July 2014

MVE Chart Tech Tips

PRODUCT INFORMATION

Chart MVE 800 High Efficiency Series

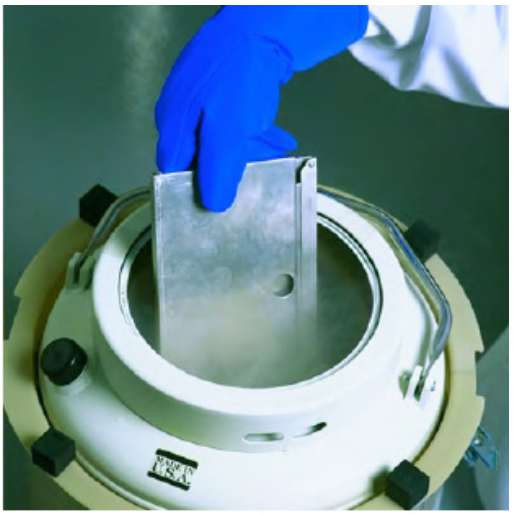
The MVE High Efficiency 800 Series -190°C* freezers provide stable cryogenic storage for up to 19,500 1.2 / 2.0 ml vials. These freezers provide maximum storage density and provide the industry's longest hold time. The MVE High Efficiency 800 Series, as well as MVE's HEco Series, offer dry sample storage, -190º C* top box temperature, lowest lift over height, and the largest LN2 capacity below the vapor platform (HE Series) or below turn tray (HEco Series).

MVE 815P-190AF-GB

*Temperature test indicates typical performance of 800 HE Series -190°C freezer with full inventory system and factory recommended level settings. Actual performance may vary with atmospheric conditions and usage. Please consult with your salesperson on how to place an order.

Chart has available cryogenic gloves to help with insertion and removal of racks and cassettes:

Medium length-medium size	9717119
Medium length-large size	9717129
Medium length-XL size	9717139
Elbow length-medium size	9717149
Elbow length-large size	9717159
Elbow length-XL size	9717169



HELPFUL HINTS / FAQS

Q: If the freezer is received damaged, what is the procedure?

A: Chart sells stainless steel freezers and all its products with F.O.B. Origin terms. In other words, the buyer owns the goods in transit and is responsible for filing freight claims for damaged or shorted goods. 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. if the delivery receipt calls for six boxes, make sure there are six items.
- If you receive a shipment that is missing a carton or visibly damaged, make a notation on the carrier's receipt.
- Check for concealed damage after opening
    - 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 your Chart sales representative.
- File a claim with your shipping carrier; not Chart.
    - Concealed damage **MUST** be reported within 15 days of receipt, **otherwise you will void any damage claim.**

Q: How does one calibrate the Hot Gas Bypass Sensor using the single-point method on the TEC3000?

A: For single-point calibration, the reference point is LN2. For an accurate calibration, the LN2 Saturation Temperature needs to be correctly set based on the altitude of the freezer location. Please verify the resistance of the bypass temperature probe; 1000 ohms @ 0°C; approximately 1080 ohms in ambient.

The single-point calibration procedure requires a small volume of LN2; enough to completely submerge the bypass sensor. Please refer to the TEC3000 Technical Freezer manual to remove the hot gas sensor.

Below is the procedure for the single-point calibration:

1. Press "SETUP"

Controller will prompt for a password. A flashing cursor will make it clear which digit is being changed. Use the "▲/▼" keys to scroll to the appropriate number. Press "ENTER" to advance the cursor to the next position.

2. Press "ENTER"

The display will read "Temperature Menus".

3. Press "SETUP"

Until the display reads "Add-on Menus".

4. Press "ENTER"

The display will read "Battery Status".

5. Press "SETUP"

Until the display reads "Hot Gas Bypass Menus".

6. Press "ENTER"

The display will read "Hot Gas Bypass".

7. Press "SETUP"

Until the display reads "Bypass Probe Calibration".

8. Press "ENTER"

The display will read "Calibration Type". Use the "▲/▼" keys to set as "SINGLE POINT".

9. Press "ENTER"

The display will read "Bypass Calibration". Submerge the sensing end of the bypass probe in LN2.

10. Press "ENTER"

The display will read "Wait for Bypass Temp to stabilize". Wait for the displayed temp reading to stabilize while the probe is submerged in liquid.

11. Press "ENTER"

The display will read "Bypass Probe single point calibration complete".

Q: How does one calibrate the Hot Gas Bypass Sensor using the two-point method on the TEC3000?

A: For the two-point calibration, the reference points are LN2 and ice water. Please verify the resistance of the bypass temperature probe; 1000 ohms @ 0°C; approximately 1080 ohms in ambience.

The two point-calibration procedure requires a small volume of LN2; enough to completely submerge the bypass sensor. The two-point calibration requires an ice water bath. Proper ice water bath preparation is imperative to ensure accuracy. It is best to add filtered water to a styrofoam cup containing crushed ice. Allow the solution to stand at room temperature for five minutes prior to beginning the calibration procedure.

Below is the procedure for the two-point calibration:

1. Press "SETUP"
Controller will prompt for a password. A flashing cursor will make it clear which digit is being changed. Use the "▲/▼" keys to scroll to the appropriate number. Press
"ENTER" to advance the cursor to the next position.

