

## VECTOR 1800 E OPERATOR'S MANUAL

---



**G  
B**

This guide has been prepared for the operator of Carrier Transicold VECTOR 1800 E 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 VECTOR 1800 E 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 on the operation 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.

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.

### **WARRANTY**

This manual refers to the standard model.

Always update the service chart which is to be found inside the front cover.

Some options may not appear in it, and in such cases you are requested to consult our Technical Services.

Carrier Transicold constantly seeks to improve the quality of its products and therefore reserve the right to modify them without prior notice.

# CONTENTS

---

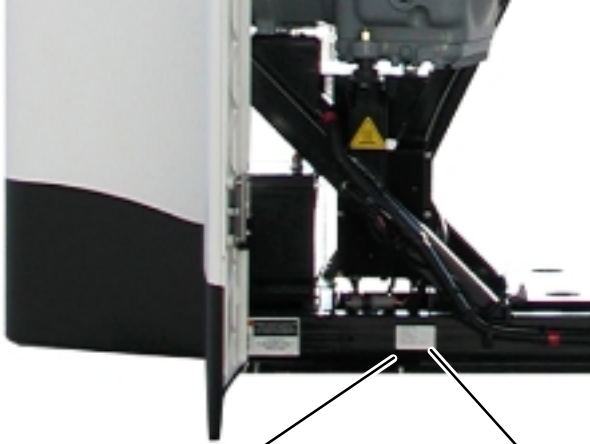
	<b>Page</b>
UNIT IDENTIFICATION .....	5
SAFETY .....	6
UNIT OPERATION .....	9
A - STARTING THE UNIT - STANDBY OPERATION .....	10
B - STOPPING THE UNIT .....	10
C - CHANGING THE SETPOINT .....	11
D - START-STOP .....	12
E - CONTINUOUS RUN OPERATION .....	14
F - MANUAL DEFROST .....	14
G - PRETRIP .....	16
H - TRIP START .....	16
I - ALARM LIST - VIEW ALARMS .....	17
ALARMS AND DEFAULT MESSAGES .....	17
J - DATA OPERATION .....	23
UNIT DATA MESSAGES .....	23
K - CHANGING A FUNCTION .....	25
PRETRIP .....	27
UNIT MAINTENANCE .....	28
ELECTRIC BOX .....	28
FUSES ON MICRO BOARD .....	28
DESCRIPTION OF SERVICE OPERATIONS .....	29
PRODUCT LOADING .....	30
STANDBY OPERATION GUIDELINES .....	33
"A.T.P. EUROPE" REGULATION EXTRACT .....	34
EMERGENCY ROAD SERVICE .....	36

## UNIT IDENTIFICATION

Each 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.

**G**  
**B**



Noise level sticker

Fixed on  
the frame



Nameplate

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 so that he or she may properly assist you.

## 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 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 and when the main power switch is in the Run (On) position.

### AUTO-START/STOP

Your refrigeration unit is equipped with Auto-Start/Stop, a valuable fuel saving feature. When the unit is set for Auto-Start/Stop operation it may start at any time and without warning. When performing any check of the refrigeration unit (e.g., checking fan motor), make certain that the main power switch is on the **OFF** position.

When the unit is running in diesel operation, keep your hands away from this belt



### 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.



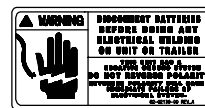
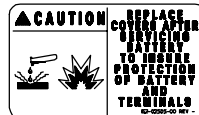
### BATTERY

This unit is equipped with a lead-acid type battery. The battery normally vents small amounts of flammable hydrogen gas. Keep any flame, any lighted object (cigarette etc.) or any source of sparks away from the battery elements. A battery explosion can cause serious physical harm and/or blindness.

Maintenance :

Never leave a unit more than a month without running. In case of long standstill, charge the battery independently.

Before performing any welding on the chassis, take care to disconnect the battery from the unit and the vehicle as well as from the charge alternator and any other electronic system (microprocessor).



Never try to start the vehicle with a booster because this could damage the electronic components in the unit or on the vehicle. IN

## INSTALLATION

During assembly and routine service operations.

Access to the unit may involve certain risks.

TAKE EVERY SAFETY MEASURE TO ACCESS THE UNIT.

### Advice :

When handling the unit, use suitable lifting gear attached to the eye-bolts provided for that purpose on the unit.

### Note :

The unit should not protrude out of the body.

**G**  
**B**

## SAFETY INSTRUCTIONS

Check that all mounting bolts are well tightened and suitable for use.

When you drill holes in the unit or in the body of the vehicle, be careful not to pierce the refrigeration tubes or the electrical wiring (see template).

When you are working next to the batteries (condenser and evaporator) be careful not to cut yourself on the sharp edges.

When the unit is running, keep your hands away from belts and fan motors.

**Never close the compressor discharge valves when the unit is running.**

In case of repair, only use manometer by-pass hoses which are in a good condition and avoid their contact with belts, pulley and fan motor.

The refrigerant liquid must be handled with great care.

Next to a flame the refrigerant liquid gives off a phosgene gas which has an unpleasant smell and irritates the lungs.

Never heat up a closed cooling circuit with a flame the cooling system must be handled with great care.

When liquid refrigerant is getting in contact with the atmosphere, it evaporates and freezes everything which gets in contact with it.

