Refrigerator Operation Manual

i.Series™ and Horizon Series™

Model Group	i.Series	Horizon Series
Blood Bank	iB111 (Version D) iB120, iB125, iB245, iB256 (Version D)	HB111 (Version D) HB120, HB125, HB245, HB256 (Version D)
Laboratory	iLR111 (Version D) iLR120, iLR125, iLR245, iLR256 (Version D)	HLR111 (Version D) HLR120, HLR125, HLR245, HLR256 (Version D)
Pharmacy	iPR111 (Version D) iPR120, iPR125, iPR245, iPR256 (Version D)	HPR111 (Version D) HPR120, HPR125, HPR245, HPR256 (Version D)

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Document History

Revision	Date	CO	Supersession	Revision Description
A	23 JAN 2013	6666	n/a	Initial release (as version D, revision A).

* Date submitted for Change Order review. Actual release date may vary.

Contents

Section I: General Information

1 About this Manual

1.1 Intended Audience

This manual is intended for use by end users of the refrigerator and authorized service technicians.

1.2 Model References

Generic references are used throughout this manual to group models that contain similar features. For example, “125 models” refers to all models of that size (iB125, HB125, iLR125, HLR125, iPR125, HPR125). This manual covers all upright refrigerators, which may be identified singly, by their size, or by their respective “Series.”

1.3 Copyright and Trademark

Helmer, Inc., doing business as (DBA) Helmer Scientific and Helmer.

2 Safety

Includes general safety information for refrigerator operation.

2.1 Labels


Caution: Risk of damage to equipment or danger to operator


Caution: Hot surface


Caution: Shock/electrical hazard


Caution: Unlock all casters


Earth / ground terminal


Protective earth / ground terminal

2.2 Avoiding Injury

- ► Review safety instructions before installing, using, or maintaining the equipment.
- ► Do not open multiple, loaded drawers at the same time.
- ► Do not move a unit whose load exceeds 900 lbs / 408 kg (single-door units) or 1350 lbs / 612 kg (double-door units).
- ► Before moving unit, ensure casters are free of debris.
- ► Never physically restrict any moving component.
- ► Avoid removing electrical service panels and access panels unless so instructed.
- ► Use supplied power cords only.

CAUTION Decontaminate parts prior to sending for service or repair. Contact Helmer or your distributor for decontamination instructions and a Return Authorization Number.

3 General Recommendations

3.1 Intended Use

Helmer refrigerators are intended for the storage of blood products and other medical and scientific products.

3.2 General Use

Allow refrigerator to come to room temperature before switching power on.

During initial startup, high temperature alarm may sound while refrigerator reaches operating temperature.

CAUTION Do not remove the cover from the condensate evaporator tray.

3.3 Initial Loading

Allow the refrigerator to reach room temperature before powering on. Allow chamber temperature to stabilize at the setpoint before storing product.

4 Operating Standards

These units are designed to operate under the following environmental conditions:

- Indoor use only
- Altitude (maximum): 2000 m
- Ambient temperature range: 15 ºC to 32 ºC
- Relative humidity (maximum for ambient temperature): 80% for temperatures up to 31 ºC, decreasing linearly to 50% at 40 ºC
- Temperature control range: 2 ºC to 10 ºC

4.1 Electrical Specifications

Refer to specification label for voltage and power consumption requirements. Voltage tolerance is ±10%. Power consumption is measured in full load Amperes.

Input Voltage	Model Variety				
	111	120	125	245	256
115 V, 60 Hz	7.0 A	7.5 A	7.5 A	11.5 A	11.5 A
230 V, 50/60 Hz	3.5 A	4.2 A	4.2 A	6.0 A	6.0 A

Circuit breakers are used only on 230 V models. The ratings for 111, 120, and 125 models is 6 A. The rating for 105, 245 and 256 models is 7 A (quantity 2).

The terminals on the remote alarm interface have the following maximum load capacity:

- 0.5 A at 125 V (AC): 1 A at 250 V (DC)

4.2 Dimensions

4.2.1 Weight

NOTE The weight may vary slightly depending on installed options. Weights provided are for standard configurations as shown.

