

# Tech Tips

(May 2016)

## Product Information

---

### Chart MVE IATA Shipper

Chart MVE IATA (International Air Transport Association) Shippers have been independently tested and approved to meet current UN and IATA regulations concerning the transportation of potentially infectious substances. The IATA shipper is a complete package that includes a protective shipping container, MVE CryoShipper XC, and one stainless steel secondary container. The secondary container is approximately 7.4 in diameter X 8.7 in depth, and is closed utilizing six screws around the lid to allow for safe transport of hazardous materials.

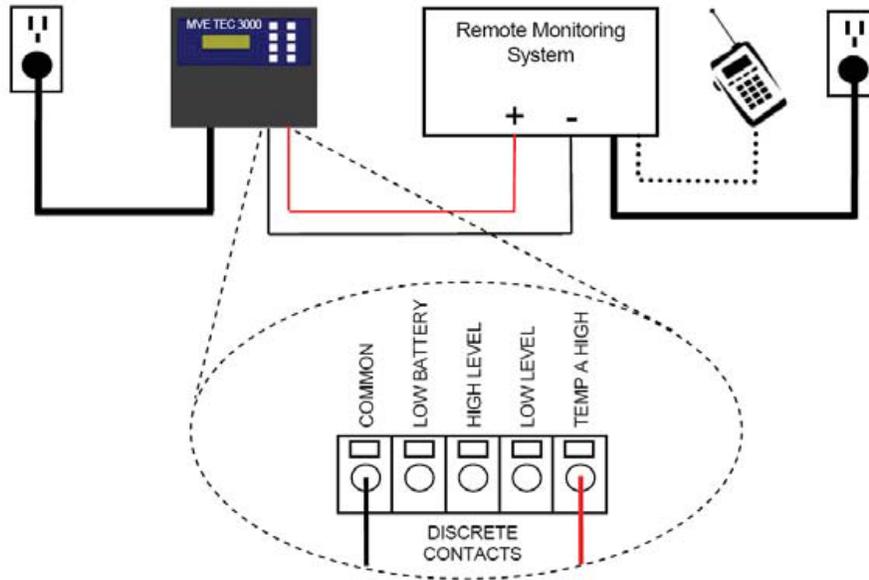
NOTE: All other MVE Vapor Shippers can be legally transported by air when shipping specimens that are not classified as, or known to be, potentially infectious.



MVE IATA SHIPPER: P/N 10777411.

### The TEC3000 and Third Party Alarm Systems

The TEC3000 has the ability to connect to an external alarm system via its discrete and global contacts, both located at the rear of the panel. The discrete contacts are open collectors and are polarity sensitive, whereas the global contacts are dry contacts and are not polarity sensitive. Once the TEC3000 goes into alarm, these latching contacts change state. The global common terminal is not connected to the chassis.

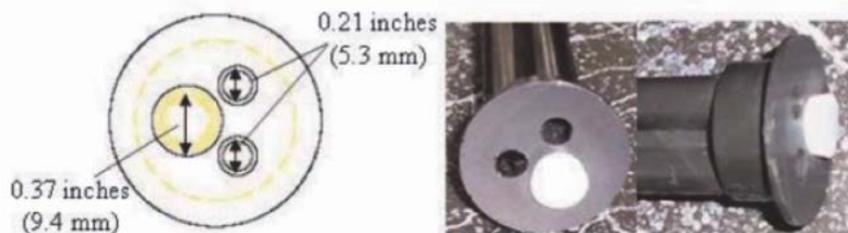


Typical Remote Monitoring System Schematic

## Sensor Tube Assembly

Chart MVE has available a 3-tube temperature sensor assembly. This sensor assembly is standard on all MVE High Efficiency / Vapor Series Freezers. If there is a high efficiency series freezer with the dual tube assembly, this can be replaced with the 3-tube sensor assembly. The 3-tube assembly is designed to house a third party temperature sensor. The assembly will come with a removable plug installed in the third hole. To order the correct sensor tube assembly, please provide the freezer serial number.

PN	Description	Freezer Model
14248744	26" Three Sensor Tube	1800 stock series
14248816	39" Three Sensor Tube	800s and 1500s
14248752	44" Three Sensor Tube	1800s, except stock series
14248824	49" Three Sensor Tube	1892 series



# Helpful Hints/FAQs

---

## TEC3000 Global Remote and Discrete Contacts Alarm

Q: How do I connect the physical wiring to the global and discrete alarm contacts?

