

Carrier  
Transicold  
Truck  
Refrigeration

# Integra 40S Integra 50S



Operator's  
Manual



**TRANSICOLD**

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# OPERATOR'S MANUAL

## TRUCK REFRIGERATION UNIT

# Integra 40S Integra 50S

Carrier Transicold,  
A member of the United Technologies Corporation family. Stock symbol UTX.  
Carrier Transicold Division, Carrier Corporation,  
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**Carrier**

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A United Technologies Company

# Integra 40/50s OPERATOR'S MANUAL

This guide has been prepared for the operator of Carrier Transicold truck refrigeration units. It contains basic instructions for the daily operation of the refrigeration unit as well as safety information, 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 40/50s unit.

Your refrigeration unit has been engineered to provide long, trouble-free performance when it is properly operated and maintained. 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.

## **WARNING**

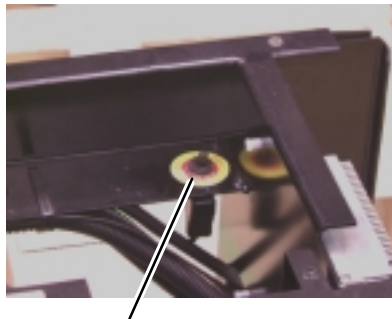
**Beware of unannounced starting of the fans caused by the thermostat and the start/stop cycling of the unit.**

## 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.

## EMERGENCY SWITCH

D The unit can be completely shut down manually by the emergency switch inside the frame of the condenser unit. The emergency switch has to be reinitiated to allow the unit to restart with the "ON" key of the cab command.



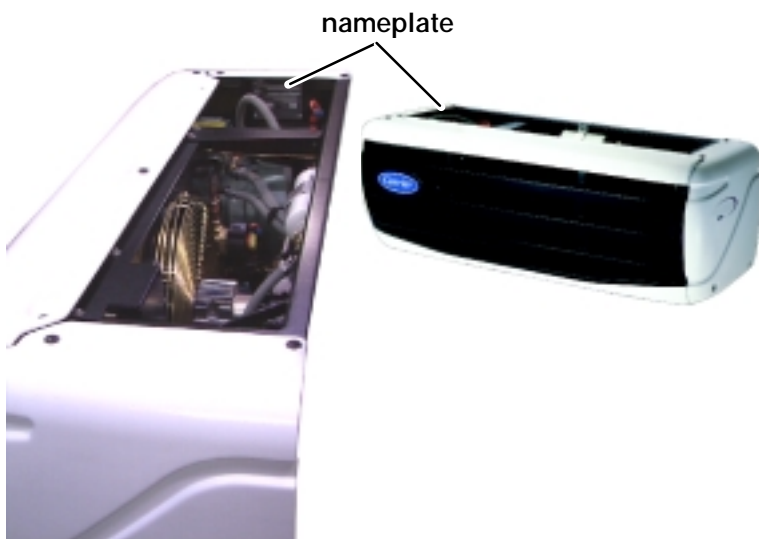
Emergency Switch

# UNIT IDENTIFICATION

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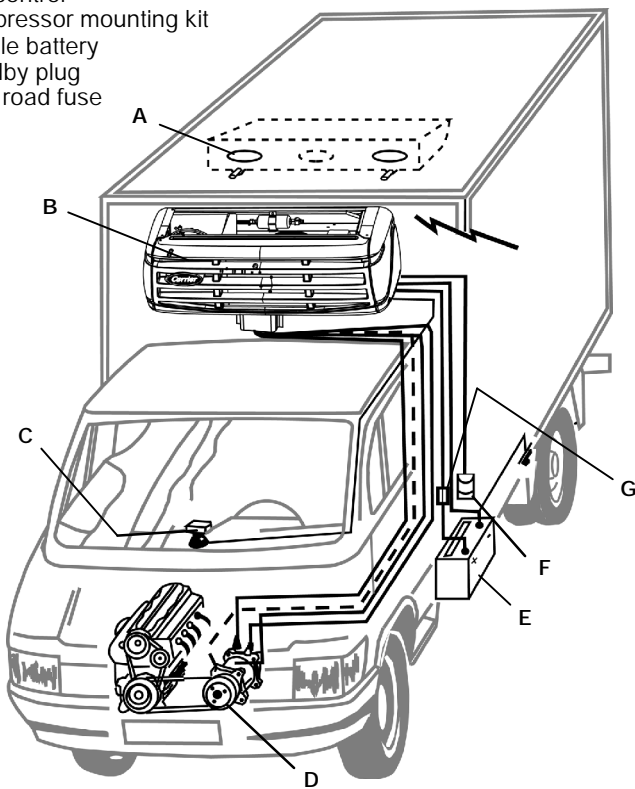
Integra 40S/50S unit is identified by a nameplate attached to the frame of the unit. This nameplate identifies the complete model number of the unit, the serial number, the refrigerant charge and quantity, and the date the unit was placed in service.