	Model Variety		
Model Family	**111**	**120/125**	**245/256**
iB	5 drawers	7 drawers	14 drawers
iLR	4 shelves	4 shelves	8 shelves
iPR	1 shelf and 5 roll-out baskets	1 shelf and 6 roll-out baskets	2 shelves and 12 roll-out baskets

	Model Variety				
Model Family	**111**	**120**	**125**	**245**	**256**
iB	352 lbs 160 kg	531 lbs 241 kg	559 lbs 254 kg	836 lbs 380 kg	890 lbs 404 kg
iLR	322 lbs 147 kg	473 lbs 215 kg	484 lbs 220 kg	702 lbs 319 kg	738 lbs 335 kg
iPR	357 lbs 162 kg	525 lbs 239 kg	552 lbs 251 kg	824 lbs 374 kg	876 lbs 398 kg

NOTE Maximum load per drawer is 100 lbs / 45 kg

4.2.2 Size

	i.Series			Horizon Series/Scientific Series		
Model Family	**Width**	**Height**	**Depth**	**Width**	**Height**	**Depth**
105	24” 610 mm	34” 864 mm	28.5” 724 mm	24” 610 mm	34” 864 mm	28.5” 724 mm
111	24.25” 616 mm	70.5” 1791 mm	28.25” 718 mm	24.25” 616 mm	70.5” 1791 mm	28.25” 718 mm
120	29.5” 750 mm	79.5” 2020 mm	32.5” 826 mm	29.5” 750 mm	78.75” 2001 mm	32.5” 826 mm
125	29.5” 750 mm	79.5” 2020 mm	38.5” 978 mm	29.5” 750 mm	78.75” 2001 mm	38.5” 978 mm
245	59.25” 1505 mm	79.5” 2020 mm	32.5” 826 mm	59.25” 1505 mm	78.75” 2001 mm	32.5” 826 mm
256	59.25” 1505 mm	79.5” 2020 mm	38.5” 978 mm	59.25” 1505 mm	78.75” 2001 mm	38.5” 978 mm

NOTE Add 1.50” (39 mm) to the width of all refrigerators equipped with the Access Control option.

5 Regulatory Compliance

This device complies with the requirements of directive 93/42/EEC concerning Medical Devices, as amended by 2007/47/EC.

Sound level is less than 70 dB(A).

CE
0086

EC REP

Emergo Europe
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WEEE Compliance

The WEEE (waste electrical and electronic equipment) symbol (right) indicates compliance with European Union Directive WEEE 2002/96/EC and applicable provisions. The directive sets requirements for the labeling and disposal of certain products in affected countries.

When disposing of this product in countries affected by this directive:

- ► Do not dispose of this product as unsorted municipal waste.
- ► Collect this product separately.
- ► Use the collection and return systems available locally.

For more information on the return, recovery, or recycling of this product, contact your local distributor.

6 Installation

6.1 Location Requirements

- ► Has a grounded outlet meeting the electrical requirements listed on the product specification label.
- ► Is clear of direct sunlight, high temperature sources, and heating and air conditioning vents.
- ► Minimum 8“ (203 mm) above, and minimum 3” (76 mm) behind.
- ► Meets limits specified for ambient temperature and relative humidity.

6.1.1 Placement

CAUTION

- ► Do not use the water evaporation tray, located on the rear of the refrigerator, as a handle. The tray may be hot.
- ► To prevent tipping, ensure the casters are unlocked, leveling feet (if installed) are lifted, and the doors are closed before moving the refrigerator.

1. Ensure all casters are unlocked and doors are closed.
2. Roll refrigerator into place and lock casters.
3. Ensure refrigerator is level.

NOTE Helmer recommends the use of leveling feet.

6.2 Temperature Probes

For each probe bottle, use:

► Approximately 4 oz (120 ml) of product simulation solution (10:1 ratio of water to glycerin).

