

# REEFERVAN – RVTC

Trailer Cooler & Stationary Refrigeration Cooler

Installation Operation & Service Manual



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## 1. Cooler Description & Warnings

Intended to mount into mobile refrigerated trailers or stationary cooler boxes, Reefervan's RVTC refrigeration cooler is a one-piece integrated standalone cooler that comes already prewired and precharged with freon and is ready to go out of the box.

No specialist technician is required to install the RVTC. Easy to install and maintain, any certified HVAC technician can maintain the cooler. Most parts used in the RVTC are widely available across North America from local HVAC suppliers.

### **WARNING:**

The RVTC comes already pre-charged with high pressure R404a refrigerant which can cause serious injury to a person and even cause death in un ventilated areas.

High voltage is also present and can cause serious injury or death. Under no circumstance attempt to install, repair or service the cooler if you do not have the correct qualifications to do so.

If you require a certified installer Contact Reefervan for your nearest installer and service location.

## Application Guidelines:



- RVTC can be installed to applications with box volumes of up to 12ft long 6ft wide and 6ft tall (approx. 500 CUFT)
- Box volumes are noted as a general guideline only. Actual volume calculation must be determined by insulation thickness, operational ambient temperature, door sealing, type of product, door openings, and pre-cooling time of cargo area.
- Reefervan reserve the right to change the above specifications above
- Contact Reefervan to confirm your application and product specification

## Installer Requirements:



- Personnel assigned to do the installation and maintenance must read and understand fully the installation instructions and have the correct knowledge and skills required to complete the installation or repair procedure.
- If the installer does not have the skills required, contact a local Reefervan dealer or a HVAC installer for installation or service. DO NOT attempt an install if you do not have the qualifications required.
- The following cases will release Reefervan from any liability whatsoever for damage caused to the refrigeration cooler. Improper use – Non-suitable personnel to carry out install and service – Incorrect assembly- Unauthorized modifications or repairs – Personnel injury due to incorrect installation, service and operation of the cooler.
- Make sure that the cooler is operated in a well-ventilated area with good air circulation. Do not block the evaporator or condenser fan outlets. Do not expose or operate cooler in direct sunlight.
- Reefervan reserve the right to amend design and procedures without being liable to give prior notice.

## 2. Technical Information & Product Overview

| Technical Information                    | Description                       |                                       |
|------------------------------------------|-----------------------------------|---------------------------------------|
| Temperature Range                        | 50°F to 0°F                       | Depending on insulation thickness etc |
| Refrigerant:                             | R404a (Frozen Standard)           | Refrigerant charge 2.3LB (1.1 KG)     |
| Cooling Capacity:                        | 7895 BTU at 32°F Box temperature  | Temp range 50°F to 0°F                |
| Voltage / AMPS:                          | 115v 60HZ (1 phase)               | Max power consumption 13.5A           |
| Defrost Type:                            | Hot gas                           | Defrost electronic auto timer strn    |
| Condenser Dimensions:                    | L x W x H (Inches)                | 35" x 16" x 17¾"                      |
| Evaporator Dimensions:                   | L x W x H (Inches)                | 30" x 18¼" x 12¼"                     |
| Condenser Fan:                           | Axial                             | Qty 1 – CFM 650 (1100 M³ per H)       |
| Evaporator Fan:                          | Axial                             | Qty 2 – CFM 650 (1100 M³ per H)       |
| Refrigeration Safety Protection Devices: | High pressure                     | 320 PSI Cut out (compressor stops)    |
|                                          | Low pressure cut out              | 0 PSI Cut Out (compressor stops)      |
| Compressor                               | 3/4HP Rotary compressor           | LRA – 70AMP / FLA 15                  |
| Oil Performance Separator                | Pre oiled – Installed as Standard | Optimal Frozen Performance            |
| Control:                                 | Electronic control                | 2 x NTC Probes                        |
| Weight:                                  | 196LB (88KG)                      |                                       |
| Electrical Connection:                   | 30A 3 Pin 110v Socket – UL        | Min 20 AMP 115v power supply req.     |

## Internal Components:

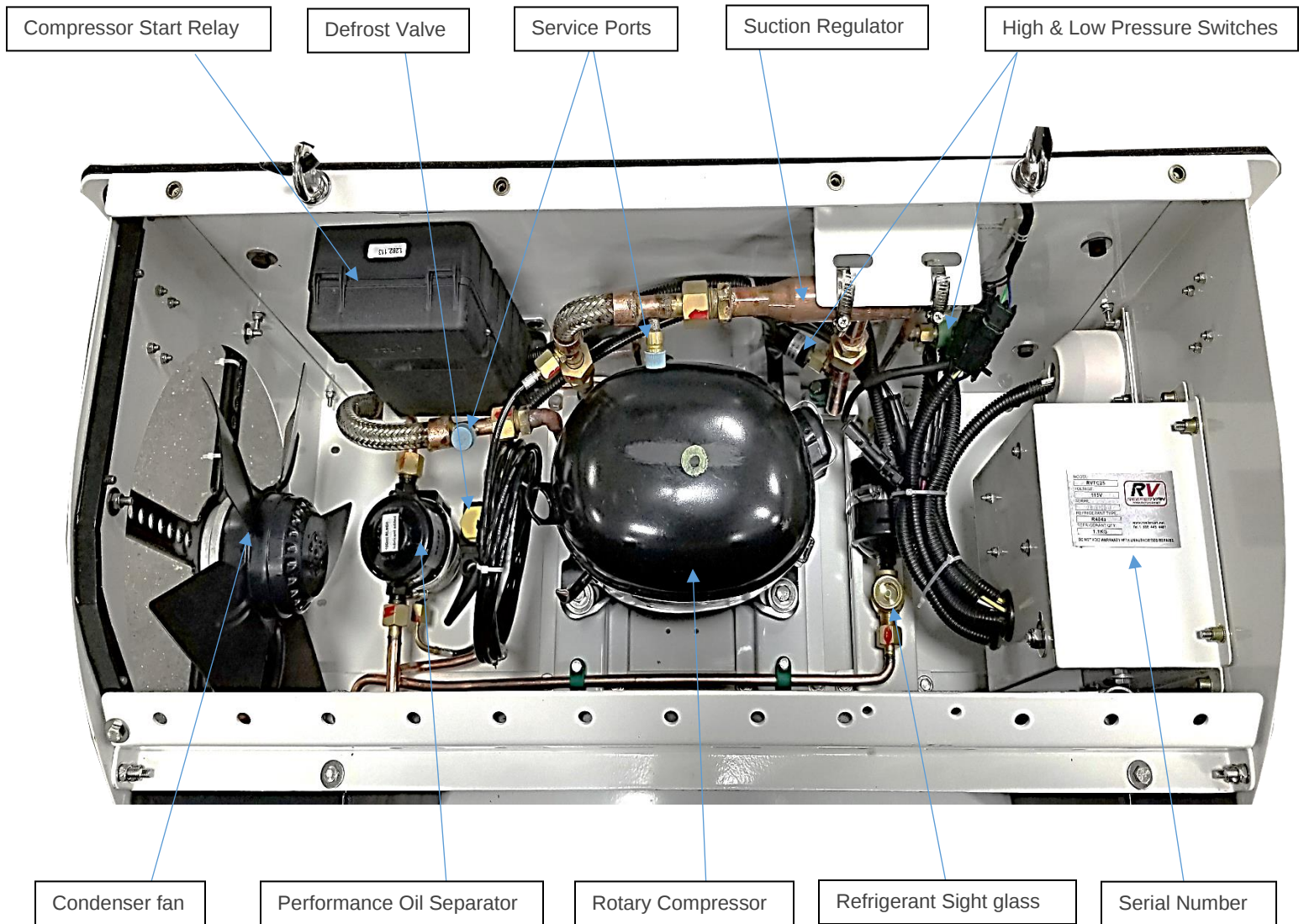
Removal of Top Cover – Always remove the power plug connection before removing the cover



