

1. INTRODUCTION

This guide has been prepared for the operator of Carrier Transicold 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 unit. This manual refers to the standard model. Some options may not appear in it, and in such cases you are requested to consult our Technical Services.

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 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.

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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2. IDENTIFICATION

Keep the fold out sheet while reading the instructions.

1. Nameplate

Each unit is identified by a nameplate attached to the frame of the unit. The 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 so that he may properly assist you.

The upper part is fixed on the frame (1a) and the lower is fixed on the micro (1b) : easily readable.

2. Noise level sticker

This sticker indicates the noise level in Lwa (accoustic pressure).

3. WARNINGS AND PRECAUTIONS

This manual contains safety and service instructions to follow in order to prevent any accident. Some of following stickers have been placed on the product for your **SAFETY**.











BEFORE USING THIS REFRIGERANT UNIT, read carefully all safety information explained in this manual and indicated on the product. Be sure that everybody who will use this refrigeration unit has been trained to use it in a safe way.

DURING THE USE OR MAINTENANCE OF THIS REFRIGERATION UNIT, the notes on safety are to be considered.

	<p>Personal Protective Equipment : Always use adequate Personal Protective Equipment before doing anything on this refrigerant unit, as explained in this manual.</p>
	<p>Working at height : Take all necessary safety precautions when accessing this refrigeration unit : use safe ladders, working platforms with appropriate guards.</p>
	<p>Automatic start : This refrigeration unit is equipped with Auto-Start/Stop, a valuable fuel saving feature. When this refrigeration unit is set for Auto-start/Stop operation it may start at any time and without warning.</p>
<p>Before servicing refrigeration unit, make sure the main power switch is on the OFF position. Ensure the unit will not restart.</p> <p>Lock-out / Tag-out can be performed by disconnecting and enclosing :</p> <ul style="list-style-type: none"> - The negative battery cable in diesel mode - The electrical plug in electrical mode. 	



	<p>Belts and fans :</p> <p>This refrigeration unit is equipped with Auto-start/stop, it may start at any time and without warning.</p> <p>When the unit is running beware of belts and fans that are moving. Before servicing refrigeration unit, make sure the main power switch is on the OFF position.</p> <p>Ensure the unit will not restart. Lock-out / Tag-out can be performed as described above.</p> <p>When there is protective structure (fan grid or guard for example) make sure they are in place. Never removed them when the refrigeration unit is running.</p> <p>Always keep your hands, body parts, clothes, hairs and tools far from moving parts.</p>
  	<p>Electricity :</p> <p>When this refrigeration unit is running in electrical operation, some devices are powered up especially in the electrical control box.</p> <p>Before servicing refrigeration unit, make sure the main power switch is on the OFF position. Ensure this refrigeration unit is disconnected from the local electrical network. Lock-out / Tag-out can be performed as described above.</p> <p>Before working in the electrical control box, it is required to control the lack of tension.</p> <p>WHEN IT IS NECESSARY TO WORK IN THE ELECTRICAL CONTROL BOX UNDER TENSION, PEOPLE MUST BE QUALIFIED FOR WORKS UNDER LOW OR HIGH VOLTAGE.</p> <p>Always use adequate tools and Personal Protective Equipment when working on electrical devices : safety gloves and safety glasses.</p>
   	<p>Engine coolant :</p> <p>This refrigeration unit is equipped with a pressurised cooling system. Under normal operating conditions, the coolant in the engine and radiator is under high pressure and very hot.</p> <p>Coolant is very slippery. It can be harmful in case of ingestion.</p> <p>Never remove the cap from a hot radiator when this refrigeration unit is running or immediately after.</p> <p>If the cap must be removed, wait at least 10 minutes and then do so very slowly in order to release the pressure without spray.</p> <p>In case of leakage, immediatly clean the floor to prevent slipping.</p> <p>Avoid contact with the skin and eyes. Always use Personal Protective Equipment when handling engine coolant : safety clothes, safety gloves and safety glasses.</p>



“Low pollution” engine :

- The TRI-VORTEX-type indirect injection system minimizes exhaust fume pollution.
- **NEVER START THE ENGINE IN A CLOSED ROOM, EXHAUST GAS IS POISONOUS.**
- It is colorless and odorless and created by the incomplete combustion of hydrocarbons.
- **Exhaust gas is poisonous, breathing it in induces drowsiness and may lead to loss of consciousness.**

The following symptoms indicate exhaust gas has been inhaled :

- Blackout, intense headache, sudden weakness and sleepiness, vomiting, muscular contractions, beating temples.

