-80°C @FV

-85°C, @BRDG

Scotsman
Flaker @BRDG

Ice-o-Matic
Flaker @ FV

-20C @FV

Cold Room
Walk-in 4C

-20 Refrigeration
BRDG

Chiller- @ BRDG
Bioprocessing

Marvel
5 cuft

Freezer Alarm
Sensor/Dialer@ BR

Bench
Minifridge
Boekel II

Refrigeration Freezers

Link to SERVICE/REPAIR INFO

Office Refrigerator at
BRDG

Cryogenic
LN2@ BRDG

Cryogenic
Dewar

Refrigeration
Crosley 15cft
@FV

Refrig/Freezer
27 cuft
Hotpoint @FV

Prepared by: Bob Morrison
Instrumentation Specialist

Initial version Oct 08, Last Revision Dec14 (Marvel)

Refrigeration: Service and Emergency Outage Plan

For all Refrigerators or Freezers except the Cold Room:

Ace Lab Systems 1550 S. Kingshighway St. Louis, MO 63110
Tel.: (314) 771-7272 Fax: (314) 771-6956
Email: Tammy tammyc@AceLabSystems.com (Nov 2010)

For Cold Room Service: (Nov 2010)

LOCAL SERVICE: Steve Diruscio, 636-305-9966,
Emergency Number: 314 -568- 2538 (Aug 2014)
Email: henry@diruscioassociates.com

Gases:
Airgas Mid America (Rowena)
Phone: (314) 533-3100 F: (314) 533-0901, Emerg:314-966-7313
Address: 3500 Bernard Street,St. Louis, MO 63103
www.airgas.com

Dry ICE:

Continental Carbonic, 8535 Scudder Rd
(near Airport/Kinlock)
St. Louis MO 63140-1000
Hank Hedges: 314-524-5888 (bus)
M-F 8am-4pm, NO WEEKENDs
636-288-0069 (mobil)
www.continentalcarbonic.com

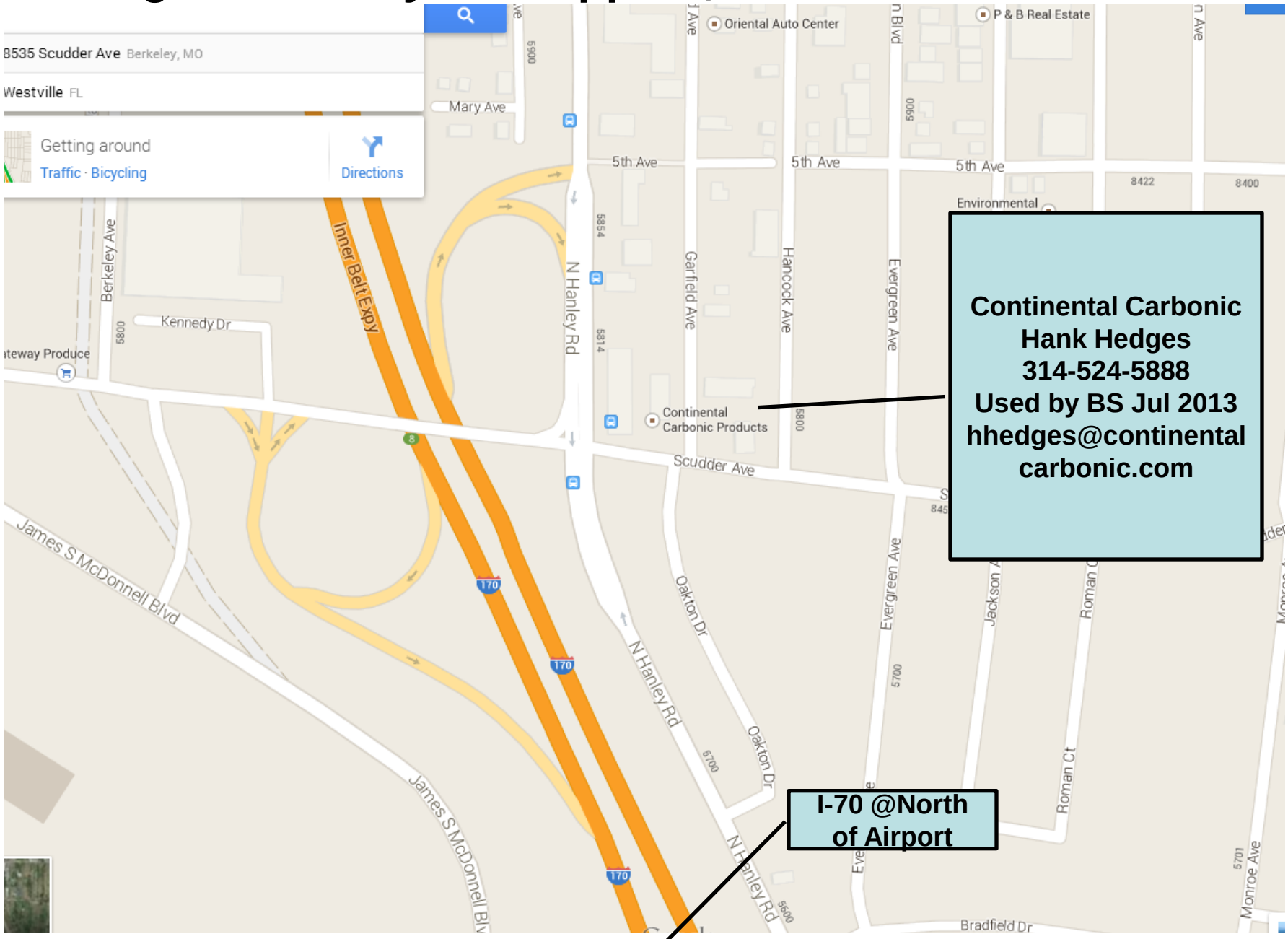
Arctic Ice Inc
1498 Kinark Drive, (< 1 mile from BRDG)
Saint Louis, MO 63132-1407
(314) 989-9090 8-5pm, Emerg till 9pm
arctic-icestl.com

-80 Freezer: Certain items labeled with "HIGH PRIORITY" must be maintained at or near this temperature. They should be transported to the FV -80 with dry ice ASAP.
Do not move any items to Liquid Nitrogen.

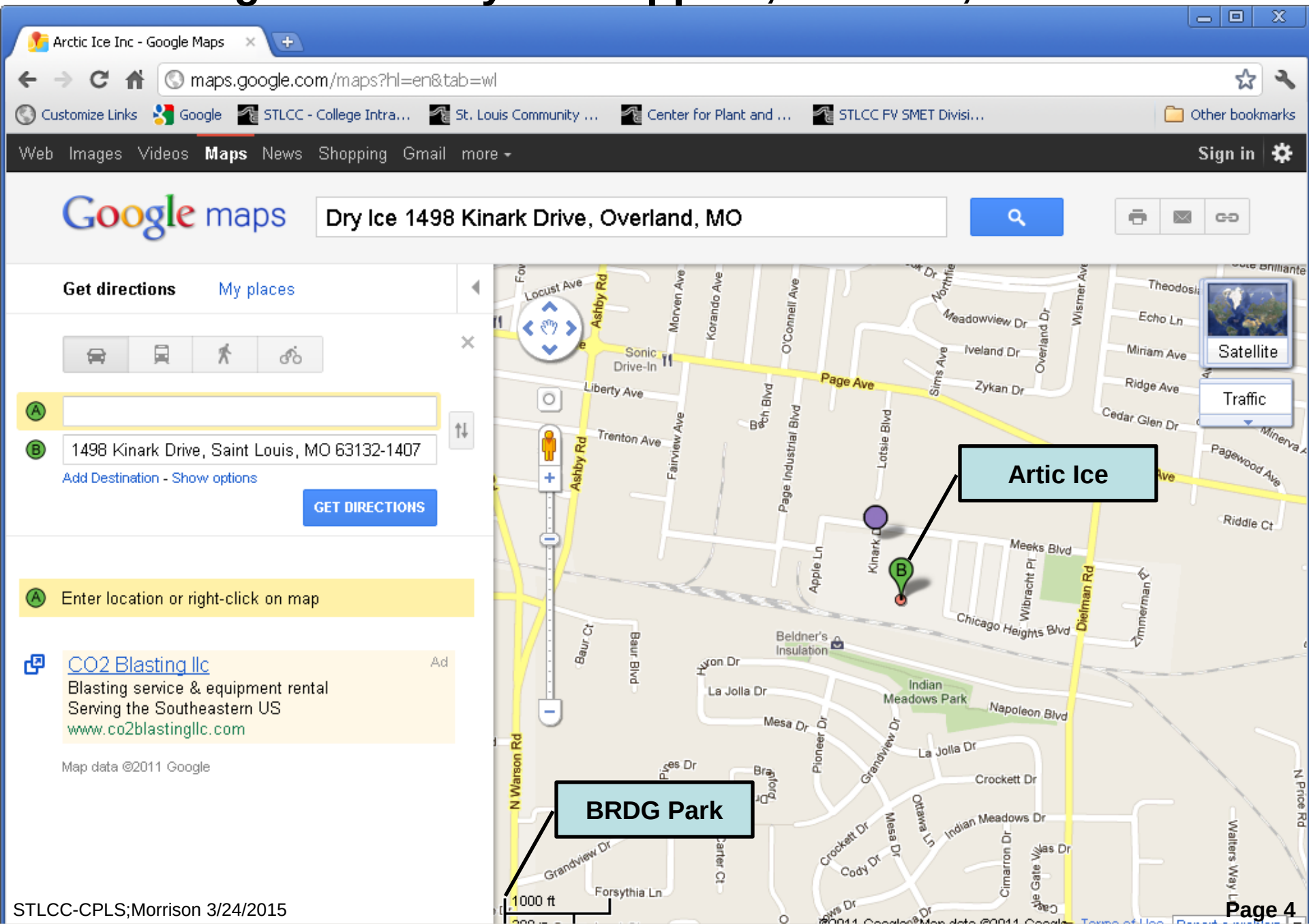
-20 Freezer: If another -20 is operating (CRO-20, R124 Lab -20, R127 Lab -20 , Depot -20), move items labeled "HIGH PRIORITY" to that location . When that space is used, take items to FV -20 freezer using dry ice.

Cold Room: Move "HIGH PRIORITY" items to other local refrigerators (CRO Refrigerator, Office, Low Temp Incubator) or incubators. If outage is extensive, move remaining items to FV Cold room with dry ice.

Refrigeration: Dry Ice Supplier, Continental Carbonic



Refrigeration: Dry Ice Supplier, Artic Ice, Overland



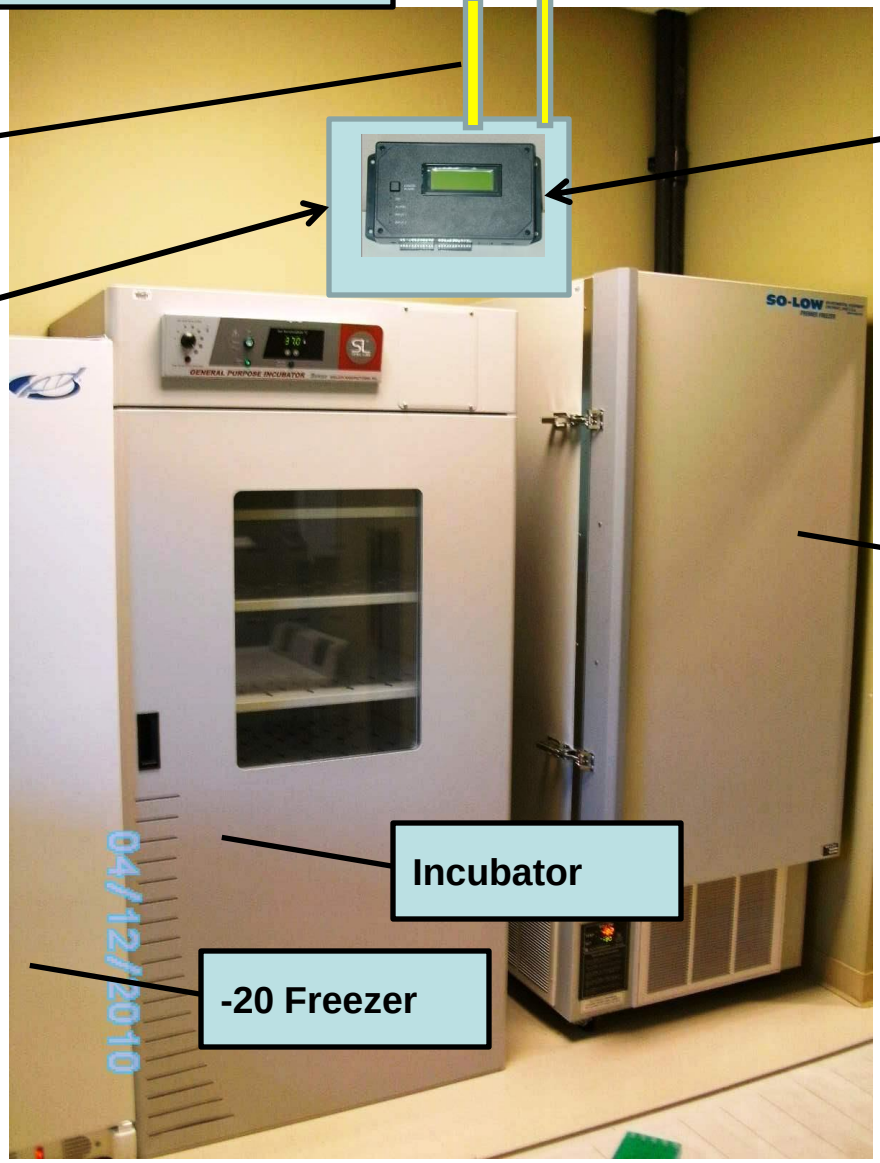
Lab Systems: Freezer Alarm Control Panel Wall Layout

Twisted pair Sensor Lines to:
- Cold Room sensor across hallway
- Minus 20 freezer in Instrumentation rm

New: Analog Phone Line
Ceiling drop connected to
IT/Phone closet

TIP #MITREC004
VM500-5 Alarm Dialer
Made by Omegaphone
Omega.com
Model: OMA-VM505

12" x 12" Alarm Control
Box mounted behind -80



-80 Freezer

Incubator

-20 Freezer

Power Adapter line to 110V

Lab Systems: Freezer Alarm; Control Panel

TIP Temp Pro d: #MITREC004
VM500-5 Alarm Dialer
Made by Omegaphone
Omega.com
Model: OMA-VM505

Notes:
1) **Requires ANALOG phone line, not digital.**
2) **Programmable by voice message text prompts after dialing into the control panel (see user manual).**
3) **To access dial 314-513-4988, enter PIN 0000.**

