To better help you obtain assistance or service should you ever need it, write down the following information about the product. This information is on the identification label located on the left hand inside wall of the cabinet. We advise you to keep this Owners Manual and sales slip in your possession.

Model: _____

Serial Number: _____

Date of Purchase: _____

minusforty®

a Due North brand

OWNERS MANUAL

Payment Enabled
Glass Door Freezers
230V, 50Hz

SINGLE DOOR MODELS WITH SMARTLOCK, POS TERMINAL AND PRODUCT RECOGNITION TECHNOLOGY

22-USGF-F2PV
22-USGF-L2PV

minusforty®

30 Armstrong Avenue
Georgetown, Ontario
Canada L7G 4R9

Tel: +1.905.702.1441
Fax: +1.905.702.1442
email: info@duenorth.com
web: duenorth.com

Part No. 108994

MNL_R290 PV USGF-F2-L2_230V EN20251030

R290

30 Armstrong Ave. Georgetown, Ontario Canada L7G 4R9
tel 800.800.5706 · 905.702.1441 · fax 905.702.1442 · DUENORTH.com

⚠ ATTENTION

Heat Insulation Material Polyurethane (PU) Foam with Carbon Dioxide

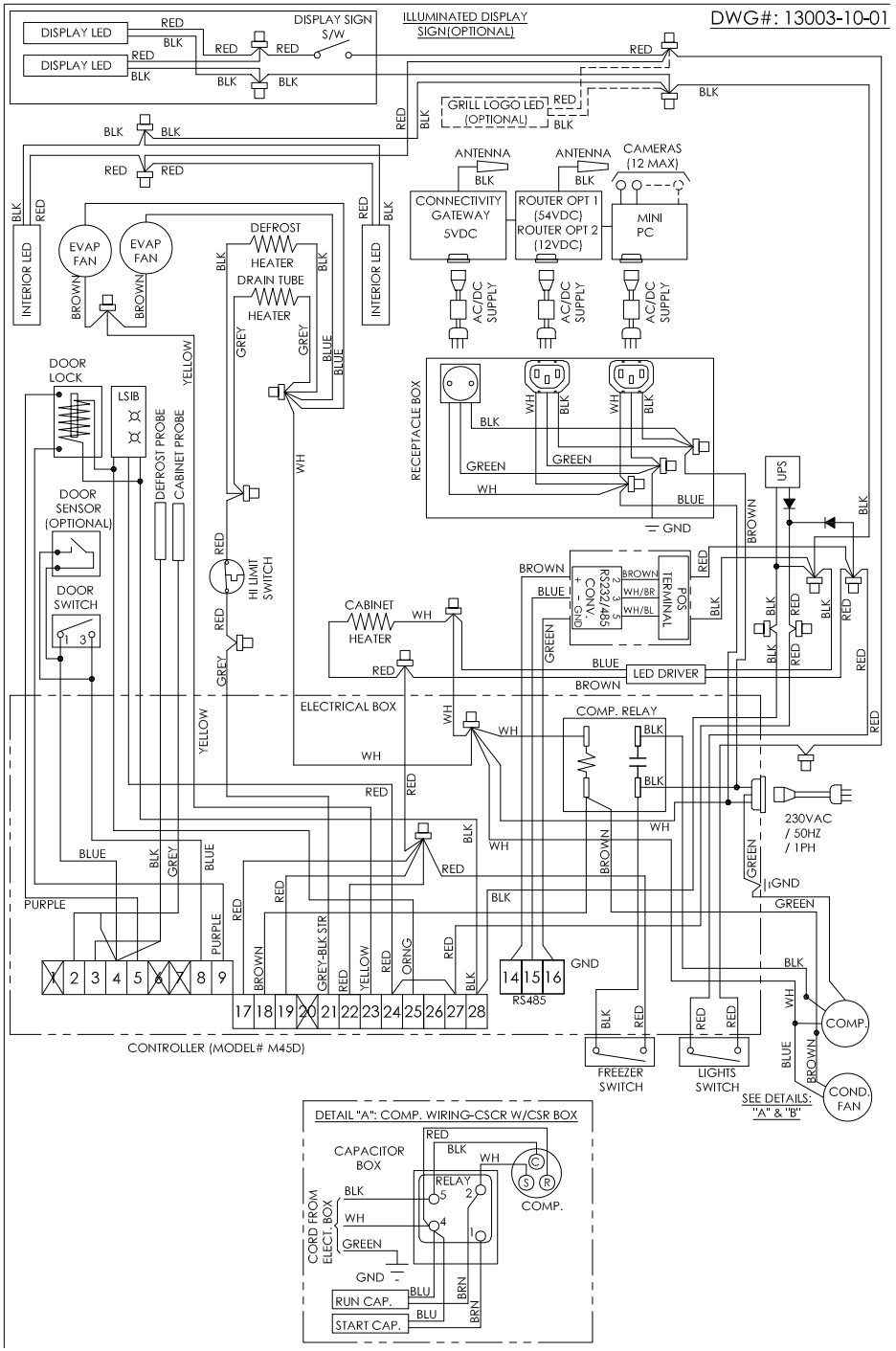
Do not put the unit in with regular waste. Please check your obligations in accordance with the national WEEE provisions and the local WEEE disposal partner. Ensure the piping is not damaged in the process.

⚠ ATTENTION

Heat Insulation Material Polyurethane (PU) Foam with Carbon Dioxide

Do not put the unit in with regular waste. Please check your obligations in accordance with the national WEEE provisions and the local WEEE disposal partner. Ensure the piping is not damaged in the process.

WIRING DIAGRAM



CAUTIONARY INSTRUCTIONS FOR UNITS CHARGED WITH PROPANE (R290) REFRIGERANT

⚠ WARNING

THIS UNIT IS CHARGED WITH PROPANE REFRIGERANT. PROPANE IS AN EXTREMELY FLAMMABLE AND EXPLOSIVE GAS. PLEASE READ CAREFULLY THIS MANUAL/GUIDE AND FOLLOW ALL SAFETY PRECAUTIONS CONTAINED HEREIN TO REDUCE A RISK OF FIRE AND/OR EXPLOSION. FAILURE TO FOLLOW THE SAFETY PRECAUTIONS MAY RESULT IN SERIOUS INJURY OR DEATH, AND/OR PROPERTY DAMAGE.

- **WARNING: KEEP CLEAR OF OBSTRUCTION ALL VENTILATION OPENINGS IN THE APPLIANCE ENCLOSURE OR IN THE STRUCTURE FOR BUILDING-IN.**
- **WARNING: DO NOT USE MECHANICAL DEVICES OR OTHER MEANS TO ACCELERATE THE DEFROSTING PROCESS, OTHER THAN THOSE RECOMMENDED BY THE MANUFACTURER.**
- **WARNING: DO NOT DAMAGE THE REFRIGERANT CIRCUIT.**
- **WARNING: DO NOT USE ELECTRICAL APPLIANCES INSIDE THE FOOD STORAGE COMPARTMENTS OF THE APPLIANCE, UNLESS THEY ARE OF THE TYPE RECOMMENDED BY THE MANUFACTURER.**

To mitigate the risk, please follow the precautionary measures as follows:

- Avoid unit installation in areas with open flames (kitchens, repair garages or the like), or in vicinity of open flames or high surface temperatures.
- Avoid unit installation in confined spaces. Well ventilated areas are preferred. Keep clear all ventilation openings of obstructions.
- Do not rely on smell to detect potential leaks of propane refrigerant. Propane refrigerant is a high purity propane gas and does not contain any stanching agent(s). Stanching agents are typically used in fuel-grade propane and natural gas to detect their presence in air by relying on smell.
- All repairs must be performed in well ventilated areas.
- To minimize the risk of possible ignition due to incorrect parts or improper service, component parts shall be replaced with like components and servicing shall be done by service personnel authorized by Minus Forty Technologies.
- Do not attempt to modify the unit or remove any functional part(s) from the unit.
- Handle the unit with care to avoid any damage.
- When transporting the unit, all appropriate safety considerations must be considered. Check with local Department of Transportation for detailed requirements pertaining to transportation of flammable gasses.