If you feel one of the above mentioned symptoms, go out and breathe fresh air.

If you notice a noise or modification of the exhaust system, immediately stop the engine and call your service centre for checking and repair.



Environment :

Think about protection of environment during all the life of this refrigeration unit.

To prevent environmental damages NEVER release refrigerant in the atmosphere, NEVER throw coolant, oil, battery and chemicals in the nature. It must be recuperate and recycle according to current regulations.

When disposing this refrigerant unit do it in an environmentally sound way and in accordance with current regulations.



CAUTION

Under no circumstances should anyone attempt to repair the Logic or Display Boards. Should a problem develop with these component, contact your nearest Carrier Transicold dealer for replacement.

Under no circumstances should a technician electrically probe the processor at any point, other than the connector terminals where the harness attaches. Microprocessor components operate at different voltage levels and at extremely low current levels. Improper use of voltmeters, jumper wires, continuity testers, etc. could permanently damage the processor.

Most electronic components are susceptible to damage caused by electrical static discharge (ESD). In certain cases, the human body can have enough static electricity to cause resultant damage to the components by touch. This is especially true of the integrated circuits found on the truck/trailer microprocessor.



4. PRODUCT LOADING

Proper air circulation in the trailer 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 trailer. 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.

OPTIONS FOR INSULATED BODIES

● Mobile partition

The mobile partition must be placed at a minimum distance from the evaporator of :

- 1700 mm for auxiliary evaporator
- 2600 mm for host unit evaporator

● Ducting of evaporator air outlet

Ventilation ducts must never be covered.

SOME ADVICE

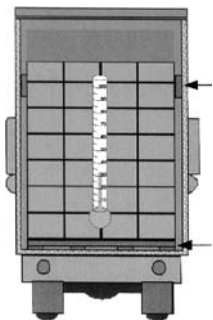
Before loading

- 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).
- Evaporator fans are protected by safety grills. In the event of heavy duty use of the unit, ice can accumulate on the grills. It is therefore recommended to clean them regularly by means of a small brush. The operation **MUST** be done when the unit has been SHUT DOWN.

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).





Load spacers

Load on pallets

- Take care not to obstruct the air intakes on the evaporator section and the ventilation ducts.
- 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.

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	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 that the unit always be operated in the continuous run mode to help insure product quality. It is essential to shut down the unit during the periods when the body doors are open, in order to maintain the temperature of the cargo and keep the unit operating correctly.



6. QUICK GLANCE ON THE DISPLAY BOARD

6.1. Microprocessor

NOTE

Location of the display board :

Maxima 1000 : fixed on the box / Maxima 1300 : fixed in the bottom cover

Keep the fold out sheet while reading the instructions.

The microprocessor controlled features of this unit provide the most reliable control system currently available. It is also designed to be the easiest to use, offering great flexibility in control, yet minimal user input for normal operation – a true “set it and forget it” design.

1. Standby operation led

2. Fault alarm led

3. Display

shows set-point, box temperature, operating mode, alarm displays, as well as data on the unit itself (battery voltage, water temperature etc...).

4. Up and Down arrow keys

These enable modification of the set-point. Press the Up and Down arrow keys until the required set-point is displayed on the left-hand side of the screen. When the correct set-point is displayed, press the ENTER key to validate. The ARROW KEYS also enable modification of unit functions, and scrolling of FUNCTION and UNIT DATA.

5. Function change key

enables access to unit programming functions (see p. 18).

6. Unit data key

Pressing this key scrolls a display of the various operating conditions on-screen, for example the temperature of the engine coolant, or the battery voltage. A more detailed description of the function of this key is given later in this chapter.

7. Pretrip key

The PRETRIP key initiates the pretrip check of all normal operating modes for Road operation. The temperature inside the trailer body must be lower than $3^{\circ}\text{C} \pm 1^{\circ}\text{C}$.