Connections for 1-8 RTD sensors 2 per

Connections for 1-2 Door open sensors

Ext alarm relay

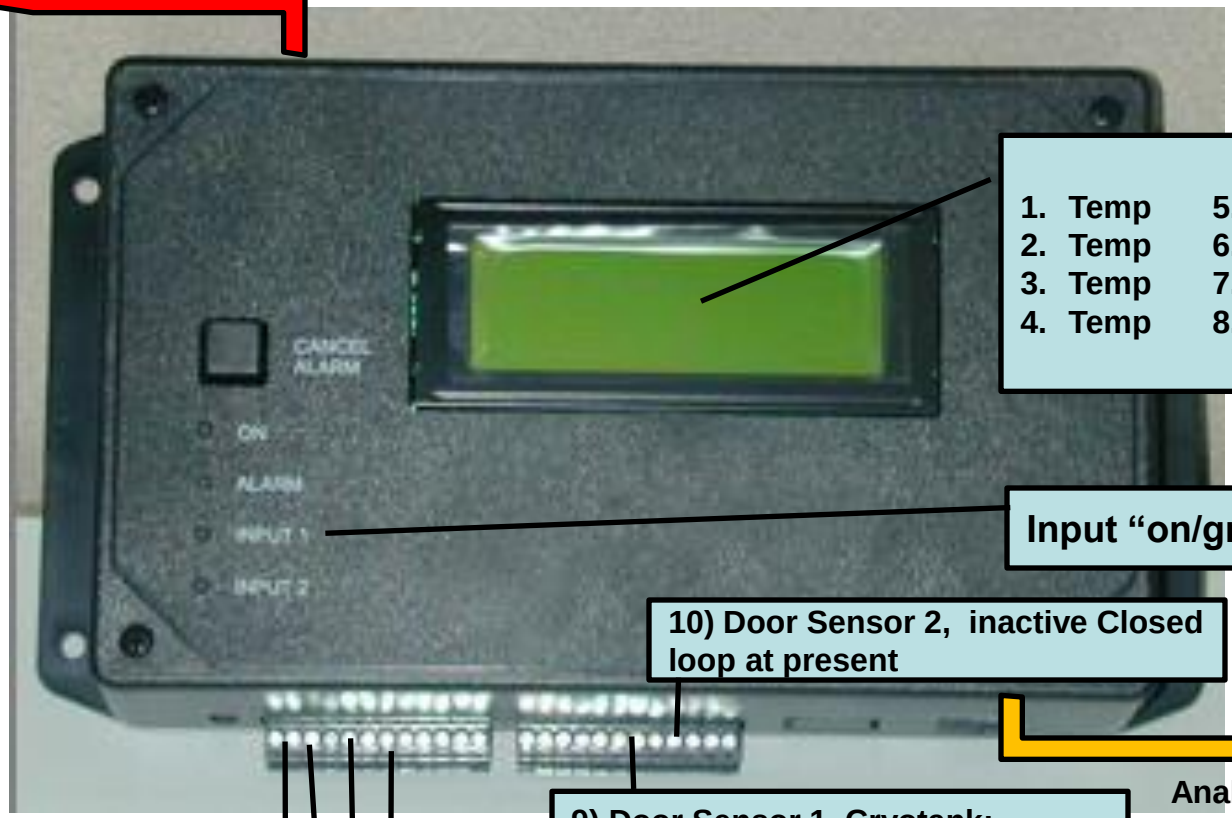
Analog Phone Line
Phone # 314-513-4988
Outside line: dial 8-then #
Added by ATT/ M. Petz 10/14/10
Analog line By Guarantee Elec 11/4/10
Moved to Shoretel: 3/31/11 by ATT (Ed)

Hotlink to Omega VM505-Alarm Dialer User Manual… pdf 25 pgs

Link to TIP Temp catalog: Tip Phone: 800-847-8367
http://www.tiptemp.com/Product.aspx?ProductID=633

Lab Systems: Freezer Alarm; Control Panel Sensor Connections and Settings

Power Adapter line to 110V



1. Temp	5. Temp	SNR # displayed
2. Temp	6. Temp	High on Sensor #
3. Temp	7. Temp	Low on Sensor #
4. Temp	8. Temp	Time Sensor on Alarm

Input “on/green” , Door Sensor enabled

10) Door Sensor 2, inactive Closed loop at present

9) Door Sensor 1, Cryotank; R126C, Remote alarm triggered

4) -20 CRO; R126B, L=-30C, H=-10C

3) Coldroom; R126A, L=0C, H=10C

2) -20; R126D, L=-30C, H=-10C

1) -80; R126D, L=-90C, H=-60C

Corrected sensor from -67 (output) t o -77 (actual) on 6/7/11 RGM

Analog Phone Line
Phone number: 314-513-4988
Added by ATT/ M. Petz 10/14/10
Analog line By Guarantee Elec 11/4/10
Fix Dialtones: ATT 11/9/10
Implemented: 11/10/10 RGM.
Moved to ShoreTel and tested 3/31/11 RGM

Lab Systems: Freezer Alarm; Monitor/Set , Access from Any Phone

CHECK STATUS:

1) Dial 314-513-4988, wait for 4-5 rings for Monitor to Answer

2) Enter PIN "0000", note from digital phones at STLCC enter each digit slowly, you may even have to enter five zeros vs. four.

3) Listen to options for Status or setting limits

4) Press "1" for Status, wait for message to Enter Sensor Number

5) Enter the number before the parenthesis below to access the sensors. For instance, enter "3" on your phone to get a status report of the Cold Room.

6) Enter "0" to exit and end the phone call.

SET LIMITS:

1) Dial as above, enter PIN, listen for prompts

2) Enter "2" to set Limits, system will respond with "Enter Sensor "

3) Enter 1,2,3,4 for appropriate sensor as shown in boxes below

4) System will respond with "Current message is….."

5) Enter "1" to change, wait for tone, record short message, wait for system

6) System will continue thru all options, Enter 1 to change, Enter 2 to skip without changes, Enter 0 to stop setting for this sensor

7) Note: Due to digital/analog issues, you may have to enter extra digits or enter some values twice including PIN as 00000 vs. 0000.

8) Note on Negative Values: Enter asterisk "*" before number for negative values

TURN OFF CRYO or Door Open Circuits

1) Dial as above, enter PIN, listen for prompts

2) Press "2" to set Limits, system will respond "Enter Sensor ".

3) Press "9" for Cryo sensor (door 1)

4) System will respond "Door 1 time delay is xx minutes"

5) Press "1" to change limits or any other key to exit

6) System will respond " Enter number (delay minutes) then press #

7) Enter any value (0 to 999). Note an entry of "0" will disable this door sensor

8) System will respond with entered value and return to set limits menu

***) Door Sensor 2, inactive Closed loop at present**

9) Door Sensor 1, Cryotank; R126C, Remote alarm triggered

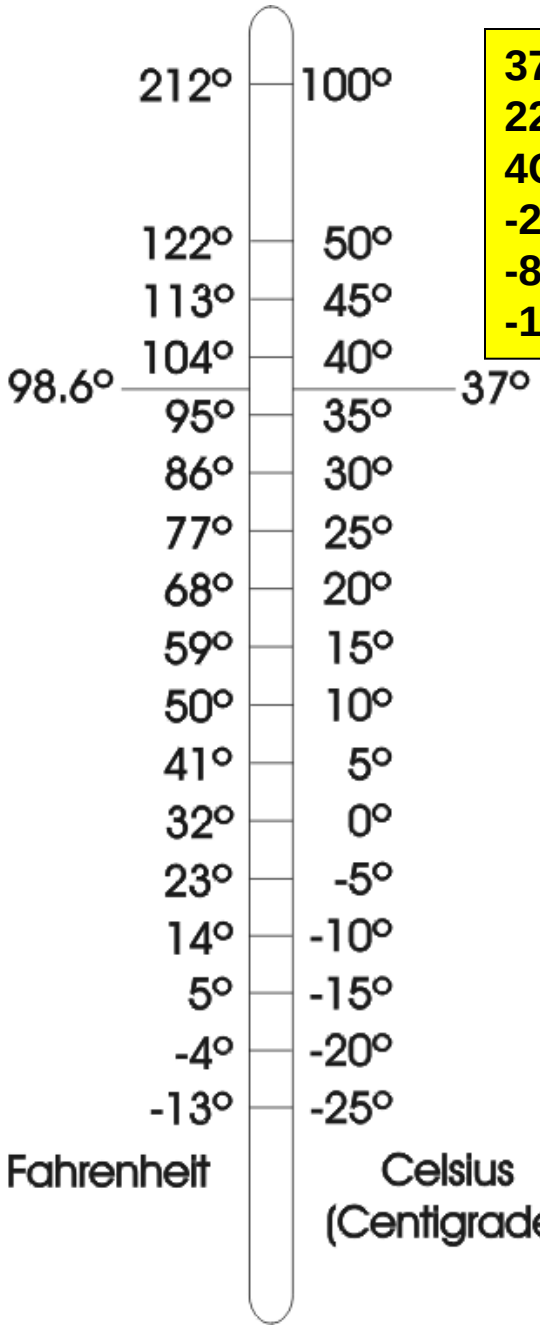
4) -20 CRO; R126B, L=-30C, H=-10C

3) Coldroom; R126A, L=0C, H=10

2) -20; R126D, L=-30C, H=-10C

1) -80; R126D, L=-90C, H=-60C

Refrigeration: Temp Conversion Chart



37 C = 98.6 F human body
22 C ~ office temp
4C = 39F home refrigerator
-20C = - 4F home freezer
-80C = - 112F DNA temp
-132C = - 207F Cryo storage

Refrigeration: -85C, ArcticTemp, BRDG R126, 13cuft

Catalog # V85-13

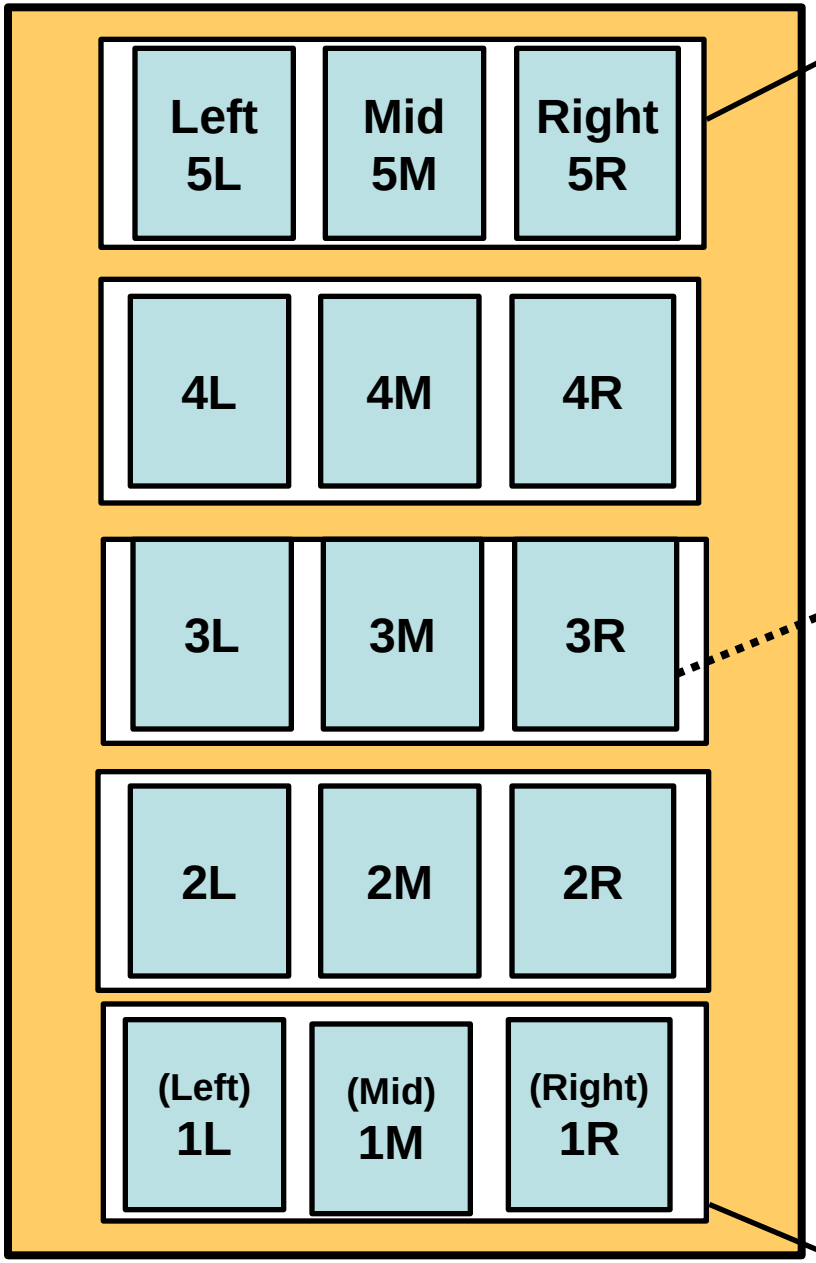
Interior Dimensions (	W x F-B x H) E	xterior Dimensions (W x F-B x H)
	20" x 22" x 51-1/4	35" x 33" x 79"
Drawer size:	**20” x 22” x 10”**	

- **Features:**

- Compressor life is extended by an energy-saving low stage (operates only on demand).
- Compressors are protected with a constant flow of refrigerant.
- Heat is efficiently and effectively dissipated by an air-cooled condenser with three fans.
- Monitoring light to warn of clogged condenser.
- Refrigeration has an automatic timer system that will restart the unit in case of power failure.
- Large air-cooled condenser with front to back air flow resulting in cooler compressors.
- Special hinged grill for easy opening provides for a quick visual check of the condenser.
- CFC-Free DuPont Suva 95 Refrigerant.

ArcticTemp -85°C Ultra Low Freezer

Refrigeration: -80 Storage Map, Log Book



Drawer 5

Drawer: 19.5” W x 9” H x 22” Deep

Rack ID: 3R Top

Back

A4	B4	C4	D4
A3	B3	C3	D3
A2	B2	C2	D2
A1	B1	C1	D1

Front

Rack ID: 3R Bottom

Drawer 1

Refrigeration: -20/-80 Freezer Log Book Guidelines

- **Status Information:**
  - **4/3/12; Divider tabs are on order (BobM)**

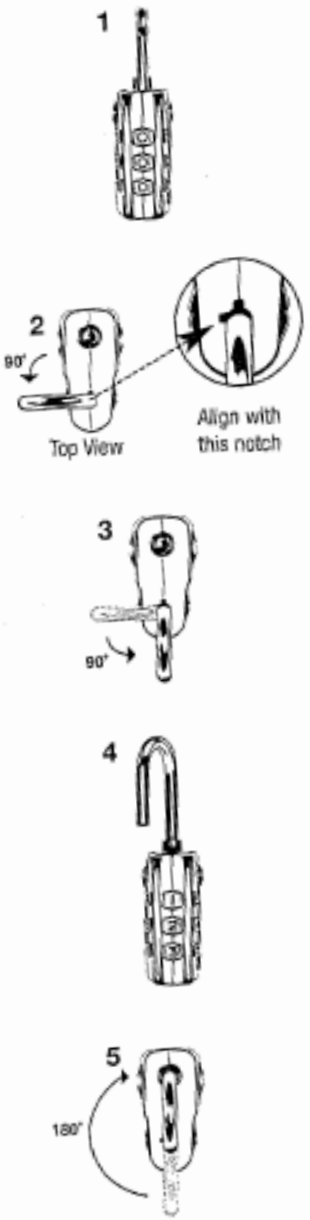
- **Guidelines**
  - **Using the map of freezer, determine the RACK ID associated with the storage location you are using**
  - **Behind the tab for each RACK ID, fill in a summary level description for each box added or changed in the rack.**
  - **To document detailed contents of a box, use the blank BOX ID forms to enter description and notes for each box well/location**
  - ***An Excel version of the Blank forms for the RACK ID and Box contents is located on the Imager/Nano PC in a folder named: Refrigeration***

Refrigeration: -80, Inventory, Box Detail Form

BOX DRAWER _____ (ex: D3R); RACK _____ (ex: A4) ; DESCRIPTION _____

Tube ID	Description/Notes/Ownership/Dates
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	

Refrigeration: -80, Combo Lock Reset



Master Lock

RESETTABLE COMBINATION LOCK

Transportation Security Administration (TSA) baggage screeners are trained to recognize the Travel Sentry™ logo on TSA – accepted locks. They have access to a secured set of codes and tools which allow them to open, inspect and relock baggage which is locked with a TSA – accepted lock.

Your new lock is preset at the factory to unlock at 0-0-0. Make sure you are able to open and close the lock prior to setting your own combination. Carefully follow each step to ensure proper setting procedures.

