Syracuse, N.Y. 13221 U. S. A.

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**Carrier**

A United Technologies Company

# **Integra 30s OPERATOR'S MANUAL**

This guide has been prepared for the operator of Carrier Transicold diesel truck refrigeration units. 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 the information contained in this booklet and refer to it whenever you have a question about the operation of your Carrier Transicold Integra 30s 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 insure 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.

This guide is intended as an introduction to your unit and to provide general assistance when needed. More comprehensive information can be found in the Operation and Service Manual for your unit. This manual can be obtained from your Carrier Transicold dealer.

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, specifications may change without notice.

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# **SAFETY**

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Your Carrier Transicold refrigeration unit has been designed with the safety of the operator in mind. During normal operation, all moving parts are fully enclosed 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.

## **REFRIGERANTS**

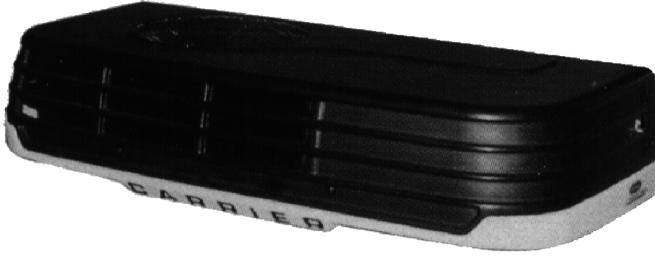
The refrigerant contained in the refrigeration system of your unit can cause frostbite, severe burns, or blindness when in direct contact with the skin or eyes. For this reason, and because of legislation regarding the handling of refrigerants during system service, we recommend that, whenever your unit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

# UNIT IDENTIFICATION

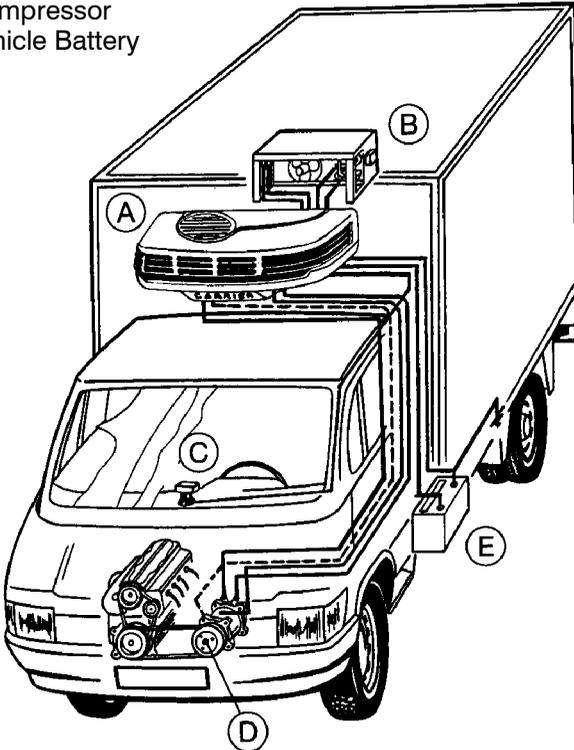
Integra 30s unit is identified by a nameplate attached to the frame of the unit. This nameplate identifies the complete model number of the unit, the serial number, the refrigerant charge and quantity, and the date the unit was placed in service.

If a problem occurs, please refer to the information on this plate, and make a note of the model and serial number before calling for assistance. This information will be needed when you contact a technician or Carrier Transicold Service Engineer so that he or she may properly assist you.

		Carrier Transicold Division Carrier Corporation Syracuse, New York © Registered Trademarks					
		ABCDEFGHIJKLMNOPQRSTUVWXYZ 1234567890 1234567890					
MODEL NO.	SERIAL NO.	WARRANTY ID NO.					
DO NOT PERFORM WARRANTY WORK IF THIS PLATE IS NOT PROPERLY STAMPED			REFRIGERANT LB				
<b>WARRANTY EXPIRATION FROM DATE TO SERVICE</b>							
MONTHS	3	6	12	24	30	36	REFER TO WARRANTY FORM FOR DETAILS P-PARTS I-LABOR
BASIC UNIT							
ENGINE							
COMPRESSOR							
RADIATOR							
REFRIG. COILS							
SV1/2/3 LESS COIL							
TEMP. CONTROLLER							
DATE IN SERVICE		DAY 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31					
MONTH	1 2 3 4 5 6 7 8 9 10 11 12	YEAR 19 20 21 22 23 24 25 26 27 28 29 30 31					