6.3 Chart Recorder

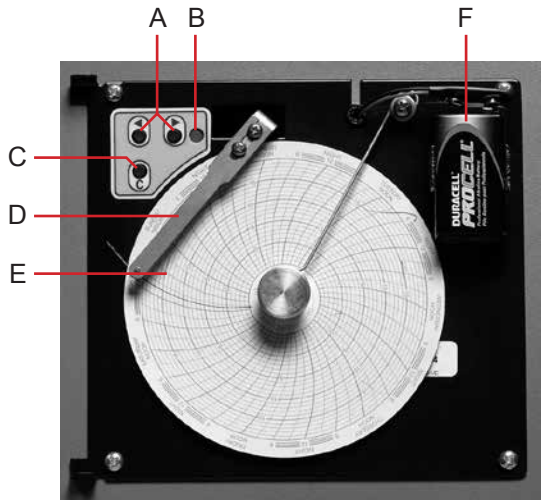
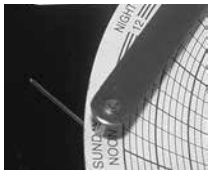


Chart recorder with paper and battery installed.

Label	Description	Function
A	Left and Right Arrow buttons	Adjust settings and stylus position
B	LED	Indicates status of chart recorder in operating mode, or selected temperature range in paper change mode
C	Chart change button	Adjust position of stylus when changing chart paper, or run a test pattern
D	Stylus	Mark temperature line on paper
E	Reset button	Restart chart recorder
F	Backup battery	Provides power during AC power failure. Connect prior to use.

6.3.1 Install and Change Chart Paper

1. Press and hold **C** button. When stylus begins to move left, release button. The LED flashes to indicate current temperature range.
2. When stylus stops moving, remove chart knob then move knob up and away from chart paper.
3. Place new chart paper on chart recorder.
4. Gently lift stylus and rotate paper so current time line corresponds to time line groove.



5. Hold chart paper and reinstall chart knob.

NOTE

- ► For accurate temperature reading, ensure that current time is aligned with time line groove when chart knob is tightened.
- ► Do not overtighten knob.

6. Confirm the temperature range is set to the correct value.
7. Press and hold **C** button. When the stylus begins to move right, release the button.
8. Confirm the stylus is marking the temperature correctly.

7 Maintenance Schedule

Maintenance tasks should be completed according to the following schedule. Refer to the service manual and the i.C³ User Guide for more detail on the various tasks.

NOTE These are recommended minimum requirements. Regulations for your organization or physical conditions at your organization may require maintenance items to be performed more frequently, or only by designated service personnel.

Task	Frequency		
	Quarterly	Annually	As Needed
Test the high and low temperature alarms.	✓		
Test the power failure alarm (as required by your organization's protocols).	✓ (i.Series)		✓ (Horizon Series)
Test the door alarm (as required by your organization's protocols).			✓
Check the temperature calibration on the monitor and change it if necessary.	✓		
(Models with chart recorders) Check the backup battery for the chart recorder after an extended power failure and change it if necessary, or change the battery if it has been in service for 1 year. Refer to the Temperature Chart Recorder Operation and Service Manual.			✓
Check the level of the solution in the probes bottle. Refill or replace solution if necessary.			✓
Examine the probe bottles and clean or replace if necessary.		✓	
Check the chamber lights and replace them if necessary.			✓
Clean the condenser grill.	✓		
Clean the door gaskets, interior, and exterior of the refrigerator.			✓
If applicable, test the ground fault circuit interrupter on the internal outlet.			✓

NOTE Clean the condenser grill on a quarterly basis.

NOTE

- ► During a power failure, the backup battery provides power to the monitoring system and the power failure alarm. If the backup battery is not functioning, the power failure alarm will not be activated.
- ► If the backup battery does not provide power to the monitoring system during the power failure alarm test, replace the battery.
- ► i.Series: If rechargeable battery has been in service for 2 years, replace battery.
- ► Horizon Series: If battery has been in service for 1 year, replace battery.

Section II: i.Series™ Models

8 Operation

8.1 Initial Start Up

1 Plug the power cord into a grounded outlet that meets the electrical requirements on the product specification label.
2 Switch AC ON/OFF switch ON.
3 Switch backup battery switch ON.