8. Auto Start/Stop-Continuous key

Switches the operating mode of the unit from Automatic Start/Stop to continuous operation in Road or Standby modes. When the unit is set to Automatic Start/Stop, it operates in this mode until the box temperature reaches the set-point, then stops (after operating for the minimum run time).

See page 18 (Function Parameters - FN3) until a heating or cooling cycle becomes necessary once again (after minimum off time - FN2).

In continuous run mode, the unit automatically cycles from heating to cooling modes as required to maintain the box temperature at the set-point. In the case where the latter is lower than -12°C , the unit does not heat, but continuously operates in low speed cooling mode (*Maxima 1300 only*).

When set to continuous run mode, the unit only shuts off when the Run/Stop switch is moved to the Stop position, or a unit fault occurs.



9. Manual defrost key

The MANUAL DEFROST key switches the unit to defrost mode. It is not usually necessary to defrost the unit manually, since it is fitted with a defrost timer and defrost air switch. Manual defrost may be necessary if ice accumulates on the evaporator after frequency opening the trailer door in damp weather conditions (the DF message is displayed on-screen).

10. Enter key

This confirms changes entered concerning unit functions. The key enables validation of a change in set-point made using the Arrow-keys. If the Enter Key is not used, the set-point reverts to its previous value.

The ENTER key also enables validation of a change made to a function parameter. If the Enter Key is not used, the function reverts to its previous parameter.

11. Run/Stop switch

Controls unit operation. In the Run position, the unit starts up according to the operating mode previously specified (Road or Standby).

12. Engine/Standby switch

When this switch is set to the ENGINE position, the unit operates in Diesel mode (diesel engine) when the unit was previously operating in Standby mode.

Important : If the screen display is blank, check the position of the RUN switch (11.) on the box.

7. OPERATION

Keep the fold out sheet while reading the instructions.

MAXIMA 1000 - MAXIMA 1300

The MAXIMA 1000/1300 are equipped with a diesel engine and an electric motor.

If necessary, the unit can operate as a heater simply by using the thermostat: its control is the same as for the refrigeration cycle.

The START/STOP system automatically cycles the unit on and off during engine operation, regulating refrigeration or heating output to meet the temperature requirements of the products being transported.

- **Diesel engine:**

Diesel - 4 cylinders - water-cooled - reinforced crankshaft bearings - perfect balance at all speeds - low noise level - water-oil safety switch - large-volume oil pan.

- **Electric motor :**

230/400/3/50Hz

- **4-stage thermostat :**

Four operating modes for temperature set-point > -12°C:

- High-speed cool
- Low-speed cool (**Maxima 1300 only**)
- Low-speed heat (**Maxima 1300 only**)



- High-speed heat
- Two operating modes for temperature set-point < -12°C:
- High-speed cool
 - Low-speed cool (**Maxima 1300 only**)

- **Controller :**

The unit is delivered fitted with a microprocessor controller.

- **Charge alternator**

- Maxima 1000/1300 : 14 VDC, 50 A

7.1. Operating principle

The operation of this self-contained unit is automatic.

7.1.1. In ROAD mode (engine operation)

With Start/Stop

The thermostat controls unit shut-down as soon as the set-point temperature has been reached.

Without Start/Stop

The diesel engine runs continuously. During temperature pulldown it runs at high speed. Down to -12°C, the box temperature is regulated in low-speed (**MAXIMA 1300 only**) cool and heat; under -12°C, a safety cut-out prevents any possibility of heating; this means that as soon as the set-point temperature has been reached the unit will run in low-speed cool.

NOTE: If a fixed negative temperature selection is required lower than -12°C (e.g. -15°C or -20°C or -25°C), please contact your local Carrier dealer or service.

7.1.2. In STANDBY mode

With Start/Stop

The thermostat controls unit shut-down as soon as the set-point temperature has been reached.

Without Start/Stop

The unit will run continuously :

cool / heat for setpoint above -12°C

only cool for setpoint below -12°C

7.1.3. In DEFROST mode

The unit is equipped with an automatic defrost.

Triggering of the defrost cycle is controlled by a differential pressure air switch; shut-down of the defrost cycle is controlled by two defrost termination thermostats. The defrost cycle can also be controlled manually. During the defrost cycle the evaporator blower is off.