⚠ WARNING

IN THE EVENT THE ELECTRONIC SAFETY LOCK (IF EQUIPPED) HAS LOCKED THE FREEZER, THE FOOD IN THE FREEZER MUST BE INSPECTED TO INSURE ITS SAFETY AND QUALITY FOR CONSUMPTION.

⚠ WARNING

MAKE SURE THE FREEZER IS DISCONNECTED FROM THE POWER SUPPLY BEFORE ANY SERVICE. PRESS THE POWER SWITCH TO THE “OFF” POSITION THEN UNPLUG THE POWER CORD FROM THE ELECTRICAL RECEPTACLE.

ALL SERVICE WORK MUST BE PERFORMED BY CERTIFIED, FACTORY AUTHORIZED SERVICE PERSONNEL ONLY. COMPONENT PARTS MUST BE REPLACED WITH LIKE COMPONENTS.

COMMERCIAL USE ONLY. NOT FOR HOUSEHOLD USE.

FOR INDOOR USE ONLY.

⚠ SAFETY PRECAUTIONS

READ ALL INSTRUCTIONS AND SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.

DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS NEAR THIS OR ANY OTHER APPLIANCE.

DO NOT TOUCH COLD SURFACES WITH DAMP OR WET HANDS. SKIN MAY STICK TO EXTREMELY COLD SURFACES.

DO NOT ALLOW CHILDREN TO CLIMB, HANG OR STAND ON FREEZER SHELVES.

KEEP FINGERS OUT OF PINCH-POINT AREAS.

DISCONNECT POWER TO THE UNIT PRIOR TO CLEANING OR REPAIRING.

BEFORE DISCARDING THIS OR ANY OTHER APPLIANCE, REMOVE THE DOORS OR LIDS TO REDUCE RISK OF CHILD ENTRAPMENT.

WHEN RECYCLING THE UNIT, REFRIGERANTS MUST BE HANDLED IN ACCORDANCE WITH LOCAL AND NATIONAL REGULATIONS.

IMPORTANT

THIS APPLIANCE CAN BE USED BY CHILDREN AGED FROM 8 YEARS AND ABOVE AND PERSONS WITH REDUCED PHYSICAL, SENSORY OR MENTAL CAPABILITIES OR LACK OF EXPERIENCE AND KNOWLEDGE IF THEY HAVE BEEN GIVEN SUPERVISION OR INSTRUCTION CONCERNING THE USE OF THE APPLIANCE IN A SAFE WAY AND UNDERSTAND THE HAZARDS INVOLVED.

CHILDREN SHALL NOT PLAY WITH THE APPLIANCE.

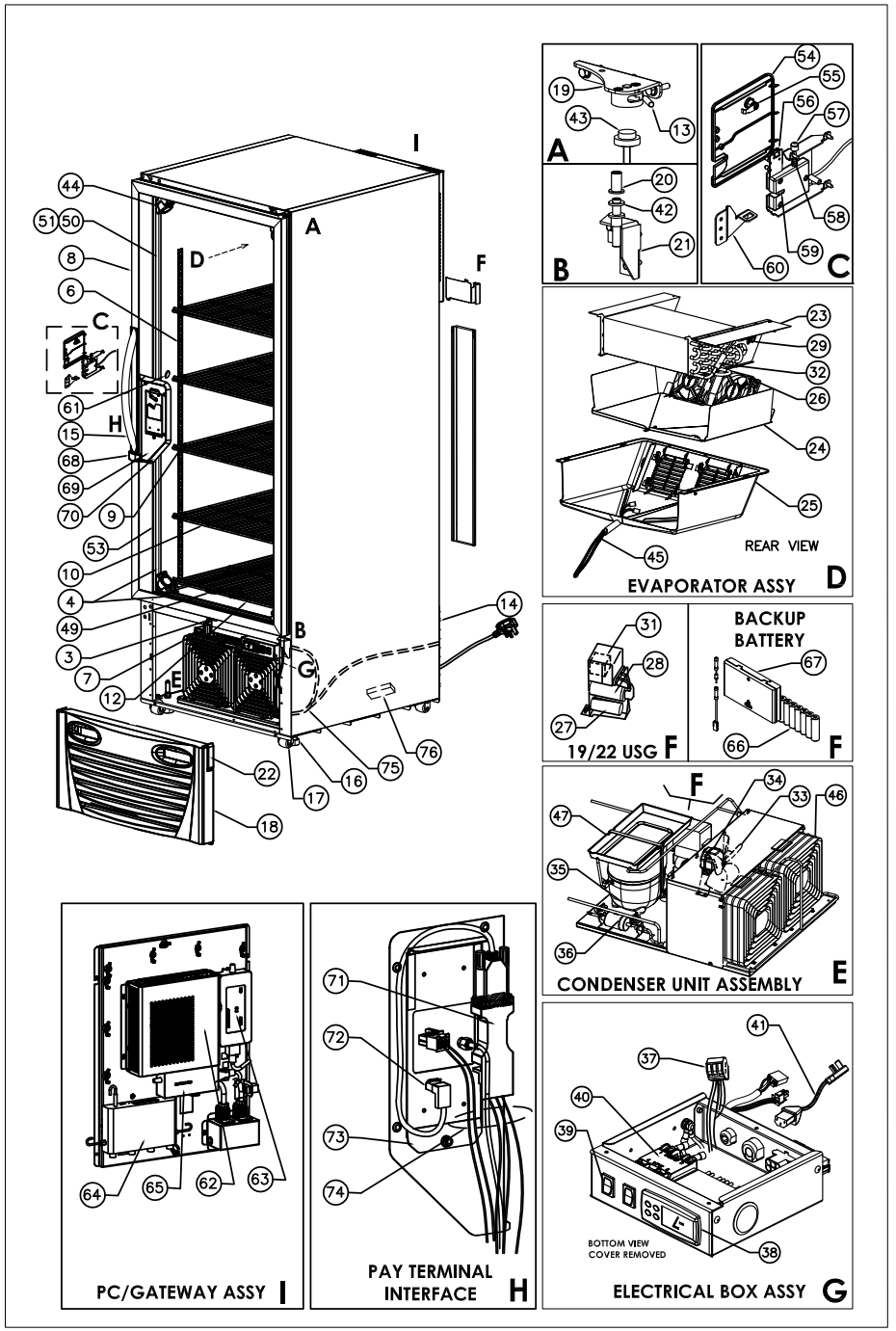
CLEANING AND USER MAINTENANCE SHALL NOT BE MADE BY CHILDREN WITHOUT SUPERVISION.