NOTE The i.C³ monitoring and control system will take approximately 2 minutes to boot up.

4 Select language.

NOTE Active alarms are displayed on the Home screen. If an alarm condition other than High Temperature occurs, refer to the service manual for troubleshooting.

5 If an alarm sounds, temporarily mute the alarm by touching the **Mute** button.

8.2 Change Temperature Setpoint

i.C³ APPS >  Touch **+** or **–** on spin box to change value.

NOTE Default setpoint is 4.0 ºC

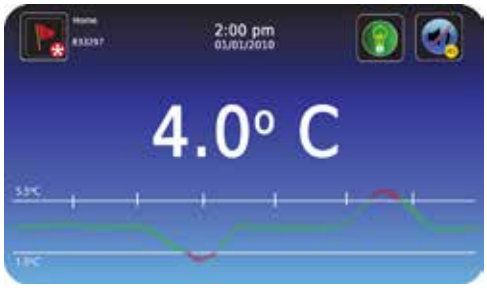
8.3 Set Alarm Parameters

i.C³ APPS >  > Alarm Settings — Control the conditions and timing of alarm condition indicators displayed on the i.C³ Home screen. Touch **+** or **–** on spin box to set each parameter.

8.4 Normal Operation

The i.C³ Home screen displays temperature and alarm information, and provides icons for reaching other functions of the i.C³.

Home screen



Home screensaver (touch to return to Home screen)

8.5 Active Alarms

Home with no alarms.

Home with active alarm.

Alarm	Description
High Temperature	Chamber temperature reading is above high temperature alarm setpoint
Low Temperature	Chamber temperature reading is below low temperature alarm setpoint
Low Battery	Rechargeable battery voltage is low
Power Failure	Power to unit has been disrupted
Probe Failure	Probe not functioning properly
Door Open	Door is open beyond user-specified duration
Compressor Temperature	Compressor temperature reading is above high temperature alarm setpoint
Communication Failure Messages 1, 2, 3	**1** Communication lost between i.C³ display board and control board **2** Communication lost between i.C³ display board and internal system memory **3** Corrupt database

8.6 Mute and Disable Active Alarms

Audible alarms may be muted by touching the **Mute** button to set delay.

Unmuted *Muted*

8.7 Light Operation

8.8 Access Control (Optional)

Allows user-specific secure access to the refrigerator.

8.8.1 Setup

 > Access Setup	Configure and manage use-specific accounts to allow controlled access to the refrigerator.

► Enter the supervisor PIN to set up Access Control
► Initial factory supervisor PIN = 5625

NOTE The supervisor PIN can not be deleted, and should be changed to prevent unauthorized user ID setup. The supervisor PIN does not allow access to the unit. At least 1 user ID must be set up to gain access to the unit.

8.8.2 Open Refrigerator with Access Control

► Enter a valid PIN using the keypad.

9 i.C³® Icon Reference Guide

	Home		Mute		Icon Transfer
	Event Log		Download		Display Brightness
	Settings		Upload		Scroll Arrows
	i.C³ Applications		Light On/Off		Access Control
	Back Arrow		Temperature Graph		Access Control Log
	Alarm Conditions		Information Log		Contact Helmer
	Alarm Test		Compressor Log		Battery Power

10 Components

10.1 Front and Chamber

Chamber and front features (iLR120 model shown).