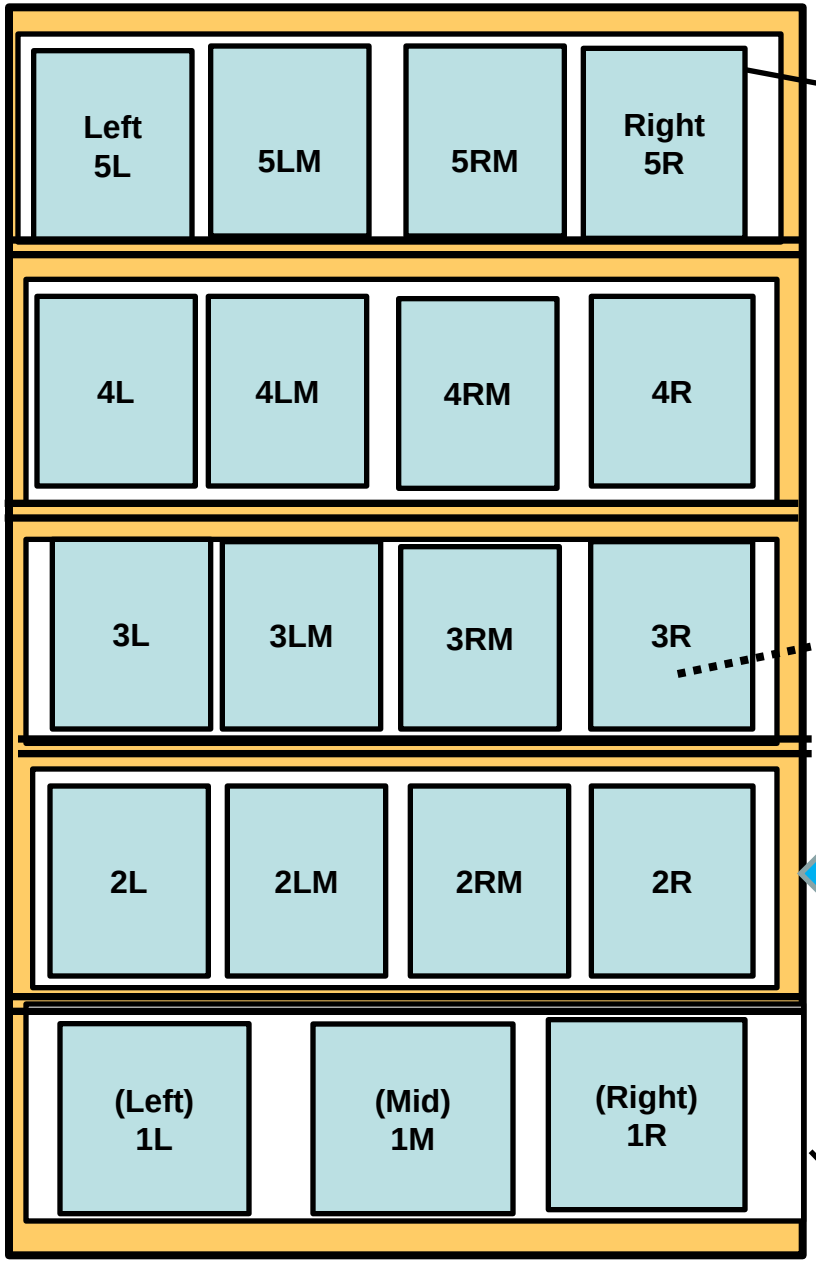
1. Adjust dials so the preset factory combination of 0-0-0 appears clearly in the "windows".
2. Pull shackle straight up and rotate it 90° counter clockwise so the notch on the shackle aligns with the notch in the lock body.
3. Firmly press shackle down into the body of the lock and rotate it counter clockwise an additional 90°. The shackle should be pushed securely inside the body of the lock so it will not come out.
4. Set the 3 dials to any combination you choose. Make sure each number appears clearly in the window. Record your combination – once the lock is set, there is no way to open it without the combination.
5. Rotate the shackle 180° clockwise. The lock is now ready to be used with your new combination. To change the combination again, repeat steps 1-5.

Refrigeration: -20, BRDG R126, VWR, 20cuft

VWR Manual Defrost Upright -20C Freezer. 20 Cubic Feet

115V, 4 Fixed Shelves.
Exterior Dim: 32In W X 29In D X 70In H
Usable Interior Dim: 27In W X 18In D X 57In H.
Shipping Weight 335Lbs. Leveling Legs. 770 Btu/Hr

Refrigeration: -20 Storage Map, Log Book



Drawer/Shelf 5

Drawer: 19 Deep x 9" H x 27" Wide

Rack 3R Top

Back

A4	B4	C4
A3	B3	C3
A2	B2	C2
A1	B1	C1

Front

Drawer 1

Rack 3R Bottom

Refrigeration: -20/-80 Freezer Log Book Guidelines

- **Status Information:**
  - **4/3/12; Divider tabs are on order (BobM)**

- **Guidelines**
  - **Using the map of freezer, determine the RACK ID associated with the storage location you are using**
  - **Behind the tab for each RACK ID, fill in a summary level description for each box added or changed in the rack.**
  - **To document detailed contents of a box, use the blank BOX ID forms to enter description and notes for each box well/location**
  - ***An Excel version of the Blank forms for the RACK ID and Box contents is located on the Imager/Nano PC in a folder named: Refrigeration***

Refrigeration: -20, Inventory Box Detail Form

BOX DRAWER _____ (ex: D3R); RACK _____ (ex: A4) ; DESCRIPTION _____

Tube ID	Description/Notes/Ownership/Dates
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	

Refrigeration: Freezer Racks, Stainless,

-80 Drawers: 22" Depth x 10" H x 19.5 Wide
-20 Shelves: 19" Depth x 10" H x 27" Wide

Fisher Sci: Upright Freezer Racks for 2 in. Boxes
Depth x Height x Width

16.5 x 6.7 x 5.4 in. (41.9 x 17 x 13.7cm) 9 (3 x 3 array) 03-395-479 Each for $82.28

16.5 x 9.4 x 5.4 in. (41.9 x 23.9 x 13.7cm) 12 (3 x 4 array) 03-395-493 Each for $78.60 for -20 shelves, 4 each

16.5 x 10.9 x 5.5 in. (41.9 x 27.7 x 13.9cm) 15 (3 x 5 array) 03-395-480 Each for $98.34
22.1 x 6.7 x 5.5 in. (56.1 x 17 x 13.7cm) 12 (4 x 3 array) 03-395-481 Each for $85.78

22.1 x 9.4 x 5.4 in. (56.1 x 23.9 x 13.7cm) 16 (4 x 4 array) 03-395-494 Each for $110.32 for -80 drawers, 3 each

21.1 x 10.9 x 5.5 in. (56.1 x 27.7 x 13.9cm) 20 (4 x 5 array) 03-395-482 Each for $135.09
21.1 x 12.7 x 5.5 in. (56.1 x 32.3 x 13.5cm) 24 (4 x 6 array) 03-395-483 Each for $249.75
26.8 x 9.4 x 5.3 in. (68.1 x 23.9 x 13.5cm) 20 (5 x 4 array) 03-395-466 Each for $188.58

MIDSCI: Upright Freezer Drawer Rack, Rack only, Fits 2in.Boxes,

4 Boxes High x 4 Boxes Deep UFD-442 , UFD-442-W-XX with white dividers
Upright Freezer Drawer Rack, Rack only, Fits 2in.Boxes, 4 Boxes High x 4 Boxes Deep $227.10 (quoted 10/11 at $90)
UFD-332 3x3
UFD-332-W-XX with white divders

Refrigeration: -20C; FV, ArcticTemp, 20cuft.

ArcticTemp -20°C Upright Manual Defrost Freezer

Specifications	ATF16	ATF20	ATF-5
Capacity (Cu. Ft.)	16.0	20.1	4.7
Defrost	Manual	Manual	Manual
Shelves	3	4	3
Lower Storage Gate	Yes	Yes	No - Has Basket
Lock	No	Yes	No
Magnetic Door Gasket	Yes	Yes	Yes
Adjustable Temp. Control	Yes	Yes	Yes
Door Racks	5	6	3
Automatic Interior Light	Yes	Yes	Yes
Finish	White	White	White
Length - Left To Right	30"	33"	25.3"
Height	61"	67"	33.5"
Depth - Excluding Handles	30.3"	30.3"	21.8"
Net. Weight (lbs.)	162	191	72

Refrigerator: BRDG R124, Marvel , ~8 cuft, Bench/Floor

Brand Name	Marvel Scientific
Part Number	8CRF7103
Number of Items	1
Capacity	227 liters
Color Name	White
Current Rating	3.3 Amps
EAN	0768388047139
Inside Depth	20.25 inches
Inside Height	28.5 inches

Inside Width	28 inches
Item Depth	24 inches
Operating Frequency	60 Hz
Size Name	With Door Lock, Door Type Solid, Door Hinge Left, Door Color White, Cabinet Color White
Temperature Range	33/45 Degrees Celsius
UNSPSC Code	41103006
UPC	768388047139
Voltage	115 Volts

Temp setting dial

Refrigeration: Hasp Lock Signage (FV example)

Refrigeration: Cold Room, BRDG, Nor-Lake Scientific,

Nor-Lake Model: M18966 SN: 09091321, W28707
Control Panel Model CP7L, SN 09-05196
LOCAL SERVICE: Steve Diruscio, 636-305-9966,
personal cell #: 314-568-2538

Emergency Number Steve: 314-568-2538 (Aug 2014)
Email: henry@diruscioassociates.com

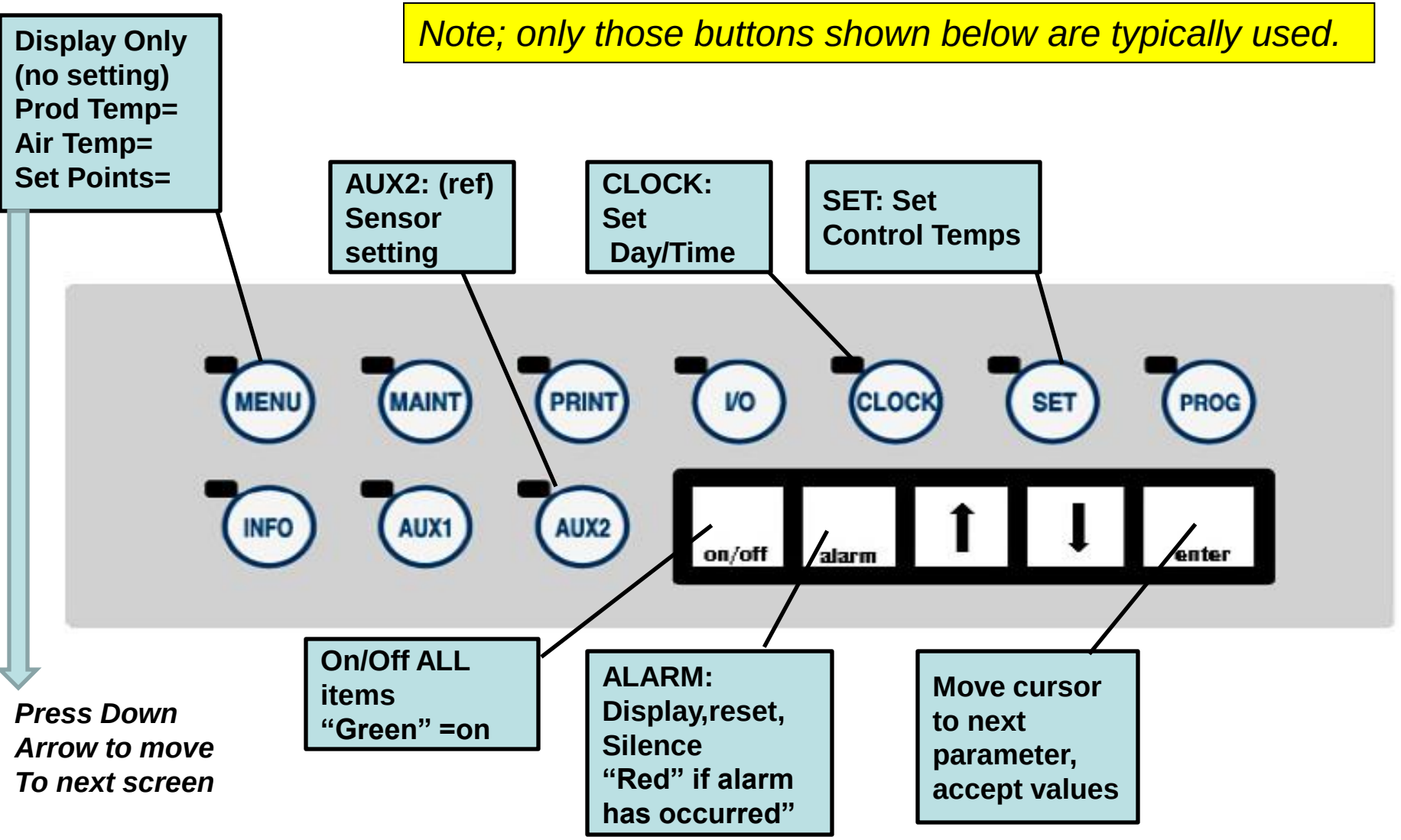
NOR-LAKE SCIENTIFIC, www.norlake.com
727 Second Street
P.O. Box 248
Hudson, Wisconsin 54016
800-477-5253
715-386-2323
866-961-5253 Parts
800-388-5253 Service: Jeff Kobilika
715-386-4290 FAX

Hotlink to Nor-Lake Spec Sheet

Replace paper wheel monthly. Instructions on inside door. Press “3” wait for pen to move, replace paper wheel, press “3” again. Align wheel with mark at 3pm position

Refrigeration: Cold Room, BRDG, Control Panel, Buttons

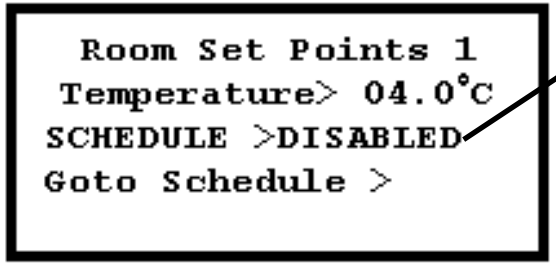
Note; only those buttons shown below are typically used.



Hotlink to NorLake CP7L Control Panel Manual.. pdf

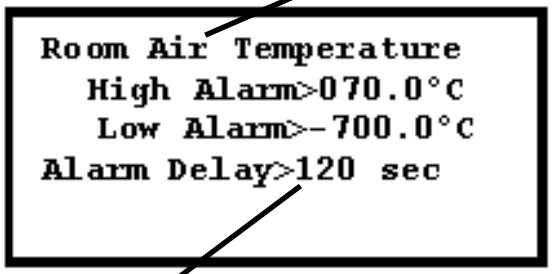
Refrigeration: Cold Room, BRDG, Control Panel, SET Mode

Use these screens for ALARM conditions to set Product Temperature above the Current reading and thus restart the cooling system. See next slide on ALARMS.



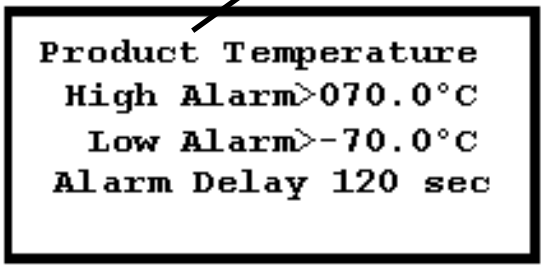
DISABLED: Normal mode, no ramped temp schedule is being used at BRDG

Press Down Arrow to move To next screen



AIR TEMP: Press ENTER to change values using up/down arrows, Press ENTER again to save new values.

ALARM DELAY: Wait time before alarm sounds; helpful when door is opened



PRODUCT TEMP: Press ENTER to change values using up/down arrows, Press ENTER again to save new values.

Refrigeration: Cold Room, BRDG, Alarms

1. During normal operations, if an alarm occurs, the Alarm button will glow RED and an audible alarm will sound.
   - Press ALARM button once to silence the alarm
   - Press again to bring up successive screens, continue until “NO MORE ALARMS”
   - If alarm sounds persist, open the upper cabinet and toggle the two switches or remove the two lower door panel screws, open small door, remove/reattach the phone-like line.