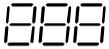


- A: Condenser
- B: Cube or Ceiling-Mount Evaporator
- C: Cab Control
- D: Compressor
- E: Vehicle Battery



# SYMBOLS USED ON CAB CONTROL

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Readout



Standby operation display



Road operation display



Manual defrost control key



Unit start-up key



Unit shut-down key



Data selection key



Selected data decrement key

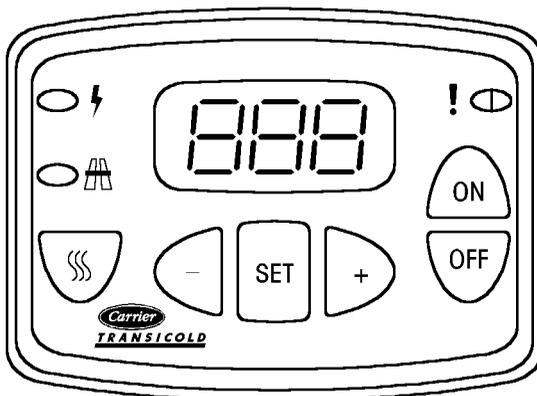


Selected data increment key



Unit operation display

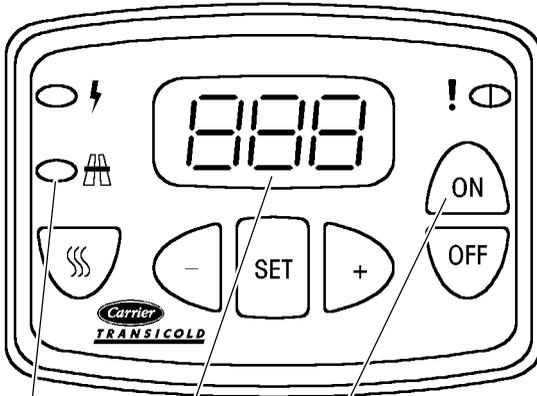
- Green = in-range (left half)
- Red = malfunction (right half)



# UNIT OPERATION

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## STARTING ENGINE OPERATION



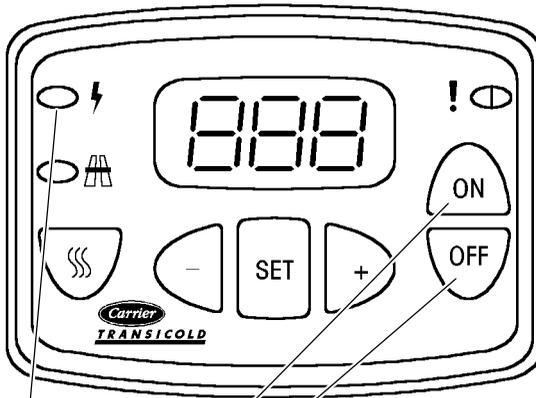
1. Press ON key.

2. Check if box temperature is displayed.

3. Check if road operation light is on. If not, unplug power cord from receptacle.

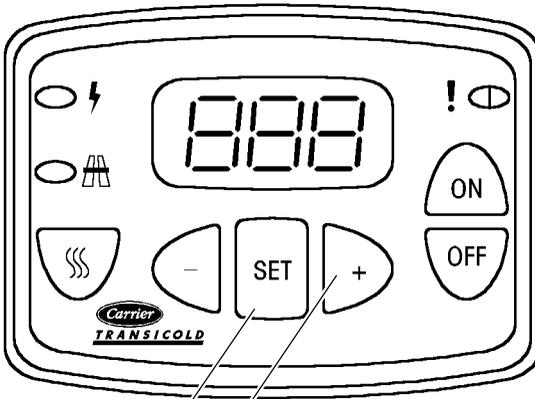
**NOTE:** If standby power cord is plugged in, the unit will run in standby mode.

# STARTING STANDBY OPERATION



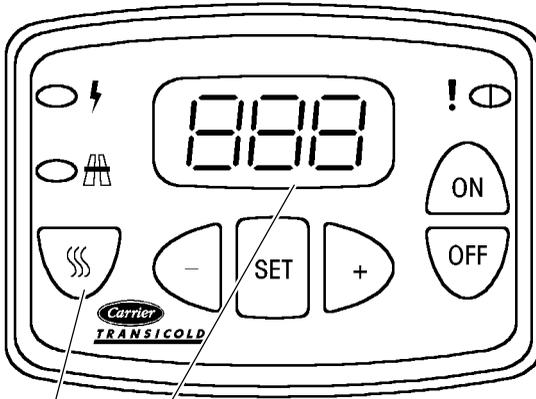
1. Press the OFF key and plug in power supply.
2. Press the ON key.
3. Check that the standby operation light is on.