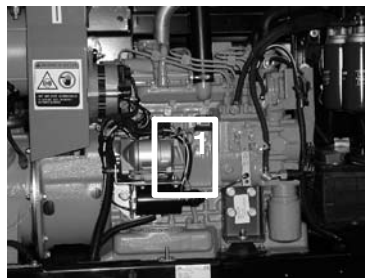


7.2. Petrip inspection

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.

1. Place the unit's main power switch to the Stop position.
2. **Fuel** - Drain any water and impurities from the sump of the refrigeration unit fuel tank by opening the drain-cock located on the bottom of the tank. Close the valve when only pure fuel emerges. Check the fuel level in the tank, ensuring that the fuel supply is adequate for unit operation. Refuel if necessary.
3. **Belts** - Check the belt tension by depressing the belt with your thumb, near the center of the longest free run of each belt. Under moderate pressure each belt should deflect approximately 6 mm to 13 mm (1/4 inch to 1/2 inch). If the belts deflect more than this they should be tightened (loose belts may slip, generating heat and reducing belt life). If the belts are too tight they should be loosened; tight belts can reduce bearing life.
4. **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.

5. **Engine Oil** - The engine oil should be checked last, since oil has to drain out of the block and into the oil pan to obtain a correct reading. Remove the dip-stick (1), wipe it clean and re-insert it fully into the engine block. Once again, remove the dip-stick and observe the oil level; it should be somewhere between the "full" and "add" marks. If it is below the add mark, add oil until the level is correct.



6. **Coolant level** - Visually inspect the coolant level in the coolant bottle (located on the upper left-hand side of the unit).
7. **Over-all Unit inspection** - Visually inspect the entire unit for leaks, loose bolts, frayed, loose, or broken wires, etc. The radiator and condenser coils 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.
8. **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.
9. **Pretrip** - Initiate a pretrip by pressing the PRETRIP Key.



7.3. Starting the unit - Road operation

1. Complete the PRETRIP inspection described in the previous section.
2. If the unit was previously operating in STANDBY mode, place the switch (12.) to the ENGINE position.
3. Place the RUN/STOP switch (11.) to the RUN position.

NOTE

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

The microprocessor initiates a unit pretrip check, initiates preheating for a period determined by the temperature of the engine coolant, and automatically starts the unit.

7.4. Starting the unit - Standby operation

1. Check that the unit is connected to a suitable electricity supply (See section 7.4.1.)
2. Place the Standby switch (12.) to STANDBY.
3. Place the RUN/STOP switch (11.) to the RUN position.

NOTE

THE UNIT NOW OPERATES ON STANDBY. SEE THE TABLE ON PAGE 15 FOR INFORMATION ABOUT THE APPROPRIATE WIRING.

7.4.1. Standby operation guidelines

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

- a. **NEVER** plug the unit in to the power source with the main switch in the RUN position. The main switch should always be in the STOP position when connecting the unit to the power source.
- b. 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 350/415 / 3/ 50 Hz	Standardized extension cable H.07.RNF	
		230 volts	400 volts
MAXIMA 1000/1300	30 A	10 mm ²	6 mm ²

aM : Motor rated fuse



- c. The unit connection cable must be fitted with a ground connection. The cable must be connected to earth.
- d. On the 400 V supply, the unit **MUST BE CONNECTED** to a high sensibility (30mA) differential protection.
- e. 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.
- f. Operations on the 400 V supply for the unit must only be carried out by authorized personnel.
- g. The user is liable for ensuring that the above measures are taken.

7.5. Unit shut-down

1. Place the RUN/STOP switch (11.) to STOP.

7.6. Changing the setpoint

1. Press the UP or DOWN arrow key (4.) until the desired setpoint is displayed.
2. Release the arrow key, then the setpoint will flash.
3. Press the ENTER key (10.) to confirm the new setpoint.

WARNING

IF THE ENTER KEY IS NOT PRESSED, THE SETPOINT WILL REVERT TO THE PREVIOUSLY ENTERED SETPOINT.

