



AN EXCHANGE OF TECHNICAL INFORMATION

VOLUME 16 NUMBER 2 ABOUT CARRIER TRANSICOLD CONTAINER PRODUCTS

December 2010

### Inside This Issue



#### **TechFacts**

- Carrier Audits
- Evaporator Cleaning
- ThinLINE® Unit DPRV Removal



#### **TechFAQs** (*frequently asked questions*)

- ? Genset Dual-Speed
- ? Motor / Controller Replacement
- ? Controller Battery Replacement



#### **TechTip**

- ▲ Out of Range Alarm (AL72)

---

## **TechFact – Carrier Audits Authorized Service Centers**



Carrier Transicold partnered with its nearly 420 Authorized Service Centers (ASCs) around the world to continuously improve customer satisfaction. To guide and monitor this process, Carrier's dedicated field service managers (FSMs) regularly audit ASCs in the global network. Through the use of Achieving Competitive Excellence (ACE) tools, a unique set of guiding principles that keep the organization focused on being the provider of choice for customers, Carrier's field service organization has developed a robust, two-stage audit process:

### **1.) Off-site Audit**

The off-site audit focuses on reviewing the performance aspects of an ASC. Information from the past five years of operations is analyzed by the FSM performing the audit,

including the authenticity of purchased parts, warranty-related services completed, warranty-related field programs completed, training attended and the ASC's financial history. Plans are to perform an off-site audit at least once every three years.

### **2.) On-site Audit**

An FSM will visit the ASC for an on-site audit, including a one-on-one interview with ASC senior management, close examination of the ASC's inventory, business processes, company image, staff training, marketing and customer knowledge.

The audit team, which originated in 2008, is now in the process of updating the on-site audit requirements for 2011, making sure the audit questions are relevant to today's working environment. One of the team's future goals is to set up a program that will recognize ASCs that are also striving for excellence in their representation of Carrier to customers.

The relationship between Carrier and its ASCs is very much a partnership and this audit process is aimed at strengthening that partnership. The Carrier field service engineering team looks forward to working closely with all Carrier ASCs throughout the world in the coming years.

Johan Vander Kruk  
Global Service Director

---

## TechFact – Evaporator Section Cleaning

Carrier Transicold recently received reports about a white powder found on the inside of a container and on the reefer unit evaporator stator and fan deck.



Analyses by Carrier Transicold environmental specialists have identified the white powder as consisting predominantly of aluminum oxide. Aluminum oxide is a coarse crystalline deposit most likely the result of surface corrosion on the aluminum parts within the container. If left untreated over time, it may build up in thickness and eventually flake as a light-weight white powder.

The surface corrosion of aluminum is brought about by exposure to chemicals such as sulfur dioxide and possibly other fumigants that are commonly used for fumigation and protection of some perishable cargo such as grapes, for example. Fumigation is the process by which a chemical is released into an enclosed area to eliminate infestations of insects, termites, rodents, weeds and soil-born disease.

Typically any aluminum oxide that becomes detached from evaporator fan stators will be blown into the wet evaporator coil where it will be caught and then flushed out of the unit during routine defrost cycles.

However, it is still highly recommended that after carrying cargo subject to fumigation procedures, that the inside of the unit be thoroughly cleansed prior to reuse.

After testing alternative cleaners available on the market, we have identified a fully biodegradable and environmentally safe alkaline cleaning agent (Tri-Pow'r® HD) for the unit. This will assist in helping to remove the corrosive fumigation chemicals and dislodging of the corrosive elements.

This cleaner is available from the Carrier Transicold Performance Parts Group (PPG) and can be ordered through any of the PPG locations.



p/n NU4371- 88

As a general safety precaution, before using this product, refer to and retain the Material Safety Data (MSDS) sheet. This document can be found at:

[http://www.nucalgon.com/products/coil\\_cleaners\\_tripower.htm](http://www.nucalgon.com/products/coil_cleaners_tripower.htm)

### Prior to cleaning:

- Always wear goggles, gloves and work boots.
- Avoid contact with skin and clothing, and avoid breathing mists.
- When mixing, add water to the sprayer first, then the cleaner.
- ALWAYS provide for proper ventilation when cleaning indoor evaporator coils (rear doors must be open).
- Be aware of surroundings - food, plants, etc., and the potential for human exposure.
- Always read directions and follow recommended dilution ratios. More is not always better. Using non-diluted cleaner is not recommended.

