



MVE Tech Tips



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The following service documentation can be used either with or by your customers during routine service procedures on MVE Liquid Nitrogen Storage Freezers. The sheets provide both a checklist of required service functions and a GMP / validatable record that the service was correctly and completely carried out. In addition to this service plan, IQ/OQ/PQ documentation packages are now available for LN2 freezers.

Please contact Bruce Edel or Jim Bachman for details and prices.

Introduction

The purpose of this service guide is to provide documented evidence that the Chart BioMedical MVE Liquid Nitrogen freezer with TEC 2000 control system is correctly installed, performs and will continue to perform as intended throughout the operating ranges specified by the manufacturer.

Scope

The equipment to be serviced will be one of the following models:

- MVE 230 II, MVE 511, MVE 611, MVE 1411, MVE 1841
- MVE 810 Eterne, MVE 1520 Eterne, MVE 1830 Eterne
- MVE 810 HE, MVE 1520 HE, MVE 1830 HE

Model: _____ Serial Number: _____

Location: _____ Purpose: _____

Date: _____ Completed by: _____

Responsibilities:

Service Personnel:

Execution of Protocol

Provision of service schedule completion data for review by user / owner

Analysis and compilation of data into summary report

This protocol is to be executed only after installation of the freezer has been completed according to instructions found within the technical manual supplied with the system.

Procedure:

Service schedule will be completed by operating and observing the freezer system and any associated equipment. Observed data will be compared to performance requirements herein to certify correct function and results will be documented on the attached sheets for future reference and change control.

Date: _____ Completed by: _____

Ongoing performance qualification (PQ) is the responsibility of the owner.

Temperature Performance:

System	Temperature at top of rack	Temperature at liquid interface
230, 511, 611, 1411,1841	<= -125°C	>= -190°C
810 HE, 1520 HE, 1830HE	<= -150°C	>= -190°C
810 Eterne, 1520 Eterne 1830 Eterne	<= -190°C	>= -190°C

All temperatures are quoted within limit T +/- 3°C

Date: _____ Completed by: _____

Service Schedule:

1. Unit Location / Installation
2. Liquid Nitrogen Supply
3. Power (electricity) Supply
4. Controller Module
5. Supply Connection
6. TEC2000

Step	Description	Specification / Acceptance Criteria	Observed Result	
1	Unit Location / Installation			
		Is the unit visually free from damage	Yes	No
		Verify following documentation present		
		Operation Manual	Yes	No
		Quick User Guide	Yes	No
		Liquid Handling Safety Guide	Yes	No
		Technical Manual	Yes	No
		Verify following equipment present		
		Controller, Controller screws	Yes	No
		Controller post and post screws	Yes	No
		Transformer bracket, bracket screws	Yes	No
		Dipstick	Yes	No
		Transfer hose	Yes	No
		Transformer	Yes	No
		Is unit placed on flat, level ground	Yes	No
		Has minimum clearance of 2" on all sides been provided	Yes	No
		Has transfer hose been connected to supply	Yes	No
		Has a manual shutoff valve been installed between LN2 supply and freezer	Yes	No
		Is the power supply installed	Yes	No
		Is the TEC2000 installed	Yes	No
		Is the power supply connected to inlet power and to the TEC2000	Yes	No
		Is the pressure tube securely connected to the barb connector on the TEC2000	Yes	No
		Are Green connectors in place at the base of the TEC2000	Yes	No
		Is power present at the TEC2000	Yes	No
2	Supply (LN2)			
		Is the supply securely connected and isolated	Yes	No
		Is the pressure at the supply <30psig	Yes	No

		Is a relief valve present between supply and manual shut off	Yes	No
		Is the supply denoted as Liquid Nitrogen, 22psi	Yes	No
		Is the supply sufficient for fill	Yes	No
3	Supply Power			
		Describe electrical power		
		Required:		
		90 – 240 VAC		VAC
		47 – 63 Hz		Hz
		Single Phase		
		Verify Fuses Correct for Supply		
		Panel Number (Supply)		Panel #
		Circuit Number (Supply)		Circuit #
		Amperage of Circuit Breaker		Amps
4	Controller			
		After Power is connected, does initial display indicate "Diagnostics, Please wait"	Yes	No
		Does message clear and subsequently display "Diagnostics complete: System OK"	Yes	No
		Verify time and date to local	Yes	No
5	Supply Connection			
		Inspect Transfer Hose	Yes	No
		Outer Casing intact	Yes	No
		Indication of Leakage	Yes	No
		Broken Welds	Yes	No
		Inspect Freezer LN2 Plumbing		
		Soap Solution test shows no leaks	Yes	No
		Initiate fill – is plumbing downstream leak free	Yes	No
		Inspect Vinyl Tubing		
		Free from cracks and cuts	Yes	No
		Free from discoloration	Yes	No
		Routed away from freezer LN2 plumbing	Yes	No
		Treat with vinyl treatment (12 M)		
		Completed	Yes	No
		Inspect vinyl Tube Connections		
		Correctly engaged	Yes	No
		Leak free	Yes	No
		Any leaks found corrected	Yes	No
			Yes	No
			N/A	
6	TEC2000			
		Verify Level Readings		