## SAFETY

---

### First aid in case of frost-bite :

- a) Cover up the frost-bitten part.
- b) Warm up quickly the frost-bitten part by dipping it into lukewarm water (not hot).
- c) In case you do not have water wrap the wounded place in a clean cloth.
- d) If refrigerant fluid has been splashed into your eyes, rinse them immediately with clean water; as a precaution, you are recommended to have a medical examination as well.

Cooling oil

Polyolester types

- Avoid contact with skin.
- Wash carefully after handling.

<b>WARNING</b>
<b>The unit starts up automatically. Keep well away from belts, pulleys and fans.</b>

## UNIT OPERATION

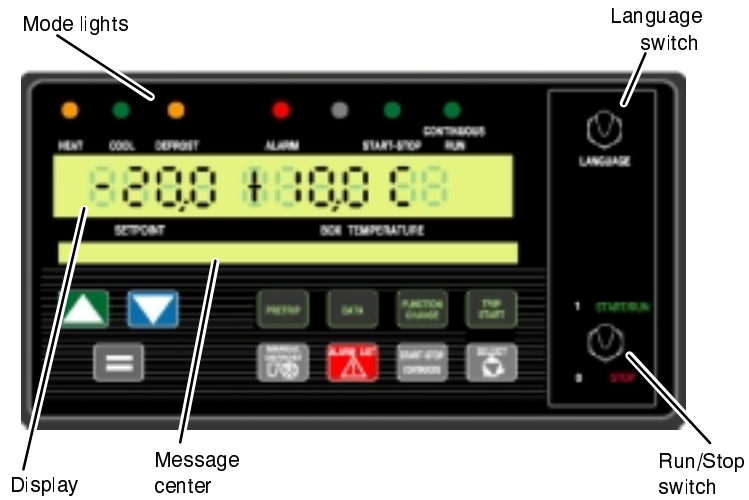
### Microprocessor **LOGICOLD**

**G  
B**

The microprocessor "**LOGICOLD**" controls are the most reliable control system available.

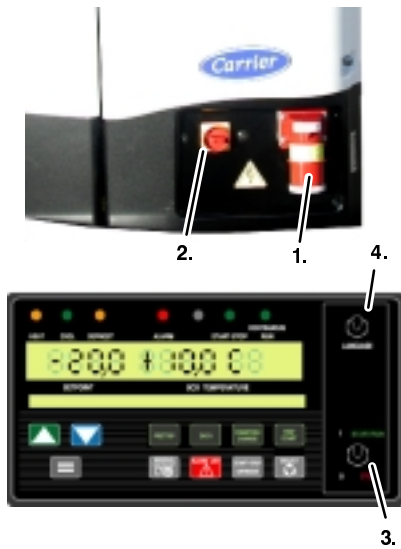
**LOGICOLD** is also designed to be the easiest to use, offering great flexibility in control and selecting the language you need.

**LOGICOLD** allows yet minimal user input for normal operation, a true "**Set it and forget it**" design.



## UNIT OPERATION

### A - STARTING THE UNIT - STANDBY OPERATION



1. Connect standby cable to unit.
2. To power up unit, place the circuit breaker main switch on "ON".
3. Place the RUN / STOP switch on the microprocessor controller to RUN.
4. Toggle the LANGUAGE switch as soon as you select 1 of the 8 available languages : English - French - Spanish - German - Danish - Dutch - Italian and Russian.

#### NOTE

THE UNIT IS FITTED WITH AN AUTOMATIC PHASE REVERSER. IN ALL CASES THE ELECTRIC MOTORS WILL RUN IN THE CORRECT DIRECTION.

### B - STOPPING THE UNIT



1. To stop the unit, place the RUN / STOP switch on the microprocessor controller keypad to STOP.



C - CHANGING THE SETPOINT

G  
B



1. With the setpoint displayed, press the UP ARROW or DOWN ARROW key to change setpoint to the desired value. The display will flash to indicate that the setpoint reading being displayed is a non-entered value. The message center will show "↑↓TO SCROLL, THEN = TO SAVE". The setpoint display will flash for 5 seconds of until the = (ENTER) key is pressed.
2. Press the = (ENTER) key to save the new setpoint.
3. Verify that the message "SETPOINT CHANGED" is displayed on the message center for 5 seconds.

Setpoints of -30°C to +32°C (-22°F to +89°F) may be entered via the keypad. The controller always retains the last entered setpoint in memory.

You can not change setpoint when unit is in Pretrip or when viewing Alarm List, Data List or Functional Parameters.

Depressing the = key (ENTER) will cause the new displayed setpoint value to become active. If the display is flashing and the new value is not entered, after 5 seconds or no keyboard activity, the display will flash for 10 seconds with "SETPOINT NOT CHANGED" displayed and then revert back to the last setpoint. All other keys are active at this time and may be pushed while the display is flashing.

TIP

YOU MAY PRESS AND HOLD THE UP ARROW OR DOWN ARROW KEY TO CHANGE THE SETPOINT. THE LONGER THE KEY IS HELD, THE FASTER THE SETTING WILL CHANGE.

D - START-STOP



1. Press the **START/STOP CONTINUOUS** key until the **START/STOP Light** on the controller illuminates.
2. Verify that **“START/STOP MODE SELECTED”** is displayed on the message center for 5 seconds and that the **START/STOP Light** is illuminated. The unit is now in **Start-Stop operation**.

The system works as follows :

- When the temperature(s) selected with the thermostat(s) has been reached, the system shuts the diesel engine down.
- Unit shut-downs can be programmed. Shut-down times will be modified depending on the isothermal insulation of the box, the ambient temperature and the cargo. The shut-down time is pre-programmed in the plant.