NOTICE

OPERATING THE FREEZER FOR 24 HOURS PRIOR TO LOADING PRODUCT IS RECOMMENDED

MONITOR FREEZER TEMPERATURE REGULARLY

ILLUSTRATION: 22-USGF-F2PV



PARTS LIST: 22-USGF-F2PV

No	Description
1	not used
2	not used
3	Door Switch
4	Heater Breaker Seal (Bottom/Top)
5	LED Driver
6	Pilaster
7	Door Sensor
8	Door Assembly(Right or Left Hand)
9	Pilaster Clip
10	Shelf
11	Interior Back Grill
12	Bottom Shelf
13	Torsion Pin
14	Rear Grill
15	Door Handle
16	Leveling Leg
17	Caster
18	Front Bottom Grill
19	Door Top Bracket(Right or Left)
20	Bushing, Nylon
21	Door Bottom Bracket(Right or Left)
22	not used
23	Evaporator Coil
24	Evaporator Tray
25	Evaporator Shroud
26	Evaporator Fan
27	Start Capacitor
28	Run Capacitor
29	T-Stat, Defrost Limit
30	not used
31	Relay Potential
32	Defrost Heater
33	Fan Blade(Condensing Unit)
34	Fan Motor(Condensing Unit)
35	Compressor
36	Filter Drier
37	3 Pole Terminal Block
38	Controller
39	Rocker Switch
40	Compressor Relay

No	Description
41	Power Cord UK/IRELAND
	Power Cord EUROPE
	Power Cord AUS/NZ
42	Nylon Washer
43	Torsion Bar
44	Camera Module
45	Drain Tube Heater
46	Condenser Coil
47	Condensate Tray Assembly
48	not used
49	Pressure Relief Ball
50	Heater Breaker Seal (LED)
51	Cabinet LED Strip
52	not used
53	Heater Breaker Door
54	Lock Cover
55	Camlock
56	Lock LSIB
57	Lock Release Pin
58	Lock Release Spring
59	Lock
60	Lock Latch
61	Lock Pushbutton
62	Mini PC
63	Mini PC Adapter
64	Connectivity Gateway
65	Connectivity Gateway Adapter
66	Backup Battery
67	Battery Holder
68	Wire Cover(POS Terminal)
69	Handle Bracket(POS Terminal)
70	Bezel (POS Terminal)
71	RS-485/232 Converter(POS Terminal)
72	RJ45/RS-232 Harness(POS Terminal)
73	Mounting Base(POS Terminal)
74	Door Wire Harness(POS Terminal)
75	Controller Wire Harness(POS Ter-
76	LED Driver(POS Terminal)
77	not used
78	not used

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STANDARD WARRANTY FOR MINUS FORTY®
REFRIGERATION EQUIPMENT AND ACCESSORIES

LIMITED WARRANTY

Minus Forty® Technologies warrants its products to be free from defect as to workmanship and materials for a period of twelve (12) months from the time of delivery.

Minus Forty® Technologies will at its option either replace or repair any defective parts returned within twelve (12) months of the time of delivery, transportation charges prepaid, which Minus Forty® Technologies in its sole discretion, determines to be defective.

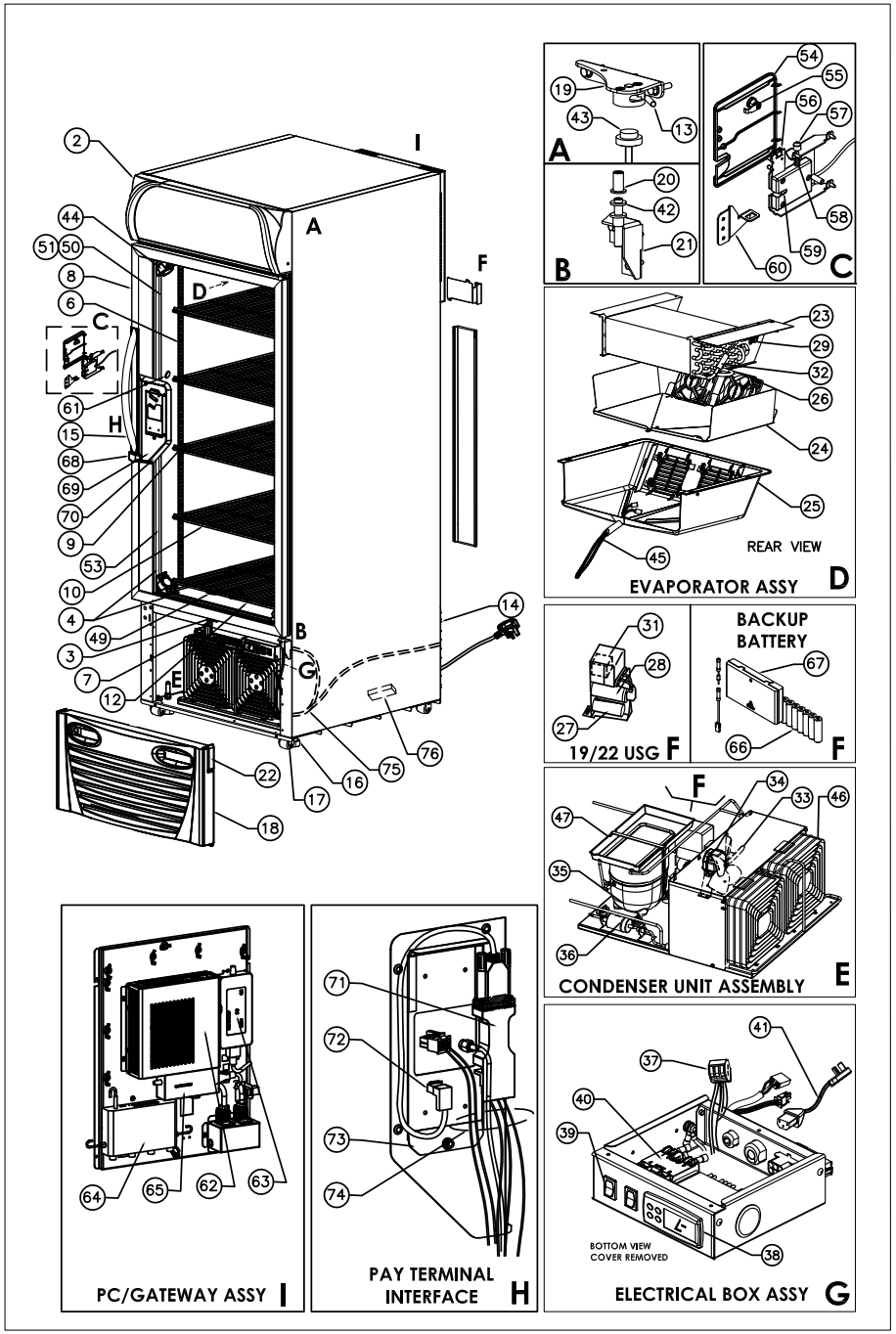
This warranty shall not apply to any products that have been repaired or altered outside of Minus Forty® Technologies factory or repair facilities if the repairs in the judgement of Minus Forty® Technologies have affected the reliability or wear of the product and nor does the guarantee apply to any product which has been subject to misuse, accident or to any product which has not been maintained pursuant to the instruction of Minus Forty® Technologies.

This warranty does not extend to any consequential damage caused by the failure of the product under any circumstance and further, Minus Forty® Technologies shall not be responsible for damage to the contents of the product or any economic loss caused by the failure of the product, whether such loss is suffered by the customer or a third party user of the product or whether the contents are owned by the customer or a third party user or supplier.

minusforty®

Effective January 1, 1996

ILLUSTRATION: 22-USGF-L2PV



PARTS LIST: 22-USGF-L2PV

No	Description
1	Display LED Strip
2	Top Display Assembly
3	Door Switch
4	Heater Breaker Seal (Bottom/Top)
5	LED Driver
6	Pilaster
7	Door Sensor
8	Door Assembly(Right or Left Hand)
9	Pilaster Clip
10	Shelf
11	Interior Back Grill
12	Bottom Shelf
13	Torsion Pin
14	Rear Grill
15	Door Handle
16	Leveling Leg
17	Caster
18	Front Bottom Grill
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74	Door Wire Harness(POS Terminal)
75	Controller Wire Harness(POS Terminal)
76	LED Driver(POS Terminal)
77	not used
78	not used

INSTALLATION INSTRUCTIONS

⚠ WARNING

This appliance MUST be installed on a dedicated grounded circuit protected with a circuit breaker or a time delay fuse. Do not remove ground prong. If the cord or plug is damaged, replace with the same type. Refrigeration and electrical work must be performed by a qualified technician. Failure to follow these instructions can result in injury, death, fire, or electrical shock.