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.















- A : Evaporator
- B : Condenser
- C : Cab control
- D : Compressor mounting kit
- E : Vehicle battery
- F : Standby plug
- G : Main road fuse

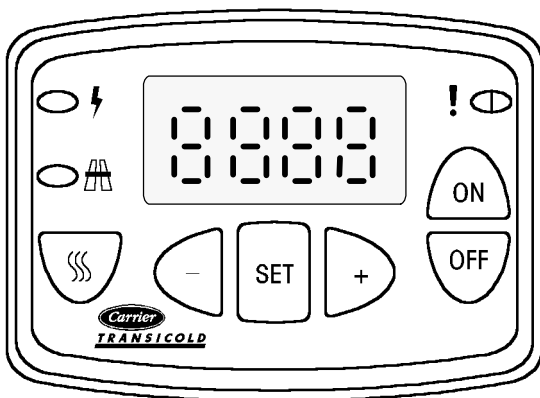




# SYMBOLS USED ON CAB CONTROL

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



# UNIT OPERATION

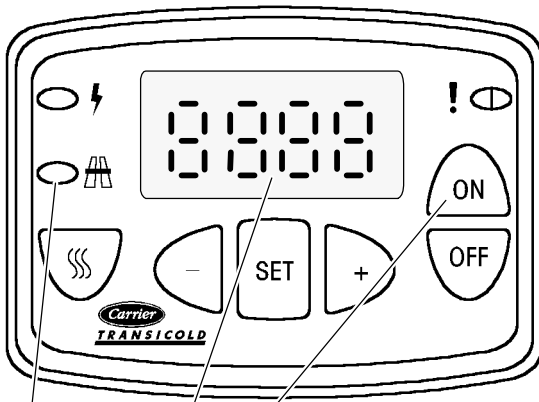
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## OPERATING PRINCIPLE

After starting up the refrigeration unit by pressing the **ON** key on the Cab Command, unit start-up and shut-down are automatic.

- S **On Road operation**, an open-type compressor is driven by the engine of the vehicle. The vehicle battery powers the evaporator and condenser fans. The unit automatically shuts down when the engine is switched off with the ignition key.
  
- S **On Standby**, 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.
  
- S 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 malfunction light and readout. In this case, the unit will start in road operating mode.  
As soon as one operating mode is inhibited, the unit automatically starts up in the other mode.
  
- S In all cases the unit can be completely shut down manually by pressing the OFF key on the Cab Command.

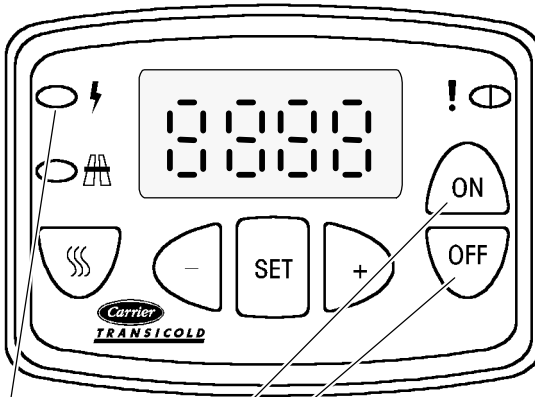
# STARTING - ENGINE OPERATION



1. Press ON key.  
(Start-up is time delayed  
for 40 seconds)
2. Check if box temperature is displayed.
3. Check if road operation light is on.

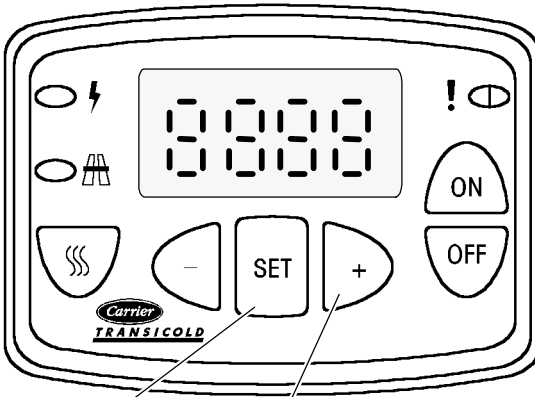
**NOTE:** If standby power cord is plugged in, the unit will run in standby mode.