The user should determine whether this setting is appropriate for his type of cargo and the insulation of the bodywork (**all adjustments are to be made by a Carrier Transicold technician**).

**Caution** : During unit shut-downs, the evaporator fans also stop. Only use this operating mode for products which tolerate shut-downs of this kind.

- The start/stop system comprises several safety devices which ensure it operates correctly. These check :
  - the battery status
  - the minimum run time

## UNIT OPERATION

---

Automatic start/stop is provided to permit starting/restarting of the compressor as required. This gives the microprocessor automatic control of starting and stopping the unit. The main function of automatic start-stop is to turn off the refrigeration system near the setpoint to provide a full efficient temperature control system and then restart the unit when needed. Start-stop operation is normally used for frozen loads only.

**G  
B**

If pressing the START/STOP CONTINUOUS key seems to have no effect, this key may be locked out. START-STOP and CONTINUOUS operation may be tied to the setpoint ranges for frozen and perishable loads.

The microprocessor controller monitors box temperatures and battery voltage. Once setpoint is reached the controller will shut off the unit to save electricity. The controller will not shut off the unit if the battery voltage is not sufficient to restart it.

The controller will restart the unit if the box temperature is

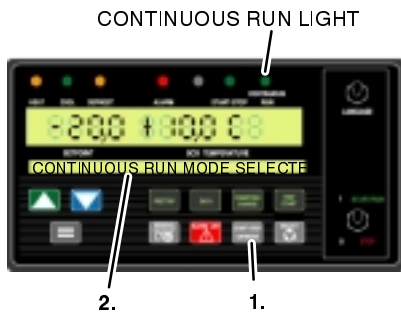
- more than +6°C (+11 °F) (programmable) over setpoint,
- the battery voltage drops below 11 VDC.

- Continuous Run :

- Only for setpoint above -12°C ( $\geq 12^{\circ}\text{C}$ )

## UNIT OPERATION

### E - CONTINUOUS RUN OPERATION



1. Press the **START/STOP CONTINUOUS** key until the **CONTINUOUS RUN Light** on the controller illuminates.
2. Verify that "**CONTINUOUS RUN MODE SELECTED**" is displayed on the message center and that the **CONTINUOUS RUN Light** is illuminated. The unit is now in **Continuous Run operation**.

In the continuous run mode, the unit will not shut down except for safeties. Continuous Run operation is normally used for perishable loads.

If pressing the **START/STOP CONTINUOUS** key seems to have no affect, this key may be locked out. Start-Stop and Continuous operation may be tied to the setpoint ranges for frozen and perishable loads.

### F - MANUAL DEFROST



1. Press the **MANUAL DEFROST** key. The **DEFROST Light** will come on and the message center will display "**DEFROST CYCLE STARTED**" for 5 seconds or flash "**CANNOT START DEFROST CYCLE**" for 5 seconds.

## UNIT OPERATION

---

The defrost mode may be initiated in three different ways if the evaporator coil is below 4.5°C (40°F) :

**G  
B**

1. Defrost is initiated automatically at preset intervals by defrost timer in the micro-processor.
2. Defrost is initiated by the defrost air switch.
3. The defrost mode may be manually initiated by pressing the Manual Defrost Key.

If “**CANNOT START DEFROST CYCLE**” is displayed, the coil temperature is above 4.5°C (40°F). Run the unit to lower temperature below 4.5°C (40°F) and then restart defrost.

All defrost modes with heater bars terminate when the evaporator temperature is higher than 12.5°C (55°F).

Natural defrost mode terminates when Return Air Temperature is equal to Supply Air Temperature.

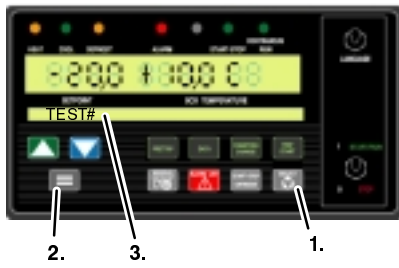
Should the defrost cycle not complete within 45 minutes, the defrost cycle is terminated. “**A54-DEFROST NOT COMPLETE**” will be in the Message Center.

After the 20 minute termination, the controller will wait 1.5 hours before attempting another defrost cycle. Pressing the manual defrost key will override this mode and start a new 20 minute defrost cycle. Overriding this 1.5 hour waiting period will generate an alarm.

If a shutdown alarm occurs, defrost will be terminated.

## UNIT OPERATION

### G - PRETRIP



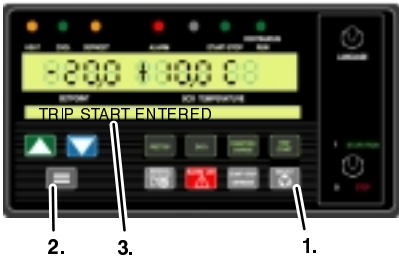
1. Press the **SELECT** key until **PRETRIP** is illuminated.
2. Press the **=** key to start **PRETRIP**.
3. Verify that the display shows **TEST#**.

The **PRETRIP** mode is for checking unit operation and evaluating operation of all modes and indicating a failure when detected.

The message center displays the current test and the % complete of the test. When the Pretrip tests are complete the message center will display **“PRETRIP PASS”** or **“PRETRIP FAIL IN TEST<test number>”**. If **“PRETRIP FAIL IN TEST<test number>”** is displayed the **ALARM** light will flash. Press the **ALARM LIST** key to review the alarms set by the Pretrip tests.

