

***MEDI-KOOL™***

**Rx CLIMATE CONTROL UNITS**







**INSTALLATION INSTRUCTIONS  
AND OWNER'S MANUAL  
2010**




**PRODUCED BY:**


**MERMAID MANUFACTURING OF  
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## CHOOSING A LOCATION: USE CHART BELOW FOR REFERENCE BEFORE ORDERING

<b>Medi-Kool Model Number</b>	<b>Refrigerator Volume Cubic Feet</b>	<b>Refrigeration System Configuration</b>	<b>Unit Dimensions</b>	<b>Cut Out Dimensions Allow for:</b>
MK15DR 	1.5 Cubic Feet	Remote located compressor (3ft) away	L = 20" D = 22.5" H = 12.0	L = 18.5" D = 22.5" H = 10.25 + Compressor
MK15 	1.5 Cubic Feet	Compressor on the Back	L = 25.75" D = 17.5" H = 12.0"	L = 24" D = 17.5" H = 10"
MK15-COMP-L 	1.5 Cubic Feet	Compressor on the Left	L = 31.50" D = 11.75" H = 12.0"	L = 24" + 6" Side Compressor D = 11.75" H = 10"
MK18 	1.8 Cubic Feet	Compressor On the Back	L = 25.75" D = 23.5" H = 12.0"	L = 24" D = 23.5 H = 10"
MK18-COMP-L 	1.8 Cubic Feet	Compressor on the Left	L = 31.50" D = 17.0" H = 12.0"	L = 24" + 6" Side Compressor D = 17.0" H = 10"
MK20-L 	2.0 Cubic Feet	Compressor on Back Hinge on Left	L = 19.25" D = 20.5" H = 21.5"	L = 17.75" D = 21.0" H = 20.5"

<b>Medi-Kool Model Number</b>	<b>Refrigerator Volume Cubic Feet</b>	<b>Refrigeration System Configuration</b>	<b>Unit Dimensions</b>	<b>Cut Out Dimensions Allow for:</b>
MK20-R PLASTIC	2.0 Cubic Feet	Compressor on Back Hinge on Right	L = 19.25" D = 20.5" H = 21.5"	L = 17.75" D = 21.0" H = 20.5"
MK20-COMP-R-L PLASTIC	2.0 Cubic Feet	Compressor on Right Hinge on Left	L = 25.25" D = 14.75" H = 21.5"	CUSTOM DUE TO SIDE COMPRESSOR
MK20-COMP-R-R PLASTIC	2.0 Cubic Feet	Compressor on Right Hinge on Right	L = 25.25" D = 14.75" H = 21.5"	CUSTOM DUE TO SIDE COMPRESSOR
MK20-COMP-L-L PLASTIC	2.0 Cubic Feet	Compressor on Left Hinge on Left	L = 25.25" D = 14.75" H = 21.5"	CUSTOM DUE TO SIDE COMPRESSOR
MK20-COMP-L-R PLASTIC	2.0 Cubic Feet	Compressor on Left Hinge on Right	L = 25.25" D = 14.75" H = 21.5"	CUSTOM DUE TO SIDE COMPRESSOR
MK20-SS-L STAINLESS STEEL 	2.0 Cubic Feet	Compressor on Back Hinge on Left	L = 19.25" D = 21" H = 21.5"	L = 17.75" D = 21.0" H = 20.5"
MK20-SS-R STAINLESS STEEL	2.0 Cubic Feet	Compressor on Back Hinge on Right	L = 19.25" D = 21" H = 21.5"	L = 17.75" D = 21.0" H = 20.5"
MK20-SS-COMP-R-L STAINLESS STEEL	2.0 Cubic Feet	Compressor on Right Hinge on Left	L = 26.25" D = 15.25" H = 21.5"	CUSTOM DUE TO SIDE COMPRESSOR