# STARTING - STANDBY OPERATION



1. Press the OFF key and plug in power supply.
2. Press the ON key.  
(Start-up is time delayed for 40 seconds)
3. Check that the standby operation light is on.

# TEMPERATURE SETPOINT

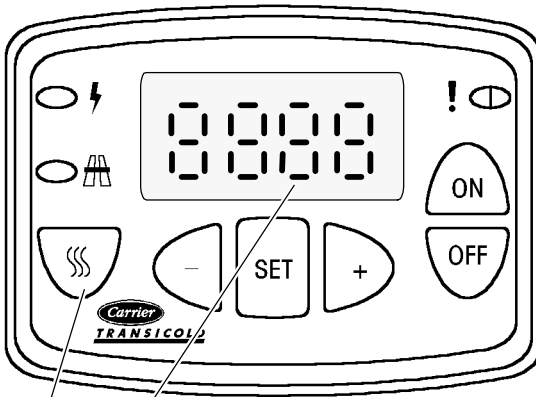


1. Press SET key

2. Press + (plus) key to increase setpoint or press - (minus) key to decrease setpoint.

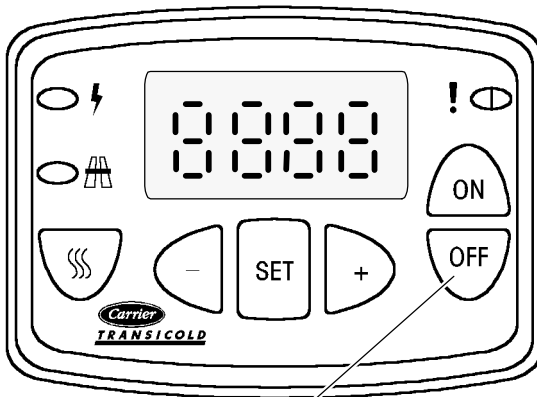
3. Press SET key when desired setpoint is displayed to lock in new setpoint.

# MANUAL DEFROST



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

# STOPPING UNIT

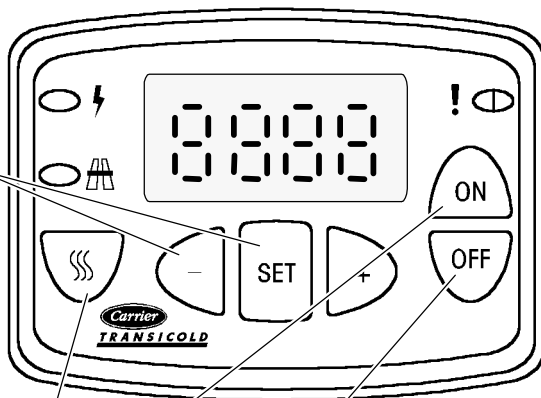


1. Press the OFF key.

# DEFROST INTERVAL

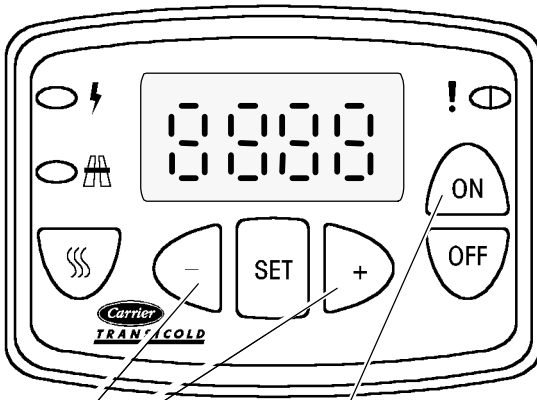
Defrost interval in hours: 1H, 2H, 3H, 4H, 5H & 6H

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.