POWER REQUIREMENTS:

All models require a dedicated and properly grounded 230VAC/50Hz/1Ph circuit with a receptacle. Wiring and breaker/fuse must be sized according to the amperage rating stated on the serial plate and applicable government and local regulations. Failure to use a dedicated circuit may cause the circuit breaker to trip off and/or cause voltage drops. As a result, power to the freezer may be interrupted and freezing performance can be adversely affected which may cause equipment damage and/or product loss.

Voltage supply to the freezer must not vary more than ±6% of the nominal 230V, or performance may be affected. The warranty and liability does not cover damage resulting from excessive voltage variations.

- **DO NOT USE AN EXTENSION CORD**
- **DO NOT CUT, REMOVE OR BYPASS THE GROUNDING PRONG FROM THE PLUG**
- **DO NOT PLUG FREEZER INTO AN OUTLET CONTROLLED BY A WALL SWITCH**
- **ENSURE POWER CORD IS NOT CUT OR DAMAGED FROM PINCHING, KNOTTING, OR MISHANDLING**

CABINET LOCATION: This appliance is rated for Climate Class (EN23953), Category 4 (30°C, 55%RH) and is to be operated in an environment not greater than 30°C (86ºF) and 55% relative humidity.
An air space of at least 2" (5cm) around sides, 3" (7.5cm) at the back, and 6" (15cm) at the top of the freezer must be maintained. Do not place freezer in direct sunlight; do not place freezer under or near heat range or heating vent.

CABINET LEVELING: The freezer must be completely leveled side to side and front to back or slightly tilted front to back but never tilted forward. Once the freezer is placed in its final location, use a carpenter level to level the freezer. Proper leveling of the freezer is important for the door closing and water drainage during the defrost cycle. There are two leg levelers in the front that can be adjusted. First, loosen the nuts using an adjustable wrench. Second, turn levelers counter-clockwise to raise the freezer, or clockwise to lower, until they reach the leveled position. Lastly, tighten the nuts again to lock the legs.

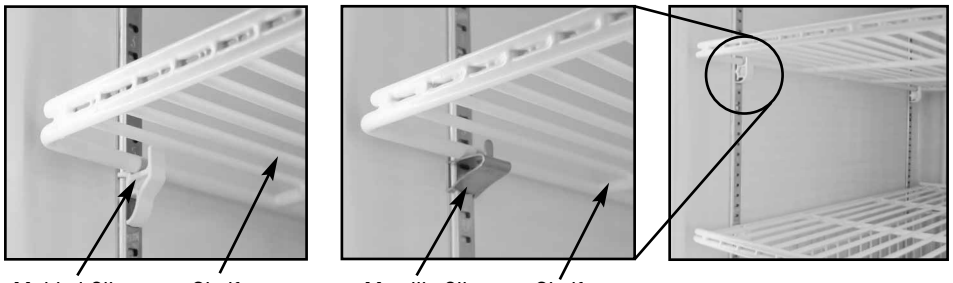
NOTICE:
Failure to follow these instructions may void the warranty and/or cause loss of product.

PROTECTIVE DOOR FILM REMOVAL

The anti-fog glass door has a protective film on the inner side. After the unit has been installed, peel and remove the protective film covering the inner glass surface.

SHELF AND BASKET, INSTALLATION AND ADJUSTMENT

The freezer is supplied with shelves and molded or metallic clips. The freezer has slotted pilasters to position the shelves according to the customer's needs.



The clips can be removed at any time if a new position is chosen for the shelf or basket. To remove, grab the clip with your thumb and index finger, then push up the bottom surface until the clip is free. Once the clips are in place, put the shelf on top. Once the shelves are securely in place, baskets (if equipped) may be positioned on the shelves.

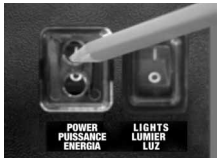
OPERATING INSTRUCTIONS

⚠ WARNING

Check with your power company if you are not certain of your power supply.
Before connecting to power supply the freezer should be upright and idle for at least 1 hour.

Once the unit has been installed and the power supply has been connected, press the power switch to the "ON" position using a pen or pencil.

The compressor will start to run after 3 minutes. This can be confirmed by listening for a slight humming or a slight vibration.



NOTE:

If the freezer is running and the power supply is interrupted, the freezer will not restart immediately. There is a 3 minute delay for compressor protection.

Once the freezer is running, the inside temperature will start to cool down within a couple of minutes. Ensure that the freezer has reached the desired temperature (this will take between 2 to 3 hours) by checking the electronic control display readout before loading product. **It is strongly recommended to run the freezer empty for 24 hours before loading any products.**

TROUBLESHOOTING GUIDE CONT...

for online reference go to duenorth.com

⚠ WARNING

Make sure the freezer is disconnected from the power supply before any service. Press the freezer switch to the "Off" position then unplug the power cords from electrical receptacle. All service work must be conducted by a certified technician only.

Problem	Possible Cause	Action
Condensation on glass door.	• Door not closing properly. • Room humidity too high.	• Check the spring tension or any obstruction • To prevent condensation, room humidity should be below 55%.
LED strips are not working.	• Light switch is off. • Faulty LED strip.	• Check if the light switch is on. • Replace the LED strip. (See page 17)
Cabinet is noisy.	• Part(s) loose • Tubing vibrating	• Locate and tighten loose part(s). • Ensure tubing is not in contact with other tubing or components.
Door does not close tight.	• Freezer is not leveled. • Hinges are loose / not adjusted. • Gasket is out of the groove.	• Level the unit (See page 2). • Adjust / tighten the hinge screws. • Check gasket condition. Adjust position or replace gasket.
Electronic control blank, flashing, or displaying incorrect characters.	• Wires disconnected at back of electronic control.	• See actions described in the controller section (pages 5 - 7)
Evaporator fan does not run.	• Fan wire disconnected. • Door switch not working.	• Check wiring. • Check door switch.
Alarms on electronic controller.	• Various	• See Controller Alarms and Signals section (page 6)

TROUBLESHOOTING GUIDE

for online reference go to duenorth.com

⚠ WARNING

Make sure the freezer is disconnected from the power supply before any service. Press the freezer switch to the “Off” position then unplug the power cords from electrical receptacle. All service work must be conducted by a certified technician only.

Problem	Possible Cause	Action
Freezer not operating.	• Freezer switch located on the front grill turned off.	• Turn power switch on.
	• Fuse blown / circuit breaker tripped.	• Replace fuse/reset circuit breaker.
	• Power cord unplugged.	• Plug in power cord.
	• Receptacle not working.	• Check receptacle.
	• Improper voltage supplied to cabinet / over load circuit.	• Remove extension cords or other equipment on the same circuit.
Freezer not getting cold but compressor is operating.	• Freezer located in direct sunlight or ambient (room) temperature is too hot.	• Move freezer away from direct sunlight. • Room temperature is recommended not to exceed 86ºF (30ºC), 55% RH.
	• Condenser clogged with dust.	• See page 8 (Cleaning)
Condensing unit operating for a prolonged period or continuously.	• Freezer loaded with excessive amount of warm product.	• Allow enough time for product to cool down.
	• Prolonged door opening or door ajar.	• Close door when not in use. Avoid prolonged door openings.
	• Door not closing properly.	• Level the unit (See page 2). Check gasket condition. Check the door spring.
	• Clogged condenser.	• Clean the condenser (See page 8).
Freezer cabinet temperature too high.	• Electronic control set too high.	• Adjust control setting (See page 5).
	• Poor air circulation in cabinet.	• Follow instructions for product loading (See page 4)
	• Insufficient clearance around cabinet or ambient temperature too high.	• Keep 2" (5cm) free space around sides of the freezer, 3" (7.5cm) at the back, and 6" (15cm) at the top of the freezer. Room temperature is recommended not to exceed 86ºF (30ºC), 55% RH. Make sure the air flow to the compressor is not obstructed.
	• Clogged condenser	• Clean the condenser (See page 8)

PRODUCT LOADING

NOTICE:

Ensure the freezer has reached the proper operating temperature before loading product. The electronic control displays the interior cabinet temperature.