<b>Medi-Kool Model Number</b>	<b>Refrigerator Volume Cubic Feet</b>	<b>Refrigeration System Configuration</b>	<b>Unit Dimensions</b>	<b>Cut Out Dimensions Allow for:</b>
MK20-SS-COMP-R-R STAINLESS STEEL	2.0 Cubic Feet	Compressor on Right Hinge on Right	L = 26.25" D = 15.25" H = 21.5"	CUSTOM DUE TO SIDE COMPRESSOR
MK20-SS-COMP- L-L STAINLESS STEEL	2.0 Cubic Feet	Compressor on Left Hinge on Left	L = 26.25" D = 15.25" H = 21.5"	CUSTOM DUE TO SIDE COMPRESSOR
MK20-SS-COMP- L-R STAINLESS STEEL	2.0 Cubic Feet	Compressor on Left Hinge on Right	L = 26.25" D = 15.25" H = 21.5"	CUSTOM DUE TO SIDE COMPRESSOR
MK747-L STAINLESS STEEL 	3.0 + Cubic Feet	Compressor on Back Hinge on Left (Right hinge picture shown)	L = 27.25" D = 22.25" H = 23.25"	L = 25.75" D = 22.25" H = 22.5"
MK747-R STAINLESS STEEL	3.0 + Cubic Feet	Compressor on Back Hinge on Right	L = 27.25" D = 22.25" H = 23.25"	L = 25.75" D = 22.25" H = 22.5"
MK747-COMP-L-L STAINLESS STEEL	3.0 + Cubic Feet	Compressor on Left Hinge on Left	L = 34.25" D = 16.0" H = 23.25"	CUSTOM DUE TO SIDE COMPRESSOR
MK747-COMP-L-R STAINLESS STEEL	3.0 + Cubic Feet	Compressor on Left Hinge on Right	L = 34.25" D = 16.0" H = 23.25"	CUSTOM DUE TO SIDE COMPRESSOR
MK747-COMP-R-L STAINLESS STEEL	3.0 + Cubic Feet	Compressor on Right Hinge on Left	L = 34.25" D = 16.0" H = 23.25"	CUSTOM DUE TO SIDE COMPRESSOR

<b>Medi-Kool Model Number</b>	<b>Refrigerator Volume Cubic Feet</b>	<b>Refrigeration System Configuration</b>	<b>Unit Dimensions</b>	<b>Cut Out Dimensions Allow for:</b>
MK747-COMP-R-R STAINLESS STEEL	3.0 + Cubic Feet	Compressor on Right Hinge on Right	L = 34.25" D = 16.0" H = 23.25"	CUSTOM DUE TO SIDE COMPRESSOR
MK40-L STAINLESS STEEL 	4.0 + Cubic Feet	Compressor on Back Hinge on Left (Right hinge picture shown)	L = 27.25" D = 29.25" H = 23.25"	L = 25.75" D = 22.25" H = 22.5"
MK40-R STAINLESS STEEL	4.0 + Cubic Feet	Compressor on Back Hinge on Right	L = 27.25" D = 29.25" H = 23.25"	L = 25.75" D = 22.25" H = 22.5"
MK40-COMP-L-L STAINLESS STEEL	4.0 + Cubic Feet	Compressor on Left Hinge on Left	L = 34.25" D = 22.25" H = 23.25"	CUSTOM DUE TO SIDE COMPRESSOR
MK40-COMP-L-R STAINLESS STEEL	4.0 + Cubic Feet	Compressor on Left Hinge on Right	L = 34.25" D = 22.25" H = 23.25"	CUSTOM DUE TO SIDE COMPRESSOR
MK40-COMP-R-L STAINLESS STEEL	4.0 + Cubic Feet	Compressor on Right Hinge on Left	L = 34.25" D = 22.25" H = 23.25"	CUSTOM DUE TO SIDE COMPRESSOR
MK40-COMP-R-R STAINLESS STEEL	4.0 + Cubic Feet	Compressor on Right Hinge on Right	L = 34.25" D = 22.25" H = 23.25"	CUSTOM DUE TO SIDE COMPRESSOR