# CHANGING DISPLAY BRIGHTNESS



1. Press ON key.
2. Press within 5 seconds the + (plus) or - (minus) key to increase or decrease display brightness..



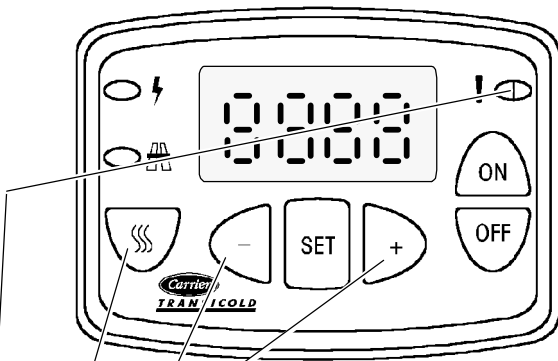
# MINIMUM/MAXIMUM SETPOINT, OUT-OF-RANGE AND CONTINUOUS AIRFLOW

Minimum Setpoint Settings: 32\_F (0\_C) or -20\_F (-29\_C)

Maximum Setpoint Settings: 68\_F (20\_C) or 86\_F (30\_C)

Out-of-Range Settings: 1, 2 or 3\_C (3.6, 5.4 or 7.2\_F)

Continuous Airflow Settings: F/ON or F/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 -20\_F (-29\_C). Press + (plus) key or - (minus) key to change setting.
6. Press SET key to save setting. Next Maximum Setpoint setting will appear.
7. Press + (plus) key to increase Maximum Setpoint setting. Press - (minus) key to decrease setting.
8. Press SET key to save Maximum Setpoint setting.
9. Next setting is Out-of-Range. Press + (plus) key to increase Out-of-Range setting. Press - (minus) key to decrease setting.
10. Next setting is Continuous Airflow. This is selectable to fan on or fan off at setpoint. Press + (plus) or - (minus) key to select desired operating mode. Press SET key to save fan mode setting .

# PRODUCT LOADING

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## **BEFORE LOADING:**

- D 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.
- D Place the unit in a defrost cycle immediately before loading. This will remove moisture accumulated on the evaporator coil.

## **DURING LOADING:**

- D Turn the unit off!
- D Check product temperature during loading.
- D Ensure that the air return and supply opening remain unobstructed.
- D Leave approximately 4 to 5 inches between the load and the front wall for air return to the unit.
- D 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
- D 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	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, it is recommended that the unit be turned off during the time the body doors are open to help conserve the product temperature.

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

# PROBLEMS & ALARMS

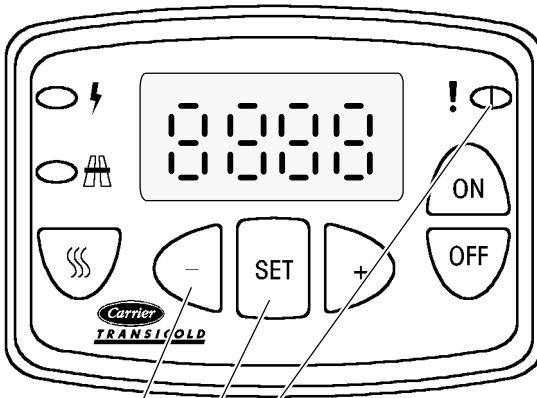
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Everything possible has been done to ensure that your unit is the most reliable, trouble-free equipment available today. If, however you run into problems the following section may be of assistance.

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 shut down.	Check alarm codes.
Unit not cooling properly.	Check minimum setpoint setting (see page 12). 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 + or - key to view additional alarms.

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

**NOTE:** There are two types of Alarms

Axx (example: A02)

Pxx (example: P02)

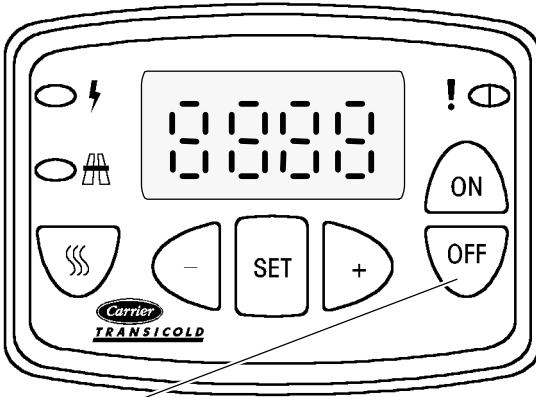
Axx - Designates Active Alarms

Pxx - Designates Past Alarms, These are Alarm conditions that existed but are now not active.

