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## MVE Chart Tech Tips

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February 2014

### PRODUCT INFORMATION

#### Chart MVE Freezer Components

If it is suspected that one of the electrical components is not operating properly, an evaluation may be in order. Below is a list of normal resistance values for select items:

- Fill Valves (Dual 24VDC): 30 - 35 ohms
- Fill Valve (Singular 24VDC): 60 - 70 ohms
- Bypass Valve: 60 - 70 ohms
- Bypass Sensor:
  - Room Temp: 1000 - 1100 ohms
  - Cryogenic Temp: 200 - 300 ohms
- Humphrey 3 way: 130 - 145 ohms
- Temperature Probes:
  - Room Temp: 1000 - 1100 ohms
  - Cryogenic Temp: 200 - 300 ohms



## Receiving Chart MVE Freezer Shipments

Domestically, Chart sells its products with F.O.B. (Free on Board) Origin terms. Under F.O.B. terms the buyer owns the goods from the time the shipment leaves the dock and is responsible for filing freight claims for damaged or shorted goods. Internationally, INCO Terms determine who is responsible for filing the freight claim.

Regardless of location, please follow the listed steps upon delivery:

- \* Check your shipment thoroughly upon receipt for any visible damage, i.e. dents, tears, punctures, etc.
- \* Make sure you have the proper number of boxes within the shipment, i.e. the delivery receipt calls for 6 boxes, but you only have 5.
- \* If you receive a shipment that is short or visibly damaged, make a notation on the carrier's receipt.
- \* Check for concealed damage after opening or if any damage to the product is found after the carrier has left, **do not throw anything away, including packaging materials.**
- \* Report damage to the carrier as well as Chart, Inc. (internationally, this action depends on INCO Terms). Concealed damage **MUST** be reported within 15 days of receipt, **otherwise you will void any damage claim.**

## Chart MVE Series and Cabinet Freezers

### Factory UL Approved Lid Switch, Harness, & TEC 3000 Settings

Chart MVE Series and Cabinet Freezers are manufactured with an embedded lid switch (See Figure 1). There are two wiring harness variations of the lid switch. The standard UL-Approved lid switch harness; and the Optional Fog Clear lid switch harness.

The factory standard UL lid switch harness allows users to open the lid that will disengage the lid switch and de-energize the fill valves. This adds a measure of safety to enable users to retrieve or insert biological materials and prevents liquid from splashing onto users. The process stops /interrupts the liquid nitrogen filling process if the freezer is filling. Once the lid is closed the fill process will continue.



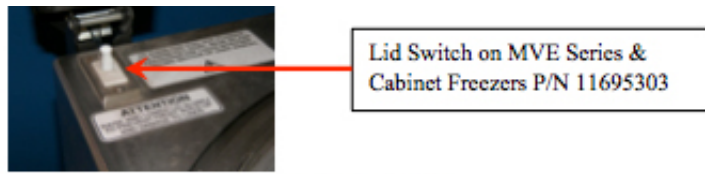


Figure 1. Lid switch on the MVE Freezer Series

The functionality of the UL lid switch harness is independent of the TEC 3000 settings. In the Lid Switch Menu the factory sets the "Lid Switch Installed" option to "NO" (See Figure 2).

Please note: If the freezer is filling and the user has lifted the lid, the TEC 3000 will continue to display "FILLING", even though the UL lid switch harness has interrupted the fill (See Figure 3). Once the lid is closed, the fill cycle will continue until the freezer reaches its high-level fill set point. The maximum fill time can be changed accordingly (See Figure 4).



Figure 2:  
Lid Switch Installed  
Menu



Figure 3:  
Freezer Filling



Figure 4:  
Max. Fill Time

MVE's UL listing stipulates that models in these two series must have the lid switch hardwired in series with the fill valve circuit when it leaves the factory to be UL compliant.

**The above description is classified as a factory UL-Approved Lid Switch Harness for Chart MVE Series and Cabinet freezers.**

#### HELPFUL HINTS / FAQs

#### The UL-Approved Harness

**Q:** How is the UL-Approved harness connected at the factory?

**A:** Chart's UL-Approved harness is hardwired in series with the fill valve circuit from the TEC 3000 main harness fill solenoid connector and to the lid switch. When the lid is opened this electrically opens the fill circuit and interrupts the fill (See Figures 5 & 6).