Remove Power Plug  
Before Removing Cover



Condenser Section Internal Component Overview:



Condenser Coil

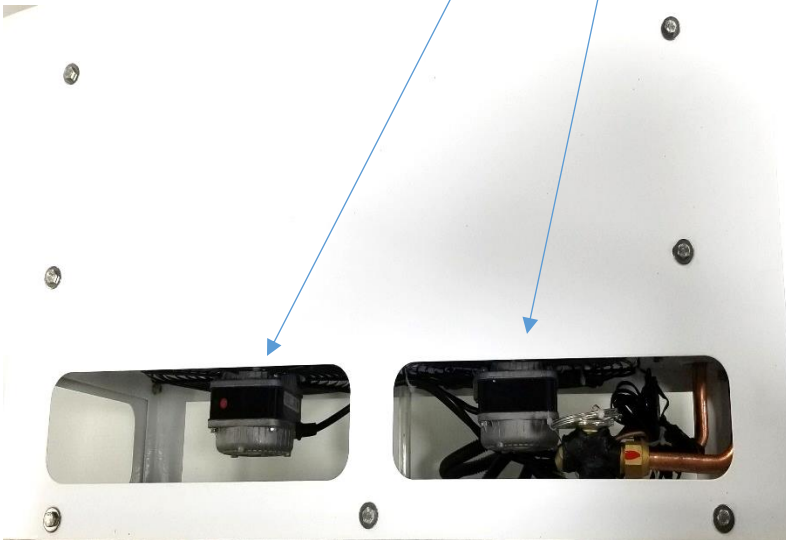
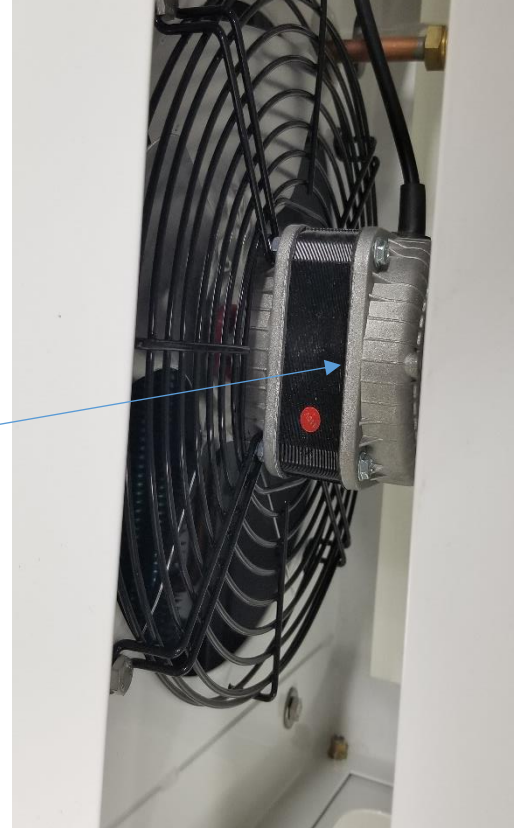


Evaporator Coil



Expansion Valve

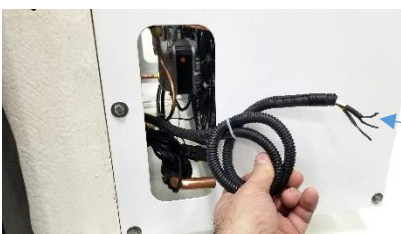
Evaporator Fan Motors



Return Air Sensor (PB1)



Defrost Suction Line Sensor (PB2)



Interior Light Wiring Loom  
Controlled by switch on panel.  
Light fitting not included.

## ELECTRICAL WIRING PANEL:

### WARNING: HIGH VOLTAGE !!

Do not attempt to service if not authorized  
or if you are not a certified technician.

Disconnect power cable before  
removing the screws securing  
electrical access panel.