		Manually Measure Tank level	Level Inches
		Comparison Reading on controller	Level Inches
		Levels Agree	Yes No
		If no, manually adjust	Yes No
		Corrected	Yes No
		Perform LN2 Temperature Cal.	
		Probe A cal completed	Yes No N/A
		Probe B cal completed	Yes No N/A
		Carry out High Temp alarm test	
		Probe A test completed	Yes No N/A
		Probe B test completed	Yes No N/A
		Remove Ice and Frost from Lid	
		Completed	Yes No
		Inspect all electrical connections	
		Electrical connections satisfactory	Yes No
		Inspect Cork for wear	
		Cork wear free	Yes No
		Verify output relay fuse intact	
		Fuse intact	Yes No
		Verify electrical output to solenoid	
		24VDC present	Yes No
		Verify resistance of fill valve coil	
		28ohm < R < 36ohm	Yes No
		Verify action of 3 way valve	
		Action correct	Yes No
		Verify voltage at 3 way valve coil	
		24 VDC present	Yes No
		If battery back up present	
		Backup operates when power interrupted	Yes No
		Verify battery output 12<V<16	Yes No
		Visual condition of batteries OK	Yes No
		Review historical LN2 Usage stats	
		No increase over review period	Yes No
		If yes recommend revac	Yes No

Service Schedule:

Date _____

Completed By _____

Replacement thermocouples for AI liquid level alarms

The two types of liquid level alarms that are distributed through Chart are the Thermolert and the Bat Alarm. The replacement probes for each are:

Part number	description	list price
11866441	probe-Bat alarm	\$116.00
11866416	probe for model 610 Thermolert	\$183.00

Data logger calibration and battery replacement

Chart now has the authority to replace the battery, reconfigure the software and calibrate the Planer data loggers. Additional information such as pricing and turn around time will be in next months Tech Tips.

Warranty change on freezer and aluminum parts.

As noted by recent e-mail announcements Chart has changed their warranty coverage policy on parts and workmanship from one year to two years. This includes the MVE Series freezers and all aluminum dewars. This also includes electronic parts such as TEC-2000 and Bio-Series controllers. All will continue to carry the 5 year vacuum warranty except vapor shippers, Doble models and Cryosystem dewars. These will remain at 3 years vacuum warranty.

Sales tip of the month courtesy of Pete McGee

A man is looking in the classified ads for a job. He notices an advertisement for a toothbrush salesman and figured that couldn't be such a bas job. So, he calls in, he goes in and they hire him. The next day, he heads out to a neighborhood to make some sales. Five hours later he comes home and says. "Man, I only sold one toothbrush. That's not enough."

So the next day he goes to a richer neighborhood, thinking maybe those people would buy more toothbrushes. He ends up selling two toothbrushes. So he goes to his boss for advice and his boss says "Look, you're a great guy and all, but you gotta come up with a gimmick or something."

So, the salesman thinks about it and, later that night, he finally comes up with one.

So the next day, he sets up a booth near the subway with a sign that says "Free chips and dip" A guy walks over and puts the chip in the dip and says, "This tastes like something you'd find in a garbage can."

And the salesman replied, "Yeah, it is. Wanna buy a toothbrush?"

Bio-Medical Customer and Technical Service

Customer Service	888 683-2796 toll free / 952 882-5000 Burnsville receptionists 800 232-9683 fax
Technical Service	952 641-6115 direct line 866 819-5897 toll free 612 382-6678 cell 800-232-9683 fax

For copies of past Tech Tips or for more information on maintaining your nitrogen storage dewars please contact Jim Bachman at (952) 641-6115, Fax (800) 232-9683.