Once pretrip is started, the control panel keys are disabled until the pretrip ends.

### H - TRIP START



1. To mark the start of a trip in the data recorder, press the **SELECT** key until **TRIP START** is lit.
2. Press the **=** key.
3. If trip start is acknowledged by the data recorder, **“TRIP START ENTERED”** will be displayed for 5 seconds and then the display will revert back to the normal display. Otherwise **“CANNOT ENTER TRIP START”** will flash and then the display will revert back to the normal display.

Trip start marks a time stamp in memory to allow easy review of the data from the last trip.

Trip start tells the recorder that the present date and time is beginning of a new trip.

I - ALARM LIST - VIEW ALARMS

G  
B



1. Press the ALARM LIST key. If there are no active alarms in the alarm list, the display will say "NO ACTIVE ALARMS" for 5 seconds.
2. If there are active alarms in the alarm list, the display will be "A" and the alarm message for the latest active alarm in the list for 5 seconds.
3. Press the UP ARROW or DOWN ARROW key.
4. When you reach the end of the alarm list, "LIST END, = TO CLEAR ALARMS" is displayed.
5. If the alarm list is full, the "A" and the alarm message for the latest alarm is displayed for 5 seconds and then "LIST END, = TO CLEAR ALARMS" is displayed for 5 seconds.
6. To deactivate the active alarm list, press the = key while "LIST END, = TO CLEAR ALARMS" is being displayed.

TIP

TO DEACTIVATE ACTIVE ALARMS, TURN THE CONTROLLER OFF AND THEN BACK ON USING THE RUN / STOP SWITCH.

**ALARMS AND DEFAULT MESSAGES**

Unit problems detected by the controller are stored in the Alarm List in the controller. Stored alarms may be viewed in the Message Center.

All most times, the "STATUS OK" message will be shown in the message center.

When the unit is due for service or preventative maintenance (PM). "PM DUE" will be shown until the unit is taken in for the PM inspection and the PM timer is reset.

If there is a problem with the data recorder, "DATA RECORDER FAILURE" will be shown.

If there is a problem within the Microprocessor, the alarm "249-MICROPROCESSOR ERROR" will be shown.

## UNIT OPERATION

---

If a problem begins to develop one of the following messages may be shown :

“**CHECK AT NEXT SERVICE INTERVAL**” is shown when :

1. There is an active non-shutdown alarm present (the alarm condition is present but is not serious enough to stop the unit). These alarms may be viewed by pressing the ALARM LIST Key. The message will clear itself when the condition is corrected.
2. If there has been a Shutdown Alarm, and the unit has not yet been into a shop for inspection. Once the shutdown condition has been corrected, the unit may be started, and the alarm message will no longer be in the Alarm List. **This message can only be cleared by a qualified refrigeration technician.**

**TIP**

TO DEACTIVATE ACTIVE ALARMS, TURN THE CONTROLLER OFF AND THEN BACK ON USING THE **RUN / STOP** SWITCH.

If there is a safety shutdown, “**UNIT SHUTDOWN-SEE ALARM LIST**” will be shown. Pressing the ALARM LIST Key will bring any Active Alarms into the Message Center. The following are the Shutdown Alarms that may appear :

Shutdown alarms	unit shutdown
13-HIGH DISCHARGE PRESSURE	X
15-BATTERY VOLTAGE TOO HIGH	X
16-BATTERY VOLTAGE TOO LOW	X
17-HIGH COMP DISCHARGE TEMP	X
18-LOW REFRIGERANT PRESSURE	X or √
22-LOW SUCTION SUPERHEAT	X
23-A/C CURRENT OVER LIMIT	X
27-HIGH SUCTION PRESSURE	X or √
28-CHECK REFRIGERATION SYSTEM	X or √
√ : Alarm only / X or √ : It depends on the configuration / X : Shutdown	



UNIT OPERATION

**G**  
**B**

Warning / status alarms	unit shutdown
51-ALTERNATOR NOT CHARGING	X or ✓
53-BOX TEMP OUT-OF-RANGE	X or ✓
54-DEFROST NOT COMPLETE	✓
55-CHECK DEFROST AIR SWITCH	✓
57-CHECK REMOTE SWITCH 1	✓
58-CHECK REMOTE SWITCH 2	✓
59-DATALOGGER NOT RECORDING	✓
60-DATALOGGER TIME WRONG	✓
61-DOOR OPEN	✓
✓ : Alarm only / X or ✓ : It depends on the configuration / X : Shutdown	

Electrical alarms	unit shutdown
71-BAD F2 OR F3 FUSE	✓
73-NO POWER- CHECK POWER CORD	X
74-AC PHASE REVERSED	X or ✓
75-COMP MOTOR OVERHEATED	X
76-CONDENSER MOTOR OVERHEATED	X
77-EVAP MOTOR OVERHEATED	X
82-CHK REMOTE OUT-RANGE LIGHT	✓
83-CHECK REMOTE DEFROST LIGHT	✓
84-CHECK REMOTE ALARM LIGHT	✓
87-CHECK REMOTE HEAT LIGHT	✓
88-CHECK REMOTE COOL LIGHT	✓
89-CHECK REMOTE AUTO LIGHT	✓
91-CHECK HEATER CONTACTOR 1	✓
92-CHECK HEATER CONTACTOR 2	✓
93-CHECK STARTUP BUZZER	✓
94-CHECK COMP CONTACTOR 1	✓

