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Cryogenic Delivery and Storage Systems

CHART

MVE Tech Tips

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OVERFILLING DEWARS

Some of our customers have expressed concern over experiencing sudden vacuum loss to a few of their dewars. These were returned to the factory and immediately leak checked. They were then revac'd and LN2 tested. The results of this investigation were; the vast majority of these vacuum losses were due mostly to an incorrect filling procedure (overfilling). This article will explain why it is imperative that careful filling protocol be followed. I am addressing the subject in this months Tech Tip to help explain why overfilling dewars during the charging process can be detrimental to the vacuum integrity of the aluminum dewar.

The purpose of the pumpout plug is two-fold. The main purpose (and most obvious) is to maintain the vacuum in the annular space of the dewar. As long as there is a vacuum, the pumpout plug will remain inserted into the pumpout body. The second purpose is to act as a pressure relief plug in the event of a catastrophic inner leak. If a leak develops to the inner section of the dewar, allowing liquid nitrogen to enter the annular space, this plug will fall out relieving any pressure build up. This pressure increase in the annular space is created when the liquid nitrogen evaporates into a gas and begins to expand. There are two o-rings that seal the plug to the pumpout body. These are coated with a vacuum grease film to ensure longevity. The pumpouts are then covered with a flexible composite cap to keep dirt and contaminates from affecting the o-rings.

The problem from overfilling occurs when LN2 comes in contact with the pumpout plug or body for an extended period of time. The extreme cold temperatures cause the o-rings to contract and harden. This can cause the o-rings to temporarily lose their sealing properties. This problematic scenario can occur on dewars from all manufacturers whereas all utilize the same o-ring design. The plastic cap will not prevent this from happening but will extend the time required for failure to begin. It is imperative that the pumpout remains covered. Although they may crack and fall off if nitrogen has been spilled on it, (a sign that improper filling has occurred), a new replacement cap should be applied to the pumpout immediately. They are inexpensive and MVE will supply replacement pumpout caps when so desired.

Years ago, MVE utilized a metal cap that adhered to the pumpout body. Although this kept dirt particles from affecting the o-rings, it did not relieve pressure adequately and became a liability issue. We had installed for a short while, a hard plastic cover that would relieve pressure but did not protect the plug from dirt. The design we currently use appears to be the safest and easiest method of protecting the o-rings without adding to the cost of the dewar. This appears to be the general design practiced throughout the industry although there are different styles depending on the manufacturer. This filling precaution is particularly important on vapor shippers where the window for failure recovery is shorter. Vapor shippers are usually warm when LN2 charging is required. Because of the smaller inner volume and the additional liner to be cooled down, the initial flash off is far greater then if the dewar was cold. It is due to this fact that the shippers usually require additional filling during the charging cycle.

Proper filling instructions are listed in the manuals provided with each MVE dewar, both liquid and vapor. If I can be of further assistance please contact me at 952 758-8520.
Sincerely,

Jim Bachman
Technical Service
Chart Bio-Medical Division

NEW REPAIR PROGRAM PRICING

ALUMINUM REPAIR PROGRAM

PLEASE NOTE THAT MVE WILL NOT DECONTAMNINATE ANY FREEZER ON RECEIPT. MVE WILL NOT ACCEPT DELIVERY OF ANY UNIT FOR WHICH A DECLARATION OF DECONTAMINATION HAS NOT BEEN RECEIRVED PRIOR TO SHIPMENT

LEVEL I **INSPECTION / SCRAP FEE** **$35**
- mass spec

LEVEL II **REVAC ONLY** **$175**
- inspection
- re-evacuation
- liquid test (NER)
- 1 year vacuum warranty
- 3 week turnaround

LEVEL III **COMPLETE REPAIR** **$250**
- inspection
- re-evacuation
- liquid test
- paint
- new labels
- new cork/cover
- one year vacuum warranty
- 4 week turnaround

LEVEL IV **NON-MVE MANUFACTURED DEWARS** **$250**
- inspection
- re-evacuation of vacuum space
- no warranty
- paint $75 additional

Remove canister and cork/cover before shipping. MVE cannot repair non-MVE vapor shippers.