Product loss is not covered under warranty.

For enhanced performance of the unit and to avoid spoilage of perishable products, follow these instructions:

DO leave at least 6” (15 cm) free space between the fan and the product for air circulation.

DO NOT stock any products against the evaporator fan. See load limit labels inside the cabinet for reference.

DO NOT block the air space behind the grill. Free space is required for proper air circulation.

AVOID removing the bottom shelf from the inner bottom.

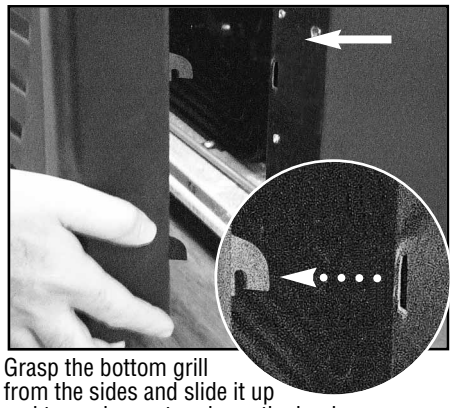
DO NOT overstock the unit.

SHELF LOAD LIMIT

Model	Maximum Load (Kg)	Maximum Load (lb)
22-USGF-F2PV	49	108
22-USGF-L2PV	49	108

HOW TO REMOVE THE FRONT BOTTOM GRILL

With a screwdriver remove the bottom screws from the grill.



Grasp the bottom grill from the sides and slide it up and towards you to release the hooks.

To replace bottom grill, align hooks of the grill with slots and slide the grill back onto the freezer. Replace the bottom screws to secure the grill to the cabinet.

TEMPERATURE ADJUSTMENT AND SWITCH FUNCTIONS

Locate the electronic control on the right of the front bottom grill. The electronic control displays actual temperature inside the freezer. In addition, the electronic control turns the refrigeration system OFF when freezer reaches the set temperature, and turns the refrigeration system ON after the freezer temperature rises by 3˚C or after 7 minutes, whichever lasts longer.

To adjust the set temperature, follow these steps:

1. Press and release P button; the set temperature and SP1 are displayed alternatively on the controller
2. Press the UP or DOWN buttons to adjust the set temperature.
3. Press P to store the adjusted value; The electronic control will return to cabinet temperature display. The U Button on the electronic controller is used for displaying cabinet and defrost temperatures (PR1 and PR2 parameters)

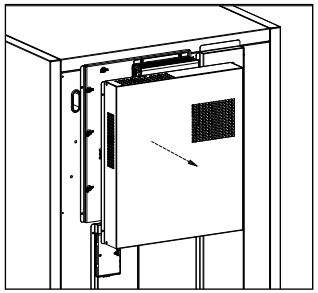
There are two switches located on the right hand side of the controller.
Their functions are to manually switch electronic components of the freezer.

1. POWER switch turns the refrigeration system (including all electrical parts) ON or OFF. (use a pen or pencil to press the power switch to the ON or OFF position).
2. LIGHT switch turns the internal and external lights ON or OFF.

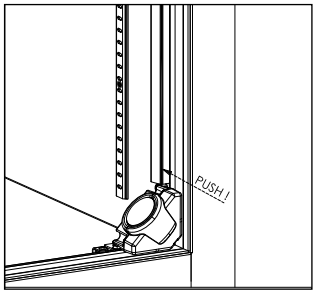
M45D ELECTRONIC CONTROLLER (MODELS WITH SMARTLOCK)

ELECTRONIC CONTROL POWER LIGHTS

CAMERA REPLACEMENT (IF EQUIPPED)



To replace the camera, locate the CPU cover on the back of the cooler. Remove four(4) screws and place the cover on top of the unit. Locate USB cable ends and disconnect from CPU.



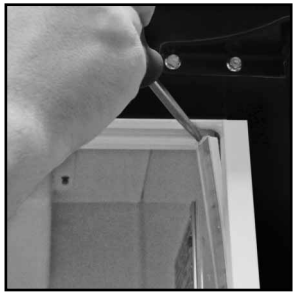
Locate defective Camera and untighten screws for both Camera and cable clip holding USB cable or open raceway by pushing rubber hinge. Replace Camera and reverse previous steps to complete replacement.

INTERIOR LED STRIP REPLACEMENT

⚠ WARNING

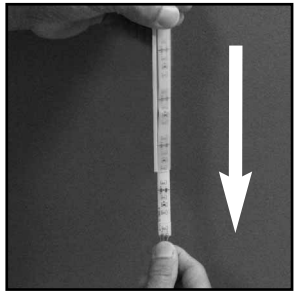
Make sure the unit is disconnected from the power supply before any service. Press the power switch to the "Off" position then unplug the power cord from electrical receptacle. All service work must be conducted by a certified technician only.

Remove silicone corner beads. Pry the screwdriver between plastic cover and cabinet frame. Pry from one end to the other.



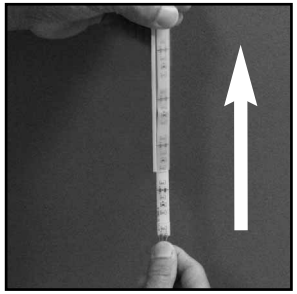
Pry the screwdriver between plastic lens cover and cabinet frame.

Carefully remove the plastic lens cover from cabinet frame.



Slide faulty LED strip from plastic cover.

Locate the wire for the LED strip in the compressor compartment and disconnect from connectors.



Install the new LED strip into the plastic cover.

Attach wires, observing color coding. Press lens cover back to cabinet frame.

Snap plastic cover back to cabinet frame. Apply silicone at plastic cover corners.

Plug the unit in and make sure the light switch on the bottom grill is in the 'ON' position.

M45D CONTROLLER ALARMS AND SIGNALS

The electronic controller can detect and signal several alarm conditions: high/low freezer temperatures, door open and open or short-circuited temperature probes. If the alarm conditions last longer than pre-programmed time delays, the controller will turn ON an audio signal (buzzer). Also a LED light located in the upper left corner of the controller, next to the caution symbol, will glow in case an alarm is active.

Once the alarm conditions have been fixed, the controller will turn off the alarms on its own. Alarms can be disabled by pressing any controller button, during alarm conditions

Message	Cause	Action
Pr1 dISC	Cabinet temperature probe open	• Check connections • Replace probe
Pr1 Short CC	Cabinet temperature probe short-circuited	
Pr2 dISC	Defrost probe open	• Check connection • Replace probe
Pr2 Short CC	Defrost probe short-circuited	
EPr	Internal memory error	• Replace controller
Err	Internal memory error	• Replace controller
StArt dELAY	Start up delay in progress	• Wait for 6 minutes
H I ALArM	High temperature alarm in progress	• Check door closing and gasket seal for damage. • See Troubleshooting (pages 18-19)
LO ALArM	Low temperature alarm in progress	• Check controller. probes and compressor relay. • Adjust set temperature
door oPEn	Door open	• Close door
dEFroSt	Defrosting in progress	• none
PoSt dEFroSt	Post-defrosting in progress	• none
CC CYCLE	"Turbo" mode active	• none
HAC	Stored HACCP alarm on controller	• See Accessing and Resetting Alarms Data on the Electronic Controller (pages 13-14)
H IºF dELAY or H IºC dELAY	Restocking alarm delay	• See Restocking Delay (page 13)
AL	Digital input alarm in progress	• Presently not used.
LocHEd	Door locked	• none • Door locked by POS Terminal to prevent unauthorized access
UnLocHEd	Door unlocked	• none • Door unlocked by POS Terminal for authorized access
dFt	Very low voltage event	• Press any button to clear the dFt message. • Check setpoint and adjust if changed by the low voltage event.