UNIT OPERATION

95-CHECK COND FAN CONTACTOR 1	✓
98-CHECK HIGH TEMP THERMOSTAT	X
99-CHECK STANDBY CONTACTOR	✓
109-CHECK EVAP FAN CONTACTOR	✓
✓ : Alarm only / X or ✓ : It depends on the configuration / X : Shutdown	

Sensor alarms	unit shutdown
121-CHECK AMBIENT AIR SENSOR	✓
122-CHECK RETURN AIR SENSOR	X
123-CHECK SUPPLY AIR SENSOR	X
124-CHK DEFROST TERM 1 SENSOR	✓
125-CHECK COMP DISCH SENSOR	✓
127-CHECK SUCTION TEMP SENSOR	✓
131-CHECK EVAP TEMP SENSOR	✓
133-CHEK REMOTE TEMP SENSOR 1	✓
134-CHEK REMOTE TEMP SENSOR 2	✓
135-CHEK REMOTE TEMP SENSOR 3	✓
✓ : Alarm only / X or ✓ : It depends on the configuration / X : Shutdown	

Pretrip alarms	unit shutdown
141-PRETRIP STOPPED BY USER	✓
153-CHECK RETURN AIR SENSOR	✓
154-CHECK SUPPLY AIR SENSOR	✓
156-CHECK BATTERY VOLTS	✓
157-CHECK BATTERY CURRENT	✓
158-CHECK AMBIENT AIR SENSOR	✓
159-CHK DEFROST TERM 1 SENSOR	✓
160-CHECK DISCH TEMP SENSOR	✓
161-CHK SUCTION TEMP SENSOR	✓

UNIT OPERATION

**G**  
**B**

171-CHECK EVAP & DISC PRESS	✓
177-CHECK TXV SUPERHEAT	✓
180-CHECK SUCTION MOD VALVE	✓
186-CHECK EVAP OUTLET TEMP	✓
187-CHECK HEATER 1 CIRCUIT	✓
188-CHECK HEATER 2 CIRCUIT	✓
189-CHECK EVAP FAN MOTOR	✓
190-CHECK CONDENSER FAN MOTOR	✓
206-CHK CONDENSER FAN CIRCUIT	✓
207-CHK COMP CONTACT CIRCUIT	✓
209-CHK STANDBY CONT CIRCUIT	✓

Maintenance alarms	unit shutdown
224-STANDBY MAINTENANCE DUE	✓
225-GENERAL MAINTENANCE DUE	✓
226-SERVICE SOON-PM #1 DUE	✓
227-SERVICE SOON-PM #2 DUE	✓
228-SERVICE SOON-PM #3 DUE	✓
229-SERVICE SOON-PM #4 DUE	✓
230-SERVICE SOON-PM #5 DUE	✓
✓ : Alarm only / X or ✓ : It depends on the configuration / X : Shut-down	

UNIT OPERATION

Microprocessor alarms	unit shutdown
232-SETPOINT ERROR	X
233-MODEL # ERROR	X
234-UNIT SERIAL # ERROR	X
235-CONTROL SERIAL # ERROR	X
236-TRAILER ID # ERROR	X
237-FUNCTION PARAMETER ERROR	X
238-CONFIGURATIONS 1 ERROR	X
239-CONFIGURATIONS 2 ERROR	X
240-HOUR METER ERROR	X
241-ALARM STATUS ERROR	X
242-DIS PRESS CALIBRATE ERROR	X
243-SUCT/EVAP CALIBRATE ERROR	X
245-MICRO SW REV ERROR	X
246-EEPROM WRITE FAILURE	X
247-CONFIGURATIONS 3 ERROR	X
248-CONFIG MODE / HP2 ERROR	X
249-MICROPROCESSOR ERROR	X
√ : Alarm only / X or √ : It depends on the configuration / X : Shutdown	

J - DATA OPERATION

**G**  
**B**



1. Press the **SELECT** key until **DATA** is illuminated.
2. Press the **=** key.
3. Press the **UP ARROW** or **DOWN ARROW** key to display the next or previous unit data value.

3. 2. 1.

**UNIT DATA MESSAGES**

UNIT DATA	
Message	Value
ENGINE RPM:	0 to 3 000
UNIT AC CURRENT #1:	0 A to 60 A
UNIT AC CURRENT #2:	0 A to 60 A
EXPANSION VALVE:	0 % to 100 % or closing
START MODE:	AUTO or MANUAL
SOFTWARE REVISION:	XXXXXX
DISPLAY SOFTWARE REV:	XXXXXX
CONTROL SERIAL #:	XXXXXX
TRAILER ID #:	XXXXXX (10 letters or numbers)
UNIT SERIAL #:	XXXXXX
UNIT MODEL #:	XXXXXX
ENGINE HOURS:	0 HR to 99999 HRS
STANDBY HOURS:	0 HR to 99999 HRS
SWITCH ON HOURS:	0 HR to 99999 HRS
HOURS TO ENGINE MAINT:	0 HR to 99999 HRS
HOURS TO S/B MTR MAINT:	0 HR to 99999 HRS
HOURS TO UNIT MAINT:	0 HR to 99999 HRS
TIME LEFT TO PM 1:	0 HR to 99999 HRS