Condenser Fan Capacitor

Wiring Connection Junction

Circuit Breaker –  
Fan & Compressor

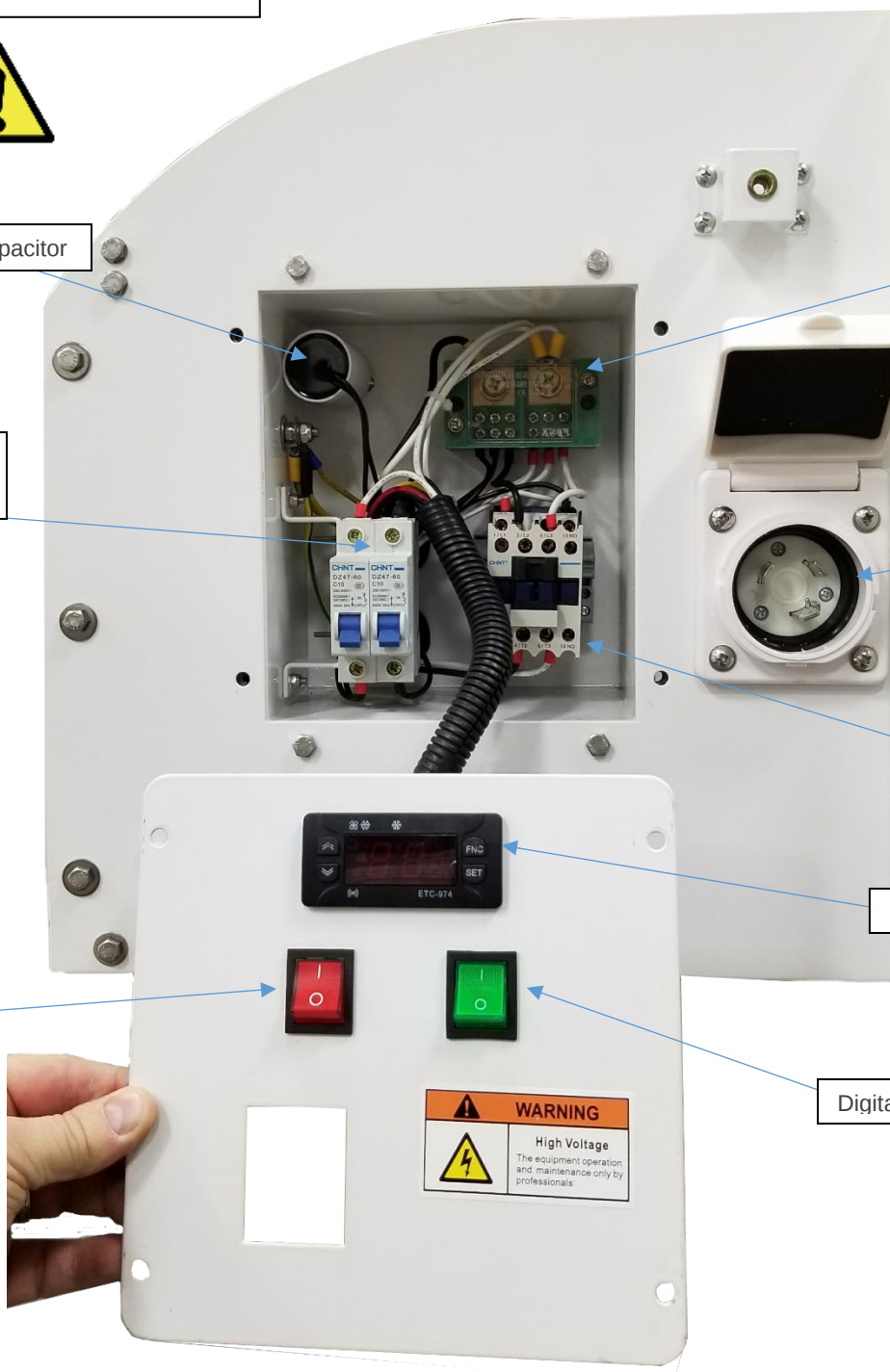
Appliance Inlet 115v 60HZ

Compressor Contactor

Digital Temperature Controller

Interior Light

Digital Temperature Controller



### 3. Installation – General Safety Precautions



#### Refrigerant & Electrical Components



- Unless you are a certified electrical technician all electrical connections must be accomplished by a certified licensed electrician. There is a risk of electric shock causing property or personal injury or death! Do not disassemble the appliance inlet plug socket.
- DO NOT plug in to the power supply before installation is completed or if your hands are wet. Do not use a damaged power cord. Do not use power cord extensions.
- Satisfy yourself that the correct power supply is present before starting the cooler. If in doubt contact a certified electrician.
- If using a generator DO NOT use a generator that does not have a voltage stabilizer / inverter system included – **Regular low-cost generators will cause damage to the cooler** contactor and or compressor due to voltage and amperage fluctuations. Warranty on some parts may not be covered when using a generator.
- The cooler contains fluorocarbon refrigerant which in a presence of an open flame will produce toxic gas that may cause respiratory irritants capable of causing death. Never apply heat to the refrigeration unit, because it could cause an explosion. The refrigerant tends to displace air and can cause oxygen depletion and may cause death. Only a certified technician may install, service or repair the cooler.
- Always use personal safety protection including: Eye protection (such as goggles) – refrigerant and oils can permanently damage the eyes – Wear work gloves, safety shoes – Keep your hands away from fans at all times – Never drill holes into the refrigeration unit.
- Refrigerant can cause severe frostbite, in the event of liquid refrigerant contacting your skin or eyes, immediately flush with lukewarm water then seek medical attention immediately.
- Refrigerant in the cooler must be handled directed by State / Federal or Provincial law by a certified gas handling service technician. DO NOT under any circumstances handle the refrigerant if you are not certified.

#### Trailer Pre-Installation Confirmation:



- Verify that the trailer is designed and built for the trailer cooler, including the thickness of the insulated walls, ceiling, floor and doors (minimum insulation thickness recommended is 4")
- Verify that the front bulkhead of the trailer can accommodate the trailer cooler (see drawing)
- Verify measurements before cutting hole in bulkhead