A: The TEC3000 has two physical discrete connectors. The discrete connection will have either the white push button style (See Figure 1) or the slotted lever style (See Figure 2). For the white button style, wires can be inserted and removed by pressing on the white button with a small flathead screwdriver. For the slotted lever style, wires can be inserted and removed by placing a jeweler flathead screwdriver in the slot above the contact and prying down on the latch until the clamp connector opens (See Figures 2 and 3). Remove the screwdriver to close the connector.



Figure 1



Figure 2



Figure 3

## TEC3000 Global Contact Alarm Connections

Q: How does the global connection trigger a remote alarm system?

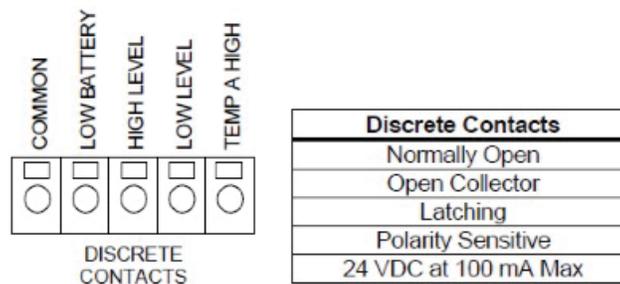
A: The global remote connection is a latching type of contact that will change its state should the TEC3000 begin to alarm. Once the alarm condition has been corrected and after the ALARM MUTE button has been pressed, the global contacts will revert back to their original state. For example, the normally closed (NC) to common (COM) contacts are in continuity during the no alarm state. When the controller enters into an alarm state, these contacts will change state and open, no longer making contact. The same principle applies to the normally open (NO) to the common (COM) contacts. In the no alarm state these connections are open. If the TEC3000 enters an alarm state, the normally open (NO) to common (COM) contacts close, establishing continuity. The global contact specifications are 250 VAC at 1A maximum and are not polarity sensitive.



### TEC3000 Discrete Contact Alarm Connections

Q: How does the discrete contact trigger a remote alarm?

A: The individual discrete alarm contact is a latching type of contact that will change its state should the TEC3000 go into alarm. Once the individual discrete alarm condition has been corrected, and after the ALARM MUTE button is pressed, the contact reverts back to its original state. For example, the HIGH LEVEL to COMMON contacts are open during the no alarm state. If the level of liquid nitrogen exceeds its high level set point, the TEC3000 will change the state of the contact and close, making continuity. The similar principle applies to the other three discrete contacts. For proper discrete contact function, ensure that the negative (low voltage) terminal of the remote monitoring system is connected to the COMMON terminal on the TEC3000. The positive (high voltage) remote monitoring terminal should be connected to the respective alarm contact. The discrete contact specifications are open collectors, 24VDC, 100mA, and are polarity sensitive.



## TEC3000 Global and Discrete Contact Test

Q: How do I test the global and discrete alarm connections on the TEC3000?

A: To test the global and discrete alarm connections you may use a regular multimeter by following the steps below:

### Global Remote Contacts:

Normal State (No Alarms):

1. Check for continuity across the leads of the multimeter.
2. During normal state, there should be continuity between the COM and NC terminals of the Global Remote connections. The COM-NO circuit should be open.

Alarm State:

1. There should be continuity between the COM and NO terminals of the Global Remote. The COM-NC circuit should be open.

### Discrete Contacts:

Check for continuity using the multimeter on the diode setting. Since the discrete contacts are open collectors, the diode check function should be used.

Normal State (No Alarms):

1. All discrete contact terminals should be open with respect to COMMON.

Alarm State:

1. There should be continuity between the specific active alarm terminal and COMMON. Inactive alarms should remain open with respect to COMMON.

## Frost and Ice on Freezer Lids

Q: Why is there frost and ice on the freezer neck and lid while I'm filling it for the first time?

A: When performing the first fills on the freezer, it is necessary to keep the lid off in order to allow sufficient venting during filling. A certain amount of frost and ice may appear and accumulate around the freezer neck for the first fills, but this is normal.