M45D CONTROLLER SYMBOLS AND FUNCTIONS

At the left side of the controller display are the following LED indicators:

1. Indicates compressor status:
   - Light on - Compressor cooling on
   - Light off - Compressor cooling off
   - Light flashing - Start-up delay in progress

2. Indicates defrost status:
   - Light on - Defrost in progress
   - Light flashing - Freezer in dripping mode

3. Indicates fan status:
   - Light on - Cabinet fan ON
   - Light off - Cabinet fan OFF
   - Light flashing - Start-up delay in progress after defrost.

4. Indicates internal clock is running.
   - Flashing slowly - Clock error (ie:clock chip not working).
   - Flashing rapidly - Clock battery is drained.

   Cyclical Flashing for delays indication:
   - One flash, 2 seconds off - High temperature alarm delay (standard)
   - Two flashes, 2 seconds off - High temperature alarm delay in defrost and post-defrost
   - Three flashes, 2 seconds off - High temperature alarm delay during restocking
   - Four flashes, 2 seconds off - High temperature alarm delay after power-up

5. Indicates the alarm status:
   - Light on - Alarm is on
   - Light off - Alarm is off
   - Light flashing - Alarm silenced or memorized

6. Indicates the lock status:
   - Light on - Unit locked
   - Light off - Unit unlocked
   - Light Flashing - Locking delayed

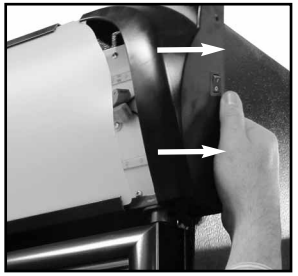
ISD TRANS-LIGHT LED STRIP REPLACEMENT (IF EQUIPPED)

⚠ WARNING

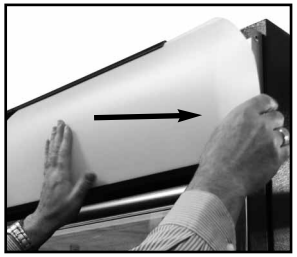
Make sure the freezer is disconnected from the power supply before any service. Press the freezer switch to the “Off” position then unplug the power cord from electrical receptacle. All service work must be conducted by a certified technician only.

Remove the plastic screw covers from the right hand side of the display.

With a screwdriver remove the two screws from the right hand side of the display.

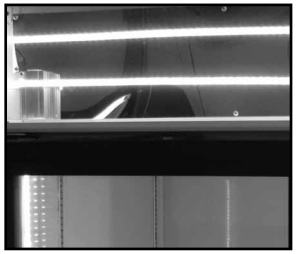


Slide the right hand display end cap from the display frame.

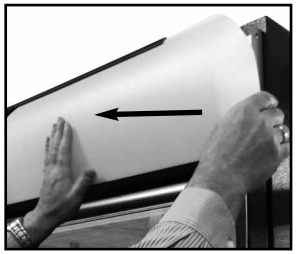


Slide the diffuser panel and graphic panel (if used) out of the frame channel.

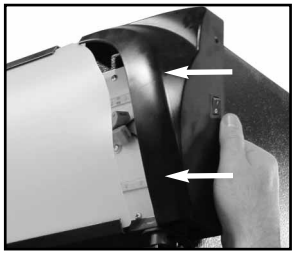
Disconnect LED strip wires from connectors and peel LED strips off freezer.



Install replacement LED strips at the same place and connect wires. Observe color coding.

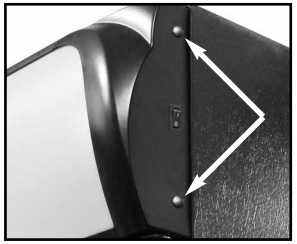


Replace the diffuser panel and graphic panel (if used).



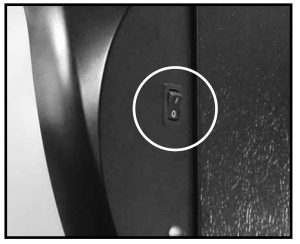
Replace the display end cap.

Replace the two screws on the display end cap.



Replace the plastic screw covers on the display end cap.

Plug the freezer in and make sure the light switch on the bottom grill is in the ‘ON’ position.



To turn the display lighting “ON” or “OFF”, use the display light switch.

FIELD TESTING OF THE FOOD SAFETY LOCK

Proper operation of the food safety lock can be verified by following steps:
1. Ensure the freezer and the POS Terminal power cords are plugged into electrical wall receptacles, and both devices are powered.
2. Ensure the freezer door is closed and locked.
3. Using either a regular or secure user interface on the POS Terminal, initiate the POS Terminal to unlock the door. For more information on the POS Terminal operation, refer to the manual provided separately with the POS Terminal. In normal access mode, the POS Terminal should unlock the door and relock it upon door closing. If the freezer is in a high-temp alarm state or has an unreviewed high-temp alarm, or has temperature probe malfunctioning, the POS Terminal should not unlock the door and a suitable message should be shown on its display. The normal operation should be disabled until the root cause(s) is rectified and normal access mode reinstated through a secure user interface on the POS Terminal.

If further lock verification is needed, a false high-temp alarm can also be simulated by following these steps:
• Ensure the electronic controller is not in any of the high-temp delays (power-up, defrost, restocking, high-temp). See page 7 for the controller clock flashing as a visual indicator of high-temp delays.
• Gain access to the refrigerated compartment either via the POS Terminal or the lock mechanical key provided with the freezer.
• Place a warm putty over the temperature sensor holder and keep the electronic controller reading above 5ºC for 30 minutes. A few changes of warm putty may be needed to keep the sensor above 5ºC. Make sure the door is closed immediately after each putty change to minimize warming of the stored food products. Monitor cabinet temperature on the electronic controller display.

• Once the false high-temp alarm is activated after 30 minutes, the controller should scroll “Hi F” and the buzzer should beep cyclically. Note: Some freezers may come with the buzzer disabled.
• The POS Terminal should disable the normal access mode for regular user access and keep door locked.
• Gain access to the refrigerated compartment via the POS Terminal secure access or the lock mechanical key, and remove the putty.
• Close the door.
• Wait until cabinet temperature drops below 5ºC, and through a secure user interface on the POS Terminal, reinstate access mode operation.

CONDENSER CLEANING

The freezer is designed for minimal condenser cleaning. With the “lint free” condenser design, most dust and dirt will pass right through the condenser. To insure the proper operation, we recommend scheduled check-ups and cleaning every three to four months. This period may be shorter or longer depending on the location in which the freezer was installed. A dirty condenser can result in a voided warranty, part failure, product loss, and higher electrical cost. The steps to clean the condenser are as follows:

1. Remove the front bottom grill (see page 5)
2. Switch off power at freezer switch on control panel.
3. Unplug power cord from electrical receptacle.
4. Brush the dirt, dust and paper off the condenser coil plate, all the way to the fan. Use either a vacuum or blow with a compressed air supply if available.
5. When finished with cleaning, plug power cord back into receptacle.
6. Switch power back on at switch on control panel.
7. Replace bottom grill (see page 5)

NOTE:
The cleaning of the condenser is a service not covered under the warranty

CABINET CLEANING

⚠ WARNING
To reduce the risk of fire, electrical shock or personal injury, disconnect the freezer from the power source before cleaning. Press the freezer switch to the “Off” position, then unplug the power cord from the receptacle. Keep liquids away from electrical and electronic components.

⚠ CAUTION
Do not apply hot water on cold glass components. Allow glass to warm sufficiently to prevent shattering.