<b>Medi-Kool Model Number</b>	<b>Refrigerator Volume Cubic Feet</b>	<b>Refrigeration System Configuration</b>	<b>Unit Dimensions</b>	<b>Cut Out Dimensions Allow for:</b>
<b>MK747-EXT-L</b> <b>STAINLESS STEEL</b> 	4.5 + Cubic Feet	Compressor on Back Hinge on Left (Right hinge picture shown)	L = 30.25" D = 31.25" H = 23.25"	L = 28.75" D = 24.25" H = 22.5
<b>MK747-EXT-R</b> <b>STAINLESS STEEL</b>	4.5 + Cubic Feet	Compressor on Back Hinge on Right	L = 30.25" D = 31.25" H = 23.25"	L = 28.75" D = 24.25" H = 22.5"
<b>MK747-EXT</b> <b>COMP-L-L</b> <b>STAINLESS STEEL</b>	4.5 + Cubic Feet	Compressor on Left Hinge on Left	L = 36.25" D = 24.25" H = 23.25"	CUSTOM DUE TO SIDE COMPRESSOR
<b>MK747-EXT</b> <b>COMP-L-R</b> <b>STAINLESS STEEL</b>	4.5 + Cubic Feet	Compressor on Left Hinge on Right	L = 36.25" D = 24.25" H = 23.25"	CUSTOM DUE TO SIDE COMPRESSOR
<b>MK747-EXT</b> <b>COMP-R-L</b> <b>STAINLESS STEEL</b>	4.5 + Cubic Feet	Compressor on Right Hinge on Left	L = 36.25" D = 24.25" H = 23.25"	CUSTOM DUE TO SIDE COMPRESSOR
<b>MK747-EXT</b> <b>COMP-R-R</b> <b>STAINLESS STEEL</b>	4.5 + Cubic Feet	Compressor on Right Hinge on Right	L = 36.25" D = 24.25" H = 23.25"	CUSTOM DUE TO SIDE COMPRESSOR
 <b>MK-PELICAN-R</b> <b>STAINLESS STEEL</b>	5.0 + Cubic Feet	Compressor on Back Hinge on Right (Shown in picture)	L = 30.75" D = 28.0" H = 26.0"	L = 29.5" D = 26.0" H = 25"

<b>Medi-Kool Model Number</b>	<b>Refrigerator Volume Cubic Feet</b>	<b>Refrigeration System Configuration</b>	<b>Unit Dimensions</b>	<b>Cut Out Dimensions Allow for:</b>
MK-PELICAN-L STAINLESS STEEL	5.0 + Cubic Feet	Compressor on Back Hinge on Left	L = 30.75" D = 28.0" H = 26.0"	L = 29.5" D = 26.0" H = 25"
MK-PELICAN-COMP- R-R STAINLESS STEEL	5.0 + Cubic Feet	Compressor on Right Hinge on Right	L = 37.75" D = 21.0" H = 26.0"	CUSTOM DUE TO SIDE COMPRESSOR
MK-PELICAN-COMP- R-L STAINLESS STEEL	5.0 + Cubic Feet	Compressor on Right Hinge on Left	L = 37.75" D = 21.0" H = 26.0"	CUSTOM DUE TO SIDE COMPRESSOR
MK-PELICAN-COMP- L-L STAINLESS STEEL	5.0 + Cubic Feet	Compressor on Left Hinge on Left	L = 37.75" D = 21.0" H = 26.0"	CUSTOM DUE TO SIDE COMPRESSOR
MK-PELICAN-COMP- L-R STAINLESS STEEL	5.0 + Cubic Feet	Compressor on Left Hinge on Right	L = 37.75" D = 21.0" H = 26.0"	CUSTOM DUE TO SIDE COMPRESSOR
CONVERSION KITS + PLATE SIZES 	1.0 TO 15 Cubic Feet Capacity!	Compressor Dimensions  L = 13.0" D = 7.0" H = 8.0"	<b>105M Plate:</b> 8.25 x 11.25 <b>190M Plate</b> 25 x 11.25 <b>260M Plate:</b> 29.75 x 11.25 <b>425M Plate</b> 39.90 x 14.20	LEAVE ROOM FOR 4" x 4" INTERNAL FAN AND AIR AROUND UNIT FOR PROPER VENTILATION