2. The Air Temperature alarm provides early warning that perhaps the door has been left open too long. Press ALARM button to silence after investigating the issue.

3. The Product Temperature alarm will **SHUT DOWN THE SYSTEM** for safety of system components.
   - **To restart the system you MUST set the High Product Alarm temperature ABOVE the current temperature reading.**
   - Press the SET key and **follow the instructions on the previous slide** to move to the Product temperature menu, raise the set point above the current reading, then press ENTER and return to the main menu.
   - You should hear a “click” in the panel above as a switch is reset to start the cooling compressor, fans, and lights.
   - After the normal temperature setting has been reached, use the menus on the previous slide to restore original Upper and Lower temperature sett points.
   - If the Alarms continue, call service/repair numbers on the first page of the instructions.

Refrigeration: Cold Room, Fuses in Upper Panel

9/24/13; Shutdown cause was blown fuse 10A 250V sloblo in upper control panel (accessible from lower panel, remove screws). Testing components on this circuit did not yield root cause for blowing fuse.

DiRUSCIO & ASSOCIATES, INC.
2141 South Old Highway 141
Fenton, MO 63026-5941
Phone: 636-305-9966
Fax: 636-305-9977

P.O. # ____________

SERVICE ORDER

☐ SERVICE ☐ INSTALL | ☐ PICK UP ☐ DELIVER | REPAIR IN: ☐ LAB ☐ SHOP | DATE OF ORDER | NO. 8905

NAME: Bob Morrison 314 | PHONE: 971 3785
COMPANY: St. Louis Community | DEPT. College | ROOM NO.
ADDRESS: 1005 N Warson
CITY: St. Louis MO 63132
MAKE: Nobke | MODEL: M1896L | SERIAL NO: 09091321
REQUESTED BY: W28707

NATURE OF SERVICE REQUEST: Not Cooling

QTY.	PART NO.	DESCRIPTION	UNIT PRICE	AMOUNT
1		Fuse		5 —

SERVICE PERFORMED: Checked. Fuse Blown, Replace Fuse, Test OK

TOTAL MATERIAL	5 —
TAX	
TECHNICAL SERVICE TIME 1 HRS. @ $115 PER HR.	115 —
TRAVEL TIME 1 HRS. @ $85 PER HR.	85 —
FREIGHT	
SURCHARGE	
TOTAL	205.00

TIME COMPLETED → 12:02 | DATE COMPLETED → 9/24/2013

I hereby accept above performed service and charges, as being satisfactory and acknowledge that equipment has been left in good condition.

Technician ________ Customer's Signature ________

GUARANTEE: We are pleased to guarantee all parts installed by us against normal service failure for a period of days.

Refrigeration: Cold Room Fuse Repair Oct 2013

DiRuscio & Associates, Inc.
2141 South Old Highway 141
Fenton, MO 63026-5941
(636) 305-9966
(636) 305-9977 Fax

Invoice

Customer Number	Date	Invoice Number
STL COM COLG	10/7/2013	000020802

Bill To:

ST LOUIS COMMUNITY COLLEGE
c/o ACCOUNTS PAYABLE
1005 N WARSON
St. Louis, MO 63132
(314) 971-3795

Ship To:

ST LOUIS COMMUNITY COLLEGE
c/o BOB MORRISON
1005 N WARSON
St. Louis, MO 63132
(314) 971-3795

Ship Via	Terms	Due Date	Salesperson	Customer PO	Original Order Number
	Net 30	10/7/2013	00 SVC	BOB MORRISON	

Item No	Qty	B/O	Ship	Description	Tax	Sales Price	Disc	Total
SV MISC ITEM	1	0	1	FUSE	Yes	5.00	0%	5.00
SV ON SITE LABOR	1	0	1	ON SITE LABOR - NORLAKE M18966, S/N # 09091321, W28707	No	115.00	0%	115.00
SV TRAVEL	1	0	1	TRAVEL - Service Order # 8905	No	85.00	0%	85.00

Total Item Count = 3, Total Items Shipped = 3

Refrigeration: Cold Room, BRDG, Maintenance of Condenser

VERY IMPORTANT:

- **Clean this monthly.**
- **The cold room condenser and compressor is located off the north end of the dock.**
- **The thin “radiator-like” panel must be clear of debris or the unit may shut down, particularly in Spring and Summer months.**

Refrigeration; Woods, Upright, -20C, @ FV

Woods Upright Freezer
34” W x 34” D x 65” H

Refrigeration: Refrigerator; FV, Hotpoint, 27 cu ft.

Hotpoint (currently in SM235 Prep next to Cold Room)
STLCC ID = 3-54595

28” W x 31” D x 62” H

Refrigerator on Top, rh door

Refrigeration section below, pull down door

Refrigeration: Refrigerator; FV, Crosley 15cuft, CT15A2

CROSLEY CT15A2A Refrigerator

Model Number: CT15A2A

28” W x 31” D x 62” H

Style: Top Refrigeration w/o Ice thru door
Brand: CROSLEY
Defrost: Automatic
Manufacturer: MAYTAG
Built-in Ice Maker: No
Access Type: Door

Capacity and Size Measures

Fresh Food Volume: 10.79 (cu. ft.) Height: 60 (inches)

Refrigeration Volume: 4.17 (cu. ft.) Width: 28 (inches)

Total Volume: 14.96 (cu. ft.) Depth: 29 (inches)

Refrigeration: Bench, MiniFridge II - Boekel

On/Off toggle key

Set and ^ arrow keys: Hold Set key down, use arrow key to adjust.

Use Temp Probe (IR) To check cavity temperatures

Link to How it works Thermoelectric cooling Peltier Effect at Wikipedia

These units are ideal for maintaining the 14°C used in ligation reactions or 17°C for storing oocytes, cooling blood samples prior to coagulation testing or storing samples from ambient to 4°C. Features of both units include press-to-set microprocessor controller and large, easy-to-read LCD. Peltier cooling uses no compressors or CFCs. Watertight well functions as a small refrigerated bath. MiniFridge II (pictured) is supplied with standard block (2 x 3 x 3 3/4 in.) that accommodates small beakers, flasks and microplate block modules. Includes domed plastic lid.
Chamber Dim. [W x D x H] in. (cm): 6 1/4 x 3 3/4 x 2 1/4 (15.4 x 9.7 x 5.7)
Temperature Range (°C): 4°C to ambient.
Overall Dimensions [W x D x H] in. (cm): 9.75 x 11.75 x 7.25 (24.8 x 28.6 x 18.4).
Ship. Wt lbs (kg): 10 (4.5).
Electrical: 115V, 50/60 Hz, 100W.

Refrigeration: BRDG Refrigerator, Office area

GE® ENERGY STAR® 25.4 Cu. Ft. Side-By-Side Refrigerator with Dispenser
Model #: GSHL5KGXLS (GSHLKGXECLS)
APPROXIMATE DIMENSIONS (WxHxD)
35 3/4 in x 69 1/2 in x 35 in

MWF Water Filtration Cartridge (See next Slide for Ordering Info)

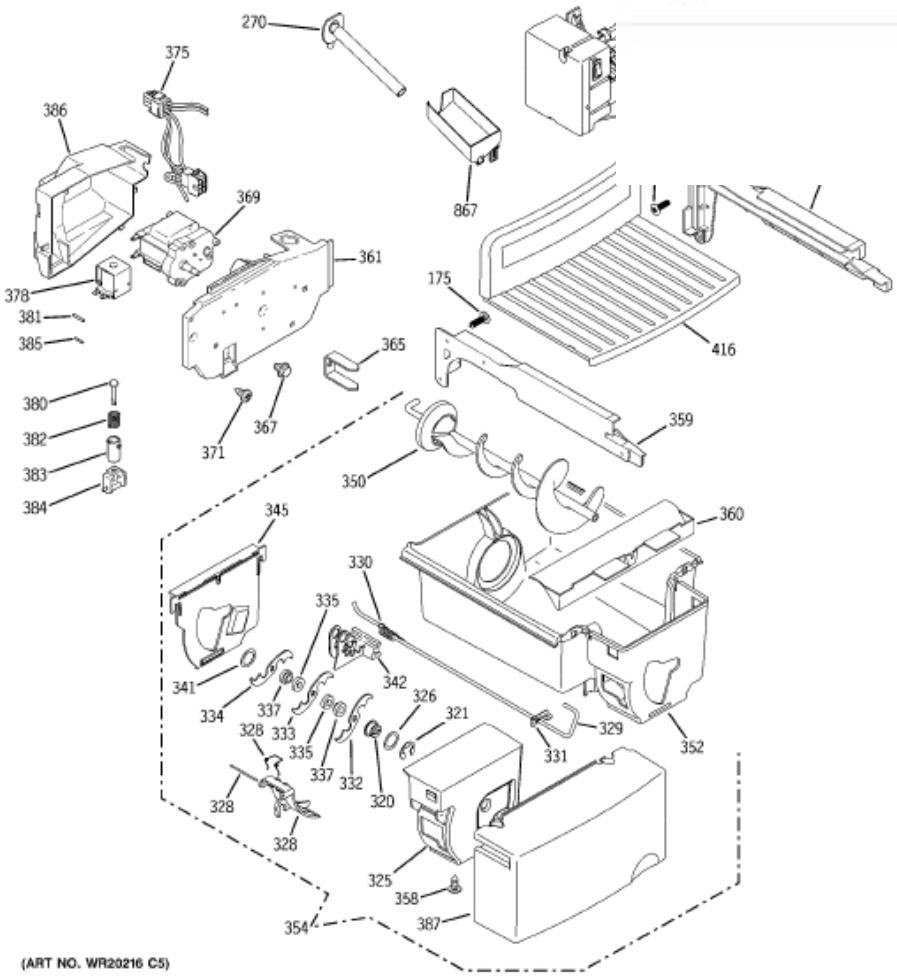
GE - SmartWater Replacement Water Filter for GE Refrigerators
Best Buy 9/13/11 Reorder per AT.
Model: *MWF|* ***SKU:*** *7219137*

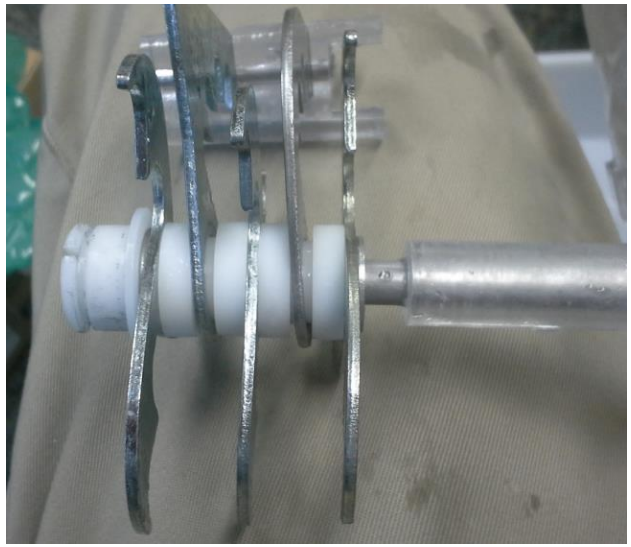
Refrigeration: Office, BRDG, GE 25 cuft , Ice Maker Parts

Order Review

Item	Quantity	Unit Price	Total
Refrigerator ice maker auger assembly WR17X11939	1	$62.75	$62.75

Shipping Costs	$5.95
Tax	$5.57
Final Total	**$74.27**





Refrigeration: Office, Order Water Filters at Best Buy

MWF Water Filtration Cartridge

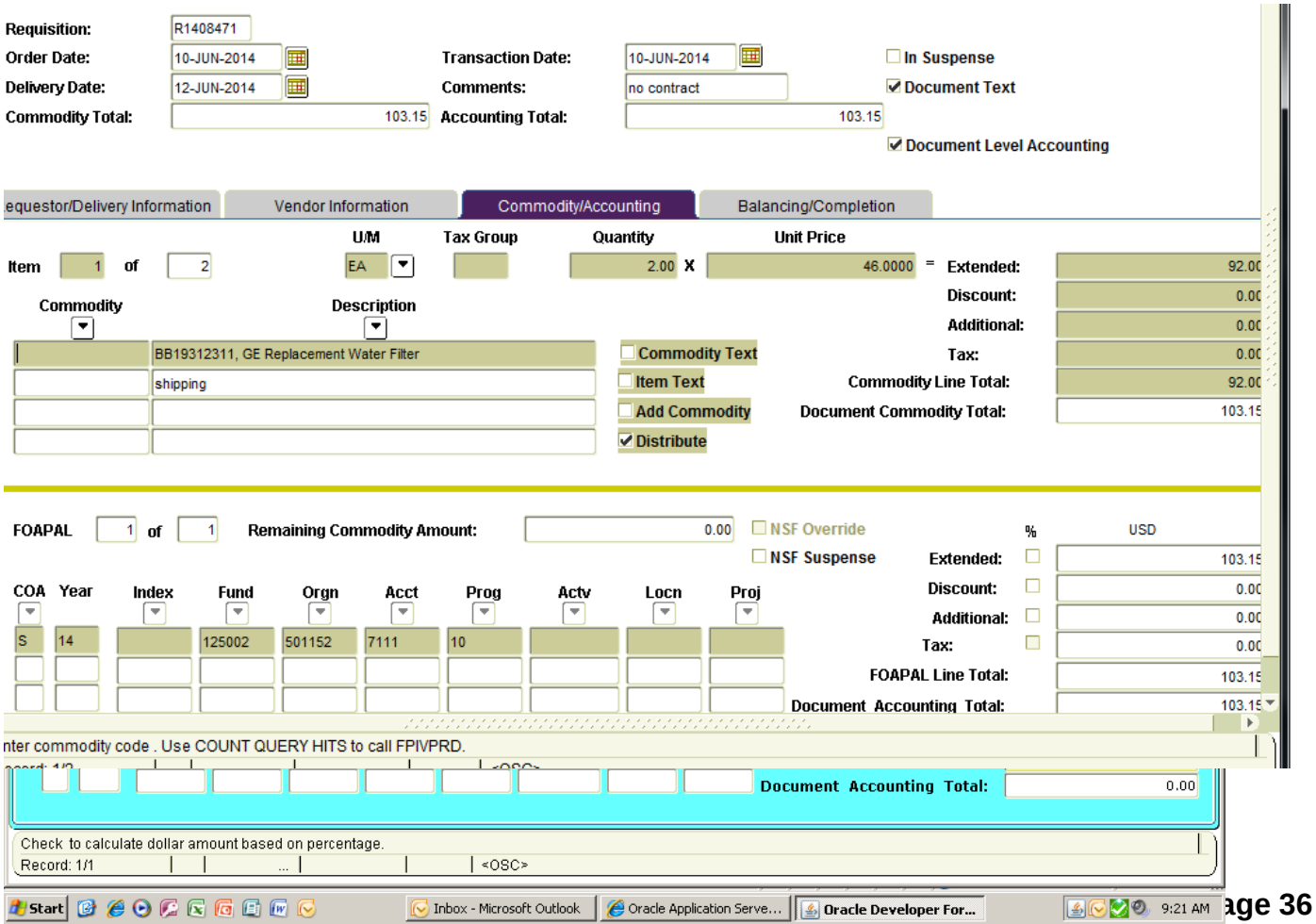
Improved version of GWF

Reduces more waterborne contaminates such as Mercury, Toxaphene, p-dichlorobenzene, Carbofuran, Alachlor and Benzene

Also reduces lead, crystosporidium and giardia

Also replaces FXRT and FXRC filters when used with a reusable adaptor (Part number: Adapter)

Replace filters every six (6) months



Refrigeration: Cryogenic, CryPro N2 Autofill Tank System

- Auto-Fill Convenience
- Large Vial Capacities
- Remote Alarm Contacts
- Digital Temperature Display
- Easy-to-Select Setting Options
- VWR Two-Year Limited Parts and Labor and Five-Year Limited Vacuum Warranty

