AN EXCHANGE OF TECHNICAL INFORMATION
VOLUME 7 NUMBER 2 ABOUT CARRIER TRANSICOLD CONTAINER PRODUCTS **2nd Quarter 2002**

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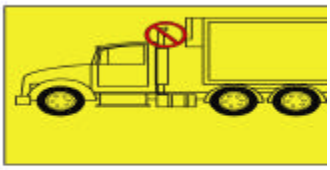
Tech*Tip*

Genset Exhaust

Truck exhaust should not be pointed directly at the container if a clip on genset is being used. The exhaust temperature of diesel engines at the muffler outlets is approximately 750?F (399?C) for the standard exhaust and 950?F (510?C) for the supercharged engines. This heat will result in damage to the unit. It is recommended that the exhaust outlet be angled outboard of the chassis fore and aft rails by at least 30° but preferably 45°.

P. Hoover



Tech*Fact*

Contactor Replacement

Recently, Carrier Transicold introduced a new replacement contactor. Although this contactor is fully interchangeable with the previous contactor, there has been some confusion in the field in regards to which contactor and which auxiliary contacts should be used. The following information should be helpful in determining the correct contactor and auxiliaries:

New Contactor	Old Contactor
10-00431-06 (12 Amps)	10-00333-00
10-00431-07 (30 Amps)	10-00333-01

New Auxiliary	Old Auxiliary
10-00431-02 Normally Closed	10-00333-02
10-00431-03 Normally Open	10-00333-04

The new contactor will not accept the older style auxiliaries and the new auxiliaries will not fit on the older style contactors.

The new contactor will use a different top mounting hole for securement. *(It is recommended to loosely install the bottom screw first to line up the top hole*)

M. Rogers

Tech*Line* is a publication of Carrier Transicold

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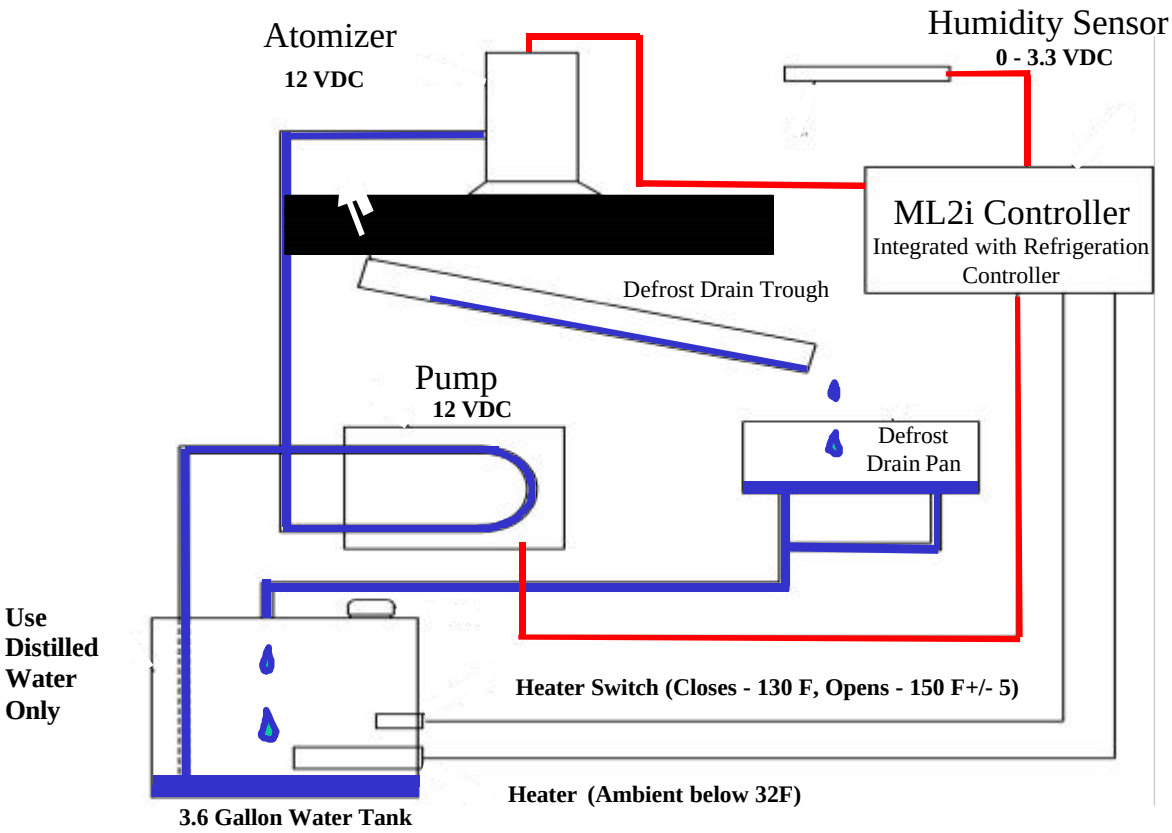
Feature Article

NatureFresh™ – Humidity Option

The Carrier Transicold Nature Fresh™ humidity option will allow the shipper to maintain humidity set points between 75 and 95% relative humidity (RH) for cargo temperature set points 33 ?F and above (.6?C). In this issue we will discuss how this humidity option functions.