**NOTE: FOR YOUR CONVENIENCE, LENGTH AND HEIGHT DIMENSIONS INCLUDE THE MOUNTING FLANGE. "CUSTOM CUT-OUT" MEANS CONSIDER 7" SIDE MOUNTED COMPRESSOR AND ENSURE FLANGE MEASUREMENT IS DEDUCTED ON MEASUREMENT FOR A PRECISE INSTALL.**

## KEY:

- 1) "MK" = "Medi-Kool"
- 2) "15", "20", or "747" = Cubic Size Requested
- 3) "Comp-R" or "Comp-L" = Compressor on Left or Right
- 4) -L = Door Hinge on Left
- 5) -R = Door Hinge on Right

**EXAMPLE #1:** MK20-L = Medi-Kool™ unit, 2.0 size, with Compressor on Back and Door Hinge on Left.

**EXAMPLE #2:** MK20-COMP-L-R = Medi-Kool™ unit, 2.0 size, with Compressor on Left and Door Hinge on Right.

**EXAMPLE #3:** MK747-L = Medi-Kool™ unit, 747 / 3.0 + size, with Compressor on Back and Door Hinge on Left.

**EXAMPLE #4:** MK747-R = Medi-Kool™ unit, 747 / 3.0 + size, with Compressor on Back and Door Hinge on Right.

Should any additional assistance be needed in determining the proper unit for your application, please do not hesitate to contact the factory. 1-800-330-3553.

## INSTALLATION:

- 1) Using your model number above, choose a cabinet location large enough to accommodate the Medi-Kool™ unit. The mounting flange must mount on a flat surface on the front of the cabinet. .
- 2) Example: For the 2.0 Cubic Feet systems, prepare an opening for the cabinet front 20.5" H x 17.75" W (cut-out dimensions).
- 3) If necessary for the support of the unit, install a support block under the body of the Medi-Kool™ unit. This will also alleviate the pressure on the mounting flange.
- 4) Choose a location for the Medi-Kool™ temperature control panel. Each unit is pre-wired using 4' of cable and protected using an 8 amp fuse. It is important not to damage the control panel nor disturb the wiring on the rear of the unit. Failure to follow these instructions will void all warranties on the product.

## VENTING:

- 1) Outside venting is always the preferred form of venting the compressor units on each product however, if outside ventilation is not possible ensure a **minimum** of 36 square inches of airflow reaches the compressor compartment for adequate cooling. **INLET AND OUTLET VENTS REQUIRED.**



- 2) If less than 36 square inches are used, an auxiliary fan may be required to vent the compressor compartment. **PROPER VENTILATION IS REQUIRED FOR COMPRESSOR AND UNIT OPERATION.**
- 3) Should you experience the system not operating properly, verify that the venting area is not obstructed or the auxiliary fan (if installed) has not stopped performing. **Failure to vent the unit properly voids all warranties!**

## **WIRING:**

- 1) Hard wire the Medi-Kool™ electrical connection to the 12-Volt DC power source on the vehicle. The back of each unit will have a (+) and a (-) label indicating where the power for the vehicle is to be placed. They will be near the white terminal block. If possible, use copper conductors with a minimum of #14 AWG wire. The longer the wire length from the power source to the unit, the thicker the gauge wire is needed. **IT IS RECOMMENDED NOT TO EXCEED 15 FEET OF WIRE, HOWEVER, SHOULD THE CIRCUMSTANCE ARISE, ENSURE YOU HAVE UPGRADED THE GAUGE OF YOUR 12-VOLT DC WIRE.**
- 2) A constant 12VDC power supply is recommended to ensure uninterrupted operation of the Mermaid Medi-Kool™ units. If a battery isolator is required, ensure the operator understands programming the Medi-Kool™ control board may be required on re-start.