**Listed is a general review of the cleaning procedure used for container equipment:** (Refer to the Web site referenced above for greater detail).

1. Remove the upper evaporator access panel inside of the unit.
  2. Spray the surface with water before applying the cleaning solution. This helps the cleaner work better.
  3. Liberally apply the prepared cleaner solution (5 parts water and 1 part cleaner).
  4. Allow the cleaner to soak in for 5 to 7 minutes.
  5. Assess area for rinsing. Follow all local regulations regarding disposal of waste water.
  6. Thoroughly rinse the cleaner and surrounding area, floor, etc. When rinsing where heavy foaming solution is present, it is very important to take the time to thoroughly rinse the equipment and surroundings.
-

7. Always rinse the empty coil cleaner bottle, cap tightly and dispose of properly.

Perry Hoover

### TechFact – DPRV Removal

In the August 2010 issue of TechLINE, we announced the removal of the Discharge Pressure Regulator Valve (DPRV). For detail on the removal please refer to (Volume 16 #1, ThinLINE® Unit DPRV Removal TechFact).

As a follow-up to customer inquires about DPRV removal, we are establishing a low cost replacement kit (tubing) if the DPRV needs to be replaced. The tubing will have the same dimension as the old DPRV for quick and easy installation. The new kit (part number 76-00826-00) is targeted for January 2011 release.

Please note that to utilize this option the unit needs to be equipped with the following:

- ML3 controller with software version 5147 or greater; and,
- Stepper Modulation Valve.

If the unit does not have these features, then a new DPRV must be installed.

Mark Donahoe

### TechFact – Software Release Update

Scroll: ML2i/5348, ML3/ 5348  
 Recip Unit: ML2i/ 5148, ML3/5148  
 Reciprocating Unit: ML2/1207  
 Controlled Atmosphere: 3114  
 DataLINE: 1.9.1  
 DataBANK: 0513

- Software can be downloaded from Transcentral: <http://www.container.carrier.com>.
- DataLINE can only be upgraded from the site if you have an original version installed.
- Prior to upgrading a unit, you should always obtain permission from the end user to upgrade the unit.

### TechFAQ – Genset Dual Speed Kit

**Q: Is there an aftermarket retrofit kit available to convert a single speed genset to a Carrier Transicold Fuel Wise™-equipped genset (dual-speed operation)?**

A: Yes. Introduced in 2008 for both PowerLINE® undermount and clip-on generator sets, the FuelWise option delivers fuel efficiency

boosts of up to 37 percent, depending on conditions, cargo and the refrigeration unit being used.

The FuelWise option achieves this performance as the electronic governor enables the generator set to run at two speeds. Initially, it runs at 1,800 rpm, providing maximum pull down power during the short startup period. Then it automatically reduces speed to a fuel-conserving 1,500 rpm for the duration of a trip. At a slower 1,500 rpm the generator operates at 50 Hz, delivering requisite power and voltage, while conserving fuel.

To support aftermarket requests, upgrade kits were set up to convert either the UG or RG model Tier 4i Genset over to a 2 speed operation based on the units PID (Product Identification) number.

The PID number starts with the basic model, such as UG or RG, followed by four digits to determine the configuration of that specific genset. With the PID of the unit, you can reference the chart below to determine the kit part number you need to convert to the dual-speed operation.

The FuelWise-equipped genset was highlighted in the June 2010 issue of ContainerLINE.

Gary Barkowski

KIT P/N	CONVERSION TO DUAL-SPEED	PID #
74-00297-00	69RG T4i Std 2 speed provisioned	RG16XX
74-00298-00	69UG T4i Std Single speed	UG14XX
74-00299-00	69RG T4i Std Single speed	RG14XX
74-00300-00	69UG T4i Std Single speed w/Auto Restart	UG14XX
74-00301-00	69RG T4i Std Single speed w/Auto Restart	RG14XX
74-00302-00	69UG T4i Single speed w/external mounted control box	UG14XX
74-00303-00	69UG T4i 2 speed provisioned w/external mounted control box	UG16XX
74-00310-00	69UG T4i Std 2 speed provisioned	UG16XX