# TEMPERATURE SETPOINT



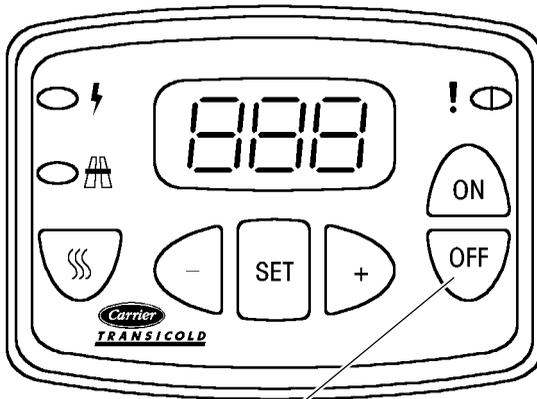
1. Press + (plus) key to increase setpoint or press - (minus) key to decrease setpoint.
2. Press SET key when desired setpoint is displayed to lock in new setpoint.

# MANUAL DEFROST



1. Check that box temperature is 40°F or lower.
2. Press Manual Defrost key to initiate manual defrost.

# STOPPING UNIT

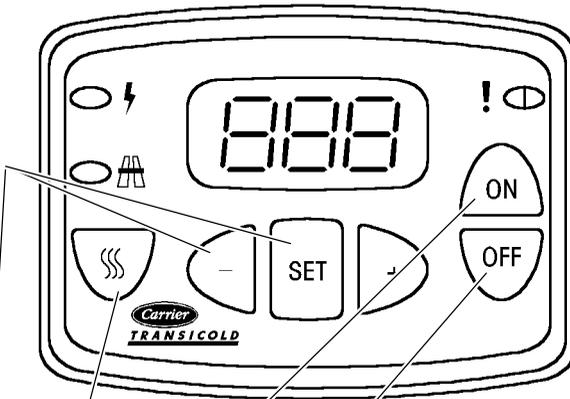


1. Press the OFF key.

# DEFROST INTERVAL

Defrost interval in hours: 1H, 2H, 3H, 4H, 5H & 6H

AUT: microprocessor optimized automatic defrost according to type of cargo.



1. Press the OFF key.

2. Press Defrost and ON key to display the previously selected defrost interval.

3. Press - (minus) or + (plus) key to select defrost interval.

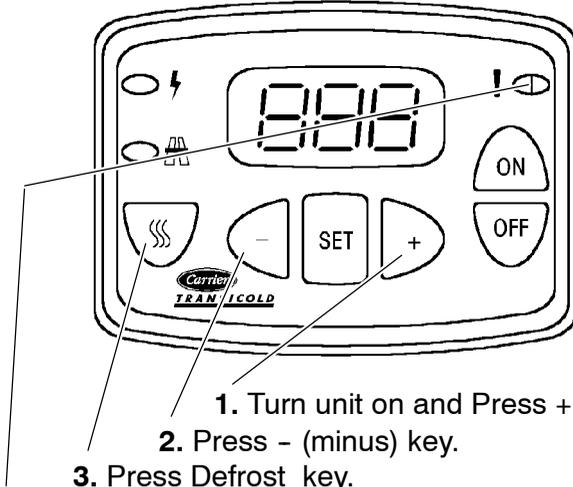
4. Press SET key to validate modified value.

# MINIMUM SETPOINT, OUT-OF-RANGE AND CONTINUOUS AIRFLOW

Minimum Setpoint Settings: 32°F (0°C) or -17°F (-27°C)

Out-of-Range Settings: 1, 2 or 3°C (3.6, 5.4 or 7.2°F)

Continuous Airflow Settings: ON or OFF



1. Turn unit on and Press + (plus) key.
2. Press - (minus) key.
3. Press Defrost key.
4. Check that the ! light flashes green.
5. The operator can select a minimum setpoint. The selections are 32°F (0°C) or -17°F (-27°C). Press + (plus) key or - (minus) key to change setting.
6. Press SET key to save setting. Next out-of-range setting will appear.
7. Press + (plus) key to increase out-of-range setting. Press - (minus) key to decrease out-of-range setting.
8. Press SET key to save out-of-range setting.
9. Check that the display shows "ON" or "OFF". ON means the evaporator fan continues to run when setpoint is reached for constant air flow. OFF indicates the evaporator fan stops when box temperature is within setpoint range.
10. Press + (plus) or - (minus) key to change airflow option. Press SET key to save fan mode setting .