**See WIRING DIMENSIONS under TROUBLESHOOTING SECTION for additional information.**

- 3) The digital control panel has quick connect fittings for ease of installation. Should the wires need to be removed for installation, ensure the proper leads are replaced in their respective points. **FAILURE TO RE-CONNECT THE WIRES PROPERLY WILL RESULT IN AN OPERATIONAL FAILURE OF THE COMPRESSOR.**
- 4) Beginning in May of 2006 we no longer put the gray thermostat cable in the quick connect harness. It is now the installer's responsibility to connect the black terminal block on the gray thermostat cable to the back of the Medi-Kool™ circuit control board. There is a white label on the cable indicating exactly where the terminal connects to the board. The connection is on the terminal on the back of the board. The black terminal block on the gray cable has a small "snap-in" connection to it. **Ensure the terminal is put on the proper way or false readings will be read on the digital display.**

**DO NOT CUT OR SPLICE THE GRAY THERMOSTAT CABLE OR THE PRE-MADE WIRING HARNESS. FAILURE TO FOLLOW THIS INSTRUCTION WILL VOID ALL WARRANTY.**

## **SETTING THE MEDI-KOOL™ OPERATING PARAMETERS:**

- 1. Make sure ALL power, thermostat, and White Molex plug connections are made.**
- 2. Turn the Red POWER SWITCH on.**
  - a. Display will show set temperature (top left number), current temperature (middle number) and memory used (upper right corner - 0% on new boards).
  - b. Display will also show date (lower left) and time (lower right). **These will need to be set upon initial use of the Mermaid Medi-Kool™ board. Follow instruction below to set each prompt.**
- 3. To Set Temperature:**
  - a. Push dial once, “Set Temp” will display with an arrow pointing left and right.
  - b. Push dial again. “Set Temp” will display again with set temp now showing. Turn dial clockwise or counterclockwise to set desired cabinet temperature.
  - c. Once set, push dial again. This will lock in set temperature.
  - d. Rotate dial clockwise or counterclockwise to “Exit” prompt and push dial.
- 4. To Set Date:**
  - a. Push dial once, rotate dial ONCE clockwise “Set Date” will display with an arrow pointing left and right.
  - b. Push dial again. “Set Year” will display again with “YY and a number. Turn dial clockwise or counterclockwise to set current year.
  - c. Once set, push dial again. “MM/DD and set date will display.
  - d. Turn dial clockwise or counterclockwise to set month. Push dial again to save and rotate dial again to set day.
  - e. Once complete, push dial again “Set Date” will display. Rotate dial to “Exit” prompt.
- 5. To Set Time:**
  - a. Push dial once, rotate dial TWICE clockwise “Set Time” will display with an arrow pointing left and right.
  - b. Push dial again. “Set Hour” and “hh:mm” will display with default time. Turn dial clockwise or counterclockwise to set Hour.
  - c. Once set, push dial again to set Minute.
  - d. Push dial again to finish Hour and Minute setting.
  - e. Set Time will show on the screen again.
  - f. Rotate dial clockwise or counterclockwise to “Exit” prompt and push dial.

6. **To Transmit Log:** Click or go here: [http://www.mmair.com/medical\\_division](http://www.mmair.com/medical_division) and select the unit of choice on the left tab menu. Under each unit are the USB Download Instructions.

**OR** – Click here: <http://mmair.com/content/download/476/4668/file/Medi-Kool%20USB%20Download%20Instructions.pdf>

7. **To Erase Log:**

- a. Push dial once, rotate dial FOUR times clockwise “Erase Log” will display with an arrow pointing left and right.
- b. Push dial once. “Are you sure? N” will display.
- c. Turn dial clockwise to “Y” if you are sure you want to Erase Log/Memory.
- d. If “NO” simply push dial again to go back to main “Erase Log” screen.
- e. Rotate dial again to “Exit” and push the dial.
- f. If “YES” simply push the dial and the Log/Memory will permanently erase. This data **cannot** be recovered if erased.