# ALARM LIST

ALARM	ALARM DESCRIPTION
A00	No Malfunction
A01	Low Pressure Switch Open
A02	High Pressure Switch Open
A03	Standby Compressor Over Heated
A04	Road Compressor Clutch
A05	Standby Contactor (high amps draw)
A06	Condenser Fan Motor (high amps draw)
A07	Fan Speed Alarm
A08	Hot Water Solenoid (high amps draw)
A09	Hot Gas Valve HGS1 (high amps draw)
A10	Liquid Injection Valve (high amps draw)
A11	Condenser Closing Valve HGS2
A12	Out-of-Range High Temperature
A13	Out-of-Range Low Temperature
A14	Defrost Cycle >45 minutes
A15	Setpoint out of range -20_F to 86_F
A16	Drain Water Resistor - Heater (DWR1)
A17	Standby Compressor or Diode Overload
A18	Electrical Heating Relay (high amps draw)
A19	Liquid Solenoid Valve (high amps draw)
A20	Standby Low Pressure Switch Open
A21	Compressor Contactor Open
A22	Condenser Fan Motor Open Circuit
A23	Hot Water Solenoid Open Circuit
A24	Hot Gas Valve (HGS1) Open Circuit
A25	Liquid Injection Valve Open Circuit
A26	Hot Gas Valve (HGS2) Open Circuit
A27	Drain Water Resistor (DWR1) Open Circuit
A28	Heating Relay (EHR) Open Circuit
EE	Return Air Sensor
bAt	Low Battery Voltage
---	Using Road & Standby Compressors at the Same Time.
---	
---	
Err	Programming mistake of maximum setpoint by user.
---	Setpoint lower than maximum setpoint but in the range -20_F to 86_F

# ALARM RESET



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

# STANDBY OPERATION GUIDELINES

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

- D Always check that the unit is OFF (Cab Command) before connecting or disconnecting the unit from power source.
- D 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 40S	230V / Single phase / 60 hz	24 A
	230V / Three phase / 60 hz	14 A
Integra 50S	230V / Single phase / 60 hz	25 A
	230V / Three phase / 60 hz	15 A

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

- D 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.

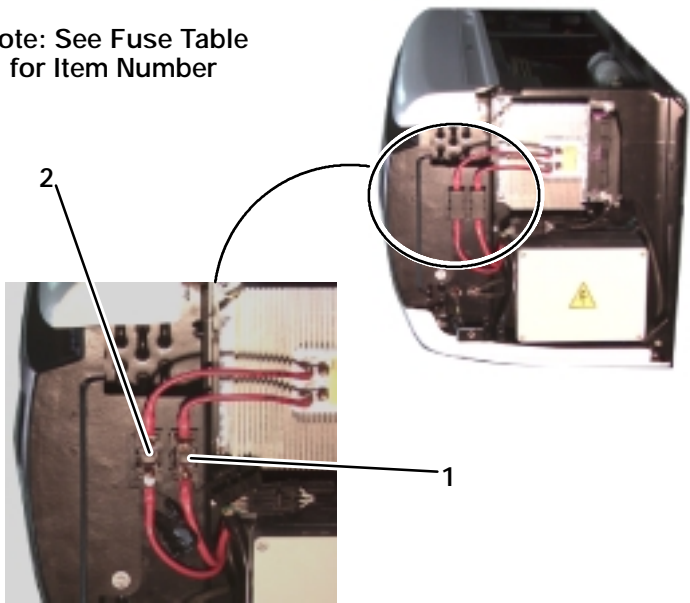
When preparing a circuit for operation of the refrigeration unit, a licensed electrician should be contracted. A licensed electrician is familiar with all local ordinances and special requirements for your area and can ensure that the circuits are properly designed, installed, and connections are correct.



# FUSES

To access the road and standby fuses, remove the left side cover (fastened by 4 screws).

**Note: See Fuse Table for Item Number**



Item	Purpose	230/60 hz 3 ph	230/60 hz 1 ph
1	Road Supply Fuse	50 A	50 A
2	Standby Supply Fuse <sup>(a)</sup>	50 A	50 A
3	Main Standby Fuse FB (x3) <sup>(b)</sup>	16 A	12 A
4	Main Standby Fuse FB (x3) <sup>(c)</sup>	20 A	16 A
5	Heating Resistor Fuses F4/F5/F6	6.3 A	3.15 A
6	Transformer Primary Fuses F1/F2/F3	3.15 A	2 A
7	Main Road Fuse <sup>(d)</sup>	60 A	60 A