⚠ CAUTION
Do not use ammonia or bleach based cleaners or abrasive type cleaners.
Do not use abrasive cleaning pads.

To clean the exterior whether it has the original finish or a decal package, use only a mild non-abrasive liquid cleaner, water and a soft cloth. For stainless steel parts, a commercial stainless steel polish and cleaner can be used. Always apply the cleaner to the soft cloth and then clean the freezer. Never apply the cleaner directly to the freezer. Excess liquid applied to the surface may seep into the electronic control and switches which can cause an electrical hazard or a malfunction.

DO NOT USE abrasive or caustic cleaners, scouring pads, solvents or flammable liquids.

GENERAL

The freezer should be cleaned at regular intervals to meet a good standard of hygiene and to keep the freezer attractive as an effective point of purchase display.

INTERIOR CLEANING

Use only mild non-abrasive liquid cleaner, water and a soft cloth for the entire freezer interior. Make sure to wipe off all residue.

CABINET CLEANING (CONT'D)

EXTERIOR CLEANING

Use only mild non-abrasive liquid cleaner, water and a soft cloth for the painted surfaces and a stainless steel polish and cleaner for the stainless steel surfaces if desired.

CLEANING GLASS DOOR EXTERIOR

Due to the special coating on the glass, use only a mild, non-abrasive liquid cleaner, water, and a soft cloth. The same applies to the plastic door frame.

ANTI FOG GLASS DOOR INTERIOR (IF EQUIPPED)

The anti-fog glass door has a protective film on the inner side. After the unit has been installed, peel and remove the protective film covering the inner glass surface.

The Anti-Fog coating is a scratch resistant, permanent coating applied on the inner surface of the door glass. It prevents fogging and icing of cold glass surface after door opening and closing.

Cleaning can be performed using common household glass cleaners (Sidolin®, Windex®, Mr. Muscle ®) and a tissue or paper towel. However, on very cold surfaces these cleaners may freeze. In these cases a mixture with 30% pure alcohol and water may be used.
At temperatures above 0°C, warm hand temperature water with a mild detergent can be applied.

Do not use abrasive cleaners or materials like Ajax®, Scotch Brite® or Steel Wool.
Do not contaminate the door with silicone.
Do not use tape, glue, stickers, attachments, magic markers or similar products on the coating.
Do not use razor blades or any other mechanical device to remove foreign residues or objects directly from the coating.

Do not use cleaners or materials that hinder the anti-fog performance by leaving residue or damaging the surface. Examples of these cleaners include: ArmorAll®, Tilex®, Bleach, Windex® No-Drip, Windex® Wipes, Pledge®, or any product containing silicone oils or waxes.

Recommended cleaners include: Greased Lightning®, Formula 409® Grease & Grime®, Fantastik®, Windex® Vinegar, Windex® Original, MicroClean Professional APC® (formerly Now® all purpose cleaner), Mean Green®, or Mr. Clean® (degreasing cleaners).

Recommended cleaning is with a soft dry or slightly damp towel, or with one of the degreasing cleaners listed above.

ACCESSING AND RESETTING ALARMS DATA ON THE ELECTRONIC CONTROLLER CONT'D.

The chart below (Figure 6) shows how to navigate through the controller to access alarm data.

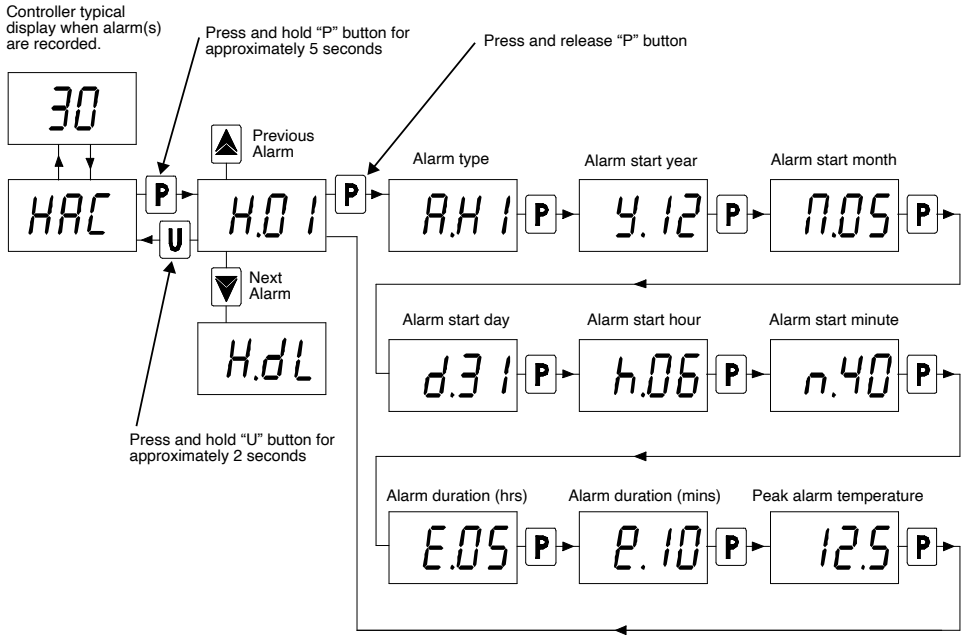


Figure 6

If an alarm flashes (H.01...H.10) when a user scrolls through the alarm list, the flashing indicates that the alarm has never been reviewed. After pressing the P key on an alarm and reviewing any of its data, the alarm will be displayed solid afterwards to indicate that the alarm has been reviewed. If the alarm is still ongoing at the time of its display, the data are displayed but the ongoing alarm will be flashing all time. In the event of non-reviewed and/or still ongoing alarms, the electronic control displays the message "HAC", alternating it with the temperature reading.
An alarm can be deleted from the controller memory by holding the arrow-down button for more than 5 seconds while one of the alarm data is displayed. After alarm deletion, the controller displays three dashes: ---. Similarly, the value of the "H.dL" parameter can be reset to 0 by holding the arrow-down button for more than 5 seconds while the value is displayed. All recorded alarms can be deleted at once, by holding the arrow down button in the controller regular display. After all alarms deletion, the controller displays three dashes: ---.

ENTRAPMENT LOCK RELEASE

The lock is equipped with an emergency entrapment release feature.

In the event of entrapment the door can be unlocked from inside the compartment by pressing and holding the pushbutton, then pushing against the door (Figure 4).

RESTOCKING DELAY

During or immediately after product stocking, temperatures inside the cabinet food compartment may rise above the food safety temperature limits, thereby causing a potential for nuisance high temperature alarms. To prevent such nuisance events, the restocking alarm delay needs to be activated. This delay can be activated by slightly opening and closing the compartment door repeatedly three times within 5 seconds.

After the triple switch activation, a scrolling message “HI F deLAy or HI C dELAy” is displayed three times on the controller accompanied by two buzzer beeps (if buzzer enabled). The clock symbol on the controller will rapidly flash three (3) times during restocking delay. This confirms that the delay has been accepted by the electronic controller, that any active high temperature alarm is cancelled, and that the restocking delay is now in progress. This delay prevents high temperature alarms from being activated for a factory pre-set time (30 minutes). During this delay time, the freezer should bring the temperature in the food storage temperature within normal operating range.

If the Restocking Delay has been entered inadvertently, it can be terminated by pressing and holding the “U” button for 5 seconds until the controller beeps once (if buzzer enabled) and the clock symbol stops with three rapid flashes.

ACCESSING AND RESETTING ALARMS DATA ON THE ELECTRONIC CONTROLLER

The electronic controller records two types of alarms: high temperature and power failures (black outs). If there have been multiple alarms, the electronic controller records up to 10 alarms sorts them form the most recent (H.01) to the oldest (H.10). If there have been more than 10 alarms, the electronic controller deletes alarms on historical basis (newer ones are kept), and keeps the number of deleted alarms in the parameter H.dL by increasing this variable by 1 each time an alarm is deleted.