General Overview

The main parts of the system consist of a 3.6 gallon stainless steel water tank (equipped with water gauge, heater and heater switch), a 12 VDC peristaltic reversible pump, a 12 VDC atomizer that spins at 12000 revolutions per minute, and a humidity sensor. When the humidity sensor calls for moisture to be added, the controller activates the atomizer and pump. Distilled water from the tank is then pumped to the atomizer that is located under the evaporator coil. When coming in contact with the atomizer, the water is broken into small particles that are absorbed by the air stream and supplied to the cargo. Any excess water that is not picked up by the air stream is collected in the drain pan and is returned to the water tank.



Initial Power UP

On every power-on sequence, regardless of the status of the humidity selection, the pump will run in the reverse direction for 3 minutes with ambient above 34?F (1.1?C). With ambient less than or equal to 34?F (1.1?C), the heater will be turned on, raising the temperature of the water prior to reversing. This is done to assure that the waterlines have been drained from the last trip.

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Humidity Start – Up

To activate the option, press the code select key on the keypad, arrow to code select 33 and press enter. Accessing this code select will allow you to operate either the humidification or the dehumidification modes of operation. The settings available, by pressing the arrow key, are "OFF, "Test", or 65 to 95% relative humidity in increments of 1 %. If the setting is above 75 % then the unit will operate in the humidification mode supplying moisture to the cargo. If the setting is 75 % or below the controller will operate in the dehumidification mode removing moisture from the cargo. Once a humidification set point is chosen, the controller will activate the humidification system. This can be noted by the flashing white supply air sensor LED on the front of the unit's display. The controller will then sit idle until the unit reaches its set point temperature. Once met, the controller will look at the RH level and the ambient temperature in the container. If there is a demand to increase the RH level, the controller will take one of the following two actions:

If the ambient temperature is less than or equal to 34?F (1.1? C):

The controller will activate a 300 watt 460 volt heater in the water tank, heating the water to 150 ºF (65.5ºC) or for 4 hours if the temperature switch is out of range. This is done to assure that the water in the tank and lines is not frozen due to the low ambient condition. On demand (RH level 2 % below its set point), the controller will activate the atomizer and humidity pump running it in a reverse direction for the first ten minutes. On completion of the reversing cycle, the controller will run the pump in the forward direction for 7 minutes supplying water to the 12 VDC atomizer with a disk that is rotating at 12000 revolutions per minute. When the water hits the disk, it atomizes into a mist that is absorbed by the supply air stream and distributed throughout the cargo. On completion of the 7 minutes, the pump will reverse for 3 minutes, draining the water lines. This sequence of forward/reverse will continue until the chosen RH set point is reached. The reversing is done to assure that water does not remain in the water lines for any length of time, potentially freezing, while also taking care not to oversupply the cargo with moisture, as the controlling humidity sensor is in the return air and the moisture being provided is in the supply air. On reaching the chosen set point, the pump reverses for 10, minutes draining the water lines. It will then sit idle for five minutes before restarting. The heater will maintain the water temperature while the humidification option is active via a temperature switch located in the water tank. It opens at 150 ?F (65.5ºC) and closes at 130 ?F (65.5ºC) assuring that the water does not freeze in the lines.

If the ambient temperature is above 34? F (1.1?C):

Upon demand (RH level 2 % below its set point), the controller will activate the atomizer and the humidity pump and run in the forward direction for 3 minutes, and then off for 4 minutes, until the chosen RH set point is reached. The off cycle is to take as to not oversupply the cargo with moisture, as the controlling humidity sensor is in the return air and the moisture being provided is in the supply air. Once the set point is reached, the pump will reverse for 3 minutes preventing water from sitting in the lines. On completion of the reverse cycle, the system will sit in idle mode for five minutes before restarting.

Trip completion:

On completion of the trip, the humidity option should be turned "OFF" via code select 33. On doing this the pump will reverse draining the water lines.