(a) On road / standby unit only

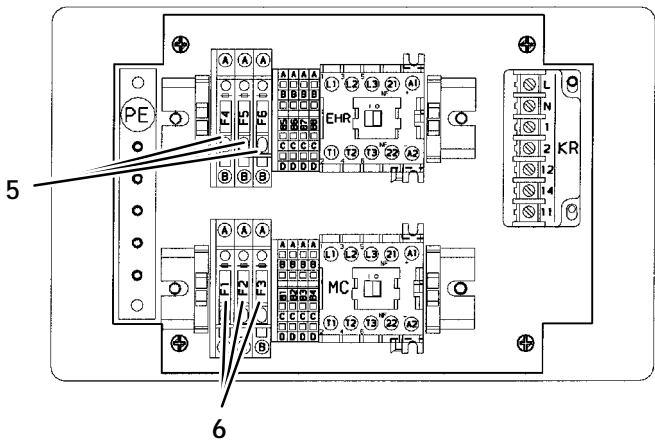
(b) If located in standby box

(c) If located in standby plug (not shown)

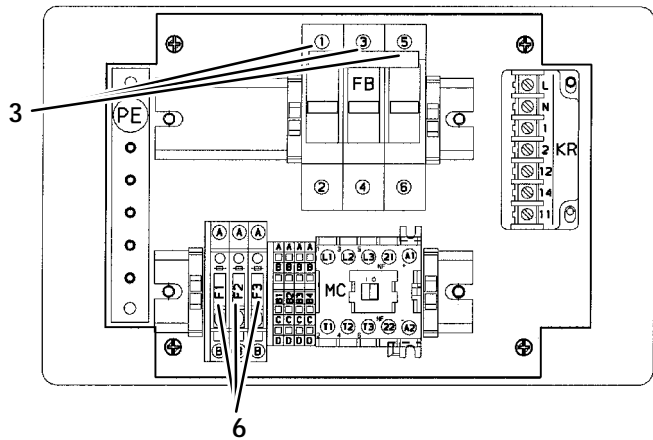
(d) Not shown - this fuse is located close to the vehicle battery (12 v).

To access the fuses in the control box, remove the left side cover, then open the control box (fastened by 4 screws).

With Electrical Heating Option



Without Electrical heating Option



# UNIT MAINTENANCE

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**WARNING**

Before working on unit, check that:

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

Refrigerant Charge: R404A      6 lbs Integra 40S  
   6.5 lbs Integra 50S

Compressor oil		
Approved Oil	Oil Charge	
	Road	Standby
Mobil Arctic EAL 68	250cc (.53 pint)	1200cc (2.5 pint)

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

Hours	100	1000	2000	3000	4000	5000	6000	7000
Service A	H	H	H	H	H	H	H	H
Service B		H	H	H	H	H	H	H
Service C			H		H		H	
Service D					H			

Service Schedule	
SERVICE A	<p>§ Check the tension of the alternator belt(s).</p> <p>§ Check that the vehicle engine runs correctly at low speed and that the compressor kit is correctly tightened/belt tension.</p> <p>§ Check the tightness of bolts and screws and that the unit is correctly fastened onto the box.</p>
SERVICE B	<p>§ Clean the condenser and the evaporator.</p> <p>§ Replace the Road compressor belt.</p> <p>§ Replace the filter-drier.</p> <p>§ Clean the TXV orifice filter.</p> <p>§ Check the standby compressor oil level.</p> <p>§ Check the operation of the cab control.</p> <p>§ Check the defrost</p> <ul style="list-style-type: none"> <li>- Cut-in,</li> <li>- Fan shut-down,</li> <li>- Cut-out,</li> <li>- Defrost water drain.</li> </ul> <p>§ Check the water tightness of the emergency switch cap.</p>
SERVICE C	<p>§ Check the bearings of the belt tension pulleys and bearing of the mechanics kit. Change the spring if there is one.</p> <p>§ Change the shockmounts (if any) installed on the road compressor mounting kit.</p> <p>§ Check the operation of the evaporator and condenser fans. Change the condenser motor brushes.</p> <p>§ Change the compressor oil. Only use Ester oil (POE) approved by CARRIER. See the technical information sheets for the recommended quantities and types of oil.</p>
SERVICE D	<p>§ Change the removable fuses and capacitor (if any) in the control box.</p>
<p><b>Note :</b> The evaporator of this unit is equipped with brushless fan motors which don't need to be maintained.</p>	

# 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:

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

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