For each recorded alarm, the following data are recorded:

- Alarm type
  A.H1, high temperature alarm
  A.bo, power failure (black out)
- Alarm start date and time
  y.dd, dd = 10 ÷ 99, last two digits of the year
  M.dd, dd = 1 ÷ 12, month
  d.dd, dd = 1÷ 31, day
  h.dd, dd = 0 ÷ 23, hour
  n.dd, dd = 0 ÷ 59, minute

  NOTE: Since the electronic controller is powered through a battery backup device, the electronic controller will record power failure when the battery backup drains out, not when the freezer loses power on the electric receptacle.
- Alarm duration
  E.dd, dd = 0 ÷ 99, number of hours the alarm lasted
  e.dd, dd = 0 ÷ 23, number of minutes the alarm lasted
- Peak temperature in the cabinet during the high temperature alarm condition (A.H1), or temperature in the cabinet when the power is restored after power failure (A.bo)

The chart (Figure 6.) on Page 14 shows how to navigate through the controller to access alarm data.

POS TERMINAL AND ELECTRONIC FOOD SAFETY LOCK

⚠ WARNING

READ THIS SECTION IN ITS ENTIRETY AND FOLLOW OUTLINED INSTRUCTIONS BEFORE OPERATING THE UNIT. IN THE EVENT THE POS TERMINAL AND THE ELECTRONIC SAFETY LOCK HAS LOCKED THE UNIT AND DISABLED ACCESS MODE, THE FOOD IN THE UNIT MUST BE INSPECTED TO INSURE ITS SAFETY AND QUALITY FOR CONSUMPTION.

⚠ ATTENTION

IMMEDIATELY AFTER POWERING ON THE UNIT, “HAC” MESSAGE MAY BE SCROLLING ON THE ELECTRONIC CONTROLLER. “HAC” INDICATES A PRESENT, OR PAST UNREVIEWED, HIGH TEMPERATURE ALARM CONDITION AND/OR POWER LOSS. TO REVIEW DATE, TIME AND DURATIONS OF THOSE EVENTS, REFER TO THE APPLICABLE SECTION BELOW. TO CLEAR “HAC” MESSAGE, HOLD DOWN THE ARROW BUTTON ON THE CONTROLLER UNTIL THREE DASHES APPEAR, THEN RELEASE THE BUTTON. “HAC” SCROLLING MESSAGE SHOULD DISSAPPEAR.

⚠ ATTENTION

TURN THE BATTERY BACKUP OFF WHEN THE UNIT IS DISCONNECTED FROM THE MAIN POWER SOURCE TO AVOID DEPLETING THE BATTERY BACKUP CHARGE. DEPLETING THE BATTERY BACKUP CHARGE REDUCES ITS LIFECYCLE AND LEADS TO BATTERY REPLACEMENT. SEE THE LABELS ON THE UNIT AND SECTIONS BELOW HOW TO TURN THE BATTERY BACKUP ON/OFF.

GENERAL DESCRIPTION

The POS Terminal together with the electronic refrigeration controller enable typical access operation when the freezer is normal operating state. The freezer default door state is locked upon power-up, and all unlocking and locking actions are controlled by the POS Terminal. In the event of refrigeration/cooling malfunctioning, the POS Terminal will disable access mode and keep the freezer door locked thereby preventing public access to potentially hazardous food. The electronic controller continuously monitors temperature inside the food storage compartment. If temperature stays above 5ºC for 30 minutes, it will generate a high-temp alarm and keep the door locked via a mechanical lock upon receiving a locking command from the POS Terminal. The normal access mode will be disabled. The door will also be kept locked and access mode disabled in the event of the cabinet temperature sensor malfunction. After all active lockout triggers (high temperature or sensor malfunction alarms) are rectified, normal access operation can be reinstated in two ways:

1. Holding the arrow down button on the freezer controller until three (3) dashes --- flash and HAC message disappears.
2. Through a secure user interface on the POS terminal.

POS Terminal and the electronic food safety lock system consists of these seven (7) major components.

• **POS Terminal (provided separately by a third party).** The POS Terminal is installed on the front of the door beside the door handle, see Figure 1 for the POS Terminal location. For more information on the POS Terminal operation, refer to the manual provided separately with the POS Terminal.

Figure 1

Figure 2

Figure 3

GENERAL DESCRIPTION (CONT'D)

• **Electronic Controller.** A factory pre-programmed electronic controller that monitors temperature inside the food compartment, controls refrigeration system, and locks/unlocks the mechanical door lock upon receiving locking/unlocking commands from the POS Terminal. See Figure 2 for the controller's location..

• **Mechanical lock.** A mechanical locking mechanism located on the left side of unit. The lock mechanically locks the compartment door when it receives an electrical signal from the electronic controller. See Figure 3 for the lock(s) location.

• **Lock status Indicator Board (LSIB)**. An electronic PCB that provides power to the adjacent lock and shows the lock status (locked or unlocked) via two onboard LEDs. A solid green LED indicates that 12VDC is present at the board. During normal operation, the green LED is always on when the unit is powered. A flashing red LED indicates that the lock/door is in the locked stated. See Figure 3 for the board location.

• **Battery Backup.** The purpose of the battery backup is to supply backup electricity to the electronic controller and to the mechanical lock in the event of power failure (black out). It allows the electronic controller to continue monitoring the food compartment temperature during prolonged power losses. The battery backup powers ONLY the controller and potentially lock during a power outage and does not power any other electrical components of the freezer. There is only one battery backup per unit. See Figure 4 for its location and how to turn it ON or OFF.

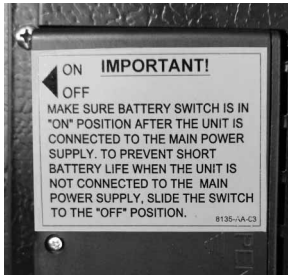


Figure 4

Figure 5

• **Lock key.** A special-purpose key that is used to temporarily override the mechanical lock to gain access to the inside of the locked out compartment. See Figure 3 for the lock key and slot location.

• **Entrapment lock release.** This is an emergency entrapment release feature to temporarily override the lock from the inside of the locked out compartment. See Figure 5 for the entrapment release location.

PRODUCT RECOGNITION TECHNOLOGY (IF EQUIPPED)

For more information on the product recognition technology installed on this unit, refer to the separate manual and instructions provided with the unit.

BATTERY BACKUP OPERATION

The battery backup is located at the back of the unit. Its function is to provide power to the controller(s) and mechanical lock(s) during the main power failures so that the controller can keep monitoring the cabinet temperature during prolonged blackouts. The battery backup has eight AA alkaline batteries connected in series to provide 12VDC.

To activate the battery backup, slide the switch on top of the battery backup enclosure to ON position (Figure 3). To prevent the battery backup from premature charge drain and to extend its lifecycle, slide the switch on top of the battery backup enclosure to OFF position (Figure 3) when the unit is not in use and disconnected from the main power source.

A set of new eight batteries is capable of powering the electronic lock safety system controller(s) and lock(s) for about 7 hours.

To check whether the battery backup is functioning, follow these steps:

1. Ensure the battery backup switch is in the ON position.

2. Turn the power switch beside the freezer controller to off position to disconnect the main power to the unit. If the controller loses power and the lock engages immediately or within a few minutes, then the batteries in battery backup enclosure should be replaced. To replace batteries, undo the screw on the battery cover and replace the eight AA batteries with a new set of alkaline batteries (Figure 7). Use high quality brands such as Duracell, Panasonic, etc. Ensure the battery polarity is followed as per indicators on the backup housing.

Figure 7

3. Repeat steps 1 and 2 periodically, every 3 to 4 months.