Trouble Shooting:

Checking the operation of the pump and atomizer, is accomplished by accessing code select 33 on the keypad, pressing enter and scrolling by pressing the arrow key to "Test" and then pressing enter. If the ambient is above 34? F (1.1?C) the pump and atomizer will run in the forward direction for 7 minutes. During this time you can view the operation of the atomizer by removing the heater access panel. During the test, 'hUM' 'tESt', will alternate on the display with the normal set point. If the ambient is 34? F (1.1?C) or below the tank heater will be energized as described above prior to entering the 7-minute forward test. During this time, a 'hUM' "tPrEP' will alternate on the display. When the system is ready to activate the test, a 'hUM' rEADy' will alternate on the display. Once this is displayed the operator can press the enter key to activate the test. On completion of either test the tank will reverse accordingly, draining the water lines.

The information above is a general review; additional detail on the operation of the humidity system can be found in either the Carrier Transicold Operation and Service manual number T-276-03 or T-297. *P. Hoover*

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General

Spare Parts List for 69NT40-531-XXX Model Units

The below table lists the new parts applicable to the newest members of Carrier Transicold container refrigeration product offering, EliteLINE™ and StreamLINE™ which where introduced in our November 2001 addition of TechLine.

Item	Part Description	Part Number
1	Card, Software	12-00397-01
2	Coil, Valve (Economizer, Oil Return, Liquid Injection)	14-01091-01
3	Coil, Unloader Solenoid Valve	14-01091-02
4	Coupling, Oil Return	40-00586-00
5	Module, Controller Expansion	12-55535-00
6	Oil, Mobil 32ST	07-00427-00
7	Scroll Service Compressor	18-00095-20SV
8	Sensor, Thermistor (CPDS)	12-00493-05
9	Sensor, Thermistor (CPSS)	12-00493-09
10	Suction Pressure Transducer	12-00352-07SV
11	Transformer, Current Sensing (CS)	10-00366-02
12	Valve, Economizer Expansion (TXV)	14-00232-08
13	Valve, Economizer Solenoid	14-01090-10
14	Valve, Solenoid (Oil Return, Liquid Injection)	14-00285-00
15	Valve, Thermostatic Expansion. (Hermetic)	14-00273-02
16	Valve, Unloader Solenoid	14-01090-11
17	Motor, Evaporator Fan * **(StreamLINE only)**	54-00578-00

** EliteLINE uses standard NT evaporator motor (54-00548-00)*

Below is the list of Operation & Service Manuals for these units:

T-292 EliteLINE Operation & Service Manual
T-292PL EliteLINE Service Parts List Manual
T-309 StreamLINE Operation & Service Manual (available June 2002)
T-309PL StreamLINE Service Parts List Manual (available June 2002)

✍✍ *Z. Asprovski*

General

Spare Parts List for 69NT40-489-CA Model Units

The below table lists the parts that are recommended for stocking in support of EverFresh ™, our Controlled Atmosphere unit.

Item	Part Description	Part Number
1	Calibration Gas	07-00322-01
2	Switch, High Air Temp. (HATS)	10-00342-00
3	Triac, Air Heater (AT)	10-00343-00
4	Sensor, Oxygen (OS)	10-00344-00
5	Sensor, Carbon Dioxide (COS)	10-00398-00
6	Rectifier, Door Interlock	10-01120-00
7	Module, Controller Interface	12-00344-00
8	Module, Oxygen Sensor (OSM)	12-00346-00
9	Sensor (MTS)	12-00360-00
10	Card, Software	12-00399-00
11	Module, Display	12-00433-01RP
12	Module, Controller	12-55458-03
13	Coil, Solenoid Valve	14-00260-02
14	Coil, Solenoid Valve	14-01091-01
15	Compressor	18-00052-03SV
16	Heater, Air	22-01680-00
17	Filter, Sensor	30-00415-22
18	Filter Element (Red)	30-00438-14
19	Filter Element (Blue)	30-00438-15
20	Filter, Air Intake	38-00554-00
21	Voltage Surge Suppresser (MOV)	69NT43-243-1
22	Curtain and Ribbon Seal Pkg	76-50036-00
23	Pre-Trip Kit	76-50040-00
24	Keypad	79-01706-01SV

Below is a listing of the Operation & Service Manuals for these:

T-289 EverFresh Operation & Service Manual
T-289PL EverFresh Service Parts List Manual
T-305 EverFresh CA Operation & Service Manual for Models 69NT40-489-100 Series
T-305PL EverFresh Controlled Atmosphere Service Parts List Manual

✍✍ *M. Rogers*