## 4. Installation Mounting Diagrams

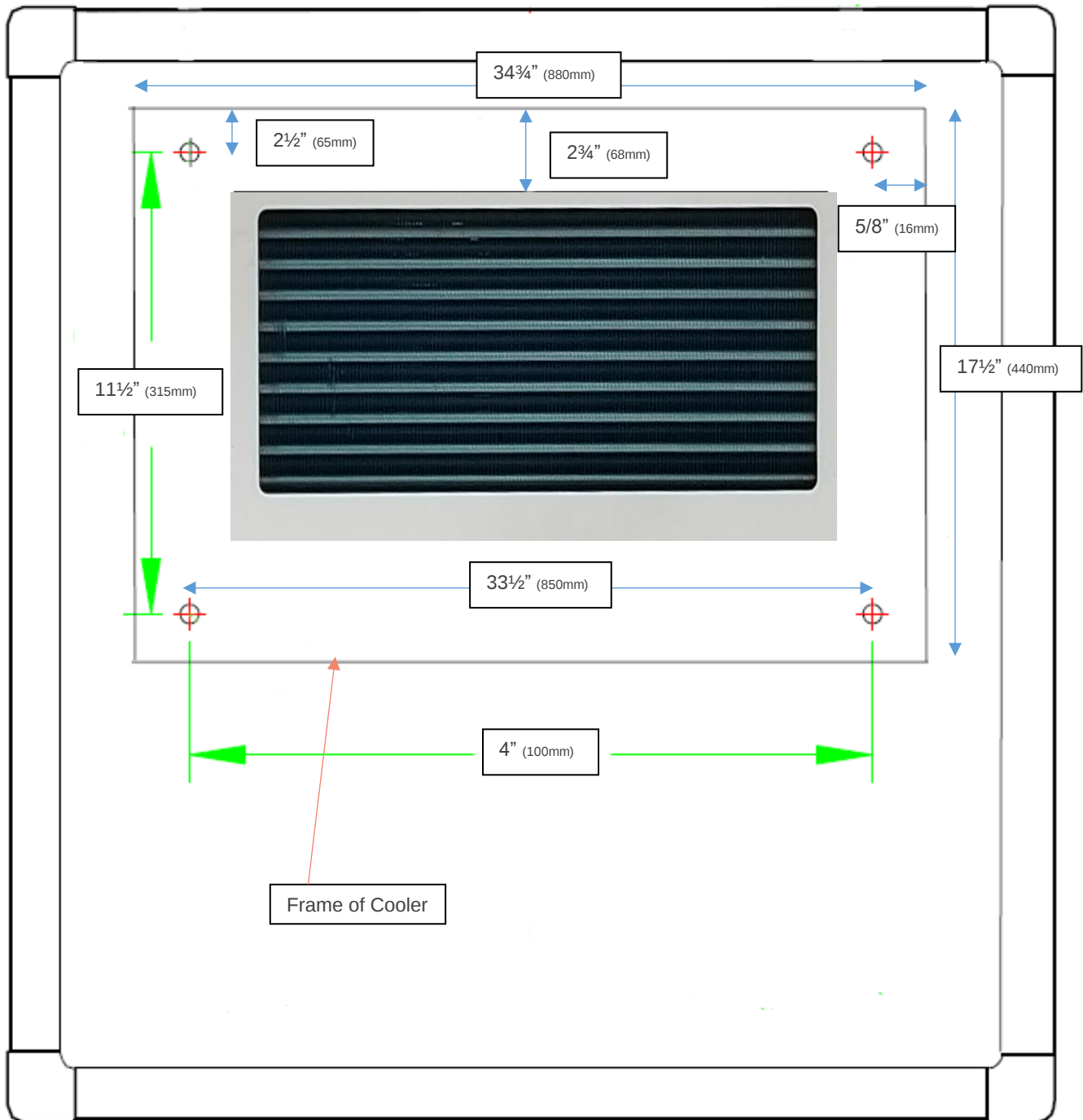


- The cooler must be mounted and operated in a horizontal position
- Lifting points and hooks are supplied with the RVTC
- Do not plug the cooler into power supply until the installation is completed
- An auxiliary wiring loom for a interior light is located in the evaporator section – A separate switch is located on the control panel
- Install the water drain hose extension to the exterior of the cargo area

### Dimensions:



**Evaporator Hole Size Drawing:**

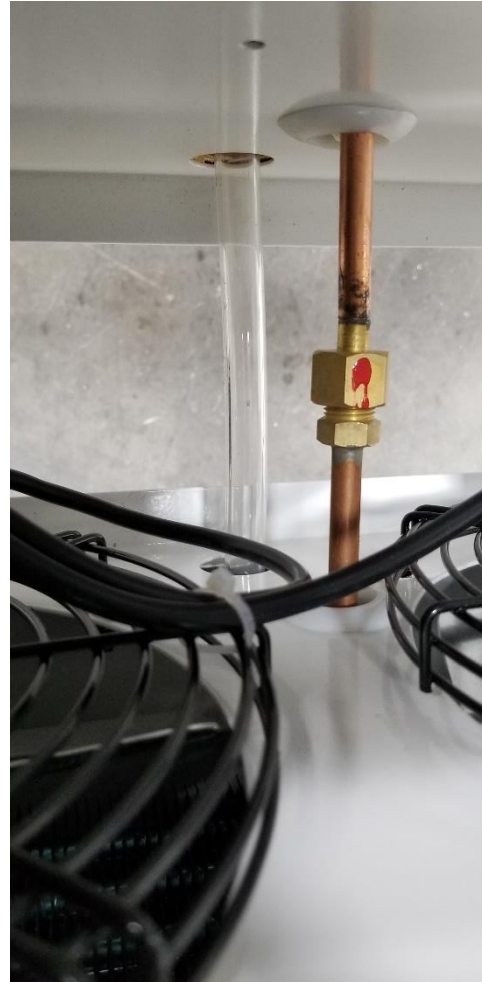


## Drain Tube Extension:

Add the additional pipe to the defrost water drain pipe underneath the reefer upon installation



Drain Tube Extension Tube



Drain Tube in evaporator

## 5. Digital Controller Operation



# Temperature Controller

### REEFERVAN ETC-974 Cab Command Operation Instructions

The ETC-974 is a general temperature controller that is normally found in stationary cold-rooms. There are no complicated microprocessors for ease of service and serviceability.

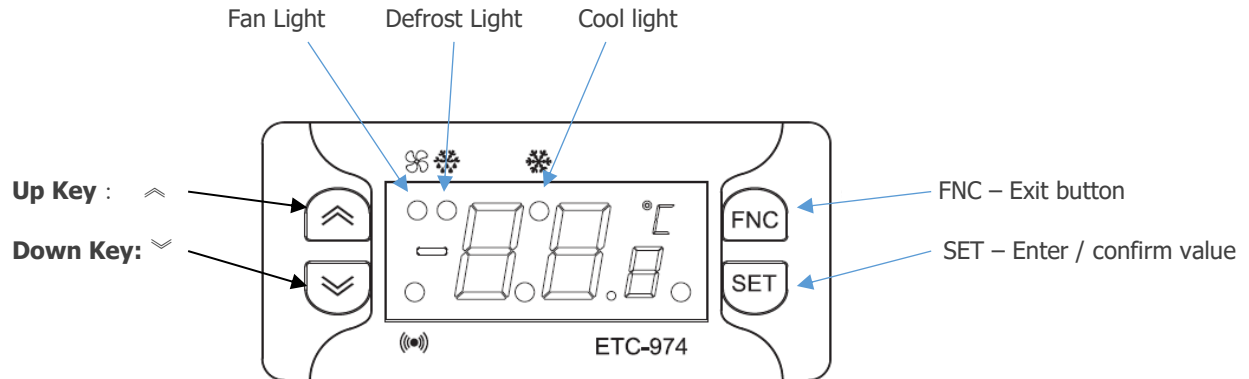
#### Specifications :

1. Power supply : 110VAC
2. Product Size : Length 77× Width 34.5 × Depth 58 (mm)
3. Mounting Hole Size : Length 71 × Width 29 (mm)

#### Technical parameters :

1. Temperature controlling range :  
NTC probe: -50...110 °C (-58...230°F)  
  
PTC probe: -55...140 °C (-67...284°F)
2. Display resolution : 1°C/0.1°C
3. Probe type : NTC (-50°C~120°C) PTC (-50°C~150°C)

**Operation and display panel:**



| ICON | Related Function | Status                                                                                                      |
|------|------------------|-------------------------------------------------------------------------------------------------------------|
|      | Compressor       | ON when the compressor is started; blinking in case of delay                                                |
|      | Defrost          | ON when defrosting; blinking in case of manual enabling (Push UP Arrow for 5 Sec to initiate Defrost Cycle) |
|      | Alarm            | ON when the alarm is enabled; blinking when the alarm is silenced                                           |
|      | Fans             | ON when the fan is working                                                                                  |

## Controller Basic Operation :

### Setting the "Set point" temperature that you require :

1. To adjust set point of the controller, press the SET key once, now the display will show "Set".
2. Now press the SET key again for a second time, now you can view the current temperature set point of the controller.
3. Press  $\nearrow$  key or  $\searrow$  key to modify or adjust the set point up or down.
4. Press FNC key to confirm the set point temperature and exit from the temperature setting.
5. The display will now return to the cargo area temperature reading

### Manually Defrosting the Reefer:

1. Once the cargo area is cool enough to allow a defrost cycle – Initiate defrost by pressing the "UP" button for 5 seconds
2. If a defrost cycle is initiated the defrost light will appear on the display
3. If the display "Blinks" three times the conditions are not right for a Defrost cycle to initiate. (for example, the evaporator sensor temperature is higher than defrost stop temperature)
4. The reefer has an automatic timed defrost for every 2 or 3 hours, however it is recommended that the driver monitors the ice on the cooling coil in the cargo area and manually defrost when required.
5. Defrost will terminate automatically and resume cooling
6. The defrost timer always resets to 0 mins when the reefer controller is turned off.