2. Press "ENTER"
The display will read "Temperature Menus".

3. Press "SETUP"
Until the display reads "Add-on Menus".

4. Press "ENTER"
The display will read "Battery Status".

5. Press "SETUP"
Until the display reads "Hot Gas Bypass Menus".

6. Press "ENTER"
The display will read "Hot Gas Bypass".

7. Press "SETUP"
Until the display reads "Bypass Probe Calibration".

8. Press "ENTER"
The display will read "Calibration Type". Use the "▲/▼" keys to set as "TWO POINT".

9. Press "ENTER"
The display will read "Bypass Calibration". Submerge the sensing end of the bypass probe in LN2.

10. Press "ENTER"
The display will read "Wait for Bypass Temp to stabilize". Wait for the temp reading to stabilize while the probe is submerged in LN2.

11. Press "ENTER"
The display will read "Remove Probe A from LN2". Remove the bypass sensor from the LN2.

12. Press "ENTER"
The display will read "Wait while probe warms to room temperature". Wait while the bypass sensor warms to room temperature and the controller counts down.

13. **Wait 180 seconds**

    After the controller counts down, the display will read "Place Probe A in ice water". Completely submerge the sensing end of the probe in the ice water bath.

14. **Press "ENTER"**

    The display will read "Wait for Temp A to stabilize". Wait for the displayed Temp A reading to stabilize while the probe is submerged in the ice bath.

15. **Press "ENTER"**

    The display will read "Bypass Probe two point calibration complete".

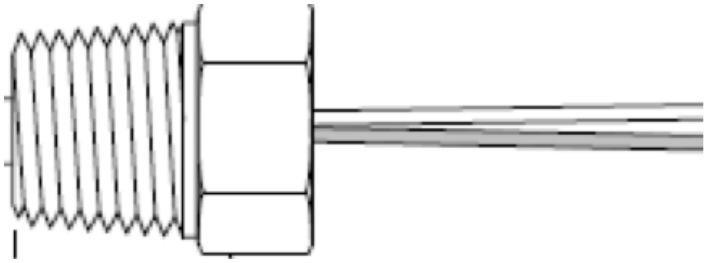
Below is the LN2 saturation table based on altitude for reference:

Altitude vs. LN2 Saturation Temp

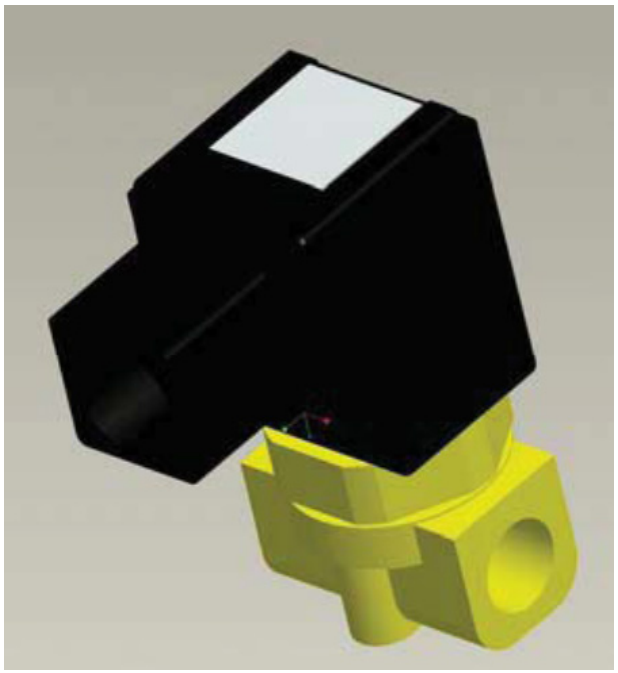
Altitude		LN2 Saturation Temp		
Feet	**Meters**	**°C**	**°F**	**K**
Sea Level - 500	Sea Level - 152	-195.8	-320.4	77.4
501 - 1,000	152 - 305	-196.0	-320.7	77.2
1,000 - 1,500	305 - 457	-196.2	-321.1	77.0
1,501 - 2,000	457 - 610	-196.4	-321.5	76.8
2,001 - 3,000	610 - 915	-196.6	-321.9	76.6
3,001 - 4,000	915 - 1,220	-196.9	-322.4	76.3
4,001 - 5,000	1,220 - 1,524	-197.2	-322.9	76.0
5,001 - 6,000	1,524 - 1,829	-197.5	-323.5	75.7
6,001 - 7,000	1,829 - 2,134	-197.8	-324.0	75.4
7,001 - 8,000	2,134 - 2,439	-198.1	-324.6	75.1
8,001 - 9,000	2,439 - 2,744	-198.4	-325.1	74.8
9,001 - 10,000	2,744 - 3,049	-198.7	-325.7	74.4

ACCESSORIES

Bypass sensor part number PN 10713400



Bypass solenoid part number PN 14224611S



Distributed by

PrincetonCryo.com
Cryogenic Delivery and Storage Systems

www.PrincetonCryo.com | Sales@PrincetonCryo.com | 800.232.2796