Model: AF-10 (PS- includes packing system) from VWR
Static Holding Time: 33 days
Evaporation Rate: 5 L/day
Liquid Nitrogen Capacity: 165 L
Weight Empty: 111 kg (245 lbs.)
Weight Full: 243 kg (537 lbs.)
Internal Diameter: 53.3 cm (21")
External ($23^1/_8$ x $30^1/_2$ x 44")
Vial Capacity (2 mL): 10,400 vials

WARNINGS: READ AND FOLLOW

1. **Always wear gloves and protective eyewear when opening or handling racks**
2. **Discharge of LN2 can cause rapid depletion of oxygen in the area and dangerous conditions for personnel. Pay attention to warnings and alarms.**
3. **Never connect device to a supply line with > 22 psi supply pressure**
4. **Validate/check alarms by holding Stop/Start Fill together >8 secs, all LED should light up and audible alarms should sound.**
5. **NEVER insert a hollow rod or tube into the tank, LN2 will shoot out the top**
6. **Perform Normal Evaporation Rate (NER) test by measuring LN2 level over a period of 48hrs with a wood or plastic rule, level should not drop >1" per day**
7. **Do not let ice or debris collect in the bottom of the freezer, clean periodically.**
8. **NEVER use chlorine-based disinfectants or cleaners.**

Hotlink to Biosafety, Safe Handling/Storage of Liquid Nitrogen

Hotlink to "Similar" Model Manual (Taylor-Wharton)…pdf 45 pgs

Refrigeration: CryoPro , Menu Instructions

1. Press and hold Temp/Mute > 8 sec to enter the controlling Menus. A symbol "----" indicates entry at the root or base level.
2. Press Start Fill (increment) or Stop Fill (decrement) to scroll through setting options list (items in #6 below)
3. Press Temp/Mute again to set values for any specific setting in the list
4. Press Start Fill (increment) or Stop Fill (decrement) to change values for the settings
5. Press Temp/Mute after setting values will SAVE the setting and return to the root "-----" level.
6. **To exit without saving settings, you must Power OFF the device before hitting the Temp/Mute button and wait for at least 3 minutes before resuming any other menu settings.**
7. **Symbols Used are:**

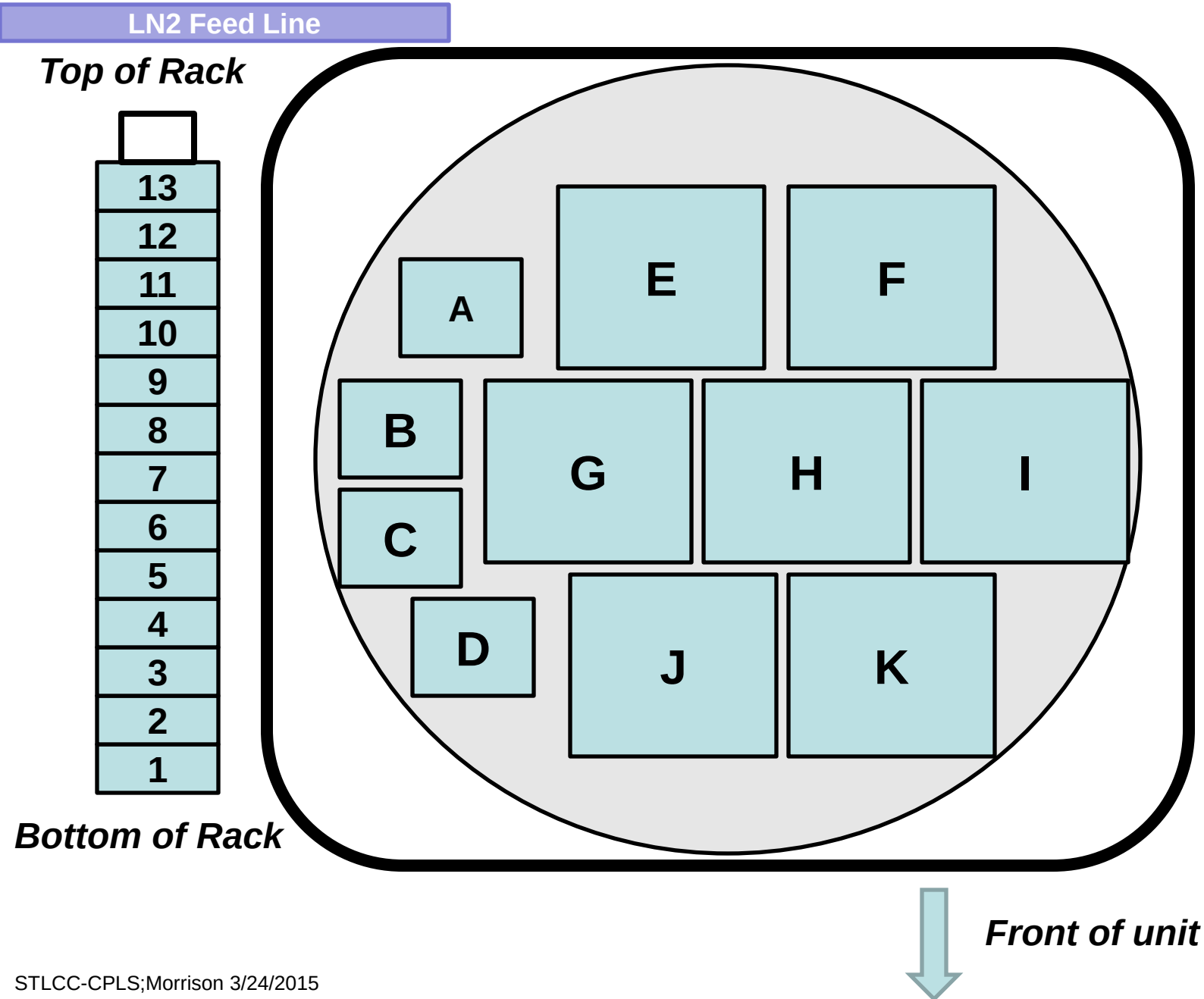
–	-----	Root or base level
–	tSP	Temperature Set Point, adjust the temperature alarm setting. Set to -132C for BRDG.
–	SEN	Sensor Choice, select sensor type (2 or 4, use "4")
–	tAd	Temperature Alarm Delay, Adjust time before the audible sounds after temperature exceeds set value (5,15,30,45,60,75,90,105)
–	AAd	Audible Alarm Delay, adjust time alarm is silenced after MUTE is pressed (No retrigger for same error when muted ,5,15,30,45,60,75,90,105)
–	rAD	Remote alarm (0= immediate, or 15,30,45,60,75,105)
–	Ver	Version of Firmware, display version loaded on the device (1= major, 2= minor)
–	Ser	Control Serial Number, identifies the control should it be required (1=first 2 digits, 2=rest)
–	SS	Sensor State, if thermistor is in "G" or "L", pressing Start Fill and Stop Fill together will identify which and releasing them will display the value. (Left-to-right: #1 High Alarm in gas, #2 Low Alarm in LN2, #3 Stop Fill in gas, #4 Start fill in LN2)
–	SU	Sensor Value, filtered value each thermistor, Pressing Start Fill and Stop Fill together and then release to display the value.
–	SU2	Sensor Value, unfiltered value of thermistor.

Refrigeration: CryoPro , Alarms and Defaults

- **High Temp Alarm:** Sounds and flashes when thermocouple temperature rises above the defined setting (tSP menu)
- **Open Thermocouple Alarm**: If internal thermsister is damaged or not plugged in, Opn displayed along with audible alarm
- **Low Level Alarm**: Level of LN2 has dropped 1” below low level sensor
- **High Level Alarm:** Level of LN2 has risen 1” above high level sensor
- **Low LN2 Supply Alarm:** Level has not reached high level sensor in last 30 minutes of filling, usually a sign that reservoir tank is empty
- **Sensor Fault Alarm**: Open circuit or crimped locations of sensors, all LEDs go dark.
- **Remote Alarm Output**: 2amp signal through external sensor indicating alarm condition has not been corrected with set limits
- **Test Button:** Tests audible and LEDs;
  - Press STOP/FILL/TEST button >8 secs, audible sounds and all LEDs should light up
  - Continue holding for another 5 secs, remote alarm relay will be tripped
  - USE THIS BUTTON to close the fill valve when the LN2 level is still below the fill level
- **Watch Dog Test**: The tank should restart itself after any power disruption. To test this feature press the STOP FILL/TEST button >8 sec and hold them while pressing/holding TEMP/Mute, Control should reset with “000” displayed for 4 seconds.
- **MUTE:** Press Temp/Mute to silence audible alarms. Use settings to set time delay
- **Default Settings** are: High Temp = -100C, Alarm Delay = 5min, Audible Mute Delay = 15 min

  Remote alarm delay = 30 min, Sensor defaults to 2 vs. 4.

Refrigeration: CryoPro; Inventory System, Rack/Row IDs



Refrigeration: Cryopro, Rack Inventory Database

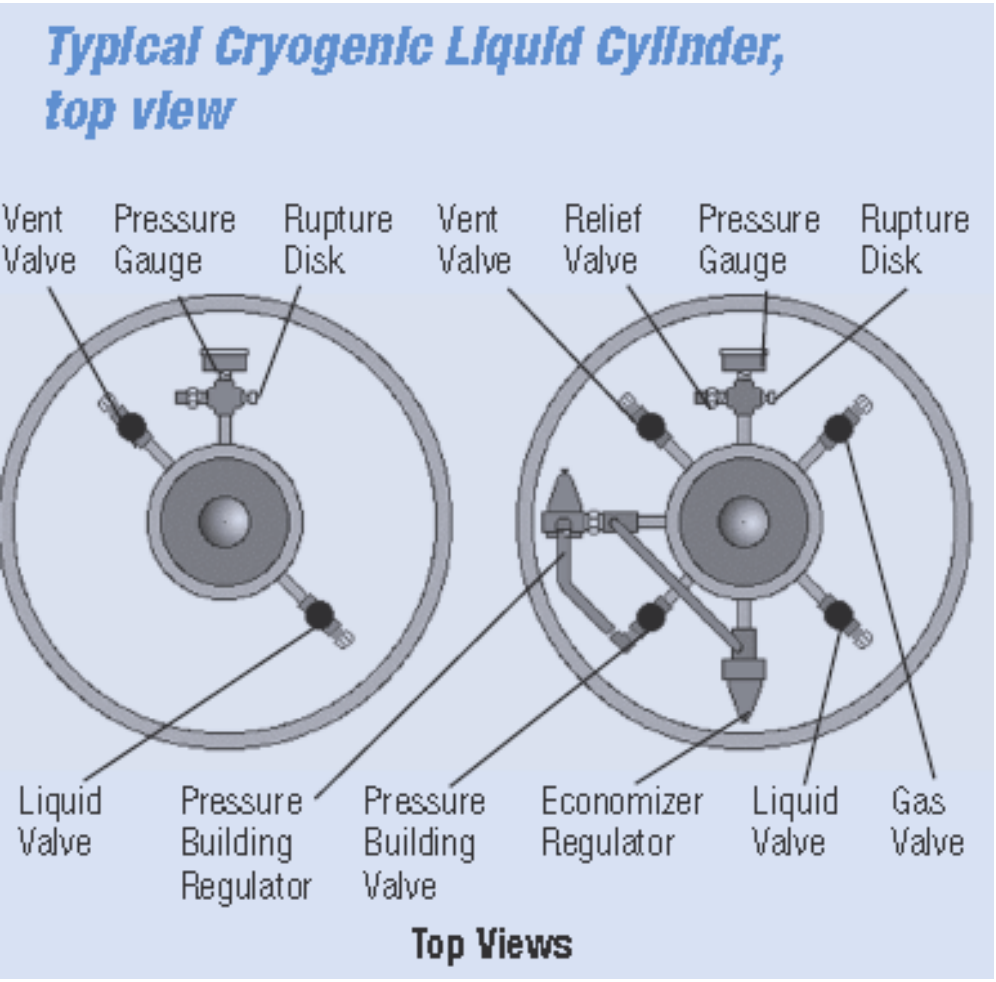
Rack/Level	Description	Date In	Status
A-1 bottom			
A-2			
A-3			
A-4			
A-5			
A-6			
A-7			
A-8			
A-9			
A-10			
A-11			
A-12			
A-13 top			
B-1 bottom			
B-2			
B-3			
B-4			
B-5			
B-6			
B-7			
B-8			
B-9			
B-10			
B-11			
B-12			
B-13 top			

Refrigeration: Cryo, Inventory, Box ID Contents

	Box Location RACK and LEVEL: _____ (ex: E-7) , Title/Description
Tube ID	Description/Notes/Ownership/Dates
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	

Refrigeration: Cryotank Safety Guidelines

Hotlink to Cryotank Safe Handling ….. Pdf



Special Note: All sections of equipment that may allow for the liquid to be trapped must be protected by a pressure release device preferably vented to an outside location. This includes any section of piping between two valves.

AIRGAS

- Part Number: LN 160LTRS 22PSI (NI 160LT22)
- BRDG Account# QNA40 as of 6/3/11.
- Tag all tanks with current account number

Note: For tank on caster platform order:
NI 230LT22 per deliveryman 4/11/11. (RGM)

Refrigeration: Cryotank, Remote Alarm Connection Info

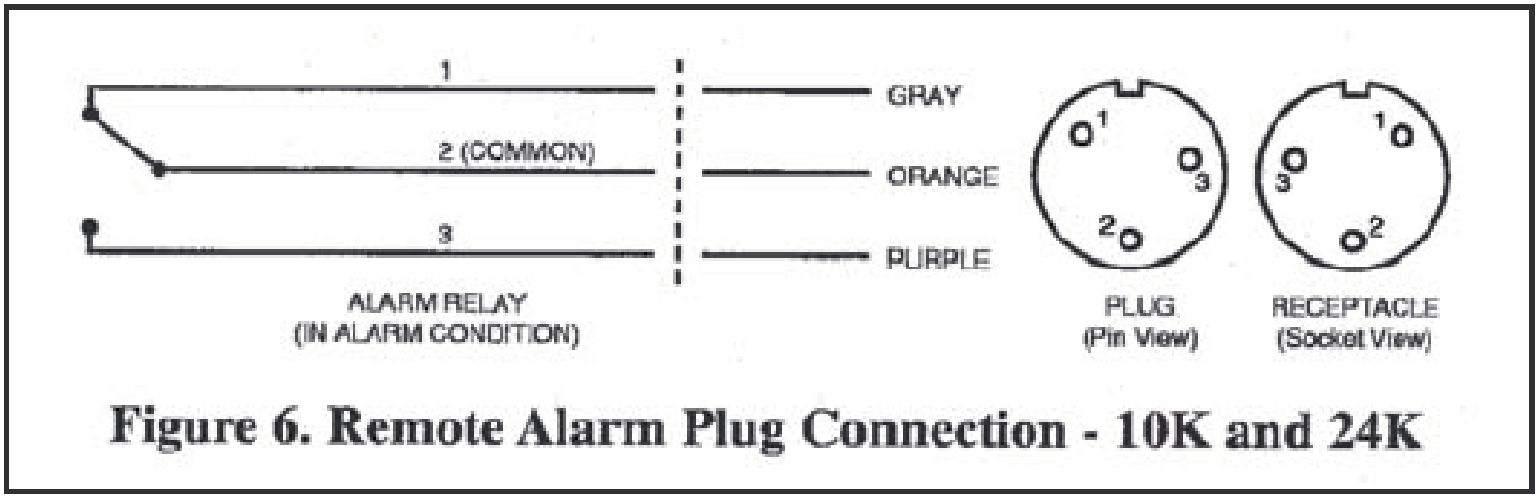


Figure 6. Remote Alarm Plug Connection - 10K and 24K

R06K-8C20 Plug with leads (from CryoPro Manual, pg 20)

Pins 1 (11am) and 2 (6pm) are closed during normal operations which corresponds to Door Shut on Freezer alarm panel.