8. **To Set Key Code:**

- a. Push dial once, rotate dial FIVE times clockwise “Set key code” will display with an arrow pointing left and right.
- b. Push dial one and “Code 00” will display.
- c. Turn dial clockwise to set desired key code. **Remember this number! It cannot be cleared without a software re-write. This is NOT a warranty issue.**
- d. Once set, push dial again. “Set key code” will display again. Rotate dial clockwise or counterclockwise to “Exit” prompt. Push dial to return to main screen. **Key code is now set and needs to be remembered!**

9. **Exit Prompt:**

- a. Exit prompt take the operator back to the main display screen. If at anytime the operator is unsure of the setting, use “Exit” to start again. No harm can be done to the board with the exception of failure to recall a previously set keycode.

## **OPERATION AND MAINTENANCE:**

Turn the unit on and let it run for several hours prior to filling the unit with its contents.

Do NOT run the unit with the door open for an extended period of time. This will only increase the frost on the evaporator, increase product temperature, and reduce the efficiency of the unit.

Your Medi-Kool™ unit automatically monitors the incoming voltage and will cycle the compressor off if the incoming voltage drops below the recommended minimum of 9.7

volts. This feature is designed to make sure your batteries will still be strong enough to start your vehicle.

As with any other 12-Volt load applied to an idle battery, the battery power will eventually begin to run down. Some form of re-charging the battery is necessary for continuous operation of the unit over extended operating periods. How long the battery, or batteries, will last on a single charge will depend on the operating time of the unit and the desired set temperature. Factors that determine operation time include; load on the cooler, ambient temperature, set temperature, and use (door open/closed) of the cooler. A key note to remember is more cycles the compressor has to take to achieve its desired set temperature = more battery life. Continuous operation of the unit as a result of any of the above = shorter battery life.

## **CLEANING THE MEDI-KOOL™ UNITS:**

It is important to keep the interior of the unit clean and moisture free to avoid any mold or mildew growth.

Use a mild detergent (dish soap) and warm water to periodically wipe out the interior of the unit and the wire racks (on the 2.0 unit). Ensure the door gasket is cleaned as well and that the entire unit is dried completely before operation commences. The use of “WD40” or “Sheila Shine” is recommended to keep the stainless steel units clean.

NOTE: Do not use any abrasive cleaners, chemicals or scouring pads as this may damage your unit and transfer chemicals to the contents.

Thank you again for purchasing the Medi-Kool™ Vehicle Climate Control System. The information provided is meant to assist you during your installation and maintenance of the unit. Should you need any additional assistance, please don't hesitate to contact us!

## **WARRANTY:**

Should your Medi-Kool™ product fail to function (due to a defect in material or workmanship) within one year from the date of purchase, MERMAID MANUFACTURING OF S.W. FL INC. (hereafter “MERMAID”) will replace or repair (at MERMAID'S discretion) any defective parts free of charge after written notice to MERMAID of your intent to ship the product back to our factory with transportation charges pre-paid.

The one year provision of this limited warranty shall be void if either the circuit board or any major component has been damaged after the sale, subjected to unreasonable or abnormal use or operation, altered, repaired by anyone other than MERMAID without the company's consent, wired with undersized wire (consult factory for questions), or installed or used other than as indicated in this installation and user's guide.

MERMAID MAKES THIS LIMITED WARRANTY EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE EXPRESSED WARRANTIES OF MERCHANTABILITY AND BREACH OF ANY WARRANTY THE LIABILITY OF MERMAID SHALL BE LIMITED TO THE REPAIRING OR REPLACING THE NONCONFORMING GOODS. MERMAID SHALL NOT BE LIABLE FOR ANY OTHER DAMAGES, EITHER DIRECT, INCIDENTAL OR CONSEQUENTIAL, REGARDLESS OF THEIR KIND OR NATURE. **NON-TRANSFERABLE.**

## **TROUBLESHOOTING:**



**Each Mermaid Medi-Kool™ product utilizes the Danfoss BD35 12/24v compressor. The compressor operates the specific climate controlled cabinet via an electronic module that is connected to the left side of the compressor. Here, at the module, is where all wiring is connected in order to operate the condenser fan, the compressor, and the circuit control board. Should the unit not function, please refer to this section for assistance. Should additional information be needed, please contact the Mermaid factory.**