### Other display readings:

**Pb1:** Air Return probe value

**Pb2:** Defrost Suction probe value (Located at the Expansion valve Thermo Bulb)

**SEt:** Set point.

## Parameter settings

The controller has seven parameter function folders: **CP, Def, Fan, AL, diS, CnF, FPr**. The folders contain settings to fully optimize the operation of the reefer.



**CAUTION !** Changing the controller from **Degree °C** to **Degree °F** – **FIRSTLY CHANGE PARAMETER, “dro” in the “dis” folder to degree C or F and then ALL THE PARAMETERS MUST BE CHANGED.**

The controller does not change all the parameters automatically, **ONLY THE MEASUREMNET VALUE (degree C or F).**

**The reefer will not operate correctly if all the parameters are not changed. Contact Reefervan if in doubt.**



**Parameters marked with warning symbol are crucial for correct operation of reefer**

## Entering parameter folders, **CP, Def, Fan, AL, diS, CnF, FPr** :

- The controller normally shows the cargo temperature on the display panel, to enter parameters settings press **SET key for at least five seconds**, then the display will enter into the first parameter folder code **CP**.
- Press **↵ key or ⏮ key**, to display all the parameters folders in rotation (...Def,Fan,AL,diS,CnF,FPr.)
- If you need to view or modify a parameter setting in a folder, press SET key to view the parameter value, then press **↵ key or ⏮ key** to modify the value.

To exit the parameters, press **FNC key** this will exit from the parameter folder you are currently in.

To fully exit, **Press FNC again**, this will restore to the normal display temperature value and exit from parameter settings.

## Alarm codes :

- **PB1:** Return Air Probe Failure (sensor wire connection failure or sensor failure)
- **PB2:** Defrost Suction Line Probe Failure (or sensor wire connection failure)  
(Note: If PB1 and PB2 alarms are active, they will be displayed simultaneous alternately, every 2 seconds)
- **HAL:** High Temperature Alarm (Out of Range)
- **LAL:** Low Temperature Alarm (Out of Range)

Note: To silence alarms press any key.

## Parameter Table

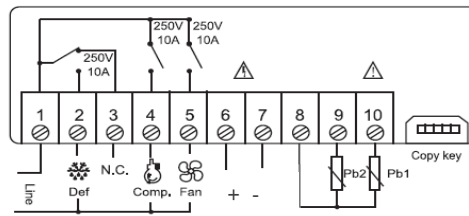
| COMPRESSOR REGULATOR (folder with "CP" label)  |                |                                                                                                                                                                                                                            |                 |                                                                                                                   |         |
|------------------------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------|---------|
|                                                | Parameter code | Description                                                                                                                                                                                                                | Set range       | Default value                                                                                                     | Unit    |
| 1                                              | <b>diF</b>     | The temperature difference between set point and when the compressor restarts                                                                                                                                              | (0.1 ... 30.0)  | <b>2 °C</b><br><b>3 °F</b>                                                                                        | °C/F    |
| 2                                              | <b>HSE</b>     | Higher Set. Maximum possible set point value.                                                                                                                                                                              | (LSE ... 302)   | <b>99.0</b>                                                                                                       | °C/F    |
| 3                                              | <b>LSE</b>     | Lower Set. Minimum possible set point value.                                                                                                                                                                               | (-55.0 ... HSE) | <b>-20°C / 0 °F</b>                                                                                               | °C/F    |
| 4                                              | <b>Ont</b>     | Compressor On time activation time in the event of faulty probe. If set to "1" with <b>Oft</b> at "0" the compressor is always on, while at <b>Oft</b> >0 compressor cycle mode.                                           | (0 ... 250)     | <b>0</b>                                                                                                          | min     |
| 5                                              | <b>Oft</b>     | OFF time (compressor). Compressor in disabled state time in the event of a faulty probe. If set to "1" with <b>Ont</b> at "0" the compressor is always off, while at <b>Ont</b> >0 it functions always in duty cycle mode. | (0 ... 250)     | <b>1</b>                                                                                                          | min     |
| 6                                              | <b>dOn</b>     | Delay compressor on. Delay time in activating the compressor relay after switching on cab command.                                                                                                                         | (0 ... 250)     |  <b>10 - For 110v Standby</b> | Seconds |
| 7                                              | <b>dOF</b>     | Delay (after power) OFF. Delay after switching off; the indicated time must elapse between switch-off of the compressor relay and the successive switch-on.                                                                | (0 ... 250)     | <b>0</b>                                                                                                          | min     |
| 8                                              | <b>dbi</b>     | Delay between power-on. Delay between compressor starts; The indicated time must elapse between two successive switch-ons of the compressor.                                                                               | (0 ... 250)     |  <b>4 - For 110v Standby</b> | min     |
| 9                                              | <b>OdO</b>     | Delay Output (from power) On. Delay time in activating the outputs after switch-on of the instrument or after a power failure.                                                                                             | (0 ... 250)     | <b>0</b>                                                                                                          | min     |
| DEFROSTING REGULATOR (folder with "dEF" label) |                |                                                                                                                                                                                                                            |                 |                                                                                                                   |         |
| 10                                             | <b>dtY</b>     | defrost type. Type of defrosting.                                                                                                                                                                                          | (0 ... 2)       | <b>1</b>                                                                                                          | number  |
|                                                |                | 0 = Electric defrost;                                                                                                                                                                                                      |                 |                                                                                                                   |         |
|                                                |                | 1 = Reverse cycle defrost (hot gas);                                                                                                                                                                                       |                 |                                                                                                                   |         |
|                                                |                | 2 = Natural defrost (No compressor).                                                                                                                                                                                       |                 |                                                                                                                   |         |
| 11                                             | <b>dit</b>     | Defrost interval time. Interval between the start of two successive defrosting operations.                                                                                                                                 | (0 ... 250)     | <b>2</b>                                                                                                          | hours   |
| 12                                             | <b>dCt</b>     | Defrost Counting type. Selection of count mode for the defrosting interval.                                                                                                                                                | (0 ... 2)       | <b>1</b>                                                                                                          | number  |