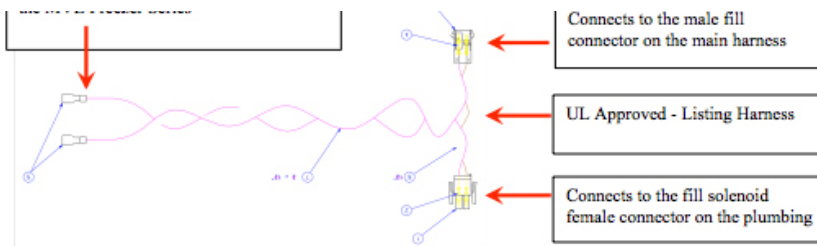


Figure 5. UL Approved-Listing Harness

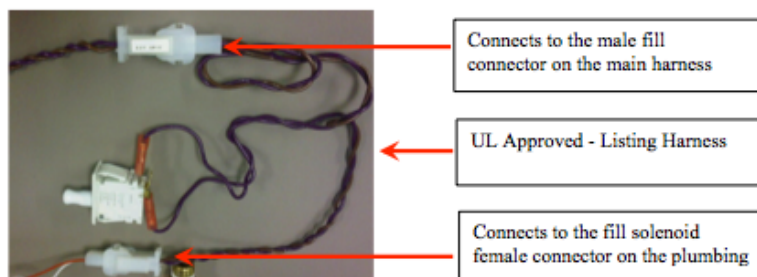


Figure 6. (Actual View before installation) UL Approved-Listing Harness

Q: Does the user need to do anything with the UL harness?

A: No, for UL-Approved, everything is performed at the factory.

A Lid Switch Harness, P/N 13701586, is included from the factory (See Figure 7). The harness is connected at pins 3 and 6 to the TEC 3000 main harness as shown in Figure 7. The other end of the harness is a white male connector labeled "Lid Switch". This is purposely not connected or secured and is located within the black plastic wire loom. This "Lid Switch" allows users to add the optional lid switch alarm and fog clear features.

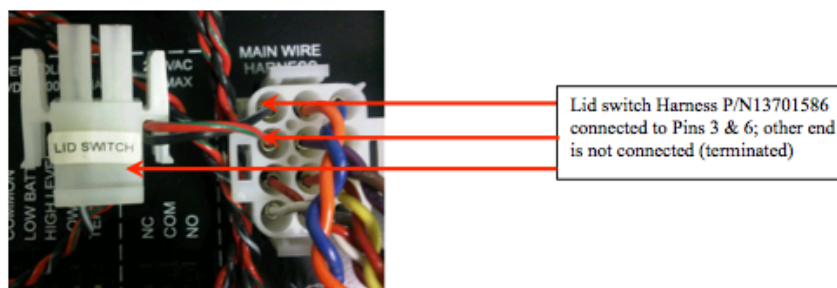


Fig 7. P/N 13701586 Lid Switch Wire Harness not connected

This harness is used to connect the TEC 3000 to the optional Fog Clear Harness, P/N 13296488, which adds the optional lid switch alarm and fog clear features.

### The Optional Fog Clear Harness: PN 13296488

Q: How can one use the optional TEC 3000 lid open alarm and fog clear features?

A: Purchase the fog clear harness, PN 13296488 (See Figure 8).

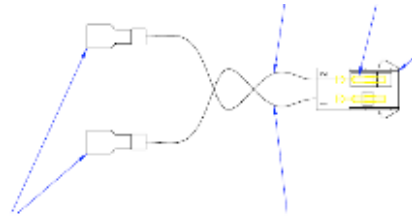


Figure 8. Fog Clear Harness P/N 13296488

Q: How does the fog clear harness connect?

A: The UL-Approved Harness must be disconnected from the lid switch and fill solenoid. The Fog Clear Harness connects directly to the two terminals on the lid switch and to the terminating end of the lid switch harness. The fill solenoid is then connected directly to the TEC 3000 main wire harness (See Figure 9).

### Adding the Optional Fog Clear Harness: PN 13296488 (Installation)

To enable the TEC 3000 Lid Switch Alarm and Fog Clear Options install the wire harness P/N 13296488 as described in Figure 9.

The one end of the Fog Clear Harness connects to the lid switch harness P/N 13701586 (See Figures 7 & 9) and the other end connects to the Lid Switch terminals (See Figure 9). The UL-Approved Listing Harness is completely removed from the circuit. The fill solenoid is then connected directly to the main wire harness (See Figure 9).