7.7. Manuel defrost

1. Press MANUAL DEFROST key (9.).

NOTE

- THE BOX TEMPERATURE MUST BE EQUAL TO OR LOWER THAN +3°C.
- THE AUTOMATIC DEFROST CYCLE IS CONTROLLED BY AN AIR SWITCH OR BY A DEFROST TIMER (PRESET 1,5 - 3 - 6 AND 12 HOURS) USING HOT GAS FROM THE COMPRESSOR.
- DURING THE DEFROST CYCLE, THE EVAPORATOR FAN IS STOPPED.
- DEFROST TERMINATION IS AUTOMATICALLY CONTROLLED BY TWO "KLIXON" THERMOSTATS.
- DURING DEFROST, DF IS DISPLAYED ON THE SCREEN.



7.3. To display unit data

The UNIT DATA key (6.) provides access to unit data listed below.

The unit data list can be scrolled through by pressing the UNIT DATA Key. The list will advance by one with each key push; or press the UNIT DATA Key (6.) once and use the UP or DOWN ARROW keys (4.) to scroll through the list faster. Press the ENTER key (10.) to display the data for 30 seconds.

UNIT DATA		
CODE	ENGLISH	DATA
CD1	SUCT	Suction pressure
CD2	ENG	Engine hours
CD3	WT	Engine temperature
CD4	RAS	Return air temperature
CD5	*SAS	Supply air temperature
CD6	*REM	Remote air temperature
CD7	ATS	Ambient temperature
CD8	EVP	Future expansion
CD9	CDT	Not used
CD10	BATT	Battery voltage
CD11	SBY	Standby hours
CD12	MOD V	Future expansion
CD13	REV	Software revision
CD14	SERL	Serial number low
CD15	SERU	Serial number upper
CD16	2RA	Future expansion
CD17	3RA	Future expansion
CD18	MHR1	Maintenance hour meter 1
CD19	MHR2	Maintenance hour meter 2
CD20	SON	Switch on hour meter

* SAS and REM are options. SAS is displayed when the SUP PROBE Function is selected. REM is displayed when the REM PROBE Function is selected.



7.9. To change a function

The Function Settings below can be changed through the FUNCTION CHANGE key (5.).

WARNING

**Before modifying any function, be aware of consequences.
Read carefully function parameters here below.**

1. Press the FUNCTION CHANGE key (5.) until the Function you want change appears on the Display.
2. Press the ENTER key (10.) to select the Function you want to change.
3. Press the UP or DOWN ARROW key (4.) until the Function Setting you want appears on the Display.
4. Press the ENTER key (10.) to validate new setting.

FUNCTION PARAMETERS		
CODE	ENGLISH	AVAILABLE SELECTIONS
FN0	DEFR	Defrost interval 1.5, 3 , 6, or 12 hr
FN1 ON	HIGH AIR	High air flow
FN1 OFF	NORM AIR	Normal air flow
FN2	OFF T	Minimum off-time 10 ,20, 30, 45 or 90 mn
FN3	ON T	On-time 4 or 7 min.
FN4 A	REM PROBE	Controlling Probe-Return air
FN4 B	SUP PROBE	Controlling Probe-Supply air (above12°C) (SAS)
FN5	Degrees °C or °F	Temperature Unit (°C or °F)
FN6 ON	TIME STRT	Maximum Off-time 30 min.
FN6 OFF	TEMP STRT	Temperature based restarting (after minimum Off time)
FN7 0	MOP STD	Mop selection
FN7 -5	MOP -	
FN7 +4	MOP +	
FN8	2SET	Set-point adjustment 2nd compartment - YES / NO
FN9	3SET	Set-point adjustment 3rd compartment - YES / NO
FN10 ON	AUTO OP	Auto Start operation
FN10OFF	MAN OP	Manual Start operation
FN11	T RANGE	Out-of-Range 2, 3, or 4 °C



FUNCTION PARAMETERS

Code vs English = Code or **English** Display Format

Manual Glow Override = **Normal** or Add 30 seconds

Alarm RST = Alarm Reset Required

Alarm CLR = No alarm active

Selections in **BOLD** are factory settings.

8. PROBLEMS

Everything possible has been done to ensure that your unit is the most reliable, trouble-free equipment available on the market 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 below, please call your Carrier Transicold dealer for assistance.