|                                                 |            |                                                                                                                                                                                                                  |                        |                                                                                                                   |      |
|-------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------|------|
|                                                 |            | 0 = compressor operating hours;<br>1 = Real Time – appliance operating time;<br>2 = compressor stop.                                                                                                             |                        |                                                                                                                   |      |
| 13                                              | <b>dOH</b> | Delay Defrost on start up. Start-of-defrosting delay time from start up of instrument.                                                                                                                           | (0 ... 59)             | <b>0</b>                                                                                                          | min  |
| 14                                              | <b>dEt</b> | Length of defrost time. Defrosting time-out; determines duration of defrost cycle.                                                                                                                               | (1 ... 250)            | <b>15</b>                                                                                                         | min  |
| 15                                              | <b>dSt</b> | Defrost Stop temperature. Defrost stop temperature (Defined by the suction evaporator sensor, at the Expansion valve).                                                                                           | (-50.0 ... 150.0)      | <b>8.0 °C</b><br><b>46°F</b>                                                                                      | °C/F |
| 16                                              | <b>dPO</b> | Defrost at Power On. Determines if at the start-up the reefer should enter defrost mode (Only if suction evaporator sensor is cold enough to allow this operation).<br><br><b>y = yes; n = no.</b>               | (0=n ... 1=Y)          | <b>n</b>                                                                                                          | flag |
| <b>FANS REGULATOR (folder with "FAn" label)</b> |            |                                                                                                                                                                                                                  |                        |                                                                                                                   |      |
| 17                                              | <b>FSt</b> | Fan Stop temperature. If the value, read by the evaporator sensor, is higher than the set value, the fans will stop.                                                                                             | (-50.0 ... 150.0)      | <b>60 °C</b><br><b>140 °F</b>  | °C/F |
| 18                                              | <b>FAd</b> | Fan differential. Fan starting differential (see par. "FSt").                                                                                                                                                    | (1.0 ... 50.0)         | <b>2.0 °C</b><br><b>35 °F</b>                                                                                     | °C/F |
| 19                                              | <b>Fdt</b> | Fan delay time. Delay time in activating fans after defrost.                                                                                                                                                     | (0 ... 250)            | <b>0</b>                                                                                                          | min  |
| 20                                              | <b>dt</b>  | Water Drainage time. Defrost.                                                                                                                                                                                    | (0 ... 250)            | <b>0</b>                                                                                                          | min  |
| 21                                              | <b>dFd</b> | Defrost Fan disable. Allows to select y = yes; n = no.                                                                                                                                                           | (0=n ... 1=Y)          | <b>Y</b>                                                                                                          | flag |
| 22                                              | <b>FCO</b> | Evaporator Fans OFF when compressor stops at set point<br><br>y = fans activated (based on the value of the evaporator sensor, see parameter "FSt");<br><br>n = fans turn off at set point;<br><br>dc = not used | (0=n ... 1=Y ... 2=dc) | <b>Y</b>                                                                                                          | flag |
| <b>ALARMS (folder with "AL" label)</b>          |            |                                                                                                                                                                                                                  |                        |                                                                                                                   |      |
| 23                                              | <b>AFd</b> | Alarm Fan differential.                                                                                                                                                                                          | (1.0 ... 50.0)         | <b>2.0</b>                                                                                                        | °C/F |
| 24                                              | <b>HAL</b> | Higher Alarm. Maximum temperature alarm. Temperature value (Set point), if exceeded in an upward direction will trigger the alarm signal.                                                                        | (LAL ... 150.0)        | <b>60 °C</b><br><b>140°F</b>                                                                                      | °C/F |

|                                                |                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                     |                 |              |        |
|------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------|--------|
| 25                                             | <b>LAL</b>                                                                                        | Lower Alarm. Minimum temperature alarm. Temperature value (Set point), Which if exceeded in a downward direction will trigger the alarm signal.                                                                                                                                                                                                                                     | (-50.0 ... HAL) | <b>-50.0</b> | °C/F   |
| 26                                             | <b>PAO</b>                                                                                        | Power-on Alarm Override. Alarm exclusion time after instrument switch on, after a power failure.                                                                                                                                                                                                                                                                                    | (0 ... 10)      | <b>0</b>     | hours  |
| 27                                             | <b>dAO</b>                                                                                        | Defrost Alarm Override. Alarm exclusion time after defrost.                                                                                                                                                                                                                                                                                                                         | (0 ... 999)     | <b>0</b>     | min    |
| 28                                             | <b>tAO</b>                                                                                        | Temperature Alarm Override. Temperature alarm signal delay time.                                                                                                                                                                                                                                                                                                                    | (0 ... 250)     | <b>0</b>     | min    |
| <b>DISPLAY (folder with "diS" label)</b>       |                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                     |                 |              |        |
| 29                                             | <b>LOC</b>                                                                                        | Keyboard locking (LOC). <b>y = yes; n = no</b>                                                                                                                                                                                                                                                                                                                                      | (0=n ... 1=Y)   | <b>n</b>     | flag   |
| 30                                             | <b>PA1</b>                                                                                        | Password 1. When enabled (value other than 0) it constitutes the access key for level 1 parameters.                                                                                                                                                                                                                                                                                 | (0 ... 250)     | <b>0</b>     | number |
| 31                                             | <b>ndt</b>                                                                                        | Temperature / Number display. View with decimal point.<br><b>y = yes; n = no</b>                                                                                                                                                                                                                                                                                                    | (0=n ... 1=Y)   | <b>n</b>     | flag   |
| 32                                             | <b>CA1</b>                                                                                        | Calibration 1. Calibration 1. Positive or negative temperature value added to the value read by probe 1.                                                                                                                                                                                                                                                                            | (-12 ... 12)    | <b>0</b>     | °C/F   |
| 33                                             | <b>CA2</b>                                                                                        | Calibration 2. Calibration 2. Positive or negative temperature value added to the value read by probe 2.                                                                                                                                                                                                                                                                            | (-12 ... 12)    | <b>0</b>     | °C/F   |
| 34                                             | <b>ddl</b>                                                                                        | Defrost display. Viewing mode during defrosting.<br>0 = shows the temperature read by the controller probe;<br>1 = locks the reading on the temperature display read by controller probe when defrosting starts, and until the next time the set point value is reached;<br>2 = displays the label "deF" during defrosting, and until the next time the Set point value is reached. | (0 ... 2)       | <b>1</b>     | number |
| 35                                             | <b>dro</b><br> | Selecting degree <b>°C or °F</b> for temperature display and parameters read by the controller probe. <b>0 = °C, 1 = °F. IMPORTANT! This setting MUST be set FIRST BEFORE changing any other parameters</b>                                                                                                                                                                         |                 | <b>1</b>     | number |
| <b>CONFIGURATION (folder with "CnF" label)</b> |                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                     |                 |              |        |
| 36                                             | <b>H00</b>                                                                                        | Probe type selection, PTC or NTC. 0 = PTC; 1 = NTC.                                                                                                                                                                                                                                                                                                                                 | (0...1)         | <b>1</b>     | number |
| 37                                             | <b>H42</b>                                                                                        | Evaporator suction probe present.                                                                                                                                                                                                                                                                                                                                                   | (0=n ... 1=Y)   | <b>y</b>     | flag   |
| 38                                             | <b>rEL</b>                                                                                        | Release firmware. Device version: read only parameter.                                                                                                                                                                                                                                                                                                                              | /               | /            |        |
| 39                                             | <b>tAb</b>                                                                                        | Table of parameters. Reserved: read only parameter.                                                                                                                                                                                                                                                                                                                                 | /               | /            |        |