# PRODUCT LOADING

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## **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.

## **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 between the load and the front wall for air return to the unit.
- Leave at least 10 to 12 inches 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.

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

Product stacking is another important factor in protecting the product. Products that generate heat – fruits and vegetables, for example – should be stacked so the air can flow through the product to remove the heat; this is called “air stacking” the product. Products that do not create heat – meats and frozen products – should be stacked tightly in the center of the trailer.

All products should be kept 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.

## RECOMMENDED TRANSPORT TEMPERATURES

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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 set point required by the shipper or receiver.

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

Product	Setpoint Range	
	°F	°C
Bananas	55 to 60	13 to 16
Fresh fruits and vegetables	33 to 38	0 to 3
Fresh meats and seafood	28 to 32	-2 to 0
Dairy Products	33 to 38	0 to 3
Ice	15 to 20	-10 to -7
Frozen fruits and vegetables	0	-18
Frozen meats and seafood	-10 to 0	-23 to 18
Ice Cream	-20	-29

During delivery cycles that include frequent stops and door openings, it is recommended that the unit be turned off during the time the body doors are open to help conserve the product temperature.

# PROBLEMS

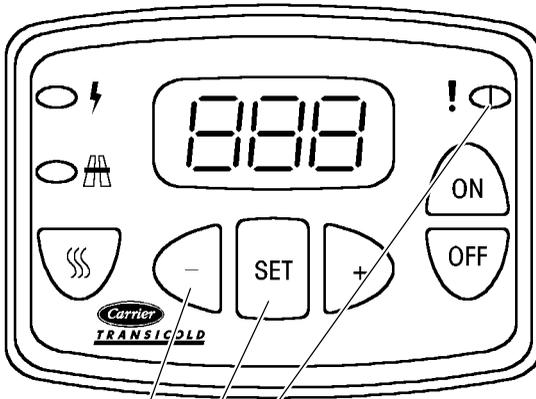
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Everything possible has been done to ensure that your unit is the most reliable, trouble-free equipment available today. If, however you run into problems the following section may be of assistance.

If you do not find the trouble that you have experienced listed, please call your Carrier Transicold dealer for assistance.

General Problems	
Unit won't power up.	Check battery condition. Check battery connections. Check all fuses
Unit won't start.	Check all fuses
Unit won't run.	Check all fuses
Unit dies.	Check belts. Check alarm codes.
Unit not cooling properly.	Check minimum setpoint setting (see page 10). Defrost unit. Check evaporator for airflow restriction. Check condenser for airflow restriction. Check body for damage or air leaks. Check product is loaded properly Check refrigerant charge.

# ALARM DISPLAY



1. When an alarm is activated, the ! light flashes red.

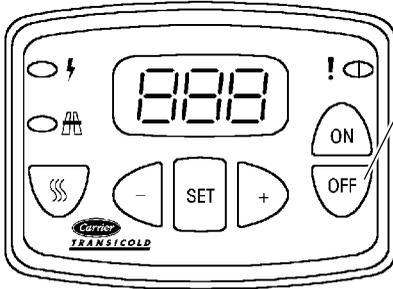
The ! light flashes green when the unit is operating correctly.