Q: Why is there frost and ice on the freezer lid?

A: It is normal for a small amount of frost and ice to appear and accumulate around the freezer lid area as the freezer automatically fills. However, excessive frost and ice can be attributed to a worn gasket, insufficient venting of the lid, or improper fill pressure. If there is not enough gap in the gasket to allow for sufficient venting, this can cause excessive frost on the lid edge. Objects placed on the lid can cause the gasket to seal too tightly as the freezer fills and may cause frosting issues, which could also affect controller level readings. On the HE Series, a minor leak in the plumbing can also simulate a frost and ice issue.

Please note, depending on ambient room temperatures, normal condensation and frost may develop on the lid/neck area assembly at times during fills. Chart's preventative maintenance plan recommends wiping down the lid and neck areas of the freezer either weekly or as needed.

# Accessories

---

## SUC Canister Racks

If storing SUC canisters (PN 9710491) in freezers, Chart offers two racking options to conserve space. These racks work as a two-stage shelf, which allows two layers of racks to be stored in the freezer. One of the available racks holds two SUC canisters, PN 11392644, storing one over the other. The second, PN 11395896, holds eight of the canisters, storing four on each shelf.



Part Number	Number of SUC Canisters (PN 9710491)
11392644	Holds two SUC Canisters
11395896	Holds eight SUC Canisters

SUC Canister: PN 9710491  
2.5" (63.5 mm) W x 11" (279.4 mm) H



PN 11395896  
5.25" (133.35 mm) W x 25" (635 mm) H



PN 113926443  
(76.2 mm) W x 25" (635 mm) H

## Rigid Dippers

Rigid Dippers are used to scoop out liquid nitrogen for the Lab Series and are available for order via the following part numbers:

Part Number	Description	Overall Length
9711569	LAB 5	18.25"
9711589	LAB 10	21.63"
9711619	LAB 20 or LAB 30	23.75"
9711669	LAB 50	30.25"
11555669	Dipper W/ Extended Cup (3.5oz)	21.75"
20593015	Swivel (Piccasso) Dipper	21.25"



## Shipping Foam for the SC2/1V Vapor Shipper

Chart MVE offers extra foam for the SC2/1V Vapor Shipper that is required to ship in protective containers. Part numbers are as follows:

PartNumber	Description
14667084	Extra Foam for Sides (4 required)
14667092	Extra Foam for Bottom (2 required)
14667068	Extra Foam for Top

## Protective Shipping Containers

Chart MVE sells Protective Shipping Containers for our shippers. These containers are designed to protect Vapor Shippers when samples are being shipped. They come in a variety of sizes depending on the shipper being used, and can be ordered using the below PN's.

**Note:** Only the CryoShipper (PN 10508967), CryoShipper Mini (PN 11037386, 11037378, or 10979435) and CryoShipper Extra Capacity (XC) (PN 11015195) come standard with a protective shipping container.

Part Number	Unit	Outer Dimensions
<b>20750409</b>	SC 2/1V (See below), SC 4/2V, SC 4/3V, MINIMOOVER, QWICK 6/9, QWICK 10/100, QWICK 14/48, QWICK 14/24	24.1H X 15.0 OD
<b>20749412</b>	CRYOSHIPPER MINI	25.1H X 18.1 OD
<b>20750519</b>	SC 11/7, DOBLE 11, DOBLE QWICK 10/660	
<b>20750520</b>	XC 20/3V, CRYOSHIPPER, QWICK 9/500	
<b>11912460</b>	SC 20/12V, QWICK 62/180, DOBLE 20, DOBLE QWICK 20/660	28.0H X 22.1 OD
<b>10741726</b>	CRYOSHIPPER EXTRA CAPACITY (XC), QWICK 10/950, IATA CRYOSHIPPER	
<b>11930861</b>	CRYOMOOVER, DOBLE 28, DOBLE QWICK 17/2400	
<b>14035731</b>	DOBLE 47, DOBLE 47-10, DOBLE QWICK 20/2100, DOBLE QWICK 14/4500, DOBLE QWICK 14/3500	30.75H X 24.1 OD

*\*This table gives only the outer dimensions of each shipping container. Inner dimensions will vary between part numbers due to the dewar specific foam placed in each container.*