| COPY CARD (folder with "Fpr" label) |           |                                                                        |  |   |  |
|-------------------------------------|-----------|------------------------------------------------------------------------|--|---|--|
| 40                                  | <b>UL</b> | Up load. Programming parameter transfer from instrument to Copy Card.  |  | / |  |
| 41                                  | <b>dL</b> | Down load. Programming parameter transfer from Copy Card to instrument |  | / |  |
| 42                                  | <b>Fr</b> | Format. Erasing all data in the copy card.                             |  | / |  |

### Cab Command Wiring Diagram



110 VAC



## 6. Fault Diagnosis

**i** Failure to operate the cooler in the correct manner may damage components in the cooler and may void warranty of some parts not be covered under warranty. If in doubt of operation contact Reefervan. The cooler must be serviced regularly.

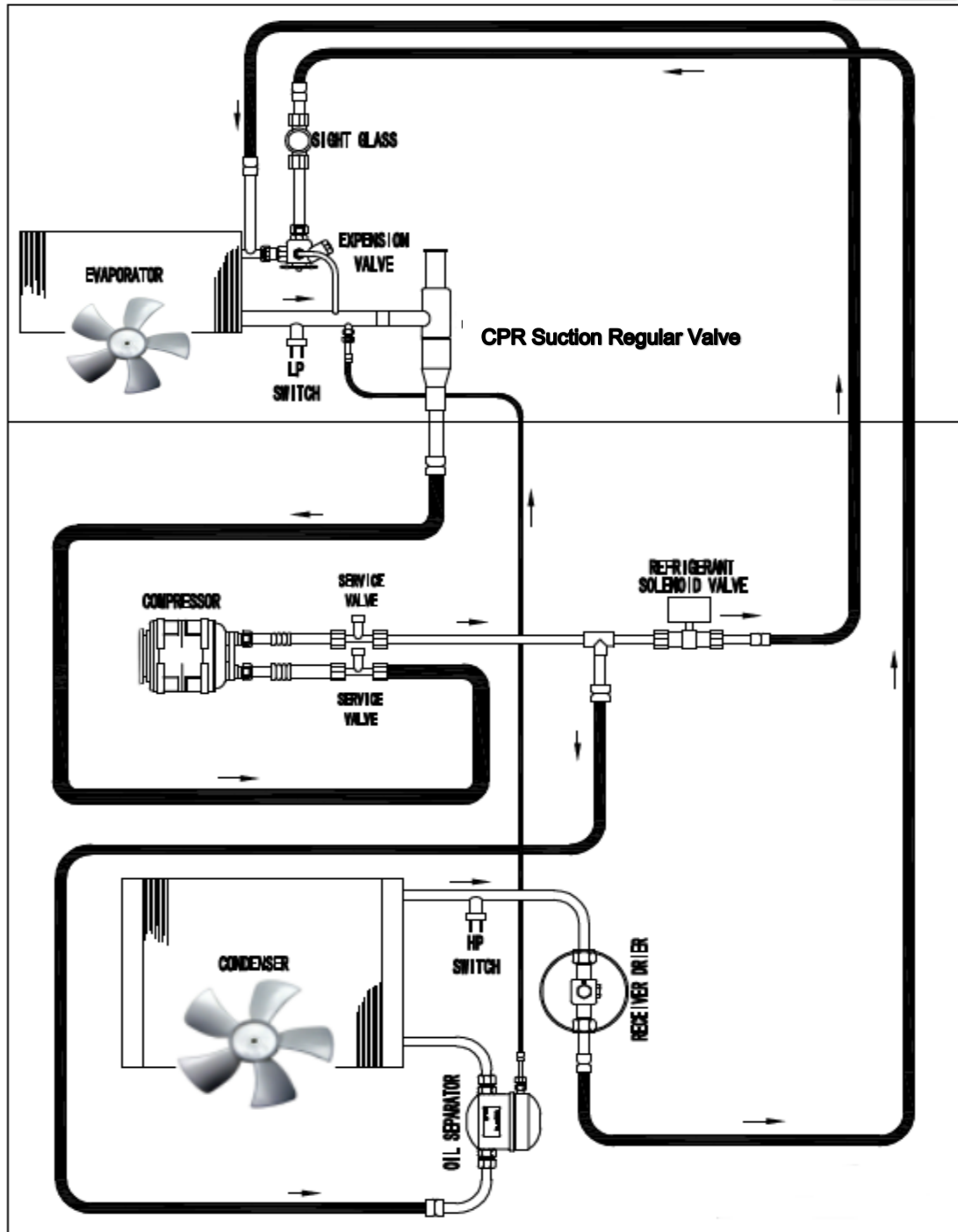
Under no circumstances operate the cooler as follows:

- The maximum length of power cable from power supply is 25ft – DO NOT USE EXTENSION CORDS!!
- If you intend to use a generator, DO NOT USE a generator that does not have an inverter and a voltage stabilizer installed.
- Voltage supply must be within 10% of the supply voltage
- Any abnormal "voltage spike" may damage the cooler compressor or contactor or controller