NOTE: New Repair Program Pricing To Take Effect May 1, 2002.

STAINLESS XLC REPAIR PROGRAM

PLEASE NOTE THAT MVE WILL NOT DECONATMINATE ANY FREEZER ON RECEIPT. MVE WILL NOT ACCETP DELIVERY OF ANY UNIT FOR WHICH A DECLARATION OF DECONTAMINATION HAS NOT BEEN RECEIVED PRIOR TO SHIPMENT.

INSPECTION FEE / SCRAP FEE **$75**

LEVEL I **REVAC ONLY** **$450**

- test repair
- LN2 test
- Revac
- one year vacuum warranty

NOTE: There will be a $250 additional charge if cabinet has to be removed and reinstalled.

LEVEL II **COMPLETE REPAIR / COMETIC** **$700 NON CABINET**
$825 CABINET

- LN2 test
- Revac
- Mass spec
- RE LN2 test
- Buffing and cleaning
- one year vacuum warranty

NOTE: This does not include any electrical work or parts. Those items are additional.

LEVEL III **REPAIRS INVOLVING CUT APART**
XLC-511 AND SMALLER **$1000**
XLC-800 AND LARGER **$1800**

REPAIRS INVOLVING ELECTRONICS
COST OF PARTS PLUS **$100**

NOTE: New Repair Program Pricing To Take Effect May 1, 2002.

Any questions concerning your **XLC units** please contact **Gil Edwards** at 770 720-6714. E-mail gil.edwards@chart-ind.com

Questions concerning **aluminum dewars** can be directed to **Jim Bachman** at 952 758-8520. E-mail jim.bachman@chart-ind.com

REFURBISHED BIOLOGICAL UNITS

SALE PRICES - NO OTHER DISCOUNTS APPLICABLE
WARRANTY – 2 YEAR VACUUM
6 MONTHS CONTROLLER

REFURBISHED XLC UNITS IN STOCK AS OF 4/12/02

QTY	PN#	DESCRIPTION	SN#	SELLING PRICE
2	10491190R	XLC 500 F (ROUND CORNER CABINET)	CDRA96B106	$3,550.00
			JSA93J103	3,550.00
1	10763976R	XLC 500 F GB BB	CDRA96H127	4,055.00
1	10570761R	XLC 500 W/LL	JSA94E110	4,000.00
1	10504501R	XLC 1200FA	JUA94M102	6,500.00
1	10763888R	XLC 1200 F GB BB	CEPA98G103	7,028.00

ALUMINUM UNITS: IN STOCK AS OF 04/12/02

SALE PRICES - NO OTHER DISCOUNTS APPLICABLE
WARRANTY – 1 YEAR VACUUM

QTY	PN#	DESCRIPTION	SN#	SELLING PRICE
2	10854940R	RPL XC 35/12		612.50
1	10718067R	RPL CRYO SYSTEM 6000		1,634.00
2	11016649R	RPL XC 20/3V		643.00
4	991798R	RPLS SC 8/5		368.00
1	11005317R	RPL SC 20/12V		487.50
8	11082646R	RPL MILL XC 20		332.50
2	10854069R	RPL XC 14/2V		457.50
1	991853R	RPL XC 22/5		430.00
1	991807R	RPL LAB 5		210.00
1	991808R	RPL LAB 10		236.00

THE FOLLOWING UNITS ARE NEW, BUT CONSIDERED OBSOLETE OR OVER STOCK. ALL COME WITH A 3YR VACUUM WARRANTY

THE XC 35/5V IS A VAPOR SHIPPER, HOWEVER NO PROTECTIVE CARTON IS AVAILABLE.

6	11198761	XC 35/5V	737.50
7	11052674	CRYO SYSTEM 8	422.50
(like a Locator 8 w/cork & cover, no canisters or racks)			
2	10585911	CRYO SYSTEM 3600	550.00

For copies of past Tech Tips or for more information on maintaining your nitrogen storage dewars please contact Jim Bachman at (952) 882-5168, Pager (612) 579-8367, Fax (952) 882-5175.