## **COMPRESSOR OPERATES, NO COOLING:**

1. Check that the condenser fan, located above the compressor, is in fact running.
2. If the fan is not running, check the wiring (black and red) at the module for a proper connection. Refer to Danfoss wiring schematics below.
3. If the fan is running, feel the plate inside the unit. The plate is located on the top of each unit. It is white in color and, if operating properly, will be cold to the touch.
4. If after 15 minutes, the plate is not cold and the compressor is **CONFIRMED** running/operating, the unit is out of refrigerant and needs to be returned to the factory for repair.

## **NO COMPRESSOR, NO FAN:**

1. Ensure the control board is attached with 12VDC applied. The “power” light on the control board should illuminate indicating 12VDC is present.

2. Should the unit already be installed, ensure the proper 12VDC is being supplied. The Danfoss compressor will not operate below 9.7VDC and will not operate above 17.0VDC.
3. Verify the “power” light is on again. If not, check the incoming 12VDC power supply. If necessary, use a secondary 12VDC power supply (a power supply box, a 12VDC portable power supply, or any other device that will provide the necessary range of power.
4. If the “power” light is on, and the compressor and fan are not operating, check the wiring at the module. Refer to the Danfoss wiring diagram below.  
Keeping in mind, Mermaid utilizes our own thermostat.

## **COMPRESSOR OPERATES, NO FAN:**

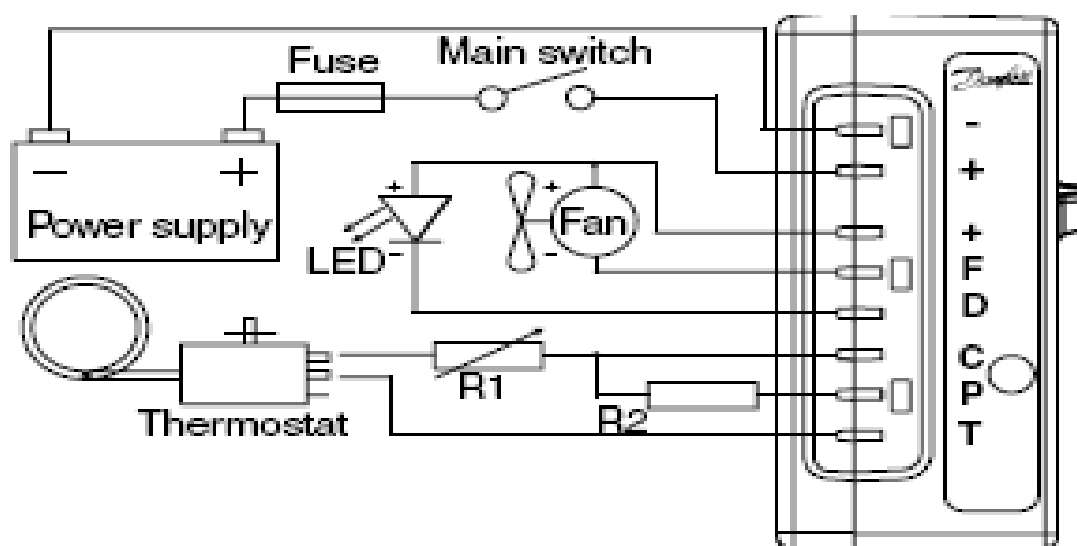
1. Verify the fan wires (Mermaid used red and black wires) are properly connected to the electronic module at the “+” and “F” terminals.
2. Verify the fan is not obstructed with a wire or other impurity.
3. If both #1 and #2 are clear, change the fan for proper operation.