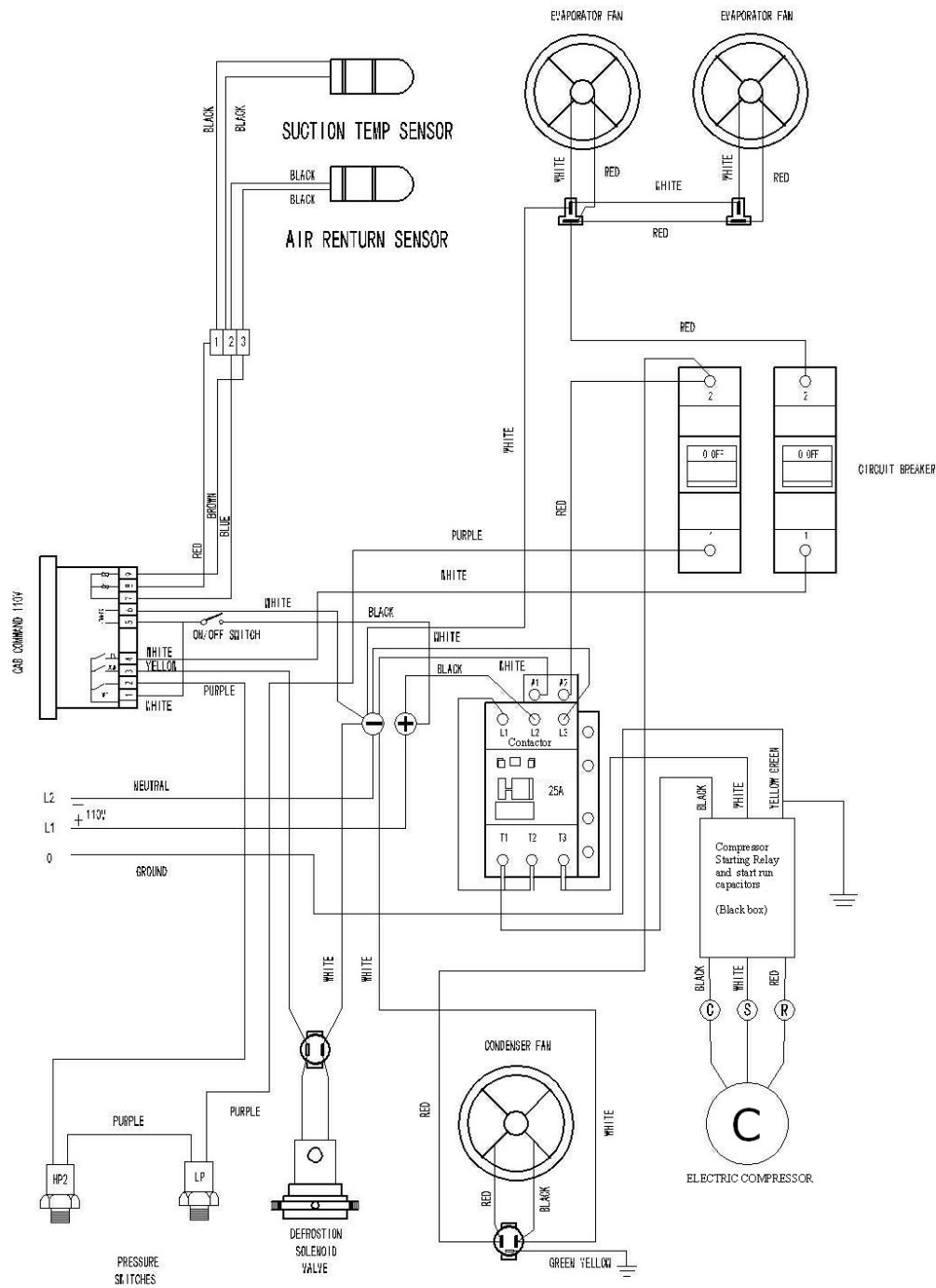
| Malfunction                                              | Cause                                                                                                  | Remedy to Rectify                                                                                                                                                              |
|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cooler will not start                                    | No power supply – Fuses or circuit breaker tripped – Cable damaged                                     | Check power supply – Reset circuit breaker – Repair power cable – DO NOT USE EXTENSION CORDS!                                                                                  |
| Cooler will not cool when all fans are operating         | Possible low or high refrigerant pressure – Thermostat set incorrectly -                               | Check that condenser is clean – Set thermostat lower to start reefer if the above does not work call service technician to check gas pressures.                                |
| Cooler not refrigerating well – loss of capacity         | Low fan air circulation – Incorrect loading – Evaporator coil blocked with ice -Too little refrigerant | Check fan operation – Door openings are too long, shorten the openings - Defrost evaporator coil of ice (push defrost button) - Call service technician to check gas pressures |
| Functions set incorrectly                                | Digital controller not set correctly                                                                   | Adjust settings to suit operation                                                                                                                                              |
| Ice on evaporator                                        | Inner fan not functioning – Defrost does not operate                                                   | Check fan operation – Clear evaporator coil by manually defrosting the evaporator coil.                                                                                        |
| Incorrect generator model (if used off mains grid power) | Non use of a inverter type generator – Bad voltage - contactor burn out                                | Do not use a budget generator only use an inverter type generator – Replace compressor contactor and or start relay assy.                                                      |
| Cooler starts and stops frequently                       | Refrigerant pressure too high or too low                                                               | Check condenser fan operation – check ice on evaporator coil - Call service technician to check gas pressures                                                                  |
|                                                          |                                                                                                        |                                                                                                                                                                                |

## 7. Maintenance & Service Diagrams:

### RVTC Refrigeration Piping Circuit



## Reefervan RVTC - Trailer Cooler - 110v 60HZ Wiring Diagram



**Compressor Start Relay & Capacitors:**



Disconnect power supply and remove cover from relay / capacitor box



Run Capacitor

Compressor Starting Relay

Start Capacitor



## 8. Service & Maintenance

**i** Like any other mechanical machinery the RVTC cooler requires regular servicing, below is the service schedule

| Service                 | Timeframe       | Service Procedure                                                                                                                                                                                                  |
|-------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General Service         | Every 6 months  | Check gas level (view sight glass) – Cover must be removed                                                                                                                                                         |
|                         |                 | Check and clean condenser and evaporator and fan operation with compressed air                                                                                                                                     |
|                         |                 | Clean water drain hose out with compressed air                                                                                                                                                                     |
| Yearly Service          | Every 12 months | Check contactor and wiring connections – If using a separate gas driven generator, the contactor should be changed every year.<br><br>If using mains 115v voltage, the contactor replacement will not be required. |
| Winter / Summer Service | Every Year      | Winter service requires the condenser fan to be free from ice accumulation.<br><br>Summer service requires the compressor suction regulation valve (CPR) to be adjusted to prevent motor overload                  |

Please Note: Warranty may be effected if the cooler is not serviced regularly

For local Reefervan service location please call **1 888 445 4481**

## 9. Warranty – Terms & Conditions

- i**
- Warranty terms of the trailer cooler is as follows
  - 12 months parts only, if purchased directly by end user or if installed and serviced by a local HVAC technician. No labor is covered.
  - If a service plan is in place warranty will be 12 months parts and labor – provided cooler is installed by an authorized installer.
  - If the cooler is used in conjunction with a generator the warranty is reduced to exclude the contactor, starting relays and capacitors due to undeterminable voltage spikes that can occur and damage the components. This potential issue is out of Reefervan's control and warranty terms reflect this.
  - In most cases any part failure replacement should be purchased in advance ahead of a warranty claim being processed – The failed part will be examined by Reefervan and if the part has failed due to a malfunction it will be refunded to the end user. However, any part failure due to incorrect voltage or operation will not be covered under warranty.



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