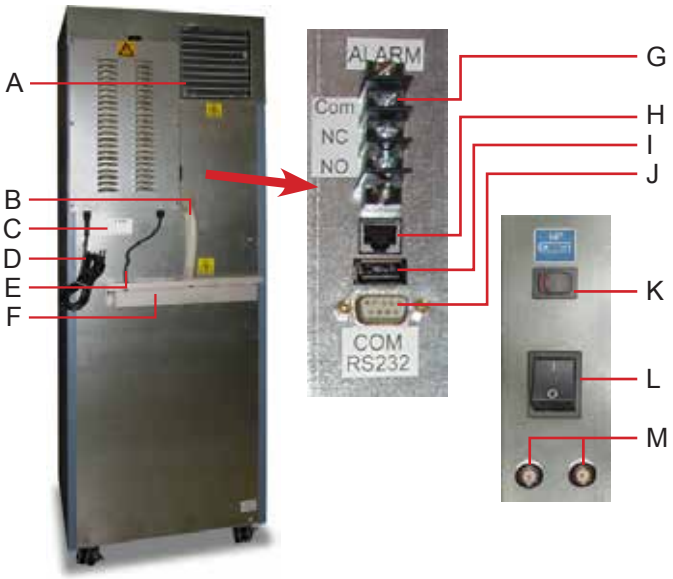
Label	Description
A	Door lock
B	i.C³ control
C	USB port
D	Upper probe bottle
E	Unit cooler with fan guard
F	Shelf
G	Lower probe bottle (excluding 111 models)
H	Caster
I	Standard for adjusting storage components
J	Drawer/basket slide
Not shown	Chart recorder (standard on blood bank models, optional on laboratory and pharmacy models)

10.1.1 Access Control Option

Access Control lock cartridge (iB120 model shown).

Label	Description
A	Access Control cartridge assembly (includes manual override key)

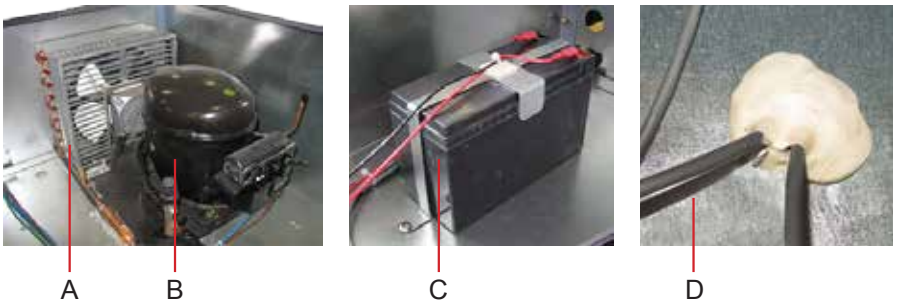
10.2 Rear



Rear features (iB111 model shown).

Label	Description
A	Condenser grill
B	Drain line
C	Product specification label
D	Power cord
E	Condensate evaporator
F	Water evaporation tray
G	Remote alarm interface
H	RJ-45 Ethernet port
I	USB port
J	RS-232 COM port (optional)
K	Backup battery switch
L	Main power switch
M	Circuit breakers (230 V models)

10.3 Top



Top features (i.Series model shown).

Label	Description
A	Condenser
B	Compressor
C	Monitor backup battery
D	Access port (number and location vary by model)

Section III: Horizon Series™ Models

11 Operation

11.1 Initial Start Up

1 Plug the power cord into a grounded outlet that meets the electrical requirements on the product specification label.
2 Switch AC ON/OFF switch ON.
3 Reverse 9 V backup battery and connect it.

NOTE If an alarm condition other than High Temperature occurs, refer to the service manual for troubleshooting.

4 Press **Down Arrow** (Mute) if high temperature alarm sounds.

11.2 Temperature Setpoints

11.2.1 Change Setpoint

NOTE Default setpoint is 4.0 ºC

1 On the monitoring system, press and release **SEL** to change to Control mode. CONTROL lamp will illuminate.
2 Press and hold **SET** to display the reference temperature.
3 Hold **SET** and press **Up Arrow** and **Down Arrow** as necessary to set the value.
4 Release all buttons; the setpoint is changed.
5 Press and release **SEL** to return to Monitor mode. MONITOR lamp will illuminate.

EXAMPLE
- ► Current setpoint is 4.5 ºC
- ► Target temperature is 4.0 ºC
- ► Setpoint adjustment value is -0.5 ºC.

11.2.2 Monitor Offset

- ► Adjust if temperature displayed on the monitor does not match measured chamber temperature.
- ► Value is factory-set to match an independent thermometer.
- ► Value can be changed from -10.0 ºC to +10.0 ºC.
- ► Refer to the service manual for instructions in changing the Monitor Offset.