**Please Note: Converting from the standard UL Lid Switch to the optional Fog Clear Lid Switch voids the UL compliance and requires that the UL mark be removed from the freezer.**

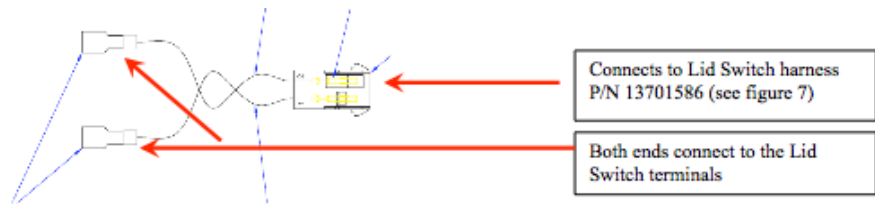


Figure 9: Optional Fog Clear Wire Harness PN 13296488

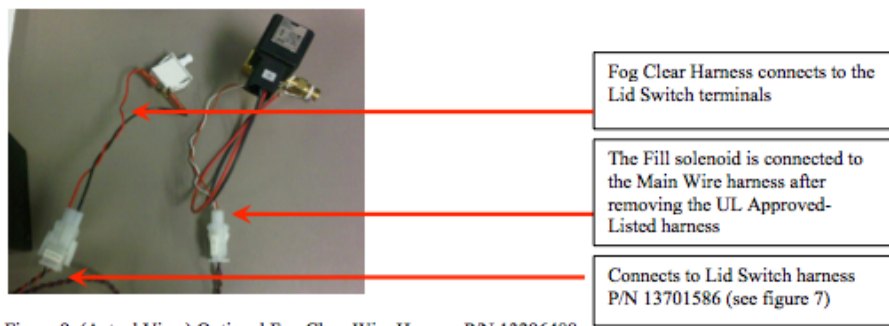


Figure 9. (Actual View) Optional Fog Clear Wire Harness P/N 13296488

Once these connections have been established, proceed to change the Lid Switch and Fog Clear parameters on the TEC 3000.

### TEC 3000 Lid Switch and Fog Clear Parameter Settings

Q: How does one change the parameters in the TEC 3000 to enable the lid switch and fog clear functionality?

A: Navigate to the Lid Switch menu located in the ADD ON menus.

1. Press SET UP
2. Enter password
3. Press SET UP to navigate to the ADD-ON menus; press Enter
4. Press SET UP to navigate to the LID SWITCH MENU; press Enter
5. Use the up or down arrow keys to change Lid switch installed to "Yes"; press Enter to save
6. Press SET UP to navigate to the LID OPEN FOG CLEAR, use the up and down arrow keys to ENABLED, press Enter to save
7. Press SET UP to navigate to the LID OPEN ALARM TIME; change the time to user preference.

The TEC 3000 settings can alter the capabilities of the fog clear harness. In all cases the lid switch must be enabled. If the Lid Open Fog Clear is disabled every time the lid is opened and closed the hot gas bypass time restarts (if the hot gas bypass is enabled) and the fill time continues from the previous count.

If the Lid Open Fog Clear is enabled the hot gas bypass and fill cycles do not stop; regardless if the lid is open or closed.

When the lid is first opened in fog clearing mode, the fog clearing process is initiated for 30 seconds. If the lid is left open for a prolonged period of time and the fog clearing process needs to be reactivated, one may do so by pressing down until

the lid switch is triggered, holding a few seconds and then releasing.

The TEC 3000 will alarm if the freezer lid remains open beyond the designated lid open time limit. Chart recommends changing the lid open alarm time to prevent false alarms. The maximum time can be set to 360 minutes.

**Please Note: Converting from the standard UL Lid Switch to the optional Fog Clear Lid Switch voids the UL compliance and requires that the UL mark be removed from the freezer.**

## ACCESSORIES

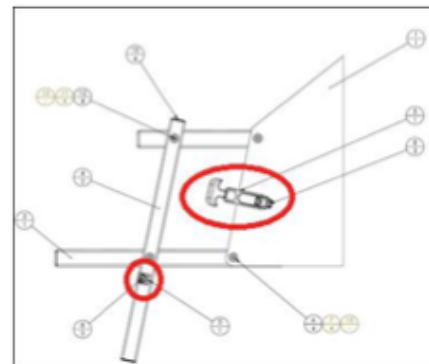
### USB TEC COM Kit

The USB TEC COM Kit, P/N 13376947, is a useful tool for downloading data from both the TEC 2000 and TEC 3000 controllers and may be ordered through Chart Customer Service.



### Chart MVE Freezer Step Latch Rubber Assembly

The part number of the latch (DRAW LATCH RUBBER 2"LG) for the step assembly of the HE 1500/1800 freezer series freezers is PN 11891849 and the screws are PN 11891881 (3 are needed per handle)



## Upcoming Events

### Trade Shows



We will be present at the following trade shows and would love to see you at our booth!

**EBMT**  
**March 30 - April 2**  
**Milan, Italy**  
**Chart MVE**

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