2. Press the SET key for 5 seconds to display alarms.

3. Press + (plus) or - (minus) key to view additional alarms.

4. Press SET key to return to box temperature display.

# ALARM RESET



1. Press the OFF key to clear alarm list. Unit can now be restarted if no active alarm condition remains.

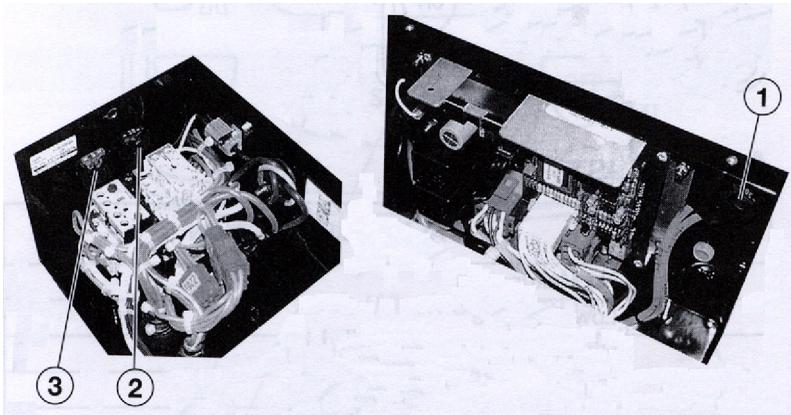
# ALARM LIST

ALARM Number	ALARM DESCRIPTION
A00	No Malfunction
A01	Low Pressure
A02	High Pressure
A03	Electric Motor Overload
A04	Road Compressor Clutch
A05	Standby Clutch and Contactor
A06	Condenser Fan Motor
A07	Evaporator Fan Motor
A08	Not Used
A09	Defrost Valve
A10	Quench Valve
A11	Condenser Valve (Optional)
A12	Out-of-Range High Temperature
A13	Out-of-Range Low Temperature
A14	Defrost Cycle
A15	Setpoint is out of controller temperature range of -20.2°F to 86°F.
EE	Return Air Sensor
bAt	Low Battery Voltage
- - -	Using Road Compressor & Standby Compressor at the Same Time.
- - -	Setpoint is lower than programmed minimum setpoint, but within controller range of -20.2°F to 86°F.
ERR	Programming error on part of operator

# FUSES

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To access the fuses in the control box, remove the upper cowling from unit, then open the control box (fastened by 3 screws).



<b>Fuse</b>	<b>Purpose</b>	<b>12V</b>	<b>24V</b>
F1	Road supply fuse	30 A	15 A
F2	Standby supply fuse	30 A	15 A
F3	Clutch fuse (Standby)	5 A	3 A

# UNIT MAINTENANCE

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## WARNING

Before working on unit, check that:

- the unit (cab command) is OFF.
- it is impossible for unit to automatically start-up during maintenance.

Refrigerant Charge: R134a 4lbs

Compressor oil		
Approved Oil	Oil Charge	
	Road	Standby
Mobil Arctic EAL 68	250cc (.53 pint)	150cc (.32 pint)

For the most reliable operation and for maximum life, your unit requires regular maintenance. Maintenance should be performed on the following schedule:

SERVICE SCHEDULE	
<b>Monthly</b>	<ul style="list-style-type: none"> <li>● Check tension of compressor belt(s).</li> <li>● Check all bolts, screws and unit mounting bolts for tightness. Tighten as required.</li> <li>● Check motor brushes.</li> </ul>
<b>Yearly</b>	<ul style="list-style-type: none"> <li>● Clean condenser and evaporator coils.</li> <li>● Replace Road and Standby compressor belts.</li> <li>● Replace filter-drier.</li> <li>● Check operation of cab control.</li> <li>● Change compressor oil.</li> <li>● Check defrost:               <ul style="list-style-type: none"> <li>– Fans stop</li> <li>– Defrost ends automatically</li> <li>– Water drains from evaporator</li> </ul> </li> <li>● Check operation of evaporator and condenser fans.</li> <li>● Check all belt tension pulleys.</li> </ul>

# STANDBY OPERATION GUIDELINES

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

- Always check that the unit is OFF (Cab Command) before connecting or disconnecting the unit from power source.
- The circuit breaker and power cord used for Standby operation must comply with legislation currently applicable on site of use and with unit specifications in table below.

Unit	Operating Voltage	Maximum Unit Operating Amperage
Integra 30s	115 V Single phase 60 hz	18.2 A
	230 V Single phase 60 hz	9.0 A
	230 V Three phase 60 hz	3.8 A

Voltage	Power Cord Length and Wire Gage			
	25 ft	50 ft	75 ft	100 ft
115/1/60	14	12	10	8
230/1/60 208/1/60	14	12	10	8
230/3/60	16	14	12	10

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

**Important note:** This information is provided as a guideline only.

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

# EMERGENCY ROAD SERVICE

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At Carrier Transicold we're working hard to give you 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.

Should you experience a unit problem with your refrigeration unit during transit, follow your company's emergency procedure or contact the nearest Carrier Transicold service center. Consult the Shortstop Service Centers directory to locate the service center nearest you. This directory may be obtained from your Carrier Transicold dealer.

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

When calling, please have the following information ready for fastest service:

- Your name, the name of your company, and your location.
- A telephone number where you can be called back.
- Refrigeration unit model number and serial number.
- Box temperature, set point and product.

Brief description of the problem you are having, and what you have already done to correct the problem.

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