NOTE If the variance is within acceptable limits, changing the offset value is optional.

11.2.3 Control Sensor Offset

- ► Controls chamber temperature.
- ► Factory-set to match an independent thermometer.
- ► Varies for each refrigerator.

NOTE Control Sensor Offset is factory-preset and should not be changed unless directed by Helmer Technical Service.

11.2.4 Hysteresis

- ► Default setpoint for HB (blood bank) models is 2.0 ºC.
- ► Default setpoint for HLR111 and HPR111 (laboratory and pharmacy) models is 0.8 ºC.
- ► Default setpoint for all other Horizon HLR and HPR (laboratory and pharmacy) models is 2.0 ºC.
- ► Allowable temperature variance on each side of the refrigerator setpoint.

NOTE Hysteresis is factory-preset and should not be changed.

11.2.5 Change a Temperature Alarm Setpoint

Flashing Lamp	Selected Setting
HIGH TEMP and MONITOR	High Temp alarm setpoint
LOW TEMP and MONITOR	Low Temp alarm setpoint
MONITOR only	Monitor Offset
CONTROL only	Control Sensor Offset
CONTROL only	Control Hysteresis

1. Hold **Up Arrow** and **Down Arrow** for 3 seconds. MONITOR lamp will flash to indicate entry into program mode.
2. Press **SEL** until desired setting appears.

NOTE The control lamp flashes when the Control Sensor Offset setting is selected. Press and release the **SEL** button again to select Control Hysteresis. The control lamp will continue to flash.

3. Hold **SET**, then press **Up Arrow** or **Down Arrow** to change the setpoint.
4. Release **SET** button.
5. To change another setting, repeat steps 2-4.
6. Hold **Up Arrow** and **Down Arrow** for 3 seconds. MONITOR lamp stops flashing to indicate exit from program mode. New settings are saved.

11.3 Active Alarms

The controller displays temperature and alarm information.

DOOR ALARM lamp light	Door is open*
HIGH TEMP lamp flashes	Temperature reaches high temperature set point
LOW TEMP lamp flashes	Temperature reaches low temperature set point
“PoFF” appears on display	AC power failure
“Prob” appears on display	Probe circuit is open

* Audible alarm will sound after door is open for 3 minutes.

11.4 Mute and Disable Audible Alarms

Muting audible alarms does not disable alarm lamps or signals sent through the remote alarm interface.

To disable all audible alarms, insert the key in the Alarm Disable switch and turn.

11.5 Light Operation

The light switch is located on the monitoring and control panel.

11.6 Access Control (Optional)

Allows user-specific secure access to the refrigerator.

11.6.1 Setup

The Access Control keypad was programmed at the factory with a master code (0000). The master code is used to program the keypad and enter user codes. The master code also releases the door lock.

NOTE The master code can not be deleted, and should be changed to prevent unauthorized user code setup.

Enter unique user codes for up to 100 users. Each user code is stored with a specific record location number. Keep a log of the location numbers and user codes with users' names.

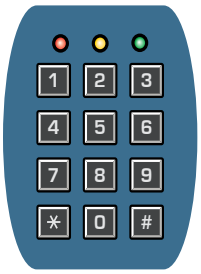
11.6.2 Add User Code

- ► Enter the master code
- ► Press **1** to initiate user code programming function
- ► Enter the location number (00 - 99)
- ► Enter the user code (4 - 9 digit number)
- ► Press ***** to save changes and return to normal operation

11.6.3 Delete User Code

- ► Enter the master code
- ► Press **1** to initiate user code programming function
- ► Enter the location number (00 - 99)
- ► Press ***** to save changes