8.1. General problems

UNIT WON'T CRANK, BY THE STARTER	CHECK BATTERY CONDITION. CHECK BATTERY CONNECTIONS. CHECK ALL FUSES. CHECK ALTERNATOR CONNECTIONS
UNIT WON'T START	CHECK FUEL LEVEL. CHECK ALL FUSES.
UNIT WON'T RUN	CHECK FUEL LEVEL. CHECK ENGINE OIL LEVEL. CHECK ALL FUSES.
UNIT DIES	CHECK BELTS. CHECK ENGINE OIL LEVEL. CHECK COOLANT LEVEL. CHECK FUEL LEVEL. CHECK ALL FUSES.
UNIT NOT COOLING PROPERLY	DEFROST UNIT. CHECK EVAPORATOR FOR AIRFLOW RESTRICTION. CHECK CONDENSER FOR AIRFLOW RESTRICTION. CHECK BODY FOR DAMAGE OR AIR LEAKS.



8.2. Fault alarm display and safety features

Display will alternate between an alarm message and the normal display whenever any of the failures listed below occur.

NOTE : Whenever the fault light is on, check display for fault message.

1. Reset the micro to start the unit.
2. Press the FUNCTION CHANGE key (5.).
3. Press the UP or DOWN ARROW keys (4.) until ALARM RST is displayed.
4. Press ENTER key (10.) to clear alarm. ALARM CLR will now be displayed and unit will restart.

Other method to reset : move RUN/STOP switch (11.) to STOP. Unit resets and will start when RUN/STOP switch (11.) is moved to run position.

ALARM DISPLAY √= FAULT LIGHT ON		
CODE	ENGLISH	DESCRIPTION
AL0	ENG OIL	√Low Oil Pressure
AL1	ENG HOT	√High Coolant Temperature
AL2	HI PRESS	√High Pressure
AL3	STARTFAIL	√Auto Start Failure
AL4	LOW BATT	√Low Battery Voltage
AL5	HI BATT	√High Battery Voltage
AL6	DEFRFAIL	Defrost Override
AL7	ALT AUX	√Alternator Auxiliary
AL8	STARTER	√Starter Motor
AL9	RA SENSOR	√Return Air Sensor
AL10	SA SENSOR	Supply Air Sensor
AL11	WT SENSOR	Coolant Temperature Sensor
AL12	HIGH CDT	√High discharge temperature
AL13	CD SENSOR	Discharge temperature sensor
AL14	SBY MOTOR	Not used
AL15	FUSE BAD	√Fuse
AL17	DISPLAY	Display
AL18	SERVICE 1	Maintenance Hour Meter 1
AL19	SERVICE 2	Maintenance Hour Meter 2
AL20	OUT RANGE	√Main Compartment Out-of-range
AL21	2RA OUT	Not used
AL22	3RA OUT	Not used
AL23	SYSTEM CK	√Check refrigeration system
√ = FAULT LIGHT ON		

WARNING : AL0 (ENG OIL) could come up if alternator is badly connected.



8.3. Fuses location

Refer to the fold out sheet for fuses location.

Maxima 1000 (from SN RB403109 - 02/04) & 1300

FUSE IDENTIFICATION						
Rep.	Item	Amps		Rep.	Item	Amps
F1	Main fuse	60 A		F8	Microprocessor fuse	5 A
F2	Solenoid / Water pump fuse	7.5 A		F12	Fuel heater fuse (option)	25 A
F3	Electric fan clutch / Bypass valve	25 A		F13	Standby L1	25 A
F4	Hot gas fuse	15 A		F14	Standby L2	25 A
F5	Speed control solenoid fuse	15 A		F15	Standby L3	25 A
F6	Light bar (option) fuse Auto restart light Out of ranger light	7.5 A		F BTY	Battery	150 A

9. MAINTENANCE

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. Refer to the "Maintenance information" section in CD "Généralité" for description of services, recommended oils...