UNIT OPERATION

UNIT DATA	
TIME LEFT TO PM 2:	0 HR to 99999 HRS
TIME LEFT TO PM 3:	0 HR to 99999 HRS
TIME LEFT TO PM 4:	0 HR to 99999 HRS
TIME LEFT TO PM 5:	0 HR to 99999 HRS
PM1 RESET INTERVAL:	0 HR to 99999 HRS
PM2 RESET INTERVAL:	0 HR to 99999 HRS
PM3 RESET INTERVAL:	0 HR to 99999 HRS
PM4 RESET INTERVAL:	0 HR to 99999 HRS
PM5 RESET INTERVAL:	0 HR to 99999 HRS
EVAPORATOR PRESSURE:	-1 B to +6.88 Bars <b>or</b> -14.7 psi to 100 psi
DISCHARGE PRESSURE:	0 B to +34.4 Bars <b>or</b> 0 psi to 500 psi
ENGINE OIL PRESSURE:	0 B to +6.88 Bars <b>or</b> 0 psi to 100 psi
ENGINE COOLANT TEMP:	-50°C to +130°C <b>or</b> -58°F to 266°F
RETURN AIR TEMP:	-47°C to +70°C <b>or</b> -52.6°F to 158°F
<i>C2 RETURN AIR TEMP:</i> -Vector 1800 Mt°	-47°C to +70°C <b>or</b> -52.6°F to 158°F
<i>C3 RETURN AIR TEMP:</i> -Vector 1800 Mt°	-47°C to +70°C <b>or</b> -52.6°F to 158°F
SUPPLY AIR TEMP:	-47°C to +70°C <b>or</b> -52.6°F to 158°F
AMBIENT AIR TEMP:	-47°C to +70°C <b>or</b> -52.6°F to 158°F
DEFROST TERM TEMP 1:	-47°C to +70°C <b>or</b> -52.6°F to 158°F
<i>DEFROST TERM TEMP 2:</i> -Vector 1800 Mt°	-47°C to +70°C <b>or</b> -52.6°F to 158°F
<i>C3 DEFROST TERM TEMP:</i> -Vector 1800 Mt°	-47°C to +70°C <b>or</b> -52.6°F to 158°F
SUCTION LINE TEMP:	-47°C to +70°C <b>or</b> -52.6°F to 158°F
EVAP OUTLET TEMP:	-47°C to +70°C <b>or</b> -52.6°F to 158°F
COMP DISCHARGE TEMP:	-40°C to +200°C <b>or</b> -40°F to 392°F
SUCTION PRESSURE:	-1 B to +6.88 Bars <b>or</b> -14.7 psi to 100 psi
BATTERY:	0 V to 28 V

## UNIT OPERATION

UNIT DATA	
FUEL LEVEL:	0 to 100 %
CURRENT DRAW:	-80 A to 80 A

**G**  
**B**

### K - CHANGING A FUNCTION



1. Press the SELECT key until FUNCTION CHANGE is highlighted, "PRESS ↑↓ TO VIEW SETTINGS" will appear in the Message Center.
2. Press the UP ARROW key to scroll through the Function List beginning at the top.  
Press the DOWN ARROW key to scroll through the Function List beginning at the bottom.
3. "↑↓ TO SCROLL, THEN = TO SELECT" will appear in the Message Center.
4. To read through the Function List, continue to press either the UP or DOWN ARROW key. The Functional Parameters will appear in the Message Center in the order as shown below. The list is circular meaning that once the end is reached, it is repeated from the beginning. If no key presses are made for 10 seconds, the Message Center will return to the default message.
5. To change one of the Functions, bring the Function you wish to change into the Message Center, and press = (ENTER) key. "TO SCROLL, THEN = TO SAVE" will show in the Message Center. Pressing either UP or DOWN ARROW key will begin to change the Function setting. The Message Center will flash, indicating that a change has been made that has not been entered into memory.
6. Continue pressing UP or DOWN ARROW key until the desired value is showing, then press the = (ENTER) key. The Message Center will stop flashing. The new value is now in memory.  
If the = key is not pressed within 10 seconds, the Message Center will change to "FUNCTION NOT CHANGED". This will appear for 5 seconds, then return to the last Functional Parameter shown. If no further keys are pressed, the default display will return in another 10 seconds.

UNIT OPERATION

FUNCTIONAL PARAMETERS	
Functional parameters	Available selections
SILENT MODE:	YES or NO
PRETRIP TYPE:	<b>SHORT</b> / LONG
SWITCH TO ENGINE	<b>YES</b> / NO
OVERRIDE DOOR SHUTDOWN:	YES / <b>NO</b>
OVERRIDE REMS1 SHUTDOWN:	YES / <b>NO</b>
OVERRIDE REMS2 SHUTDOWN:	YES / <b>NO</b>
SLEEP MODE, OFF/ON TO WAKE	YES / <b>NO</b>
PERISH MIN OFF TIME:	10 min to 90 min <b>20 min</b>
PERISH OVERRIDE TEMP:	2°C to 10°C <b>6°C</b>
PERISH MAX OFF TIME:	10 min to 255 min <b>0 min = OFF</b>
FROZEN MIN RUN TIME:	<b>4 min</b> to 60 min
FROZEN MIN OFF TIME:	10 min to 90 min <b>20 min</b>
FROZEN OVERRIDE TEMP:	2°C to 10°C <b>6°C</b>
FROZEN MAX OFF TIME:	10 min to 255 min <b>0 min = OFF</b>
FROZEN SHUTDOWN OFFSET:	2°C to 10°C <b>2°C</b>
DEFROST TIMER SET FOR	1.5 hrs / 3 hrs / <b>6 hrs</b> / 12 hrs
TEMP CONTROL:	<b>RETURN AIR</b> / SUPPLY AIR
DISPLAY IN	<b>ENGLISH UNITS</b> / METRIC UNITS
OUT OF RANGE ALARM:	English OFF : 4°F / 5.5°F / <b>7°F</b> Metric OFF : 2°C / 3°C / <b>4°C</b>
AIR FLOW:	<b>NORMAL</b> / HIGH
PM1 RESET INTERVAL:	<b>REMAIN THE SAME</b> / TURN OFF / RESET / RESUME
PM2 RESET INTERVAL:	<b>REMAIN THE SAME</b> / TURN OFF / RESET / RESUME
PM3 RESET INTERVAL:	<b>REMAIN THE SAME</b> / TURN OFF / RESET / RESUME
PM4 RESET INTERVAL:	<b>REMAIN THE SAME</b> / TURN OFF / RESET / RESUME