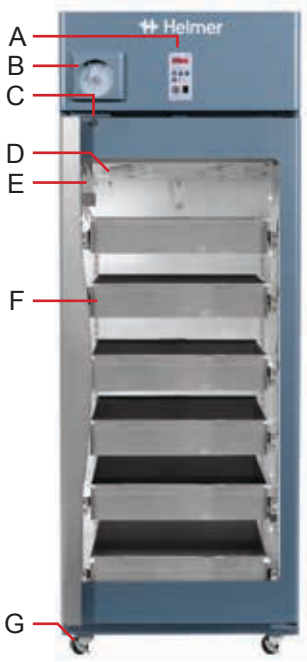
11.6.4 Open Refrigerator with Access Control



► Enter the user code
► Press #

12 Components

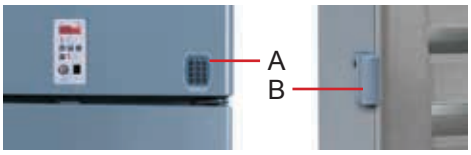
12.1 Front and Chamber



Chamber and front refrigerator features (HB120 model shown).

Label	Description
A	Horizon temperature monitor and control
B	Chart recorder (standard on blood bank models, optional on laboratory and pharmacy models)
C	Door lock
D	Unit cooler (evaporator) with fan guard
E	Upper probe bottle
F	Drawer
G	Caster
H	Standard for adjusting storage components
I	Drawer/basket slide

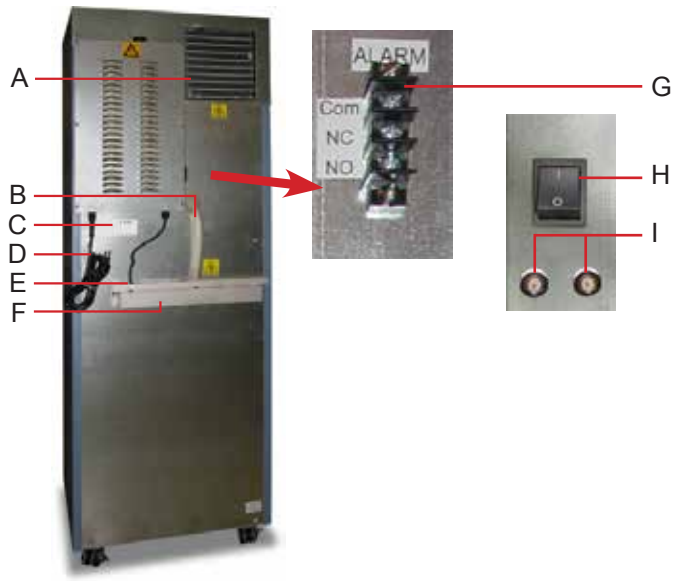
12.1.1 Access Control Option



Access Control keypad and lock cartridge (HB120 model shown).

Label	Description
A	Access Control keypad (included with Access Control option)
B	Access Control cartridge assembly (includes manual override key)

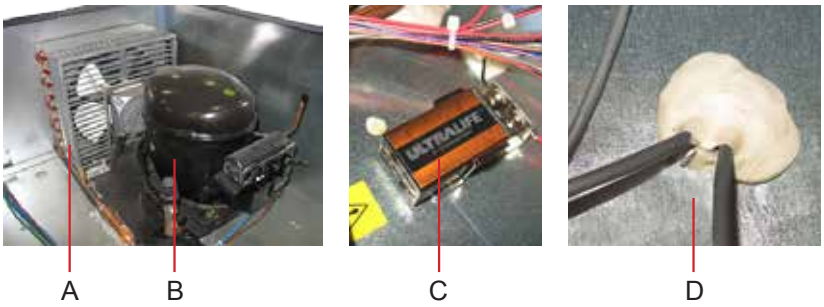
12.2 Rear



Rear features (HB111 model shown).

Label	Description
A	Condenser grill
B	Drain line
C	Product specification label
D	Power cord
E	Condensate evaporator
F	Water evaporation tray
G	Remote alarm interface
H	Main power switch
I	Circuit breakers (230 V models)

12.3 Top



Top features (Horizon Series model shown).

Label	Description
A	Condenser
B	Compressor
C	Backup battery (9 V lithium, non-rechargeable)
D	Access port (number and location vary by model)

END OF MANUAL

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