In This Issue

Product Information
Helfpul Hints / FAQs
Accessories

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MVE Chart Tech Tips

PRODUCT INFORMATION

TEC 3000 Firmware Update, Version 2.02

Chart MVE has released a new firmware Version 2.02 for the TEC3000. Chart recommends that all TEC3000's be updated to this latest version.

Please see the below list of improvements included in this new version:

- Additional Overfill Protection

  An automatic fill will be prevented if the LN2 level drops to 0 or if the LN2 level reading is zero. This will prevent an overfill scenario in any situation where the TEC 3000 loses its ability to measure the LN2 level. For example, if the vinyl level sensing tube becomes disconnected or after a significant power surge.

  Pressing the manual fill button will override and allow the freezer to fill.

- Gas Bypass and Sequential OFAF Correction

  Corrected previous error that did not allow gas bypass to be used in conjunction with sequential OFAF.

- Gas Bypass Temperature Set Point Range

  The gas bypass maximum temperature set point has been increased to 0°C to avoid the possibility of LN2 exiting the plumbing assembly muffler during gas bypass when using vacuum insulated transfer hoses.

- Stuck Valve Alarm

  A stuck valve alarm has been incorporated to alert the end-user in the event that the fill valves are stuck open or closed.

- Liquid Usage Warning

  The liquid usage warning will only be recorded in the controller event log and will no longer be accompanied by an audio/visual alarm. The more important liquid usage alarm, which is the early warning to potential vacuum failure, will still have an audio/visual alarm. This is to minimize self-correcting nuisance alarms.

- Battery Backup Menu

  The battery backup menu has been adjusted so that it will display running on AC power or running on battery backup power. If on battery backup power, it will indicate the battery voltage and estimated percentage of battery life remaining.

- Password Entry

  A flashing cursor has been added to the password entry screen to make it clear which digit is being changed.

- ASCII Commands

  Additional ASCII commands have been included to enhance the TEC 3000 -PC interface that allow it to query current settings rather than just the last logged event - "STATUS?" Alarm masks have also been added to prevent specific audio/visual alarms. Events will still be recorded in the controller event log Factory default settings will continue to have all alarms fully enabled including: Power Failure, High and Low Temp, and Liquid Usage Alarms.

Chart MVE1211 and XLC1211 Lid Liners

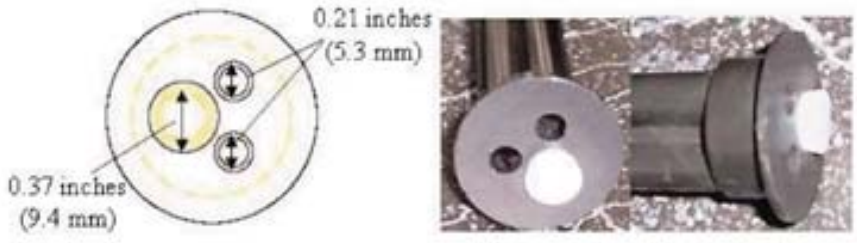
The XLC1211 original lid liner and gasket are obsolete. Chart has engineered a new part number that will allow older freezers to be serviceable. The new design will include the cork and plate assembly rather than the cork and separate liner. Field units that require the lid liner and gasket replacement will benefit from this design. The service part number will include the cork, mounting plate, gasket, and rivets.

This new part number is: PN 14112521S.

Three Tube Sensor Assembly

Chart MVE has a three tube temperature sensor assembly available. The three tube sensor assembly is standard on MVE High Efficiency / Vapor Series Freezers. The three tube assembly is designed to allow a third party temperature sensor for easy validation. The assembly is equipped with a removable plug installed in the third hole. High Efficiency freezers with the two sensor tube assembly can upgrade to the three sensor tube assembly.

SPECS: The new injection molded XENOY material will provide thermal performance as well as lasting durability. Below are pictures of the new assembly and the inner diameters of the sensor tubes.