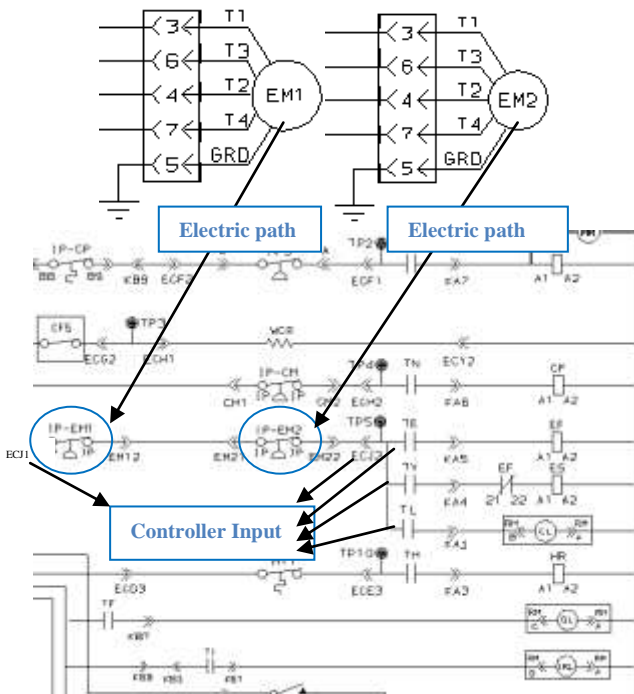
## TechFAQ – Motor / Controller Replacement

### Q: Can an evaporator motor failure result in a controller failure?

A: Yes. These motors follow an industry standard of having a low voltage internal protector (IP) buried within the high voltage windings of the motor. The internal protector opens its contact when it senses excessive heat is being generated by the motor. By opening the IP, the 24 vac control voltage supplied through the controller relay to the 24 volt contactor is removed, de-energizing the motor contactor, preventing the motor from further overheating.

At several points along the low voltage line, connections are made to the controller for identification of alarm “i.e. AL22” (ECJ1, ECJ2) and control of the contactor (TL, TE, TV).

Each of these points is hard-wired to the controller. As such, if a motor were to internally short in the area of the protector (IP), it could potentially create a path of electrical high voltage flow through the protector (IP) to the controller.



Before replacing a failed controller, you should ensure that the cause of the failure is not associated with one of the motors in the unit (evaporator or condenser).

To ensure the motors are not the cause of the controller failure, the following procedure should be followed:

- Evaporator motor: Make sure there is an open circuit (no connectivity) between TP5 and EFT1; TP5 and EFT2; TP5 and EFT3; TP5 and EST1; TP5 and EST2 and TP5 and EST3
- Condenser motor: Make sure there is an open circuit (no connectivity) between TP4 and CFT1, TP4 and CFT 3.

Mark Donahoe

## TechFAQ – Battery Replacement

### Q: Is there a battery replacement for the Real Time Clock Battery inside the ML3 controller?

A: Yes. The replacement part number for the Real Time Clock Battery exists for both the ML2i (p/n 09-00369-00) and ML3 controllers (p/n 09-00375-00).

When replacing a battery, it is recommended that the unit's software be upgraded to revision 5147, 5347 or greater, as a battery reset option was added to allow for the immediate resetting of the alarm when the battery has been replaced.

To clear the alarm after replacing the battery, press and hold the Enter key for 5 seconds while dAL86 is displayed in the DataCORDER alarm list (dAL).

Otherwise, the alarm will become inactive after 24-hour consecutive reading above 2.2 volts.

Mark Donahoe

## TechTip – Out of Range Alarm

An “out-of-range” alarm (AL72) was added to the alarm list with software version 5348. It will be activated if the unit first goes in-range for 30 minutes and then out of range for a continuous 120 minutes.

The alarm is deactivated by a power cycle, when control temperature comes in-range or while the unit is in any Pre-Trip mode.

Perry Hoover

## General - Training in 2011

Each Service Center Manager will receive an email asking them to complete a survey about the training that Carrier Transicold conducts each year. This survey is in response to input about training we received from Service Center surveys. We greatly appreciate you completing the survey.

**TechLINE is a publication of Carrier Transicold**  
Editor / Contributor: Perry Hoover

Contributors: Gary Barkowski, Mark Donahoe, Paul Gray, David Whyte

Thanks to all who supported this release.