Pins 2 and 3 are closed during Remote alert conditions (door open on freezer Alarm).

Also See: Taylor-Wharton 10K Cryostorage Systems

Refrigeration: Cryotank, LN2 Losses and Use

(from Published Paper
www.biomedicalmarketing.com/pdffiles/LN2Consumption.pdf **)**

1. **Storage System Static loss of 9 liters per day**
   - Function of diameter of upper opening surface area

2. **Use loss; 0- 8 liters per day**
   - add/remove samples, check levels

3. **Transfer loss of 3- 6 liters per fill event**
   - hose line and fittings will be cooled from 25C ambient to -192C during a fill

4. **Source cylinder static loss** of 1.5 - 6 liters per day
   - also, don't assume it came fully filled, may have lost 20% from supplier warehouse to your facility

Total Losses: 12 liters and up to 29 liters per day
- depending on usage and condition of equipment
- 6 days of use from the source tank for worst conditions to about 15 days at best

Refrigeration: Cryo, Supply Tank Swapout

Early on the day the new supply tank is to arrive: (Every other Friday about 11am)

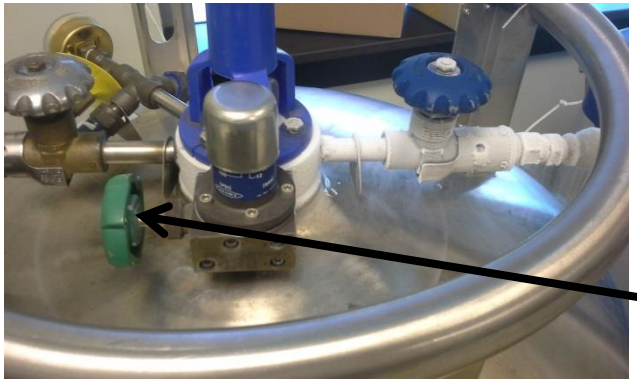
1. **Push and hold the FILL button on the Cryo storage system to put the remainder of the gas in the existing supply tank into the storage system. You may have to do this several times as the system fills for only 8 seconds if already at the HIGH mark.** Note, this may cause a "HIGH" level LN2 alarm because the level in the tank has been raised above the fixed high level sensor. This can be muted using the MUTE button.
2. **Shut off the supply tank valve to the Cryo system**

3. **After frosting of the supply line has diminished, disconnect the line at the supply tank port using an appropriate wrench. Use gloves if needed.**

When the new LN2 Supply Tank arrives:

1. **The AIRGAS representative will remove the old supply tank and put the new one in it's place.**
2. **Connect the supply line from the Cryo storage system to the "Liquid" port on the new supply tank and tighten with a wrench.**
3. **Open the valve on the new Supply tank fully**. Note their may be some frosting of the supply line at this time, but unless a fill is needed, this should stop quickly.
4. **Check the Pressure (Green valve) to make sure it is in fully closed position.** This is only opened to add pressure to the LN2 supply tank.

Refrigeration: Cryo Supply Tank Frost Buildup Issue



This frost pattern indicates continuous or frequent draws from supply tank, <u>not necessarily a leak at this location.</u>

Likely cause is leak in connections, transfer hose, valve fault in cryo unit, or frequent access/use of storage system.

Perform test fill operation while observing all connections (supply tank and rear of cryo system) and hose for liquid or gas leaks.

Other Frost Patterns:
Frost on transfer hose; probable rupture of inner fluid line.

Frost at bottom of supply tank; probable loss of vacuum in supply tank.

Frost at supply tank level gage; potential leak in fill gasket, contact supplier.

Pressure valve (green) on supply tank in open vs. closed position.

Refrigeration: VWR CryoPro, Transfer Hose

Cryogenic Transfer Hoses
Supplier: Western Enterprises

Cleaned for oxygen service
- Exceptional flexibility, hose resists kinking
- Machined CGA stainless steel end connections
- Constructed of 316 stainless steel for all wetted parts
- Use in cyro-biological and medical systems, and gas filling plants

		CGA#		Supplier#	VWR#	
72 in	3.17 lb	CGA-295	Nitrogen, Argon	312-WMH-2-16	300008-025	$282.06

Refrigeration: Cryo; Valves, Fittings, Filters

ASCO 8600A013 In-Line Filter, Brass, Stainless filter mesh, Supplied with CryoPro tank on elbow from base unit to feed source

3/8	1.9	100x100	.35	140	.0055	--	400	750	8600A013 @

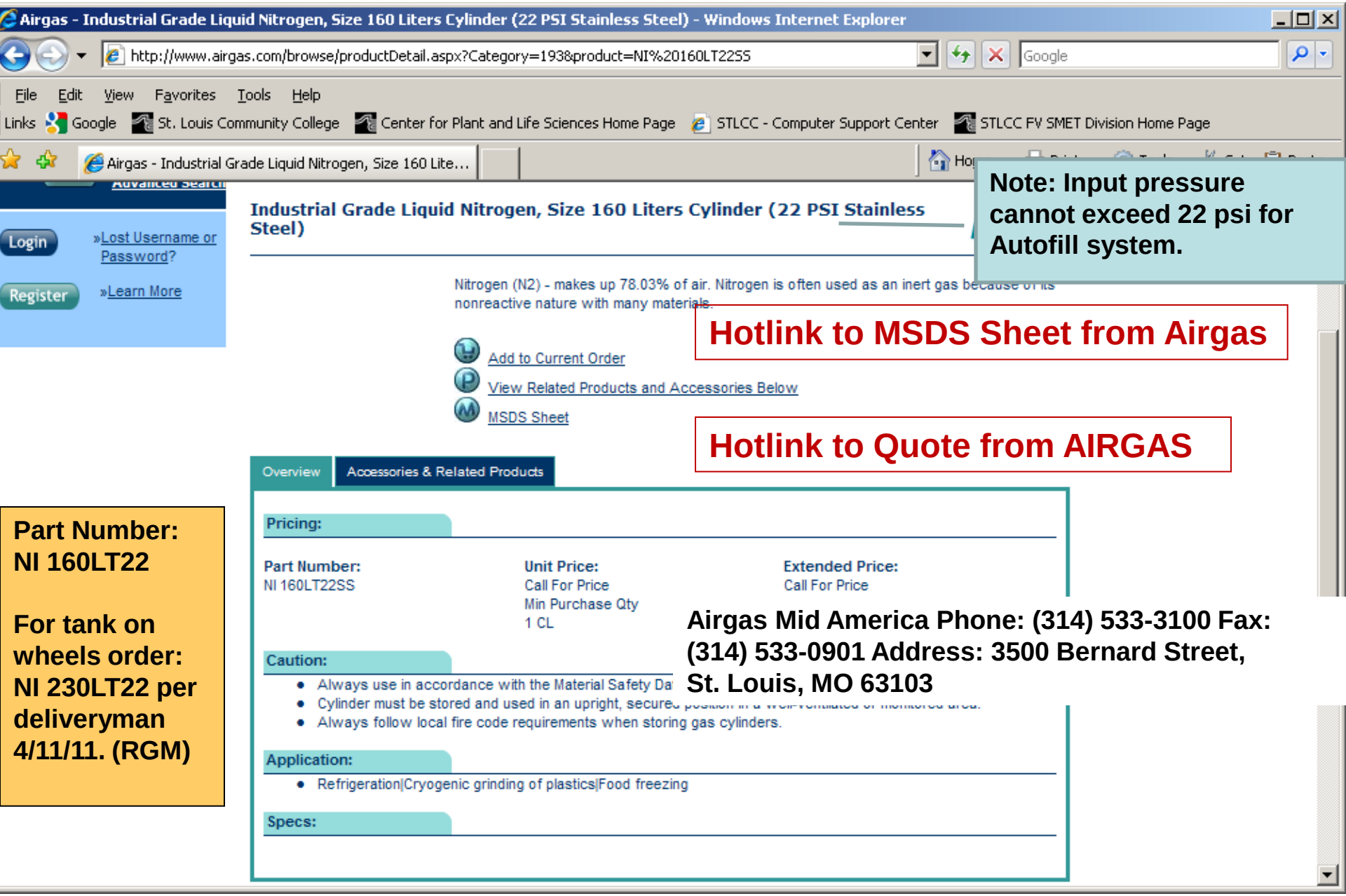
AIRGAS WESWMV-4-22 Western® 22 PSI X 1/4" NPT Male Relief Valve

Lab Systems: Gas Detection; Sensor/Alarms; Oxygen , Airgas

Warning on Low Oxygen due to Nitrogen evaporation:
Sea Level Oxygen level = 20.1%
Default meter setting for alarm: 19.5%
Denver = 17.2%
Pikes Peak = 12.2%
Everest = 6.8%

Link to Metrology SOP; Gas Detection, Oxygen Levels, Meters, Alarms

Refrigeration: Liquid Nitrogen Supplier, 160L Tank, Airgas



Note: Input pressure cannot exceed 22 psi for Autofill system.

Hotlink to MSDS Sheet from Airgas

Hotlink to Quote from AIRGAS

Part Number: NI 160LT22

For tank on wheels order: NI 230LT22 per deliveryman 4/11/11. (RGM)

Airgas Mid America Phone: (314) 533-3100 Fax: (314) 533-0901 Address: 3500 Bernard Street, St. Louis, MO 63103

Refrigeration: Cryo, Dewar, LN2, Storage, Transfer

LINDE

LAB DEWAR LINDE (UNION CARBIDE)
Model LR-31
SN 230-126-M1
30 Liter Max N Capacity.

7 Storage Cylinders, approx 2.5” dia, 8” deep

Always use approved hose for transfer, Stainless Steel

Cryogenic Transfer Hoses
Supplier: Western Enterprises

Cleaned for oxygen service
- Exceptional flexibility, hose resists kinking
- Machined CGA stainless steel end connections
- Constructed of 316 stainless steel for all wetted parts
- Use in cyro-biological and medical systems, and gas filling plants

Ice Maker ; Ice-O-Matic Flaker @ FV, Storage Bin, Industrial

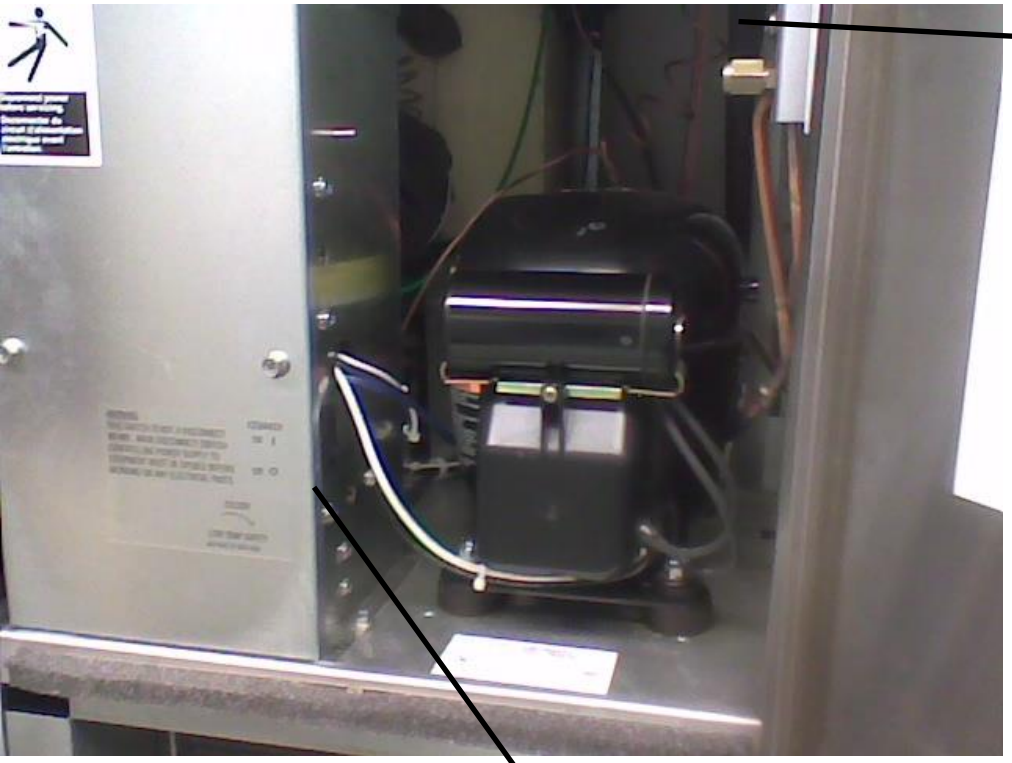
Ice-O-Matic Flakers EMF450

Maximum ICE Maximum ICE production in a minimum amount of space: * No additional side clearance required on a 30 inch wide bin * Maximum ICE production in a 16 inch wide cabinet * Works on all industry dispensers and bins
Dependable ICE-O-Matic Flake ICE Makers remove excess water by pushing the flaked ICE through an extrusion process. The result is high quality flaked ICE which is ideal for medical, supermarket, or restaurant applications.
ICE-O-Matic Tough Constructed with a brass evaporator and rugged stainless steel transport system enclosed in polyurethane insulations
Filter-Free Air No air filter to change
Production Produces up to 472 lbs. of ICE per day

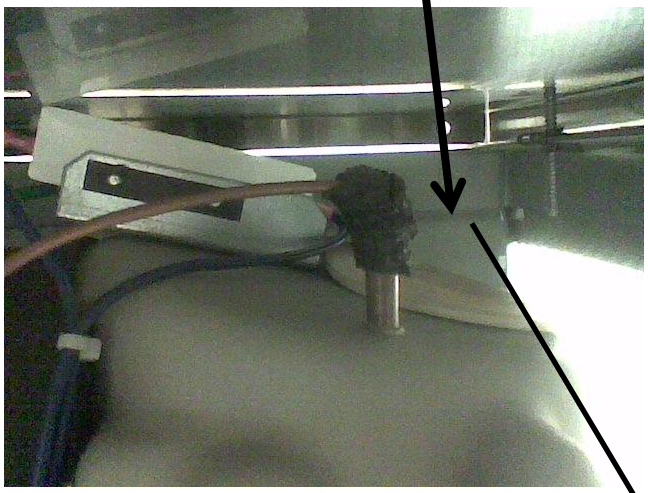
Link to IceOMatic Installation Manual … pdf

Link to IceOMatic Technical Manual … pdf

Refrigeration: Ice-O-Matic @ FV Internal Control Switches



Secondary Bin Control Switch located in extreme right rear upper part of cabinet. See closeup below.