Part Number (PN)	Description	Freezer Models
14248744	3 Tube Sensor Assembly-26" Long	MVE 1842P-150F
14248816	3 Tube Sensor Assembly-39" Long	MVE 800 and 1500 Series
14248752	3 Tube Sensor Assembly-44" Long	MVE 1800 Series
10539413	Brass Nut for the Temperature Probe	All HE Freezers
14243599	Temperature Silicone	All HE Freezers

Chart recommends allowing users to verify the preferred height of the temperature probe displacement before applying the silicone.

HELPFUL HINTS / FAQS

First Fills/Initial Startup

Q. What is the process for filling a freezer for the first fill?

A. Once the freezer has been properly installed at its location with proper piping system pressure (22-35psi, 1.5, 2.4bar) the freezer is ready for its first fill.

Make sure to set the high level alarm, high level set point, low level set point, and low level alarms before proceeding. Position the temperature probes inside the freezer. (See helpful hints below for temperature probe placements).

Open or remove the lid for the first fill due to the accelerated LN2 evaporation rate when filling a warm freezer. If the freezer is equipped with a lid switch, engage the manual override, press down and hold the lid switch, (reference the Lid Switch section of the TEC3000 manual for more info). Open the LN2 supply valve and press "Start Fill" to begin filling the freezer.

The first fill will take significantly longer than subsequent fills due to the freezer being warm.

It is recommended to place empty inventory system components such as racks, boxes, frames, or canisters in the freezer during the first fill. This will cool the inventory system as well as help the freezer reach its top box temperature rating faster. It is normal for some condensation or frost to develop around the neck opening during the initial fill.

Once the freezer LN2 level has reached the High Fill Set-point, close or replace the lid and allow the freezer to equilibrate and reach its temperature rating.

It is recommended that biological samples are not introduced into the freezer until several days after the top box temperature has stabilized at or below the freezer's temperature

Positioning Temperature Probes

Q: Where should one position temperature probes within the freezer?

A: Insert the two temperature probes into the sensor tubes and position the sensors at the preferred height in the freezer space. Selecting probe A and B as well as the sensor placement is adjustable and completely up to the user. Chart MVE recommends placing one sensor at the "top box" level. This refers to the level in the freezer space where the highest sample is being stored. If storing vials in boxes, then this would be at the level with the top box. This is recommended as it will be the warmest temperature experience by samples being stored in the freezer space.

Chart MVE Freezer temperature probes are calibrated at the factory. If a temperature probe calibration is required Chart recommends calibrating temperature probes submerged in liquid nitrogen.

ACCESSORIES

Chart MVE Freezer Parts

Here are common freezer parts to have handy when performing routine freezer maintenance.

Part Number	Description
11648945	Inline Filter - 40 micron mesh
1810032	Relief Valve - 50 PSI (3.4 bar)
14224611S	SMC Solenoid Valve - Fill and Gas Bypass
13284954S	Purge/3-way Solenoid Valve
10713400	Gas Bypass Temperature Sensor
11499812	Gas Bypass Muffler
11885449	Gas Bypass Muffler Deflector
20570663	Temperature Probe
11795030	Jerome Power Supply - Input: 110-230

Chart MVE Vacuum Jacketed flexible hoses (VJ Flex Hose)

Chart offers a complete line of vacuum insulated flexible transfer hoses to complement vacuum jacketed piping systems. Our flexible transfer hoses are constructed with the same quality of workmanship, and superior insulation technologies as our standard line of vacuum insulated pipe. The flexibility of the hoses allows for frequent connections to liquid cylinders and cryogenic processing devices such as biological freezers, thermal test chambers, etc.

Chart's superior vacuum insulation technology greatly reduces cryogen product loss, and improves the efficiency of your system. In addition, the high thermal performance eliminates ice balls and dripping water along the length of the hose, which can be a safety hazard. Commonly used hoses are stocked for quick delivery. Vacuum insulated flexible transfer hoses are available in ¼ or 3/8 inch ID.

Below are a few popular part numbers:

3/8 inch ID VJ Flex Hose

TRANSFER HOSE 4' Part #: 10581700 TRANS HOSE 3/8ID*1-1/2OD*4'LG VJ 1/2"ODT 37D FLARE
TRANSFER HOSE 6' Part #: 10670059 TRANS HOSE 3/8ID*1-1/2OD*6'LG VJ 1/2"ODT 37D FLARE