NOTE

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

9.1. Maintenance schedule

MAXIMA 1000/1300	Required Service							
Oil filter with Bypass (in standard)	A	A	A B	A C	A B	A	A B C	A
Hours	400	1500	3000	4500	6000	7500	9000	10500



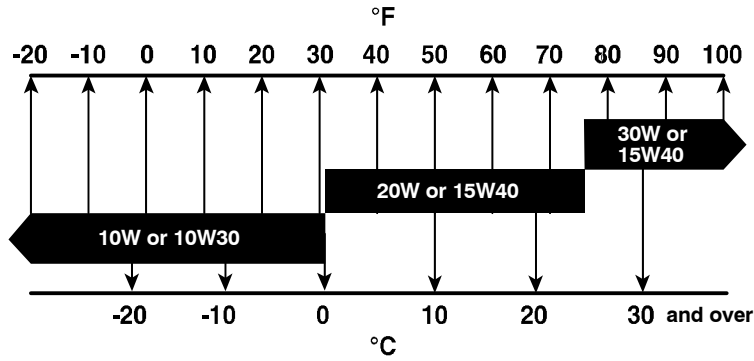
9.2. Services description

Service A	<p>Drain engine oil and change oil air filter.</p> <p>Grease control rods of diesel engine.</p> <p>Replace oil filter cartridge and by-pass filter cartridge.</p> <p>Replace primary and secondary fuel cartridge.</p> <p>Clean fuel pump filter.</p> <p>Check level of coolant, refrigerant and battery electrolyte.</p> <p>Drain water from fuel tank.</p> <p>Check alternator charge.</p> <p>Check thermostat operation.</p> <p>Check manual/automatic defrost operation.</p> <p>Check operation of solenoid.</p> <p>Check "klixon" cut-out.</p> <p>Check drainage of defrost water.</p> <p>Check motor speed in high-speed/low-speed.</p> <p>Check bolts/screws are correctly tightened.</p> <p>Check unit fastening into box.</p> <p>Check belts and belt tighteners.</p> <p>Check pilot lights and switches.</p> <p>Check tightness of lines and connections.</p> <p>Check relays, electrical connections and hoses.</p> <p>Clean condenser and radiator.</p>
Service B	<p>Grease blower and hinges.</p> <p>Replace belts.</p> <p>Check and adjust rocker arms.</p>
Service C	<p>Replace bearings and brushes of 12 VDC alternator.</p> <p>Check and adjust clutch.</p> <p>Calibrate injectors 140 kg/cm³.</p>



9.3. Recommended oil

Engine oil : The oils recommended for use in your refrigeration unit must comply with the American Petroleum Institute's (API) SG/CD rating. The use of oil of the proper weight (viscosity) is also essential. The following chart indicates the SAE Weight Rating of the oil to be used in various climates :



The following oils are accepted for use in Europe with the unit.

RECOMMENDED OILS			
CARRIER	CARRIER TD+15W-40	LABO	MEGAMAXI 15W-40
AGIP	SIGMA TURBO SHPD 15W-40	MOBIL	DELVAC SHC 15W-40
ANTAR	GRAPHITE R 15W-40		DELVAC 1400 SUPER
BP	VANELLUS C3 EXTRA 15W-40	OPAL	OPALGET D 500 15W-40
	VANELLUS FE 15W30	ORLY	TURBO 2002 15W-40
ELF	MULTIPERFORMANCE4D 15W-40	POLAROIL	POLATRUCK 15W-40
	PERFORMANCE TROPHY 15W-40	RENAULT	KMX 2 PLUS 15W-30
FIAT	URANIA TURBO 15W-40		KMX 2 PLUS 15W-40
FINA	KAPPA LDO 15W-40		MV5 "EUROPE"
	KAPPA TD PLUS 15W-40	TEXACO	URSA SUPER TD 15W-40
	KAPPA EXTRA 15W-40	TOTAL	RUBIA TIR MAX 15W40
HAFA	DETERGENTE 4DM 15W-40	SHELL	MYRINA TX 15W-40
	STRADEX 900 ECO 15W-40		MYRINA T 15W-30
	SYNTHIDEX ECO 15W-40	UNIL	SUPER ROC 3D 15W-40
IGOL	RALLYE TURBO 4E 15W-40		TURBO DX 15W-40
	RALLYE TURBO 4E LD 15W-40	YACCO	SM 4D + 15W-40
IMPERATOR	RAFF SUPER HPDO 15W-40		



10. 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/m²°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 = month (June)
6-2003 2003 = 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.



11. 24H ASSISTANCE

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	800 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



From other countries or direct : +32 9 255 67 89

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.