## UNIT OPERATION

### FUNCTIONAL PARAMETERS

PM5 RESET INTERVAL:	<b>REMAIN THE SAME</b> / TURN OFF / RESET / RESUME
ECO MODE: NO or	ECO MODE: YES
Selections in <b>BOLD</b> are the factory settings	

**G**  
**B**

### PRETRIP

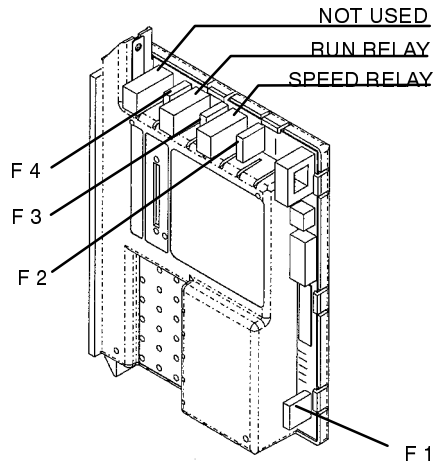
The pre-trip inspection should be performed before picking up any load. This inspection is essential to anticipate and help minimize the possibility of "on-the-road" problems. These checks take only a few minutes.

- Battery** - On units equipped with serviceable batteries, the level of the electrolyte in each of the cells should be checked. If the level is low, distilled water should be added to the correct level. Most units, however, are equipped with low or maintenance-free batteries; these should be inspected to ensure that the connections are clean and tight, and the battery hold-down should be checked for tightness.
- Over-all Unit inspection** - Visually inspect the entire unit for leaks, loose bolts, frayed, loose, or broken wires, etc. The condenser coil of the unit should be free of dirt, bugs, cardboard, or any other debris that may obstruct airflow across the coils. The evaporator (located inside the body) should be free of debris also, especially stretch-wrap, which is often used during transport to prevent cargo from shifting.
- Truck body** - The body should be inspected prior to loading. Check the door and vent seals for damage and wear. Inspect the entire interior and exterior of the body to detect any damage, including 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 in the box.
- Pretrip** - Initiate a pretrip by pressing the PRETRIP Key.

## UNIT MAINTENANCE



**ELECTRIC BOX**



**FUSES ON MICRO BOARD**

	Purpose	Capacity	Location
F 1	Power fuse	7.5 A	Micro board
F 2	Speed relay fuse	10 A	Micro board
F 3	Run relay fuse	7.5 A	Micro board
F 4	Not used		Micro board
F 5	Main fuse	80 A	Control box
F 6	Micro power	15 A	Control box

## UNIT MAINTENANCE

All maintenance services must be done by a technician trained on Carrier products respecting all safety and quality standards of Carrier.

**G  
B**

Vector E	Initial service	1 month	Every 6 months	Every 2 years
----------	-----------------	---------	----------------	---------------

### DESCRIPTION OF SERVICE OPERATIONS

Service Operations	
Initial service 1 month	Check bolts/screws are correctly tightened. Check unit fastening into box. Check all electrical connection in control box Pretrip inspection
every 6 months	Complete operations of initial service Calibrate defrost air switch Clean evaporator and condenser coils Calibrate defrost air switch Check level of coolant, refrigerant and battery electrolyte Check battery charger charge Check thermostat operation Check manual / automatique defrost operation Check klixon cut out
Service C	Complete operations of 6 months service Replace filter drier Clean up the EXV filter Replace compressor oil - only use Ester oil (POE) approved by Carrier Transicold Replace refrigerant

## PRODUCT LOADING

---

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, because 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 truck. All products should be kept away from the sidewalls of the body, allowing air to 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 a warm product.

### SOME ADVICE

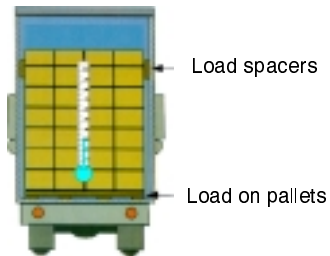
#### Before loading

- Pre-cool the inside of the insulated body by lowering the temperature for about 15 minutes.
- Evacuate the humidity existing inside the box by carrying out a manual defrost. This can only take place when enabled by the defrost thermostat (box temperature lower than 3°C during pulldown and 8°C during heating).

#### When loading

- To be carried out with the unit stopped.
- It is recommended to open doors as little as possible to avoid the intake of hot air and humidity.
- Select the 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 the air intakes on the evaporator section and the ventilation ducts.