## **FAN OPERATES, NO COMPRESSOR:**

1. Verify proper 12VDC is applied to the unit. The fan will run below the necessary 9.7VDC compressor voltage.
2. Verify the compressor wires are in fact attached to the electronic compressor module. Each unit is pre-wired and pre-charged, however, the wires may have been inadvertently removed. They should be connected at the “+” and “-“at the top of the module.
3. If compressor still does not operate, provide a secondary source of power (power supply box, a 12VDC portable power supply, or any other device that will provide the necessary range of power) directly to the “+” and “-“located on the compressors electronic module. Simply remove the positive and negative wires on the module and replace with the secondary power supply. This will “jump out” the control board and provide power directly to the compressor. If the compressor starts, check wiring at the control board. If the compressor does not start, replace the electronic module.

## **WIRING SCHEMATIC FOR ELECTRONIC MODULE**





## FAULT LIGHT INDICATORS AS SHOWN ON MEDI-KOOL™ CONTROL BOARD AND WIRING

### Operational errors shown by LED (optional)

Number of flashes	Error type
5	<b>Thermal cut-out of electronic unit</b> (If the refrigeration system has been too heavily loaded, or if the ambient temperature is high, the electronic unit will run too hot).
4	<b>Minimum motor speed error</b> (If the refrigeration system is too heavily loaded, the motor cannot maintain minimum speed at approximately 1,850 rpm).
3	<b>Motor start error</b> (The rotor is blocked or the differential pressure in the refrigeration system is too high (>5 bar)).
2	<b>Fan over-current cut-out</b> (The fan loads the electronic unit with more than 1A <sub>peak</sub> ).
1	<b>Battery protection cut-out</b> (The voltage is outside the cut-out setting).

### Wire dimensions

Size		Max length*		Max length*	
AWG	Cross section	12V operation		24V operation	
Gauge	mm <sup>2</sup>	ft.	m	ft.	m
12	2.5	8	2.5	16	5
12	4	13	4	26	8
10	6	19.5	6	39	12
8	10	32.8	10	65.6	20

\*Length between battery and electronic unit

**It is imperative that properly sized wire is used to operate the Mermaid Medi-Kool™ climate controlled cabinet. Should failure to follow the specifications listed in this manual can potentially cause damage to the circuit control board, the electronic module, and the compressor. These items are NOT covered under warranty if undersized wire is used. Warranties will also NOT apply if the gray thermostat cable or the wiring harness has been cut or spliced. Contact the Mermaid factory for harness extensions.**

## **ELECTRONIC MODULE WIRING FROM PRE-WIRED MEDI-KOOL™ CONTROL BOARD TO COMPRESSOR MODULE:**

### **MODULE:**

### **WIRES:**

(-) NEGATIVE LEAD =	<b>BLACK</b> WIRE (NEGATIVE 12/24V) FROM WHITE TERMINAL BLOCK PRE-WIRED FROM THE MERMAID FACTORY.
(+) POSITIVE LEAD =	<b>RED</b> WIRE (INCOMING 12/24V POWER) FROM WHITE TERMINAL BLOCK PRE-WIRED FROM THE MERMAID FACTORY.
(+) POSITIVE LEAD =	<u>THIN</u> <b>RED</b> WIRE (FAN) + <b>BLUE</b> WIRE PIGGY BACKED
(F) NEGATIVE LEAD =	<u>THIN</u> <b>BLACK</b> WIRE (FAN)
(D) FAULT LIGHT =	<b>GREEN</b> WIRE ( <b>BLUE</b> ABOVE IS ALSO FAULT LIGHT)
(C) SPEED CONTROL =	<b>BLACK</b> JUMPER WIRE (C-T TERMINAL)
(P) OPEN TERMINAL =	NO WIRE
(T) SPEED CONTROL =	<b>BLACK</b> JUMPER WIRE (C-T TERMINAL)

**EACH MERMAID UNIT ALSO HAS A HEATER(S) INTALLED. THERE ARE TWO RED OR BLACK WIRES EXITING THE CASE NEAR THE INSULATED EVAPORATOR LINE. THESE WIRES OPERATE THE HEATER AND ARE CONNECTED DIRECTLY TO THE MEDI-KOOL™ CONTROL BOARD.**

We thank you for your business and trust that you will have many years of successful operation with the Mermaid Medi-Kool™ Climate Controlled Rx units.