Primary On/Off Toggle Switch: Note remove front panel to access this area

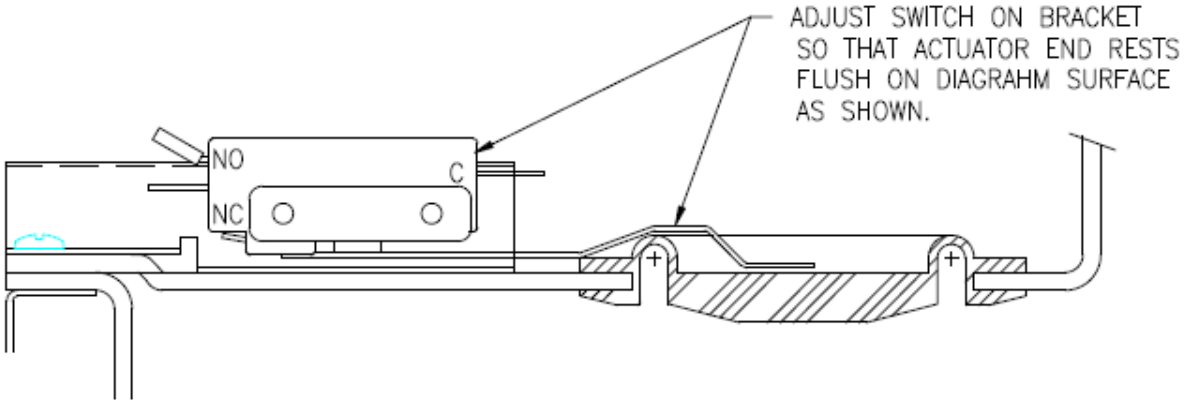
Secondary Bin Control Switch (thin copper over bin diaphragm) See Next Slide for details

Ice-O-Matic : @ FV, Adjusting Secondary Bin Control Switch

Mechanical Bin Control

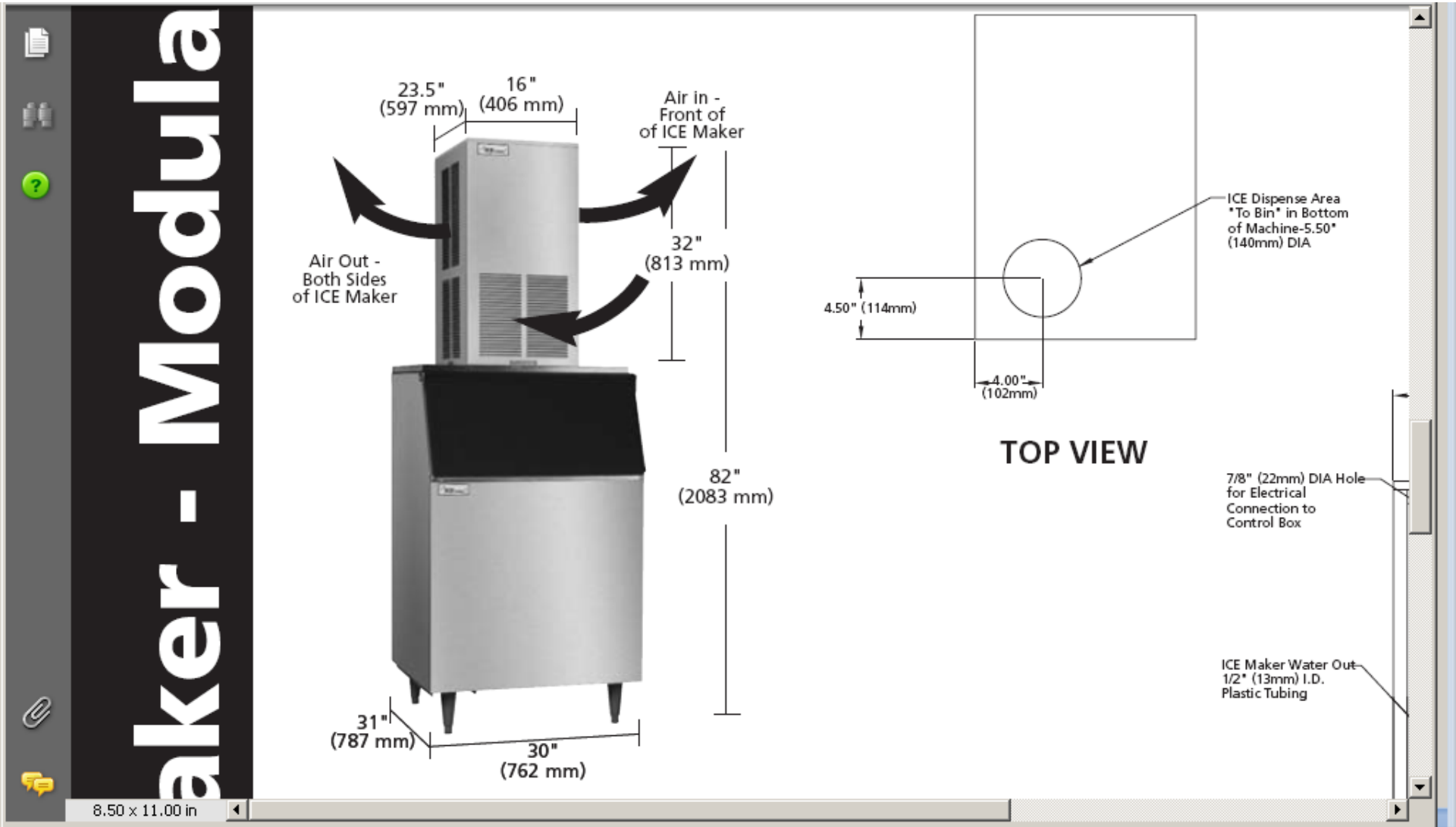
The mechanical bin control is located in the top panel of the ice bin on the EF Series and on the top of the down chute on the EMF Series. When ice fills the down chute on the EMF Series units, or ice fills the bin on EF Series units a rubber diaphragm pushes up against a switch.

To check the bin switch, push up on the diaphragm or switch arm raising it approximately 1/8 inch. This movement should actuate (open) the switch. The switch should close when returned to the normal position. The switch can be adjusted by loosening the adjusting screws and moving it to the proper position.



Important! The secondary bin switch should only be utilized as a safety. If the machine is shutting off on the secondary control, the primary control should be adjusted.

Ice Maker; Ice-o-Matic at FV Model 450 Series Footprint



Refrigeration: Ice-Maker, Flaker, BRDG, F0522 Scotsman

Shown on B322S bin with optional KLP6S legs

All Models

Dimensions (W x D x H):

Unit:
22.9" x 24" x 23"
(58.2 x 61.0 x 58.4 cm)

Shipping Carton:
25.5" x 27.5" x 28.5"
(64.8 x 69.9 x 72.4 cm)

Shipping Weight:
173 lb/78 kg

BTU per hour:
5,000

Refrigerant:
R-404A

http://www.bi-staterefrigeration.com/home/
Service: Bi-State Refrigeration
P.O. Box 1566 · St. Peters, MO 63376
636-379-7217
314-291-7217
800-292-7217
Fax: 636-379-3715
Model: F0522A-1A Ice Flaker
SN: 09101 3200 1 1001
Installed 1/26/10, 3yr warrantee

Model: B530P Bin (30", 500lb cap)

Scotsman Ice Systems · 775 CorporateWoods Parkway · Vernon Hills, IL 60061
1-800-SCOTSMAN
Fax: 847-913-9844
E-mail: customer.relations@scotsman-ice.com
www.scotsman-ice.com

Link to Scotsman Ice-Maker Installation and User Manual … pdf

Link to Scotsman Ice-Maker Service Manual … pdf

Link to Scotsman Ice-Maker Parts List … pdf

Technician Section

Clean

Code Display

Control Operation - See Manual

Water Light On - Restore water supply to machine.

De-Scale Light On - Clean and sanitize machine.

Test Mode - Depress Off for 3 seconds, then depress Clean for 3 seconds.

Recall Diagnostic Codes - Depress Off for 3 seconds. Press Clean repeatedly to go from most recent to oldest of 10.

Clear Diagnostic Codes - Switch unit off, depress and hold Clean and Off for 3 seconds.

Reset from Code 1, 2, 3 or 4 - Depress Off then Depress On.

Code	Description
F	Freeze Mode
F flashes	Freeze Mode is Pending
b	Bin is Full
C	Clean Cycle
L	Board Locked
d	Test Mode
O	Off
E	Self Test Failed
1 flashes	No ice sensed - Retrying
1	No ice sensed - Shut Down
2 flashes	Auger motor high load - Retrying
2	Auger motor high load - Shut Down
3	No water in reservoir
4	Refrigeration pressure too high / low

All 4 Upper Lights Flashing - Unit Remotely Locked Out - Contact Leasing Company

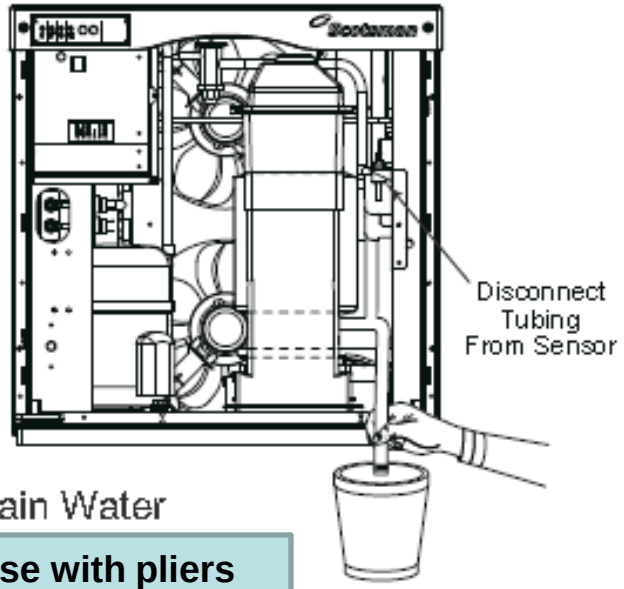
Component Operation Indicator Lights

Refrigeration: Ice-Maker, BRDG, Controls and Codes

Maintenance: Scale Removal

Note: Following this procedure will reset the de-scale and sanitize light.

1. Remove front panel (two screws top left/right)
2. Push and release the Off button.
3. Remove ice from bin or dispenser.
4. Turn the water supply to the ice machine OFF.
5. Drain the water and evaporator by disconnecting the leg of the hose connected to the water sensor and draining it into the bin. Return the hose to its original position.
6. Remove the water reservoir cover.
7. Mix solution of 8 ounces of Scotsman Clear One Scale Remover and 3 quarts of 115 degree F. potable water.
8. Pour the scale remover solution into the reservoir. Use a small cup for pouring.
9. Push and release the Clean button: the auger drive motor and light are on, C is displayed and the De-scale light blinks. After 20 minutes the compressor will start.
10. Operate the machine and pour the scale remover into the reservoir until it is all gone. Keep the reservoir full. When all the scale remover solution has been used, turn the water supply back on. After 20 minutes of ice making the compressor and auger motor will shut off.
11. Turn the water supply to the ice machine OFF
12. Drain water reservoir and evaporator by disconnecting the leg of hose connected to water sensor and draining it into bucket. Return hose to its original position. Discard all ice made during the previous step.

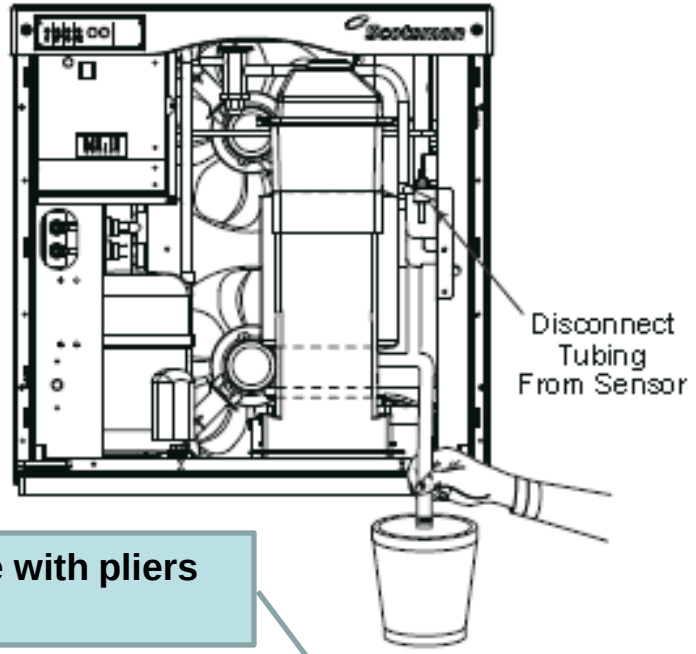


Remove hose with pliers on clamp

Maintenance: Sanitation of Water System

Do steps 1-6 of the De-Scale process if not done in conjunction with this procedure, then…..

13. To sanitize the water system, mix a locally approved sanitizing solution. An example of a sanitizing solution is mixing one ounce of liquid household bleach and two gallons of 95 – 115 F.
14. Pour the sanitizing solution into the reservoir.
15. Push and release the On button.
16. Switch the water supply to the ice machine on.
17. Operate the machine for 20 minutes.
18. Push and release the Off button.
19. Wash the reservoir cover in sanitizing solution.
20. Return the reservoir cover to its normal position.
21. Discard ice made during the sanitizing process.
22. Wash inside of storage bin with sanitizing solution.
23. Push and release the On button.
24. Return the front panel to its original position and secure with the original screws.



Remove hose with pliers on clamp

Refrigeration: Ice-Maker, BRDG, Scotsman, B530S-Storage Bin

Modular Storage Bins

B530S shown with optional KLP8S legs

Features

New sleek, contemporary styling. A perfect match to Prodigy cube ice machines and other Scotsman ice machines.

Convenient, built-in scoop holder*

Scoop incorporates antimicrobial Agion® for better sanitation.

Easily removable baffle, no tools required for cleaning.*

Lightweight.

Unique recessed drain fitting for maximum installation flexibility.

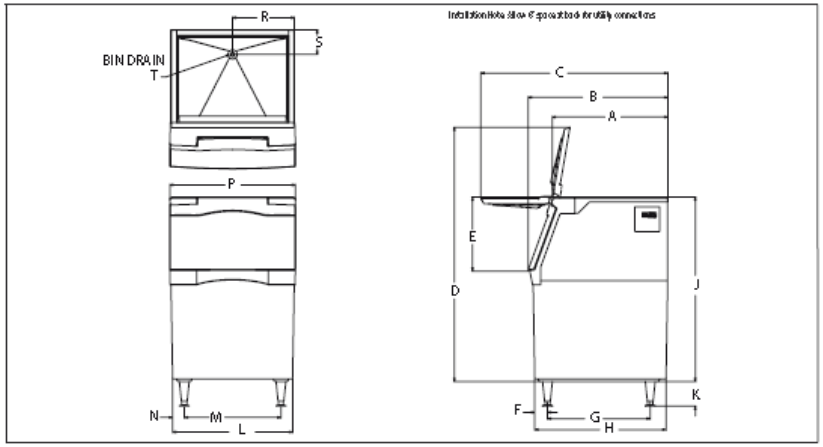
Corrosion resistant.

Spring loaded door with hidden hinges for easy opening and closing

Available in metallic finish or durable rotocast plastic.

AHRI, NSF certified.

* except for B230P



Storage Capacity

B222S		B322S		B230P		B330P	
APPLICATION Capacity lb/kg	AHRI Capacity lb/kg	APPLICATION Capacity lb/kg	AHRI Capacity lb/kg	APPLICATION Capacity lb/kg	AHRI Capacity lb/kg	APPLICATION Capacity lb/kg	AHRI Capacity lb/kg
242/110	190/86	370/168	290/132	242/110	190/86	344/156	270

B530P/S		B842S		B948S	
APPLICATION Capacity lb/kg	AHRI Capacity lb/kg	APPLICATION Capacity lb/kg	AHRI Capacity lb/kg	APPLICATION Capacity lb/kg	AHRI Capacity lb/kg
536/244	420/191	778/353	610/277	893/406	700/319

Application capacity is based on 90% of total volume in the cubic feet x 34 lb/ft³
AHRI capacity is based on 80% of total volume in cube feet x 30 lb/ft³

Dimensions

Model #	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T
B222S	28.23	34	45.5	47.24	18	3.88	25	32.75	31	6	22	15.5	3.25	22.5	11	6	.75 NPT
B230P	26.75	32	37.5	32.75	10	2.25	26.5	31.00	28	6	30	25.5	2.25	30.63	15	2	.75 NPT
B322S	28.23	34	45.5	61.24	18	3.88	25	32.75	44	6	22	15.5	3.25	22.5	11	6	.75 NPT
B330P	28.15	34	45.5	47.24	18	3.33	25	32.42	31	6	30	23.5	3.08	30.5	15	6	.75 NPT
B530P/S	28.15	34	45.5	61.24	18	3.09	25	31.93	44	6	30	23.5	2.83	30.5	15	6	.75 NPT
B842S	28.07	34	45.5	61.87	18	3.88	25	32.75	44	6	42	35.5	3.25	42.5	21	6	.75 NPT
B948S	28.05	34	45.5	61.24	18	3.88	25	32.75	44	6	48	41.5	3.25	48.5	24	6	.75 NPT

Finish: S=Metallic Finish, P=Poly

Overall Dimensions

Model #	Unit** (W x D x H)
B222S	22" x 34" x 31"
B230P	30" x 31" x 28"
B322S	22" x 34" x 44"
B330P	30" x 34" x 31"
B530P	30" x 34" x 44"
B530S	30" x 34" x 44"
B842S	42" x 34" x 44"
B948S	48" x 34" x 44"

**Add 6" (152 mm) height for legs.

Accessories*

Model #	Description
KBC1	Kit, Bin Casters for B530S, B842S, B948S & SB380.XX Not for use with B222S, B322S or SB480 when using extensions.
KBC1P	Kit, Bin Casters for B330P & B530P.XX
KLP7	Kit, Legs, 6", Flanged Feet, For B Bins, HD Dispensers, AFE, CU1/2/3 & NSE.
KLP8S	Kit, legs, 6", Stainless Steel, For B Bins, HD Dispensers, AFE, CU1/2/3 & NSE.
BGS10	Bagger, Hooks on Any Bin.
KBAG	Kit, Bags, 1000, For BGS10.
KSEALER	Kit, Tape Sealer, For BGS10.
KTAPE	Kit, Tape, 180 ft. Roll, For BGS10.
KHOLDER	Kit, Scoop Holder, Stainless Steel.