## PRODUCT LOADING



**G**  
**B**

- Leave a free space of about :
  - 6 to 8 cm between load and frontwall,
  - 20 cm between the top of the load and the roof,
  - between the floor and the load (gratings, pallets).
- Do not forget to close the doors.
- Before closing the doors, check your load once more and see that nobody is shut inside the box.



### NOTE :

For stationary utilization, we recommend to place the body in the shade.

### IMPORTANT

Never leave your unit more than a month without running.

## PRODUCT LOADING

### 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 set-point required by the shipper or receiver.

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

Product	Set-point Range		Operating mode*
Bananas	15°C	60°F	Continuous
Fresh fruits and vegetables	+4°C to +6°C	+39°F to +43°F	Continuous
Fresh meats and seafood	+2°C	+36°F	Auto-Start/Stop or continuous
Dairy Products	+2°C to +6°C	+36°F to +43°F	Auto-Start/Stop or continuous
Ice	-20°C	15°F to 20°F	Auto-Start/Stop
Frozen fruits and vegetables	-18°C	0°F	Auto-Start/Stop
Frozen meats and seafood	-20°C	-10°F to 0°F	Auto-Start/Stop
Ice cream	-25°C	-20°F	Auto-Start/Stop

\* During delivery cycles that include frequent stops and door openings, it is recommended to shut down the unit during the time the box doors are open, in order to limit the accumulation of ice on the evaporator OR use a door switch (option).

## STANDBY OPERATION GUIDELINES

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

**G  
B**

- Always check that the unit is OFF before connecting it to 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 below :

Unit	aM 400 / 3/ 50 Hz	Standardized extension cable H.07.RNF
VECTOR E	32 A	6 mm <sup>2</sup>

aM : Motor rated fuse

- The unit connection cable must be fitted with a ground connection. The cable must be connected to earth.
- On the 400 V supply, it is recommended to use a differential protection on each plug.
- When performing service and/or maintenance procedures on a refrigeration unit, make certain that the unit is disconnected from the power source and that the keypad correctly indicates "OFF", and that it is impossible for the unit to start up automatically during the maintenance operation.
- Operations on the 400 V supply for the unit must only be carried out by authorized personnel.
- The user is liable for ensuring that the above measures are taken.

## **“A.T.P. EUROPE” REGULATION EXTRACT**

---

**(Date: March 1974)**

Approval of vehicles intended for the carriage of perishable goods.

Before putting a refrigerated vehicle into service, it is necessary to have it approved by the Regional Health Department.

**CHARACTERISTICS OF VEHICLES USED FOR CARRYING PERISHABLE GOODS; REFRIGERATION UNIT.**

The refrigeration unit is an insulated unit with a cooling system which makes it possible, with a mean outside temperature of +30°C, to lower the temperature inside the empty body and to maintain this low temperature in the following way:

### **CLASS A**

Refrigeration unit furnished with a cooling system whereby a temperature between +12°C and 0°C inclusive can be chosen.

### **CLASS B**

Refrigeration unit furnished with a cooling system whereby a temperature between +12°C and -10°C inclusive can be chosen.

### **CLASS C**

Refrigeration unit furnished with a cooling system whereby a temperature between +12°C and -20°C inclusive can be chosen.

The cooling capacity of a unit is determined by a test carried out in one of the approved testing stations and ratified by an official report.

Note: The “K” factor of bodies intended to be classified as C must be equal to or lower than 0.4 W/m<sup>2</sup> °C.



**SIGNS, IDENTIFICATION MARKS AND PLATES TO BE ATTACHED TO REFRIGERATION UNITS**



Refrigeration Plate

This reference must be followed by identification marks according to the following list:

Standard refrigeration unit Class A      FNA

Reinforced refrigeration unit Class A      FRA

Reinforced refrigeration unit Class B      FRB

Reinforced refrigeration unit Class C      FRC

In addition to the above identification marks, the date (month and year) of expiry of the approval certificate must be indicated.

Example:

FRC

6-2001      (6 = month (June) 2001 = year)

**VERY IMPORTANT**

**Regularly check the expiry date of the approval certificate. During transport, the approval certificate or provisional certificate should be shown on request of qualified agents. To have an insulated unit approved as a refrigeration unit, an application to modify the approval certificate should be sent to the regional health office.**

## EMERGENCY ROAD SERVICE

---

At Carrier Transicold we're working hard to give you complete service when and where you need it. That implies a worldwide network of dealers and available an 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 encounter 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 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 Carrier Transicold's 24-hour Assistance :

**In Europe**, please use the following free phone numbers from :

A	AUSTRIA	0800 291039
B	BELGIUM	0800 99310
CH	SWITZERLAND	0800 838839
D	GERMANY	0800 1808180
DK	DENMARK	808 81832
E	SPAIN	900 993213
F	FRANCE	0800 913148
FIN	FINLAND	0800 113221
GB	GREAT BRITAIN	0800 9179067
GR	GREECE	00800 3222523
H	HUNGARY	06800 13526
I	ITALY	800 791033
IRL	IRELAND	1800 553286
L	LUXEMBURG	0800 3581
RUS	RUSSIA	810 800 200 31032
N	NORWAY	800 11435
NL	THE NETHERLANDS	0800 0224894
P	PORTUGAL	8008 32283
PL	POLAND	00800 3211238
S	SWEDEN	020 790470

## EMERGENCY ROAD SERVICE

---

**From other countries :** +32 9 255 67 89

**Direct :** +32 9 255 67 89

**G  
B**

In Canada or United States, call 1 - 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.