Shipping

Polyurethane Insulation

Foam insulation is forced between the wall and liner under heat and pressure to form a perfect wall to wall bond, preserving ice supply for long periods.

Bin Interior

The polyethylene bin interior is sanitary and easy to clean. Resists scratches and scuffs from ice scoops.

Warranty

- 3 years parts and labor on all com

Warranty valid in North, South & Central America. Contact factory for warranty in other regions.

Refrigeration: Ice Maker, Repair leak , gasket Apr 2013, Bi-State

Refrigeration: Ice Maker, Repair leak , gasket Apr 2013, Bi-State

(636) 379-7217 (800) 292-7217

BI-STATE REFRIGERATION

P.O. BOX 1566
ST. PETERS, MO 63376
Fax (636) 379-3715

59837

☐ SERVICE ☐ INSTALL | ☐ PICK UP ☐ DELIVER | PHONE 314-513-4966 | DATE OF ORDER 5-01-13

NAME St. Louis Community College | W/O #

ADDRESS 1005 N. Warson | PO #

CITY ~~St~~ Creve Coeur MO 63141 | DATE OF ORIG. INSTALL.

MAKE Scotsman | MODEL F0522A-1A | SERIAL NO. 09101320011001

NATURE OF SERVICE REQUEST: No Ice

☐ WARRANTY ☐ ~~CHARGE~~ ☐ C.O.D.

QUAN.	DESCRIPTION	PRICE	AMOUNT
1	02-0929-23 water seal		116 08
1	Breaker		37 00
	REFRIGERANT RECOVERY		

SERVICE PERFORMED: Unit off on no water. Water is ~~on~~ going out the bottom of the evap (water seal bad). Replaced water seal and bad breaker. Making ice,

Thank You!

DATE COMPLETED 5-01-13 | CASH ON COMPLETION OF WORK →

TOTAL MATERIAL	491 00
TECHNICAL SERVICE TIME	152 00
SERVICE CALL	60 00
TAX	
TOTAL	703 09

I hereby accept above performed services and charges as being satisfactory and acknowledge that equipment has been left in good condition.

Technician: Kevin

Customer's Signature:

636-379-7217 314-291-7217

BI-STATE REFRIGERATION

800-292-7217

Ice Machines • Commercial Refrigeration • Misting Systems

Invoice

Date	Invoice #
5/12/2013	59837

43 159 7769

Bill To
ST. LOUIS COMMUNITY COLLEGE
ATTN: ACCOUNTS PAYABLE
300 SOUTH BROADWAY
ST. LOUIS, MO 63102-2810

Serviced At
ST LOUIS COMMUNITY COLLEGE
1005 N WARSON
ST LOUIS MO 63141
Need Pott

BOB morrison

Rep	P.O. No.	Terms	Due Date
KMB		Net 30	6/11/2013

Description	Item	Amount
SERVICE ON SCOTSMAN ICE MACHINE M/N F0522A-1 S/N 09101320010001 5-1-13		
	MATERIAL	491.00
	SERVICE TIME	152.00
	SERVICE CALL	60.00

Subtotal	$703.00
Sales Tax (5.95%)	$0.00
Total	$703.00

THANK YOU FOR YOUR BUSINESS.

So-Low Premier
Model V85-13
SN 96971079
34″W x 38″D x 80″H

Refrigeration ; FV, So-Low Premier, -80C

Maintenance: Clean cooling condenser grill vent every 90 days

Control Panel (below)
Set @ -80C
Actual -77C

Refrigeration: CryoPro LN2, Liquid or Vapor Phase

Water is the major component of all living cells, and must be present in order for chemical reactions to occur within a cell. During cryopreservation, when water changes to ice, all cellular metabolism ceases. During this process, as the ice forms, the cells become dehydrated, leading to changes in the concentrations of salts and other metabolites that are present. This osmotic imbalance can be highly detrimental to cell recovery. However, cell survival is strongly influenced by a number of factors, most notably the cooling rate. Each cell type has a characteristic optimum-cooling rate, which reflects the highest percentage of survival. This rate can be modified by the use of a cryoprotective agent. Cell survival also depends on the rewarming rate and the storage temperature. (from Cryosite weblink, Australian company)

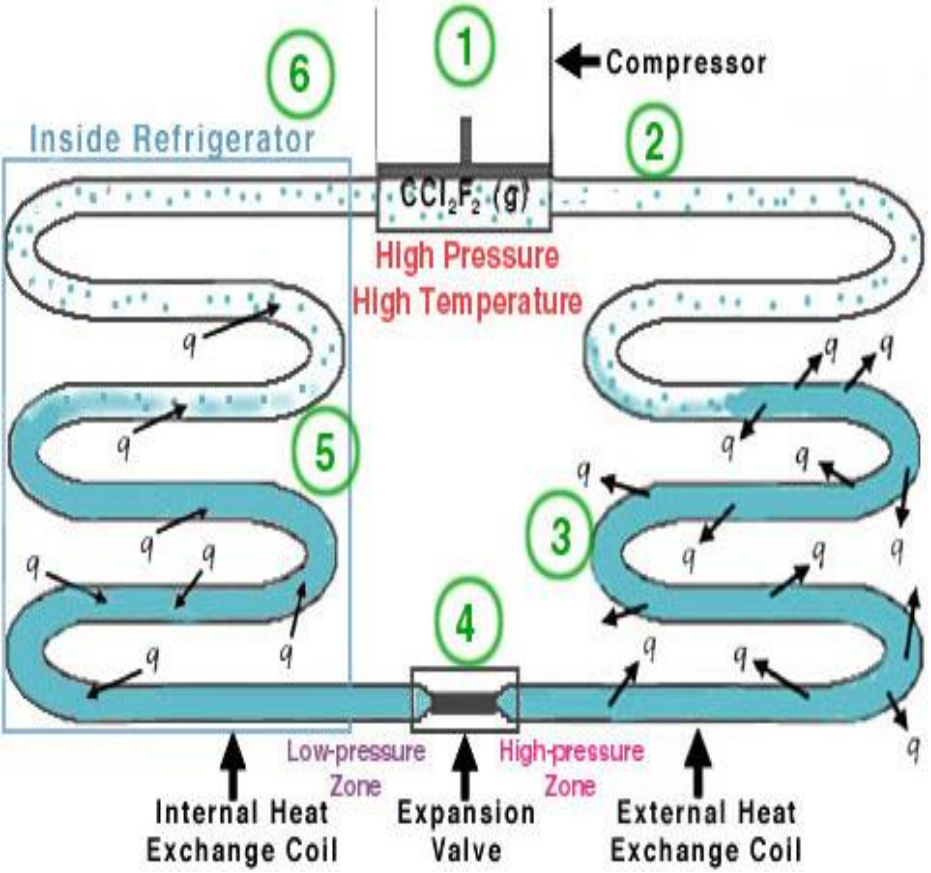
However, the duration of storage is not indefinite and the storage temperature will directly influence the time during which the samples can be recovered without damage. Lower storage temperatures are associated with extended viability of the preserved samples. While many samples are stored at -80°C, it should be noted that at this temperature metabolic activity has not ceased, it has only slowed down (due to small amounts of unfrozen water). By reducing sample temperatures to below the glass transition phase of water (-132°C), all metabolic activity comes to a halt. Storage below -130°C in liquid nitrogen therefore offers the most secure form of preservation.

Since it is clear that storage in liquid nitrogen containers represents the best long-term option for sample preservation, the question that then needs to be addressed is whether storage should be in the liquid or vapour phases. In liquid phase, samples are **completely submerged in liquid nitrogen at -196°C**. However, there are a number of risks associated with direct storage in the liquid phase that need to be highlighted. Storage of samples in glass ampoules is not advised, as during the transition from liquid nitrogen to room temperature, the rapid conversion to a gas phase may cause it to explode. While the use of plastic screw-cap cryotubes minimises this potential for explosion, during warming, the liquid may still spray from the interface between the cap and the tube. For this reason it is advisable to open cryotubes within a contained area. The alternative to direct storage in the liquid phase is to store samples above the liquid nitrogen in the **vapour phase at -150°C.** As this is well below the glass transition phase of -132°C (where all metabolic activity ceases), storage in the vapour phase is therefore both an excellent and safe means of storing your samples.

Vapor phase storage eliminates the possible contamination issues associated with liquid phase storage. This is due to the fact that the samples are not submerged in the liquid nitrogen but instead benefit from the cooling effects of the nitrogen vapors. However, using the vapor phase to maintain low temperatures can often result in a temperature gradient, which needs to be closely monitored. The temperature throughout the chamber must be kept below –130°C to ensure that all metabolic activity remains arrested.

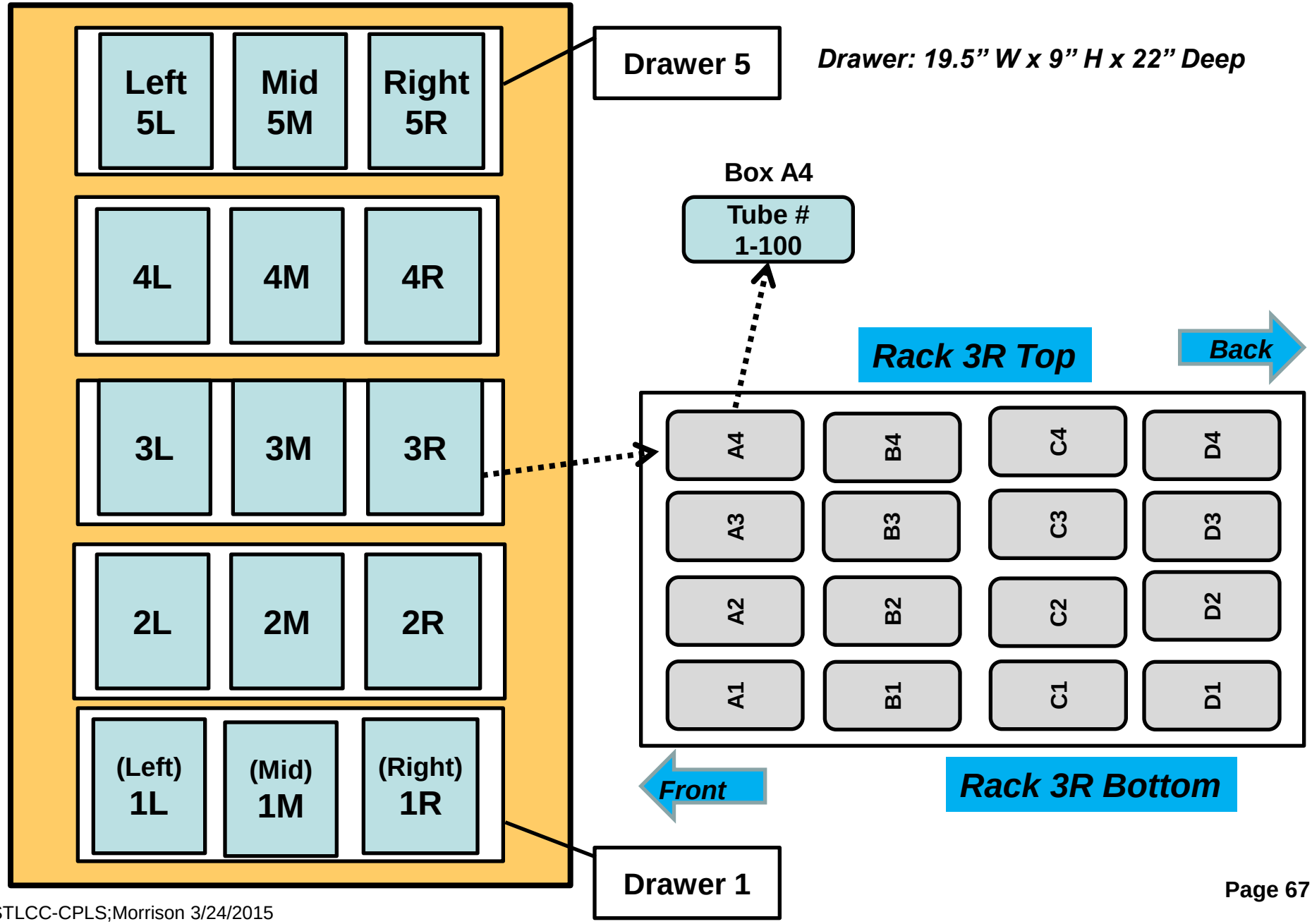
Refrigeration: Typical Refrigeration Cycle

(from Wash U STL Chem 152 Class)



1. Outside of the refrigerator, the electrically-run compressor does work on the Freon gas, increasing the pressure of the gas. As the pressure of the gas increases, so does its temperature (as predicted by the ideal-gas law).
2. Next, this high-pressure, high-temperature gas enters the coil on the outside of the refrigerator.
3. Heat (q) flows from the high-temperature gas to the lower-temperature air of the room surrounding the coil. This heat loss causes the high-pressure gas to condense to liquid, as motion of the Freon molecules decreases and intermolecular attractions are formed. Hence, the work done on the gas by the compressor (causing an exothermic phase transition in the gas) is converted to heat given off in the air in the room behind the refrigerator. If you have ever felt the coils on the back of the refrigerator, you have experienced the heat given off during the condensation of Freon.
4. Next, the liquid Freon in the external coil passes through an expansion valve into a coil inside the insulated compartment of the refrigerator. Now, the liquid is at a low pressure (as a result of the expansion) and is lower in temperature (cooler) than the surrounding air (i.e., the air inside the refrigerator).
5. Since heat is transferred from areas of greater temperature to areas of lower temperature, heat is absorbed (from inside the refrigerator) by the liquid Freon, causing the temperature inside the refrigerator to be reduced. The absorbed heat begins to break the intermolecular attractions of the liquid Freon, allowing the endothermic vaporization process to occur.
6. When all of the Freon changes to gas, the cycle can start over. The cycle described above does not run continuously, but rather is controlled by a thermostat

Refrigeration: OBSOLETE -80 Storage Map, Inventory



Refrigeration: Temp-Logger, Evidencia, Thermassure USB Interface

EVIDENCIA

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PRODUCTS

- NFC Mobile Cold Chain Management by Log-ic
- Temperature Recorders
- Temperature Labels
- Temp/Humidity Recorders
- Shipping & Handling Monitors
- Accessories

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Home > Temperature Recorders > USB Recorders > Thermassure X2 USB Logger - USB (& RFID) Temperature Recorder

THERMASSURE X2 USB LOGGER - USB (& RFID) TEMPERATURE RECORDER

ThermAssure X2 is the first RFID Data Logger equipped with a USB cable. This temperature Data Logger generates a PDF evaluation report with the optional power of RFID download. Just plug it into the USB port of any PC and it will generate a PDF report.

More details

$25.00 tax excl.

Reference : X2-3002-USB

Quantity : 1

Add to cart

Do an estimate

> Do an estimate